

# ● ● MEMORIA

## MÉMORISATION DE RESSOURCES NUMÉRIQUES ET D'ACTIVITÉS



### MEMORIA

### NOMENCLATURE DES ACTIVITÉS

Prototype de recherche exploratoire porté par l'UMR 3495 CNRS/MC MAP  
(Modèles et Simulations pour l'Architecture et le Patrimoine).

Marseille, Mai 2022  
Iwona Dudek, Jean-Yves Blaise



Le projet MEMORIA a été soutenu par :

- Le DREST - Département de la Recherche, de l'Enseignement Supérieur et de la Technologie, Ministère de la Culture (2016-2020)
- L'ANR - Agence Nationale de la Recherche - Projet SESAMES [ANR-18-CE38-0009-01] (2019 -2022)

Travail d'élicitation des connaissances mené avec la participation de : N. Renaudin, L. Bergerot, N. Carboni, A. Alaoui M'darhri, L. De Luca, A. Pamart, P. Bénistant, J.Y. Blaise, F. De Domenico (MAP-Gamsau, UMR 3495 CNRS/MC) et X. Rodier, E. Lorans, G. Simon, O. Marlet (LAT, UMR 7324 CITERES).

Liens vers les processus d'élicitation des connaissances :

- elicitation and structuring of activities - 1  
<[http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&\\_op=set&id=12](http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&_op=set&id=12)>
- elicitation and structuring of activities - 2  
<[http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&\\_op=set&id=13](http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&_op=set&id=13)>
- elicitation and structuring of activities related to site examination (data collection group: field acquisition)  
<[http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&\\_op=set&id=96](http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&_op=set&id=96)>
- elicitation and restructuring of activities related to site examination (data collection group)  
<[http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&\\_op=set&id=97](http://memoria-dev.gamsau.archi.fr/is/enter.php?show=process&_op=set&id=97)>

Ce document « nomenclature des activités » a été mis en page par N. Renaudin (MAP-Gamsau, UMR 3495 CNRS/MC).

L'implémentation du système en ligne a été portée entre 2019 et 2022 par M. Rabefandroana (MAP-Gamsau, UMR 3495 CNRS/MC).

La maintenance du SI est assurée par P. Bénistant (MAP-Gamsau, UMR 3495 CNRS/MC).



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Introduction English version

## INTRODUCTION

### 1.1 LE SI EN LIGNE MEMORIA

UN PROTOTYPE EXPLORATOIRE POUR FORMALISER ET DÉCRIRE DES FLUX DE RECHERCHE.

Nomenclature des activités (Jan-2022)

I. Dudek, J.Y. Blaise

Le prototype de recherche MEMORIA est un système d'informations pour le web dont le but est d'apporter aux acteurs d'opérations scientifiques une solution pratique pour formaliser et décrire des flux de recherche. L'initiative repose sur l'idée qu'au-delà de métadonnées décrivant des résultats finaux, des productions, ces acteurs attendent des moyens pour leur associer un historique de production clair. Le SI MEMORIA a pour donc objectif de leur permettre de décrire des résultats de recherche (*i.e.* les extrants), de les associer à des indicateurs permettant de mieux retracer les processus de production de ces résultats, et ce pour :

- assurer la transmissibilité intersubjective de ces processus, sur le long terme ;
- permettre l'interprétabilité, la vérifiabilité et la reproductibilité des résultats ;
- favoriser une lecture comparative et cumulative facilitant le raisonnement sur nos méthodes de travail, leur évolution, les biais disciplinaires, *etc.* ;
- encourager des pratiques intègres en matière de reconnaissance et d'attribution des résultats scientifiques ;

Le prototype fait interagir des composants clés dont les plus importants sont l'output (extrant), le processus et l'activité.

**L'output** est le composant de base du système: c'est un résultat considéré significatif au sein d'un flux de recherche, quelle que soit sa position chronologique dans ce flux (des données brutes de terrain, une ontologie, une restitution 3D, *etc.*). L'output est décrit par une liste de métadonnées classiques permettant de spécifier son contenu (titre, auteurs, type, format, ou date de production, ...) et son contenu (objet d'étude, couverture temporelle d'analyse ...).

L'output est associé à un **processus**, notion qui représente le flux de travail ayant conduit à l'obtention du résultat. Ce flux est très souvent fortement hétérogène en SHS car combinant des étapes interprétatives potentiellement subjectives et des étapes beaucoup plus techniques. La notion de processus implémentée dans MEMORIA n'est donc pas à confondre avec celle d'un enregistrement de flux opérationnel spécialisé, fixe et homogène, type input > algorithme ou série d'algorithmes itératifs > output, dans lequel ce que l'on cherche à transmettre ce ne sont pas des choix et interprétations humaines mais une procédure informatique par exemple (code source). Un processus est constitué d'activités dont l'ordre d'exécution dans le temps peut être spécifié ou non. Un processus peut par ailleurs être lié à des processus « précédents », *i.e.* des processus antérieurs dont il est dépendant.

L'élément atomique d'un processus est **l'activité**, sujet de la présente nomenclature. Chaque activité est définie, exemplifiée et documentée, et dans la majorité des cas caractérisée par une série de **descripteurs** spécifiques. Les activités sont réparties

en 5 groupes (acquisition de données, filtrage et traitement de données, analyse des données, protocoles d'exploitation, finalisation). À l'intérieur de chaque groupe, elles sont organisées de manière hiérarchique, des plus générales aux plus spécifiques et représentées dans ce que nous appelons des roues d'activités.

L'ensemble du système, et les définitions proposées dans cette nomenclature, sont en langue anglaise mais ne proviennent pas nécessairement de sources anglo-saxonnes, et les définitions adoptées ont souvent fait l'objet de réécriture ou de reformulations partielles pour correspondre aux pratiques et protocoles de recherche du laboratoire d'émergence de l'initiative.

## **1.2 CONTENU ET RÔLE DE CETTE NOMENCLATURE**

La nomenclature proposée dans ce document présente sous une forme complète les définitions des 285 activités identifiées dans le système d'informations MEMORIA en janvier 2022. Elle représente un point d'étape dans le développement du système, qui a vocation à s'enrichir de nouvelles activités au fur et à mesure de collaborations à venir. En effet, le jeu d'activités listé dans le présent document est né des préoccupations et pratiques du laboratoire d'origine du système, l'UMR 3495 CNRS/MC MAP, et a nécessité de mettre en place une longue phase d'élicitation de connaissances (ou de savoir-faire) focalisée sur les champs d'expertise de cette unité. Il n'a donc aucune prétention d'exhaustivité, et le lecteur notera que si certaines branches des hiérarchies d'activités sont assez développées, d'autres restent très générales. Le jeu d'activités initial a été étendu en intégrant un volet lié aux interactions de l'UMR MAP avec une équipe d'archéologues du bâti, le LAT (UMR 7324 CITERES). Chaque extension de la présente liste impose d'identifier et d'organiser les activités propres à une discipline ou à une unité de recherche, et nécessite par conséquent un nouveau travail de d'élicitation de connaissances.

La présente nomenclature associe à chaque activité une définition appuyée sur une ou plusieurs sources documentaires (ou dans quelques cas particuliers rédigée par l'équipe du projet) et lorsque cela fait sens une exemplification. A chaque activité correspond également un pictogramme original, conçu pour MEMORIA, exploité dans le système en phase de sélection des activités (via les roues d'activités) et en phase d'organisation/structuration des processus (espace de composition visuelle). Les codes alphanumériques associés à une activité traduisent son niveau de spécialisation dans la hiérarchie : plus le code est long, plus l'activité est spécialisée (ex. A1 premier niveau dans le groupe d'activités « acquisition de données », A1.1 deuxième niveau). Il est important de noter que cette organisation hiérarchique a été conçue pour apporter une forme de flexibilité à l'usage : cela permet à l'utilisateur au besoin de sélectionner une activité relativement générique en cas d'informations imprécises ou lacunaires. Le terme hiérarchie d'activités doit donc être compris avant tout comme une mécanique de structuration, de regroupement, rendant la sélection d'une activité plus facile, lisible. Cette nomenclature a été voulue afin de donner une vision globale de l'ensemble des activités présentes dans le système, pour par exemple un lecteur voulant préparer la restitution d'un processus en amont de l'utilisation effective du SI en ligne. Elle permet également de rendre compte du travail d'élicitation et de de recherche bibliographique qu'a nécessité la construction du SI exploratoire MEMORIA.

## **1.3 STRUCTURATION DU DOCUMENT**

Les activités présentes dans le SI MEMORIA sont réparties en cinq groupes, correspondant à des grandes familles de pratiques. Dans chaque groupe, les activités sont organisées hiérarchiquement – des plus générales, au centre des roues d'activités, aux plus spécialisées – les plus excentrées.

Le présent document reprend cette division par groupes, et par hiérarchie au sein de



chaque groupe. Il ne s'appuie donc pas sur une présentation alphabétique, activité par activité, mais est constitué de cinq chapitres correspondant chacun à un des groupes d'activité, puis de sous-chapitres exploitant le positionnement hiérarchique de chaque activité.

À l'intérieur de chaque chapitre une table des matières spécifique est proposée, qui est organisée en exploitant les codes alphanumériques associés aux activités. La ou les références bibliographiques présentées au fil du texte, activité par activité, sont des références abrégées : elles sont présentées en version longue en fin de document (cf. section Références).

Le cas échéant, lorsqu'une activité est associée à des descripteurs, ceux-ci sont définis (dans la même forme que les activités : définition, exemplification, référence), juste après l'activité elle-même.

En tête de document est proposée une table des matières reprenant la structure du document. Un index des entrées, cette fois-ci purement alphabétique, est également proposé en fin de document.

#### 1.4 POUR EN SAVOIR PLUS SUR LE PROJET MEMORIA

<<http://memoria.gamsau.archi.fr/projet/publications.php?lang=fr>>

- Dudek, J.Y. Blaise, L. De Luca, L. Bergerot, N. Renaudin  
**How Was This Done? An Attempt at Formalising and Memorising a Digital Asset's Making-of.**  
[in] Proceedings of the 2nd International Congress on Digital Heritage 2015  
Vol. 2, Assessment of Methodologies and Tools in DH, IEEE Computer Society, 2015, ISBN: 978-1-5090-0254-2, pp. 343-346  
  
<<http://memoria.gamsau.archi.fr/projet/pdf/DCH2015.pdf>>  
<<http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7419519>>
- I. Dudek, J.Y. Blaise, F. De Domenico, L. De Luca, L. Bergerot, N. Renaudin  
**Record-keeping of digital resources and activities MEMORIA.**  
Séminaire Modèles et simulations pour l'Architecture et le Patrimoine, Marseille, 01/2015  
  
<<https://halshs.archives-ouvertes.fr/halshs-01494994v1>>
- I. Dudek  
**MEMORIA project - progress report (2015-2016)**  
Marseille, 09/2016, 56 pages  
  
<<https://halshs.archives-ouvertes.fr/halshs-01495093>>
- J.Y. Blaise, I. Dudek  
**What comes before a digital output? Eliciting and documenting Cultural Heritage research processes.**  
[in] International Journal of Culture and History (IJCH), Volume 3, Number 1  
ISSN: 2382-6177, 03/2017, pp. 86-94  
  
<<http://www.ijch.net/index.php?m=content&c=index&a=show&catid=43&id=383>>
- I. Dudek, J.Y. Blaise  
**MEMORIA – la préservation des processus d'étude comme enjeu éthique [dans] La diffusion numérique des données en SHS, Guide des bonnes pratiques éthiques et juridiques**  
sous la direction de V. Ginouvès, I. Gras, collection DIGITALES, Presses Universitaires de Provence, Aix-Marseille Université 2018, ISBN: 9791032001790, pp. 231-240  
  
<<https://halshs.archives-ouvertes.fr/halshs-01902564>>

- I. Dudek

**Store Preserve Visualize - The MEMORIA project**

[in] A. Alaoui M'Darhri, V. Baillet, B. Bourineau, et al., «Share — Publish — Store — Preserve. Methodologies, Tools and Challenges for 3D Use in Social Sciences and Humanities», Ch.4.3, pp. 66-73. PARTHENOS Workshop, Marseille, 02/2019

<<https://hal.archives-ouvertes.fr/hal-02155055/document>>
- I. Dudek

**Identifier, structurer et visualiser les activités mobilisées dans la production d'extrants: présentation de l'approche générale MEMORIA, illustration sur le cas d'hypothèses de restitution, programme de développement du S.I. en ligne.**

Ateliers de lancement du projet Sesames, Atelier 4 : Formalisation du raisonnement, inférences passage observé-restitué. Marseille, 03/2019

<[http://memoria.gamsau.archi.fr/projet/pdf/MEMORIA\\_Sesames\\_27032019.pdf](http://memoria.gamsau.archi.fr/projet/pdf/MEMORIA_Sesames_27032019.pdf)>
- I. Dudek, J.Y. Blaise

**Enabling the comparability of research workflows: a case study**

CAA 2019, Check Object Integrity, Kraków, session 40: Argumentation and the Archaeological Record, (in press)

<[http://memoria.gamsau.archi.fr/projet/pdf/s40\\_Dudek\\_CAA\\_2019.pdf](http://memoria.gamsau.archi.fr/projet/pdf/s40_Dudek_CAA_2019.pdf)>
- I. Dudek

**MEMORIA (Mémorisation de ressources numériques et d'activités)**

Séminaire bisannuel de l'UMR CNRS/MC 3495 MAP (Modèles et simulations pour l'Architecture et le Patrimoine), Nancy, 06/2019

<[http://127.0.0.1:8080/projects/BlackWhite/Confer/Memoria\\_SEM\\_MAP2019.pdf](http://127.0.0.1:8080/projects/BlackWhite/Confer/Memoria_SEM_MAP2019.pdf)>
- J.Y. Blaise, I. Dudek

**MEMORIA (Mémorisation de ressources numériques et d'activités)**

Table ronde "Diffuser des données aujourd'hui : enjeux juridiques et éthiques", Maison méditerranéenne des sciences de l'homme, Aix-en-Provence animée par Philippe Mouron (Aix Marseille Université - LID2M) et Isabelle Gras (SCD AMU)

<<https://sygefor.reseau-urfist.fr/#/training/8112/9067>>
- I. Dudek, J.Y. Blaise

**Enabling the comparability of research workflows: a case study**

Proceedings - CAA 2019 (in press)

<<https://halshs.archives-ouvertes.fr/halshs-02927631>>
- I. Dudek

**Projet MEMORIA – Bilan 2019/2020**

10/ 2020, 35 pages

<<https://halshs.archives-ouvertes.fr/halshs-03044175>>
- I. Dudek

**Projet MEMORIA – Séminaire mi-parcours ANR SESAMES (ANR-18-CE38-0009-01)**

23/11/2020 - 04/12/2020, visioconférence

<[http://127.0.0.1:8080/projects/BlackWhite/Confer/Memoria\\_2020Sesames\\_2311\\_int.mp4](http://127.0.0.1:8080/projects/BlackWhite/Confer/Memoria_2020Sesames_2311_int.mp4)>

- I. Dudek, J.Y. Blaise  
**MEMORIA - SI en ligne pour décrire des protocoles de recherche**  
11/2021, démo, (4 min.)  
<[http://memoria.gamsau.archi.fr/projet/pdf/Memoria\\_ECG\\_3495\\_MAP.mp4](http://memoria.gamsau.archi.fr/projet/pdf/Memoria_ECG_3495_MAP.mp4)>
- Iwona Dudek, Jean-Yves Blaise, Miora Rabefandroana  
**MEMORIA. SI en ligne pour décrire des protocoles de recherche**  
Extraction et Gestion des Connaissances, EGC 2022, Revue des Nouvelles Technologies de l'Information, Vol. RNTI-E-38, Sous la direction de Djamel A. Zighed et Gilles Venturini, ISBN 979-10-96289-16-5 pp. 453-460  
<[http://memoria.gamsau.archi.fr/projet/pdf/MEMORIA\\_SI\\_RNTI.pdf](http://memoria.gamsau.archi.fr/projet/pdf/MEMORIA_SI_RNTI.pdf)>  
<[http://memoria.gamsau.archi.fr/projet/pdf/ecg2022\\_poster1.pdf](http://memoria.gamsau.archi.fr/projet/pdf/ecg2022_poster1.pdf)>

## GROUPS OF ACTIVITIES

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#### DATA COLLECTION AND ACQUISITION

A class of activities dedicated at gathering data that is to become the subject of further analysis, filtering and processing.



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#### DATA FILTERING AND TREATMENT

A class of activities dedicated to transformation of the raw data into a suitable form with regards to analysis, output production or finalisation needs, either when accessing the data for the first time or in subsequent steps. Editing, cleaning or modifying the raw data results into processed data.



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#### DATA ANALYSIS

A class of activities focusing on methods of acquisition or gaining of scientific-theoretical, explicit - knowledge, as well as manners of its articulation and transmission in a formal language.

Explicit knowledge is knowledge that can be readily articulated, codified, accessed and verbalised. Scientific knowledge is knowledge accumulated by systematic study and organised by general principles.



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#### ADDED VALUE PROCEDURAL ACTIVITIES

A class of activities dedicated to the phase of research centred on the use of procedural knowledge, such as scientific procedures and technological protocols, and implicating the use of technical skills and abilities acquired and developed by training or practice.



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#### FINALISATION

A class of activities that corresponds to those stages in a research process that are specifically undertaken in such contexts as publication, communication, dissemination, *etc.*

These activities focus on presenting, disseminating, and transmitting research results to various audiences.

The group encompasses activities that lead to reprocessing existing outputs (modification, adjustment, reformation, optimisation, adaptation) or activities that lead to the creation of new ones (video capture, voice-over narration).



## Legend



A1.2

### motion detection

Detecting a change in the position of an object relative to its surroundings or a change in the surroundings relative to an object

*e.g., mechanical, optical or acoustic motion detection*

Based on:  
 [310] anonymous, Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>

Activity code

Activity name

Definition

Examples

References

ACTIVITY

### METHODS

Specifies methods of motion detection

### mechanical motion detection

Motion detection achieved by a mechanical system that manages power to accomplish a task that involves forces and movement.

*e.g., vibration and shock sensors, barometer*

Based on:  
 [833] Wikipedia <[https://en.wikipedia.org/wiki/Mechanical\\_system](https://en.wikipedia.org/wiki/Mechanical_system)>

Category of descriptor

- Multiple choice
- Single choice

- Descriptor value and definition

ACTIVITY  
 DESCRIPTORS



A

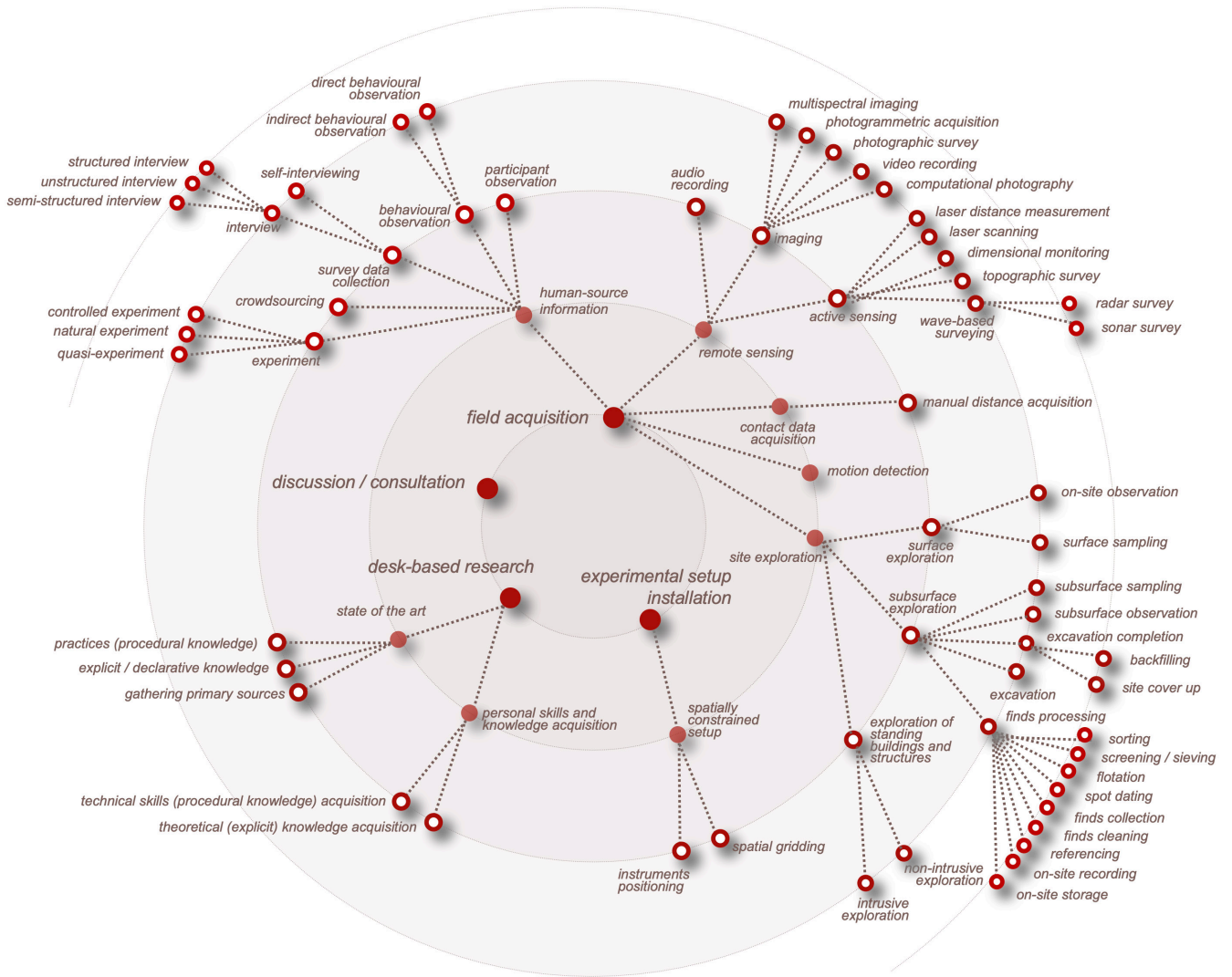


## DATA COLLECTION AND ACQUISITION

A class of activities dedicated at gathering data that is to become the subject of further analysis, filtering and processing.

e.g., collecting data by direct observation, interviews, surveys, experiments or other methods





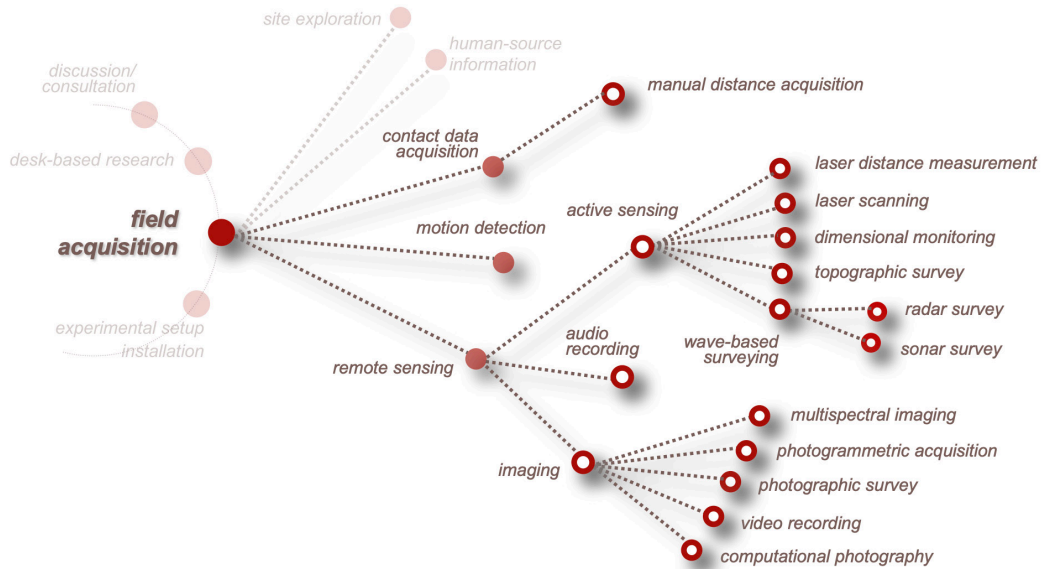
# DATA COLLECTION AND ACQUISITION

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**A1**  
**field acquisition**

Generating new data, commonly by observing the phenomenon in its natural state or in situ.

*e.g., eyewitness report, measurement of dimensions, photographing*

*Based on:*  
[648] William M.K. Trochim, *Social Research Methods* <<http://www.socialresearchmethods.net/kb/qualapp.php>>



**A1.1**  
**contact data acquisition**

Data acquisition that concerns the physical phenomenon or physical property to be measured using contact measurement technology.

*e.g., measurement of dimensions, temperature, or fluid flow*

*Based on:*  
[610] Engineers Edge <[http://www.engineersedge.com/instrumentation/data\\_acquisition\\_systems.htm](http://www.engineersedge.com/instrumentation/data_acquisition_systems.htm)>



**A1.1.1**  
**manual distance acquisition**

The systematic measurement processes that involve taking manual measurements of sites, buildings or artefacts to produce accurate dimensional data. They are usually specified to an agreed-upon level of detail.

*e.g., architectural or archaeological manual survey*

*Based on:*  
[649] Jonathan Fletcher, RICS: Royal Institution of Chartered Surveyors <<http://www.isurv.com/site/scripts/documents.aspx?categoryID=59>>



## A1.2

### motion detection

Detecting a change in the position of an object relative to its surroundings or a change in the surroundings relative to an object

*e.g., mechanical, optical or acoustic motion detection*

*Based on:*  
[310] anonymous, Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>

#### METHODS

Specifies methods of motion detection

##### mechanical motion detection

Motion detection achieved by a mechanical system that manages power to accomplish a task that involves forces and movement.

*e.g., vibration and shock sensors, barometer*

*Based on:*  
[833] Wikipedia <[https://en.wikipedia.org/wiki/Mechanical\\_system](https://en.wikipedia.org/wiki/Mechanical_system)>

##### electronic motion detection

Motion detection achieved by electronic-based methods (*i.e.*, that involve active electrical components).

*e.g., optical detection, acoustic detection*

*Based on:*  
[833] Wikipedia <[https://en.wikipedia.org/wiki/Mechanical\\_system](https://en.wikipedia.org/wiki/Mechanical_system)>

#### SENSORS

Specifies the sensors used to detect the motion of the objects

##### infrared

Devices that emit and/or detects infrared radiation (passive and active sensors).

*e.g., PIR-based motion detector*

*Based on:*  
[310] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>  
[954] wiseGEEK <<http://www.wisegeek.org/what-is-an-infrared-sensor.htm>>

##### optics

Devices that convert light rays into electronic signals.

*e.g., video and camera systems*

*Based on:*  
[310] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>  
[955] wiseGEEK <<http://www.wisegeek.com/what-is-an-optical-sensor.htm>>

##### radio frequency energy

Radar, microwave and tomographic motion detection.

*Based on:*  
[310] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>

##### sound

Microphones and acoustic sensors.

*Based on:*  
[310] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>

##### vibration

Triboelectric, seismic, and inertia-switch sensors.

*Based on:*  
[310] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>

##### magnetism

Magnetic sensors and magnetometers.

*Based on:*  
[310] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_detection](https://en.wikipedia.org/wiki/Motion_detection)>



### A1.3

#### remote sensing

The acquisition of information about an object or phenomenon without making physical contact with the object and thus in contrast to on-site observation.

*e.g., topographic surveying, sonar, radar*

*Based on:*  
[127] Wikipedia <[http://en.wikipedia.org/wiki/Remote\\_sensing](http://en.wikipedia.org/wiki/Remote_sensing)>



### A1.3.1

#### active sensing

The technique of accurately determining the terrestrial or three-dimensional position of points and the distances and angles between them.

*e.g., topographic surveying*

*Based on:*  
[311] Wikipedia <<http://en.wikipedia.org/?title=User:RekonDog/Surveying>>



### A1.3.1.1

#### laser scanning

The acquisition of information using high-speed, non-contact measurement technology in which 3D coordinates of points on an object's surface are determined by projecting laser spots and utilizing scanning methods to measure each spot's location.

*e.g., data acquisition using LIDAR, or TOF (time of flight) laser scanners*

*Based on:*  
[650] LPT - Laser Projection Technologies, Inc. <<http://www.lptcorp.com/products/laser-projectors/laser-grammetry-system/>>

## MEASUREMENT METHODS

Specifies the measurement method at the basics of the instrument

### time of flight

Time-of-flight scanners (also called ranging scanners) can acquire punctual distance information by exploiting a pulsed laser beam that is reflected by the surface of the object being scanned.

Most of these devices measure the time taken by the light to return to a laser receiver to compute the distance of the point of reflection, using an assumed speed of light.

*Based on:*  
[1048] Paolo Cignoni, Andrea D'Andrea, SlideShare <<https://www.slideshare.net/3dicons/3dicons-d-2-1digitisationplanningreport>>

### phase shift

Phase-based scanning utilises a constant beam of laser energy that is emitted from the scanner. The scanner then measures the phase shift of the returning laser energy to calculate distances. Everything else is the same as the time-of-flight scanner.

*Based on:*  
[974] SurvTech Solutions <<http://floridalaserscanning.com/3d-laser-scanning/how-does-laser-scanning-work/>>

### optical triangulation

Triangulation-based 3D laser scanners are active scanners that use laser light to probe the environment. With respect to time-of-flight 3D laser scanner, the triangulation laser shines a laser on the subject and uses a camera to look for the location of the laser dot.

*Based on:*  
[834] anonymous, Wikipedia <[http://en.wikipedia.org/wiki/3D\\_scanner#Triangulation](http://en.wikipedia.org/wiki/3D_scanner#Triangulation)>



#### A1.3.1.2

### topographic survey

Surveys made to determine the configuration of the Earth's surface by measuring the elevation of points in order to locate natural and cultural features on it.

*e.g., Transit-Stadia method (distance, elevation, and location measurements are taken in the field, recorded in the field book, and then plotted on paper in the office). Generally this activity includes angle and GPS coordinates.*

*Based on:*  
[587] Purdue University, College of Engineering <<https://engineering.purdue.edu/~asm215/topics/toposurv.html>>, [312] Wikipedia <<http://en.wikipedia.org/wiki/Surveying>>



#### A1.3.1.3

### dimensional monitoring

Systematic measurement and tracking of the alteration in the shape or dimensions of an object as a result of stresses induced by applied loads.

*e.g., deformation monitoring using photogrammetry, laser tracking or total stations*

*Based on:*  
[651] Dimensional Metrology Services, Precision 3D Measurement & Engineering Surveying <<http://www.metrology.com.au/deformation-monitoring/>>



#### A1.3.1.4

### wave-based surveying

Using waves to determine the distance and direction between objects.

*e.g., using sonar or radar to detect object's position*

*Based on:*  
[313] Wikipedia <[http://en.wikipedia.org/wiki/Acoustic\\_location](http://en.wikipedia.org/wiki/Acoustic_location)>



#### A1.3.1.4.1

### radar survey

An object-detection method that uses radio waves to determine the range, altitude, direction, or speed of objects.

*e.g., using a ground-penetrating radar for subsurface investigation*

*Based on:*  
[314] Wikipedia <<http://en.wikipedia.org/wiki/Radar>>



#### A1.3.1.4.2

### sonar survey

A survey technique that uses sound propagation (usually underwater) to detect objects on or under the surface of the water.

*e.g., using echo sounding to determine the depth of water beneath ships and boats*

*Based on:*  
[315] Wikipedia <<http://en.wikipedia.org/wiki/Sonar>>



#### A1.3.1.5

### laser distance measurement

Employing/manipulating a laser rangefinder that uses a laser beam to determine the distance and direction between objects.

Laser measuring tools typically include the ability to produce some simple calculations, such as the area or volume, as well as switch between imperial and metric units.

*e.g., measuring a large object like a room with a laser measuring tool (laser rangefinder)*

*Based on:*  
[1083] Wikipedia <[https://en.wikipedia.org/wiki/Laser\\_rangefinder](https://en.wikipedia.org/wiki/Laser_rangefinder)>



#### A1.3.2

### imaging

Also called passive sensing, it encompasses survey methods using a representation or a reproduction of an object's form, especially a visual representation (*i.e.* the formation of an image)

*e.g., photogrammetric surveys*

*Based on:*  
[316] Wikipedia <<https://en.wikipedia.org/wiki/Imaging>>



A1.3.2.1

**photographic survey**

The acquisition of information about an object or phenomenon using photography.

*e.g., rephotography – is a form of photography in which the same site is photographed at two separate points in time*

[3] Memoria team, Memoria project

**PHOTO SHOOTING TECHNIQUES**

Specifies photo shooting techniques in terms of camera orientation in relationship to the object.

**convergent axes**

Taking pictures while turning around the object in a systematic manner.

[3] Memoria team, Memoria project

**parallel axes**

Taking pictures while moving along an object's face in a systematic manner.

*e.g., stereo photography*

[3] Memoria team, Memoria project

**divergent axes**

Taking pictures while rotating the camera on its optical centre.

[3] Memoria team, Memoria project

**unique axis**

Taking pictures of the same object from the same point view.

*e.g., rephotography*

[3] Memoria team, Memoria project

**CAMERA POSITION**

Specifies the location of a camera while shooting.

**terrestrial**

Operated from the ground.

*e.g., pictures taken from a tripod, freehand shooting*

[3] Memoria team, Memoria project

**aerial**

Operated from the air.

*e.g., photos taken from a plane, helicopter, or by a person on top of a building*

[3] Memoria team, Memoria project

**underwater**

Situated, occurring, or done beneath the surface of the water.

*e.g., surveying underwater volcanos*

[3] Memoria team, Memoria project

**CAMERA ORIENTATION**

Specifies the global orientation of the optical axis of the camera.

**horizontal**

The optical axis of the camera is approximately horizontal in relationship with the ground.

[3] Memoria team, Memoria project



○ **vertical**

The optical axis of the camera is approximately vertical in relationship with the ground.

[3] Memoria team, Memoria project

○ **oblique**

The optical axis of the camera is inclined towards the ground, or angled in the direction of the sky.

[3] Memoria team, Memoria project

○ **MONITORING**

Specifies the level of human intervention in the control of shooting parameters.

○ **automated**

Shooting parameters (orientation, exposure, time, etc.) are controlled by a robot.

e.g., UAV automated acquisition, surveys made by 3D digitisation robot

[3] Memoria team, Memoria project

○ **human-driven**

Shooting parameters (orientation, exposure, time, etc.) are controlled by an operator.

e.g., pictures taken by a photographer

[3] Memoria team, Memoria project

○ **CAMERA TYPE**

specifies how the signal is processed and stored.

○ **digital camera**

A camera in which a sensor detects and conveys the information that constitutes an image in the form of digital signals.

e.g., Panasonic HC-V770 HD digital video camcorder

Based on:  
[835] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_sensor](https://en.wikipedia.org/wiki/Image_sensor)>  
[1054] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/digital>>  
[1055] Rock Mallin, R. Mallin <<http://www.mallincam.net/blog/digital-camera-analog-camera-whats-the-difference>>

○ **analogue camera**

A tape-based video camera, recording analogue signals onto videotape cassettes.

e.g., SONY FX-1E HDV analogue video camcorder

Based on:  
[948] Macmillan Dictionary <<http://www.macmillandictionary.com/dictionary/british/analogue-camera>>

○ **computational camera**

A camera that uses unconventional optics and software to produce new forms of visual information, including wide field-of-view images, high dynamic range images, multispectral images, and depth images.

It samples the light field in radically different ways to create new and useful forms of visual information. A computational camera embodies the convergence of the camera and the computer.

e.g., Light 16, Lytro Illum

Based on:  
[985] Shree K. Nayar, Stanford Computer Graphics Laboratory <<https://graphics.stanford.edu/papers/lphoto/comp-photo-articles/Data/NAYAR.pdf>>

- SPECTRUM**  
 Specifies the range and scope of frequencies of electromagnetic radiation that captures image data.
  
- near-infrared**  
 Wavelength range (0.7-1) to 5 microns.  
*e.g., used primarily for imaging vegetation*

*Based on:*  
 [1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>
  
- mid-infrared**  
 Wavelength range 5 to (25-40) microns  
*e.g., used for imaging vegetation, soil moisture content, and some forest fires*

*Based on:*  
 [1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>
  
- far-infrared**  
 Wavelength range (25-40) to (200-350) microns.  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

*Based on:*  
 [1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>
  
- blue**  
 450-515..520 nm.  
*e.g., used for atmosphere and deep water imaging*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
  
- green**  
 515..520-590..600 nm  
*e.g., used for imaging man-made objects*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
  
- red**  
 600..630-680..690 nm  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
  
- thermal infrared**  
 10400-12500 nm  
*e.g., uses emitted instead of reflected radiation to image geological structures, thermal differences in water currents, and fires, and for night studies*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
  
- green-red-infrared**  
 The combination in which the blue channel is replaced with near infrared.  
*e.g., used for vegetation, which is highly reflective in near IR; it then shows as blue*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
  
- blue-NIR-MIR**  
 The combination in which the blue channel uses visible blue, green uses NIR (so vegetation stays green), and MIR is shown as red.  
*e.g., such images allow the water depth, vegetation coverage, soil moisture content, and fires to be seen, all in a single image.*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

- **true-colour**  
Uses only red, green, and blue channels, mapped to their respective colours.  
*e.g., good for analysing man-made objects, and is easy to understand for beginning analysts*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>



### A1.3.2.2

#### photogrammetric acquisition

Application of photogrammetry in surveying practice.

*e.g., using photogrammetry to collect dimensional information about a sculpture*

[3] Memoria team, Memoria project

#### ● PHOTO SHOOTING TECHNIQUES

Specifies photo shooting techniques in terms of camera orientation in relationship to the object.

- **convergent axes**  
Taking pictures while turning around the object in a systematic manner.  
*[3] Memoria team, Memoria project*

- **parallel axes**  
Taking pictures while moving along an object's face in a systematic manner.  
*e.g., stereo photography*  
*[3] Memoria team, Memoria project*

- **divergent axes**  
Taking pictures while rotating the camera on its optical centre.  
*[3] Memoria team, Memoria project*

- **unique axis**  
Taking pictures of the same object from the same point view.  
*e.g., rephotography*  
*[3] Memoria team, Memoria project*

#### ● CAMERA POSITION

Specifies the location of a camera while shooting.

- **terrestrial**  
Operated from the ground.  
*e.g., pictures taken from a tripod, freehand shooting*  
*[3] Memoria team, Memoria project*

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Operated from the air.  
*e.g., photos taken from a plane, helicopter, or by a person on top of a building*  
*[3] Memoria team, Memoria project*

- **underwater**  
Situated, occurring, or done beneath the surface of the water.  
*e.g., surveying underwater volcanos*  
*[3] Memoria team, Memoria project*

**CAMERA ORIENTATION**

Specifies the global orientation of the optical axis of the camera.

**horizontal**

The optical axis of the camera is approximately horizontal in relationship with the ground.

[3] Memoria team, Memoria project

**vertical**

The optical axis of the camera is approximately vertical in relationship with the ground.

[3] Memoria team, Memoria project

**oblique**

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[3] Memoria team, Memoria project

**MONITORING**

Specifies the level of human intervention in the control of shooting parameters.

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Shooting parameters (orientation, exposure, time, etc.) are controlled by a robot.

e.g., UAV automated acquisition, surveys made by 3D digitisation robot

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e.g., pictures taken by a photographer

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**CAMERA TYPE**

specifies how the signal is processed and stored.

**digital camera**

A camera in which a sensor detects and conveys the information that constitutes an image in the form of digital signals.

e.g., Panasonic HC-V770 HD digital video camcorder

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 [1054] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/digital>>  
 [1055] Rock Mallin, R. Mallin <<http://www.mallincam.net/blog/digital-camera-analog-camera-whats-the-difference>>

**analogue camera**

A tape-based video camera, recording analogue signals onto videotape cassettes.

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It samples the light field in radically different ways to create new and useful forms of visual information. A computational camera embodies the convergence of the camera and the computer.

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Based on:  
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- SPECTRUM**  
Specifies the range and scope of frequencies of electromagnetic radiation that captures image data.
- near-infrared**  
Wavelength range (0.7-1) to 5 microns.  
*e.g., used primarily for imaging vegetation*

*Based on:*  
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- far-infrared**  
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*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

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- blue**  
450-515..520 nm.  
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### A1.3.2.3

#### multispectral imaging

The acquisition of information about an object or phenomenon using a combination of imaging and spectroscopy that captures image data at specific frequencies across the electromagnetic spectrum.

The wavelengths may be separated by filters or by instruments that are sensitive to particular wavelengths, including light from frequencies beyond the visible light range.

*e.g., using multispectral imaging camera sensors to capture both visible and invisible images of crops and vegetation*

*Based on:  
[317] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image](https://en.wikipedia.org/wiki/Multispectral_image)>*

#### ● PHOTO SHOOTING TECHNIQUES

Specifies photo shooting techniques in terms of camera orientation in relationship to the object.

##### ○ convergent axes

Taking pictures while turning around the object in a systematic manner.

*[3] Memoria team, Memoria project*

##### ○ parallel axes

Taking pictures while moving along an object's face in a systematic manner.

*e.g., stereo photography*

*[3] Memoria team, Memoria project*

##### ○ divergent axes

Taking pictures while rotating the camera on its optical centre.

*[3] Memoria team, Memoria project*

##### ○ unique axis

Taking pictures of the same object from the same point view.

*e.g., rephotography*

*[3] Memoria team, Memoria project*

#### ○ CAMERA POSITION

Specifies the location of a camera while shooting.

##### ○ terrestrial

Operated from the ground.

*e.g., pictures taken from a tripod, freehand shooting*

*[3] Memoria team, Memoria project*

##### ○ aerial

Operated from the air.

*e.g., photos taken from a plane, helicopter, or by a person on top of a building*

*[3] Memoria team, Memoria project*

##### ○ underwater

Situated, occurring, or done beneath the surface of the water.

*e.g., surveying underwater volcanos*

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#### ● CAMERA ORIENTATION

Specifies the global orientation of the optical axis of the camera.

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*[3] Memoria team, Memoria project*

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[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project

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*e.g., UAV automated acquisition, surveys made by 3D digitisation robot*

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Shooting parameters (orientation, exposure, time, *etc.*) are controlled by an operator.

*e.g., pictures taken by a photographer*

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*e.g., used primarily for imaging vegetation*

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**mid-infrared**  
 Wavelength range 5 to (25-40) microns  
*e.g., used for imaging vegetation, soil moisture content, and some forest fires*

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**far-infrared**  
 Wavelength range (25-40) to (200-350) microns.  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

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**blue**  
 450-515..520 nm.  
*e.g., used for atmosphere and deep water imaging*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)> *Based on:*

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 515..520-590..600 nm  
*e.g., used for imaging man-made objects*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)> *Based on:*

**red**  
 600..630-680..690 nm  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)> *Based on:*

**thermal infrared**  
 10400-12500 nm  
*e.g., uses emitted instead of reflected radiation to image geological structures, thermal differences in water currents, and fires, and for night studies*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)> *Based on:*

**green-red-infrared**  
 The combination in which the blue channel is replaced with near infrared.  
*e.g., used for vegetation, which is highly reflective in near IR; it then shows as blue*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)> *Based on:*



○ **blue-NIR-MIR**

The combination in which the blue channel uses visible blue, green uses NIR (so vegetation stays green), and MIR is shown as red.

*e.g., such images allow the water depth, vegetation coverage, soil moisture content, and fires to be seen, all in a single image.*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

○ **true-colour**

Uses only red, green, and blue channels, mapped to their respective colours.

*e.g., good for analysing man-made objects, and is easy to understand for beginning analysts*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>



A1.3.2.4

**video recording**

The acquisition of information about an object or phenomenon by recording of moving visual images.

*e.g., recording a group performing a folk dance with a motion picture camera (digitally or on videotape)*

*Based on:*  
[443] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/video>>

○ **CAMERA POSITION**

Specifies the location of a camera while shooting.

○ **terrestrial**

Operated from the ground.

*e.g., pictures taken from a tripod, freehand shooting*

[3] Memoria team, Memoria project

○ **aerial**

Operated from the air.

*e.g., photos taken from a plane, helicopter, or by a person on top of a building*

[3] Memoria team, Memoria project

○ **underwater**

Situated, occurring, or done beneath the surface of the water.

*e.g., surveying underwater volcanos*

[3] Memoria team, Memoria project

○ **MONITORING**

Specifies the level of human intervention in the control of shooting parameters.

○ **automated**

Shooting parameters (orientation, exposure, time, etc.) are controlled by a robot.

*e.g., UAV automated acquisition, surveys made by 3D digitisation robot*

[3] Memoria team, Memoria project

○ **human-driven**

Shooting parameters (orientation, exposure, time, etc.) are controlled by an operator.

*e.g., pictures taken by a photographer*

[3] Memoria team, Memoria project

**CAMERA TYPE**

specifies how the signal is processed and stored.

**digital camera**

A camera in which a sensor detects and conveys the information that constitutes an image in the form of digital signals.

*e.g., Panasonic HC-V770 HD digital video camcorder*

*Based on:*  
 [835] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_sensor](https://en.wikipedia.org/wiki/Image_sensor)>  
 [1054] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/digital>>  
 [1055] Rock Mallin, R. Mallin <<http://www.mallincam.net/blog/digital-camera-analog-camera-whats-the-difference>>

**analogue camera**

A tape-based video camera, recording analogue signals onto videotape cassettes.

*e.g., SONY FX-1E HDV analogue video camcorder*

*Based on:*  
 [948] Macmillan Dictionary <<http://www.macmillandictionary.com/dictionary/british/analogue-camera>>

**computational camera**

A camera that uses unconventional optics and software to produce new forms of visual information, including wide field-of-view images, high dynamic range images, multispectral images, and depth images.

It samples the light field in radically different ways to create new and useful forms of visual information. A computational camera embodies the convergence of the camera and the computer.

*e.g., Light 16, Lytro Illum*

*Based on:*  
 [985] Shree K. Nayar, Stanford Computer Graphics Laboratory <<https://graphics.stanford.edu/papers/lfphoto/comp-photo-articles/Data/NAYAR.pdf>>

**SPECTRUM**

Specifies the range and scope of frequencies of electromagnetic radiation that captures image data.

**near-infrared**

Wavelength range (0.7-1) to 5 microns.

*e.g., used primarily for imaging vegetation*

*Based on:*  
 [1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

**mid-infrared**

Wavelength range 5 to (25-40) microns

*e.g., used for imaging vegetation, soil moisture content, and some forest fires*

*Based on:*  
 [1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

**far-infrared**

Wavelength range (25-40) to (200-350) microns.

*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

*Based on:*  
 [1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

**blue**

450-515..520 nm.

*e.g., used for atmosphere and deep water imaging*

*Based on:*  
 [836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

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[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>



#### A1.3.2.5

##### computational photography

Refers to digital image capture and processing techniques that use digital computation instead of optical processes to overcome limitations of conventional photography. The capture methods include sophisticated sensors, electromechanical actuators and on-board processing.

The computational techniques encompass methods from modification of imaging parameters during capture to sophisticated reconstructions from indirect measurements.

This activity is sometimes called also 'computational imaging'.

*Examples include adaptation to sensed scene depth and illumination, taking multiple pictures by varying camera parameters or actively modifying the flash illumination parameters.*

*e.g., in-camera computation of digital panoramas, high-dynamic-range images, focus stacking, RTI (Reflectance Transformation Imaging)*

*Based on:*  
[550] Ramesh Raskar, Jack Tumblin, Ankit Mohan, Amit Agrawal, Yuanzen Li, Semantic Scholar  
<<https://pdfs.semanticscholar.org/754e/979592fcec1a82f847a02a36e5db817aba0b.pdf>>  
[391] Wikipedia <[https://en.wikipedia.org/wiki/Computational\\_photography](https://en.wikipedia.org/wiki/Computational_photography)>

[551] Michael S. Brown, EECS  
<[http://www.eecs.yorku.ca/~mbrown/EECS6323/lectures/01\\_EECS\\_6323-Introduction.pdf](http://www.eecs.yorku.ca/~mbrown/EECS6323/lectures/01_EECS_6323-Introduction.pdf)>

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Operated from the ground.

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[3] Memoria team, Memoria project

**aerial**

Operated from the air.

*e.g., photos taken from a plane, helicopter, or by a person on top of a building*

[3] Memoria team, Memoria project

**underwater**

Situated, occurring, or done beneath the surface of the water.

*e.g., surveying underwater volcanos*

[3] Memoria team, Memoria project

**CAMERA ORIENTATION**

Specifies the global orientation of the optical axis of the camera.

**horizontal**

The optical axis of the camera is approximately horizontal in relationship with the ground.

[3] Memoria team, Memoria project

**vertical**

The optical axis of the camera is approximately vertical in relationship with the ground.

[3] Memoria team, Memoria project

**oblique**

The optical axis of the camera is inclined towards the ground, or angled in the direction of the sky.

[3] Memoria team, Memoria project

**MONITORING**

Specifies the level of human intervention in the control of shooting parameters.

**automated**

Shooting parameters (orientation, exposure, time, etc.) are controlled by a robot.

*e.g., UAV automated acquisition, surveys made by 3D digitisation robot*

[3] Memoria team, Memoria project

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[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

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[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>
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Wavelength range (25-40) to (200-350) microns.  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

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[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>
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[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
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*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

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[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
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*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>
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Uses only red, green, and blue channels, mapped to their respective colours.  
*e.g., good for analysing man-made objects, and is easy to understand for beginning analysts*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>



## A1.3.3

**audio recording**

The acquisition of information by sound recording.

*e.g., soundscape recording*

[3] Memoria team, Memoria project

**ACOUSTIC SOURCE**

Specifies the sound source type from the point of view of its reproducibility.

**preregistered sound**

Emission of previously recorded sound (audible acoustic wave) may it be a natural or synthetic sound.

*e.g., emission of recorded speech, emission of a sweep*

[3] Memoria team, Memoria project

**live sound emission**

Intentional emission of live-sounds, in relation with a predefined scenario (e.g., fixed text, music score).

*e.g., playing a piano, singing, walking inside a church*

[3] Memoria team, Memoria project

**singular sound recording**

Direct capturing of a unique and unrepeatabe audio information within a given area, at a given time.

*e.g., acoustic environment of the Concorde (Paris) metro station at 21:30 on March the 12th, 2019*

Based on:  
[354] anonymous, Wikipedia <<https://en.wikipedia.org/wiki/Soundscape>>

**PLACE OF REGISTRATION**

Specifies the type of a space within which a recording takes place.

**outdoor**

Relates to an outside of a building and open spaces.

*e.g., streets, gardens, forests*

Based on:  
[1204] Vocabulary.com <<https://www.vocabulary.com/dictionary/exterior>>  
[1205] Collins Dictionary <<https://www.collinsdictionary.com/dictionary/english/outdoor>>

**anechoic chamber**

A room designed to absorb all sound so as to eliminate all echoes, used for research on hearing and sensory deprivation.

Based on:  
[1206] Farlex Partner Medical Dictionary. (2012) <<https://medical-dictionary.thefreedictionary.com/anechoic-chamber>>

**recording studio**

A recording studio is a facility for sound recording and mixing designed to achieve optimum acoustic properties (acoustic isolation or diffusion or absorption of reflected sound that could otherwise interfere with the sound heard by the listener).

Based on:  
[1207] Wikipedia <[https://en.wikipedia.org/wiki/Recording\\_studio](https://en.wikipedia.org/wiki/Recording_studio)>

**other indoor spaces**

Recording that happen inside a building and not outside with an exception of anechoic chambers and recording studios.

*e.g., an interior of a chapel, caves, attics*

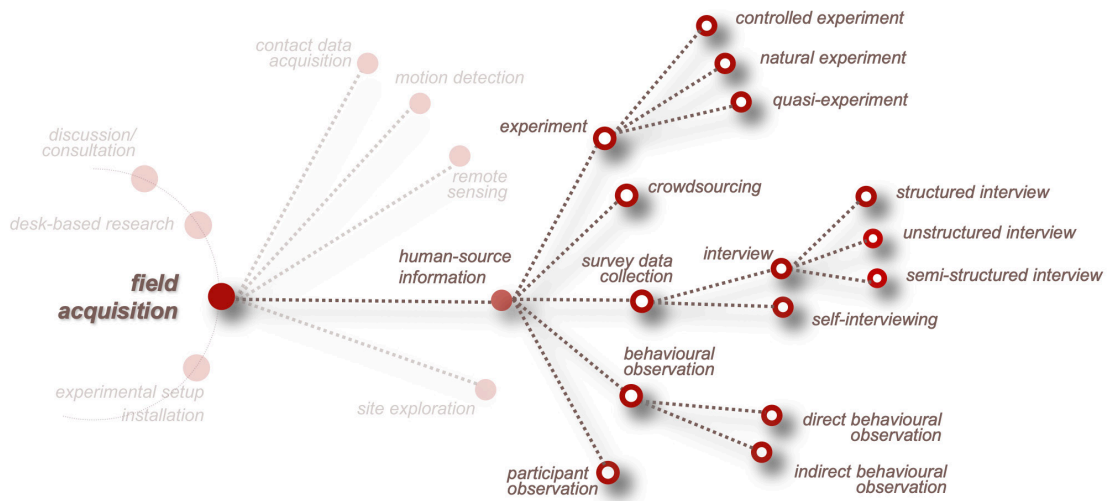
Based on:  
[1208] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/indoor>>

○ **transitional spaces**

Semi-indoor spaces that share certain properties of indoor and outdoor areas, or exhibit distinct characteristics different from indoor/outdoor spaces.

*e.g. a small courtyard garden, a porch*

*Based on:  
[1209] Holger Fritze, Angela Schwering, Christian Kray, Thore Fechner, (PDF) Transitional Spaces: Between Indoor and Outdoor Spaces. <[https://www.researchgate.net/publication/299696379\\_Transitional\\_Spaces\\_Between\\_Indoor\\_and\\_Outdoor\\_Spaces](https://www.researchgate.net/publication/299696379_Transitional_Spaces_Between_Indoor_and_Outdoor_Spaces)>*



**A1.4**  
**human-source information**

Collecting information based on human reports.

*e.g., respondents who answer questions, results of participative observation*

*Based on:*  
[440] BusinessDictionary <<http://www.businessdictionary.com/definition/qualitative-data.html>>  
[585] Natalie Boyd, Study.com <<http://education-portal.com/academy/lesson/what-is-qualitative-research-definition-sources-examples.html>>

[586] William M.K. Trochim, Social Research Methods <<http://www.socialresearchmethods.net/kb/qualdata.php>>



**A1.4.1**  
**survey data collection**

A data collection method used to gather information from a predefined group of individuals.

*e.g., gathering information using phone questionnaires, or structured interview with small groups of individuals*

*Based on:*  
[652] Kandra Cherry, VeryWell <<https://www.verywell.com/what-is-a-survey-2795787>>  
[756] American Society for Quality ASQ <<http://asq.org/learn-about-quality/data-collection-analysis-tools/overview/survey.html>>

[757] AlleyDog <<http://www.alleydog.com/glossary/definition.php?term=Survey>>  
[758] <<http://psychology.about.com/od/researchmethods/f/survey.html>>



**A1.4.1.1**  
**interview**

A data collection method using conversation between two or more people during which questions are asked by the interviewer to elicit facts or statements from the interviewee.

*e.g., gathering information by interviewing passers-by*

*Based on:*  
[404] Merriam-Webster <<http://www.merriam-webster.com/dictionary/interview>>



## ○ INTERVIEW METHOD

Types of interviews according to number of interviewers and interviewees.

### ○ one-to-one interviewing

During the interview process only the interviewer and the interviewee are present. The interviewer may be present physically or remotely (via video chat, telephone).

*e.g., a conversation between a researcher and a farmer*

*Based on:*  
[837] Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_survey\\_information\\_collection](http://en.wikipedia.org/wiki/Computer-assisted_survey_information_collection)>

### ○ group interviewing

Group interview takes place when a candidate is interviewed by more than one interviewer at the same time.

*e.g., panel interview - the candidate is interviewed by a group of panellists*

*Based on:*  
[1043] AARP WorkSearch Information Network <<http://cms.aarpworksearch.org/Inside/Pages/EmployersInterviews.aspx>>

### ○ focus group

A group of interacting individuals having some common interest or characteristics, brought together by a moderator, who uses the group and its interaction as a way to gain information about a specific or focused issue.

*e.g., small number of people (usually between four and 15, but typically eight) brought together with a moderator to focus on a specific product or topic*

*Based on:*  
[759] BusinessDictionary <<http://www.businessdictionary.com/definition/focus-group.html#ixzz3RSF7BtNr>>  
[968] Meg Sewell, Mary Marczak, College of Agriculture and Life Sciences University of Arizona <<http://ag.arizona.edu/sfcs/cyfernet/cyfar/focus.htm>>

## ○ INTERACTION MODE

Specifies the location of a camera while shooting.

### ○ face-to-face interviewing

An interviewer is physically present to ask the survey questions and assist the respondent in answering them. Data obtained from the interview are filled in by interviewer.

*Based on:*  
[952] James K. Doyle, Worcester Polytechnic Institute <[https://www.wpi.edu/Images/CMS/SSPS/Doyle\\_-\\_Face-to-Face\\_Surveys.pdf](https://www.wpi.edu/Images/CMS/SSPS/Doyle_-_Face-to-Face_Surveys.pdf)>

### ○ remote interviewing

Data obtained from the interview are filled in by respondent but assisted by a remote human interviewer (by telephone, video chat, etc.)

*e.g., by telephone, videophone or Internet*

[3] Memoria team, Memoria project

## ○ RESULTS RECORDING MODE

Classification of interviews according to techniques used to record the results.

### ○ paper-and-pencil interviewing

Data obtained from the interview are filled in on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*Based on:*  
[1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>

### ○ recorded interview

Data obtained from the interview are registered (audio or video).

*e.g., voice recording, videoing*

[3] Memoria team, Memoria project

○ **computer-assisted personal interviewing**

Data obtained from the interview are directly entered into a computer programme using a computer, a laptop, a tablet, etc.

*Based on:*  
[838] anonymous, Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>

○ **online interviewing**

The respondents answer the questions online.

[3] Memoria team, Memoria project

○ **mixed mode surveys**

Multiple modes are used to contact and survey respondents.

[3] Memoria team, Memoria project



A1.4.1.1.1

**structured interview**

A data collection method in which an interviewer plans the questions to ask participants beforehand.

*e.g., using a structured list of questions during a telephone interview*

*Based on:*  
[609] Gerard Keegan, Gerard Keegan Psychology <[http://www.gerardkeegan.co.uk/glossary/gloss\\_s.htm#-structuredinterview](http://www.gerardkeegan.co.uk/glossary/gloss_s.htm#-structuredinterview)>

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[3] Memoria team, Memoria project

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Multiple modes are used to contact and survey respondents.

[3] Memoria team, Memoria project



A1.4.1.1.2

**semi-structured interview**

A data collection method in which the researcher follows pre-set questions, but will ask also some spontaneous ones.

*e.g., radio interviews*

*Based on:*  
[608] Gerard Keegan, Gerard Keegan Psychology <[http://www.gerardkeegan.co.uk/glossary/gloss\\_s.htm#semistructuredinterview](http://www.gerardkeegan.co.uk/glossary/gloss_s.htm#semistructuredinterview)>

○ **INTERVIEW METHOD**

Types of interviews according to number of interviewers and interviewees.

○ **one-to-one interviewing**

During the interview process only the interviewer and the interviewee are present. The interviewer may be present physically or remotely (via video chat, telephone).

*e.g., a conversation between a researcher and a farmer*

*Based on:*  
[837] Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_survey\\_information\\_collection](http://en.wikipedia.org/wiki/Computer-assisted_survey_information_collection)>

○ **group interviewing**

Group interview takes place when a candidate is interviewed by more than one interviewer at the same time.

*e.g., panel interview - the candidate is interviewed by a group of panellists*

*Based on:*  
[1043] AARP WorkSearch Information Network <<http://cms.aarpworksearch.org/Inside/Pages/EmployersInterviews.aspx>>

### ○ focus group

A group of interacting individuals having some common interest or characteristics, brought together by a moderator, who uses the group and its interaction as a way to gain information about a specific or focused issue.

*e.g., small number of people (usually between four and 15, but typically eight) brought together with a moderator to focus on a specific product or topic*

*Based on:  
[759] BusinessDictionary <<http://www.businessdictionary.com/definition/focus-group.html#ixzz3RSF7BtNr>>  
[968] Meg Sewell, Mary Marczak, College of Agriculture and Life Sciences University of Arizona <<http://ag.arizona.edu/sfcs/cyfernet/cyfar/focus.htm>>*

### ○ INTERACTION MODE

Specifies the location of a camera while shooting.

### ○ face-to-face interviewing

An interviewer is physically present to ask the survey questions and assist the respondent in answering them. Data obtained from the interview are filled in by interviewer.

*Based on:  
[952] James K. Doyle, Worcester Polytechnic Institute <[https://www.wpi.edu/Images/CMS/SSPS/Doyle\\_-\\_Face-to-Face\\_Surveys.pdf](https://www.wpi.edu/Images/CMS/SSPS/Doyle_-_Face-to-Face_Surveys.pdf)>*

### ○ remote interviewing

Data obtained from the interview are filled in by respondent but assisted by a remote human interviewer (by telephone, video chat, etc.)

*e.g., by telephone, videophone or Internet*

*[3] Memoria team, Memoria project*

### ○ RESULTS RECORDING MODE

Classification of interviews according to techniques used to record the results.

### ○ paper-and-pencil interviewing

Data obtained from the interview are filled in on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*Based on:  
[1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>*

### ○ recorded interview

Data obtained from the interview are registered (audio or video).

*e.g., voice recording, videoing*

*[3] Memoria team, Memoria project*

### ○ computer-assisted personal interviewing

Data obtained from the interview are directly entered into a computer programme using a computer, a laptop, a tablet, etc.

*Based on:  
[838] anonymous, Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>*

### ○ online interviewing

The respondents answer the questions online.

*[3] Memoria team, Memoria project*

### ○ mixed mode surveys

Multiple modes are used to contact and survey respondents.

*[3] Memoria team, Memoria project*



### A1.4.1.1.3

#### unstructured interview

The key feature of the unstructured interview is the free-ranging nature of the questions asked. The researcher does not have to, or need to stick to any particular questions.

*Based on:*  
[607] Gerard Keegan, Gerard Keegan Psychology <[http://www.gerardkeegan.co.uk/glossary/gloss\\_u.htm#un-structuredinterview](http://www.gerardkeegan.co.uk/glossary/gloss_u.htm#un-structuredinterview)>

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[952] James K. Doyle, Worcester Polytechnic Institute <[https://www.wpi.edu/Images/CMS/SSPS/Doyle\\_-\\_Face-to-Face\\_Surveys.pdf](https://www.wpi.edu/Images/CMS/SSPS/Doyle_-_Face-to-Face_Surveys.pdf)>

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[1011] *Inview Veldwerk* <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>

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*Based on:*

[838] *anonymous, Wikipedia* <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>

**online interviewing**

The respondents answer the questions online.

[3] *Memoria team, Memoria project*

**mixed mode surveys**

Multiple modes are used to contact and survey respondents.

[3] *Memoria team, Memoria project*

**A1.4.1.2****self-interviewing**

A form of interview, in which an interviewer is not present (questions are presented in the form of text, audio or video).

*e.g., gathering information using an online form*

*Based on:*

[699] *Paul J. Lavrakas, Lavrakas Paul J., Encyclopedia of Survey Research Methods, Sage Publications Inc, 2008*

**RESULTS RECORDING MODE**

Classification of interviews according to techniques used to record the results..

**paper-and-pencil self-interviewing**

Data are filled in on a paper form by the respondent and posted.

[3] *Memoria team, Memoria project*

**computer-assisted self-interviewing**

Data obtained from the interview are directly entered into a computer programme using a computer, a laptop, a tablet, and stored locally.

[3] *Memoria team, Memoria project*

**online self-interviewing**

The respondents answer the questions online.

[3] *Memoria team, Memoria project*

**disk by mail**

An interviewing technique that includes a floppy or optical disk that is sent to the respondent and returned to the interviewer.

[3] *Memoria team, Memoria project*

**touch-tone data entry**

The respondent enters the answers by pressing the appropriate numeric keys on a telephone handset. The interviewer is not present.

[3] *Memoria team, Memoria project*

**interactive voice response**

The answers provided by the respondent through the telephone are automatically recorded as text.

[3] Memoria team, Memoria project



A1.4.2

**crowdsourcing**

Crowdsourcing is the process of obtaining information by soliciting contributions from a large group of people (not selected by authors of interview) and especially from an online community.

e.g., internet crowdsourcing

Based on:  
[318] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Crowdsourcing>>  
[405] Meriam Webster <<https://www.merriam-webster.com/dictionary/crowdsourcing>>

**TASK TYPE**

Types of tasks to be accomplished.

**annotation**

Enrichment of an existing data set.

e.g., identifying people or places on old pictures

[3] Memoria team, Memoria project

**production**

Producing new content (e.g., observation notes, photographs), bringing it into existence.

e.g., meteorological observations

Based on:  
[915] The Free Dictionary <<http://www.thefreedictionary.com/producing>>

**collecting**

Gathering existing data and information.

e.g., collect and send code bar codes

[3] Memoria team, Memoria project



A1.4.3

**behavioural observation**

A study in which the investigator simply observes a behaviour in a systematic manner without influencing or interfering with the behaviour. The observed group or individual is outside of the control of the investigator.

e.g., non-participant observation (researcher watches the subjects of the study, with their knowledge, but without taking an active part in the situation under scrutiny)

Based on:  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>

**TIME SPAN**

Differentiations according the time span of an observation.

**cross-sectional study**

Study that involves observation at one specific point in time or over a short period. It is used generally for examining phenomena expected to remain static through the period of interest.

e.g., often used to assess the prevalence of acute or chronic conditions, or to answer questions about the causes of disease or the results of intervention.

Based on:  
[839] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Cross-sectional\\_study](https://en.wikipedia.org/wiki/Cross-sectional_study)>  
[1056] Kate Ann Levin, Nature Research <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

**○ longitudinal study**

Study that involves repeated observations of the same variables over long periods of time. It uses time as the main variable.

*e.g., an observational study that employs continuous or repeated measures to follow particular individuals and observe the same set of variables over a prolonged period*

*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>



**A1.4.3.1**

**direct behavioural observation**

The observer is physically present and is recording what he/she is watching. He/she is watching human behaviour rather than taking part.

*e.g., observing from behind one-way mirrors, health practitioner observing hyperactive children*

*Based on:*  
[319] William M.K. Trochim, Social Research Methods <<http://www.socialresearchmethods.net/kb/qualmeth.php>>

**● TIME SPAN**

Differentiations according the time span of an observation.

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[839] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Cross-sectional\\_study](https://en.wikipedia.org/wiki/Cross-sectional_study)>  
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*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>



**A1.4.3.2**

**indirect behavioural observation**

Indirect method of human behaviour observation involving an automated recording process.

*e.g., videotaping the phenomenon, observation based on video records (video-based observation)*

*Based on:*  
[654] KJ Singh, MBA Official <<http://www.mbaofficial.com/mba-courses/research-methodology/what-are-the-types-of-observation/>>

**● TIME SPAN**

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[839] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Cross-sectional\\_study](https://en.wikipedia.org/wiki/Cross-sectional_study)>  
[1056] Kate Ann Levin , Nature Research <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>



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Study that involves repeated observations of the same variables over long periods of time. It uses time as the main variable.

*e.g., an observational study that employs continuous or repeated measures to follow particular individuals and observe the same set of variables over a prolonged period*

*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>



**A1.4.4**

**participant observation**

Observation method requiring that the researcher becomes a participant in the culture or context being observed.

*e.g., participant ethnographic observation*

*Based on:*  
[653] William M.K. Trochim, Social Research Methods <<http://www.socialresearchmethods.net/kb/qualmeth.php>>

[760] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Participant\\_observation](https://en.wikipedia.org/wiki/Participant_observation)>



**A1.4.5**

**experiment**

An operation or procedure in which individuals (or clusters of individuals) are exposed to the experimental and control conditions constructed and controlled by the investigator.

*Based on:*  
[320] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Natural\\_experiment](http://en.wikipedia.org/wiki/Natural_experiment)>



**A1.4.5.1**

**controlled experiment**

Experimenting that relies on repeatable procedure and logical analysis of the results (ex. the results obtained from experimental samples are compared against control samples).

*Based on:*  
[321] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Experiment#Controlled\\_experiments](http://en.wikipedia.org/wiki/Experiment#Controlled_experiments)>

Experiment in which all the important factors that might affect the phenomena of interest are under control..

*Based on:*  
[655] Research Connections <<http://www.researchconnections.org/childcare/datamethods/experimentsquasi.jsp>>

*e.g., The study population is divided into two groups. One group receives a placebo, while the other group receives a standard drug.*



**A1.4.5.2**

**natural experiment**

Experiment in which the individuals (or clusters of individuals) are determined by nature or by other factors outside the control of the investigators. The process governing the exposures arguably resembles random assignment.

*e.g., observing the response of individuals to a disease*

*Based on:*  
[320] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Natural\\_experiment](http://en.wikipedia.org/wiki/Natural_experiment)>



### A1.4.5.3

#### **quasi-experiment**

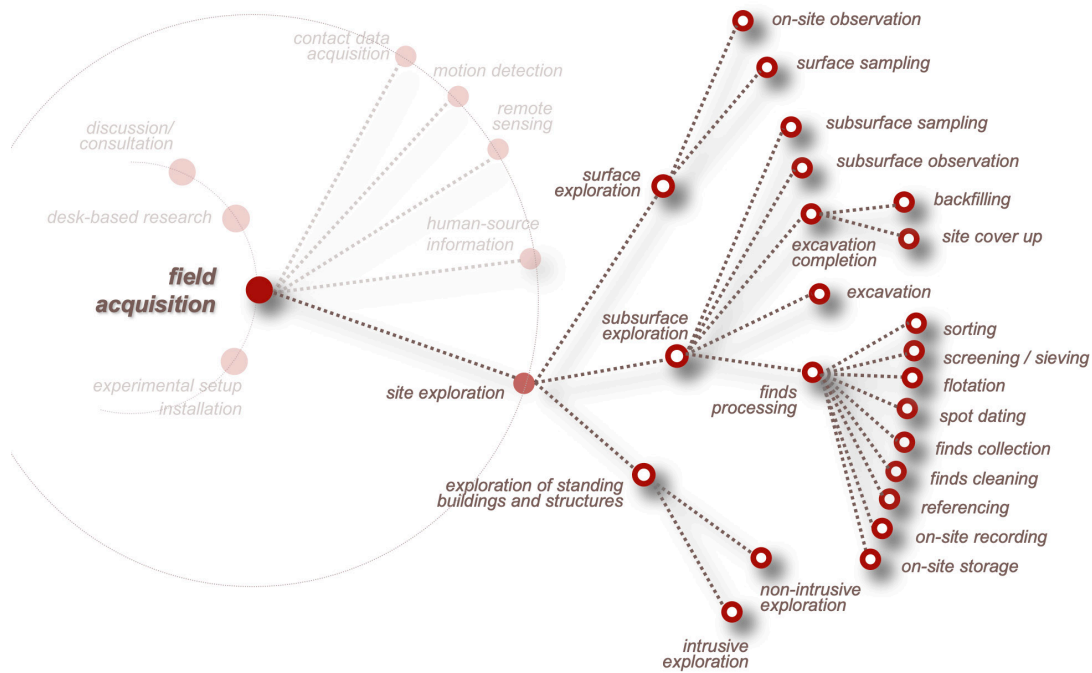
A quasi-experimental study is lacking key components of a true experiment. While a true experiment includes (1) pre-post test design, (2) a treatment group and a control group, and (3) random assignment of study participants, quasi-experimental studies lack one or more of these design elements.

It encompasses a broad range of nonrandomized intervention studies. These experiments are frequently used when it is not logistically feasible or ethical to conduct a randomized controlled trial.

*e.g., participants are not randomly assigned to either the treatment or the control group, the control and treatment groups differ not only in terms of the experimental treatment they receive, but also in other, often unknown or unknowable ways*

*Based on:*  
[656] NCTI <<http://www.nationaltechcenter.org/index.php/products/at-research-matters/quasi-experimental-study/>>

[657] Anthony D. Harris, NCBI <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1380192/>>



### A1.5

#### site exploration

A type of field acquisition centred on data and information collection about a particular site, involving human capacities of observation and/or surface and subsurface data collection.

This type of exploration can be a practical way to decide whether or not to carry out further works (e.g., further examinations, excavation, construction), but may also be ends in themselves.

*e.g., archaeological excavation, surface sampling, onsite observation of stone erosion*

Based on:  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

#### ⊙ RISKS OF DESTRUCTION

Differentiations according the risks of destroying material evidences.

#### ○ intrusive

An exploration with a risk of destroying material evidence.

*e.g., archaeological excavation*

Based on:  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

#### ○ non-intrusive

In a non-intrusive survey, nothing is touched, just recorded.

*e.g., surface water sampling, drawing from nature*

Based on:  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**SPATIAL RESOLUTION**

Differentiations in terms of resolution usually according to types of research questions being asked.

**extensive**

A site exploration characterised by a low resolution coverage of the survey area. Extensive surveys are designed to provide a preliminary picture of the evidence in a given survey area, for instance to target the identification of archaeological sites across a large area.

*e.g., random sampling*

*Based on:*

[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**intensive**

A site exploration characterised by the complete or near-complete coverage of the survey area at a high resolution. Intensive surveys are designed to provide a comprehensive picture of the location and distribution of evidence in a given survey area.

*e.g., several teams of survey walk in a systematic way (e.g. in parallel transects) over parcels of the landscape, documenting archaeological data such as lithics, ceramics and/or building remains*

*Based on:*

[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**MOTIVE**

The reasons why an area has been considered worthy of surveying.

**chance discovery**

Accidental discoveries of artefact, remains or sites.

*.g., Locals have picked up physical artefacts, sometimes held by the local museum but more often collected in private homes or old buildings such as churches and synagogues.*

*Based on:*

[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**literary sources**

Texts describing the existence of a site (generally with no physical proof remaining).

*e.g., a book on local history mentioning an interesting area*

*Based on:*

[1304] Demoule, Jean-Paul, François Gilligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte

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[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**oral sources**

Local stories containing hints.

*e.g., someone may remember that his grandfather who used to walk the hills as a shepherd used to talk about columns from an old temple, although the descendant never saw the ruins*

*Based on:*

[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**local knowledge**

Local knowledge of the existence of an archaeological discoveries without physical or textual proofs.

*e.g., traditional knowledge or indigenous knowledge*

*Based on:*

[1304] Demoule, Jean-Paul, François Gilligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte

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○ **previous research**

Knowledge of past archaeological operations (surveys or archaeological excavations) in this particular area.

*e.g., re-examination of a previously surveyed site using recent technologies*

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **hypothesis verification**

Exploration motivated by a will of verification of hypotheses.

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>  
[1311] Djindjian, François. 2017. *L'archéologie : Théorie, méthodes Et Reconstitutions*. Malakoff: Armand Colin.

○ **lack of information**

Investigating a localisation for which there is no previous data.

*Based on:*  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

○ **risk of destruction**

Exploration of a site under threat.

*e.g., collection of archaeological data before new construction planned on this area*

*Based on:*  
[1291] <<https://www.dictionary.com/browse/salvage-archaeology>>



A1.5.1

**surface exploration**

A type of mostly non-intrusive site exploration/field acquisition centred on surface data/artefacts collection. Its objective can be to delineate anomalies and describe occurrences in their context.

*e.g., general surface examination of an area's geological entities, archaeological fieldwalking*

*Based on:*  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>  
[1162] Xuxun Huang, Samita Dhangwattantoi, Petroleum Geology, Chulalongkorn University <<https://petgeo.weebly.com/exploration-techniques.html>>  
[1163] Infrastructure for Spatial Information in the European Community (INSPIRE), INSPIRE <<https://inspire.ec.europa.eu/codelist/ExplorationActivityTypeValue/detailedSurfaceExploration>>

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**● AREA OF CONCERN**  
Reasons of exploration, disciplines involved.

**○ geological investigation**

A systematic investigation of an area determining the distribution, structure, composition, history, and interrelations of rock units. Its purpose may be either purely scientific or economic with special attention to the distribution, reserves, and potential recovery of mineral resources.

*Based on:*  
[1167] Glossary, Mindat.org <[https://www.mindat.org/glossary/geological\\_survey](https://www.mindat.org/glossary/geological_survey)>

**○ geomorphologic investigation**

Study of landforms and landscapes, including the description, classification, origin, development, and history of planetary surfaces.

*e.g., study of coastal geomorphotypes*

*Based on:*  
[1168] Victor R. Baker, Faculty of Geographical and Geological Sciences (AMU) <[http://geoinfo.amu.edu.pl/wpk/geos/GEO\\_1/GEO\\_CHAPTER\\_1.HTML](http://geoinfo.amu.edu.pl/wpk/geos/GEO_1/GEO_CHAPTER_1.HTML)>

**○ architectural investigation**

An investigation to uncover the history, significance and structure of elements of built heritage.

*e.g., historic area assessment to assess the built heritage of a particular town or place, a rapid urban survey*

*Based on:*  
[1169] Historic England (Historic Buildings and Monuments Commission for England), Historic England <<https://historicengland.org.uk/research/methods/architectural-investigation/>>

**○ hydrological investigation**

Determining existing hydrologic conditions in a given site.

*e.g., identification of water flow direction, surface water quality analysis*

*Based on:*  
[1170] Water Resources Division - State of Michigan, Water Resources Division - Michigan <[https://www.michigan.gov/documents/deq/wrd-hydrogeo\\_565044\\_7.pdf](https://www.michigan.gov/documents/deq/wrd-hydrogeo_565044_7.pdf)>

**○ paleontological investigation**

Study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.

*Based on:*  
[1171] Britannica <<https://www.britannica.com/science/paleontology>>

**○ engineering construction**

An investigation in which the physical qualities of a site and engineering properties of the soil and rock, or other site-specific characteristics are evaluated in order to determine if the site is suitable and safe for the design of planned structures.

*e.g., feasibility studies for construction projects, Identification of physical hazards.*

*Based on:*  
[1172] Collins Dictionary <<https://www.collinsdictionary.com/dictionary/english/geotechnical-investigation>>  
[1173] Shruthi Hiremath, Shruthi Hiremath <<https://fr.slideshare.net/ShruthiHiremath3/subsurface-exploration-84974545>>  
[1174] design buildings <[https://www.designingbuildings.co.uk/wiki/Preliminary\\_site\\_investigations](https://www.designingbuildings.co.uk/wiki/Preliminary_site_investigations)>

**○ archaeological investigation**

Uncovering and/or studying the material remains of past human cultures and documenting it.

*Based on:*  
[1175] Cultural Resources Management (CRM), Cultural Resources Management <<http://www.culturalresources-management.com.au/Archaeological%20investigation%20page.html>>  
[1176] Science Daily <[https://www.sciencedaily.com/terms/archaeological\\_field\\_survey.htm](https://www.sciencedaily.com/terms/archaeological_field_survey.htm)>



### A1.5.1.1

#### surface sampling

Taking a representative portion of a material found on the surface of a site to test it (e.g., by physical measurements, chemical analysis, microbiological examination) typically for the purposes of identification, quality control, or regulatory assessment.

*e.g., surface water sampling, sediment sampling, surface soil sampling*

*Based on:*

[1164] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Sampling>>

[1165] Steven L. Krupa, Ian Watson, Roy Lemon, Springer <[https://link.springer.com/referenceworkentry/10.1007%2F0-387-30844-X\\_97](https://link.springer.com/referenceworkentry/10.1007%2F0-387-30844-X_97)>

#### ● AREA OF CONCERN

Reasons of exploration, disciplines involved.

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[1167] Glossary, Mindat.org <[https://www.mindat.org/glossary/geological\\_survey](https://www.mindat.org/glossary/geological_survey)>

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[1170] Water Resources Division - State of Michigan, Water Resources Division - Michigan <[https://www.michigan.gov/documents/deq/wrd-hydrogeo\\_565044\\_7.pdf](https://www.michigan.gov/documents/deq/wrd-hydrogeo_565044_7.pdf)>

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[1171] Britannica <<https://www.britannica.com/science/paleontology>>

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[1172] Collins Dictionary <<https://www.collinsdictionary.com/dictionary/english/geotechnical-investigation>>

[1173] Shruthi Hiremath, Shruthi Hiremath <<https://fr.slideshare.net/ShruthiHiremath3/subsurface-exploration-84974545>>

[1174] design buildings <[https://www.designingbuildings.co.uk/wiki/Preliminary\\_site\\_investigations](https://www.designingbuildings.co.uk/wiki/Preliminary_site_investigations)>



○ **archaeological investigation**

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[1176] Science Daily <[https://www.sciencedaily.com/terms/archaeological\\_field\\_survey.htm](https://www.sciencedaily.com/terms/archaeological_field_survey.htm)>

● **MOTIVE**

The reasons why an area has been considered worthy of surveying.

○ **chance discovery**

Accidental discoveries of artefact, remains or sites.

*.g., Locals have picked up physical artefacts, sometimes held by the local museum but more often collected in private homes or old buildings such as churches and synagogues.*

*Based on:*  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

○ **literary sources**

Texts describing the existence of a site (generally with no physical proof remaining).

*e.g., a book on local history mentioning an interesting area*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **oral sources**

Local stories containing hints.

*e.g., someone may remember that his grandfather who used to walk the hills as a shepherd used to talk about columns from an old temple, although the descendant never saw the ruins*

*Based on:*  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **local knowledge**

Local knowledge of the existence of an archaeological discoveries without physical or textual proofs.

*e.g., traditional knowledge or indigenous knowledge*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

○ **previous research**

Knowledge of past archaeological operations (surveys or archaeological excavations) in this particular area.

*e.g., re-examination of a previously surveyed site using recent technologies*

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **hypothesis verification**

Exploration motivated by a will of verification of hypotheses.

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>  
[1311] Djindjian, François. 2017. *L'archéologie : Théorie, méthodes Et Reconstitutions*. Malakoff: Armand Colin.

○ **lack of information**

Investigating a localisation for which there is no previous data.

*Based on:*  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

### ○ risk of destruction

Exploration of a site under threat.

*e.g., collection of archaeological data before new construction planned on this area*

Based on:

[1291] <<https://www.dictionary.com/browse/salvage-archaeology>>

## ● SELECTION TECHNIQUE

Differentiations of sampling techniques and methods.

### ○ judgmental sampling

Purposive sampling (also known as judgmental, expert, authoritative sampling) is a non-probability sampling technique in which researcher relies on his or her own judgment when choosing a sample.

The main objective of a purposive sample is to produce a sample that can be logically assumed to be representative of the population.

*e.g., samples are chosen only on the basis of the researcher's knowledge and judgment*

Based on:

[1177] SAGE Research Methods <<https://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n419.xml>>

[1178] Laerd dissertation <<http://dissertation.laerd.com/purposive-sampling.php#maximum-variation-sampling>>

[1179] The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation <<https://methods.sagepub.com/reference/the-sage-encyclopedia-of-educational-research-measurement-and-evaluation/i11890.xml>> <<https://methods.sagepub.com/reference/the-sage-encyclopedia-of-educational-research-measurement-and-evaluation/i11890.xml>>

[1296] Sampling Strategies Worksheets – Placeography <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj\\_p6CPpv7yAhVnyoUKHWxNBy8QFnoECBgQA&url=http%3A%2F%2Fwww.placeography.org%2Fimages%2F9%2F9%2FSampling\\_Strategies.PDF&usq=AOvVaw3Xytv8z5QZKkniL6kyas6W](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj_p6CPpv7yAhVnyoUKHWxNBy8QFnoECBgQA&url=http%3A%2F%2Fwww.placeography.org%2Fimages%2F9%2F9%2FSampling_Strategies.PDF&usq=AOvVaw3Xytv8z5QZKkniL6kyas6W)>

### ○ opportunity sampling

Opportunity sampling (also known as grab sampling, accidental sampling, or convenience sampling) is a type of non-probability sampling that involves the sample being drawn from that part of the population that is close to hand.

*e.g. stopping random people on the street and asking questionnaire questions*

Based on:

[1181] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Convenience\\_sampling](https://en.wikipedia.org/wiki/Convenience_sampling)>

[1180] John Dudovskiy, research-methodology.net <<https://research-methodology.net/sampling-in-primary-data-collection/convenience-sampling/>>

### ○ quota sampling

Quota sampling is a non-probability sampling technique in which researchers create a sample involving individuals that represent an entire population. Researchers choose these individuals according to specific traits or qualities. These samples can be generalized to the entire population. The final subset is decided only according to the researcher's knowledge of the population.

*e.g., For example, a cigarette company wants to find out what age group prefers what brand of cigarettes in a particular city. He/she applies quotas on the age groups of 21-30, 31-40, 41-50, and 51+. From this information, the researcher gauges the smoking trend among the population of the city.*

Based on:

[1182] QuestionPro <<https://www.questionpro.com/blog/quota-sampling/>>

### ○ probability sampling

Probabilistic sampling is based on the assumption that all natural populations have a "normal" distribution of variation from which the proportion of individuals with a given characteristic can be estimated.

*e.g. Splitting subjects into mutually exclusive groups and then using simple random sampling to choose members from groups..*

Based on:

[1310] Sampling in archaeology. <[https://www.researchgate.net/publication/247987195\\_Sampling\\_in\\_archaeology](https://www.researchgate.net/publication/247987195_Sampling_in_archaeology)>

[1183] QuestionPro <<https://www.questionpro.com/blog/probability-sampling/>>

[1177] SAGE Research Methods <<https://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n419.xml>>

1184 Scribbr <<https://www.scribbr.com/methodology/sampling-methods/>>

### ○ random sampling

A random sampling strategy is the least biased sampling method. The locations to excavate are determined by creating a list of random coordinates and excavating units at those coordinates.

Random sampling can provide uneven coverage or concentrate units in areas away from surface finds..

*e.g., The locations to excavate are determined by creating a list of random coordinates and excavating units at those coordinates.*

*Based on:*

[1296] *Sampling Strategies Worksheets – Placeography* <[https://www.google.com/url?sa=t&rct=j&q=&es-rc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj\\_p6CPpv7yAhVnyoUKHWxNBy8QFnoECBgQA-w&url=http%3A%2F%2Fwww.placeography.org%2Fimages%2F9%2F90%2FSampling\\_Strategies.PDF&usg=AOv-Vaw3Xytv8z5QZKkniL6kyas6W](https://www.google.com/url?sa=t&rct=j&q=&es-rc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj_p6CPpv7yAhVnyoUKHWxNBy8QFnoECBgQA-w&url=http%3A%2F%2Fwww.placeography.org%2Fimages%2F9%2F90%2FSampling_Strategies.PDF&usg=AOv-Vaw3Xytv8z5QZKkniL6kyas6W)>

[1295] *Dig It with Rawen* <<https://www.digitwithraven.com/single-post/archaeological-sampling-techniques>>

### ○ systematic sampling

In systematic sampling strategy, the goal is to provide equal and unbiased coverage of a suspected site. In constructing this strategy, excavation units are usually distributed across the site in a way that will provide equal coverage to the entire area.

*e.g., Using a grid of equally spaced locations to sample, for example every other square, or every two squares.*

*Based on:*

[1296] *Sampling Strategies Worksheets – Placeography* <[https://www.google.com/url?sa=t&rct=j&q=&es-rc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj\\_p6CPpv7yAhVnyoUKHWxNBy8QFnoECBgQA-w&url=http%3A%2F%2Fwww.placeography.org%2Fimages%2F9%2F90%2FSampling\\_Strategies.PDF&usg=AOv-Vaw3Xytv8z5QZKkniL6kyas6W](https://www.google.com/url?sa=t&rct=j&q=&es-rc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj_p6CPpv7yAhVnyoUKHWxNBy8QFnoECBgQA-w&url=http%3A%2F%2Fwww.placeography.org%2Fimages%2F9%2F90%2FSampling_Strategies.PDF&usg=AOv-Vaw3Xytv8z5QZKkniL6kyas6W)>

[1295] *Dig It with Rawen* <<https://www.digitwithraven.com/single-post/archaeological-sampling-techniques>>

## ● SAMPLED ENTITIES

Differentiation of entities that have been sampled.

### ○ human-made artefact

Collection of objects and remains of objects made by a human being.

*e.g., pottery or stone samples*

*Based on:*

[1273] *National Geographic Society* <<https://www.nationalgeographic.org/encyclopedia/artifacts/>>

[1274] *K. Kris Hirst, ThoughtCo.* <<https://www.thoughtco.com/sampling-in-archaeology-172714>>

### ○ ecofact

In archaeology, an organic material found at an archaeological site consisting of natural remains, as opposed to an object of human workmanship.

*e.g., animal bones, charcoal, plants, and pollen*

*Based on:*

[1271] *Wikipedia* <[https://en.wikipedia.org/wiki/Biofact\\_\(archaeology\)](https://en.wikipedia.org/wiki/Biofact_(archaeology))>

[1272] *Lexico Dictionaries* <<https://www.lexico.com/definition/ecofact>>

### ○ gas/vapour

A gas refers to a substance that has a single defined thermodynamic state at room temperature whereas a vapour refers to a substance that is a mixture of two phases at room temperature, namely gaseous and liquid phase.

*e.g., gas samples from fumaroles*

*Based on:*

[1275] *Kivumbi, Difference Between Vapor and Gas | Difference Between* <<http://www.differencebetween.net/science/difference-between-vapor-and-gas/#ixzz6kZzgAPnB>>

### ○ soil/sediment

The upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles.

*e.g., systematic soil sampling*

*Based on:*

[1293] *Jagran Josh* <<https://www.jagranjosh.com/general-knowledge/what-is-chernozem-1554463399-1>>

- rock**

The solid mineral material forming part of the surface of the earth and, exposed on the surface.

*e.g., stone sampling*

*Based on:*  
[1294] Encyclopedia.com <<https://www.encyclopedia.com/earth-and-environment/geology-and-oceanography/geology-and-oceanography/rock>>
- biological samples**

Any type of biological living or dead specimen such as cells, internal organs, veins, or even fluids.

*e.g., collecting bacteria and other microorganisms, plant samples, biofacts (in biology, a biofact is dead material of a once-living organism)*

*Based on:*  
[1276] Science Care <<https://www.sciencecare.com/blog/biological-sample>>
- surface water**

Surface water is water located on top of the Earth's surface such as rivers, creeks, and wetlands including permanent, ephemeral and manmade surface waters.

*e.g., water samples from rivers or artificial swamps*

*Based on:*  
[1292] Wikipedia <[https://en.wikipedia.org/wiki/Surface\\_water](https://en.wikipedia.org/wiki/Surface_water)>
- other fluid sampling**

Fluids present at the surface of the earth except water.

*e.g., petroleum seep samples*

[3] Memoria team, Memoria project



#### A1.5.1.2

##### on-site observation

A study in which the investigator simply observes (direct or distant observation) natural phenomena or artefacts in a systematic manner.

*e.g., researcher watches ruins of a building taking the field notes, counting the amount of flowers on one square meter*

*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>

**AREA OF CONCERN**  
Reasons of exploration, disciplines involved.

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[1169] Historic England (Historic Buildings and Monuments Commission for England), Historic England <<https://historicengland.org.uk/research/methods/architectural-investigation/>>

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[1170] Water Resources Division - State of Michigan, Water Resources Division - Michigan <[https://www.michigan.gov/documents/deq/wrd-hydrogeo\\_565044\\_7.pdf](https://www.michigan.gov/documents/deq/wrd-hydrogeo_565044_7.pdf)>

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[1171] Britannica <<https://www.britannica.com/science/paleontology>>

**engineering construction**

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*e.g., feasibility studies for construction projects, Identification of physical hazards.*

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[1172] Collins Dictionary <<https://www.collinsdictionary.com/dictionary/english/geotechnical-investigation>>  
[1173] Shruthi Hiremath, Shruthi Hiremath <<https://fr.slideshare.net/ShruthiHiremath3/subsurface-exploration-84974545>>  
[1174] design buildings <[https://www.designingbuildings.co.uk/wiki/Preliminary\\_site\\_investigations](https://www.designingbuildings.co.uk/wiki/Preliminary_site_investigations)>

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Uncovering and/or studying the material remains of past human cultures and documenting it.

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[1175] Cultural Resources Management (CRM), Cultural Resources Management <<http://www.culturalresourcesmanagement.com.au/Archaeological%20investigation%20page.html>>  
[1176] Science Daily <[https://www.sciencedaily.com/terms/archaeological\\_field\\_survey.htm](https://www.sciencedaily.com/terms/archaeological_field_survey.htm)>

**MOTIVE**

The reasons why an area has been considered worthy of surveying.

**chance discovery**

Accidental discoveries of artefact, remains or sites.

*.g., Locals have picked up physical artefacts, sometimes held by the local museum but more often collected in private homes or old buildings such as churches and synagogues.*

*Based on:*  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**literary sources**

Texts describing the existence of a site (generally with no physical proof remaining).

*e.g., a book on local history mentioning an interesting area*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. Guide Des méthodes de l'archéologie. Guides Repères 6414. Paris: Éditions La Découverte  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**oral sources**

Local stories containing hints.

*e.g., someone may remember that his grandfather who used to walk the hills as a shepherd used to talk about columns from an old temple, although the descendant never saw the ruins*

*Based on:*  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**local knowledge**

Local knowledge of the existence of an archaeological discoveries without physical or textual proofs.

*e.g., traditional knowledge or indigenous knowledge*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**previous research**

Knowledge of past archaeological operations (surveys or archaeological excavations) in this particular area.

*e.g., re-examination of a previously surveyed site using recent technologies*

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**hypothesis verification**

Exploration motivated by a will of verification of hypotheses.

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>  
[1311] Djindjian, François. 2017. *L'archéologie : Théorie, méthodes Et Reconstitutions*. Malakoff: Armand Colin.

**lack of information**

Investigating a localisation for which there is no previous data.

*Based on:*  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**risk of destruction**

Exploration of a site under threat.

*e.g., collection of archaeological data before new construction planned on this area*

*Based on:*  
[1291] <<https://www.dictionnaire.com/browse/salvage-archaeology>>

**TIME SPAN**

Differentiations according to the time span of an observation.

**synchronic study**

Study that involves observation at one specific point in time, or over a short period. It is used generally for examining phenomena expected to remain static through the period of interest.

*e.g., onsite observation of the level of erosion and alteration of a structure*

*Based on:*  
[839] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Cross-sectional\\_study](https://en.wikipedia.org/wiki/Cross-sectional_study)>  
[1056] Kate Ann Levin , Nature Research <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

**diachronic study**

Study that involves repeated observations of the same variables over long periods of time. It uses time as the main variable.

*e.g., study of building degradation process*

*Based on:*  
[1319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>

## ● REPORTING TYPE

Differentiations concerning the standardisation level of the field documentation.

### ○ standardized forms

Documentation based on established norms and requirements especially in order to assure consistency and regularity of notes.  
Fully standardised forms may concern different aspects of observation. Some are oriented to control the operation, others are meant for description of the drawings, photographs, or measurements that have been collected, still others will be designed for the documentation of specific types of features in a standardized way.

*Based on:*  
[171] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Standards\\_organization#International\\_standards\\_organizations](https://en.wikipedia.org/wiki/Standards_organization#International_standards_organizations)>  
[1185] Merriam-Webster <<https://www.merriam-webster.com/dictionary/standardize>>  
[1186] UNESCO, UNESCO <<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/unesco-manual-for-activities-directed-at-underwater-cultural-heritage/unesco-manual/documentation/on-site-observations/>>

### ○ ad hoc documentation

Documentation modes designed for a specific problem or task, non-generalizable, and not intended to be adapted to other purposes.

*e.g., a report created for a one-time-use*

*Based on:*  
[1188] Logi Analytics <<https://www.izenda.com/ad-hoc-reporting/>>

## ● FOCUS

Differentiations concerning the aspects that are observed.

### ○ stratigraphy

The spatial location and temporal sequence of rock bodies, organic deposits, archaeological findings or different layers of a building.  
By means of stratigraphy, identified elements are dated and correlated with each other.

*e.g., determining chronological layers of a church façade before starting the renovation work*

*Based on:*  
[1190] Swiss geology community, Geology Portal <<https://www.geologieportal.ch/en/themes/fundamentals-of-geology/stratigraphy.html>>  
[1191] ABC Minet <<https://www.abcminet.fr/post/la-stratigraphie-c-est-quoi>>  
[1192] Wiktionary <<https://en.wiktionary.org/wiki/stratigraphy>>  
[1193] Britannica <<https://www.britannica.com/science/stratigraphy-geology>>

### ○ spatial relationships

Spatial arrangement of objects, such as topology, alignments, etc.

*e.g., vertical and horizontal relationships of objects*

[3] Memoria team, Memoria project

### ○ geometry

Spatial analysis related to the geometry of an object - shape or the relationship of its parts to each other.

*e.g., observing the geometry of a vaulting*

*Based on:*  
[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>  
[1195] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/geometry>>

### ○ deterioration patterns

Results of decay phenomena and processes.

*e.g., observing stone surface showing alveolization*

*Based on:*  
[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>

- **biotic elements**  
Plants, animals and all living elements that an organism interacts with over a scrutinised area.

*e.g., presence of types of plants over a site*

*Based on:*  
[1197] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Groundcover>>  
[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

- **abiotic elements**  
Abiotic elements are non-living elements of natural environment which include air, water, sunlight, etc.

*e.g., observe physical conditions of the site (e.g., wind direction and temperature)*

*Based on:*  
[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

● **PROXIMITY AND INTERACTION**  
Differentiations concerning the type of contact between an observer and a situation or a site at the time of the activity.

- **direct observation**  
The observer is physically present and is reporting (noting) what he/she is watching.  
*e.g., drawing from nature.  
A team of surveyors walking across the land, noting artefacts, with an objective of recording important observations (i.e., artefacts found on the surface of ploughed fields).*

*Based on:*  
[1653] William M.K. Trochim, Social Research Methods <<http://www.socialresearchmethods.net/kb/qualmeth.php>>

- **indirect observation**  
The observer uses some remote device (such as a video camera) but observes in real-time a situation, a site, etc.  
His observations are bounded by what the remote device allows.

*e.g., real time observation of a volcanic crater from inside a distant shelter, using video cameras positioned around the crater*

*[3] Memoria team, Memoria project*

● **PROCEDURES**  
Differentiations concerning the procedures employed.

- **fieldwalking**  
Walking (individually or in organised groups) slowly through the target area looking for landscape variations (which might reveal buried walls or buildings) and/or for the distribution of artefacts on the surface.

*e.g., a visual examination of a landscape for variations in ground surface*

*Based on:*  
[1200] Jigsaw, Cambridge Archaeology Field Group <<https://peterborougharchaeology.org/archaeology-skills-techniques/fieldwalking/>>

- **position marking**  
Marking or flagging a site or an object with regards to the objectives of observation.  
*e.g., strata markers, flag marking in archaeology*

*[3] Memoria team, Memoria project*

- **using grids**  
Using spatial grids and canvas to perform observations.  
*e.g., walking following a predefined grid*

*[3] Memoria team, Memoria project*



○ **counting**

Determining the number of elements in a group.

*e.g. verbal counting, finger counting, automated counting of pieces of ceramics on a site*

*Based on:*  
[1199] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Counting>>



A1.5.2

**subsurface exploration**

A manual or mechanical exploration of subsurface soil (onshore, nearshore, or offshore) to collect information about the location, distribution and organization of past human cultures, or fossils, to establish the sub-surface profiles, relative strata strengths, etc.

*e.g., geological or geoenvironmental model of the ground*

*Based on:*  
[1301] Q. Záruba, V. Menc, *Subsurface Exploration in Developments in Geotechnical Engineering*, <<https://www.sciencedirect.com/science/article/pii/B9780444998774500094>>  
[1302] *The Free Dictionary* <<https://encyclopedia2.thefreedictionary.com/subsurface+investigation>>  
[1303] Paula F. da Silva, *Subsurface Exploration* <[https://link.springer.com/referenceworkentry/10.1007/978-3-319-73568-9\\_275](https://link.springer.com/referenceworkentry/10.1007/978-3-319-73568-9_275)>

● **MOTIVE**

The reasons why an area has been considered worthy of surveying.

○ **chance discovery**

Accidental discoveries of artefact, remains or sites.

*e.g., Locals have picked up physical artefacts, sometimes held by the local museum but more often collected in private homes or old buildings such as churches and synagogues.*

*Based on:*  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

○ **literary sources**

Texts describing the existence of a site (generally with no physical proof remaining).

*e.g., a book on local history mentioning an interesting area*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **oral sources**

Local stories containing hints.

*e.g., someone may remember that his grandfather who used to walk the hills as a shepherd used to talk about columns from an old temple, although the descendant never saw the ruins*

*Based on:*  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **local knowledge**

Local knowledge of the existence of an archaeological discoveries without physical or textual proofs.

*e.g., traditional knowledge or indigenous knowledge*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte  
[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

○ **previous research**

Knowledge of past archaeological operations (surveys or archaeological excavations) in this particular area.

*e.g., re-examination of a previously surveyed site using recent technologies*

*Based on:*  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**○ hypothesis verification**

Exploration motivated by a will of verification of hypotheses.

*Based on:*

[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

[1311] Djindjian, François. 2017. *L'archéologie : Théorie, méthodes Et Reconstitutions*. Malakoff: Armand Colin.

**○ lack of information**

Investigating a localisation for which there is no previous data.

*Based on:*

[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**○ risk of destruction**

Exploration of a site under threat.

*e.g., collection of archaeological data before new construction planned on this area*

*Based on:*

[1291] <<https://www.dictionary.com/browse/salvage-archaeology>>

**● SPATIAL RESOLUTION**

Differentiations in terms of resolution usually according to types of research questions being asked.

**○ extensive**

A site exploration characterised by a low resolution coverage of the survey area. Extensive surveys are designed to provide a preliminary picture of the evidence in a given survey area, for instance to target the identification of archaeological sites across a large area.

*e.g., random sampling*

*Based on:*

[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**○ intensive**

A site exploration characterised by the complete or near-complete coverage of the survey area at a high resolution. Intensive surveys are designed to provide a comprehensive picture of the location and distribution of evidence in a given survey area.

*e.g., several teams of survey walk in a systematic way (e.g. in parallel transects) over parcels of the landscape, documenting archaeological data such as lithics, ceramics and/or building remains*

*Based on:*

[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**● AREA OF CONCERN**

Reasons of exploration, disciplines involved.

**○ geological investigation**

A systematic investigation of an area determining the distribution, structure, composition, history, and interrelations of rock units. Its purpose may be either purely scientific or economic with special attention to the distribution, reserves, and potential recovery of mineral resources.

*Based on:*

[1167] Glossary, Mindat.org <[https://www.mindat.org/glossary/geological\\_survey](https://www.mindat.org/glossary/geological_survey)>

**○ geomorphologic investigation**

Study of landforms and landscapes, including the description, classification, origin, development, and history of planetar surfaces.

*e.g., study of coastal geomorphotypes*

*Based on:*

[1168] Victor R. Baker, Faculty of Geographical and Geological Sciences (AMU) <[http://geoinfo.amu.edu.pl/wpk/geos/GEO\\_1/GEO\\_CHAPTER\\_1.HTML](http://geoinfo.amu.edu.pl/wpk/geos/GEO_1/GEO_CHAPTER_1.HTML)>

**○ architectural investigation**

An investigation to uncover the history, significance and structure of elements of built heritage.

*e.g., historic area assessment to assess the built heritage of a particular town or place, a rapid urban survey*

*Based on:*  
[1169] Historic England (Historic Buildings and Monuments Commission for England), Historic England <<https://historicengland.org.uk/research/methods/architectural-investigation/>>

**○ hydrological investigation**

Determining existing hydrologic conditions in a given site.

*e.g., identification of water flow direction, surface water quality analysis*

*Based on:*  
[1170] Water Resources Division - State of Michigan, Water Resources Division - Michigan <[https://www.michigan.gov/documents/deq/wrd-hydrogeo\\_565044\\_7.pdf](https://www.michigan.gov/documents/deq/wrd-hydrogeo_565044_7.pdf)>

**○ paleontological investigation**

Study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.

*Based on:*  
[1171] Britannica <<https://www.britannica.com/science/paleontology>>

**○ engineering construction**

An investigation in which the physical qualities of a site and engineering properties of the soil and rock, or other site-specific characteristics are evaluated in order to determine if the site is suitable and safe for the design of planned structures.

*e.g., feasibility studies for construction projects, identification of physical hazards.*

*Based on:*  
[1172] Collins Dictionary <<https://www.collinsdictionary.com/dictionary/english/geotechnical-investigation>>  
[1173] Shruthi Hiremath, Shruthi Hiremath <<https://fr.slideshare.net/ShruthiHiremath3/subsurface-exploration-84974545>>  
[1174] design buildings <[https://www.designingbuildings.co.uk/wiki/Preliminary\\_site\\_investigations](https://www.designingbuildings.co.uk/wiki/Preliminary_site_investigations)>

**○ archaeological investigation**

Uncovering and/or studying the material remains of past human cultures and documenting it.

*Based on:*  
[1175] Cultural Resources Management (CRM), Cultural Resources Management <<http://www.culturalresourcesmanagement.com.au/Archaeological%20investigation%20page.html>>  
[1176] Science Daily <[https://www.sciencedaily.com/terms/archaeological\\_field\\_survey.htm](https://www.sciencedaily.com/terms/archaeological_field_survey.htm)>



**A1.5.2.1**

**subsurface sampling**

Extracting a representative portion of a material from the subsurface soil to provide a type specimen for classification purposes and/or special-purpose (e.g., petrofabric) analysis, assay, or testing (including engineering-geological and geochemical testing) by physical measurements, chemical analysis, microbiological examination.

*e.g., digging rectangular test pits by hand or with machinery*

*Based on:*  
[1164] Wikipedia <<https://en.wikipedia.org/wiki/Sampling>>  
[1165] Steven L. Krupa, Ian Watson, Roy Lemon, Samples, sampling, <[https://link.springer.com/reference-workentry/10.1007%2F0-387-30844-X\\_97](https://link.springer.com/reference-workentry/10.1007%2F0-387-30844-X_97)>

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*Based on:*  
[1167] Glossary, Mindat.org <[https://www.mindat.org/glossary/geological\\_survey](https://www.mindat.org/glossary/geological_survey)>

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[1168] Victor R. Baker, Faculty of Geographical and Geological Sciences (AMU) <[http://geoinfo.amu.edu.pl/wpk/geos/GEO\\_1/GEO\\_CHAPTER\\_1.HTML](http://geoinfo.amu.edu.pl/wpk/geos/GEO_1/GEO_CHAPTER_1.HTML)>

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*Based on:*  
[1169] Historic England (Historic Buildings and Monuments Commission for England), Historic England <<https://historicengland.org.uk/research/methods/architectural-investigation/>>

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[1170] Water Resources Division - State of Michigan, Water Resources Division - Michigan <[https://www.michigan.gov/documents/deq/wrd-hydrogeo\\_565044\\_7.pdf](https://www.michigan.gov/documents/deq/wrd-hydrogeo_565044_7.pdf)>

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[1171] Britannica <<https://www.britannica.com/science/paleontology>>

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*e.g., feasibility studies for construction projects, Identification of physical hazards.*

*Based on:*  
[1172] Collins Dictionary <<https://www.collinsdictionary.com/dictionary/english/geotechnical-investigation>>  
[1173] Shruthi Hiremath, Shruthi Hiremath <<https://fr.slideshare.net/ShruthiHiremath3/subsurface-exploration-84974545>>  
[1174] design buildings <[https://www.designingbuildings.co.uk/wiki/Preliminary\\_site\\_investigations](https://www.designingbuildings.co.uk/wiki/Preliminary_site_investigations)>

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[1175] Cultural Resources Management (CRM), Cultural Resources Management <<http://www.culturalresources-management.com.au/Archaeological%20investigation%20page.html>>  
[1176] Science Daily <[https://www.sciencedaily.com/terms/archaeological\\_field\\_survey.htm](https://www.sciencedaily.com/terms/archaeological_field_survey.htm)>

**● SAMPLED ENTITIES**

Differentiation of entities that have been sampled.

**○ human-made artefact**

Collection of objects and remains of objects made by a human being.

*e.g., pottery or stone samples*

*Based on:*  
[1273] National Geographic Society <<https://www.nationalgeographic.org/encyclopedia/artifacts/>>  
[1274] K. Kris Hirst, ThoughtCo. <<https://www.thoughtco.com/sampling-in-archaeology-172714>>

**ecofact**

In archaeology, an organic material found at an archaeological site consisting of natural remains, as opposed to an object of human workmanship.

*e.g., animal bones, charcoal, plants, and pollen*

*Based on:*  
[1271] Wikipedia <[https://en.wikipedia.org/wiki/Biofact\\_\(archaeology\)](https://en.wikipedia.org/wiki/Biofact_(archaeology))>  
[1272] Lexico Dictionaries <<https://www.lexico.com/definition/ecofact>>

**gas/vapour**

A gas refers to a substance that has a single defined thermodynamic state at room temperature whereas a vapour refers to a substance that is a mixture of two phases at room temperature, namely gaseous and liquid phase.

*e.g., gas samples from fumaroles*

*Based on:*  
[1275] Kivumbi, *Difference Between Vapor and Gas | Difference Between* <<http://www.differencebetween.net/science/difference-between-vapor-and-gas/#ixzz6kZzgAPnB>>

**soil/sediment**

The upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles.

*e.g., systematic soil sampling*

*Based on:*  
[1293] Jagran Josh <<https://www.jagranjosh.com/general-knowledge/what-is-chnozem-1554463399-1>>

**rock**

The solid mineral material forming part of the surface of the earth and, exposed on the surface.

*e.g., stone sampling*

*Based on:*  
[1294] Encyclopedia.com <<https://www.encyclopedia.com/earth-and-environment/geology-and-oceanography/geology-and-oceanography/rock>>

**biological samples**

Any type of biological living or dead specimen such as cells, internal organs, veins, or even fluids.

*e.g., collecting bacteria and other microorganisms, plant samples, biofacts (in biology, a biofact is dead material of a once-living organism)*

*Based on:*  
[1276] Science Care <<https://www.sciencecare.com/blog/biological-sample>>

**surface water**

Surface water is water located on top of the Earth's surface such as rivers, creeks, and wetlands including permanent, ephemeral and manmade surface waters.

*e.g., water samples from rivers or artificial swamps*

*Based on:*  
[1292] Wikipedia <[https://en.wikipedia.org/wiki/Surface\\_water](https://en.wikipedia.org/wiki/Surface_water)>

**other fluid sampling**

Fluids present at the surface of the earth except water.

*e.g., petroleum seep samples*

[3] Memoria team, Memoria project

**TECHNIQUES**

Differentiations concerning a subsurface-sampling technique.

**test pits**

Small dig used to find out the archaeological possibilities of a spot.

*e.g., shovel test pits (STPs)*

*Based on:*  
[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte.  
[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>  
[1309] <[https://www.nps.gov/archeology/afori/whdo\\_look3.htm](https://www.nps.gov/archeology/afori/whdo_look3.htm)>

### ○ trench sampling

Shallow ditch from which a sample can be taken and a geological observation made.

*e.g., trial pit - relatively small hand or machine excavated tranche used to determine groundwater levels and take disturbed samples from.*

Based on:

[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

[1305] INSPIRE <<https://inspire.ec.europa.eu/codelist/ExplorationActivityTypeValue/trenchingChannelSampling>>

[1304] Demoule, Jean-Paul, François Giligny, Anne Lehoërff, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte.

### ○ core sampling

A core sample is a cylindrical section of a man-made (concrete) or naturally-occurring substance (sediment or rock). Core samples are obtained by coring techniques (drilling, gravity coring, vibracoring, rotary sidewall coring, ...) A variety of core samplers exist to sample different media under different conditions.

*e.g., oil auguring*

Based on:

[1306] Wikipedia <[https://en.wikipedia.org/wiki/Core\\_sample#Methods](https://en.wikipedia.org/wiki/Core_sample#Methods)>

### ○ auger drilling

Drilling of a cylindrical hole with an ad hoc tool in order to collect a rock sample, or to carry out a physical measurement or a geological observation. Used especially when material is unconsolidated (deposits of river gravel, previously placed material such as mine waste dumps). Samples taken this way are disturbed samples.

Based on:

[1307] INSPIRE <<https://inspire.ec.europa.eu/codelist/ExplorationActivityTypeValue/augerDrilling>>



#### A1.5.2.2

### excavation

Archaeological excavation is the procedure by which archaeologists define, retrieve and record cultural and biological remains found in the ground. Past activities leave traces in the form of house foundations, graves, artefacts, bones, seeds, and numerous other traces indicative of human experience.

*e.g., examination of physical remains such as graves, tools, or pottery using extraction or digging techniques*

Based on:

[1314] Martin Carver, *Excavation Methods in Archaeology* <[https://link.springer.com/referenceworkentry/10.1007%2F978-1-4419-0465-2\\_1494](https://link.springer.com/referenceworkentry/10.1007%2F978-1-4419-0465-2_1494)>

[1313] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=excavation>>

[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

### ○ PURPOSE

Differentiations of excavations from the point of view of their purpose.

### ○ research excavation

Planned excavations carried out to locate buried evidence about an archaeological site when time and resources are available to excavate the site fully and at a leisurely pace.

*e.g., a scholar studying the life of the pre-Roman, Celtic-speaking Gauls of France deliberately selects a group of hill forts and excavate them*

Based on:

[1315] Wikipedia <[https://en.wikipedia.org/wiki/Archaeological\\_excavation](https://en.wikipedia.org/wiki/Archaeological_excavation)>

[1316] Britannica <<https://www.britannica.com/science/excavation-archaeology>>

○ **rescue archaeology**

Rescue archaeology is state-sanctioned archaeological survey and excavation carried out in advance of construction or other land development.

*e.g., clearing the ground for airports, road widening construction of houses,*

*Based on:*  
[1317] Wikipedia <[https://en.wikipedia.org/wiki/Rescue\\_archaeology](https://en.wikipedia.org/wiki/Rescue_archaeology)>  
[1345] Oxford Reference <<https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100415247>>

○ **SITE PARTICULARITIES**

Differentiations of excavations from the point of view of the site particularities.

○ **water-saturated sites**

wet-site excavation, waterlogged sites - sites filled, soaked or saturated by water.

[3] Memoria team, Memoria project

○ **underwater archaeology**

Underwater archaeology studies submerged sites, artefacts, human remains and landscapes.

*e.g., removal of silts and sediments from an area of investigation using a water dredge or airlift*

*Based on:*  
[1318] UNESCO, Underwater Archaeology <<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/protection/underwater-archaeology/>>  
[1346] Wikipedia <[https://en.wikipedia.org/wiki/Underwater\\_archaeology](https://en.wikipedia.org/wiki/Underwater_archaeology)>

○ **caves and rockshelters**

Unique sites because of their depositional and presentational environments - any natural cavity in a rock formation large enough to accommodate a person. Include wholly artificial caves and mines.

*e.g., rock-shelters and fissures, open dolines, sinkholes, caves with natural entrances*

*Based on:*  
[1319] Jonathan Last, The Archaeology of English Caves and Rock-Shelters: A Strategy Document <<https://historicengland.org.uk/research/results/reports/32-2003>>

○ **urban environment**

The practice of archaeology in urban places, particularly "living" urban places.

*e.g., excavations at a car park in London*

*Based on:*  
[1320] Tadhg O'Keefe, Urban Archaeology. <[https://link.springer.com/referenceworkentry/10.1007/978-1-4419-0465-2\\_1422](https://link.springer.com/referenceworkentry/10.1007/978-1-4419-0465-2_1422)>

○ **woodlands**

The practice of archaeology in woods and forests.

*Based on:*  
[1321] Forest Research <<https://www.forestresearch.gov.uk/tools-and-resources/fthr/historic-environment-resources/woodland-and-archaeology/woodland-and-archaeology-overview-of-potential-issues/>>

○ **mountain environment**

The practice of archaeology in mountain areas.

*e.g., high-mountain archaeology in Alps*

[3] Memoria team, Memoria project

○ **open land**

The practice of archaeology in non-built-up areas with no, or with insignificant, vegetation cover.

*e.g., excavations in arable or pasture land*

[3] Memoria team, Memoria project

## EXCAVATION STRATEGY

Differentiations of excavations from the point of view of excavation strategy.

### quartering

A quadrant method, where the mound is laid out into four quadrants by balks 3 or more ft. wide (+92 cm). Excavation of each quadrant proceeds systematically, and the coordinate balks preserve the contour and stratification of the deposit.

*Based on:*  
[1323] Thomas R. Hester, *Methods of Excavation, chapter 5, in Field Methods in Archaeology, McGraw-Hill Education – Europe, New York 2009, pp. 69-112*

[1322] Oxford Reference <<https://www.oxfordreference.com/view/10.1093/acref/9780199534043.001.0001/acref-9780199534043-e-3402>>

### stripping

Removal of topsoil, or humus.

*Based on:*  
[1323] Thomas R. Hester, *Methods of Excavation, chapter 5, in Field Methods in Archaeology, McGraw-Hill Education – Europe, New York 2009, pp. 69-112*

[1324] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=strip%20method>>

### trial trenching

A deep trench, often of restricted area, to investigate the stratigraphy of a site, or to determine whether a thorough excavation is warranted (exploratory excavation).

*Based on:*  
[1325] Wikipedia <[https://en.wikipedia.org/wiki/Trial\\_trenching](https://en.wikipedia.org/wiki/Trial_trenching)>  
[1326] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=sondage>>

### open area excavation

Open area excavations consist open a large surface of ground and follow the discovered structures as the operation goes.

*e.g., excavation of an area of a site without leaving balks between sectors*

*Based on:*  
[1327] Jockey, Philippe. 2013. *L'archéologie. Paris, France: Belin.*  
[1313] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=excavation>>  
[1328] Encyclopedia.com <<https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/excavation-methods>>

### level stripping

It consists of excavation in a staggered series of vertical faces, from 6 to 12 inches (15-30 cm) or more in height, at successive depths and looks in cross section like a flight of steps.

(also known as: control face, control front, step trenching).

*Based on:*  
[1323] Thomas R. Hester, *Methods of Excavation, chapter 5, in Field Methods in Archaeology, McGraw-Hill Education – Europe, New York 2009, pp. 69-112*

### balk excavation

Excavation of an area of a site keeping in place part of the stratigraphy (balks) to get sections.

*e.g., Wheeler method*

*Based on:*  
[1313] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=excavation>>

### total excavation

Complete excavation of an archaeological site, confined mainly to smaller sites, such as burial mounds or campsites.

*Based on:*  
[1313] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=excavation>>



## ● EXCAVATION METHODS

Differentiations of excavations from the point of view of methods of excavation.

### ○ stratigraphic excavation

The layers of a site are excavated according to their natural shapes and dimensions and in the reverse order to that in which they were deposited.

*Based on:*  
[1313] *Archaeology Wordsmith* <<https://archaeologywordsmith.com/search.php?q=excavation>>  
[1328] *Encyclopedia.com* <<https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/excavation-methods>>

### ○ arbitrary levels excavation

When there is no visible stratigraphy one can record arbitrary levels, each 5, 10, or 20 cm deep. This is the case for thick-dark levels.

*Based on:*  
[1259] *Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project*

### ○ cross-section

Half-sectioning is the usual method whereby one half of a feature is excavated and the remainder left in situ.

*Based on:*  
[1329] *Wikipedia* <[https://en.wikipedia.org/wiki/Section\\_\(archaeology\)](https://en.wikipedia.org/wiki/Section_(archaeology))>

### ○ isolated block

Excavation method is sometimes used when stratigraphy is visible. The method entails digging a square trench to isolate a block or pillar of deposit; the stratification thus exposed on all four sides of the block is carefully recorded, and the block is then peeled layer by layer.

*Based on:*  
[1323] *Thomas R. Hester, Methods of Excavation, New York 2009, pp. 69-112*

## ● TECHNIQUES

Differentiations of excavations from the point of view of techniques used uncover archaeological remains.

### ○ scarping

Cautious hand excavation technique in which the surface of a deposit is carefully scraped with a trowel, knife, or sharp spade to reveal features and cuts represented by differences in texture, colour, or composition.

*Based on:*  
[1330] *Oxford Reference* <<https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100400196>>  
[1331] *Archaeology Wordsmith* <<https://archaeologywordsmith.com/search.php?q=rabotage>>

### ○ pickaxing and shovelling

Hand excavation technique with the use of digging equipment such as pickaxes and manual shovels.

*e.g., using mall hand shovels, to clear away the loose dirt, known as "spoil"*

*Based on:*  
[1332] *Trenchesspedia* <<https://www.trenchesspedia.com/definition/2785/hand-excavation>> 20/04/2022

### ○ mechanical excavation

The use in excavations of various types and sizes of machines from small backhoes to heavy duty earth-moving machinery.

*e.g., Using a mechanical excavator to remove soil and debris and to prepare the surface for excavation by hand.*

*Based on:*  
[1315] *Wikipedia* <[https://en.wikipedia.org/wiki/Archaeological\\_excavation#Mechanical\\_excavation](https://en.wikipedia.org/wiki/Archaeological_excavation#Mechanical_excavation)>



## A1.5.2.3

**subsurface observation**

A study in which the investigator observes the stratum or strata below the earth's surface to collect information about natural phenomena or artefacts in a systematic manner.

Based on:

[319] Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>

[1312] Lexico <<https://www.lexico.com/en/definition/subsurface>>

**MOTIVE**

The reasons why an area has been considered worthy of surveying.

**chance discovery**

Accidental discoveries of artefact, remains or sites.

*e.g., Locals have picked up physical artefacts, sometimes held by the local museum but more often collected in private homes or old buildings such as churches and synagogues.*

Based on:

[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**literary sources**

Texts describing the existence of a site (generally with no physical proof remaining).

*e.g., a book on local history mentioning an interesting area*

Based on:

[1304] Demoule, Jean-Paul, François Gligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte

[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**oral sources**

Local stories containing hints.

*e.g., someone may remember that his grandfather who used to walk the hills as a shepherd used to talk about columns from an old temple, although the descendant never saw the ruins*

Based on:

[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**local knowledge**

Local knowledge of the existence of an archaeological discoveries without physical or textual proofs.

*e.g., traditional knowledge or indigenous knowledge*

Based on:

[1304] Demoule, Jean-Paul, François Gligny, Anne Lehoërf, and Alain Schnapp. 2002. *Guide Des méthodes de l'archéologie. Guides Repères 6414*. Paris: Éditions La Découverte

[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

**previous research**

Knowledge of past archaeological operations (surveys or archaeological excavations) in this particular area.

*e.g., re-examination of a previously surveyed site using recent technologies*

Based on:

[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

**hypothesis verification**

Exploration motivated by a will of verification of hypotheses.

Based on:

[1161] Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

[1311] Djindjian, François. 2017. *L'archéologie : Théorie, méthodes Et Reconstitutions*. Malakoff: Armand Colin.

**lack of information**

Investigating a localisation for which there is no previous data.

Based on:

[1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

○ **risk of destruction**

Exploration of a site under threat.

*e.g., collection of archaeological data before new construction planned on this area*

*Based on:*  
[1291] <<https://www.dictionary.com/browse/salvage-archaeology>>

● **SPATIAL RESOLUTION**

Differentiations in terms of resolution usually according to types of research questions being asked.

○ **extensive**

A site exploration characterised by a low resolution coverage of the survey area. Extensive surveys are designed to provide a preliminary picture of the evidence in a given survey area, for instance to target the identification of archaeological sites across a large area.

*e.g., random sampling*

*Based on:*  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

○ **intensive**

A site exploration characterised by the complete or near-complete coverage of the survey area at a high resolution. Intensive surveys are designed to provide a comprehensive picture of the location and distribution of evidence in a given survey area.

*e.g., several teams of survey walk in a systematic way (e.g. in parallel transects) over parcels of the landscape, documenting archaeological data such as lithics, ceramics and/or building remains*

*Based on:*  
[1161] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Survey\\_\(archaeology\)](https://en.wikipedia.org/wiki/Survey_(archaeology))>

● **AREA OF CONCERN**

Reasons of exploration, disciplines involved.

○ **geological investigation**

A systematic investigation of an area determining the distribution, structure, composition, history, and interrelations of rock units. Its purpose may be either purely scientific or economic with special attention to the distribution, reserves, and potential recovery of mineral resources.

*Based on:*  
[1167] Glossary, Mindat.org <[https://www.mindat.org/glossary/geological\\_survey](https://www.mindat.org/glossary/geological_survey)>

○ **geomorphologic investigation**

Study of landforms and landscapes, including the description, classification, origin, development, and history of planetar surfaces.

*e.g., study of coastal geomorphotypes*

*Based on:*  
[1168] Victor R. Baker, Faculty of Geographical and Geological Sciences (AMU) <[http://geoinfo.amu.edu.pl/wpk/geos/GEO\\_1/GEO\\_CHAPTER\\_1.HTML](http://geoinfo.amu.edu.pl/wpk/geos/GEO_1/GEO_CHAPTER_1.HTML)>

○ **architectural investigation**

An investigation to uncover the history, significance and structure of elements of built heritage.

*e.g., historic area assessment to assess the built heritage of a particular town or place, a rapid urban survey*

*Based on:*  
[1169] Historic England (Historic Buildings and Monuments Commission for England), Historic England <<https://historicengland.org.uk/research/methods/architectural-investigation/>>

○ **hydrological investigation**

Determining existing hydrologic conditions in a given site.

*e.g., identification of water flow direction, surface water quality analysis*

*Based on:*  
[1170] Water Resources Division - State of Michigan, Water Resources Division - Michigan <[https://www.michigan.gov/documents/deq/wrd-hydrogeo\\_565044\\_7.pdf](https://www.michigan.gov/documents/deq/wrd-hydrogeo_565044_7.pdf)>

### ○ paleontological investigation

Study of life of the geologic past that involves the analysis of plant and animal fossils, including those of microscopic size, preserved in rocks.

Based on:  
[1171] *Britannica* <<https://www.britannica.com/science/paleontology>>

### ○ engineering construction

An investigation in which the physical qualities of a site and engineering properties of the soil and rock, or other site-specific characteristics are evaluated in order to determine if the site is suitable and safe for the design of planned structures.

e.g., *feasibility studies for construction projects, Identification of physical hazards.*

Based on:  
[1172] *Collins Dictionary* <<https://www.collinsdictionary.com/dictionary/english/geotechnical-investigation>>  
[1173] *Shruthi Hiremath, Shruthi Hiremath* <<https://fr.slideshare.net/ShruthiHiremath3/subsurface-exploration-84974545>>  
[1174] *design buildings* <[https://www.designingbuildings.co.uk/wiki/Preliminary\\_site\\_investigations](https://www.designingbuildings.co.uk/wiki/Preliminary_site_investigations)>

### ○ archaeological investigation

Uncovering and/or studying the material remains of past human cultures and documenting it.

Based on:  
[1175] *Cultural Resources Management (CRM), Cultural Resources Management* <<http://www.culturalresourcesmanagement.com.au/Archaeological%20investigation%20page.html>>  
[1176] *Science Daily* <[https://www.sciencedaily.com/terms/archaeological\\_field\\_survey.htm](https://www.sciencedaily.com/terms/archaeological_field_survey.htm)>

## ● SAMPLED ENTITIES

Differentiations of entities that have been sampled.

### ○ human-made artefact

Collection of objects and remains of objects made by a human being.

e.g., *pottery or stone samples*

Based on:  
[1273] *National Geographic Society* <<https://www.nationalgeographic.org/encyclopedia/artifacts/>>  
[1274] *K. Kris Hirst, ThoughtCo.* <<https://www.thoughtco.com/sampling-in-archaeology-172714>>

### ○ ecofact

In archaeology, an organic material found at an archaeological site consisting of natural remains, as opposed to an object of human workmanship. Biofacts are passively consumed or handled by humans, as opposed to artefacts, which are purposefully manipulated.

e.g., *animal bones, charcoal, plants, and pollen*

Based on:  
[1271] *Wiki-authors, Wikipedia* <[https://en.wikipedia.org/wiki/Biofact\\_\(archaeology\)](https://en.wikipedia.org/wiki/Biofact_(archaeology))>  
[1272] *Lexico Dictionaries* <<https://www.lexico.com/definition/ecofact>>

### ○ gas/vapour

A gas refers to a substance that has a single defined thermodynamic state at room temperature whereas a vapour refers to a substance that is a mixture of two phases at room temperature, namely gaseous and liquid phase.

e.g., *gas samples from fumaroles*

Based on:  
[1275] *Kivumbi, Difference Between Vapor and Gas | Difference Between* <<http://www.differencebetween.net/science/difference-between-vapor-and-gas/#ixzz6kZzgAPnB>>

### ○ soil/rock/sediment

The upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles. The solid mineral material forming part of the surface of the earth and, exposed on the surface.

e.g., *systematic soil sampling, stone sampling*

Based on:  
[1293] *Jagran Josh* <<https://www.jagranjosh.com/general-knowledge/what-is-chernozem-1554463399-1>>  
[1294] *Encyclopedia.com* <<https://www.encyclopedia.com/earth-and-environment/geology-and-oceanography/geology-and-oceanography/rock>>

**biological samples**

Any type of biological living or dead specimen such as cells, internal organs, veins, or even fluids.

*e.g., collecting bacteria and other microorganisms, plant samples, biofacts (in biology, a biofact is dead material of a once-living organism)*

*Based on:*  
[1276] Science Care <<https://www.sciencecare.com/blog/biological-sample>>

**surface water**

Surface water is water located on top of the Earth's surface such as rivers, creeks, and wetlands including permanent, ephemeral and manmade surface waters.

*e.g., water samples from rivers or artificial swamps*

*Based on:*  
[1292] Wikipedia <[https://en.wikipedia.org/wiki/Surface\\_water](https://en.wikipedia.org/wiki/Surface_water)>

**other fluid sampling**

Fluids present at the surface of the earth except water.

*e.g., petroleum seep samples*

[3] Memoria team, Memoria project

**TIME SPAN**

Differentiations according to the time span of an observation.

**synchronic study**

Study that involves observation at one specific point in time, or over a short period. It is used generally for examining phenomena expected to remain static through the period of interest.

*e.g., onsite observation of the level of erosion and alteration of a structure*

*Based on:*  
[839] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Cross-sectional\\_study](https://en.wikipedia.org/wiki/Cross-sectional_study)>  
[1056] Kate Ann Levin, Nature Research <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

**diachronic study**

Study that involves repeated observations of the same variables over long periods of time. It uses time as the main variable.

*e.g., study of building degradation process*

*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>

**REPORTING TYPE**

Differentiations concerning the standardisation level of the field documentation.

**standardized forms**

Documentation based on established norms and requirements especially in order to assure consistency and regularity of notes. Fully standardised forms may concern different aspects of observation. Some are oriented to control the operation, others are meant for description of the drawings, photographs, or measurements that have been collected, still others will be designed for the documentation of specific types of features in a standardized way.

*Based on:*  
[711] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Standards\\_organization#International\\_standards\\_organizations](https://en.wikipedia.org/wiki/Standards_organization#International_standards_organizations)>  
[1185] Merriam-Webster <<https://www.merriam-webster.com/dictionary/standardize>>  
[1186] UNESCO, UNESCO <<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/unesco-manual-for-activities-directed-at-underwater-cultural-heritage/unesco-manual/documentation/on-site-observations/>>

**ad hoc documentation**

Documentation modes designed for a specific problem or task, non-generalizable, and not intended to be adapted to other purposes.

*e.g., a report created for a one-time-use*

*Based on:*  
[1188] Logi Analytics <<https://www.izenda.com/ad-hoc-reporting/>>

**FOCUS**

Differentiations concerning the aspects that are observed.

**stratigraphy**

The spatial location and temporal sequence of rock bodies, organic deposits, archaeological findings or different layers of a building. By means of stratigraphy, identified elements are dated and correlated with each other.

*e.g., determining chronological layers of a church façade before starting the renovation work*

Based on:

[1190] Swiss geology community, Geology Portal <<https://www.geologieportal.ch/en/themes/fundamentals-of-geology/stratigraphy.html>>

[1191] ABC Minet <<https://www.abcminet.fr/post/la-stratigraphie-c-est-quoi>>

[1192] Wiktionary <<https://en.wiktionary.org/wiki/stratigraphy>>

[1193] Britannica <<https://www.britannica.com/science/stratigraphy-geology>>

**spatial relationships**

Spatial arrangement of objects, such as topology, alignments, etc.

*e.g., vertical and horizontal relationships of objects*

[3] Memoria team, Memoria project

**geometry**

Spatial analysis related to the geometry of an object - shape or the relationship of its parts to each other.

*e.g., observing the geometry of a vaulting*

Based on:

[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>

[1195] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/geometry>>

**deterioration patterns**

Results of decay phenomena and processes.

*e.g., observing stone surface showing alveolization*

Based on:

[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>

**biotic elements**

Plants, animals and all living elements that an organism interacts with over a scrutinised area.

*e.g., presence of types of plants over a site*

Based on:

[1197] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Groundcover>>

[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

**abiotic elements**

Abiotic elements are non-living elements of natural environment which include air, water, sunlight, etc.

*e.g., observe physical conditions of the site (e.g., wind direction and temperature)*

Based on:

[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

**A1.5.2.4****finds processing**

Post-excavation processes including finds referencing, collection, cleaning, recording and on-site storage.

*e.g., placing finds in self-seal bags marked with the Historic Environment Record (HER) activity number and context number*

Based on:

[1333] Rob Hedge and Aisling Nash, Post-Excavation guidelines <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiV8NDE3\\_7yAhWyx0UKHemyAeUQFnoECAIQ-A&url=https%3A%2F%2Fwww.explorethepast.co.uk%2Fwp-content%2Fuploads%2F2020%2F07%2FPost-Excavation-guidelines-1.pdf&usq=A0vVaw3DuGzR34wsVdTktc6yk-C](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiV8NDE3_7yAhWyx0UKHemyAeUQFnoECAIQ-A&url=https%3A%2F%2Fwww.explorethepast.co.uk%2Fwp-content%2Fuploads%2F2020%2F07%2FPost-Excavation-guidelines-1.pdf&usq=A0vVaw3DuGzR34wsVdTktc6yk-C)>



#### A1.5.2.4.1

##### sorting

An operation (activity) during which archaeological finds are selected for further examination.

*Based on:*  
[1259] *Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project*



#### A1.5.2.4.2

##### referencing

Referencing the localisation of an artefact, structure or stratum, as well as its orientation and its possible slope.

*e.g., During archaeological excavations the locations of recovered objects are recorded in the appropriate grid square.*

*Based on:*  
[1311] *Djindjian, François. 2017. L'archéologie : Théorie, méthodes Et Reconstitutions. Malakoff: Armand Colin*  
[1334] *George Brauer, Archaeology gridding <https://www.google.com/url?sa=t&rct-j&q=&es-rc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOLucXsAhVdDmMBHYltAjlQFJADegQIA-hAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teaching-archaeology%2Farchaeology\_gridding.pdf%3Fsfvrsn%3D6144aac9\_6&usq=AOvVaw2ShjlxMmN\_nbmQzf\_Li1y->*  
[1331] *Archaeology Wordsmith <https://archaeologywordsmith.com/search.php?q=grid>*  
[1335] *FutureLearn <https://www.futurelearn.com/courses/archaeology/0/steps/15257>*

##### RECORDED DATA

Differentiation of information to be recorded during the referencing step.

##### stratigraphy

Referencing the stratum in which artefacts were found.

*e.g., a stratigraphic context of a sherd (layer 6 in square 4)*

*Based on:*  
[1259] *Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project*

##### spatialisation

Referencing the precise localisation of an artefact, structure or stratum, as well as its orientation and its possible slope.

*e.g., spatial provenience of a flake on XYZ coordinates*

*Based on:*  
[1311] *François Djindjian, 2017. L'archéologie : Théorie, méthodes Et Reconstitutions. Malakoff: Armand Colin, p. 91*

##### dimensions

A measurable extent of a particular kind, such as length, breadth, depth, or height.

*e.g., artefact's size*

*Based on:*  
[1336] *Google's English dictionary <https://www.google.com/search?q=dimensions+definition+in+english&client=firefox-b-d&channel=nrow5&sxsrf=APq-WBuTKKnotZ6pIBFml9P9kREOTt6UA%3A1650543445139&ei=VUt hYv6LCPCZlwTUwKjoBw&oq=dimensions+definition+in+english&gs\_lp=Egdnd3Mtdz16uAEB-AEBKgIIATIEECMY-JzIEECMYJzIEEAAYCBgewgIHEAAYRxiwA5AGCEJQ7ARQ9wRYmwdwAXgByAEAkAEAmAFpoAGRA6oBAzEuM-ID-BCBBGADIawQgRhgAiAYB&sc=client=gws-wiz>*



#### A1.5.2.4.3

##### flotation

Flotation is a process of retrieval that works by passing spoil onto the surface of water and separating finds that float from the spoil which sinks, this is especially suited to the recovery of environmental data such as seeds and small bones.

*e.g., xx*

*Based on:*  
[1315] *Wikipedia <https://en.wikipedia.org/wiki/Archaeological\_excavation>*



## A1.5.2.4.4

**screening / sieving**

Activity consisting of putting spoil through a sieve.

*e.g., water screening*

Based on:  
 [1315] Wikipedia <[https://en.wikipedia.org/wiki/Archaeological\\_excavation](https://en.wikipedia.org/wiki/Archaeological_excavation)>  
 [1337] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=sieving>>  
 [1338] Archaeologs project <<https://www.archaeologs.com/w/sieving/en>>

**METHOD**

Differentiations of sieving/screening from the point of view of techniques.

**wet sieving**

Wet sieving is a method to separate the coarse material with water or another type of liquid before drying, identifying and analysing.

Based on:  
 [1339] Precision Eforming, LLC <<https://www.precisionforming.com/conduct-wet-sieving/>>  
 [1338] Archaeologs project <<https://www.archaeologs.com/w/sieving/en>>  
 [1323] Thomas R. Hester, *Methods of Excavation, chapter 5, in Field Methods in Archaeology*, McGraw-Hill Education – Europe, New York 2009, pp. 69-112

**dry sieving**

Dry screening is the sieving of sediments through a mesh and requires the soil to pass dry through the mesh.

Based on:  
 [1340] Marta Lorenzon, *Screening Methods in Archaeology* <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjlycza4\\_7yAhUS1hoKHZg7DzQQFnoECACQA-Q&url=https%3A%2F%2Flink.springer.com%2F10.1007%2F978-3-319-51726-1\\_2520-1&usg=AOvVawos6\\_aUHM-wDOCJluSotvGng](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjlycza4_7yAhUS1hoKHZg7DzQQFnoECACQA-Q&url=https%3A%2F%2Flink.springer.com%2F10.1007%2F978-3-319-51726-1_2520-1&usg=AOvVawos6_aUHM-wDOCJluSotvGng)>



## A1.5.2.4.5

**finds collection**

Collecting finds (small finds and bulk finds - anything which can be classified as an 'artefact' and doesn't need any special treatment or conservation. This can include: pottery, animal bone, glass, worked stone/flint, building material, nails, charcoal and shell).

*e.g., collecting building material on site and placing into a tray labelled with the context number*

Based on:  
 [1335] FutureLearn <<https://www.futurelearn.com/courses/archaeology/0/steps/15257>>



## A1.5.2.4.6

**finds cleaning**

Includes the washing, drying, marking/bagging and sorting of bulk finds from archaeological sites.

*e.g., gently brushing the dirt or mud of all the surfaces of the artefact.*

Based on:  
 [1341] *Archaeology of Oxford* <<http://www.archeox.net/finds-processing.html>>



## A1.5.2.4.7

**on-site recording**

Details of small finds such as weight and measurements are recorded. Then objects are bagged or boxed separately from the bulk finds.

Based on:  
 [1335] FutureLearn <<https://www.futurelearn.com/courses/archaeology/0/steps/15257>>





#### A1.5.2.4.8

##### on-site storage

Splitting the objects into the appropriate boxes and labelling them This is the final step in the transition of the finds from site to a museum or a warehouse for example.

*e.g., Once the finds leave site, they are stored in specially made cardboard boxes of the appropriate size and shape*

*Based on:*  
 [1335] FutureLearn <<https://www.futurelearn.com/courses/archaeology/0/steps/15257>>  
 [1347] Jane Hamill, Guidelines On the Care of Archaeological Artefacts <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwirg-vhq6v2AhVMh\\_0HHSFQC4Y-QFnoECAwQAQ&url=https%3A%2F%2Fswaag.org%2Fmembers%2Fswaag%2520DIG%2520DOCS%2F-Word%2520SWAAG%2520pdfs%2Fguidelines-on-the-care-of-archaeological-finds-for-archaeologists\\_june-2012.pdf&usq=AOvVaw3\\_XnbkfTrzuGfDPyEGJ2Va](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwirg-vhq6v2AhVMh_0HHSFQC4Y-QFnoECAwQAQ&url=https%3A%2F%2Fswaag.org%2Fmembers%2Fswaag%2520DIG%2520DOCS%2F-Word%2520SWAAG%2520pdfs%2Fguidelines-on-the-care-of-archaeological-finds-for-archaeologists_june-2012.pdf&usq=AOvVaw3_XnbkfTrzuGfDPyEGJ2Va)>



#### A1.5.2.4.9

##### spot dating

Since most absolute dating techniques use samples of material uncovered during an excavation, archaeologists may attempt to come up with a rough date while a site is still being examined. This process, which relies on contextual information, is known as spot dating.

*Based on:*  
 [1342] Wikipedia <[https://en.wikipedia.org/wiki/Chronological\\_dating](https://en.wikipedia.org/wiki/Chronological_dating)>  
 [1343] Erin Blakemore <<https://www.nationalgeographic.com/culture/archaeology/archaeologist-methods-date-sites-artifacts/>>



#### A1.5.2.5

##### excavation completion

Preparing the archaeological site either for the next excavation the following year, or for a closing. This activity occurs after a break of the loop of excavating and finds processing (referencing).

*e.g., covering the site to protect it from the weather until the new operation*

*Based on:*  
 [1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project



#### A1.5.2.5.1

##### backfilling

Refilling an excavated hole/trench with the material dug out of it. The purpose of backfilling may be to prevent erosion or vandalizing.

*e.g., manual filling back of trenches*

*Based on:*  
 [1344] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=backfill>>  
 [1348] The Free Dictionary <<https://www.thefreedictionary.com/backfilling>>  
 [1323] Thomas R. Hester, Methods of Excavation, chapter 5, in Field Methods in Archaeology, McGraw-Hill Education – Europe, New York 2009, pp. 69–112

### ● TECHNIQUES

Differentiation of backfilling from the point of view of techniques used..

#### ○ manual

Refilling of an excavated area is done manually rather than by a mechanical device.

*Based on:*  
 [1259] Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project

#### ○ mechanical

Use of mechanical equipment of various types and sizes to backfill the excavated area.

*e.g., using a power shovel to backfill a trench*

[3] Memoria team, Memoria project



### A1.5.2.5.2

#### site cover up

Providing a temporal protection for excavated archaeological site in order to protect or conceal it in case of a long-term excavation campaign.

*e.g., temporary covering of the site (until the next operation) to protect it from weather conditions, construction of seasonal shelters*

Based on:

[1259] *Laboratoire Archéologie et Territoires, UMR 7324 CITERES, Memoria team LAT, Memoria project*

[3] *Memoria team, Memoria project*



### A1.5.3

#### exploration of standing buildings and structures

The investigation of buildings and standing structures to obtain information about their past and/or current condition.

The main difference between building and excavations archaeology is that the latter requires invasive digging procedures in order to make visible the sources of data, whereas on the whole, a building can be analysed by observation of its exposed surfaces, materials and building techniques without impacting upon the structure itself

*e.g., architectural survey, building archaeology exploration*

Based on:

[1253] *Designing Buildings* <[https://www.designingbuildings.co.uk/wiki/Building\\_archaeology](https://www.designingbuildings.co.uk/wiki/Building_archaeology)>

[1254] *Heritage New Zealand Pouhere Taonga, Heritage New Zealand Pouhere Taonga* <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj5hsS\\_2lDzAhVPKBoKHV8gB-KkQFnoECAUQAQ&url=https%3A%2F%2Fwww.heritage.org.nz%2Fprotecting-heritage%2Farchaeology%2F-media%2F2793010e741541cfbc24baz3feb22520.ashx&usg=AOvVaw3PhF6IKUtn6ipi8-nAdGdz](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj5hsS_2lDzAhVPKBoKHV8gB-KkQFnoECAUQAQ&url=https%3A%2F%2Fwww.heritage.org.nz%2Fprotecting-heritage%2Farchaeology%2F-media%2F2793010e741541cfbc24baz3feb22520.ashx&usg=AOvVaw3PhF6IKUtn6ipi8-nAdGdz)>

[1255] *Kate Giles, Kate Giles, Buildings Archaeology*, In: *Smith C.(eds) Encyclopedia of Global Archaeology* <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjC5t-HyAhVNrXoKHTeZCZEFnoECCEQAw&url=https%3A%2F%2Flink.springer.com%2F10.1007%2F978-1-4419-0465-2\\_1332&usg=AOvVawotm6STe\\_yeWlCczgBR6tM->](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjC5t-HyAhVNrXoKHTeZCZEFnoECCEQAw&url=https%3A%2F%2Flink.springer.com%2F10.1007%2F978-1-4419-0465-2_1332&usg=AOvVawotm6STe_yeWlCczgBR6tM->)>

[1349] *CIFA, Standard and guidance for the archaeological investigation and recording of standing buildings or structures* <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiEgealjTyAhVGUhoKHEstDboQFnoECAQAQ&url=https%3A%2F%2Fwww.archaeologists.net%2Fsites%2F-default%2Ffiles%2FCIFAS%26GBuildings\\_1.pdf&usg=AOvVaw31e0iskbMuBv4fNteoE65w>](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiEgealjTyAhVGUhoKHEstDboQFnoECAQAQ&url=https%3A%2F%2Fwww.archaeologists.net%2Fsites%2F-default%2Ffiles%2FCIFAS%26GBuildings_1.pdf&usg=AOvVaw31e0iskbMuBv4fNteoE65w>)>

#### REPORTING TYPE

Differentiations concerning the standardisation level of the field documentation.

#### standardized forms

Documentation based on established norms and requirements especially in order to assure consistency and regularity of notes.

Fully standardised forms may concern different aspects of observation. Some are oriented to control the operation, others are meant for description of the drawings, photographs, or measurements that have been collected, still others will be designed for the documentation of specific types of features in a standardized way.

Based on:

[711] *Wiki-authors, Wikipedia* <[https://en.wikipedia.org/wiki/Standards\\_organization#International\\_standards\\_organizations](https://en.wikipedia.org/wiki/Standards_organization#International_standards_organizations)>

[1185] *Merriam-Webster* <<https://www.merriam-webster.com/dictionary/standardize>>

[1186] *UNESCO, UNESCO* <<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/unesco-manual-for-activities-directed-at-underwater-cultural-heritage/unesco-manual/documentation/on-site-observations/>>

#### ad hoc documentation

Documentation modes designed for a specific problem or task, non-generalizable, and not intended to be adapted to other purposes.

*e.g., a report created for a one-time-use*

Based on:

[1188] *Logi Analytics* <<https://www.izenda.com/ad-hoc-reporting/>>

**FOCUS**  
Differentiations concerning the aspects that are observed.

**stratigraphy**

The spatial location and temporal sequence of rock bodies, organic deposits, archaeological findings or different layers of a building.  
By means of stratigraphy, identified elements are dated and correlated with each other.

*e.g., determining chronological layers of a church façade before starting the renovation work*

*Based on:*  
[1190] Swiss geology community, Geology Portal <<https://www.geologieportal.ch/en/themes/fundamentals-of-geology/stratigraphy.html>>

[1191] ABC Minet <<https://www.abcminet.fr/post/la-stratigraphie-c-est-quoi>>

[1192] Wiktionary <<https://en.wiktionary.org/wiki/stratigraphy>>

[1193] Britannica <<https://www.britannica.com/science/stratigraphy-geology>>

**spatial relationships**

Spatial arrangement of objects, such as topology, alignments, etc.

*e.g., vertical and horizontal relationships of objects*

[3] Memoria team, Memoria project

**geometry**

Spatial analysis related to the geometry of an object - shape or the relationship of its parts to each other.

*e.g., observing the geometry of a vaulting*

*Based on:*  
[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>

[1195] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/geometry>>

**deterioration patterns**

Results of decay phenomena and processes.

*e.g., observing stone surface showing alveolization*

*Based on:*  
[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>

**biotic elements**

Plants, animals and all living elements that an organism interacts with over a scrutinised area.

*e.g., presence of types of plants over a site*

*Based on:*  
[1197] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Groundcover>>  
[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

**abiotic elements**

Abiotic elements are non-living elements of natural environment which include air, water, sunlight, etc.

*e.g., observe physical conditions of the site (e.g., wind direction and temperature)*

*Based on:*  
[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

**PURPOSE**  
Differentiations according the motives of the exploration.

**building at risk**

Intervention carried out when the fabric of a building is under threat for example after a catastrophic damage to a building.

*e.g., intervention after a major fire, before dismantling prior to re-erection, before proposed demolition of the building*

*Based on:*  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAgHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usq=A0vVawoED3Sp-B4o\\_n\\_omxvfpnLOg](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAgHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usq=A0vVawoED3Sp-B4o_n_omxvfpnLOg)>

### ○ condition monitoring

Intervention carried out in a building to evaluate the risks of damage, monitor the condition of the building to ensure that it is protected from harm, prepare recommendation of actions before building's renovation, extension, or repurposing, etc.

*e.g., Evaluation of risks that are due to physical conditions such as water/rain damage, or wind damage.*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>  
 [1257] Nicky Milsted, Debbie Frearson, Mark Phillips, Council of British Archaeology, Buildings Archaeology <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeC9cQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075\\_Buildings\\_Archaeology\\_COMPLETE\\_Booklet\\_2018\\_LR.pdf&usg=AOvVaw2WmlfJjRWnno\\_FOrTj\\_YRo](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeC9cQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075_Buildings_Archaeology_COMPLETE_Booklet_2018_LR.pdf&usg=AOvVaw2WmlfJjRWnno_FOrTj_YRo)>

### ○ recording and research

Interventions carried out in the frame of a research project, strategic heritage planning, management planning, for property portfolios, ...

*e.g., exhaustive studies of the standing remains of a monastery*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>

### ● EXTENT

Differentiations of investigations from the point of view of the area covered by the exploration.

### ○ small-scale

Exploration of sub-areas or of specific components of a building.

*e.g., systematic investigation of the openings of a building, examination of a building's wood-frame*

*Based on:*  
 [1258] Andrew Woodcock, Dr Andrew Woodcock <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiL68yi4oDzAhUmy4UKHUL-B8AQFnoECAUQAQ&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzcTexK\\_dp0QvMbXUrRO\\_>](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiL68yi4oDzAhUmy4UKHUL-B8AQFnoECAUQAQ&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzcTexK_dp0QvMbXUrRO_>)

### ○ exterior

Investigation of exteriors of the building.

Note that interiors may sometimes be seen in order to make a superficial inspection.

*e.g., Territographie data acquisition campaigns focused on the relation of rural chapels to their environment, hence on exteriors only*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>

### ○ interior

Investigation of interior of the building.

Note that exteriors may sometimes be seen in order to make a superficial inspection.

*e.g., Sesames data acquisition campaigns focused on interiors of rural chapels, but including a brief examination of exteriors*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>

○ **full recording**

Both the exterior and interior of the building will be investigated.

*e.g., data acquisition campaigns on the Hôtellerie de l'Abbaye de Marmoutier*

*Based on:*  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAgHAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o\\_n\\_omxvfpnLQg](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAgHAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o_n_omxvfpnLQg)>  
[1258] Andrew Woodcock, Dr Andrew Woodcock <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiL68yi4oDzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzCtexK\\_dp0QvMbXURRO\\_>](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiL68yi4oDzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzCtexK_dp0QvMbXURRO_>)>

● **MATERIAL LONGEVITY**

Differentiations according to the durability of building materials.

○ **durable materials**

A building material capable of withstanding decay over a relatively long period.

*e.g., stone, brick, concrete*

*Based on:*  
[1260] The Free Dictionary <<https://www.thefreedictionary.com/durability>>

○ **perishable materials**

A building material liable to perish (spoil or decay) over a relatively short period if not preserved in good conditions.

*e.g., wood, clay, wall painting*

*Based on:*  
[1261] Meriam Webster <<https://www.merriam-webster.com/dictionary/perishable>>

● **RECURRING LEVEL**

Differentiations according to whether the same observation is repeated over time or not.

○ **punctual**

Investigation that involves observation at one specific point in time, or over a short period.

*e.g., punctual observation of the level of erosion and alteration of a structure*

*Based on:*  
[1262] Kate Ann Levin, Evidence-Based Dentistry Journal <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

○ **repeated**

Investigation that involves repeated observations of the same variables over long periods of time.

*e.g., observation of the variations over time of the level of erosion and alteration of a structure*

*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>



A1.5.3.1

**non-intrusive exploration**

In a non-intrusive exploration, nothing is touched, just recorded.

*e.g., careful and informed observation and analysis of a building's exposed surfaces*

*Based on:*  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAgHAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o\\_n\\_omxvfpnLQg](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAgHAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o_n_omxvfpnLQg)>

**● TIME SPAN**

Differentiations according to the time span of an observation.

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Study that involves observation at one specific point in time, or over a short period. It is used generally for examining phenomena expected to remain static through the period of interest.

*e.g., onsite observation of the level of erosion and alteration of a structure*

*Based on:*

[839] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Cross-sectional\\_study](https://en.wikipedia.org/wiki/Cross-sectional_study)>

[1056] Kate Ann Levin, Nature Research <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

**○ longitudinal study/diachronic study**

Study that involves repeated observations of the same variables over long periods of time. It uses time as the main variable.

*e.g., study of building degradation process*

*Based on:*

[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>

**● REPORTING TYPE**

Differentiations concerning the standardisation level of the field documentation.

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*Based on:*

[711] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Standards\\_organization#International\\_standards\\_organizations](https://en.wikipedia.org/wiki/Standards_organization#International_standards_organizations)>

[1185] Merriam-Webster <<https://www.merriam-webster.com/dictionary/standardize>>

[1186] UNESCO, UNESCO <<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/unesco-manual-for-activities-directed-at-underwater-cultural-heritage/unesco-manual/documentation/on-site-observations/>>

**○ ad hoc documentation**

Documentation modes designed for a specific problem or task, non-generalizable, and not intended to be adapted to other purposes.

*e.g., a report created for a one-time-use*

*Based on:*

[1188] Logi Analytics <<https://www.izenda.com/ad-hoc-reporting/>>

**● FOCUS**

Differentiations concerning the aspects that are observed.

**○ stratigraphy**

The spatial location and temporal sequence of rock bodies, organic deposits, archaeological findings or different layers of a building.

By means of stratigraphy, identified elements are dated and correlated with each other.

*e.g., determining chronological layers of a church façade before starting the renovation work*

*Based on:*

[1190] Swiss geology community, Geology Portal <<https://www.geologieportal.ch/en/themes/fundamentals-of-geology/stratigraphy.html>>

[1191] ABC Minet <<https://www.abcmimet.fr/post/la-stratigraphie-c-est-quoi>>

[1192] Wiktionary <<https://en.wiktionary.org/wiki/stratigraphy>>

[1193] Britannica <<https://www.britannica.com/science/stratigraphy-geology>>

**spatial relationships**

Spatial arrangement of objects, such as topology, alignments, etc.

*e.g., vertical and horizontal relationships of objects*

[3] Memoria team, Memoria project

**geometry**

Spatial analysis related to the geometry of an object - shape or the relationship of its parts to each other.

*e.g., observing the geometry of a vaulting*

Based on:  
[1194] Wiktionary <<https://en.wiktionary.org/wiki/geometry>>

[1195] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/geometry>>

**deterioration patterns**

Results of decay phenomena and processes.

*e.g., observing stone surface showing alveolization*

Based on:  
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**biotic elements**

Plants, animals and all living elements that an organism interacts with over a scrutinised area.

*e.g., presence of types of plants over a site*

Based on:  
[1197] Wiki-authors, Wikipedia <<https://en.wikipedia.org/wiki/Groundcover>>  
[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

**abiotic elements**

Abiotic elements are non-living elements of natural environment which include air, water, sunlight, etc.

*e.g., observe physical conditions of the site (e.g., wind direction and temperature)*

Based on:  
[1198] Wiki-authors, Wikipedia <<https://simple.wikipedia.org/wiki/Environment>>

**PURPOSE**

Differentiations according the motives of the exploration.

**building at risk**

Intervention carried out when the fabric of a building is under threat for example after a catastrophic damage to a building.

*e.g., intervention after a major fire, before dismantling prior to re-erection, before proposed demolition of the building*

Based on:  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAgHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLog](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAgHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLog)>

**condition monitoring**

Intervention carried out in a building to evaluate the risks of damage, monitor the condition of the building to ensure that it is protected from harm, prepare recommendation of actions before building's renovation, extension, or repurposing, etc.

*e.g., Evaluation of risks that are due to physical conditions such as water/rain damage, or wind damage.*

Based on:  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeCgcQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075\\_Buildings\\_Archaeology\\_COMPLETE\\_Booklet\\_2018\\_LR.pdf&usg=AOvVaw2WmIFJRWnno\\_FQrTj\\_YRo](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeCgcQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075_Buildings_Archaeology_COMPLETE_Booklet_2018_LR.pdf&usg=AOvVaw2WmIFJRWnno_FQrTj_YRo)>  
[1257] Nicky Milsted, Debbie Frearson, Mark Phillips, Council of British Archaeology, Buildings Archaeology <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeCgcQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075\\_Buildings\\_Archaeology\\_COMPLETE\\_Booklet\\_2018\\_LR.pdf&usg=AOvVaw2WmIFJRWnno\\_FQrTj\\_YRo](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeCgcQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075_Buildings_Archaeology_COMPLETE_Booklet_2018_LR.pdf&usg=AOvVaw2WmIFJRWnno_FQrTj_YRo)>

## ○ recording and research

Interventions carried out in the frame of a research project, strategic heritage planning, management planning, for property portfolios, ...

*e.g., exhaustive studies of the standing remains of a monastery*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England  
 <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o_n_omxvfpnLOG)>

## ● EXTENT

Differentiations of investigations from the point of view of the area covered by the exploration.

### ○ small-scale

Exploration of sub-areas or of specific components of a building.

*e.g., systematic investigation of the openings of a building, examination of a building's wood-frame*

*Based on:*  
 [1258] Andrew Woodcock, Dr Andrew Woodcock <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiL68yi40DzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzctexK\\_dpoQvMbXUrRO\\_>](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiL68yi40DzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzctexK_dpoQvMbXUrRO_>)>

### ○ exterior

Investigation of exteriors of the building.

Note that interiors may sometimes be seen in order to make a superficial inspection.

*e.g., Territographie data acquisition campaigns focused on the relation of rural chapels to their environment, hence on exteriors only*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England  
 <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o_n_omxvfpnLOG)>

### ○ interior

Investigation of interior of the building.

Note that exteriors may sometimes be seen in order to make a superficial inspection.

*e.g., Sesames data acquisition campaigns focused on interiors of rural chapels, but including a brief examination of exteriors*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England  
 <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o_n_omxvfpnLOG)>

### ○ full recording

Both the exterior and interior of the building will be investigated.

*e.g., data acquisition campaigns on the Hôtellerie de l'Abbaye de Marmoutier*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England  
 <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVawoED3Sp-B4o_n_omxvfpnLOG)>

[1258] Andrew Woodcock, Dr Andrew Woodcock <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiL68yi40DzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzctexK\\_dpoQvMbXUrRO\\_>](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiL68yi40DzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzctexK_dpoQvMbXUrRO_>)>



**MATERIAL LONGEVITY**

Differentiations according to the durability of building materials.

**○ durable materials**

A building material capable of withstanding decay over a relatively long period.

*e.g., stone, brick, concrete*

*Based on:*  
[1260] The Free Dictionary <<https://www.thefreedictionary.com/durability>>

**○ perishable materials**

A building material liable to perish (spoil or decay) over a relatively short period if not preserved in good conditions.

*e.g., wood, clay, wall painting*

*Based on:*  
[1261] Meriam Webster <<https://www.merriam-webster.com/dictionary/perishable>>

**RECURRING LEVEL**

Differentiations according to whether the same observation is repeated over time or not.

**○ punctual**

Investigation that involves observation at one specific point in time, or over a short period.

*e.g., punctual observation of the level of erosion and alteration of a structure*

*Based on:*  
[1262] Kate Ann Levin, Evidence-Based Dentistry Journal <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

**○ repeated**

Investigation that involves repeated observations of the same variables over long periods of time.

*e.g., observation of the variations over time of the level of erosion and alteration of a structure*

*Based on:*  
[319] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>



**A1.5.3.2**

**intrusive exploration**

Any type of investigation deemed intrusive to the fabric (e.g., micro-destructive interventions).

*e.g., dendrochronological sampling or the lifting of floorboards to examine floor structures, removal of areas of plaster, archaeological excavation within the floors of a building*

*Based on:*  
[1263] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiEgealJfTyAhVGUhoKHestDboQFnoECAIQAAQ&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2F&usq=A0vVawoED3SpB4o\\_n\\_omxvfpnLQg](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiEgealJfTyAhVGUhoKHestDboQFnoECAIQAAQ&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2F&usq=A0vVawoED3SpB4o_n_omxvfpnLQg)>

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[1185] Merriam-Webster <<https://www.merriam-webster.com/dictionary/standardize>>

[1186] UNESCO, UNESCO <<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/unesco-manual-for-activities-directed-at-underwater-cultural-heritage/unesco-manual/documentation/on-site-observations/>>

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### ○ spatial relationships

Spatial arrangement of objects, such as topology, alignments, etc.

*e.g., vertical and horizontal relationships of objects*

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### ○ geometry

Spatial analysis related to the geometry of an object - shape or the relationship of its parts to each other.

*e.g., observing the geometry of a vaulting*

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Differentiations according the motives of the exploration.

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Intervention carried out when the fabric of a building is under threat for example after a catastrophic damage to a building.

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[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>

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*e.g., Evaluation of risks that are due to physical conditions such as water/rain damage, or wind damage.*

Based on:  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>  
[1257] Nicky Milsted, Debbie Frearson, Mark Phillips, Council of British Archaeology, Buildings Archaeology <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeCgcQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075\\_Buildings\\_Archaeology\\_COMPLETE\\_Booklet\\_2018\\_LR.pdf&usg=AOvVaw2WmIFJRWnno\\_FQrTj\\_YRo](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi-Hs4jS3oDzAhULKBoKHZUeCgcQFnoECAUQAQ&url=https%3A%2F%2Fwww.yac-uk.org%2Fuserfiles%2Ffile%2F1526988075_Buildings_Archaeology_COMPLETE_Booklet_2018_LR.pdf&usg=AOvVaw2WmIFJRWnno_FQrTj_YRo)>

○ **recording and research**

Interventions carried out in the frame of a research project, strategic heritage planning, management planning, for property portfolios, ...

*e.g., exhaustive studies of the standing remains of a monastery*

Based on:  
[1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif\\_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o\\_n\\_omxvfpnLOG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG)>

## ● EXTENT

Differentiations of investigations from the point of view of the area covered by the exploration.

### ○ small-scale

Exploration of sub-areas or of specific components of a building.

*e.g., systematic investigation of the openings of a building, examination of a building's wood-frame*

*Based on:*  
 [1258] Andrew Woodcock, Dr Andrew Woodcock <[### ○ exterior](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiL68yi4oDzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzcTexK_dpoQvMbXUrRO_></a></p>
</div>
<div data-bbox=)

Investigation of exteriors of the building.

Note that interiors may sometimes be seen in order to make a superficial inspection.

*e.g., Territographie data acquisition campaigns focused on the relation of rural chapels to their environment, hence on exteriors only*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[### ○ interior](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG></a></p>
</div>
<div data-bbox=)

Investigation of interior of the building.

Note that exteriors may sometimes be seen in order to make a superficial inspection.

*e.g., Sesames data acquisition campaigns focused on interiors of rural chapels, but including a brief examination of exteriors*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[### ○ full recording](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG></a></p>
</div>
<div data-bbox=)

Both the exterior and interior of the building will be investigated.

*e.g., data acquisition campaigns on the Hôtellerie de l'Abbaye de Marmoutier*

*Based on:*  
 [1256] Historic England (Historic Buildings and Monuments Commission for England), Historic England <[\[1258\] Andrew Woodcock, Dr Andrew Woodcock <\[## ● MATERIAL LONGEVITY\]\(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiL68yi4oDzAhUmy4UKHUL-B8AQFnoECAUQA-Q&url=https%3A%2F%2Fwww.eastsussex.gov.uk%2Fmedia%2F13748%2Far-sussex-standards-for-historic-building-archaeology.pdf&usg=AOvVaw1KzcTexK\_dpoQvMbXUrRO\_></a></p>
</div>
<div data-bbox=\)](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwihzZCmif_yAhVpx-4UKHZzTBpIQjBB6BAGHEAE&url=https%3A%2F%2Fhistoricengland.org.uk%2Fimages-books%2Fpublications%2Funderstanding-historic-buildings%2Fheag099-understanding-historic-buildings%2F&usg=AOvVaw0ED3Sp-B4o_n_omxvfpnLOG></a></p>
</div>
<div data-bbox=)

Differentiations according to the durability of building materials.

### ○ durable materials

A building material capable of withstanding decay over a relatively long period.

*e.g., stone, brick, concrete*

*Based on:*  
 [1260] The Free Dictionary <<https://www.thefreedictionary.com/durability>>

### ○ perishable materials

A building material liable to perish (spoil or decay) over a relatively short period if not preserved in good conditions.

*e.g., wood, clay, wall painting*

*Based on:*  
 [1261] Meriam Webster <<https://www.merriam-webster.com/dictionary/perishable>>

**RECURRING LEVEL**

Differentiations according to whether the same observation is repeated over time or not.

**punctual**

Investigation that involves observation at one specific point in time, or over a short period.

*e.g., punctual observation of the level of erosion and alteration of a structure*

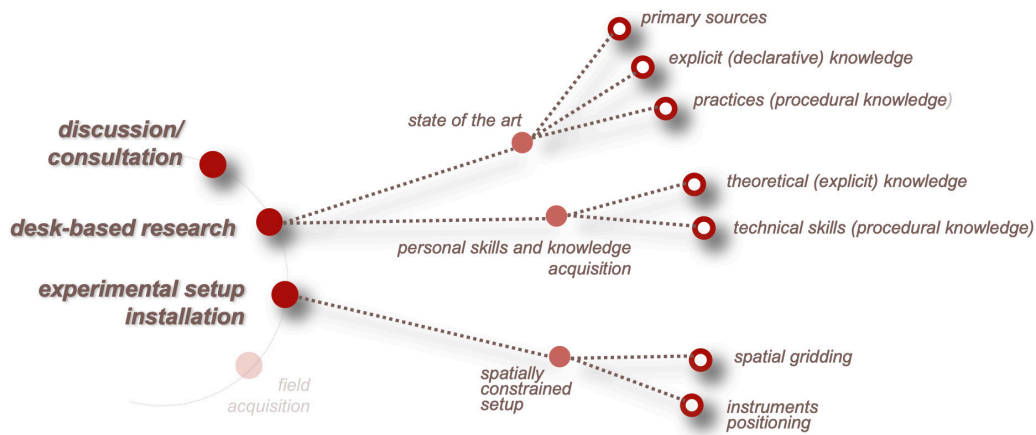
*Based on:*  
[1262] Kate Ann Levin , *Evidence-Based Dentistry Journal* <<http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html>>

**repeated**

Investigation that involves repeated observations of the same variables over long periods of time.

*e.g., observation of the variations over time of the level of erosion and alteration of a structure*

*Based on:*  
[319] Wiki-authors, *Wikipedia* <[http://en.wikipedia.org/wiki/Observational\\_study](http://en.wikipedia.org/wiki/Observational_study)>



A2

**desk-based research**

Desk-based research involves retrieving and gathering existing data, sources or documents.

*e.g., retrieve data from databases, digital libraries, archives, libraries, etc*

*Based on:*  
[439] BusinessDictionary <<http://www.businessdictionary.com/definition/desk-research.html>>

**EXPLORATION MODE**  
Identifies online and offline options of data search mechanisms.

**web scraping (harvesting)**

Computer techniques used to extract information from the web without human involvement (usually simulating human exploration of the World Wide Web).

*e.g., automatic web data extraction using specific software*

*Based on:*  
[840] Wikipedia <[https://en.wikipedia.org/wiki/Web\\_scraping](https://en.wikipedia.org/wiki/Web_scraping)>

**human Internet exploration**

Internet exploration conducted by a human.

*e.g., searching for drawings showing mediaeval town halls in Europe*

[3] Memoria team, Memoria project

**intranet and offline exploration**

Preliminary archival research concerning data kept offline. May include traditional search mechanisms.

*e.g., traditional search in a physical library or an archive*

[3] Memoria team, Memoria project



## A2.1

### state of the art

Data collection encompassing an overview of the level of knowledge and development achieved in one particular domain.

*e.g., state of the art of fingerprint indexing algorithms*

*Based on:*  
[158] The Free Dictionary <<http://www.thefreedictionary.com/state-of-the-art>>

#### ● EXPLORATION MODE

Identifies online and offline options of data search mechanisms.

#### ○ web scraping (harvesting)

Computer techniques used to extract information from the web without human involvement (usually simulating human exploration of the World Wide Web).

*e.g., automatic web data extraction using specific software*

*Based on:*  
[840] Wikipedia <[https://en.wikipedia.org/wiki/Web\\_scraping](https://en.wikipedia.org/wiki/Web_scraping)>

#### ○ human Internet exploration

Internet exploration conducted by a human.

*e.g., searching for drawings showing mediaeval town halls in Europe*

[3] Memoria team, Memoria project

#### ○ intranet and offline exploration

Preliminary archival research concerning data kept offline. May include traditional search mechanisms.

*e.g., traditional search in a physical library or an archive*

[3] Memoria team, Memoria project



## A2.1.1

### practices (procedural knowledge)

Study of the current level of the knowledge about how people do something. It may concern skills, techniques, tools or equipment.

*e.g., state of the art illustrating recent advances of 3D printing technology*

*Based on:*  
[584] F. Nickols <[http://www.nickols.us/Knowledge\\_in\\_KM.htm](http://www.nickols.us/Knowledge_in_KM.htm)>

#### ● INFORMATION SCOPE

Differentiation between the subjects of knowledge acquisition.

#### ○ skills and techniques

Acquisition of information on methods for making or doing something, such as an artistic work, a scientific procedure, or a technological protocol, as well as abilities necessary to acquire or develop by training or practice (perceptual, cognitive or psychomotor).

*e.g., state of the art on interviewing techniques or on assembling and operating technical equipment*

*Based on:*  
[916] The Free Dictionary <<http://www.thefreedictionary.com/skill>>  
[917] The Free Dictionary <<http://www.thefreedictionary.com/technique>>

#### ○ tools and equipment

Acquisition of information on instruments or devices used or needed for a specific purpose or activity.

*e.g., information about existing 3D printers*

*Based on:*  
[918] The Free Dictionary <<http://www.thefreedictionary.com/equipment>>

### ● EXPLORATION MODE

Identifies online and offline options of data search mechanisms.

#### ○ Web scraping (harvesting)

Computer techniques used to extract information from the web without human involvement (usually simulating human exploration of the World Wide Web).

*e.g., automatic web data extraction using specific software*

*Based on:*

[840] Wikipedia <[https://en.wikipedia.org/wiki/Web\\_scraping](https://en.wikipedia.org/wiki/Web_scraping)>

#### ○ human Internet exploration

Internet exploration conducted by a human.

*e.g., using Google to search for drawings showing mediaeval town halls in Europe*

[3] Memoria team, Memoria project

#### ○ intranet and offline exploration

Preliminary archival research concerning data kept offline. May include traditional search mechanisms.

*e.g., traditional search in a physical library or an archive*

[3] Memoria team, Memoria project



### A2.1.2

#### explicit (declarative) knowledge

Study of the current level of the theoretical knowledge in one particular domain that has been articulated and is transmissible in a formal, systematic language (as opposed to tacit knowledge, which is personal and cannot be articulated, formalised or communicated).

It includes secondary sources that digest, analyse, evaluate and interpret information contained in primary sources or other secondary sources.

*e.g., scientific formulas, theorems, taxonomies, articles that interpret or review previous findings, encyclopaedias*

*Based on:*

[584] Frederick W. Nickols, Frederick W. Nickols <[http://www.nickols.us/Knowledge\\_in\\_KM.htm](http://www.nickols.us/Knowledge_in_KM.htm)>

[583] Princeton University Library <[https://libguides.princeton.edu/cee262/primary\\_sources](https://libguides.princeton.edu/cee262/primary_sources)>

### ● NORMATIVE KNOWLEDGE

Specifies types of generic, highly structured pieces of knowledge considered in the state of the art.

#### ○ axioms and rules

Self-evident principles, or ones that are accepted as true without proof as the basis for argument, as well as established rules, or laws.

*e.g., Euclid's lemma, Fisher's theorem of natural selection, Darwin's theory*

*Based on:*

[920] The Free Dictionary <<http://www.thefreedictionary.com/Axiom>>

#### ○ classifications

Systematic arrangement in groups or categories according to established criteria.

*e.g., ontology, thesaurus, classification of the elements of medieval fortifications, classification of terms associated with a particular field*

*Based on:*

[930] Merriam-Webster <<http://www.merriam-webster.com/dictionary/classification>>

#### ○ dictionaries and encyclopaedias

Reference works dealing either with the whole range of human knowledge or with one particular subject. Terms are usually arranged alphabetically.

*e.g., The Encyclopaedia Britannica, Oxford Dictionary of World Religions, a dictionary of computer and Internet terms*

*Based on:*

[919] The Free Dictionary <<http://www.thefreedictionary.com/encyclopedia>>

[929] Merriam-Webster <<http://www.merriam-webster.com/dictionary/encyclopedia>>



**● DESCRIPTIVE KNOWLEDGE**  
Specifies types of materials (interpreted data) considered in the state of the art.

**○ secondary sources**  
Sources that interpret, review or analyse primary sources.  
These sources are one or more steps removed from the event they portray.  
*e.g., journal/magazine articles that interpret or review previous findings, commentaries*

*Based on:*  
[583] Princeton University Library <[https://libguides.princeton.edu/cee262/primary\\_sources](https://libguides.princeton.edu/cee262/primary_sources)>

**○ theoretical works**  
Works restricted to theory, concerned with theories rather than their practical applications.  
*e.g., The Modulor (Le Corbusier), Vitruvius' architectural theory*

*Based on:*  
[841] Wikipedia <[http://en.wikipedia.org/wiki/Theoretical\\_definition](http://en.wikipedia.org/wiki/Theoretical_definition)>  
[921] The Free Dictionary <<http://www.thefreedictionary.com/theoretical>>

**● EXPLORATION MODE**  
Identifies online and offline options of data search mechanisms.

**○ web scraping (harvesting)**  
Computer techniques used to extract information from the web without human involvement (usually simulating human exploration of the World Wide Web).  
*e.g., automatic web data extraction using specific software*

*Based on:*  
[840] Wikipedia <[https://en.wikipedia.org/wiki/Web\\_scraping](https://en.wikipedia.org/wiki/Web_scraping)>

**○ human Internet exploration**  
Internet exploration conducted by a human.  
*e.g., searching for drawings showing mediaeval town halls in Europe*

[3] Memoria team, Memoria project

**○ intranet and offline exploration**  
Preliminary archival research concerning data kept offline. May include traditional search mechanisms.  
*e.g., traditional search in a physical library or an archive*

[3] Memoria team, Memoria project



### A2.1.3

#### **gathering primary sources**

Preliminary research aimed at identification of an ensemble of primary sources concerning a particular subject or period.  
Primary sources are the evidence (first-hand sources or physical objects) obtained by surveys, observation and experimentation.

*e.g., searching for original documents: manuscripts, personal memoirs, government documents, transcripts of legal proceedings, oral histories and traditions, archaeological and biological evidence, and visual sources like paintings and photographs, pottery, etc.*

*Based on:*  
[582] BBA|mantra <<http://www.bbamantra.com/methods-of-data-collection-primary-and-secondary-data/>>  
[583] Princeton University Library <[https://libguides.princeton.edu/cee262/primary\\_sources](https://libguides.princeton.edu/cee262/primary_sources)>  
[658] Anthony D. Harris, W. Kelleher <<http://calstatela.libguides.com/content.php?pid=147626&sid=1254645>>

**● EXPLORATION MODE**

Identifies online and offline options of data search mechanisms.

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Computer techniques used to extract information from the web without human involvement (usually simulating human exploration of the World Wide Web).

*e.g., automatic web data extraction using specific software*

*Based on:  
[840] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Web\\_scraping](https://en.wikipedia.org/wiki/Web_scraping)>*

**○ human Internet exploration**

Internet exploration conducted by a human.

*e.g., searching for drawings showing mediaeval town halls in Europe*

*[3] Memoria team, Memoria project*

**○ intranet and offline exploration**

Preliminary archival research concerning data kept offline. May include traditional search mechanisms.

*e.g., traditional search in a physical library or an archive*

*[3] Memoria team, Memoria project*

**● OWNERSHIP**

Specifies the ownership status of collections that have been explored.

**○ public collections**

International, national or local public institutions that conserves a collection of artefacts and other objects of scientific, artistic, cultural or historical importance and makes them available for public viewing.

*e.g., The Louvre Museum, The National Gallery of Art, the Uffizi Gallery in Florence, Italy*

*[3] Memoria team, Memoria project*

**○ private collections**

A privately owned collection of works.

*e.g., bank or other company collections, private foundation, private collectors' collections*

*[3] Memoria team, Memoria project*

**● TIME SPAN**

Specifies the time span of the sources.

**○ synchronic study**

Sources concerning one specific point in time or a specific period of time.

*e.g., sources concerning a specific phase of evolution of a building (e.g., the 15th century, in 1506, or between 1500-1550)*

*[3] Memoria team, Memoria project*

**○ diachronic study**

Sources concerning the development and evolution of an object or a phenomenon over a long period of time or its lifecycle (throughout history).

*e.g., sources concerning the whole evolution of a building (i.e., from its construction to its destruction)*

*Based on:  
[842] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Synchrony\\_and\\_diachrony](http://en.wikipedia.org/wiki/Synchrony_and_diachrony)>*



## A2.2

### personal skills and knowledge acquisition

The acquisition of knowledge or skills through study, experience, or being taught.

*e.g., language learning, improvement of one's skills in post-treatment of points clouds, upgrading mechanical know-how*

*Based on:  
[447] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/learning>>*

**CONTINUING EDUCATION**  
Specifies modes of knowledge acquisition and refers to additional competences that are distinct from the initial academic education.

**organised education**  
Teaching organised by an institution, a company or an education unit.  
*e.g., traditional types of classroom lectures, École Thématique, distance learning*

*[3] Memoria team, Memoria project*

**non-organised transfer of knowledge**  
Acquisition of skills and knowledge in informal collaborative setups.  
*e.g., learning technical skills from partners inside a project team or research unit*

*[3] Memoria team, Memoria project*

**self-directed learning**  
Autonomous acquisition of skills and knowledge.  
*e.g., learning through Internet interest groups, personal research activities*

*[3] Memoria team, Memoria project*



## A2.2.1

### technical skills (procedural knowledge)

Acquiring and assimilating some technical skills (set of actions).

*e.g., familiarizing oneself with how to print 3D models*

*[3] Memoria team, Memoria project*

**CONTINUING EDUCATION**  
Specifies modes of knowledge acquisition and refers to additional competences that are distinct from the initial academic education.

**organised education**  
Teaching organised by an institution, a company or an education unit.  
*e.g., traditional types of classroom lectures, École Thématique, distance learning*

*[3] Memoria team, Memoria project*

**non-organised transfer of knowledge**  
Acquisition of skills and knowledge in informal collaborative setups.  
*e.g., learning technical skills from partners inside a project team or research unit*

*[3] Memoria team, Memoria project*

**self-directed learning**  
Autonomous acquisition of skills and knowledge.  
*e.g., learning through Internet interest groups, personal research activities*

*[3] Memoria team, Memoria project*



## A2.2.2


**theoretical (explicit) knowledge**

Acquiring and assimilating some theoretical knowledge in one particular domain.

*e.g., familiarizing oneself with a new methodological approach, learn French aviation law, learn Russian*

Based on:

[584] Frederick W. Nickols, Frederick W. Nickols <[http://www.nickols.us/Knowledge\\_in\\_KM.htm](http://www.nickols.us/Knowledge_in_KM.htm)>

 **CONTINUING EDUCATION**


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[3] Memoria team, Memoria project

 **self-directed learning**

Autonomous acquisition of skills and knowledge.

*e.g., learning through Internet interest groups, personal research activities*

[3] Memoria team, Memoria project



## A3

**experimental setup installation**

Arranging a selection of instruments or pieces of equipment and carrying out a series of operations in order to prepare a data collection phase with regards to a predefined scheme.

*e.g., positioning instruments inside a predefined grid*

[3] Memoria team, Memoria project



## A3.1

**spatially constrained setup**

Arranging instruments and operations with regards to specific spatial constraints, typically with regards to a specific reference frame used in the acquisition phase.

*e.g., Setting up a grid used as a frame to position instruments*

[3] Memoria team, Memoria project



## A3.1.1

**spatial gridding**

Setting up a grid (e.g., perpendicular lines and equally spaced points to form a rectangle) as a reference frame for acquisition activities. A grid can use local or global reference systems.

*e.g., a network of uniformly spaced squares that divides a site into units;*

*A site datum point is marked at a fixed point of elevation near the site. Two perpendicular axes intersecting at the site datum point are then drawn and a rectangular grid is superimposed over the entire site. Each grid square is marked on a map and then on the site. In this process, each grid is assigned its own number within the entire grid.*

Based on:

[1131] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=grid>>

[1132] Archaeology gridding <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOLucXsAhVdDmMBHYltAjlQFjADegQIAhAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teachingarchaeology%2Farchaeology\\_gridding.pdf%3Fs-fvrsn%3D6144aac9\\_6&usg=AOvVaw2ShjlxMmN\\_nbmQzf\\_Liy->](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOLucXsAhVdDmMBHYltAjlQFjADegQIAhAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teachingarchaeology%2Farchaeology_gridding.pdf%3Fs-fvrsn%3D6144aac9_6&usg=AOvVaw2ShjlxMmN_nbmQzf_Liy->)>

[1133] Top Hat <<http://www.wvculture.org/shpo/glossary.html>>

## ● REFERENCE SYSTEM

Defines the relation of the grid to a shared or standard spatial reference systems.

### ○ global

Spatial reference system that uses existing standards such as UTM (Universal Transverse Mercator coordinate system) or WGS 84.

*e.g., a grid built using GPS-enabled instruments*

*Based on:*

[380] Wiki-authors, Wikipedia <[https://en.wikipedia.org/wiki/Spatial\\_reference\\_system](https://en.wikipedia.org/wiki/Spatial_reference_system)>

### ○ local

An arbitrarily established spatial reference system tailored to one specific site and from which all measurements are taken.

A grid is usually defined by its distance and direction in reference to a referential point.

*e.g., a grid adjusted to the geometry of an edifice, regardless of the edifices position and orientation*

*Based on:*

[1131] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=grid>>

[1132] Archaeology gridding <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOLucXsAhVdDmMBHYltAjlQFjADegQIAhAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teachingarchaeology%2Farchaeology\\_gridding.pdf%3Fsfvrsn%3D6144aac9\\_6&usq=AOvVaw2ShjlxMmN\\_nbmQzf\\_Liy->](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOLucXsAhVdDmMBHYltAjlQFjADegQIAhAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teachingarchaeology%2Farchaeology_gridding.pdf%3Fsfvrsn%3D6144aac9_6&usq=AOvVaw2ShjlxMmN_nbmQzf_Liy->)>

### ○ oriented

A grid oriented to magnetic north or some other geographically unambiguous known point.

*e.g., a grid oriented according to the magnetic north (i.e., lines run north-south and baselines run east-west)*

*Based on:*

[1131] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=grid>>

## ● SYSTEMS OF MEASUREMENT

Differentiations concerning the measurement unit system(s).

### ○ metric grid

A grid based on based on the metre as a unit of length.

*Based on:*

[1134] SplashLern <<https://www.splashlearn.com/math-vocabulary/geometry/metric-system>>

### ○ non-metric grid

A grid not based on the meter as a standard of measurement.

*e.g. a grid using inches, miles, feet, or yards*

[3] Memoria team, Memoria project

## ● GRID GEOMETRY

Differentiations concerning the geometrical properties of a grid.

### ○ rectangular grid

A grid with perpendicular lines and equally spaced points to form a rectangles.

*e.g., a rectangular grid dividing an archaeological site*

*Based on:*

[1131] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=grid>>

### ○ triangular grid

A triangular grid is a grid formed by tiling the plane regularly with triangles.

*Based on:*

[1135] Wolfram Research team, Wolfram MathWorld <<https://mathworld.wolfram.com/TriangularGrid.html>>

### ○ ad-hoc grid

A grid combining rectangular, triangular or other geometry created or done for a particular purpose, a particular site.

*e.g., The Sesames project's grid combines an equilateral triangle inside another triangle, aligned on a reference axis.*

[3] Memoria team, Memoria project



## A3.1.2

**instruments positioning**

Careful positioning of instruments to be used during the acquisition phase.

*e.g., making sure that a camera's position and orientation is consistent with the acquisition's objectives.*

Based on:

[1131] Archaeology Wordsmith <<https://archaeologywordsmith.com/search.php?q=grid>>

[1132] Archaeology gridding <[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOlucXsAhVdDmMBHYltAjlQFjADegQIAhAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teachingarchaeology%2Farchaeology\\_gridding.pdf%3Fsfvrsn%3D6144aac9\\_6&usq=AOvVaw2ShjlxMmN\\_nbmQzf\\_Liy->](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizrPOlucXsAhVdDmMBHYltAjlQFjADegQIAhAC&url=https%3A%2F%2Fdocuments.saa.org%2Fcontainer%2Fdocs%2Fdefault-source%2Fdoc-teachingarchaeology%2Farchaeology_gridding.pdf%3Fsfvrsn%3D6144aac9_6&usq=AOvVaw2ShjlxMmN_nbmQzf_Liy->)>

[1133] Top Hat <<http://www.wvculture.org/shpo/glossary.html>>

**GRID DEPENDENCY**

Defines relations between the positioning of instruments and spatial grids.

**merged into a grid**

Instruments are incorporated inside a spatial grid.

*e.g., microphones positioned on tripods forming a grid*

[3] Memoria team, Memoria project

**focusing on a grid**

Instruments point at a given spatial grid, but do not necessarily overlap it.

[3] Memoria team, Memoria project

**grid-independent**

The positioning of instruments is not contingent upon a spatial grid for operation.

[3] Memoria team, Memoria project

**REPETITION LEVEL**

Specifies to which extent the positioning of instruments has been repeated.

**repetitive positioning**

The act of positioning instruments on points where they have been positioned previously (*i.e.*, during precedent steps of an acquisition phase, or at the time of an anterior acquisition campaign).

*e.g., placing a microphone on a tripod that has been previously used to mount a camera, placing cameras into the same locations during surveys repeated each year*

[3] Memoria team, Memoria project

**primary positioning**

Instruments are given an initial position – for the first time or without relation to preceding acquisition campaigns.

[3] Memoria team, Memoria project



## A4

**discussion /consultation**

A talk between two or more people (during a phase of data collection) in which thoughts and ideas are expressed, questions are asked and answered, and solutions are explored especially in order to reach a decision.

*e.g., an informal brief exchange of ideas about a site exploration strategy, a formal, in-depth discussion concerning skills and/or sources that are relevant in order to solve a data acquisition problem*

Based on:

[1240] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/conversation>>

[1241] Cambridge English Dictionary <<https://www.dictionary.com/browse/discussion>>

[1242] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/discussion>>

## ● INTERACTION MODE

Classification of discussions/consultations based on the interaction mode.

### ○ face-to-face discussion

A discussion involving participants that are present at the same place.

*e.g., an informal exchange during a photogrammetric acquisition*

[3] Memoria team, Memoria project

### ○ remote discussion

A discussion involving participants that are separated in distance typically facilitated through technology, such as video conferencing software.

*e.g., interacting via two-way communication technologies (videoconferencing, by telephone, etc.)*

Based on:

[1243] Top Hat Glossary <<https://tophat.com/glossary/r/remote-teaching/>>

## ● GROUP TYPE

Classification of discussions/consultations according to the number of participants and to the presence of a moderator.

### ○ informal group discussion

A discussion involving several people exchanging without a moderator in charge of conducting the discussion in an organized way.

[3] Memoria team, Memoria project

### ○ one-to-one discussion

A discussion involving two people.

*e.g., photos taken from a plane, helicopter, or by a person on top of a building*

Based on:

[1244] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/one-to-one>>

### ○ moderated discussion

A discussion that involves a group of people who have been brought together to discuss a particular subject in order to solve a problem or suggest ideas. The discussion is led by a person who is in charge of the discussion and makes sure that it is conducted in an organized way.

*e.g., instructions given and discussed during a training session, a briefing prior to a surface sampling campaign*

Based on:

[1245] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/moderator>>

[1246] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/focus-group>>

## ● STRUCTURATION LEVEL

Determines the level of structuration before the discussion.

### ○ structured

A discussion with strict guidelines, which can be both content-oriented, logistical, or technical, and privileging pre-set questions.

Based on:

[1247] Moodle, Moodle <<https://etrp.wmo.int/mod/book/view.php?id=8628&chapterid=1582&lang=en>>

### ○ unstructured

The key feature of the unstructured discussion is the free-ranging nature of the questions asked and ideas participants may come up with. It is non-directive in nature. It is similar to an everyday conversation because of its informal and free-flowing nature.

*e.g., unprompted exchange during a field acquisition process*

Based on:

[1248] Tom Pollock, Tom Pollock <<https://www.oliverparks.com/blog-news/the-difference-between-structured-unstructured-amp-semi-structured-interviews>>

[1249] Formplus, Formplus <<https://www.formpl.us/blog/unstructured-interview>>

### ● ANTICIPATION LEVEL

Determines whether the exchange was planned and scheduled or not.

#### ○ spontaneous

A spontaneous discussion is not planned or arranged, but takes place because someone suddenly needs or wants it to happen.

*e.g., voluntary discussion between a student and his/her supervisor*

*Based on:*  
[1250] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/spontaneous>>

#### ○ programmed

Discussion planned and arranged according to a schedule.

*e.g., mid-term project session*

*Based on:*  
[1251] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/arrange-a-schedule>>

### ● REPORTING MODE

Classification of discussion according to techniques used to report on its results.

#### ○ unreported

No traces of a discussion are kept.

*[3] Memoria team, Memoria project*

#### ○ paper-and-pencil

Decisions or conclusions resulting from the conversation are reported on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*Based on:*  
[1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>

#### ○ audio-video recording

An entire conversation, its fragments, or conclusions, are recorded (audio or video).

*e.g., voice recording, videoing*

*[3] Memoria team, Memoria project*

#### ○ computer-assisted

Decisions or conclusions resulting from the conversation are directly formatted and stored via a computer programme and using a computer, a laptop, a tablet, etc.

*Based on:*  
[838] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>







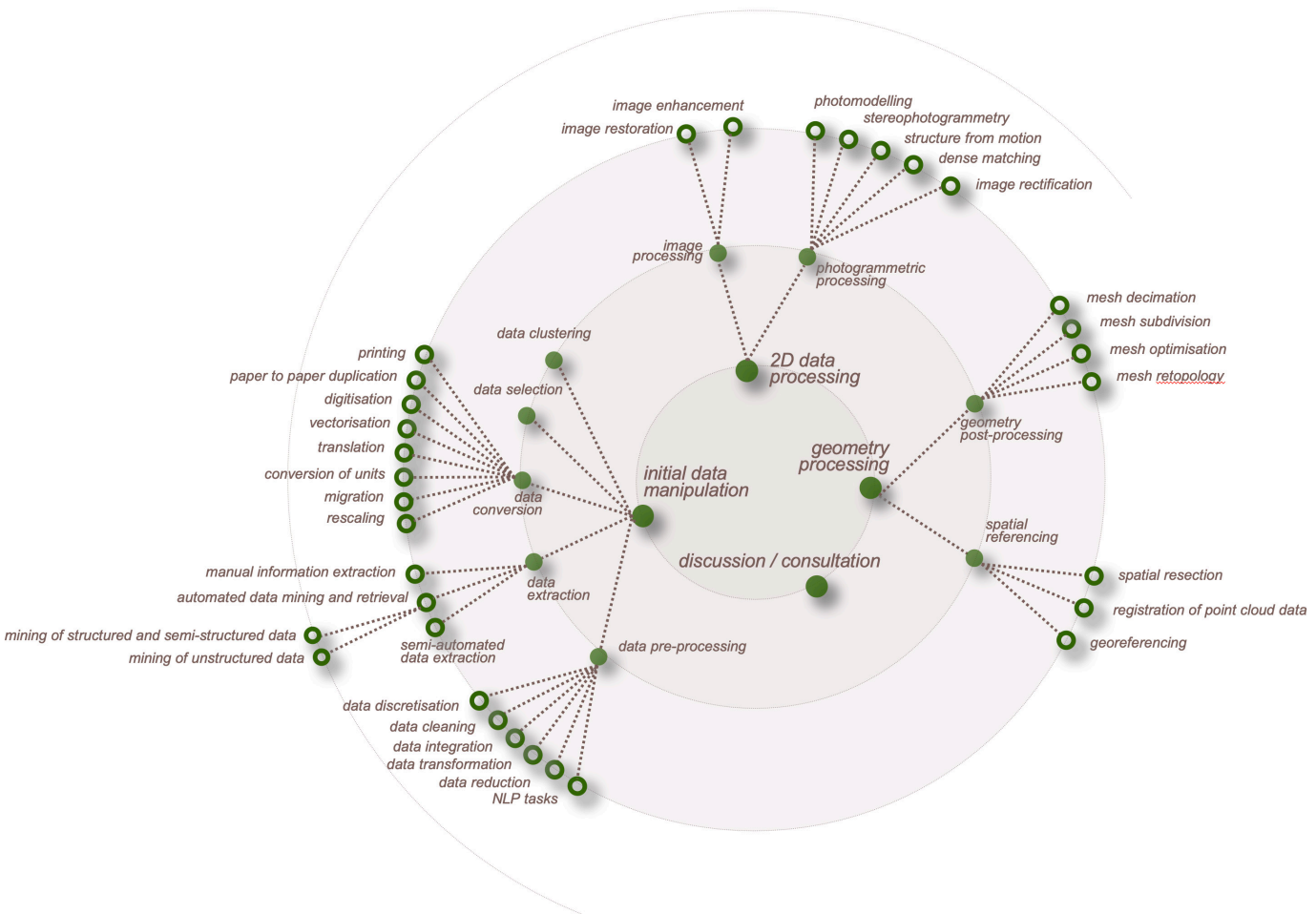
# B



## DATA FILTERING AND TREATMENT

A class of activities dedicated to transformation of the raw data into a suitable form with regards to analysis, output production or finalisation needs, either when accessing the data for the first time or in subsequent steps. Editing, cleaning or modifying the raw data results into processed data.

e.g., removing outliers and correcting sound velocity errors in raw multibeam data files



# DATA FILTERING AND TREATMENT

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B1

**initial data manipulation**

Processing the data into a suitable form with regards to analysis needs, either when accessing the data for the first time, or in subsequent steps.

*e.g., assembling data, checks of data quality whether graphical or numeric*

*Based on:*  
 [569] UCLA, Institute for Digital Research and Education <[http://www.ats.ucla.edu/stat/sas/library/SASTran-Man\\_os.html](http://www.ats.ucla.edu/stat/sas/library/SASTran-Man_os.html)>

**DATA NATURE**

The nature of the result of the activity.

**nondigital**

Refers to data that were and remains analogue.

*e.g., rescaling a map by analogues means*

**digital**

Refers to data that were and remains digital.

*e.g., translation of a text from French to Spanish*

**digital to analogue**

Refers to data that were digital and became analogue as a consequence of a treatment.

 **analogue to digital**

Refers to data that were analogue and became digital as a consequence of a treatment.

*e.g., vectorisation of an analogue image, digitisation of a map*



**B1.1**

**data selection**

Selecting a subset of a data set and excluding the remaining data from further analysis (data selection can impact data integrity).

*e.g., excluding some type of data from the initial data set*

*Based on:*  
[568] Faculty Development and Instructional Design Center, Northern Illinois University, Data Management  
<<http://www.niu.edu/rcrportal/datamanagement/dstopic.html>>



**B1.2**

**data conversion**

Converting a source from one form to another with the explicit aim of preserving the initial content. Data conversion occurs after the acquisition steps.

*e.g., digitisation, vectorisation, translation, conversion of units*



**B1.2.1**

**digitisation**

The act of transcribing data into a digital form so that they can be processed by a computer.

*e.g., scanning of non-digital sources (such as printed photos or taped videos), sound or voice converted into a binary code*

*Based on:*  
[817] Collins English Dictionary <<http://www.collinsdictionary.com/dictionary/english/digitize>>



**B1.2.2**

**vectorisation**

The process of converting a bitmap image into a vector representation.

*e.g., conversion of a raster plan into a vector graphic that uses geometrical primitives such as points, lines, curves, and shapes or polygons*

*Based on:*  
[426] Collins English Dictionary <<http://www.collinsdictionary.com/dictionary/english/vectorisation>>



**B1.2.3**

**rescaling**

The act of converting a source from one scale (*i.e.*, a proportion used in determining the dimensional relationship of a representation to that which it represents) to another.

*e.g., reducing the scale of a map from 1:4560000 to 1:10000000*



**B1.2.4**

**translation**

The act of translating a text into a different language.

*e.g., translating text in Latin into French*

*Based on:*  
[164] The Free Dictionary <<http://www.thefreedictionary.com/translation>>

### ● SOURCE LANGUAGE

Specifies a language that is to be translated into another language (used from the perspective of individuals).

#### ○ mother tongue

One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.

*e.g., A person who have been living in Great Britain since his childhood, and has used English at home, can say that English is a native language to him or her.  
A French speaker living in France can say that Italian is a native language to him or her if he or him uses Italian at home.*

Based on:

[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>

[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

#### ○ second language

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

Based on:

[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

#### ○ foreign language

A language learnt by a speaker but that he was not exposed to as a child at home, nor is used on a regular basis in his or her country of residence.

*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

Based on:

[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>

### ● TARGET LANGUAGE

Specifies a language which a written text is translated into (used from the perspective of individuals).

#### ○ mother tongue

One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.

*e.g., A person who have been living in Great Britain since his childhood, and has used English at home, can say that English is a native language to him or her.  
A French speaker living in France can say that Italian is a native language to him or her if he or him uses Italian at home.*

Based on:

[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>

[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

#### ○ second language

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

Based on:

[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

#### ○ foreign language

A language learnt by a speaker but that he was not exposed to as a child at home, nor is used on a regular basis in his or her country of residence.

*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

Based on:

[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>



● **TRANSLATOR**

Identifies the person(s) who translate texts.

○ **self-translation**

Self-translation corresponds to situations when the translation of a source text into a target text is done by the writer of the source text.

*e.g., translating one's own article into a foreign language.*

Based on:

[1352] Wikipedia <<https://en.wikipedia.org/wiki/Self-translation>>

○ **third-party**

Third-party translation corresponds to situations when someone who was not directly involved in the writing contributes to the text translation.

Situations when a professional is hired and paid to do the job are excluded.

*e.g., translation tasks carried out by colleagues*

Based on:

[945] BusinessDictionary.com <<http://www.businessdictionary.com/definition/third-party.html>>

○ **translation services**

This situation occurs when the translation is carried out by a company or an individual paid to do the job.

*e.g., using services of a professional translation agency*

[3] Memoria team, Memoria project

○ **AUTOMATION LEVEL**

Specifies an automation level of a translation procedure.

○ **automated**

Automatic conversion procedure (*i.e.*, without being directly controlled by a person).

*e.g., using machine translation services like DeepL Traduction.*

[3] Memoria team, Memoria project

○ **non-automated**

The conversion is carried out by a human being.

*e.g., conversion of a text by a native speaker*

[3] Memoria team, Memoria project

○ **semi-automated**

A process combining automatic conversion with human intervention.

*e.g., using the Google Translate online application, and then verifying and manually modifying the result.*

[3] Memoria team, Memoria project



B1.2.5

**conversion of units**

The conversion between different conventional units of measurement for the same quantity or value.

*e.g., converting the dimensions expressed in ells into a metric system, conversion of a date expressed in a Muslim calendar into a date expressed in a Gregorian calendar*

Based on:

[376] Wikipedia <[http://en.wikipedia.org/wiki/Conversion\\_of\\_units](http://en.wikipedia.org/wiki/Conversion_of_units)>

● **SCOPE OF CHANGE**

Specifies the character/nature of the alteration.

○ **measurement unit**

The act of converting a quantity, or value of something (*e.g.*, distance, mass, volume) into a different system of measurement.

*e.g., converting the dimensions expressed in ells into a metric system - centimetres for example, conversion between Cartesian and polar coordinates*

 **calendar**

The act of converting a date, time point or interval from one historic systems of time division into another.

*e.g., conversion of a date expressed in a Muslim calendar into a date expressed in Gregorian calendar*



**B1.2.6**

**migration**

The process of converting data between storage types, formats, or computer systems. This includes upgrading constraints.

*e.g., converting a Word 2003 document into a DOCX document, converting an OBJ file into another format, converting an Excel table into an RDBMS table*

*Based on:*

[377] Wikipedia <[http://en.wikipedia.org/wiki/Data\\_migration](http://en.wikipedia.org/wiki/Data_migration)>



**B1.2.7**

**paper to paper duplication**

The act of duplicating text, images or any paperwork.

The specificity of this activity is that both the original material and the result are analog.

*e.g., photocopying, copying using an ozalid, a spirit duplicator, ...*

*Based on:*


[392] Wikipedia <[https://en.wikipedia.org/wiki/List\\_of\\_duplicating\\_processes](https://en.wikipedia.org/wiki/List_of_duplicating_processes)>

 **ALTERATION**

Specifies if the original material has been altered.


 **unaltered**

The original material has not been altered.

 **colour alteration**

The colour palette has been altered.

*e.g., losing colours present in the original by switching to a monochromatic scale*

 **scale alteration**

The dimensional relation between the original material and the copy is not 1:1.

*e.g., Making a photocopy with a 50% reduction*



**B1.2.8**


**printing**

Reproducing writing or images on paper or other material with a machine.

*e.g. reproduction of an image in printed form*

*Based on:*

[1211] Cambridge Dictionary <<https://dictionary.cambridge.org/dictionary/english/printing>>

 **PRINTING PROCESS**

The nature of the printing process.

 **analog process**

A technique during which a master image is reproduced from a print plate on multiple surfaces.

*e.g. woodblock printing, screen printing, rotogravure printing*

○ **digital process**

A printing technique using digital or electronic files from a personal computer or other digital storage device as a source.

*e.g. inkjet printing, laser printing*

*Based on:*  
[1212] Techopedia <<https://www.techopedia.com/definition/14338/digital-printing>>

● **CHROMATIC SCALE**

Specifies number of colours used in the final print.

○ **monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

○ **coloured**

A representation in various colours.

*e.g., 256-colour image*

● **ALTERATION**

Specifies if the original material has been altered.

○ **unaltered**

The original material has not been altered.

○ **colour alteration**

The colour palette has been altered.

*e.g., losing colours present in the original by switching to a monochromatic scale*

○ **scale alteration**

The dimensional relation between the original material and the copy is not 1:1.

*e.g., Making a photocopy with a 50% reduction*



B1.3

**data extraction**

The act of retrieving data or information from an existing data source.

*e.g., retrieving dimensional data from a plan or a text*

● **INFORMATION SCOPE**

Specifies the area of concern of the information.

○ **geographical data**

Retrieving geographical data from existing data sources.

*e.g., longitude, latitude, altitude, orientation.*

○ **architectural data**

Retrieving architectural data from existing data sources.

*e.g., specialised vocabulary such as art terms, identification of architectural objects*

*Based on:*  
[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

○ **taxonomies**

Retrieving a classification and/or its division lines from existing data sources.

*e.g., ontology*

○ **temporal data**

Retrieving temporal data from existing data sources.

Temporal data refers to data, in which changes over time or temporal aspects play a central role or are of interest.

*e.g., chronologies*

*Based on:*  
[1015] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Temporal\\_data](http://www.infovis-wiki.net/index.php?title=Temporal_data)>

○ **dimensional data**

Retrieving dimensional data from existing data sources.

*e.g., dimensions expressed either in numbers or in words*

○ **contextual data**

Retrieving contextual data from existing data sources.

*e.g., historical events, economic context, social context*

○ **metadata**

Retrieving indications contained in the data's metadata schema.

*e.g., provenance, mime type, file size*

○ **visual representation**

Visual representation, refers to visual signs (as opposed to textual, mathematical, etc.).

*e.g., icons, pictures*

*Based on:*  
[1158] Yannis Ioannidis <[https://link.springer.com/referenceworkentry/10.1007%2F978-0-387-39940-9\\_449](https://link.springer.com/referenceworkentry/10.1007%2F978-0-387-39940-9_449)>

○ **definitions**

A description of the features and limits of something (a term for example).

Definitions can be classified into two large categories, intensional definitions (which try to give the essence of a term) and extensional definitions (which proceed by listing the objects that a term describes).

*e.g., terminology definition*

*Based on:*  
[942] Cambridge English Dictionary <<https://dictionary.cambridge.org/dictionary/english/definition>>  
[914] Wikipedia <<https://en.wikipedia.org/wiki/Definition>>



### B1.3.1

#### manual information extraction

The act of retrieving data and information from existing sources employing human analysis capacities rather than automated methods.

*e.g., using human perceptual and cognitive capacities to identify objects represented on a photograph*

● **INFORMATION SCOPE**

Specifies the area of concern of the information.

○ **geographical data**

Retrieving geographical data from existing data sources.

*e.g., longitude, latitude, altitude, orientation.*

○ **architectural data**

Retrieving architectural data from existing data sources.

*e.g., specialised vocabulary such as art terms, identification of architectural objects*

*Based on:*  
[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

○ **taxonomies**

Retrieving a classification and/or its division lines from existing data sources.

*e.g., ontology*

○ **temporal data**

Retrieving temporal data from existing data sources.

Temporal data refers to data, in which changes over time or temporal aspects play a central role or are of interest.

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[1015] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Temporal\\_data](http://www.infovis-wiki.net/index.php?title=Temporal_data)>

○ **dimensional data**

Retrieving dimensional data from existing data sources.

*e.g., dimensions expressed either in numbers or in words*

○ **contextual data**

Retrieving contextual data from existing data sources.

*e.g., historical events, economic context, social context*

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Retrieving indications contained in the data's metadata schema.

*e.g., provenance, mime type, file size*

○ **visual representation**

Visual representation, refers to visual signs (as opposed to textual, mathematical, etc.).

*e.g., icons, pictures*

*Based on:*  
[1158] Yannis Ioannidis <[https://link.springer.com/referenceworkentry/10.1007%2F978-0-387-39940-9\\_449](https://link.springer.com/referenceworkentry/10.1007%2F978-0-387-39940-9_449)>

○ **definitions**

A description of the features and limits of something (a term for example).

Definitions can be classified into two large categories, intensional definitions (which try to give the essence of a term) and extensional definitions (which proceed by listing the objects that a term describes).

*e.g., terminology definition*

*Based on:*  
[942] Cambridge English Dictionary <<https://dictionary.cambridge.org/dictionary/english/definition>>  
[914] Wikipedia <<https://en.wikipedia.org/wiki/Definition>>



B1.3.2

**automated data mining and retrieval**

The computational process of discovering pieces of data or patterns in large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics, and database systems.

*e.g., using Waikato environment for knowledge analysis (WEKA) for data mining tasks*

*Based on:*  
[567] Zdravko Markov, KDD <<http://www.kdd.org/curriculum/index.html>>

● **INFORMATION SCOPE**

Specifies the area of concern of the information.

○ **geographical data**

Retrieving geographical data from existing data sources.

*e.g., longitude, latitude, altitude, orientation.*

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Retrieving architectural data from existing data sources.

*e.g., specialised vocabulary such as art terms, identification of architectural objects*

*Based on:*  
[1912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

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[1942] Cambridge English Dictionary <<https://dictionary.cambridge.org/dictionary/english/definition>>  
[914] Wikipedia <<https://en.wikipedia.org/wiki/Definition>>



B1.3.2.1

**mining of structured and semi-structured data**

Data processing using sophisticated data search capabilities and statistical algorithms to discover patterns and correlations in large pre-existing databases or self-describing data structures.

*e.g., data search in data base of listed monuments, XML, JSON*

*Based on:*  
[165] The Free Dictionary <<http://www.thefreedictionary.com/Data+preprocessing>>  
[378] Wikipedia <[http://en.wikipedia.org/wiki/Semi-structured\\_data](http://en.wikipedia.org/wiki/Semi-structured_data)>

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[942] Cambridge English Dictionary <<https://dictionary.cambridge.org/dictionary/english/definition>>  
[914] Wikipedia <<https://en.wikipedia.org/wiki/Definition>>



## B1.3.2.2

**mining of unstructured data**

The practice of searching through large amounts of non-structured computerized data (plain text, for instance) to find useful patterns or trends.

*e.g., account of a human witness*

*Based on:*  
[413] Merriam-Webster <<http://www.merriam-webster.com/dictionary/data%20mining>>

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[942] Cambridge English Dictionary <<https://dictionary.cambridge.org/dictionary/english/definition>>  
[914] Wikipedia <<https://en.wikipedia.org/wiki/Definition>>



**B1.3.3**

**semi-automated data extraction**

The extraction of data that is partly automated and partly processed by a human actor.

*e.g., Google search*

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[942] Cambridge English Dictionary <<https://dictionary.cambridge.org/dictionary/english/definition>>  
[914] Wikipedia <<https://en.wikipedia.org/wiki/Definition>>



## B1.4

### data pre-processing

A sequence of operations that alter data characteristics, performed before formal, rigorous analyses are applied.

Data preprocessing prepares raw data for further processing.

*e.g., correction or removal of erroneous (dirty) data, redundancy detection*

*Based on:*  
[35] Techopedia <<https://www.techopedia.com/definition/14650/data-preprocessing>>  
[566] Zdravko Markov <[http://www.cs.ccsu.edu/~markov/ccsu\\_courses/DataMining-3.html](http://www.cs.ccsu.edu/~markov/ccsu_courses/DataMining-3.html)>

○ **AUTOMATION DEGREE**

Identifies degree of human intervention in data preprocessing.

○ **manual process**

Employing human capacities rather than automated methods.

*e.g., using human perceptual and cognitive capacities*

[3] Memoria team, Memoria project

○ **computed process**

Calculated by means of a computer.

*e.g., automatic removal of duplicates*

*Based on:*  
[934] Merriam-Webster <<http://www.merriam-webster.com/dictionary/compute>>

○ **semi-automated process**

A process that is partly computerised and partly requires human intervention/ decision (*i.e.*, expertise, knowledge).

*e.g., iterative removal of erroneous points*

[3] Memoria team, Memoria project



## B1.4.1

### data cleaning

Correction or removal of erroneous (dirty) data or records caused by contradictions, disparities, missing bits, *etc.* It also includes validation of the changes made.

*e.g., removal of duplicate, unnecessary or obviously erroneous pieces of data, filling in missing values, correcting inconsistent data using domain knowledge or expert decision*

*Based on:*  
[435] Business Dictionary <<http://www.businessdictionary.com/definition/data-cleaning.html>>  
[379] Wikipedia <[http://en.wikipedia.org/wiki/Data\\_cleansing](http://en.wikipedia.org/wiki/Data_cleansing)>

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#### B1.4.2 data integration

An activity during which data with different representations are put together and conflicts within the data are resolved to obtain the same representation (structure, format).

*e.g., redundancy detection when using multiple databases, resolving data value conflict when using multiple files*

Based on:  
[534] Techopedia <<http://www.techopedia.com/definition/14650/data-preprocessing>>  
[666] AixCAPE eV, Catalogue of Methods in Data Pre-Processing <[http://dataprocessing.aixcape.org/index.php/Single\\_steps](http://dataprocessing.aixcape.org/index.php/Single_steps)>

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#### B1.4.3 data transformation

Transformation of data with regards to the constraints or objectives of a further process. It includes data normalisation, aggregation, generalisation and user-specific clustering. This activity differs from data conversion in that the resulting data set is dependent on an analysis-oriented transformation process.

*e.g., (scaling) data are scaled to fall within a specified range, such as 0 to 1.0; (aggregation) grouping observations by week or month*

- Based on:*
- [685] Indian Agricultural Statistics Research Institute <[http://iasri.res.in/ebook/win\\_school\\_aa/notes/Data\\_Preprocessing.pdf](http://iasri.res.in/ebook/win_school_aa/notes/Data_Preprocessing.pdf)>
- [534] Techopedia <<http://www.techopedia.com/definition/14650/data-preprocessing>>
- [666] AixCAPE eV, Catalogue of Methods in Data Pre-Processing <[http://dataprocessing.aixcape.org/index.php/Single\\_steps](http://dataprocessing.aixcape.org/index.php/Single_steps)>
- [667] Splunk, Common Information Model Add-on <<http://docs.splunk.com/Documentation/CIM/4.1.0/User/Overview>>

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### ● TRANSFORMATION TYPE

Specifies a data transformation type.

#### ○ data normalisation

The process of scaling individual samples to have unit norm.

*e.g., data are scaled to fall within a specified range, such as 0 to 1.0.*

*Based on:*  
[986] Scikit-learn <<http://scikit-learn.org/stable/modules/preprocessing.html>>

#### ○ data aggregation

Any process in which information is gathered and expressed in a summary form for data processing.

A common aggregation purpose is to get more information about particular groups based on specific variables (*e.g.*, age, profession, income).

*e.g., grouping daily observations by week or month, grouping observation on people by ranges of age  
Online analytic processing (OLAP) – is a simple type of data aggregation in which the marketer uses an online reporting mechanism to process the information.*

*Based on:*  
[1073] SearchSQLServer <<http://searchsqlserver.techtarget.com/definition/data-aggregation>>  
[566] Zdravko Markov <[http://www.cs.ccsu.edu/~markov/ccsu\\_courses/DataMining-3.html](http://www.cs.ccsu.edu/~markov/ccsu_courses/DataMining-3.html)>  
[1072] Techopedia <<http://www.techopedia.com/definition/14647/data-aggregation>>  
[900] Wikipedia <[https://en.wikipedia.org/wiki/Data\\_aggregation](https://en.wikipedia.org/wiki/Data_aggregation)>

#### ○ generalisation

Moving up in the concept hierarchy on nominal attributes.

Shared characteristics are extracted from two or more classes, and combined into a generalised superclass. Shared characteristics can be attributes, associations, or methods.

*e.g., grouping observations on plots by street or district, grouping observation on tigers, lions and cats into a 'felines' category*

*Based on:*  
[566] Zdravko Markov <[http://www.cs.ccsu.edu/~markov/ccsu\\_courses/DataMining-3.html](http://www.cs.ccsu.edu/~markov/ccsu_courses/DataMining-3.html)>

**user-specific clustering**

Partitioning a set of data to form groups based on similarities observed inside the data set, with regards to a given analyst's need.

*e.g., identification of areas of similar land use in an Earth observation database, identifying groups of motor insurance policy holders with a high average claim cost*

*Based on:*  
[901] Wikipedia <[http://en.wikipedia.org/wiki/Cluster\\_analysis](http://en.wikipedia.org/wiki/Cluster_analysis)>,  
[1074] Jerzy Stefanowski, Institute of Computing Sciences Poznan University of Technology <<http://www.cs.put.poznan.pl/~jstefanowski/sed/DM-7clusteringnew.pdf>>



B1.4.4

**data reduction**

Minimizing the amount of data that needs to be stored but producing the same or similar analytical results.

*e.g., data deduplication, dimensionality reduction (i.e., reducing the number of attributes), reducing the number of attribute values*

*Based on:*  
[459] Whats.com <<http://searchdatabackup.techtarget.com/definition/data-reduction>>  
[566] Zdravko Markov <[http://www.cs.ccsu.edu/~markov/ccsu\\_courses/DataMining-3.html](http://www.cs.ccsu.edu/~markov/ccsu_courses/DataMining-3.html)>

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B1.4.5

**data discretisation**

A process of converting continuous data attribute values into a finite set of intervals with minimal loss of information.

*e.g., replacing numerical attributes with nominal ones, Beaufort scale - converting wind speed (continuous data) to a finite scale (discrete values) that describes conditions at sea or on land*

*Based on:*  
[686] Ruoming Jin, Yuri Breitbart, Kent State University, Department of Computer Science <<https://www.kent.edu/sites/default/files/TR-KSU-CS-2007-02.pdf>>

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### B1.4.6

#### NLP tasks

Computer manipulation of natural languages.

Techniques used to process automatically natural languages.

*e.g., tokenization, named entity recognition*

*Based on:*  
[419] Dictionary.com <<http://dictionary.reference.com/browse/natural-language-processing>>  
[565] Winfred M. Phillips, The Mind Project <[http://www.mind.ilstu.edu/curriculum/protothinker/natural\\_language\\_processing.php](http://www.mind.ilstu.edu/curriculum/protothinker/natural_language_processing.php)>

● **PROCESS TYPE**

Specifies the techniques, methods and approaches used in the NLP process.

○ **tokenization**

The process of breaking a stream of text up into words, phrases, symbols, or other meaningful elements called tokens.

*e.g., the sentence 'Countrymen, lend me your ears' can be broken up into five tokens (countrymen|lend|me|your|ears)*

*Based on:*  
[902] Wikipedia <[https://en.wikipedia.org/wiki/Tokenization\\_%28lexical\\_analysis%29](https://en.wikipedia.org/wiki/Tokenization_%28lexical_analysis%29)>

○ **named entity recognition (NER)**

The process that seeks to locate and classify elements in text into pre-defined categories such as the names of persons, organizations, locations, expressions of times, quantities, monetary values, percentages.

*e.g., the sentence 'Jim bought 300 shares of Acme Corp. in 2006' is transformed into an annotated block of text that highlights the names of entities: Jim [person] bought 300 shares of Acme Corp. [organization] in 2006 [time]*

*Based on:*  
[903] Wikipedia <[https://en.wikipedia.org/wiki/Named-entity\\_recognition](https://en.wikipedia.org/wiki/Named-entity_recognition)>

○ **stemming**

The process of reducing a word to its word stem, base or root form.

*e.g., a stemmer for English, for example, should identify the string 'cats' (and possibly 'catlike', 'catty') as based on the root 'cat'*

*Based on:*  
[904] Wikipedia <<https://en.wikipedia.org/wiki/Stemming>>

○ **stop word removal**

The process of removing the 'stop words' from a text.

Stop words usually refer to the most common words in a language (e.g., a, or, the)..

*e.g., the sentence 'This shirt is blue' is reduced to: 'shirt', 'blue'*

*Based on:*  
[926] The Free Dictionary <<http://www.thefreedictionary.com/Stopwords>>  
[905] Wikipedia <[https://en.wikipedia.org/wiki/Stop\\_words](https://en.wikipedia.org/wiki/Stop_words)>



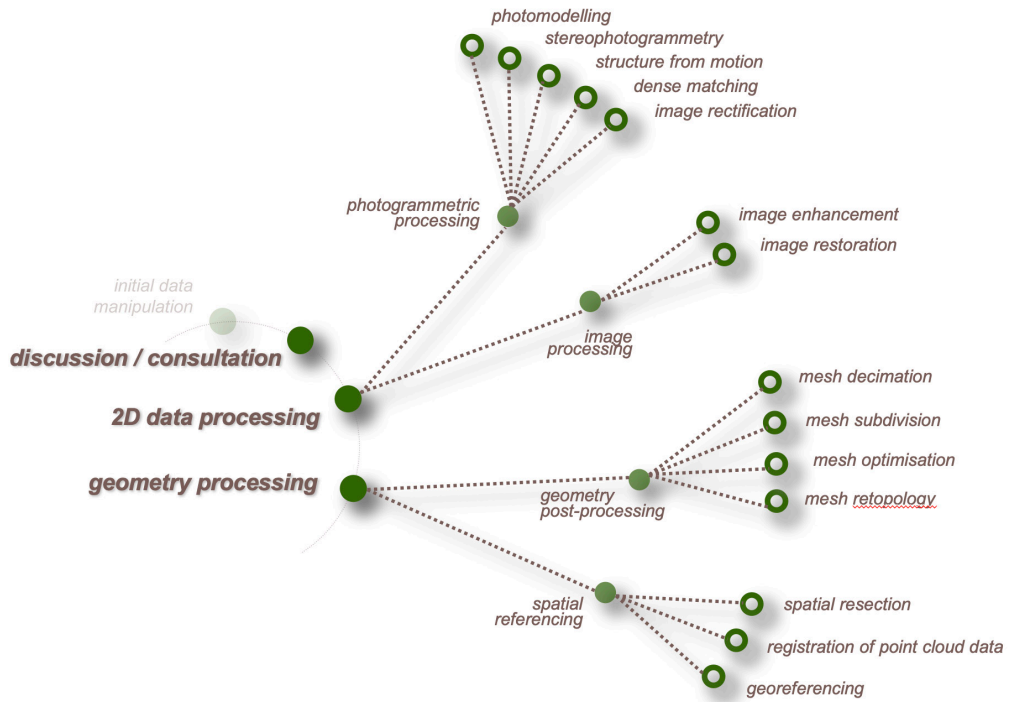
B1.5

**data clustering**

The task of grouping a set of objects in such a way that objects in the same group (called a cluster) are more similar (in some sense) to each other than to those in other groups (clusters).

*e.g., distributing the documentation about an artefact into groups that correspond to different dates, distributing the documentation about a set of artefacts into groups that correspond to different functions*

*Based on:*  
[618] Wikipedia <[https://en.wikipedia.org/wiki/Cluster\\_analysis](https://en.wikipedia.org/wiki/Cluster_analysis)>



B2

### geometry processing

The task of reconstructing geometric proprieties from 2D/3D dataset.

*e.g., reconstructing a 3D model from set of images, videos, or point clouds*

[3] Memoria team, Memoria project



B2.1

### spatial referencing

Localisation of entities in a coordinate-based (local, regional or global) system.

*e.g., referencing a point cloud in WGS84 coordinate system*

Based on:  
[380] Wikipedia <[https://en.wikipedia.org/wiki/Spatial\\_reference\\_system](https://en.wikipedia.org/wiki/Spatial_reference_system)>



B2.1.1

### spatial resection

A process for determining an unknown position (position finding) measuring angles with respect to known positions.

*e.g., estimating a camera position in a 3D scene*

Based on:  
[381] Wikipedia <[https://en.wikipedia.org/wiki/Position\\_resection](https://en.wikipedia.org/wiki/Position_resection)>



● **TYPE OF MARKERS**

An indication on the type of markers used.

○ **artificial markers**

Extrinsic elements (markers that are not forming part of or belonging to an object) placed in the real world. Artificial markers may be mobile or rigid.

*e.g., mobile markers that are taped, glued, or otherwise affixed to the object*

*Based on:*  
[1282] Y. Uematsu, H. Saito, Keyo University <[https://books.google.fr/books?id=j39kkmdbgkC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2\\_&sig=r4B8hxLpR-ZaH5e-VRO\\_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUjSD\\_sQ6AEIRjAE#v=onepage&q=artificial%20markers%20definition%20geometric%20referencing&f=false](https://books.google.fr/books?id=j39kkmdbgkC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2_&sig=r4B8hxLpR-ZaH5e-VRO_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUjSD_sQ6AEIRjAE#v=onepage&q=artificial%20markers%20definition%20geometric%20referencing&f=false)>

[1283] The-Crankshaft Publishing <<http://what-when-how.com/stereotactic-and-functional-neurosurgery/frameless-stereotactic-systems-general-considerations/>>

○ **natural markers**

Natural features that are used for registration.

*e.g., natural feature points, edges or curves.*

*Based on:*  
[1282] Y. Uematsu, H. Saito, Keyo University <[https://books.google.fr/books?id=j39kkmdbgkC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2\\_&sig=r4B8hxLpR-ZaH5e-VRO\\_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUjSD\\_sQ6AEIRjAE#v=onepage&q=natural%20markers&f=false](https://books.google.fr/books?id=j39kkmdbgkC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2_&sig=r4B8hxLpR-ZaH5e-VRO_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUjSD_sQ6AEIRjAE#v=onepage&q=natural%20markers&f=false)>

○ **PROCESS OF PRODUCTION**

An indication of the amount of automated procedures in the process.

○ **automated production**

Techniques that apply algorithms to detect 2D/3D matches.

*e.g., feature extraction (sift, surf), mutual registration, Iterative Closest Point(ICP) algorithms*

[3] Memoria team, Memoria project

○ **semi-automated production**

A process combining automatic procedures and human intervention.

*e.g., automatic detection of markers*

[3] Memoria team, Memoria project

○ **manual production**

Done by a human rather than by automatic means.

*e.g., point picking on 2D/3D dataset*

[3] Memoria team, Memoria project



B2.1.2

**registration of point cloud data**

The process of finding a spatial transformation that aligns two point sets. The purpose of finding such a transformation includes merging multiple data sets into a globally consistent model, and mapping a new measurement to a known data set to identify features or to estimate its pose.

*e.g., pulling together different 3D laser scans*

*Based on:*  
[382] Wikipedia <[https://en.wikipedia.org/wiki/Point\\_set\\_registration](https://en.wikipedia.org/wiki/Point_set_registration)>

● **TYPE OF MARKERS**

An indication on the type of markers used.

○ **artificial markers**

Extrinsic elements (markers that are not forming part of or belonging to an object) placed in the real world. Artificial markers may be mobile or rigid.

*e.g., mobile markers that are taped, glued, or otherwise affixed to the object*

Based on:  
 [1282] Y. Uematsu, H. Saito, Keyo University <[https://books.google.fr/books?id=j39kkmdtbghC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2\\_&sig=r4B8hxLpR-ZaH5e-VRO\\_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUJSD\\_sQ6AEIRjAE#v=onepage&q=artificial%20markers%20definition%20geometric%20referencing&f=false](https://books.google.fr/books?id=j39kkmdtbghC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2_&sig=r4B8hxLpR-ZaH5e-VRO_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUJSD_sQ6AEIRjAE#v=onepage&q=artificial%20markers%20definition%20geometric%20referencing&f=false)>  
 [1283] The-Crankshaft Publishing <<http://what-when-how.com/stereotactic-and-functional-neurosurgery/frameless-stereotactic-systems-general-considerations/>>

○ **natural markers**

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Based on:  
 [1282] Y. Uematsu, H. Saito, Keyo University <[https://books.google.fr/books?id=j39kkmdtbghC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2\\_&sig=r4B8hxLpR-ZaH5e-VRO\\_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUJSD\\_sQ6AEIRjAE#v=onepage&q=natural%20markers&f=false](https://books.google.fr/books?id=j39kkmdtbghC&pg=PA155&lp-g=PA155&dq=artificial+markers+definition+geometric+referencing&source=bl&ots=kC9Zhftw2_&sig=r4B8hxLpR-ZaH5e-VRO_rvQGqvV8&hl=fr&sa=X&ved=0ahUKEwjbyOO4vvfLAhXl2hoKHUJSD_sQ6AEIRjAE#v=onepage&q=natural%20markers&f=false)>

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[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project

○ **manual production**

Done by a human rather than by automatic means.

e.g., point picking on 2D/3D dataset

[3] Memoria team, Memoria project



B2.1.3

**georeferencing**

An activity dedicated to associating elements with locations in physical space. Georeferencing can be applied to any kind of object or structure that can be related to a geographical location.

e.g., aligning data (point cloud) to a known coordinate system so it can be viewed, queried, and analysed with other geographic data

Based on:  
 [383] Wikipedia <<https://en.wikipedia.org/wiki/Georeference>>  
 [477] Esri Support GIS Dictionary <<https://support.esri.com/en/other-resources/gis-dictionary/term/286a3512-81be-4dc4-a2cc-3b24ba6a5458>>

● **REFERENCING TYPE**

An indication of the way the data have been referenced.

○ **absolute**

Define location using measures of distance from fixed places.

e.g., distance between two points according to a given coordinate system

Based on:  
 [964] Keith C. Clarke, Department of Geography University of California Santa Barbara <[https://www.google.fr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwi\\_wtuoyvLAhUKvRoKHQwiDWoQFgg5MAI&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FG176B%2FLecture04.ppt&usq-AFQjCNGzIErcudIVeYaQHs6-PagkwDVc1Q&bvm=bv.118443451.d.d2s](https://www.google.fr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwi_wtuoyvLAhUKvRoKHQwiDWoQFgg5MAI&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FG176B%2FLecture04.ppt&usq-AFQjCNGzIErcudIVeYaQHs6-PagkwDVc1Q&bvm=bv.118443451.d.d2s)> [1283] The-Crankshaft Publishing <<http://what-when-how.com/stereotactic-and-functional-neurosurgery/frameless-stereotactic-systems-general-considerations/>>

**indirect**

Any location using measures in relationship to something else.

*e.g., aligning a photogrammetric point cloud with a georeferenced laser point cloud.*

[3] Memoria team, Memoria project

**nominal**

Any location that does not involve measuring.

*e.g., toponymy, postal address, cadastre, approximate GPS position.*

[3] Memoria team, Memoria project



B2.2

**geometry post-processing**

Processes by which a geometric model is modified with regards to objectives related to specific contexts of use.

*e.g., mesh restructuring*

[3] Memoria team, Memoria project



B2.2.1

**mesh decimation**

The process of reducing the number of faces used in a dense mesh while keeping the overall shape, volume and boundaries preserved as much as possible. Also called mesh simplification. It is the opposite of subdivision.

*e.g., vertex clustering, incremental decimation—removing one vertex at a time and repairing the hole left by the removal*

Based on:  
[564] Fernando Cacciola, Computational Geometry Algorithms Library <[http://doc.cgal.org/latest/Surface\\_mesh\\_simplification/](http://doc.cgal.org/latest/Surface_mesh_simplification/)>  
[687] Hugues Hoppe et al. <<http://hhoppe.com/meshopt.pdf>>



B2.2.2

**mesh subdivision**

The process of increasing the number of faces in a mesh by subdividing it and creating new vertices and new faces. The positions of the new vertices in the mesh are computed based on the positions of nearby old vertices. In some refinement schemes, the positions of old vertices might also be altered (possibly based on the positions of new vertices).

It is the opposite of mesh decimation.

*e.g., a subdivision method that recursively refines a coarse mesh and generates an ever-closer approximation to a smooth surface*

Based on:  
[384] Wikipedia <[https://en.wikipedia.org/wiki/Subdivision\\_surface](https://en.wikipedia.org/wiki/Subdivision_surface)>  
[563] CGAL Editorial Board, CGAL <[https://doc.cgal.org/latest/Subdivision\\_method\\_3/index.html](https://doc.cgal.org/latest/Subdivision_method_3/index.html)>



B2.2.3

**mesh optimization**

A process aiming to obtain a light and optimised surface mesh by removing or cleaning mesh elements without decreasing the level of detail in term of geometry.

*e.g., the main example of mesh optimization is the removal of useless subdivision of a face*

Based on:  
[689] Pierre Alliez, INRIA <<https://team.inria.fr/titane/files/2014/01/mesh-optimization.pdf>>



B2.2.4

**mesh retopology**

A process of modification of a structure/organisation of the polygons composing the mesh.

The mesh connectivity (topology), describes the incidence relations among mesh elements (e.g., adjacent vertices and edges of a face). A retopology is required when a mesh has too much detail, or has a topology that is not the best for texturing, shading, animation, or analysis.

*e.g., create a low-resolution mesh out of a high-resolution sculpture.  
A basic example of a retopology is a conversion of a mesh composed by triangle (tri) to a quadrangular (quad) faces.*



B3

**2D data processing**

Definition pending.

Based on:  
 [561] Polycount <<http://wiki.polycount.com/wiki/ReTopologyModeling>>  
 [559] Autodesk Knowledge Network <<https://knowledge.autodesk.com/support/maya-1t/learn-explore/caas/CloudHelp/cloudhelp/2016/ENU/MayaLT/files/GUID-03933C1F-1BA7-4E7E-AAB5-31FB0E6A77B2-htm.html>>  
 [690] Michigan Tech <<https://pages.mtu.edu/~shene/COURSES/cs3621/SLIDES/Mesh.pdf>>  
 [562] Polycount <<http://wiki.polycount.com/wiki/Topology>>



B3.1

**image processing**

Performing some mathematical operations on an image to get an enhanced image or to extract some useful information from it.

Most image-processing techniques involve treating the image as a two-dimensional signal and applying standard signal-processing techniques to it.

*e.g., any algorithm that takes an image as input and returns an image as output (denoising, contrast enhancement, ...), image sharpening, image smoothing*

Based on:  
 [358] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision#Recognition](https://en.wikipedia.org/wiki/Computer_vision#Recognition)>  
 [691] Image Processing Basics <<http://www.coe.utah.edu/~cs4640/slides/Lecture0.pdf>>  
 [558] Rose Mary, EngineersGarage <<http://www.engineersgarage.com/articles/image-processing-tutorial-applications>>

### ○ IMAGE PROCESSING TYPE

Specifies the type of technological approach.

#### ○ digital image processing

The use of computer algorithms to perform image processing on digital images.

*e.g., noise reduction, contrast enhancement*

Based on:  
 [906] Wikipedia <[https://en.wikipedia.org/wiki/Digital\\_image\\_processing](https://en.wikipedia.org/wiki/Digital_image_processing)>

#### ○ analogue image processing

Any image processing task conducted on two-dimensional analogue signals (e.g., sound waves, radio waves) by analogue means (as opposed to digital image processing).

Based on:  
 [907] Wikipedia <[https://en.wikipedia.org/wiki/Analog\\_image\\_processing](https://en.wikipedia.org/wiki/Analog_image_processing)>

#### ○ optical image processing

Modification of images captured on a light-sensitive medium (e.g., film) by optical means.

*e.g., use of phase contrast microscopy to transform the index of refraction variations into brightness*

Based on:  
 [966] Marianne Breinig, The University of Tennessee Department of Physics and Astronomy <[http://electron6.phys.utk.edu/light/7/optical\\_image\\_processing.htm](http://electron6.phys.utk.edu/light/7/optical_image_processing.htm)>



B3.1.1

**image restoration**

The operation of taking a corrupt/noisy image and estimating the clean, original image. Corruption may come in many forms such as motion blur, noise and camera mis-focus. Image restoration is performed by reversing the process that blurred the image. It is a model-based approach using optimality criteria.

*e.g., DeConvolution technique, which is performed in the frequency domain and after computing the Fourier transform of both the image and the PSF and undoing the resolution loss caused by the blurring factors*

Based on:  
[385] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_restoration](https://en.wikipedia.org/wiki/Image_restoration)>  
[692] Peyman Milanfar, Peyman Milanfar, UCSC EE Dept <<https://classes.soe.ucsc.edu/ee264/Fall11/LecturePDF/10-Restoration1.pdf>>



### B3.1.2 image enhancement

The processes of alteration of images designed to emphasize features of the image that make the image more pleasing to the observer, but not necessarily to produce realistic data from a scientific point of view. Image enhancement techniques (like contrast stretching or de-blurring by a nearest neighbour procedure) provided by imaging packages use no a priori model of the process that created the image.

*e.g., make an image lighter or darker, or increase or decrease contrast, correction of the image hue, histogram editing*

Based on:  
[385] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_restoration](https://en.wikipedia.org/wiki/Image_restoration)>



### B3.2 photogrammetric processing

The process of making indirect measurements from photographs, especially for recovering the exact positions of surface points

Photogrammetric processing is composed of three steps: 2D matching using features and tie-points extractions, camera position orientation (obtained by the computation of both internal and external calibration) and dense 3D matching computed by multistereoscopic correlation to obtain a point cloud from depth maps.

*e.g., using photogrammetric process to produce plans of large or complex sites, 3D models.*

Based on:  
[386] Wikipedia <<https://en.wikipedia.org/wiki/Photogrammetry>>  
[557] ITN-DCH Marie Curie Project team, PACS ITN-DCH Marie Curie Project <<http://pacs.map.archi.fr/steps/processing>>

## CALIBRATION

Specifying what kind of camera calibration has been performed.

### geometric camera calibration

The process of estimating the parameters of a pinhole camera model. The resulting parameters can be used to correct for lens distortion (also called interior or intrinsic parameters, measure the size of an object in world units, or determine the location of the camera in the scene.

It is performed by a bundle adjustments algorithm, and several methods are possible (DLT, Zang, Tsai), but the most common is self-calibration. External calibration aims at approximating the camera positions/poses in the scene.

*e.g., geometric camera calibration using DLT, Zang, Tsai , or self-calibration method*

Based on:  
[908] Wikipedia <[https://en.wikipedia.org/wiki/Camera\\_auto-calibration](https://en.wikipedia.org/wiki/Camera_auto-calibration)>  
[909] Wikipedia <[https://en.wikipedia.org/wiki/Camera\\_resectioning](https://en.wikipedia.org/wiki/Camera_resectioning)>  
[1075] MATLAB team, MathWorks <<https://fr.mathworks.com/help/vision/ug/camera-calibration.html?requestedDomain=www.mathworks.com>>  
[1076] Vladimir A. Knyaz et al., ISPRS <<https://www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XLII-2-W4/109/2017/isprs-archives-XLII-2-W4-109-2017.pdf>>

### initial camera calibration

Initial camera calibration is using a calibration previously obtained on a sample of a larger data set or a data set taken in a similar context of acquisition and using the same equipment.

*e.g., using the pre-calibrated camera*

Based on:  
[908] Wikipedia <[https://en.wikipedia.org/wiki/Camera\\_auto-calibration](https://en.wikipedia.org/wiki/Camera_auto-calibration)>

### ○ colour calibration

An image processing step aiming to set and fix known colorimetric reference values homogeneously in an image set according to visual accuracy of the perception of the object under a fixed lighting condition.

*e.g., using colour mapping techniques in reproduce the same colour values across the dataset*

Based on:

[910] Wikipedia <[https://en.wikipedia.org/wiki/Color\\_calibration](https://en.wikipedia.org/wiki/Color_calibration)>

[1077] Geert J J Verhoeven, *Basics of photography for cultural heritage*. <[https://www.researchgate.net/publication/306264840\\_Basics\\_of\\_photography\\_for\\_cultural\\_heritage\\_imaging](https://www.researchgate.net/publication/306264840_Basics_of_photography_for_cultural_heritage_imaging)>



#### B3.2.1

### dense matching

The process of bringing at least two images geometrically into agreement so that corresponding pixels in the images correspond to the same physical region of the scene being imaged.

In the dense matching process, tie points act as the first step in the reconstruction of the dense point cloud.

*e.g., using different techniques to obtain a dense point cloud*

Based on:

[556] Grupo de Ingenieria de Sistemas IntegradoS (ISIS), IntechOpen <<http://cdn.intechopen.com/pdfs-wm/323.pdf>>

### ○ TECHNIQUES

Specifies what kind of dense matching method/algorithm has been used.

### ○ stereo matching

A dense matching method to reconstruct 3D coordinates from oriented pictures using at least one stereo pair (a couple of pictures). Based on epipolar geometry, we called multi-stereo matching when the 3D model is computed using successive stereo-pairs.

*e.g., matching technique applied in PhotoScan*

Based on:

[961] Fabio Remondino, *Semantic Scholar* <<https://pdfs.semanticscholar.org/1de7/1ab82a78a34942f73275fb8913d1d572dc97.pdf>>

### ○ multi-view matching

A dense matching method to reconstruct 3D coordinates from oriented pictures using blocks of two or more images. In this case, 3D coordinates are calculated from master picture and several neighbour pictures, also called multi-view stereo when the 3D model is computed using numerous and complex master/neighbour relationships.

*e.g., establishing relative viewpoints given a large number of images where no ordering information is provided*

Based on:

[960] Roberto Cipolla, *University of Cambridge* <<http://mi.eng.cam.ac.uk/~cipolla/publications/contribution-ToEditedBook/2008-SFM-chapters.pdf>>

[961] Fabio Remondino, *Semantic Scholar* <<https://pdfs.semanticscholar.org/1de7/1ab82a78a34942f73275fb8913d1d572dc97.pdf>>



#### B3.2.2

### structure from motion

SfM is a ranging imaging technique aiming to estimate three-dimensional structures from two-dimensional image sequences.

In the structure from motion process, unlike in the dense matching process, only the tie points are reconstructed. The SfM can be used to compute a dense point cloud using different dense matching algorithms (multiview or multistereo matching).

*e.g., sparse (coarse) point cloud*

Based on:

[387] Wikipedia <[https://en.wikipedia.org/wiki/Structure\\_from\\_motion](https://en.wikipedia.org/wiki/Structure_from_motion)>

[554] Joseph L. Mundy, *CiteSeerX* <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.69.537&rep=rep1&type=pdf>>

[555] Johannes L. Schönberger, *Jan-Michael Frahm* <<https://demuc.de/papers/schoenberger2016sfm.pdf>>



### B3.2.3

#### photomodelling

Digital processing that allows obtaining a point cloud using several photographic images of an object.

Producing 3D models and measurements from photographs taken with most standard cameras (either digital or film). The resulting 3D models consist of geometric primitives such as points, lines, curves, edges, surfaces, and volumes.

*e.g., using Autodesk ImageModeler to produce 3D models*

Based on:

[387] Wikipedia <[https://en.wikipedia.org/wiki/Structure\\_from\\_motion](https://en.wikipedia.org/wiki/Structure_from_motion)>

[388] Wikipedia <<https://en.wikipedia.org/wiki/PhotoModeler>>



### B3.2.4

#### image rectification

A transformation process used to project two-or-more images onto a common image plane. This process has several degrees of freedom and there are many strategies for transforming images to the common plane.

Based on:

[389] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_rectification](https://en.wikipedia.org/wiki/Image_rectification)>

#### **CORRECTION TYPE**

Specify the correction type applied.

#### **geometric correction**

A transformation process used to project two or more images onto a common image plane. This process has several degrees of freedom, and there are many strategies for transforming images to the common plane.

Based on:

[1031] Esri Support GIS Dictionary <<https://support.esri.com/en/other-resources/gis-dictionary/term/875c-d5cb-18ff-416f-81ec-65b23eb5338b>> <<http://support.esri.com/en/knowledgebase/GISDictionary/term/geometric%20correction>>

#### **stereo/epipolar rectification**

The process by which two images of the same solid scene undergo homographic transforms, so that their corresponding epipolar lines coincide and become parallel to the x-axis of image.

Based on:

[1024] Pascal Monasse, IMAGINE <<http://imagine.enpc.fr/publications/papers/BMVC10.pdf>>

#### **orthorectification**

The process of correcting the geometry of an image so that it appears as though each pixel was acquired from directly overhead. Orthorectification uses elevation data to correct terrain distortion in aerial or satellite imagery.

Based on:

[1030] Esri Support GIS Dictionary <<https://support.esri.com/fr/other-resources/gis-dictionary/term/0cb-ced4f-c19f-48b0-9500-b13ce09eb992>>



### B3.2.5

#### stereophotogrammetry

An activity dedicated to generating three-dimensional coordinates of points on an object employing measurements made in at least two photographic images (a stereo pair) taken from different positions.

*e.g., disparity estimation, bundle adjustment.*

Based on:

[386] Wikipedia <<https://en.wikipedia.org/wiki/Photogrammetry>>

[552] Michael S. Brown, Geospatial Modeling & Visualization (GMV) <<http://gmv.cast.uark.edu/photogrammetry/four-basic-steps-of-a-close-range-photogrammetry-project-3/>>

[553] Linsinger ZT GmbH <<http://www.linsinger.at/eng/photogrammetrie.htm>>

## METHODS OF PROCESSING

Specifies the technological approach used.

### analogue

Stereophotogrammetry using analogue photography. Depending on the physical principle of modelling the analytical apparatus could be with optical, mechanical, or optical-mechanical projection system.

*Based on:*  
[1040] Borislav Marinov, University of Architecture, Civil Engineering and Geodesy <[http://www.uacg.bg/file-bank/acadstaff/userfiles/study\\_en\\_425\\_Karlsruhe\\_photo\\_Lo.jpg.pdf](http://www.uacg.bg/file-bank/acadstaff/userfiles/study_en_425_Karlsruhe_photo_Lo.jpg.pdf)>

[1553] Linsinger ZT GmbH <<http://www.linsinger.at/eng/photogrammetrie.htm>>

### digital

Stereophotogrammetry using digital photography (photographs that are represented as bit maps).

*Based on:*  
[1956] Vangie Beal, Webopedia <[http://www.webopedia.com/TERM/D/digital\\_photography.html](http://www.webopedia.com/TERM/D/digital_photography.html)>

### analytical input

Stereophotogrammetry using a hybrid approach in which solutions are obtained by mathematical methods.

*e.g., using analytical input and digital equipment*

*Based on:*  
[1927] The Free Dictionary <<https://encyclopedia2.thefreedictionary.com/analytical+photogrammetry>>



B4

## discussion / consultation

A talk between two or more people (during a phase of data filtering and treatment) in which thoughts and ideas are expressed, questions are asked and answered, and solutions are explored especially in order to reach a decision.

*e.g., an informal brief exchange of ideas about digitisation strategy, a thorough discussion when translating a text from Latin to French*

*Based on:*  
[1240] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/conversation>>

[1241] Cambridge English Dictionary <<https://www.dictionary.com/browse/discussion>>

[1242] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/discussion>>

## INTERACTION MODE

Classification of discussions/consultations based on the interaction mode.

### face-to-face discussion

A discussion involving participants that are present at the same place.

*e.g., an informal exchange during activity*

[3] Memoria team, Memoria project

### remote discussion

A discussion involving participants that are separated in distance typically facilitated through technology, such as video conferencing software.

*e.g., interacting via two-way communication technologies (videoconferencing, by telephone, etc.)*

*Based on:*  
[1243] Top Hat Glossary <<https://tophat.com/glossary/r/remote-teaching/>>

## GROUP TYPE

Classification of discussions/consultations according to the number of participants and to the presence of a moderator.

### informal group discussion

A discussion involving several people exchanging without a moderator in charge of conducting the discussion in an organized way.

[3] Memoria team, Memoria project



○ **one-to-one discussion**

A discussion involving two people.

*Based on:*  
[1244] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/one-to-one>>

○ **moderated discussion**

A discussion that involves a group of people who have been brought together to discuss a particular subject in order to solve a problem or suggest ideas. The discussion is led by a person who is in charge of the discussion and makes sure that it is conducted in an organized way.

*e.g., instructions given and discussed during a training session, a briefing prior to a data pre-processing*

*Based on:*  
[1245] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/moderator>>  
[1246] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/focus-group>>

○ **STRUCTURATION LEVEL**

Determines the level of structuration before the discussion.

○ **structured**

A discussion with strict guidelines, which can be both content-oriented, logistical, or technical, and privileging pre-set questions.

*Based on:*  
[1247] Moodle, Moodle <<https://etrp.wmo.int/mod/book/view.php?id=8628&chapterid=1582&lang=en>>

○ **unstructured**

The key feature of the unstructured discussion is the free-ranging nature of the questions asked and ideas participants may come up with. It is non-directive in nature. It is similar to an everyday conversation because of its informal and free-flowing nature.

*e.g., unprompted exchange during photogrammetric processing*

*Based on:*  
[1249] Formplus, Formplus <<https://www.formpl.us/blog/unstructured-interview>>  
[1248] Tom Pollock, The Difference Between Structured, Unstructured & Semi-Structured Interviews <<https://www.oliverparks.com/blog-news/the-difference-between-structured-unstructured-amp-semi-structured-interviews>>

● **ANTICIPATION LEVEL**

Determines whether the exchange was planned and scheduled or not.

○ **spontaneous**

A spontaneous discussion is not planned or arranged, but takes place because someone suddenly needs or wants it to happen.

*e.g., voluntary discussion between a student and his/her supervisor*

*Based on:*  
[1250] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/spontaneous>>

○ **programmed**

Discussion planned and arranged according to a schedule.

*e.g., mid-term project session*

*Based on:*  
[1251] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/arrange-a-schedule>>

● **REPORTING MODE**

Classification of discussion according to techniques used to report on its results.

○ **unreported**

No traces of a discussion are kept.

[3] Memoria team, Memoria project

○ **paper-and-pencil**

Decisions or conclusions resulting from the conversation are reported on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*Based on:*  
[1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>

○ **audio-video recording**

An entire conversation, its fragments, or conclusions, are recorded (audio or video).

*e.g., voice recording, videoing*

*[3] Memoria team, Memoria project*

○ **computer-assisted**

Decisions or conclusions resulting from the conversation are directly formatted and stored via a computer programme and using a computer, a laptop, a tablet, etc

*Based on:*  
[838] Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>





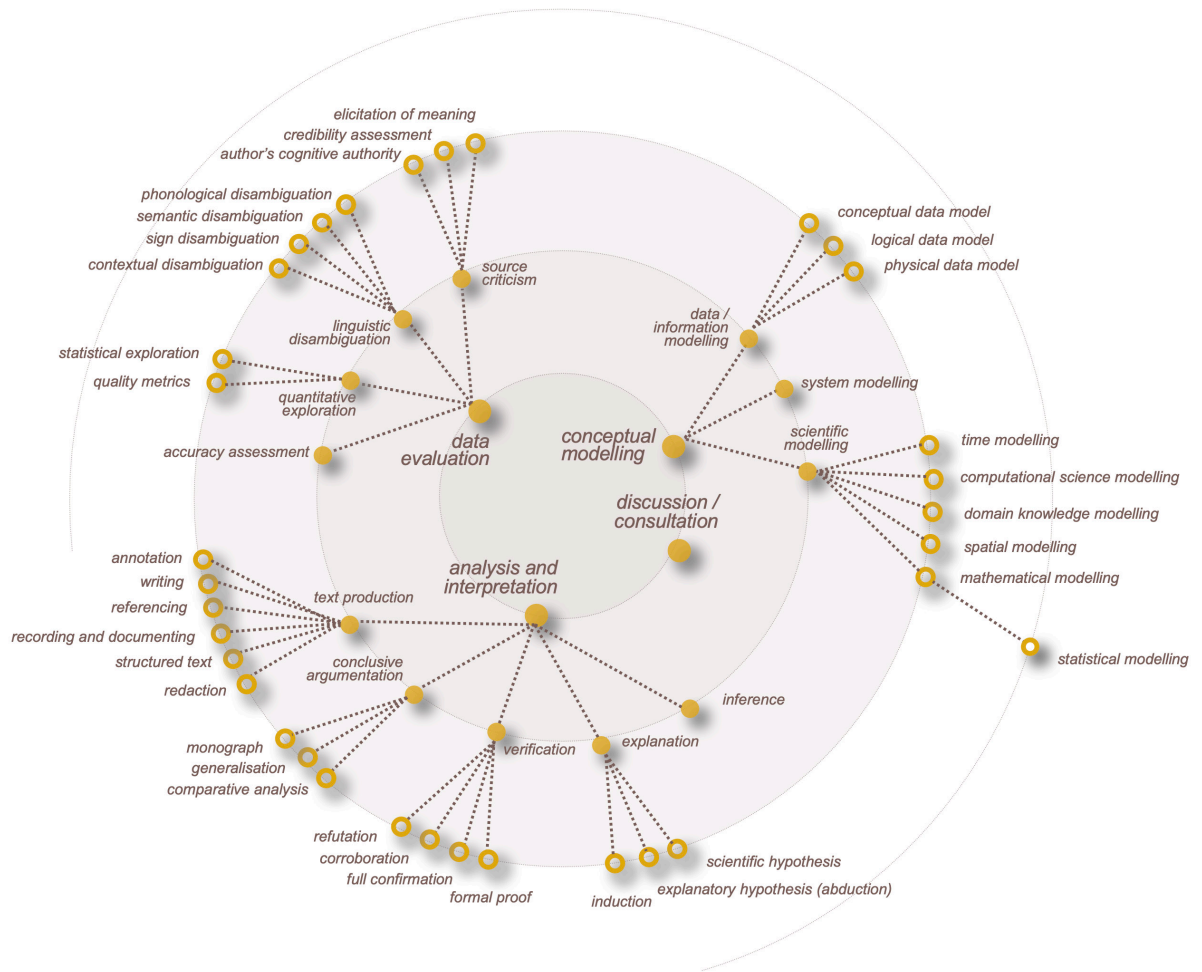
# C

## DATA ANALYSIS

A class of activities focusing on methods of acquisition or gaining of scientific—  
theoretical, explicit — knowledge, as well as manners of its articulation and  
transmission in a formal language.

Explicit knowledge is knowledge that can be readily articulated, codified, accessed  
and verbalised. Scientific knowledge is knowledge accumulated by systematic  
study and organised by general principles.

e.g., initial data manipulation, data evaluation, conceptual modelling, analysis and interpretation



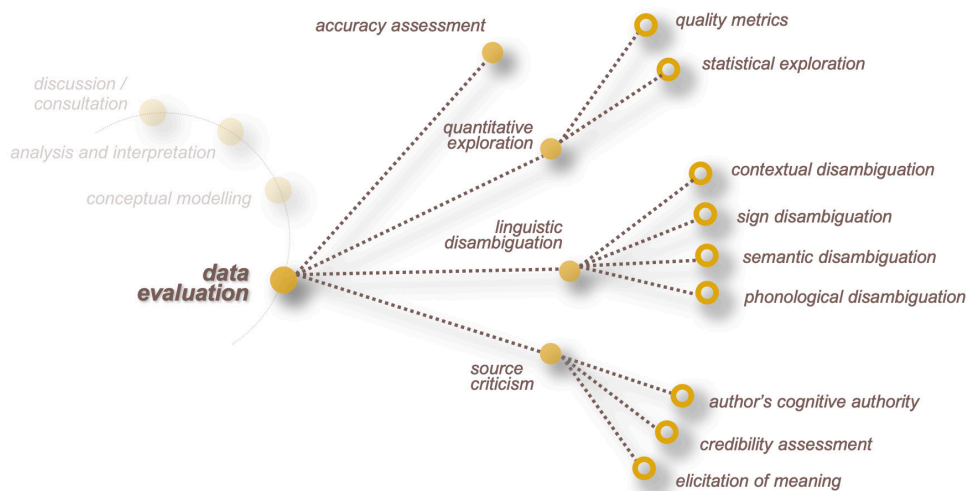
# DATA ANALYSIS

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**C1**  
**data evaluation**

Inspecting data to identify, name and disambiguate significant entities within the data, with regards to a given need. Ultimately this process is aimed at a better understanding of the messages contained in the data.

The process of exploration may result in additional data cleaning or additional requests for data, so these activities may be iterative in nature.

*e.g., linguistic analysis (interpretation of signs), evaluation of quality of evidence or source trustworthiness, analysis of point of view of the author, evaluation of the expertise of the author, evaluation of depth of the material*

*Based on:*  
[480] Cambridge English Dictionary <<http://dictionary.cambridge.org/dictionary/business-english/data-analysis>>

[322] Wikipedia <[http://en.wikipedia.org/wiki/Data\\_analysis#Data\\_collection](http://en.wikipedia.org/wiki/Data_analysis#Data_collection)>

**AUTOMATION LEVEL**  
Specifies an automation level of the procedure.

**automated**  
Automatic evaluation procedure (*i.e.*, without being directly controlled by a person).  
*e.g., evaluation conducted using an automatic linguistic analysis program*

[3] Memoria team, Memoria project

**non-automated**  
The evaluation is carried out by a human being.  
*e.g., evaluation of quality of evidence or source trustworthiness made by a researcher*

[3] Memoria team, Memoria project

**semi-automated**  
A process combining automatic conversion with human intervention.  
*e.g., using linguistic analysis programs and then verifying and modifying, if necessary, the result manually*

[3] Memoria team, Memoria project





### C1.1

#### source criticism

A process of evaluating an information source (*i.e.*, a document, a person, a speech, a fingerprint, a photo, an observation or anything used to feed the cognitive process). In relationship to a given purpose, a given information source may be more or less valid, reliable or relevant.

*e.g.*, evaluation of cognitive authority, source reliability, critical reading, information evaluating (quality of evidence, relevance, trustworthiness)

Based on:  
[323] Wikipedia <[http://en.wikipedia.org/wiki/Source\\_criticism](http://en.wikipedia.org/wiki/Source_criticism)>



### C1.1.1

#### credibility assessment

Analysing objective and subjective components of the believability of a source or message, making judgements about the value of provided information (and ultimately making decisions about what to do with the information).

*e.g.*, media credibility, message credibility (*i.e.*, believability, trustworthiness, fairness, accuracy, trustfulness, factuality, objectivity, does the information present facts, opinions, or propaganda?)  
*Is the author's point of view objective and impartial? Is the language free of emotion-rousing words or bias?*

Based on:  
[324] Wikipedia <<http://en.wikipedia.org/wiki/Credibility>>  
[698] J.M. Bocheński, *The methods of contemporary thought*



### C1.1.2

#### author's cognitive authority

Making judgements about authors' reputations, knowledge, skills, experience, training and education. Cognitive authority can be associated either with an institution and/or with an individual.

*e.g.*, An expert with the title of doctor or professor might have a reputation of being knowledgeable in a certain area, but still might not be considered trustworthy because of a tendency towards unreliability or bias.

Based on:  
[674] Michael James, *Deep Blue - University of Michigan* <[http://deepblue.lib.umich.edu/bitstream/handle/2027.42/106416/rieh\\_elis\\_published.pdf?sequence=1](http://deepblue.lib.umich.edu/bitstream/handle/2027.42/106416/rieh_elis_published.pdf?sequence=1)>

#### ● AUTHORITY LEVEL

Specifies whether the cognitive authority is an individual or a group.

#### ○ institutional authority

If the information concerns a group of people, institution, association, official organisation, *etc.*

*e.g.*, CNRS authority

[3] Memoria team, *Memoria project*

#### ○ individual authority

If the information concerns a particular person.

*e.g.*, an authority level of a particular researcher

[3] Memoria team, *Memoria project*



### C1.1.3

#### elicitation of meaning

Considering how far the data seem to apply or be relevant in the context of the rest of the knowledge, identifying the information and facts contained within the data and giving meaning to the content (what a source says or shows about a topic).

*e.g.*, The activity includes explicit meaning of the source (plainly obvious) and understanding / explaining the implicit (hinted at) meaning of the source, as existing prior to the analysis itself (*e.g.*, ideas described in a picture, carving or sculpture, overall message of a speech or an article, values or motives that influenced individuals or group).

Based on:  
[698] J.M. Bocheński, *The methods of contemporary thought*  
[660] Macquarie University <<https://www.mq.edu.au/about/campus-services-and-facilities/library/research/researching-your-assignment/critical-analysis-of-information-sources>>  
[675] Musée de l'Holocauste Montréal <[http://www.mhmc.ca/media\\_library/files/50ca46cfe202b.pdf](http://www.mhmc.ca/media_library/files/50ca46cfe202b.pdf)>  
[659] Michael James, *History Skills* <<http://historyskills.jimdo.com/source-criticism/>>



## C1.2

**linguistic disambiguation**

A process through which, prior to the data analysis steps, written or spoken data are examined to identify and disambiguate words, sentences, symbols (signs in substance) with regards to a given analysis need.

*e.g., identification of errors of transcription, analysis of cultural differences, meaning of symbols, unknown axiomatic relations, study of the system of words used to name things in a particular discipline, etc.*

[3] Memoria team, Memoria project

**AUTOMATION LEVEL**

Specifies an automation level of the procedure.

**automated**

Automatic evaluation procedure (*i.e.*, without being directly controlled by a person).

*e.g., evaluation conducted using an analysis program*

[3] Memoria team, Memoria project

**non-automated**

The evaluation is carried out by a human being.

[3] Memoria team, Memoria project

**semi-automated**

A process combining automatic conversion with human intervention.

*e.g., using linguistic analysis programs, and then verifying and modifying, if necessary, the result manually*

[3] Memoria team, Memoria project



## C1.2.1

**sign disambiguation**

The process of semiotic disambiguation—decoding of signs, used to convey messages in the data set, that either because of their state of degradation, their particularity, or the analyst's state of knowledge need a specific attention.

*e.g., identification of root words or affixes, decoding of ill-written or ill-preserved letters and words, old and deprecated scripting or calligraphy.*

[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project



### C1.2.2

#### phonological disambiguation

The process of disambiguation of sounds in spoken languages—an activity needed when handling oral recounts in which the speaker may have an accent, a problem with pronouncing words, or more generally in which the quality, definition or volume of the sound poses perception problems.

*e.g., understanding the content of an old recording or an interview conducted with local actors.*

[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project



### C1.2.3

#### semantic disambiguation

Decoding of the meaning of words, phrases or systems by a given individual. Semantic disambiguation addresses issues such as polysemy of words, obsolete words or expressions, and local interpretation of words.

*e.g., study of the 'labelling' or designating of concepts, things and actions, study of terms and their uses, terminological analysis.*

[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project



## C1.2.4

**contextual disambiguation**

Study of how context influences meanings.

Contextual disambiguation implies a geo-diachronic analysis of signs and of their meaning.

*e.g., disambiguation of what the word 'mouse' means for a 19th century farmer and for a 21st century computer scientist*

Based on:  
[325] Wikipedia <<http://en.wikipedia.org/wiki/Pragmatics>>

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[3] Memoria team, Memoria project



## C1.3

**quantitative exploration**

Evaluation, using quantitative methods, of the amount, type or intrinsic reliability of the data available, prior to the data analysis steps.

*e.g., initial statistical examination of the data, stating the percentage of missing data in a given data set, stating the reliability and precision of the data set with regards to the way it was obtained*

[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project



## C1.3.1

**statistical data exploration**

Initial examination of the data to summarise their main characteristics, clarify their general structure, check assumptions required for model fitting and hypothesis testing, handle missing values and make transformations of variables as needed. It includes processing the data into a suitable form for analysis and checking data quality.

*e.g., stating the percentage of missing data in a given data set*

Based on:  
[326] Wikipedia <[http://en.wikipedia.org/wiki/Exploratory\\_data\\_analysis](http://en.wikipedia.org/wiki/Exploratory_data_analysis)>  
[676] Leo Zhicheng Liu, Initial Data Analysis <<http://onlinelibrary.wiley.com/doi/10.1002/0471667196.ess0309.pub2/abstract>>  
[677] University of North Texas <<http://www.unt.edu/rss/class/mike/5030/articles/chatfieldida.pdf>>

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*e.g.*, using linguistic analysis programs, and then verifying and modifying, if necessary, the result manually

[3] Memoria team, Memoria project



### C1.3.2 quality metrics

A quantitative measure of the performance of a given process, tool, system, etc.

*e.g.*, assumed precision of a data set acquired with a 3D laser scanner, number of successive translations between the original source and the current data

[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project

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[3] Memoria team, Memoria project

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*e.g.*, using linguistic analysis programs, and then verifying and modifying, if necessary, the result manually

[3] Memoria team, Memoria project



### C1.4 accuracy assessment

(for remote sensing and contact data acquisition) A degree of correspondence between the results of the survey to the true values or the values accepted as being true.

*e.g.*, accuracy assessment of a given survey technique

[3] Memoria team, Memoria project

**○ AUTOMATION LEVEL**  
Specifies an automation level of the procedure.

**○ automated**  
Automatic evaluation procedure (*i.e.*, without being directly controlled by a person).  
*e.g.*, *evaluation conducted using an analysis program*

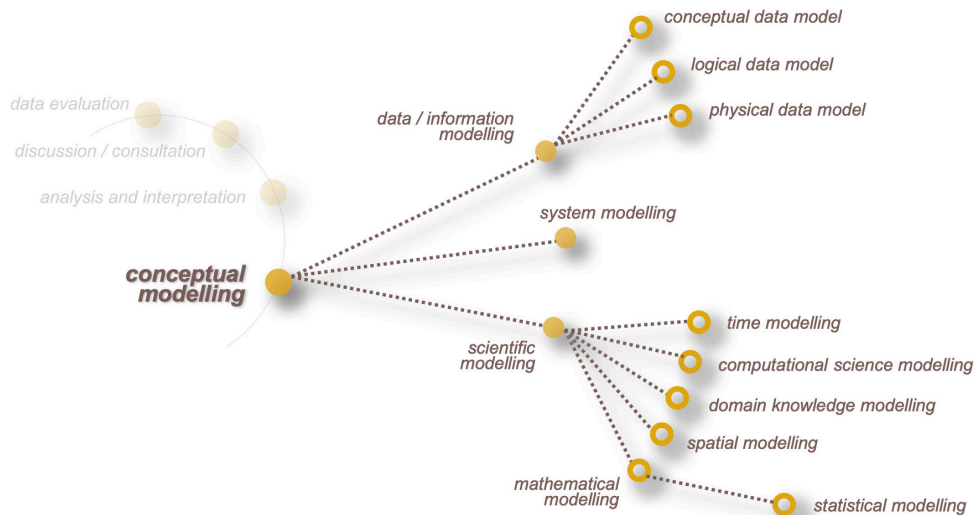
*[3] Memoria team, Memoria project*

**○ non-automated**  
The evaluation is carried out by a human being.

*[3] Memoria team, Memoria project*

**○ semi-automated**  
A process combining automatic conversion with human intervention.  
*e.g.*, *using linguistic analysis programs, and then verifying and modifying, if necessary, the result manually*

*[3] Memoria team, Memoria project*



## C2

### conceptual modelling

Conceptual modelling is the activity of formally describing some aspects of the physical or social world for the purposes of understanding and communication. It sets the basis for various reasoning tasks.

Models describe our beliefs about how the world functions. They are representations of the way one depicts a phenomenon.

*e.g., a process leading to construction of a diagram that shows of a set of relationships between factors that are believed to impact or lead to a target condition; a diagram that defines theoretical entities, objects or conditions of a system and the relationships between them*

Based on:  
[327] Wikipedia <[https://en.wikipedia.org/wiki/Conceptual\\_model#Models\\_of\\_concepts\\_and\\_models\\_that\\_are\\_conceptual](https://en.wikipedia.org/wiki/Conceptual_model#Models_of_concepts_and_models_that_are_conceptual)>

[581] Kalervo Järvelin ,Thomas D. Wilson, *Information Research* <<http://www.informationr.net/ir/9-1/paper163.html>>



## C2.1

### scientific modelling

Scientific activity, the aim of which is to make a particular part or feature of the world easier to understand, define, quantify, visualise, or simulate by referencing it to existing and usually commonly accepted knowledge. It requires selecting and identifying relevant aspects of a situation in the real world and then using different types of models for different aims.

A scientific model seeks to represent empirical objects, phenomena and physical processes in a logical and objective way.

*e.g., the Big Bang model of the universe, geologic modelling, catastrophe modelling, formal framework of description of architectural transformations*

Based on:  
[328] Wikipedia <[http://en.wikipedia.org/wiki/Scientific\\_modelling](http://en.wikipedia.org/wiki/Scientific_modelling)>



## C2.1.1

**domain knowledge modelling**

An activity that aims at formal specification of the types, properties, and interrelationships of the entities that exist for a particular domain of discourse, plus the constraints that govern the problem domain.

*e.g., taxonomic hierarchies of classes, ontologies*

*Based on:*

[329] Wikipedia <[http://en.wikipedia.org/wiki/Ontology\\_%28information\\_science%29](http://en.wikipedia.org/wiki/Ontology_%28information_science%29)>

[330] Wikipedia <[http://en.wikipedia.org/wiki/Domain\\_model](http://en.wikipedia.org/wiki/Domain_model)>



## C2.1.2

**mathematical modelling**

The process of developing a model that describes a system using mathematical concepts and language.

*e.g., mathematical model of wave propagation*

*Based on:*

[331] Wikipedia <[http://en.wikipedia.org/wiki/Mathematical\\_model](http://en.wikipedia.org/wiki/Mathematical_model)>

[678] Glenn Marion, University of Bristol, *An Introduction to Mathematical Modelling* <[https://people.maths.bris.ac.uk/~madjl/course\\_text.pdf](https://people.maths.bris.ac.uk/~madjl/course_text.pdf)>

A crucial part of the modelling process is the evaluation of whether or not a given mathematical model describes a system accurately. This question can be difficult to answer as it involves several different types of evaluation.

### OUTCOME TYPE

Division between models based on the type of outcome they predict.

#### deterministic model

Mathematical model in which outcomes are precisely determined through known relationships among states and events, without any room for random variation. In such models, a given input will always produce the same outcome from a given starting point.

*e.g., planetary motion, based on Newtonian mechanics*

*Based on:*

[947] Business Dictionary <<http://www.businessdictionary.com/definition/deterministic-model.html>>

[678] Glenn Marion, University of Bristol, *An Introduction to Mathematical Modelling* <[https://people.maths.bris.ac.uk/~madjl/course\\_text.pdf](https://people.maths.bris.ac.uk/~madjl/course_text.pdf)>

#### stochastic model

Models that predict the distribution of possible outcomes.

*e.g., genetics of small populations based on Mendelian inheritance (probabilistic equations)*

*Based on:*

[678] Glenn Marion, University of Bristol, *An Introduction to Mathematical Modelling* <[https://people.maths.bris.ac.uk/~madjl/course\\_text.pdf](https://people.maths.bris.ac.uk/~madjl/course_text.pdf)>

### MODEL FOUNDATIONS

Division between models based on the factor types they build on.

#### empirical model

Empirical models are based on direct observation, measurement and extensive data records.

In empirical models, no account is taken of the mechanism by which changes to the system occur. The model tries to account quantitatively for changes associated with different conditions.

*e.g., the model that allows predicting when tides will occur, based on data coming from long-term observations of tides, but without understanding of how the Earth, moon and sun interact*

*Based on:*

[678] Glenn Marion, University of Bristol, *An Introduction to Mathematical Modelling* <[https://people.maths.bris.ac.uk/~madjl/course\\_text.pdf](https://people.maths.bris.ac.uk/~madjl/course_text.pdf)>

[962] David Sarokin, Chron.com <<http://smallbusiness.chron.com/mechanistic-model-12706.html>>



**mechanistic model**

Mechanistic models are based on an understanding of the behaviour of a system's components.

*e.g., the model that uses the laws of physics to predict tides*

*Based on:*  
[678] Glenn Marion, University of Bristol, *An Introduction to Mathematical Modelling* <[https://people.maths.bris.ac.uk/~madjl/course\\_text.pdf](https://people.maths.bris.ac.uk/~madjl/course_text.pdf)>

[962] David Sarokin, Chron.com <<http://smallbusiness.chron.com/mechanistic-model-12706.html>>



C2.1.2.1

**statistical modelling (probabilistic model)**

The process of developing a non-deterministic mathematical model.

In a statistical model specified via mathematical equations, some of the variables do not have specific values, but instead have probability distributions (*i.e.*, some of the variables are stochastic).

*e.g., probabilistic graphical model (PGM) that is a probabilistic model for which a graph expresses the conditional dependence structure between random variables*

*Based on:*  
[332] Wikipedia <[http://en.wikipedia.org/wiki/Statistical\\_model#An\\_example](http://en.wikipedia.org/wiki/Statistical_model#An_example)>

**COMPLETENESS**

Specifies types according number and types of variables and equations used in the process.

**complete model**

Complete model does have the number of variables equal to the number of equations.

*Based on:*  
[965] TutorCircle <<http://math.tutorcircle.com/probability-and-statistics/statistics-model.html>>

**incomplete model**

Incomplete model does not have the same number of variables same as of equations.

*Based on:*  
[965] TutorCircle <<http://math.tutorcircle.com/probability-and-statistics/statistics-model.html>>

**MODEL TYPE**

Specifies types of statistical models.

**linear statistical models**

Having only continuous dependent variables, such as logistic regression. Generalized linear statistical models are frameworks for modelling a response or a resultant variable. This type of model is used while modelling positive data on a very large scale.

*e.g., lognormal distribution, skewed distribution, Poisson distribution, Bernoulli or binomial distribution, categorical distribution*

*Based on:*  
[965] TutorCircle <<http://math.tutorcircle.com/probability-and-statistics/statistics-model.html>>

**structural equation models**

Structural equation modelling is a multivariate statistical analysis technique used to analyse structural relationships between measured variables and latent constructs. Latent constructs are theoretical in nature; they cannot be observed directly and, therefore, cannot be measured directly either (*e.g.*, measuring subjects' level of extraversion).

This method estimates the multiple and interrelated dependence in a single analysis. In this analysis, two types of variables are used: endogenous variables and exogenous variables.

*e.g., models used to study dimensions of variations in human abilities or determinants of political alienation and its progress over time*

Based on:  
 [975] Statistics Solutions <<http://www.statisticssolutions.com/structural-equation-modeling/>>  
 [976] J.J. (Joop) Hox <<http://joophox.net/publist/semfamre.pdf>>  
 [977] Edward E. Rigdon, Structural Equation Modeling Page <<http://www2.gsu.edu/~mkteer/sem.html>>  
 [978] John Garger <<https://johngarger.com/articles/methodology/latent-constructs-in-social-science-research>>

### ○ multilevel models

Multilevel models (also known as hierarchical linear models, nested data models, mixed models, random coefficient, random-effects models, random parameter models, or split-plot designs) are statistical models of parameters that vary at more than one level.

*e.g., used in education research or geographical research, to estimate separately the variance between pupils within the same school, and the variance between schools*

Based on:  
 [843] Wikipedia <[https://en.wikipedia.org/wiki/Multilevel\\_model#Applications](https://en.wikipedia.org/wiki/Multilevel_model#Applications)>  
 [1057] Jon Rasbash, University of Bristol <<http://www.bristol.ac.uk/cmm/learning/multilevel-models/what-why.html>>



#### C2.1.3

##### spatial modelling

The objective of spatial modelling enables the study and simulation of spatial objects or phenomena that occur in the real world.

Spatial modelling is an essential process of spatial analysis. The resulting model represents either a set of objects or a real-world process.

*e.g., analysing the behaviour in space of individuals over time, development of models of urban growth*

Based on:  
 [536] Techopedia <<http://www.techopedia.com/definition/1940/spatial-modeling>>



#### C2.1.4

##### time modelling

Formulating the notion of time in a model that is best suited to reflect the phenomena under consideration and support the analysis task at hand.

In that sense, models of time are not targeted at imitating the physical dimension of time.

*e.g., rethinking the cyclic time model that can be used in epidemiology*

[3] Memoria team, Memoria project



#### C2.1.5

##### computational science modelling

An activity dedicated to creation of a computational model—a mathematical model in computational science that requires extensive computational resources to study the behaviour of a complex system by computer simulation.

The system under study is often a complex nonlinear system for which simple, intuitive analytical solutions are not readily available. Rather than deriving a mathematical analytical solution to the problem, experimentation with the model is done by adjusting the parameters of the system in the computer and studying the differences in the outcomes of the experiments.

*e.g., weather forecasting models, Earth simulator models, flight simulator models*

Based on:  
 [333] Wikipedia <[https://en.wikipedia.org/wiki/Computational\\_model](https://en.wikipedia.org/wiki/Computational_model)>



#### C2.2

##### data/information modelling

The analysis of data/information and the identification of the relationships among them.

*e.g., enterprise data modelling*

Based on:  
 [467] WhatIs.com <<http://searchdatamanagement.techtarget.com/definition/data-modeling>>



### C2.2.1

#### conceptual data model

An activity dedicated to creation of a conceptual model that identifies the highest-level relationships between different entities. It represents 'concepts' (entities) and relationships between them. Descriptions of concepts are independent of any computerisation.

*e.g., a conceptual data model captures the key entities (a person, place, concept, event or thing about which the organisation wants to collect data) and the relationships between these entities*

*Based on:*  
[467] WhatIs.com <<http://searchdatamanagement.techtarget.com/definition/data-modeling>>, [334] Wikipedia <[https://en.wikipedia.org/wiki/Conceptual\\_model\\_%28computer\\_science%29](https://en.wikipedia.org/wiki/Conceptual_model_%28computer_science%29)>



### C2.2.2

#### logical data model

An activity dedicated to a step that leads from a conceptual data model to a representation of that data model, but the representation remains independent of any particular data management technology.

A logical data model describes the data in as much detail as possible, without regard to how they will be physically implemented.

*e.g., UML schema corresponds to this activity*

*Based on:*  
[580] 1Keydata, Free Online Programming Tutorials <<http://www.1keydata.com/datawarehousing/logical-data-model.html>>



### C2.2.3

#### physical data model

An activity dedicated to creation of a physical data model that represents how the model will be built in the database.

A physical database model shows all table structures, including column name, column data type, column constraints, primary key, foreign key, and relationships between tables.

*e.g., implementation of the logical model in the information system (depends on the software, Oracle, MySQL)*

*Based on:*  
[579] <<http://www.1keydata.com/datawarehousing/physical-data-model.html>>



### C2.3

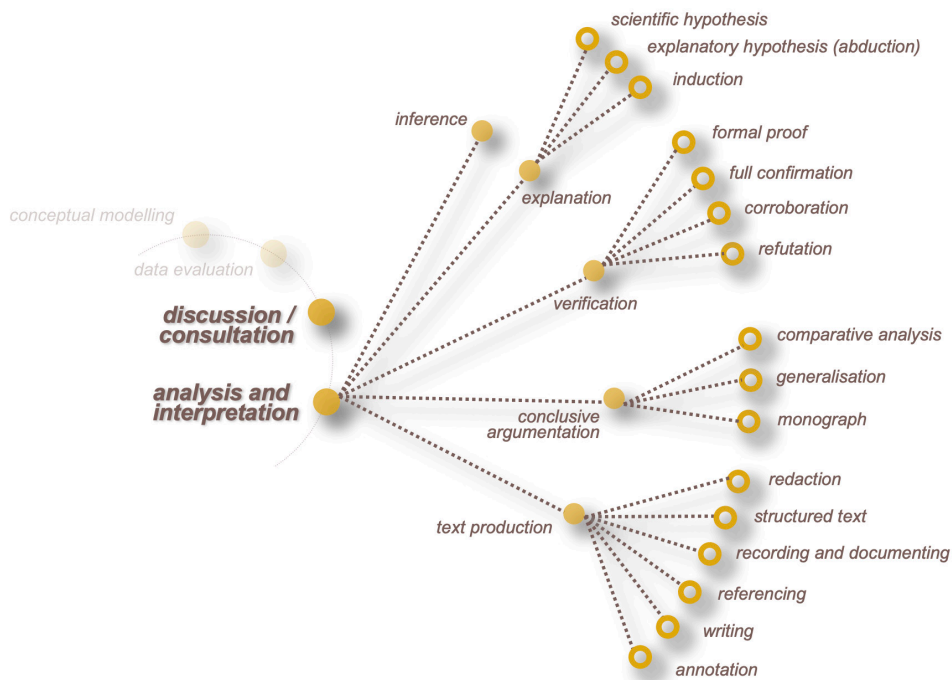
#### system modelling

An activity dedicated to creating a model that describes and represents a system.

A system is comprised of multiple views such as planning, requirement (analysis), design, implementation, deployment, structure, behaviour, input data and output data views. A system model is required to describe and represent all these multiple views.

*e.g., Memoria IS modelling*

*Based on:*  
[335] Wikipedia <[http://en.wikipedia.org/wiki/System\\_model](http://en.wikipedia.org/wiki/System_model)>



C3

**analysis and interpretation**

Examining raw data to draw conclusions. Analysing data or information involves examining them in ways that reveal the relationships, patterns, trends, etc., that can be found within them. Interpretation involves explaining the meaning, or presenting opinion about what the information means.

*e.g., data analysis and interpretation may concern objects morphology, functions, materials, geographic areas, time slots, etc.*

*Based on:*  
 [466] WhatIs.com <<http://searchdatamanagement.techtarget.com/definition/data-analytics>>  
 Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/interpretation>>

**INPUT TYPE**

Specifies the types of input used as baseline of the analysis.

**quantitative data**

Quantitative data are a set of discrete, objective facts, collected as or translated into numbers. Data are raw. They do not have meaning of themselves. They can be structured to become information: 'data' are the basic unit of 'information'.

*e.g., the frequency (rate, duration) of specific behaviours or conditions, test scores (e.g., scores/levels of knowledge), dimensions (length, height, area, volume, weight), survey results (e.g., reported behaviour, ratings of satisfaction), numbers or percentages, etc.  
 4 p.m., fifty meters*

*Based on:*  
 [1037] Community Tool Box <<http://ctb.ku.edu/en/table-of-contents/evaluate/evaluate-community-interventions/collect-analyze-data/main>>  
 [774] Gene Bellinger, Systems Thinking <<http://www.systems-thinking.org/dikw/dikw.htm>>

### ○ qualitative data

Data that approximate or characterise but do not measure the attributes, characteristics, properties, *etc.*, of a thing or phenomenon. Qualitative data give descriptive information. They can be collected as descriptions, opinions, quotes, interpretations, *etc.*, but not measured. Generally, they cannot be reduced to numbers or are considered more valuable or informative if left as narratives.

*e.g., appreciation or feelings (e.g., smells old and musty), opinion (e.g., this oil painting represents a peaceful scene of the country, my coffee has a strong taste, the edifice was in poor condition)*

*rain, john, red*

*Based on:*

[1037] Community Tool Box <<http://ctb.ku.edu/en/table-of-contents/evaluate/evaluate-community-interventions/collect-analyze-data/main>>  
[1049] Russell Lincoln Ackoff <<http://ww1.ucmss.com/books/LFS/CSREA2006/IKE4628.pdf>>  
[774] Gene Bellinger, Systems Thinking <<http://www.systems-thinking.org/dikw/dikw.htm>>  
[440] Business Dictionary <<http://www.businessdictionary.com/definition/qualitative-data.html>>  
[1050] EasyCalculations.com <[https://www.easycalculation.com/maths-dictionary/qualitative\\_data.html](https://www.easycalculation.com/maths-dictionary/qualitative_data.html)>

### ○ information

Information is data combined into meaningful structures (*i.e.*, data that have been given meaning by way of relational connection). Information can be put into a context and interpreted to become knowledge: 'information,' is the basic unit of 'knowledge'.

*e.g., 'The price of crude oil has risen from \$70 to \$80 per barrel' gives meaning to the data (\$70, \$80) and so is said to be information to someone who tracks oil prices.*

*Based on:*

[1049] Russell Lincoln Ackoff <<http://ww1.ucmss.com/books/LFS/CSREA2006/IKE4628.pdf>>  
[774] Gene Bellinger, Systems Thinking <<http://www.systems-thinking.org/dikw/dikw.htm>>  
[1036] SearchDataManagement.com <<http://searchdatamanagement.techtarget.com/feature/Defining-data-information-and-knowledge>>

### ○ knowledge

Knowledge is refined information to which human cognition and experience have added value. Information becomes knowledge through cognitive effort. Unlike data and information, knowledge contains judgement.

*e.g., 'When crude oil prices go up by \$10 per barrel, it's likely that petrol prices will rise by 2p per litre' is knowledge.*

*Based on:*

[1035] Syed Ahsan, CiteSeerX <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.89.5378&rep=rep1&type=pdf>>, [1036] SearchDataManagement.com <<http://searchdatamanagement.techtarget.com/feature/Defining-data-information-and-knowledge>>



## C3.1

### inference

Inference is the act or process of deriving conclusions (new information, statements, assessments) from premises known or assumed to be true.

Inference is a mental process in which sentences already recognised as true (premise) are added to a new sentence that has not yet been recognized as true (inference) or enhances the confidence of an opinion that is already recognized to some extent.

*e.g., Watching a man run towards the gate at the airport, one can infer that he is running late for his flight. Reading reports on repair works carried out on an edifice, one can infer that an event caused damage to the edifice.*

*Based on:*

[159] The Free Dictionary <<http://www.thefreedictionary.com/inference>>,  
[679] Michal Lipnicki, Zakład Logiki Stosowanej UAM <<http://logic.amu.edu.pl/images/6/60/Logika3hand.pdf>>

### ● PURPOSE

Specifies whether the reasoning is aimed at producing new assumptions or not.

### ○ revealing reasoning

Reasoning in which one starts from accepted, established assumptions and searches for new, not yet recognised ones.

The baseline objective of the revealing reasoning is to produce new, not yet recognised facts or statements.

*e.g., analysis that revealed an unexpected mixed pattern of gene flow among populations.*

*Based on:*  
[844] Wikipedia <<https://pl.wikipedia.org/wiki/Rozumowanie>>  
[1003] Piotr Łukowski, mauserg8k.w.inds.pl <<http://mauserg8k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>  
[777] Kazimierz Ajdukiewicz, Klasyfikacja rozumowań  
[1058] Zeszyty historyczno-teologiczne, Collegium Resurrectianum <[http://www.biz.xcr.pl/files/zeszyty\\_09.pdf](http://www.biz.xcr.pl/files/zeszyty_09.pdf)>

### ○ justifying reasoning

Reasoning, in which one looks for the confirmation/corroborator of existing assumptions by already established statements. The baseline objective of justifying reasoning is to produce a new relational connection that confirms existing assumptions.

*e.g., If the assumption exists that the Tatars entered a town, it could be confirmed by relating existing archival material with new archaeological findings.*

*Based on:*  
[844] Wikipedia <<https://pl.wikipedia.org/wiki/Rozumowanie>>  
[1003] Piotr Łukowski, mauserg8k.w.inds.pl <<http://mauserg8k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>  
[777] Kazimierz Ajdukiewicz, Klasyfikacja rozumowań  
[1058] Zeszyty historyczno-teologiczne, Collegium Resurrectianum <[http://www.biz.xcr.pl/files/zeszyty\\_09.pdf](http://www.biz.xcr.pl/files/zeszyty_09.pdf)>

### ● CAUSAL DIRECTION

Specifies the direction of causality of reasoning.

### ○ regressive reasoning

Reasoning runs backwards from known and accepted consequences to unknown causes.

*e.g., observing that there is a massive change of roofing at one period in a town and looking for potential causes (e.g., regulations).*

*Based on:*  
[844] Wikipedia <<https://pl.wikipedia.org/wiki/Rozumowanie>>

### ○ progressive reasoning

Reasoning that starts from known conditions and runs to the desired objectives.

*e.g., knowing there was a change of regulation concerning the roofing of edifices in a town at time  $t$ , looking for its consequences at time  $t+n$ .*

*Based on:*  
[1003] Piotr Łukowski, mauserg8k.w.inds.pl <<http://mauserg8k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>  
[844] Wikipedia <<http://pl.wikipedia.org/wiki/Rozumowanie>>

### ● COGNITIVE SKILLS

Specifies what kinds of cognitive skills are involved in the reasoning.

### ○ verbal reasoning

Understanding and reasoning using concepts framed in words (listening and reading).

*e.g., the ability to analyse written information and use it to make conclusions based solely on the information found in texts. Reading historical texts and finding information on the construction of the edifice.*

*Based on:*  
[845] Wikipedia <[https://en.wikipedia.org/wiki/Verbal\\_reasoning](https://en.wikipedia.org/wiki/Verbal_reasoning)>  
[1009] Catherine Donges, Classroom <<http://classroom.synonym.com/verbal-reasoning-affect-learning-6737.html>>

### ○ numerical reasoning

Ability to analyse written information and use it to make conclusions based solely on the information found in the numerical data.

*e.g., spotting tendencies and exceptions in official accounts of the tax levels presented as arrays of numbers.*

*Based on:*  
[1012] Institute of Psychometric Coaching <<http://www.psychometricinstitute.com.au/Numerical-Test-Preparation.html>>

### ○ spatial reasoning

The capacity to understand, visualise, manipulate and remember spatial features and relationships among objects.

*e.g., analysing the stratigraphy of an archaeological site.*

*Based on:*  
[1008] Johns Hopkins Center for Talented Youth <<https://cty.jhu.edu/talent/docs/SpatialMore.pdf>>  
[1009] Catherine Donges, Classroom <<http://classroom.synonym.com/verbal-reasoning-affect-learning-6737.html>>

### ○ visual reasoning

The process of analysing abstract visual information and being able to solve problems based upon it. It is a component of nonverbal intelligence, meaning that a person does not have to use language to solve problems.

*e.g., spotting tendencies and exceptions in official accounts of the tax level interpreted and summarised using abstract visual formalisms.*

*understanding information using a pie chart or a time chart.*

*Based on:*  
[953] wiseGeek <<http://www.wisegeek.com/what-is-visual-reasoning.htm>>

## ● TYPE OF PREMISES

Types of premises used in inference.

### ○ causal

Drawing conclusions based on known relationships between causes and effects.

*e.g., you cannot brew tea with cold water.*

*Based on:*  
[846] Wikipedia <[http://en.wikipedia.org/wiki/Inductive\\_reasoning#Types](http://en.wikipedia.org/wiki/Inductive_reasoning#Types)>

### ○ structural

Taking into consideration known relationships in time and space.

*e.g., if yesterday was Monday, tomorrow is Wednesday. If picture A hangs over picture B, B hangs under A. If I stand facing north, then east is on my right hand.*

*Based on:*  
[1003] Piotr Łukowski, mauser98k.w.inds.pl <<http://mauser98k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>

### ○ normative

Taking into consideration the norms and conventions (social, legal) that govern behaviour in particular groups and societies.

*e.g., if I buy goods in the store, my payment includes a tax. In some towns, gates used to be under the responsibility of guilds.*

*Based on:*  
[1003] Piotr Łukowski, mauser98k.w.inds.pl <<http://mauser98k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>

### ○ semantic

Taking into consideration the meaning of the words in a particular context.

*e.g., if this geometric figure is a square, then [this geometric figure] has four equal sides. The label 'market square' found in a text is associated with trading activities.*

*Based on:*  
[1003] Piotr Łukowski, mauser98k.w.inds.pl <<http://mauser98k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>

### ○ empirical

Based on what is experienced or based on observation or experience alone. They say something about how the world is.

*e.g., the mean distance from the Earth to the moon is 238,866 miles. The Amazon River is the largest river in the world. The costs of health care are increasing faster than the rate of inflation.*

*Based on:*  
[931] Merriam-Webster <<https://www.merriam-webster.com/dictionary/empirical>>  
[1079] Bruce Miller, Michigan State University <<https://msu.edu/user/blmiller/BasicLogic/DeductiveArguments.htm>>

### ○ logical

From the point of view of formal logic.

*e.g., if John is a bald lawyer, this implies that John is a lawyer.*

[1003] Piotr Lukowski, *mauserg8k.w.inds.pl* <<http://mauserg8k.w.inds.pl/wpia/wyklad%20z%20logiki%2012.pdf>>  
Based on:

### ● RELIABLE REASONING

Identifies processes of reasoning that run from premises to reach logically certain conclusions. (logically conclusive)

### ○ deductive reasoning

Conclusion follows from the premises under a certain law of logic (e.g., Modus Ponens that can be summarized as 'P implies Q; P is asserted to be true, so therefore Q must be true'.)

*e.g., given that all bachelors are unmarried males, and given that this person is a bachelor, one can deduce that this person is an unmarried male.*

[1990] Michal Lipnicki, *Zakład Logiki Stosowanej UAM* <<http://logic.amu.edu.pl/images/e/eb/Naukoznawstwo2.pdf>>  
Based on:

[1847] Wikipedia <[https://en.wikipedia.org/wiki/Modus\\_ponens](https://en.wikipedia.org/wiki/Modus_ponens)>

### ○ induction by complete enumeration

Also called 'perfect induction', the reasoning that establishes the material truth of an apparently general proposition on examination of each and every instance it covers..

*e.g., suppose we find that every continent in the world has seas. Asia has access to seas, Europe has access to seas, and so too every continent. Therefore, we conclude that every continent has access to seas.*

[1989] PreserveArticles.com <<http://www.preservearticles.com/2011091413437/perfect-induction-is-also-called-induction-by-complete-enumeration.html>>  
Based on:

[1990] Michal Lipnicki, *Zakład Logiki Stosowanej UAM* <<http://logic.amu.edu.pl/images/e/eb/Naukoznawstwo2.pdf>>

### ○ eliminative induction

In eliminative induction, a closed set of initial possible hypotheses concerning some state of affairs is presumed, and rivals are progressively eliminated by new evidence. This process is, however, an idealization, since in practice, no closed set of initial theories is usually possible.

*e.g., when one has excluded the impossible, whatever remains, however improbable, must be the truth.*

[1993] Oxford Reference <<http://www.oxfordreference.com/view/10.1093/oi/authority.20110803095747206>>  
Based on:  
[1990] Michal Lipnicki, *Zakład Logiki Stosowanej UAM* <<http://logic.amu.edu.pl/images/e/eb/Naukoznawstwo2.pdf>>

### ● PRESUMPTIVE REASONING

Reasoning in which, starting from true premises, we can come to a false conclusion (a possibility, that cannot be excluded), but we reasonably expect the conclusion to be true. In presumptive reasoning, the veracity of evidence does not warrant the truthfulness of conclusions.

### ○ induction by partial enumeration

Inductive reasoning, also known as induction, constructs general propositions that are derived from specific examples.

A type of reasoning in which the fact that a number of items of a given type has a characteristic A (in the absence an example of an object of the type under consideration that does not have the feature A), we conclude that all objects of this type have the characteristic A.

*e.g., potassium cyanide is soluble in water. Potassium cyanide dissolves well in milk. Potassium cyanide is soluble in wine. So potassium cyanide dissolves well in each fluid.*

*'One hundred per cent of life forms that we know of depend on liquid water to exist. Therefore, if we discover a new life form, it will probably depend on liquid water to exist'.*



Based on:  
[991] Pogonowski J., UAM <<http://logic.amu.edu.pl/images/4/46/Semlogzim05.pdf>>  
[784] Boundless <<http://oer2go.org/mods/en-boundless/www.boundless.com/communications/textbooks/boundless-communications-textbook/methods-of-persuasive-speaking-15/logical-appeals-78/different-lines-of-reasoning-302-10651/index.html>>

### ○ reasoning by analogy

The simplest variety of inductive reasoning—an argument by analogy takes note of the fact that two or more things are similar in some respects and concludes that they are probably also similar in some further respect.

*e.g., experiments on laboratory rats typically proceed on the basis that some physiological similarities between rats and humans entails some further similarity (e.g., possible reactions to a drug).*

Based on:  
[970] Garth Kemerling <<http://www.philosophypages.com/lg/e13.htm>>

### ○ probabilistic reasoning

Problem-solving techniques based on the use of probability theory for weighing evidence and inferring conclusions. Probabilistic reasoning is the formation of probability judgements and of subjective beliefs about the likelihoods of outcomes.

*e.g., using past situations and statistics to predict an outcome, application of Bayes' theorem.*

Based on:  
[1001] MITECS <<https://ai.ato.ms/MITECS/Entry/shafir.html>>  
[1002] Encyclopedia.com <<http://www.encyclopedia.com/doc/1O11-probabilisticreasoning.html>>

### ○ statistical reasoning

Statistical inference refers to the characteristics of populations considered as a whole. The data described in statistical statements reflect a number of regularities concerning the reality that need to be interpreted.

*e.g., Using data, such as interviews with cancer patients or a national survey of health behaviours, to determine a practical application based on a study's results.*

Based on:  
[679] Michał Lipnicki, Zakład Logiki Stosowanej UAM <<http://logic.amu.edu.pl/images/6/60/Logika3hand.pdf>>  
[991] Pogonowski J., UAM <<http://logic.amu.edu.pl/images/4/46/Semlogzim05.pdf>>

### ○ comparative reasoning

Comparative reasoning establishes the importance of something by comparing it against something else on the basis of an objective standard. The size of the gap between the things is used to infer some new assumption.

*e.g., we can look at past times in history and compare our current economy to the economies of those periods.*

Based on:  
[1038] David Straker, ChangingMinds.org <[http://changingminds.org/disciplines/argument/types\\_reasoning/comparison.htm](http://changingminds.org/disciplines/argument/types_reasoning/comparison.htm)>



## C3.2

### explanation

Explaining is a mental task that involves identification of reasons for proposed statements. In other words, the explanation lies in the answer to the question 'why are things as we have stated?'

Thus, we can say that explaining is seeking clarification of the relationship between the facts without necessity of proving their logical value.

*e.g., reading reports on repair works carried out on an edifice, one can infer that an event caused damage to the edifice. Based on that inference, explanations can be explored that would relate the damage to some known potential causes (e.g., fires, earthquakes).*

Based on:  
[336] Wikipedia <<http://pl.wikipedia.org/wiki/Wyja%C5%9Bnianie>>



## C3.2.1

### scientific hypothesis

A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.

*e.g., based on an archaeological stratigraphy and on previous knowledge, a hypothetical dating of wooden remains is proposed. This hypothesis may be verified by a dendrochronological analysis, for example.*

Based on:  
[160] The Free Dictionary <<http://www.thefreedictionary.com/hypothesis>>



### C3.2.2

#### explanatory hypothesis (abduction)

A number of facts, from a multitude of sources, such as literature reviews and general observations, are gathered together. After an assessment of this information, the most likely hypothesis to explain the observations is adopted as the starting point of research. Effectively, it is a process of choosing the hypothesis, which would best explain the available evidence.

Abductive reasoning leads to conjectural hypotheses.

*e.g., medical diagnosis—given this set of symptoms, what is the diagnosis that best explains most of them? Archaeologists, unlike most scientists, cannot conduct controlled experiments. Furthermore, they cannot merely evaluate hypotheses. They have first to obtain them. In fact, an archaeologist spends a great part of his/her time devising explanatory hypotheses from 'this is probably a storage pit' through 'this is obviously a late Bronze Age settlement' to 'maybe urban civilisation only evolves where there are good opportunities for long distance trade'.*

*Based on:*  
[661] New World Encyclopedia <[http://www.newworldencyclopedia.org/entry/Abductive\\_reasoning](http://www.newworldencyclopedia.org/entry/Abductive_reasoning)>



### C3.2.3

#### induction

Inductive reasoning begins with observations that are specific and limited in scope, and proceeds to a generalized conclusion that is likely, but not certain, in light of accumulated evidence. One could say that inductive reasoning moves from the specific to the general.

*e.g., if all swans that we have observed so far are white, we may induce that the possibility that all swans are white is reasonable*  
*'One hundred per cent of life forms that we know of depend on liquid water to exist. Therefore, if we discover a new life form it will probably depend on liquid water to exist'.*

*Based on:*  
[578] Butte College <<https://www.butte.edu/departments/cas/tipsheets/thinking/reasoning.html>>

#### ● INDUCTION TYPES

Various types of inductive reasoning.

#### ○ induction by complete enumeration

Also called 'perfect induction', the reasoning that establishes the material truth of an apparently general proposition on examination of each and every instance it covers.

*e.g., suppose we find that every continent in the world has seas. Asia has access to seas, Europe has access to seas, and so too every continent. Therefore, we conclude that every continent has access to seas.*

*Based on:*  
[989] PreserveArticles.com <<http://www.preservearticles.com/2011091413437/perfect-induction-is-also-called-induction-by-complete-enumeration.html>>

#### ○ eliminative induction

In eliminative induction, a closed set of initial possible hypotheses concerning some state of affairs is presumed, and rivals are progressively eliminated by new evidence. This process is, however, an idealization, since in practice, no closed set of initial theories is usually possible.

*e.g., when one has excluded the impossible, whatever remains, however improbable, must be the truth.*

*Based on:*  
[993] Oxford Reference <<http://www.oxfordreference.com/view/10.1093/oi/authority.20110803095747206>>  
[990] Michal Lipnicki, Zakład Logiki Stosowanej UAM <<http://logic.amu.edu.pl/images/e/eb/Naukoznawstwo2.pdf>>

#### ○ induction by partial enumeration

Inductive reasoning, also known as induction, constructs general propositions that are derived from specific examples.

A type of reasoning in which the fact that a number of items of a given type has a characteristic A (in the absence an example of an object of the type under consideration that does not have the feature A), we conclude that all objects of this type have the characteristic A.

*'One hundred per cent of life forms that we know of depend on liquid water to exist. Therefore, if we discover a new life form, it will probably depend on liquid water to exist'.*



### C3.3

#### verification

The process of establishing the veracity, accuracy or validity of a proposition or statement.

*e.g., verification of the sentence 'a is b' consists in solving the problem, that finds its wording in the question 'whether A is B?'*

*Reading reports on repair works carried out on an edifice, one can infer that an event caused damage to the edifice. If based on that inference an explanation is proposed that relates the damage to a fire that occurred in a neighbouring building, verification would mean finding evidence that this fire did or did not propagate.*

*Based on:*  
[446] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/verification>>  
[577] PWN <<http://sjp.pwn.pl/slowniki/weryfikacja.html>>  
[337] Wikipedia <<http://pl.wikipedia.org/wiki/Weryfikacja>>

#### EVIDENCE TYPES

Describes what kind of evidence the verification is based on.

#### empirical evidence

Also known as 'sensory experience', the practice of relying on observation and experiment.

*e.g., some experimental evidence in favour of global warming: graphs of historical trends show increasingly warming temperatures, the levels of carbon dioxide gas are on the rise in atmosphere, the levels of methane are also rising.*

*Based on:*  
[932] Merriam-Webster <<http://www.merriam-webster.com/dictionary/empiricism>>  
[848] Wikipedia <[https://en.wikipedia.org/wiki/Empirical\\_evidence](https://en.wikipedia.org/wiki/Empirical_evidence)>

#### testimonial evidence

Evidence based on personal observation and experiences or on the authority of an individual or an organisation.

*e.g., historical documents, written or oral declarations.*

*Based on:*  
[849] Wikipedia <[https://en.wikipedia.org/wiki/Theory\\_of\\_justification](https://en.wikipedia.org/wiki/Theory_of_justification)>

#### statistical evidence

Rational demonstration of degree of probability for a proposition.

*e.g., good statistical evidence is very clear about how likely the proposition is to be 'correct'. Data can be delivered with an 80% confidence or a 95% confidence. In general, the bigger the sample one uses, the more likely the answer is to be 'accurate'.*

*Based on:*  
[850] Wikipedia <[https://en.wikipedia.org/wiki/Statistical\\_proof](https://en.wikipedia.org/wiki/Statistical_proof)>

#### logical deduction

The type of reasoning that uses a specific and accurate premise that leads to a specific and accurate conclusion. With correct premises, the conclusion to this type of argument is verifiable and correct.

*e.g., All squares are rectangles. All rectangles have four sides. Logic, therefore, indicates that all squares have four sides.*

*Based on:*  
[949] Your Dictionary <<http://examples.yourdictionary.com/examples-of-logic.html#uLLLu5018GXMLrqS.99>>



## C3.3.1

**formal proof**

A finite sequence of sentences derived from axioms, an assumption, or that follows from the preceding sentences by the use of deductive apparatus.

*e.g., we prove that  $1 + 1 = 2$  by recalling the definition of 1 as the successor of 0, 2 as the successor of 1, and then invoking twice the recursive definition of addition:*  
 $1 + 1 = 1 + S(0) = S(1 + 0) = S(1) = 2$

Based on:  
 [338] Wikipedia <[https://en.wikipedia.org/wiki/Formal\\_proof](https://en.wikipedia.org/wiki/Formal_proof)>



## C3.3.2

**full confirmation**

An all-inclusive verification of the hypothesis.

*e.g., 'all the girls aged 10-11 years and living in Toronto today are brunettes'—a complete confirmation of this sentence is theoretically possible—indicating all brunettes.*  
*Using infrared imaging to unveil hidden layers in artworks that were suspected to be multi-layered.*

Based on:  
 [339] Wikipedia <<http://pl.wikipedia.org/wiki/Falsyfikacja>>  
 [680] Naukowy.pl <<http://forum.naukowy.pl/kompendium-188/konfirmacja-i-falsyfikacja-uzasadnienie-twierden/>>



## C3.3.3

**corroboration**

To corroborate something that has been said or reported means to provide evidence or information that supports it or to confirm a hypothesis based on only a subclass of a collection.

*e.g., 'all the orbits of the planets are elliptical' - a complete confirmation of this sentence is not possible. By pointing out the orbits of the planets in our solar system, which is only a certain subclass of planets, we will only corroborate this sentence.*

Based on:  
 [431] Collins English Dictionary <<http://www.collinsdictionary.com/dictionary/english-cobuild-learners/corroboration>>  
 [339] Wikipedia <<http://pl.wikipedia.org/wiki/Falsyfikacja>>



## C3.3.4

**refutation (falsification)**

A refutation of an argument, hypothesis or theory demonstrates it is wrong or untrue.

*e.g., 'the orbits of the planets are circles,' we can say the sentence was falsified or refuted by pointing the orbits of the planets of the solar system, which are elliptical.*

Based on:  
 [430] Collins English Dictionary <<http://www.collinsdictionary.com/dictionary/english-cobuild-learners/refutation>>  
 <[http://www.bio.miami.edu/dana/dox/scientific\\_method.html](http://www.bio.miami.edu/dana/dox/scientific_method.html)>



## C3.4

**conclusive argumentation**

Formulation and explanation of propositions concluded or inferred during the interpretation process, and approaching or involving an end or conclusion.

*e.g., synthetic and final explanations of causes, context and/or consequences of analysed facts and possibly fitting them into a more general, unifying framework.*

Based on:  
 [420] Dictionary.com <<http://dictionary.reference.com/browse/conclusion>>  
 [479] Reverso Dictionary <<http://dictionary.reverso.net/english-definition/conclusive%20argument>>

- **TYPES OF ARGUMENTATION**  
Types of arguments used in the phase of conclusive argumentation.

- **teleological**  
Using of ultimate purpose or design as to explain phenomena.

*e.g., an explanation of why forks have prongs is that this design helps humans eat certain types of food.*  
*Explaining the structure of flowers by their purpose—the reproduction of plants.*

Based on:  
[922] *The Free Dictionary* <<http://www.thefreedictionary.com/teleology>>

### ○ causal

Such explanatory claims must provide information about the causes of a given phenomenon.

*e.g., relating a flood to such causes as heavy rains, relief or a dam failure*

Based on:  
[1051] N. Hall *Causation, Philosophical Views of* [in]. B. Kaldis (Ed), *Encyclopaedia of Philosophy and the Social Sciences*, Sage Pub. 2013, p.68>

### ○ historical

Historical explanation depends on both causal reasoning and interpretation of actions and intentions, so it is both causal and hermeneutic (interpretive). Historical explanation concerning human actions is usually based on five elements: aim, assessment of situation, choice of means, drive and context.

*e.g., explaining why northern cities in the United States developed such profound patterns of racial segregation after World War II.*

Based on:  
[984] Daniel Little, *Stanford Encyclopedia of Philosophy* <<http://plato.stanford.edu/entries/history/>>  
[981] *history-ontheweb.co.uk* <<http://www.history-ontheweb.co.uk/concepts/explanation32.htm>>

### ○ functional

Functional explanations explain why certain organisms/objects have certain traits rather than some conceivable alternatives by appealing to the advantages for those organisms of having those traits rather than the alternatives.

*e.g., explaining why a specific pattern in the roofing of houses (steep slopes) occurs by mentioning climatic constraints (e.g., snow).*

Based on:  
[1042] Arno Wouters, *Morepork* <<http://morepork.home.xs4all.nl/papers/functional%20explanation.pdf>>

### ○ methodological

A type of explanation that refers to existing methodological frameworks.

*e.g., contextual seriation, an existing dating method used for the justification of a chronological sequence.*

Based on:  
[979] *Statistical Office of the Republic of Slovenia* <<http://www.stat.si/statweb/en/mainnavigation/methods-and-classifications/methodological-explanations>>

### ○ reductive

A reductive explanation explains a higher-level property in terms of lower-level properties.

In reductive explanations the strategy is to attempt to reduce explanations to the smallest possible entities (explanation of entire systems in terms of their individual, constituent parts and their interactions).

*e.g., atomic explanation of a substance's boiling point is preferable to the chemical explanation, and an explanation based on even smaller particles (quarks and leptons, perhaps) would be even better. Explaining the structure of a human settlement by its components, corresponding to the needs and behaviour of individuals who occupy the settlement.*

Based on:  
[851] *Wikipedia* <<http://en.wikipedia.org/wiki/Reductionism>>  
[1059] Andrew Lee, *Aporia Brigham Young University* <[http://aporia.byu.edu/pdfs/lee-reductive\\_explanation\\_and\\_qualia.pdf](http://aporia.byu.edu/pdfs/lee-reductive_explanation_and_qualia.pdf)>

### ○ mechanistic

Argumentation based on the assumption that the behaviours of complex systems, such as societies and economies, are determined strictly by the interactions of the parts or factors of which they are composed.

Mechanistic explanations differ from reductive explanations in that they focus on interrelationships between the components of a system rather than on relationships of components to the whole.

*e.g., explaining interrelationships between the components of a human settlement without drawing conclusions about the settlement as such.*

Based on:  
[946] *Business Dictionary* <<http://www.businessdictionary.com/definition/mechanistic.html>>  
[1082] Raphael van Riel, Robert Van Gulick, *Stanford Encyclopedia of Philosophy* <<http://plato.stanford.edu/entries/scientific-reduction/>>

### ○ psychological

An attempt to understand phenomena related to intelligent behaviour of an individual.

*e.g., relating abnormal mental processes to inappropriate learning, improper conditioning, the absence of appropriate role models or the strong presence and influence of inappropriate role models.*

*Based on:*  
[957] William Bechtel, Cory D. Wright, <<https://mechanism.ucsd.edu/research/What%20is%20Psychological%20Explanation.web.pdf>>

### ○ nomological–deductive

Argumentation based on a law-like statements, such as laws of nature ('nomological' component of the model) simply taken as true and deductive reasoning ('deductive' component of the model) in which the description of one occurrence of a phenomenon follows as a logical conclusion from the premises contained in a law-like statement that has been used.

*e.g., There is the law, or universal hypothesis, that whenever the Earth passes between the Sun and the Moon there is an eclipse of the Moon. Thus any particular eclipse may be explained as an instance of that general law.*

*Based on:*  
[980] James Woodward, *Stanford Encyclopedia of Philosophy* <<http://plato.stanford.edu/entries/scientific-explanation/>>  
[981] [www.history-ontheweb.co.uk](http://www.history-ontheweb.co.uk) <<http://www.history-ontheweb.co.uk/concepts/explanation32.htm>>  
[982] *Oxford Dictionaries* <[http://www.oxforddictionaries.com/fr/definition/anglais\\_america/nomological](http://www.oxforddictionaries.com/fr/definition/anglais_america/nomological)>

### ○ statistical

Explanatory use of statistics as a means to justify a conclusion.

*e.g., for instance, use of Hempel's inductive-statistical (IS) model exemplified here:  
If it is statistical law that the probability of recovery from streptococcus, given that one has taken penicillin, is high, and Jones has taken penicillin and recovered, this information can be used to provide an IS explanation of Jones' recovery.  
However if the probability of recovery is low (e.g., less than 0.5), given that Jones has taken penicillin, then even if Jones recovers, we cannot use this information to provide an IS explanation of his recovery.*

*Based on:*  
[983] James Woodward, *Stanford Encyclopedia of Philosophy* <<http://plato.stanford.edu/entries/scientific-explanation/#IndStaExp>>



#### C3.4.1

### generalisation

The process in which a small observation is used to infer a larger 'theory', without necessarily proving it.

*e.g., 'one hundred per cent of life forms that we know of depend on liquid water to exist. Therefore, if we discover a new life form, it will probably depend on liquid water to exist!'*

*Based on:*  
[445] *Oxford Dictionaries* <<http://www.oxforddictionaries.com/fr/definition/anglais/generalization?q=generalisation>>



#### C3.4.2

### monograph

A report about a person, group, thing or situation that has been studied over a period of time, focusing on an intensive analysis of an individual unit.

*e.g., an analytical study of the evolution of an edifice.*

*Based on:*  
[406] *Merriam-Webster* <<http://www.merriam-webster.com/dictionary/case%20study>>  
[429] *Collins English Dictionary* <<http://www.collinsdictionary.com/dictionary/english/case-study>>



#### C3.4.3

### comparative analysis

Comparisons across different items consisting of a study of the similarities and differences between them.

*e.g., compositional analysis of a collection of gothic cathedrals to shed light on the similarities and differences between them.*

*Based on:*  
[438] *Business Dictionary* <<http://www.businessdictionary.com/definition/comparative-analysis.html#ix-zz3XyKQsUro>>



### C3.5

#### text production

The activity of presenting an analysis, or an opinion about the data or its interpretation by writing text.

This activity encompasses writing down and structuring notes, records of observations, or other intermediate texts, as well as preparing the textual content of publications and so forth.

*e. g. writing a report or preparing an article, writing a brief record of observations or oral exchanges.*

[3] Memoria team, Memoria project

#### ● LANGUAGE

Defines language used from the perspective of individuals.

#### ○ mother tongue

One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.

*e.g., A person who have been living in Great Britain since his childhood, and has used English at home, can say that English is a native language to him or her.*

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Based on:

[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>

[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

#### ○ second language

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

Based on:

[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

#### ○ foreign language

A language learnt by a speaker but that he was not exposed to as a child at home, nor is used on a regular basis in his or her country of residence.

*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

Based on:

[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>



### C3.5.1

#### writing

The activity of expressing or communicating in writing conducted by one person or a group of people. Giving a written account of.

*e.g., to set down in writing, to note, to create pieces of written work, such as stories, poems, or articles.*

Based on:

[417] Dictionary.com <<https://www.dictionary.com/browse/writing>>

[476] Cambridge Dictionary <<https://dictionary.cambridge.org/dictionary/english/writing>>

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 [911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>  
 [935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

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*Based on:*  
 [913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>

## ● DEGREE OF FORMALITY

Refers to variety of a language or a level of usage, as determined by choice of vocabulary, pronunciation and syntax.

### ○ formal

The formal language is used in professional, academic, or legal settings where communication is expected to be respectful and restrained. Language normally used only in writing such as official documents. Formal language is associated with particular choices of grammar and vocabulary.

*e.g., official notices, cooperation agreements, letters of complaint.*

*Based on:*  
 [1081] Richard Nordquist, ThoughtCo <<https://www.thoughtco.com/register-language-style-1692038>>  
 [994] Glottopedia <[http://www.glottopedia.org/index.php/Register\\_\(discourse\)](http://www.glottopedia.org/index.php/Register_(discourse))>  
 [941] Cambridge English Dictionary <<https://dictionary.cambridge.org/grammar/british-grammar/types-of-english-formal-informal-etc/formal-and-informal-language>>

### ○ neutral

The neutral language is non-emotional and sticks to facts. It is most appropriate for technical writings.

It is impersonal, meaning it is usually not written for a specific person.

*e.g., reviews, articles, technical writing*

*Based on:*  
 [987] Ola Zur, Really-Learn-English.com <<https://www.really-learn-english.com/language-register.html>>

### ○ informal

The language normally used only in contexts such as conversations or letters between friends, *i.e.* when writing to a person or a group of people we know very well.

Informal language is more common when we speak.

*e.g., informal notes, emails, SMSs, most blogs*

*Based on:*  
 [994] Glottopedia <[http://www.glottopedia.org/index.php/Register\\_\(discourse\)](http://www.glottopedia.org/index.php/Register_(discourse))>  
 [987] Ola Zur, Really-Learn-English.com <<https://www.really-learn-english.com/language-register.html>>  
 [941] Cambridge English Dictionary <<https://dictionary.cambridge.org/grammar/british-grammar/types-of-english-formal-informal-etc/formal-and-informal-language>>

## ● REGISTER

Refers to particular varieties or styles of writing (different contexts, different audiences, different purposes).

### ○ legal

A register normally only used in the field of law and justice.

*Based on:*  
 [1032] English Language and Linguistics Online <<http://www.ello.uos.de/field.php/Sociolinguistics/Register-andstyle>>



○ **technical**

A register normally used in technical and specialist language, though not necessarily restricted to any specific field.

*Based on:*  
[994] Glottopedia <[http://www.glottopedia.org/index.php/Register\\_\(discourse\)](http://www.glottopedia.org/index.php/Register_(discourse))>

○ **literary**

A register found only or mainly in literature written in an 'elevated' style.

*Based on:*  
[994] Glottopedia <[http://www.glottopedia.org/index.php/Register\\_\(discourse\)](http://www.glottopedia.org/index.php/Register_(discourse))>

○ **advertising**

A register used when calling public attention to something.

*e.g., self-promotion using advertising flyers, promotion of goods or services*

*Based on:*  
[938] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/advertising>>

○ **didactic**

A register used or intended for teaching or instruction.

*e.g., online tutorials, web docs*

*Based on:*  
[951] Your Dictionary <<http://www.yourdictionary.com/didactic>>

○ **bureaucratic**

A register used when dealing with a system of controlling or managing a country, company, or organization, operated by a large number of officials, over-concerned with procedure at the expense of efficiency or common sense.

*e.g., pre-formatted development plans, bi-annual reports*

*Based on:*  
[940] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/bureaucratic>>  
[1080] Lexico Dictionaries <<https://en.oxforddictionaries.com/definition/bureaucratic>>

○ **popular science**

An interpretation of science intended for a general audience, rather than for other scientists or students.

A register used when presenting science to ordinary people who are not experts – *i.e.* in a simple and understandable way.

*e.g. animation of pop-science blog, article in National Geographic, presentation of scientific results during a 'Fête de la Science' or a 'European Researchers' Night'*

*Based on:*  
[1350] Cambridge Dictionary <<https://dictionary.cambridge.org/dictionary/english/popular-science>>  
[1351] Wiktionary <[https://en.wiktionary.org/wiki/popular\\_science](https://en.wiktionary.org/wiki/popular_science)>

○ **humorous**

A register used with the intention of sounding funny or playful.

*Based on:*  
[994] Glottopedia <[http://www.glottopedia.org/index.php/Register\\_\(discourse\)](http://www.glottopedia.org/index.php/Register_(discourse))>

● **SUBJECT MATTER**

Refers to the substance of the writing as distinguished from its form or style.

○ **reporting**

Giving an account or statement describing in detail an event, situation, or the like, usually as the result of observation or investigation. The objective of this activity is to inform, to relate - impart knowledge of some fact, state or affairs, or event.

*e.g., describing the way an experiment was conducted (experimental setup, schedule, results) a report on global warming that has sections such as background, methods of assessing the current situation, controversies among scientists, predictions for the future (various kinds of predictions--impacts on coastlines, impacts on agriculture, impacts on species) etc.*

*Based on:*  
[944] Dictionary.com <<https://www.dictionary.com/browse/narrating>>  
[928] The Free Dictionary <<https://www.thefreedictionary.com/narrating>>

### ○ narrating

Giving an account, commenting on, or telling the story of events, experiences, *etc.* Unlike the reporting activity the narrating activity includes a significant part of interpretation. Such accounts tend to be fictional or historical rather than informational and factual.

*e.g., Jane Austen writes narratives, institutional researchers write reports*

*Based on:*  
[944] Dictionary.com <<https://www.dictionary.com/browse/narrating>>  
[1078] English language and usage <<https://english.stackexchange.com/questions/414955/difference-between-narrative-and-report>>  
[928] The Free Dictionary <<https://www.thefreedictionary.com/narrating>>

### ○ arguing

Giving one's reasons for an opinion, idea, belief, *etc.* Presenting reasons for or against a thing.

*e.g., position papers*

*Based on:*  
[937] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/argue>>  
[943] Dictionary.com <<https://www.dictionary.com/browse/arguing>>

### ○ defining

Explaining and describing the meaning and exact limits or extent of something.

*e.g., lexicons, disambiguation of terms used in a text*

*Based on:*  
[938] Cambridge English Dictionary <<https://dictionary.cambridge.org/us/dictionary/english/defining>>



### C3.5.2

#### referencing

The activity of compiling detailed information on sources consulted and arranging them in order to help the reader get a clear understanding of the sources used during an investigation process.

As a consequence this activity goes beyond furnishing a text with references and includes all steps prior to the actual writing of the text.

*e.g., bibliography, legends*

*Based on:*  
[546] Massey University <<http://owll.massey.ac.nz/referencing/what-is-referencing.php>>  
[547] Queen's University Belfast <<https://www.qub.ac.uk/citezwrite/harvard.pdf>>  
[416] Dictionary.com <<https://www.dictionary.com/browse/referencing>>

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[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>  
[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

### ○ second language

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

*Based on:*  
[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

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*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

Based on:  
[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>

● **AUTOMATION DEGREE**

Identifies degree of human intervention in a process of referencing.

○ **manual process**

Employing human capacities rather than automated methods.

*e.g., using human perceptual and cognitive capacities.*

[3] Memoria team, Memoria project

○ **computed process**

Calculated by means of a computer.

*e.g., using automatic referencing tools*

Based on:  
[934] Merriam-Webster <<http://www.merriam-webster.com/dictionary/compute>>

○ **semi-automated process**

A process that is partly computerised and partly requires human intervention/ decision (*i.e.*, expertise, knowledge).

*e.g., using tools that assist a human in the referencing effort*

[3] Memoria team, Memoria project



C3.5.3

**recording and documenting**

The activity of setting down in writing or the like, as for the purpose of preserving evidence so that that it can be referred to later.

Unlike the writing activity the recording activity is not intended for publication, but aims at keeping a written account of an investigation on a regular basis.

*e.g., logbooks, Git hub code versioning*

Based on:  
[415] Dictionary.com <<https://www.dictionary.com/browse/recording>>  
[425] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/record>>

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[934] Merriam-Webster <<http://www.merriam-webster.com/dictionary/compute>>

○ **semi-automated process**

A process that is partly computerised and partly requires human intervention/ decision (*i.e.*, expertise, knowledge).

*e.g., semi-automatic recording of events*

[3] Memoria team, Memoria project



### C3.5.4

#### structured text

The activity of producing a systematic non-narrative presentation of data, usually arranged in rows and columns, or possibly in a more complex structure. The objective of this activity is to convey and structure information that might otherwise not be readily understood and efficiently organised.

Are excluded from this activity the formatting of data in text based computer languages (e.g., XML, SQL), as well as visual compositions such as diagrams or graphs.

*e.g., a tabular presentation of data*

*Based on:*  
[396] Wikipedia <[https://en.wikipedia.org/wiki/Table\\_\(information\)](https://en.wikipedia.org/wiki/Table_(information))>  
[475] Your Dictionary <<https://www.yourdictionary.com/chart>>

● **LANGUAGE**

Defines language used from the perspective of individuals.

○ **mother tongue**

One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.

*e.g., A person who have been living in Great Britain since his childhood, and has used English at home, can say that English is a native language to him or her.  
A French speaker living in France can say that Italian is a native language to him or her if he or him uses Italian at home.*

*Based on:*  
[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>  
[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

○ **second language**

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

Based on:  
[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

○ **foreign language**

A language learnt by a speaker but that he was not exposed to as a child at home, nor is used on a regular basis in his or her country of residence.

*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

Based on:  
[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>



C3.5.5

**redaction**

A form of text production in which an author combines multiple source texts he or she has written and that are altered slightly to make a single document. Often this is a method of collecting a series of writings on a similar theme and creating a definitive and coherent work. (The « recycling » in part or in full of a content that has already been published, without citing its sources is considered as self-plagiarism.)

*e.g., writing a scientific report in which several documents are combined*

Based on:  
[397] Wikipedia <<https://en.wikipedia.org/wiki/Redaction>>  
[545] Compilatio.net <<https://www.compilatio.net/en/beware-of-self-plagiarism/>>

● **LANGUAGE**

Defines language used from the perspective of individuals.

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One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.

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A French speaker living in France can say that Italian is a native language to him or her if he or him uses Italian at home.*

Based on:  
[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>  
[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

○ **second language**

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

Based on:  
[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

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A language learnt by a speaker but that he was not exposed to as a child at home, nor is used on a regular basis in his or her country of residence.

*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

Based on:  
[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>



C3.5.6

**annotation**

A note, comment or a tag added to a text, image, diagram, video, etc.

*e.g. Comments added to the image (e.g., IPTC comments field)*

[3] Memoria team, Memoria project

**STRUCTURE**

Identifies the way the content of the annotation is structured.

**free annotation**

Adding brief free text notes (phrases, words ...).

*e.g., text revision in a standard text editor.*

[3] Memoria team, Memoria project

**data labelling**

Tagging of pieces of data with one or more labels identifying certain properties, characteristics, classifications, contained objects, etc.

*e.g., NLP text annotation*

Based on:  
[1086] Techopedia <<https://www.techopedia.com/definition/33695/Labeled-data>>

**CONTRIBUTORS**

Identifies the profile of the persons who carry out the annotation.

**expert annotation**

Annotations produced by individuals having a great deal of knowledge or skill in a particular area – a knowledge they use in the annotation activity.

*e.g., a linguist tagging entities in a textual content.*

[1087] Lexico Dictionaries <<https://www.lexico.com/en/definition/expert>>

**layman annotation**

Annotations produced by individuals without professional or specialised knowledge in the domain relative to the annotation.

*e.g. a graphic designer tagging entities in a textual content*

[3] Memoria team, Memoria project

**crowd annotation**

Annotation produced by a large group of untrained people, either paid or unpaid, typically via the Internet.

*e.g., annotation done using a third-party crowd annotation platform*

Based on:  
[1088] Lexico Dictionaries <<https://www.lexico.com/en/definition/crowdsourcing>>

**ENVIRONMENT**

Identifies the environment inside which the annotations are created.

**digital**

Annotations produced in a digital environment.

*e.g. online annotations.*

[3] Memoria team, Memoria project

**analogue**

Annotations produced on analogue materials.

*e.g. notes written on a margin of a book*

[3] Memoria team, Memoria project

**C4****discussion / consultation**

A talk between two or more people (during a phase of data analysis) in which thoughts and ideas are expressed, questions are asked and answered, and solutions are explored especially in order to reach a decision.

*e.g., an informal brief exchange of ideas during an evaluation of quality of source trustworthiness, an in-depth discussion during conceptual modelling*

*Based on:*  
[1240] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/conversation>>  
[1241] Cambridge English Dictionary <<https://www.dictionary.com/browse/discussion>>  
[1242] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/discussion>>

#### ● INTERACTION MODE

Classification of discussions/consultations based on the interaction mode.

##### ○ face-to-face discussion

A discussion involving participants that are present at the same place.

*e.g., an informal exchange during linguistic disambiguation*

[3] Memoria team, Memoria project

##### ○ remote discussion

A discussion involving participants that are separated in distance typically facilitated through technology, such as video conferencing software.

*e.g., interacting via two-way communication technologies (videoconferencing, by telephone, etc.)*

*Based on:*  
[1243] Top Hat Glossary <<https://tophat.com/glossary/r/remote-teaching/>>

#### ○ GROUP TYPE

Classification of discussions/consultations according to the number of participants and to the presence of a moderator.

##### ○ informal group discussion

A discussion involving several people exchanging without a moderator in charge of conducting the discussion in an organized way.

[3] Memoria team, Memoria project

##### ○ one-to-one discussion

A discussion involving two people.

*Based on:*  
[1244] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/one-to-one>>

##### ○ moderated discussion

A discussion that involves a group of people who have been brought together to discuss a particular subject in order to solve a problem or suggest ideas. The discussion is led by a person who is in charge of the discussion and makes sure that it is conducted in an organized way.

*e.g., instructions given and discussed during a training session, a briefing*

*Based on:*  
[1245] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/moderator>>  
[1246] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/focus-group>>

#### ○ STRUCTURATION LEVEL

Determines the level of structuration before the discussion.

##### ○ structured

A discussion with strict guidelines, which can be both content-oriented, logistical, or technical, and privileging pre-set questions.

*Based on:*  
[1247] Moodle, Moodle <<https://etrp.wmo.int/mod/book/view.php?id=8628&chapterid=1582&lang=en>>

##### ○ unstructured

The key feature of the unstructured discussion is the free-ranging nature of the questions asked and ideas participants may come up with. It is non-directive in nature. It is similar to an everyday conversation because of its informal and free-flowing nature.

*e.g., unprompted exchange during an activity*

*Based on:*  
 [1249] Formplus, Formplus <<https://www.formpl.us/blog/unstructured-interview>>  
 [1248] Tom Pollock, The Difference Between Structured, Unstructured & Semi-Structured Interviews < <https://www.oliverparks.com/blog-news/the-difference-between-structured-unstructured-amp-semi-structured-interviews>>

**● ANTICIPATION LEVEL**

Determines whether the exchange was planned and scheduled or not.

**○ spontaneous**

A spontaneous discussion is not planned or arranged, but takes place because someone suddenly needs or wants it to happen.

*e.g., voluntary discussion between a student and his/her supervisor*

*Based on:*  
 [1250] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/spontaneous>>

**○ programmed**

Discussion planned and arranged according to a schedule.

*e.g., mid-term project session*

*Based on:*  
 [1251] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/arrange-a-schedule>>

**● REPORTING MODE**

Classification of discussion according to techniques used to report on its results.

**○ unreported**

No traces of a discussion are kept.

*[3] Memoria team, Memoria project*

**○ paper-and-pencil**

Decisions or conclusions resulting from the conversation are reported on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*Based on:*  
 [1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>

**○ audio-video recording**

An entire conversation, its fragments, or conclusions, are recorded (audio or video).

*e.g., voice recording, videoing*

*[3] Memoria team, Memoria project*

**○ computer-assisted**

Decisions or conclusions resulting from the conversation are directly formatted and stored via a computer programme and using a computer, a laptop, a tablet, etc

*Based on:*  
 [838] Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>







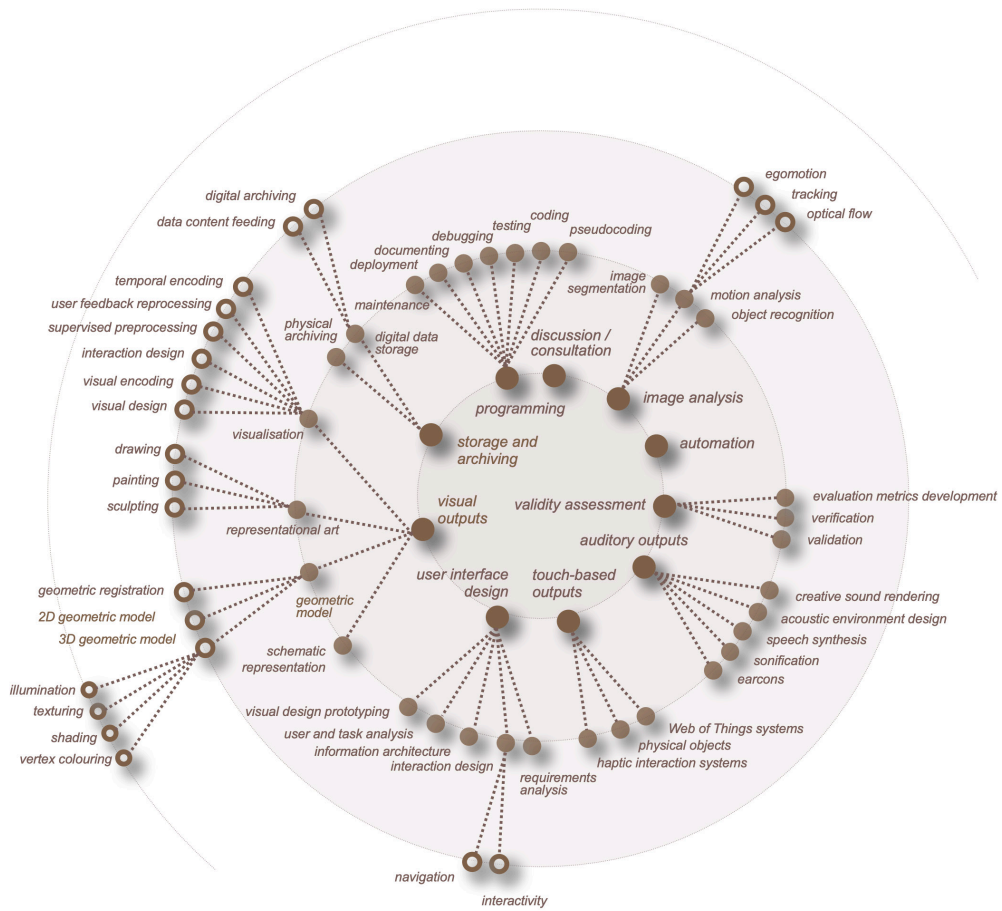
## ADDED VALUE PROCEDURAL ACTIVITIES

A class of activities dedicated to the phase of research centred on the use of procedural knowledge, such as scientific procedures and technological protocols, and implicating the use of technical skills and abilities acquired and developed by training or practice.

e.g., production of a 3D geometric model, user interface design, programming, image analysis, system validation, *etc.*



D



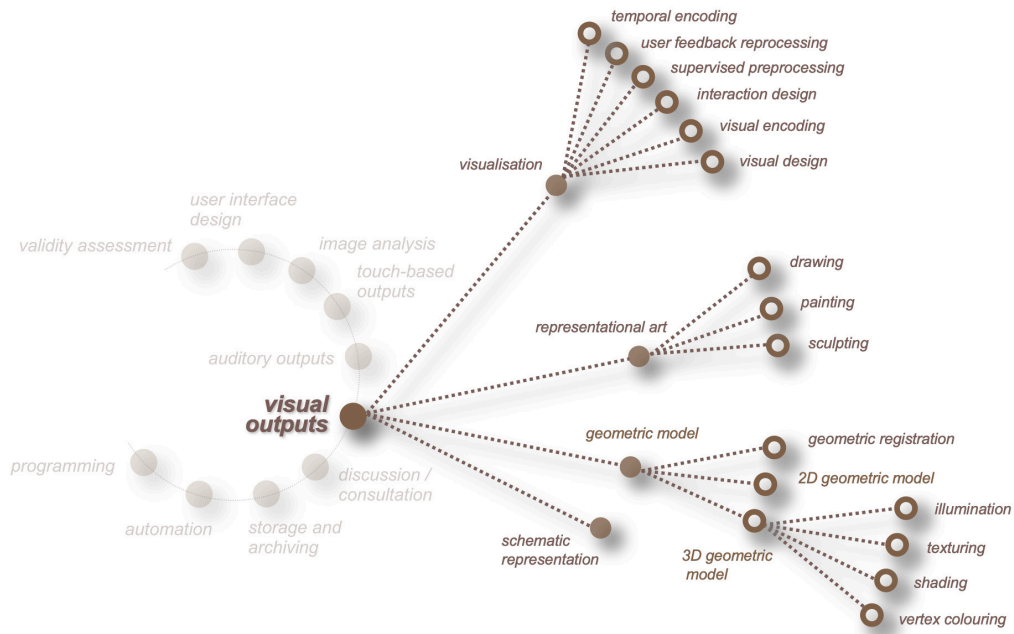
# ADDED VALUE PROCEDURAL ACTIVITIES

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D1

### visual outputs

Creation of outputs of visual nature, dedicated to a human's sense of sight.

*e.g., a picture, a chart, a map, a 3D model, picture elements in films as distinguished from the sound elements, or other presentation that appeals to the sense of sight.*

Based on:

[161] The Free Dictionary <<http://www.thefreedictionary.com/visual>>

[407] Merriam-Webster <<http://www.merriam-webster.com/dictionary/visual>>

#### ○ CHROMATIC SCALE

Specifies number of colours used in the representation.

#### ○ monochrome

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

Based on:

[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

#### ○ coloured

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project

● **OUTPUT'S NATURE**  
Classification of discussions/consultations according to the number of participants and to the presence of a moderator.

○ **nondigital**  
Refers to outputs that are created as nondigital.  
*e.g., a manual drawing*

[3] Memoria team, Memoria project

○ **digital**  
Refers to outputs that are created in a digital form.  
*e.g., Maya 3D model, SVG vector graphics, Solid Works model, JPG image*

[3] Memoria team, Memoria project



D1.1

**geometric model**

Description of 3D objects representing real-life or imaginary artefacts and environments, using mathematical methods, geometric entities and their interrelations. Geometric models are most often produced through algorithms and via specialised software.

*e.g., a 3D reconstruction of a building, a 3D model of Ankh-Morkpork, a cartographic map of PACA*

[3] Memoria team, Memoria project

● **CHROMATIC SCALE**  
Specifies number of colours used in the representation.

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A representation in one colour, or allowing a range shades of that colour.  
*e.g., grayscale, black-and-white, green-and-white, sepia*

Based on:  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

○ **coloured**  
A representation in various colours.  
*e.g., 256-colour image*

[3] Memoria team, Memoria project

● **REUSE LEVEL**  
Defines whether existing geometric models are reused.

○ **production**  
The act of creation/producing of a geometric model from scratch.  
*e.g., creating a map of Ankh-Morkpork*

[3] Memoria team, Memoria project

○ **reuse**  
The use of an existing geometric model as a starting point for the production of an output.  
*e.g., reuse of existing 3D models, reuse of existing cartographic map*

[3] Memoria team, Memoria project

**AUTOMATION LEVEL**  
Specifies the amount of automatic procedures in the production of a geometric model.

**automated production**  
Techniques that apply algorithms for producing scenes, such as a procedural modelling that focuses on creating a model from a rule set, rather than editing the model via user input.

*e.g., tree generators, procedural modelling of buildings, a mesh produced by an automatic surface reconstruction algorithm*

*[853] Wikipedia <[https://en.wikipedia.org/wiki/Procedural\\_modeling](https://en.wikipedia.org/wiki/Procedural_modeling)>* *Based on:*

**semi-automated production**  
A process combining automatic modelling and human intervention.

*e.g., using Z-brush to modify a geometrical model produced automatically*

*[3] Memoria team, Memoria project*

**manual production**  
Done by a human rather than by automatic means.

*e.g., modelled 'by hand' using computer software (e.g., Maya), photo modelling*

*[3] Memoria team, Memoria project*

**SURVEY IMPACT**  
Specifies the extent to which survey data impacts the geometric modelling processed.

**reality-based**  
The process of creating 3D virtual replicas of real objects based on results of survey campaigns.

*e.g., 3D geometric model of an existing object obtained from a 3D laser scan of an existing building*

*[3] Memoria team, Memoria project*

**interpretation driven**  
Geometric modelling based on creative processes in which a user interprets geometric features of an object's morphology.

*e.g., virtual reconstructions of the destroyed buildings, virtual simulation of unbuilt architecture*

*[3] Memoria team, Memoria project*

**ALTERNATIVE GEOMETRIES**  
Specifies the purpose of the use of alternative geometries.

**alternative levels of details**  
Use of alternative levels of details for the same object, usually by simplifying its geometry.

*e.g., decreasing the complexity of a 3D object representation as it moves away from the viewer or according to other metrics such as object importance, viewpoint-relative speed or position*

*[3] Memoria team, Memoria project*

**time-based alternatives**  
Use of the alternative geometrical definitions of the same object, each corresponding to a different time slot.

*e.g., model with a temporal cursor that allows passing/switching from one version to the other*

*[3] Memoria team, Memoria project*





D1.1.1

### 2D geometric model

An act of creating a geometric model of an object as a two-dimensional figure, usually on the Euclidean or Cartesian plane.

*e.g., technical drawing, city plan, 2D section of a building*

*Based on:*  
[340] Wikipedia <[https://en.wikipedia.org/wiki/2D\\_geometric\\_model](https://en.wikipedia.org/wiki/2D_geometric_model)>

#### GRAPHIC TYPE

Specifies the types of 2D graphics.

##### raster

Raster graphics are bitmaps.

A bitmap is a grid of individual pixels that collectively compose an image. Raster graphics render images as a collection of countless tiny squares. Each square, or pixel, is coded in a specific hue or shade.

*e.g., BMP, TIFF, GIF and JPEG files*

*Based on:*  
[969] The Printing Connection <<http://www.printcnx.com/resources-and-support/additional-resources/raster-images-vs-vector-graphics/>>

##### vector

Vector graphics are based on mathematical formulas that define geometric primitives such as polygons, lines, curves, circles and rectangles.

*e.g., SVG graphics, OpenStreetMap cartography, PowerPoint presentations*

*Based on:*  
[969] The Printing Connection <<http://www.printcnx.com/resources-and-support/additional-resources/raster-images-vs-vector-graphics/>>

#### AUTOMATION LEVEL

Specifies the amount of automatic procedures in the production of a geometric model.

##### automated production

Techniques that apply algorithms for producing 2D models, such as procedural modelling that focuses on creating a model from a rule set, rather than editing the model via user input.

*Based on:*  
[853] Wikipedia <[https://en.wikipedia.org/wiki/Procedural\\_modeling](https://en.wikipedia.org/wiki/Procedural_modeling)>

##### semi-automated production

A process combining automatic modelling and human intervention.

[3] Memoria team, Memoria project

##### manual production

Done by a human rather than by automatic means.

[3] Memoria team, Memoria project

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Specifies number of colours used in the representation.

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A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

##### coloured

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project

**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital  
*e.g., a manual drawing showing a section of a building*

[3] Memoria team, Memoria project

**digital**  
Refers to outputs that are created in a digital form.  
*e.g., JPG image*

[3] Memoria team, Memoria project

**ALTERNATIVE GEOMETRIES**  
Specifies the purpose of the use of alternative geometries.

**alternative levels of details**  
Use of alternative levels of details for the same object, usually by simplifying its geometry.  
*e.g., decreasing the complexity of a 2D object representation as it moves away from the viewer or according to other metrics such as object importance*

[3] Memoria team, Memoria project

**time-based alternatives**  
Use of the alternative geometrical definitions of the same object, each corresponding to a different time slot.  
*e.g., model with a temporal cursor that allows passing/switching from one version to the other*

[3] Memoria team, Memoria project



D1.1.2

**3D geometric model**

An act of creating a geometric model representing an object in three-dimensions, usually in the Euclidean space.

*e.g., 3D model of a house produced in Maya*

Based on:  
[3] Memoria team, Memoria project>

**REPRESENTATION SCHEMES**  
Specifies methods of formal description of 3D geometric model..

**cell-based**  
This scheme is essentially a list of spatial cells occupied by the solid. The cells, also called voxels, are cubes of a fixed size and are arranged in a fixed spatial grid (other polyhedral arrangements are also possible but cubes are the simplest).

Based on:  
[854] Wikipedia <[https://en.wikipedia.org/wiki/Solid\\_modeling](https://en.wikipedia.org/wiki/Solid_modeling)>

**surface-based**  
(boundary representation) In this scheme a solid is represented by its boundary.  
*e.g., drawing a cube in Blender as a set of six faces*

Based on:  
[854] Wikipedia <[https://en.wikipedia.org/wiki/Solid\\_modeling](https://en.wikipedia.org/wiki/Solid_modeling)>

**constructive solid geometry**  
A family of schemes for representing rigid solids as Boolean constructions or combinations of primitives.

Based on:  
[854] Wikipedia <[https://en.wikipedia.org/wiki/Solid\\_modeling](https://en.wikipedia.org/wiki/Solid_modeling)>

○ **parametric shapes**

Schemes in which shapes are associated with attributes such as intrinsic geometric parameters (length, width, depth, *etc.*), position and orientation.

*Based on:*  
[854] Wikipedia <[https://en.wikipedia.org/wiki/Solid\\_modeling](https://en.wikipedia.org/wiki/Solid_modeling)>

● **SEMANTIC ENTITISATION**

Specifies the way the geometrical model is composed, with regards to a point of view or discipline specific discretisation of the 3D content.

○ **independent entities**

The 3D content is composed of a collection of independent geometric objects corresponding to a discipline-specific point of view.

*e.g., a column is modelled as three independent objects in the scene: base, shaft, capital*

[3] Memoria team, Memoria project

○ **interrelated entities**

The 3D content is composed of a collection of interrelated geometric objects corresponding to a discipline-specific point of view.

*e.g., a column is modelled as a group of objects: base + shaft + capital*

[3] Memoria team, Memoria project

○ **parametric entities**

Geometric objects designed as 'prototypes' for reuse. An object is described through a list of quantitative parameters that correspond to its sub-parts.

*e.g., reusing the model of one moulded beam to create the 3D model of a whole ceiling, with internal dimensional variations*

[3] Memoria team, Memoria project

● **LIGHT SOURCE DESIGN**

Specifies identification, positioning and configuration of sources of illumination of a 3D scene.

○ **ambient light**

Also called global ambience, a fixed-intensity and fixed-colour light source that affects all objects in the scene equally in an unrealistic way (it makes every side of every surface the same colour).

*e.g., Upon rendering, all objects in the scene are brightened with the specified intensity and colour.*

*Based on:*  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

○ **directional light**

A light source that illuminates all objects equally from a given direction, like an area light of infinite size and infinite distance from the scene -there is shading, but cannot be any distance falloff.

*e.g., simulating direct sunlight*

*Based on:*  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

○ **point light**

Also called omnidirectional lights, light originating from a single point, and spreading outward in all directions.

*e.g., a lightbulb hanging in the middle of a room*

*Based on:*  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**spotlight**

Light originates from a single point, but it is limited to a specified cone or beam of light in a certain direction.

*e.g., a light from a pocket torch lighting selected objects*

*Based on:*  
 [855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
 [1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**area light**

Light originates from a small area on a single plane. Area lights are often available in a variety of shapes, including spherical area lights, rectangles, discs, and linear lights.

*Based on:*  
 [855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
 [1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**volumetric lighting**

Light originating from a small volume, an enclosed space lighting objects within that space.

*e.g., using an object as a light - fluorescent rings or neon tubes.*

*Based on:*  
 [855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
 [1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**environment sphere**

Also called a sky dome, a special light source that surrounds and provides illumination from all around the scene. Used in image-based lighting (IBL)...

*Based on:*  
 [1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**photometric light**

Uses photometric (light energy) values that enable to more accurately define lights as they would be in the real world.

*e.g., creating lights with various distribution and colour characteristics, or importing specific photometric files available from lighting manufacturers.*

*Based on:*  
 [971] The Autodesk Knowledge Network <<https://knowledge.autodesk.com/support/3ds-max/learn-explore/caas/CloudHelp/cloudhelp/2015/ENU/3DSMax/files/GUID-E337DCA6-6B8D-4689-BCB8-6A6EEF06E6EE-htm.html>>

**CHROMATIC SCALE**

Specifies number of colours used in the representation.

**monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
 [852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

**coloured**

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project

**REUSE LEVEL**

Defines whether existing geometric models are reused.

**production**

The act of creation/producing of a geometric model from scratch.

*e.g., creating a map of Ankh-Morkpork*

[3] Memoria team, Memoria project

○ **reuse**

The use of an existing geometric model as a starting point for the production of an output.

*e.g., reuse of existing 3D models, reuse of existing cartographic map*

[3] Memoria team, Memoria project

● **AUTOMATION LEVEL**

Specifies the amount of automatic procedures in the production of a geometric model.

○ **automated production**

Techniques that apply algorithms for producing scenes, such as a procedural modelling that focuses on creating a model from a rule set, rather than editing the model via user input.

*e.g., tree generators, procedural modelling of buildings, a mesh produced by an automatic surface reconstruction algorithm*

Based on:  
[853] Wikipedia <[https://en.wikipedia.org/wiki/Procedural\\_modeling](https://en.wikipedia.org/wiki/Procedural_modeling)>

○ **semi-automated production**

A process combining automatic modelling and human intervention.

*e.g., using Z-brush to modify a geometrical model produced automatically*

[3] Memoria team, Memoria project

○ **manual production**

Done by a human rather than by automatic means.

*e.g., modelled 'by hand' using computer software (e.g., Maya), photo modelling*

[3] Memoria team, Memoria project

● **SURVEY IMPACT**

Specifies the extent to which survey data impacts the geometric modelling processed.

○ **reality-based**

The process of creating 3D virtual replicas of real objects based on results of survey campaigns.

*e.g., 3D geometric model of an existing object obtained from a 3D laser scan of an existing building*

[3] Memoria team, Memoria project

○ **interpretation driven**

Geometric modelling based on creative processes in which a user interprets geometric features of an object's morphology.

*e.g., virtual reconstructions of the destroyed buildings, virtual simulation of unbuilt architecture*

[3] Memoria team, Memoria project

● **ALTERNATIVE GEOMETRIES**

Specifies the purpose of the use of alternative geometries.

○ **alternative levels of details**

Use of alternative levels of details for the same object, usually by simplifying its geometry.

*e.g., decreasing the complexity of a 3D object representation as it moves away from the viewer or according to other metrics such as object importance, viewpoint-relative speed or position*

[3] Memoria team, Memoria project

○ **time-based alternatives**

Use of the alternative geometrical definitions of the same object, each corresponding to a different time slot.

*e.g., model with a temporal cursor that allows passing/switching from one version to the other*

[3] Memoria team, Memoria project



D1.1.2.1

**illumination**

A deliberate use of light sources combined with rendering methods to achieve a practical or aesthetic effect.

Based on:  
[341] Wikipedia <<https://en.wikipedia.org/wiki/Lighting>>

○ **RENDERING METHODS**

Specifies the rendering methods used in computer graphics to add realistic lighting to 3D scenes.

○ **radiosity**

A global illumination algorithm based on a detailed analysis of light reflections off diffuse surfaces. The images that result from a radiosity renderer are characterised by soft, gradual shadows.

Based on:  
[1044] Matthew Ward, Matthew Ward's Home Page <<http://web.cs.wpi.edu/~matt/courses/cs563/talks/radiosity.html>>

○ **ray tracing**

A general technique of modelling the path taken by light by following rays of light as they interact with optical surfaces.

Based on:  
[1028] FANDOM <[http://graphics.wikia.com/wiki/Ray\\_tracing](http://graphics.wikia.com/wiki/Ray_tracing)>

○ **cone tracing**

A derivative of the ray tracing algorithm in which cones are projected from the camera centre through each pixel, where the intersection of the cone and the scene model is used to determine the pixel's colour.

Based on:  
[856] Wikipedia <[https://en.wikipedia.org/wiki/Cone\\_tracing](https://en.wikipedia.org/wiki/Cone_tracing)>  
[1061] Edinburgh Online Graphics Dictionary <<http://homepages.inf.ed.ac.uk/rbf/GRDICT/grdict.htm#C>>

○ **beam tracing**

A derivative of the ray tracing algorithm that replaces rays, which have no thickness, with beams. Beams are shaped like unbounded pyramids, with (possibly complex) polygonal cross sections.

Based on:  
[857] Wikipedia <[https://en.wikipedia.org/wiki/Beam\\_tracing](https://en.wikipedia.org/wiki/Beam_tracing)>

○ **path tracing**

Path tracing is an improvement on general ray-tracing techniques. Normal ray-tracing uses a constant factor to estimate the contribution of ambient light at a given surface point but path-tracing estimates the global illumination using, for example, Monte Carlo techniques. Images are thus generated using many paths through each pixel.

Based on:  
[1033] Edinburgh Online Graphics Dictionary <<http://homepages.inf.ed.ac.uk/rbf/GRDICT/grdict.htm#P>>

○ **Metropolis light transport**

An application of a variant of the Monte Carlo method called the Metropolis-Hastings algorithm to the rendering equation for generating images from detailed physical descriptions of three-dimensional scenes. Builds upon bi-directional path tracing.

Based on:  
[858] Wikipedia <[https://en.wikipedia.org/wiki/Metropolis\\_light\\_transport](https://en.wikipedia.org/wiki/Metropolis_light_transport)>

○ **ambient occlusion**

A shading and rendering technique used to calculate how exposed each point in a scene is to ambient lighting.

*Based on:*  
[859] Wikipedia <[https://en.wikipedia.org/wiki/Ambient\\_occlusion](https://en.wikipedia.org/wiki/Ambient_occlusion)>

○ **photon mapping**

A global illumination algorithm based on ray tracing used to realistically simulate the interaction of light with different objects. Specifically, it is capable of simulating the refraction of light through a transparent substance, such as glass or water, diffuse interreflections between illuminated objects, and some of the effects caused by particulate matter such as smoke or water vapour.

*Based on:*  
[1027] FANDOM <[http://graphics.wikia.com/wiki/Photon\\_mapping](http://graphics.wikia.com/wiki/Photon_mapping)>

○ **point-based global illumination**

Uses a dense point sampling of the scene's surfaces to approximate indirect light transport and is intensively used in 3D motion pictures and special effects. Each point caches the reflected light using a spherical function and is typically used in a subsequent rasterization process to compute colour bleeding and ambient occlusion in an economic, noise-free fashion.

*Based on:*  
[1041] Tamy Boubekeur, Tamy Boubekeur's Homepage <<http://perso.telecom-paristech.fr/~boubek/papers/QPBG/>>

○ **image-based lighting**

The process of illuminating scenes and objects (real or synthetic) with images of light from the 'real world'.

*Based on:*  
[992] Paul Debevec, USC Institute for Creative Technologies <<http://ict.usc.edu/pubs/Image-Based%20Lighting.pdf>>

● **LIGHT ENVIRONMENT ANALYSIS**

Identification, positioning and configuration of sources of illumination of a 3D scene.

○ **sun position calculation**

Illuminating objects using sun position calculation. Specific longitude, latitude, date and time parameters are required to calculate the exact position of the sun and to determine amount and type of sunshine applied to a 3D scene.

*e.g., simulating the sun's position and trajectory for a given day of a year in verify visibility patterns*

*Based on:*  
[1045] Hoshang Kolivand, Mohd Shahrissal Sunar, CiteSeerX <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.301.4105&rep=rep1&type=pdf>>

○ **real-light-source sampling**

Illuminating objects using measurements of real light.

*e.g., highly polished metallic spheres photographed to capture the real environment. Direct HDR capture of the sun and sky.*

*Based on:*  
[1039] Clément Poline <<http://graphics.cs.cmu.edu/nsf/course/15-462/Fall07/462/lectures/EnvMap.pdf>>



D1.1.2.2

**shading**

The process of altering the colour of an object in the 3D scene, based on its angle to lights, its distance from lights and its material properties. Shading is performed during the rendering process by a program called a shader.

*Based on:*  
[342] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Computer\\_graphics](https://en.wikipedia.org/wiki/Shading#Computer_graphics)>

**MATERIAL PROPRIETIES**

Specifies materials proprieties used to calculate objects appearance.

**specularity**

The degree to which a material is specular (*i.e.*, has the properties of a mirror).

*Based on:*

[1995] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/specular>>

[1996] Wiktionary <<https://en.wiktionary.org/wiki/specularity>>

**fluorescence**

The capacities of emission of light (or other electromagnetic radiation) by a material when stimulated by the absorption of light. Fluorescent materials cease to glow immediately upon removal of the excitation source.

*e.g., fluorescent minerals emit visible light when exposed to ultraviolet light.*

*Based on:*

[1062] Wiktionary <<https://en.wiktionary.org/wiki/fluorescence>>

[1860] Wikipedia <<https://en.wikipedia.org/wiki/Fluorescence>>

**phosphorescence**

The capacities of an object's phosphorescence. Unlike fluorescence, a phosphorescent material does not immediately re-emit the radiation it absorbs. Absorbed radiation may be re-emitted at a lower intensity for up to several hours after the original excitation.

*e.g., commonly seen examples of phosphorescent materials are glow-in-the-dark toys, paint, and clock dials that glow for some time after being charged with a bright light such as in any normal reading or room light.*

*Based on:*

[1861] Wikipedia <<https://en.wikipedia.org/wiki/Phosphorescence>>

**transparency**

The physical propriety of a material allowing light to pass through it without being scattered. A transparent medium not only allows the transport of light but also allows for image formation (objects or images that are behind it remain visible).

*e.g., a windowpane.*

*Based on:*

[1862] Wikipedia <[https://en.wikipedia.org/wiki/Transparency\\_and\\_translucency](https://en.wikipedia.org/wiki/Transparency_and_translucency)>

**translucency**

The physical property of a material allowing light to pass through it diffusely. A translucent medium allows only the transport of light.

*e.g., something that has a glowing appearance, as light is passing through it, stained glass.*

*Based on:*

[1862] Wikipedia <[https://en.wikipedia.org/wiki/Transparency\\_and\\_translucency](https://en.wikipedia.org/wiki/Transparency_and_translucency)>

**material library**

Use of predefined material types library.

*e.g., porcelain, cherrywood, rubber, blue metallic.*

[3] Memoria team, Memoria project

**heterogeneity of the material**

Taking into account heterogeneous proprieties of the same material.

*e.g., degraded marble, skin, leaves, and minerals.*

[3] Memoria team, Memoria project

**SHADING METHODS**

Differentiation between reusing existing predefined shading methods and development of new ones.

**preexisting**

Use of existing shading methods such as Blinn, Lambert, Phong...

*e.g., Blinn, Lambert, Phong*

[3] Memoria team, Memoria project



- **self-built**  
Development and use of a custom shading method.  
*e.g., BRDF, BSDF, BSSRDF.*

[3] Memoria team, Memoria project



### D1.1.2.3

#### texturing

Methods for adding detail, surface texture (a bitmap or raster image), or colour to a computer-generated graphic or 3D model.

*e.g., photorealistic texturing*

Based on:  
[343] Wikipedia <[https://en.wikipedia.org/wiki/Texture\\_mapping](https://en.wikipedia.org/wiki/Texture_mapping)>

- **TEXTURE TYPE**  
Differentiation of textures from point of view of their realism and expected effects.

- **photorealistic photography**  
Methods of adding texture to a computer-generated graphic or 3D model by applying/projecting photorealistic photographs of the object on it.  
*e.g., 3D virtual model of an edifice produced from photographs reused for texturing*  
[3] Memoria team, Memoria project

- **photorealistic image samples**  
Methods of adding texture to a computer-generated graphic or 3D model by applying/projecting photorealistic samples of photographs on it.  
*e.g., combining several photographic samples into one texture that will be applied on a wall.*  
[3] Memoria team, Memoria project

- **photorealistic generic materials**  
Textures chosen from general material libraries.  
*e.g., using AutoDesk shared material library*  
[3] Memoria team, Memoria project

- **procedural texture**  
A computer-generated image created using an algorithm intended to create a realistic representation of natural elements such as wood, marble, granite, metal and stone.  
*e.g., a procedural floor grate texture generated with the texture editor.*

Based on:  
[863] Wikipedia <[https://en.wikipedia.org/wiki/Procedural\\_texture](https://en.wikipedia.org/wiki/Procedural_texture)>

- **non-photorealistic expressive textures**  
Techniques that apply illustrative, stylistic, and artistic depiction techniques to generate visual representations that partially or completely dismiss photorealism in favour of abstraction, inspired by artistic styles such as painting, drawing, technical illustration, and animated cartoons.  
*e.g., painterly rendering, using silhouettes and 'suggestive contours'*

Based on:  
[1063] Jürgen Döllner, Springer <[http://link.springer.com/referenceworkentry/10.1007%2F978-0-387-35973-1\\_1458](http://link.springer.com/referenceworkentry/10.1007%2F978-0-387-35973-1_1458)>  
[864] Wikipedia <[https://en.wikipedia.org/wiki/Non-photorealistic\\_rendering](https://en.wikipedia.org/wiki/Non-photorealistic_rendering)>

- **non-photorealistic semantic textures**  
Texturing using semantic encoding through which meaningful information about the content is delivered.  
*e.g., using alternative textures to differentiate the rebuilt from the original*

Based on:  
Psychology Glossary <<http://www.alleydog.com/glossary/definition.php?term=Semantic%20Encoding>>

### ● TEXTURE MAPPING TECHNIQUES

Specifies techniques through which a two-dimensional (2D) surface, called a texture map, is 'wrapped around' a 3D object.

#### ○ bump mapping

Simulating bumps and wrinkles on the surface of an object by perturbing the surface norms of the object and using the perturbed normal during lighting calculations without actually modifying the size or shape of the surface.

*Based on:*  
[869] Wikipedia <[https://en.wikipedia.org/wiki/Bump\\_mapping](https://en.wikipedia.org/wiki/Bump_mapping)>

#### ○ heightmap

A heightmap - is a two-dimensional raster image used to store surface elevations that can later be applied to a three-dimensional object.

*Based on:*  
[950] YourDictionary.com <<https://www.yourdictionary.com/heightmap>>

#### ○ normal mapping

(Dot3 bump mapping) A technique used for faking the lighting of bumps and dents. It is used to add details without using more polygons. A common use of this technique is to greatly enhance the appearance and details of a low polygon model by generating a normal map from a high polygon model or height map.

*Based on:*  
[868] Wikipedia <[https://en.wikipedia.org/wiki/Normal\\_mapping](https://en.wikipedia.org/wiki/Normal_mapping)>

#### ○ displacement mapping

A technique using a (procedural) texture or height map to cause an effect in which the actual geometric position of points over the textured surface are displaced, often along the local surface normal, according to the value the texture function evaluates to at each point on the surface.

It gives surfaces a great sense of depth and detail, permitting in particular self-occlusion, self-shadowing and silhouettes; on the other hand, it is the most costly of this class of techniques owing to the large amount of additional geometry.

*Based on:*  
[867] Wikipedia <[https://en.wikipedia.org/wiki/Displacement\\_mapping](https://en.wikipedia.org/wiki/Displacement_mapping)>

#### ○ reflection mapping

An efficient image-based lighting technique for approximating the appearance of a reflective surface by means of a precomputed texture image. The texture is used to store the image of the distant environment surrounding the rendered object.

*Based on:*  
[866] Wikipedia <[https://en.wikipedia.org/wiki/Reflection\\_mapping](https://en.wikipedia.org/wiki/Reflection_mapping)>

#### ○ mipmaps

(also MIP maps) Pre-calculated, optimized sequences of textures, each of which is a progressively lower resolution representation of the same image. They are intended to increase rendering speed and reduce aliasing artefacts.

*Based on:*  
[865] Wikipedia <<https://en.wikipedia.org/wiki/Mipmap>>



#### D1.1.2.4

##### vertex colouring

A method for colouring the mesh assigning an RGB value to each vertex. The colour is generally projected from spatially oriented pictures (using spatial resection or photogrammetric registration).

The level of detail is lower than a texture mapping technique and depends of the definition of the mesh and the resolution of the pictures because the colours in between the vertex are just interpolated.

*Based on:*  
[548] Autodesk Knowledge Network <<https://knowledge.autodesk.com/search-result/caas/CloudHelp/cloudhelp/2017/ENU/MAXScript-Help/files/GUID-CBBA20AD-F7D5-46BC-9F5E-5EDA109F9CF4-htm.html>>

[549] Kyle Youngblom, K. Youngblom <<http://vertexcoloring.webflow.io/>>



### D1.1.3

#### geometric registration

The process of transforming different sets of data into one coordinate system. Registration is necessary to compare or integrate the data obtained from these different measurements.

*e.g., image registration*

*Based on:*  
[344] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_registration](https://en.wikipedia.org/wiki/Image_registration)>

#### DATA SETS

Specifies the type of data sets that are aligned.

##### image-image

Image alignment - transforming different images into one coordinate system.

*e.g., alignment of cartographic documents, alignment of photographic documents*

[3] Memoria team, Memoria project

##### image-geometry

Alignment of images and point sets.

*e.g., image and 3D geometric model alignment, image and point-cloud alignment*

[3] Memoria team, Memoria project

##### geometry-geometry

Spatial transformation that aligns two point sets.

*e.g., point-clouds alignment, alignment of the data from two 3D scans of the same environment.*

*Based on:*  
[382] Wikipedia <[https://en.wikipedia.org/wiki/Point\\_set\\_registration](https://en.wikipedia.org/wiki/Point_set_registration)>



### D1.2

#### visualisation

A method for colouring the mesh assigning an RGB value to each vertex. The colour is generally projected from spatially oriented pictures (using spatial resection or photogrammetric registration).

The level of detail is lower than a texture mapping technique and depends of the definition of the mesh and the resolution of the pictures because the colours in between the vertex are just interpolated.

*Based on:*  
[548] Autodesk Knowledge Network <<https://knowledge.autodesk.com/search-result/caas/CloudHelp/cloudhelp/2017/ENU/MAXScript-Help/files/GUID-CBBA20AD-F7D5-46BC-9F5E-5EDA109F9CF4-htm.html>>  
[549] Kyle Youngblom, K. Youngblom <<http://vertexcoloring.webflow.io/>>

#### CHROMATIC SCALE

Specifies number of colours used in the representation.

##### monochrome

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

##### coloured

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project

**● OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**○ nondigital**  
Refers to outputs that are created as nondigital.  
*e.g., a paper-based visualisation*

[3] Memoria team, Memoria project

**○ digital**  
Refers to outputs that are created in a digital form.  
*e.g., A patient monitoring visualisation in which various indicators are shown by different visual representations.*

[3] Memoria team, Memoria project



D1.2.1  
**visual design**

A process of creating visualisation by giving form to one's mental representations, or models. Visual design focuses on the aesthetic aspects of graphic design and on a global organisation of the data in the final visual output.

*e.g., choosing or designing a visual metaphor like a 'PerspectiveWall' or 'PeopleGarden', or a visual formalism like 'TimeWheel'*

*Based on:*  
[662] Emanuele Serrelli, Leo Zhicheng Liu, InfoVis:Wiki <[http://www.infovis-wiki.net/index.php?title=Visualization\\_Design](http://www.infovis-wiki.net/index.php?title=Visualization_Design)>  
[663] Anthony K. Jensen, Mark Boulton <<https://markboulton.co.uk/journal/2011-08-02.visual-design-is-not-a-thing/>>

**● REPRESENTATION FORM**  
Specifies fundamental units of visual representation and their combination.

**○ visual formalisms**  
Diagrammatic visual representations displaying information in an abstract way.  
*e.g., pie charts, histograms, hyperbolic browser, TimeWheel*

*Based on:*  
[681] Leo Zhicheng Liu, John T. Stasko, John T. Stasko <<http://www.cc.gatech.edu/~stasko/papers/infovis10-model.pdf>>

**○ visual metaphors**  
The information is represented using a real-world equivalent, but bears no direct relationship to it. A metaphor is only analogous of what it represents, but it should preserve relationships that are shown between entities.  
*e.g., using a metaphor of a tree to represent genealogical relationships between members of a family (family tree).*

*Based on:*  
[681] Leo Zhicheng Liu, John T. Stasko, John T. Stasko <<http://www.cc.gatech.edu/~stasko/papers/infovis10-model.pdf>>

**○ real-world models**  
Models applied in cases in which the information to be presented is itself based on a real-world equivalent. The information is represented using a real-world equivalent, and is in direct relationship to it.  
*e.g., using a virtual model of an imaginary library to convey information about a collection of books. Using a terrestrial globe to display geographical information.*

*Based on:*  
[681] Leo Zhicheng Liu, John T. Stasko, John T. Stasko <<http://www.cc.gatech.edu/~stasko/papers/infovis10-model.pdf>>

**○ master visualisation**  
The combined use of formalisms, metaphors and models.  
*e.g., a patient monitoring visualisation in which various indicators are shown by different visual representations.*

*Based on:*  
[681] Leo Zhicheng Liu, John T. Stasko, John T. Stasko <<http://www.cc.gatech.edu/~stasko/papers/infovis10-model.pdf>>



## D1.2.2

### visual encoding

A process of choosing adequate visual objects and graphic variables to encode the data or information with a goal of communicating them clearly and effectively. To convey ideas effectively, both aesthetic form and functionality need to go hand in hand.

*e.g., choosing the colour, shapes and line types in the design of a 'family tree'*

*Based on:*  
[345] Wikipedia <[https://en.wikipedia.org/wiki/Data\\_visualization](https://en.wikipedia.org/wiki/Data_visualization)>

#### ● GRAPHIC VARIABLES

Specifies how the visual appearance of items can be controlled in the visualisation.

#### ○ hue (colour)

A hue refers to the dominant colour family of the specific colour. It describes the colour itself.

*e.g., yellow, orange, red, violet, blue, green*

*Based on:*  
[1144] Shirley Williams, color wheel artist <<https://color-wheel-artist.com/hue/>>  
[1145] Cartosquad <<https://cartosquad.com/guide/visvar.html>>

#### ○ colour value (tint/ton/shade)

Monochromatic colour schemes are derived from a single base hue and extended using its shades, tones and tints. Tints are achieved by adding white, tones are achieved by adding a darker grey, and shades by adding black.

*e.g., greyscale, monochromatic colours, light green and dark green*

*Based on:*  
[1144] Shirley Williams, color wheel artist <<https://color-wheel-artist.com/hue/>>  
[1146] Wikipedia <[https://en.wikipedia.org/wiki/Monochromatic\\_color](https://en.wikipedia.org/wiki/Monochromatic_color)>

#### ○ position

The absolute location of the visual object in the visual object.

*e.g., (x,y) coordinates of a symbol on a map*

*Based on:*  
[1147] Wikipedia <[https://en.wikipedia.org/wiki/Visual\\_variable](https://en.wikipedia.org/wiki/Visual_variable)>

#### ○ pattern

Pattern refers to an "aggregate symbol" composed of recurring sub-symbols used to fill a body of a visual object. These sub-symbols can themselves be created by any or all of the visual variables, but a few variables apply to the overall pattern.

*e.g., areas (such as a forest filled with small tree point symbols), line symbols (such as a railroad with recurring cross-hatches)*

*Based on:*  
[1147] Wikipedia <[https://en.wikipedia.org/wiki/Visual\\_variable](https://en.wikipedia.org/wiki/Visual_variable)>  
[1145] Cartosquad <<https://cartosquad.com/guide/visvar.html>>

#### ○ grain

The amount of white space between the sub-symbols in a pattern.

*Based on:*  
[1147] Wikipedia <[https://en.wikipedia.org/wiki/Visual\\_variable](https://en.wikipedia.org/wiki/Visual_variable)>

#### ○ size

The "size" variable is used to differentiate visual objects (symbols) using dimensions (*i.e.* bigger, smaller, ...). Size differences are relatively easy to recognize, making it a useful variable to convey information.

*e.g., area of squares, thickness of line symbols, big or small circles*

*Based on:*  
[1147] Wikipedia <[https://en.wikipedia.org/wiki/Visual\\_variable](https://en.wikipedia.org/wiki/Visual_variable)>  
[1145] Cartosquad <<https://cartosquad.com/guide/visvar.html>>

**○ shape**

The "shape" variable refers to differences in the external form, contours, or outline of a visual object (symbol).  
Some shapes are simple in nature and thus are more abstract, while other shapes are more pictorial.

*e.g., circle, star, triangle*

*Based on:*  
[1147] Wikipedia <[https://en.wikipedia.org/wiki/Visual\\_variable](https://en.wikipedia.org/wiki/Visual_variable)>  
[1145] Cartosquad <<https://cartosquad.com/guide/visvar.html>>

**○ fuzziness**

Fuzziness - sometimes called crispness - refers to the sharpness of the edge or boundary of a visual object (symbol).  
Symbols with a sharp edge can draw more attention of the user than symbols with fuzzy outlines. It can be used to symbolize uncertainty in data.

*e.g., representing on a map a qualitative estimation of supposed localisation of a human settlement*

*Based on:*  
[1145] Cartosquad <<https://cartosquad.com/guide/visvar.html>>

**○ transparency**

Transparency describes the degree to which a visual object (symbol) blends with other symbols at the same location, giving the illusion of the symbol in front being translucent.  
It is rarely used to convey specific information, it is effective for reducing contrast or to retain underlying information.

*e.g., superposition of a successive layouts of a building blended into one another so as each building is visible*

*Based on:*  
[1145] Cartosquad <<https://cartosquad.com/guide/visvar.html>>

**○ orientation**

Orientation refers to the direction labels and symbols are facing on a map (occasionally called "direction" or "angle").  
It can be useful for communicating information about the real-world orientation of features.

*e.g., orientation of the buildings on a map*

*Based on:*  
[1147] Wikipedia <[https://en.wikipedia.org/wiki/Visual\\_variable](https://en.wikipedia.org/wiki/Visual_variable)>

**● DATA TYPES**

Specifies types of data, thereby determining kinds of comparisons the visualisation will support.

**○ quantitative**

Quantitative data are data that can be measured on a numerical scale.  
With quantitative data we can measure numerical differences among values.  
This data can be used for mathematical calculations and statistical analysis.

*e.g., effort in points: 0, 1, 2, 3, 5, 8, 13, duration in days: 1, 4, 666.  
length, height, volume, speed, temperature or cost*

*Based on:*  
[1148] Apttio team <<https://www.targetprocess.com/articles/visual-encoding/>>  
[1149] Arvind Satyanarayan, Arvind Satyanarayan <<https://observablehq.com/@mitvis/data-types-graphical-marks-and-visual-encoding-channels>>

**○ ordinal**

Ordinal data are the type of data in which the values follow a natural order. They consist of qualitative values that have a specific ordering and can be used to compare values.  
One of the most notable features of ordinal data is that the differences between the data values cannot be determined or are meaningless.  
They cannot be manipulated using mathematical operators.

*e.g., numerical or lexical scales such as Beaufort scale, Richter scale, movie ratings, political affiliation.  
user story priority: must have, great, good, not sure*

*Based on:*  
[1150] FCI <<https://corporatefinanceinstitute.com/resources/knowledge/other/ordinal-data/>>  
[1149] Arvind Satyanarayan, Arvind Satyanarayan <<https://observablehq.com/@mitvis/data-types-graphical-marks-and-visual-encoding-channels>>

### ○ nominal (categorical)

Nominal data — also called categorical data — consist of category names used to label variables (a discrete unordered category).  
Nominal data cannot be ordered and cannot be measured, however we can compare the equality (identity) of their values: is value A the same or different than value B?

*e.g., names of people, gender, country, marital status...*

*Based on:*  
[1149] Arvind Satyanarayan, Arvind Satyanarayan <<https://observablehq.com/@mitvis/data-types-graphical-marks-and-visual-encoding-channels>>  
[1151] Corporate Finance Institute <<https://corporatefinanceinstitute.com/resources/knowledge/other/nominal-data/>>

### ○ temporal

Temporal values measure (e.g., time points, intervals ..).  
This type is a special case of quantitative and/or qualitative values (a time or date value) with rich semantics and conventions.

*i.e., interval of dates using the Gregorian calendar*

*Based on:*  
[1149] Arvind Satyanarayan, Arvind Satyanarayan <<https://observablehq.com/@mitvis/data-types-graphical-marks-and-visual-encoding-channels>>

## ○ REDUNDANT ENCODING

Specifies if the visual encoding includes redundancy.

### ○ redundant

Using more than one graphical variables (e.g., colour + position) to encode one and the same data variable.  
[Allegedly] The advantage of redundant encoding is that using more channels to get the same information into your brain can make acquisition of that information faster, easier, and more accurate.

*e.g., using colour and line style (dotted, dashed, etc.) to differentiate one variable (e.g., contamination rates by country)*

*Based on:*  
[1152] Noah Iliinsky, Julie Steele, *Designing Data Visualizations* <<https://www.oreilly.com/library/view/designing-data-visualizations/9781449314774/ch04.html>>  
[1153] InfoVis:Wiki <[https://infovis-wiki.net/wiki/Patterns:Redundant\\_Encoding](https://infovis-wiki.net/wiki/Patterns:Redundant_Encoding)>

### ○ non-redundant

Using only one graphic variable to encode one data variable.

*e.g., using length of segments to represent lengths of cars or height of trees*

[3] Memoria team, Memoria project



## D1.2.3

### interaction design

An activity dedicated to assessing the manner in which a user will interact with a visualisation, with the purpose of making it as simple and efficient as possible. It is through interaction with the represented information that users can restructure and modify the form and amount of displayed information to optimize and enhance its epistemic utility for performing complex cognitive activities.

*e.g., dynamic query, zooming mechanism direct object manipulation*

*Based on:*  
[346] Wikipedia <[https://en.wikipedia.org/wiki/Interaction\\_design](https://en.wikipedia.org/wiki/Interaction_design)>  
[347] Wikipedia <[https://en.wikipedia.org/wiki/User\\_interface\\_design](https://en.wikipedia.org/wiki/User_interface_design)>  
[664] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Interaction\\_Design](http://www.infovis-wiki.net/index.php?title=Interaction_Design)>



## INTERACTION TECHNIQUES

Specifies techniques that allow a user interaction with a visualisation.



### dynamic query

Dynamic queries continuously update the data that is filtered from the database and visualized.

*e.g., using interactive sliders to select a range of values that impacts the content of visualisation*

*Based on:*

[1020] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Dynamic\\_query](http://www.infovis-wiki.net/index.php?title=Dynamic_query)>



### direct manipulation

Direct manipulation allows users to feel that they are directly controlling the objects represented by the computer. According to the principle of direct manipulation, an object on the screen remains visible while a user performs physical actions on the object, and the impact of those operations on the object is immediately visible.

*e.g., resizing a graphical shape, such as a rectangle, by dragging its corners or edges with a mouse*

*Based on:*

[1021] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Direct\\_manipulation](http://www.infovis-wiki.net/index.php?title=Direct_manipulation)>



### brushing

Brushing means selecting a subset of the data items with an input device (e.g., a mouse). This is usually done to highlight this subset, but it can also be done to delete it from the view or to de-emphasize it, if the user wants to focus on the other items.

*e.g., selecting one item to highlight all comparable items, selecting one member of a family in a 'family tree' to highlight all second-degree relatives.*

*Based on:*

[1017] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Linking\\_and\\_Brushing](http://www.infovis-wiki.net/index.php?title=Linking_and_Brushing)>



### linking

Interactive relating of information between multiple views. Linking is particularly useful for relating between different information structures, essentially using one structure to query another. Users can select entities according to criteria in one structure, which then shows the distribution of those entities within the other structure.

*e.g., interactive selections of entities in one view are propagated to other views to automatically highlight corresponding entities (brushing), enabling users to recognize relationships.*

*Based on:*

[1023] Chris North, Infovis Lab <<http://infovis.cs.vt.edu/oldsite/papers/HHFE-infovis.pdf>> ,  
[871] Wikipedia <[https://en.wikipedia.org/wiki/Brushing\\_and\\_linking](https://en.wikipedia.org/wiki/Brushing_and_linking)>



### details on demand

Techniques that provide more detail on the data set only after the user requested them. It provides additional information on a point-by-point basis, without requiring a change of view.

*e.g., a tooltip with additional information that is displayed when the user hovers over a data item in a visualisation with the mouse cursor.*

*Based on:*

[1022] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Details\\_on\\_demand](http://www.infovis-wiki.net/index.php?title=Details_on_demand)>,  
[1023] Chris North, Infovis Lab <<http://infovis.cs.vt.edu/oldsite/papers/HHFE-infovis.pdf>>



### filtering

One of the basic interaction techniques to limit the amount of displayed information through filter criteria.

Filter interaction techniques enable users to change the set of data items being presented based on some specific conditions. In this type of interaction, users specify a range or condition, so that only data items meeting those criteria are presented.

Data items outside of the range or not satisfying the condition are hidden from the display or shown differently, but the actual data usually remain unchanged so that whenever users reset the criteria, the hidden or differently shown data items can be recovered.

*e.g., An interactive textbox allowing user selection of the classes of object to be displayed.*



Based on:

[1018] InfoVis Wiki <<http://www.infovis-wiki.net/index.php?title=Filtering>>  
[1019] John T. Stasko <<https://www.cc.gatech.edu/~stasko/papers/infovis07-interaction.pdf>>

### ○ magic lens

A transparent or semi-transparent user interface element that can be placed over objects to change their appearance and/or their interactive behaviour while leaving the rest of the visualisation unchanged.

*e.g., using a 'magic lens' as a movable and stackable filter that displays elements in a selected zone in a particular way (showing colour encoding, changing shape and/or appearance of an object, zooming, etc.)*

Based on:

[1016] InfoVis Wiki <[http://www.infovis-wiki.net/index.php?title=Magic\\_Lens](http://www.infovis-wiki.net/index.php?title=Magic_Lens)>

### ○ geometric or fisheye zoom

A geometric zoom allows the user to increase or decrease the magnification of an image and to specify the scale of magnification. It allows focusing on a specific area, and information outside of this area is generally discarded.

A fisheye zoom preserves the outside information so it is not lost from view - this information is merely distorted.

*e.g., mapping software like MapQuest, zoom slider in PowerPoint*

Based on:

[1014] InfoVis Wiki <<http://www.infovis-wiki.net/index.php?title=Zoom>>

### ○ semantic zoom

In semantic zooming, visual elements change appearance or shape as they change size. For example, a growing dot will become a simple box, then a box with a one-word label, then a box with a longer label, then a rectangle filled with text and pictures. The goal is to give the most meaningful presentation at each size.

*e.g., a use of a digital clock within an application. In a normal view, the clock may show the hour of the day and date. If the user zooms in then the clock may alter its appearance by adding the seconds and minutes. If the user zooms out, information is discarded with only the date remaining. The actual information did not change, only the presentation method.*

Based on:

[1014] InfoVis Wiki <<http://www.infovis-wiki.net/index.php?title=Zoom>>

### ○ pan

An interaction technique that helps move the visual content parallel to the current view plane.

*e.g., mostly, navigation with panning is realized by dragging the mouse above a view and the view goes along with the mouse movements.*

Based on:

[1064] InfoVis Wiki <<http://www.infovis-wiki.net/index.php?title=Pan>>  
[870] Wikipedia <[https://en.wikipedia.org/wiki/Panning\\_%28camera%29](https://en.wikipedia.org/wiki/Panning_%28camera%29)>

## ● DESIGN PHASES

Specifies different phases of design.

### ○ conception

The act/process of conceiving the interaction modes.

*e.g., deciding how users will interact with a visualisation (semantic zoom, linking and brushing, ...)*

[3] Memoria team, Memoria project

### ○ realisation

The act/process of giving a form to a concept through an implementation.

*e.g., implementing interaction modes*

Based on:

[998] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/realization>>



D1.2.4

**supervised preprocessing**

An activity dedicated to visualisations that allow analysts to interact with automatic data preprocessing methods by modifying the preprocessing parameters or selecting other algorithms.

In that case the data and the content of the visualisation are directly altered by the user's chosen configuration.

*e.g., allowing users to control the criteria base on which clusters are identified within a dataset.*

[3] Memoria team, Memoria project



D1.2.5

**user feedback reprocessing**

The process of recording, filtering and reusing user feedback (response) in the production of a visualisation.

*e.g., using data submitted by successive users of an online survey to modify the content of a visualisation.*

[3] Memoria team, Memoria project



D1.2.6

**temporal encoding**

The process of choosing adequate time-related patterns and variables on order to encode data or information in the context of representations that go beyond traditional static forms, adding animation to reveal additional aspects of the data not easily seen in static displays.

*e.g., definition of order and duration of sequences to be displayed in animated visualisation.*

[3] Memoria team, Memoria project

**DYNAMIC VISUAL VARIABLES**

Refers to the variables used in the dynamic (animated) visualisations. .

**duration**

The length of time between two identifiable states. It can refer to the length of time involved in a change and/or the time between changes.

It may be expressed in absolute or in relative terms (number of time units or notions such as 'short/long' respectively).

Duration can affect the smoothness of the animation.

*e.g., Blinking (a sequence: normal-highlighted-normal-highlighted frame)*

*If province A has twice the amount of annual sunshine of province B, province A would be highlighted twice as long during the animation.*

*Based on:*

[1157] Barend Köbben <[https://www.researchgate.net/profile/Barend\\_Koebben/publication/262842441\\_Evaluating\\_dynamic\\_visual\\_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf](https://www.researchgate.net/profile/Barend_Koebben/publication/262842441_Evaluating_dynamic_visual_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf)>

[1154] Connie Blok <<https://journals.openedition.org/cybergeog/509>>

[1155] Dynamic visualisation <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaBgJPuAhXMyIUKHbKTASoQFjABegQIBBAC&url=https%3A%2F%2Fspace.library.uu.nl%2Fbitstream%2Fhandle%2F1874%2F2895%2Ffull.pdf&usg=AOvVaw176llhvCdideqbqJWRYxHk>>

[1156] Web encoding <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaBgJPuAhXMyIUKHbKTASoQFjACegQIAxAC&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FGeography183%2FLecture13.pdf&usg=AOvVaw3OgMSK6tma5fESizc6FE1K>>

**order**

Order defines the way sequences of successive states are organised and displayed in time based on a chosen principle (e.g., chronological order) - presentation of individual frames in a given order.

It influences the visualisation's narrative. Sequence correspond to sets of successive states and changes.

*e.g., applying chronological sequence ordering to visualise the response by emergency services to a car accident or an athletic team's performance over a season*

Based on:  
[1157] Barend Köbben <[https://www.researchgate.net/profile/Barend\\_Koebben/publication/262842441\\_Evaluating\\_dynamic\\_visual\\_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf](https://www.researchgate.net/profile/Barend_Koebben/publication/262842441_Evaluating_dynamic_visual_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf)>  
[1155] Dynamic visualisation <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjABegQIBBAC&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandle%2F1874%2F2895%2Ffull.pdf&usg=AOvVaw176llhvCdideqbjJWRyXhk>>  
[1156] Web encoding <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjACegQIAxAC&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FGeography183%2FLecture13.pdf&usg=AOvVaw30gMSK6tma5fEszc6FE1K>>

### ○ rate of change

Rate of change is the difference in magnitude of changes per unit of display time. It can be expressed in terms like 'slow/fast'; or 'at increasing/decreasing/constant rate of change'.

In an animated visualisation/representation this parameter affects smoothness of animation.

e.g., *keeping the same duration of scenes while increasing a magnitude value to increase the apparent change to the viewer (animation becomes more abrupt and "jerky")*

Based on:  
[1157] Barend Köbben <[https://www.researchgate.net/profile/Barend\\_Koebben/publication/262842441\\_Evaluating\\_dynamic\\_visual\\_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf](https://www.researchgate.net/profile/Barend_Koebben/publication/262842441_Evaluating_dynamic_visual_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf)>  
[1155] Dynamic visualisation <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjABegQIBBAC&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandle%2F1874%2F2895%2Ffull.pdf&usg=AOvVaw176llhvCdideqbjJWRyXhk>>  
[1154] Connie Blok <<https://journals.openedition.org/cybergeo/509>>

### ○ moment of display

Moment of display (also called display date) refers to the time at which some change is initiated, no matter what the type of change is, or how it is initiated.

e.g., *displaying a name (initiation of a change) 5 seconds before displaying the date of its creation*

Based on:  
[1157] Barend Köbben <[https://www.researchgate.net/profile/Barend\\_Koebben/publication/262842441\\_Evaluating\\_dynamic\\_visual\\_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf](https://www.researchgate.net/profile/Barend_Koebben/publication/262842441_Evaluating_dynamic_visual_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf)>  
[1155] Dynamic visualisation <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjABegQIBBAC&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandle%2F1874%2F2895%2Ffull.pdf&usg=AOvVaw176llhvCdideqbjJWRyXhk>>  
[1156] Web encoding <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjACegQIAxAC&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FGeography183%2FLecture13.pdf&usg=AOvVaw30gMSK6tma5fEszc6FE1K>>

### ○ frequency (of change)

Nominal data — also called categorical data — consist of category names used to describe data. Frequency is a function of order and duration. It defines the number of times states or sequences occur within one time unit.

e.g., *The high "blinking" frequency of Schiphol airport indicates its bigger importance compared to Beek airport in the southern province of Limburg*

Based on:  
[1157] Barend Köbben <[https://www.researchgate.net/profile/Barend\\_Koebben/publication/262842441\\_Evaluating\\_dynamic\\_visual\\_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf](https://www.researchgate.net/profile/Barend_Koebben/publication/262842441_Evaluating_dynamic_visual_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf)>  
[1155] Dynamic visualisation <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjABegQIBBAC&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandle%2F1874%2F2895%2Ffull.pdf&usg=AOvVaw176llhvCdideqbjJWRyXhk>>  
[1156] Web encoding <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjACegQIAxAC&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FGeography183%2FLecture13.pdf&usg=AOvVaw30gMSK6tma5fEszc6FE1K>>

### ○ synchronization

Synchronization refers to the possibility to run two (or more) temporal animations simultaneously, and shift them in time so that patterns are in phase and relationships between data sets can be discovered.

e.g., *Correspondence between spatio-temporal patterns of two chronologically ordered representations of geodata in display time (alignment of the moment of display).*

Based on:  
[1157] Barend Köbben <[https://www.researchgate.net/profile/Barend\\_Koebben/publication/262842441\\_Evaluating\\_dynamic\\_visual\\_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf](https://www.researchgate.net/profile/Barend_Koebben/publication/262842441_Evaluating_dynamic_visual_variables/links/577e1f6908aed39f59940037/Evaluating-dynamic-visual-variables.pdf)>  
[1155] Dynamic visualisation <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjx8ZaB9JPuAhXMYlUKHbKTASoQFjABegQIBBAC&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandle%2F1874%2F2895%2Ffull.pdf&usg=AOvVaw176llhvCdideqbjJWRyXhk>>



D1.3

**representational art**

An activity dedicated to creation of humanmade artistic representations that are clearly recognizable for what they are supposed to represent, such as a human figure, a building, a tree, and so on.

By contrast, non-representational or abstract art consists of images that have no clear identity, and must be interpreted by the viewer.

*e.g., a hand-drawn evocation of a Roman city in 100 BC.*

*Based on:*  
[606] Visual-Arts-Cork.com <<http://www.visual-arts-cork.com/representational-art.htm>>

**OUTPUT'S NATURE**

Specifies the nature of the output in terms of final result.

**nondigital**

Refers to outputs that are created as nondigital.

*[3] Memoria team, Memoria project*

**digital**

Refers to outputs that are created in a digital form.

*[3] Memoria team, Memoria project*

**CHROMATIC SCALE**

Specifies number of colours used in the representation.

**monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

**coloured**

A representation in various colours.

*e.g., 256-colour image*

*[3] Memoria team, Memoria project*



D1.3.1

**drawing**

An activity dedicated to creation of a representation by using various drawing instruments to mark paper or another two-dimensional medium.

Instruments include graphite pencils, pen and ink, inked brushes, wax colour pencils, crayons, charcoal, chalk, pastels, various kinds of erasers, markers, styluses, various metals (such as silverpoint), and electronic drawing.

*e.g., a sketch of an object, a hand-drawn panorama, a digital sketch.*

*Based on:*  
[348] Wikipedia <<https://en.wikipedia.org/wiki/Drawing>>

**CHROMATIC SCALE**

Specifies number of colours used in the representation.

**monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

- **coloured**  
A representation in various colours.  
*e.g., 256-colour image*

[3] Memoria team, Memoria project

- **OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

- **nondigital**  
Refers to outputs that are created as nondigital.

[3] Memoria team, Memoria project

- **digital**  
Refers to outputs that are created in a digital form.

[3] Memoria team, Memoria project



### D1.3.2

#### painting

An activity dedicated to creation of a representation produced by applying paint, pigment, colour or other medium to a surface (support base). The medium is commonly applied to the base with a brush, but other implements, such as knives, sponges, and airbrushes, can be used.

*e.g., a landscape in watercolour.*

Based on:  
[349] Wikipedia <<https://en.wikipedia.org/wiki/Painting>>

- **CHROMATIC SCALE**  
Specifies number of colours used in the representation.

- **monochrome**  
A representation in one colour, or allowing a range shades of that colour.  
*e.g., grayscale, black-and-white, green-and-white, sepia*

Based on:  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

- **coloured**  
A representation in various colours.  
*e.g., 256-colour image*

[3] Memoria team, Memoria project

- **OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

- **nondigital**  
Refers to outputs that are created as nondigital.

[3] Memoria team, Memoria project

- **digital**  
Refers to outputs that are created in a digital form.

[3] Memoria team, Memoria project



D1.3.3

**sculpting**

The act of sculpting or carving plastic or hard materials into three-dimensional objects.

*e.g., a statue, a bas-relief, a sunk relief*

*Based on:*  
 [408] Merriam-Webster <<http://www.merriam-webster.com/dictionary/sculpture>>  
 [428] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/sculpturing>>

**CHROMATIC SCALE**  
 Specifies number of colours used in the representation.

**monochrome**  
 A representation in one colour, or allowing a range shades of that colour.  
*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
 [852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

**coloured**  
 A representation in various colours.  
*e.g., 256-colour image*

*[3] Memoria team, Memoria project*

**OUTPUT'S NATURE**  
 Specifies the nature of the output in terms of final result.

**nondigital**  
 Refers to outputs that are created as nondigital.

*[3] Memoria team, Memoria project*

**digital**  
 Refers to outputs that are created in a digital form.

*[3] Memoria team, Memoria project*



D1.4

**schematic representations**

A simplified explanatory drawing showing the appearance, structure, or workings of something. It explains the parts, operations, and/or relationships between elements.

*e.g., a diagram of an engine, a diagram of an electrical or mechanical system, a graph, chrono-chorématique, a diagram of the nervous system*

*Based on:*  
 [444] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/diagram>>  
 [478] Dictionary.com <<http://dictionary.reference.com/browse/diagram>>

**DRAWING CONVENTIONS**  
 Specifies presence of drawing standards and conventions.

**standardised**  
 Use of existing standards and conventions that guarantee that everyone concerned must interpret the drawings in the same way.  
*e.g., diagram of electrical distribution system using internationally recognized standards (e.g., ISO standards), UML*

*Based on:*  
 [1025] HVAC Education <[http://www.hvaceducationaustralia.com/Resources/PDF/E107A%20Drawing%20Electrical\\_%20Workbook%20Version%202%20BG.pdf](http://www.hvaceducationaustralia.com/Resources/PDF/E107A%20Drawing%20Electrical_%20Workbook%20Version%202%20BG.pdf)>

○ **ad-hoc codes**

Unconventional codes designed for the special purpose or end of a given diagram or group of diagrams.

*e.g., chrono-chorématique studies*

*[3] Memoria team, Memoria project*

○ **CHROMATIC SCALE**

Specifies number of colours used in the representation.

○ **monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>*

○ **coloured**

A representation in various colours.

*e.g., 256-colour image*

*[3] Memoria team, Memoria project*

○ **OUTPUT'S NATURE**

Specifies the nature of the output in terms of final result.

○ **nondigital**

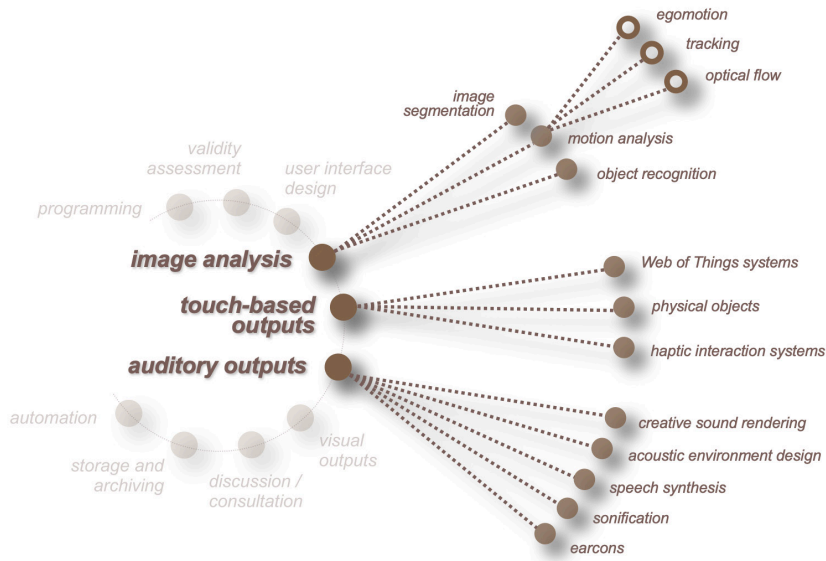
Refers to outputs that are created as nondigital.

*[3] Memoria team, Memoria project*

○ **digital**

Refers to outputs that are created in a digital form.

*[3] Memoria team, Memoria project*



D2

**auditory outputs**

Production of outputs that use sound to communicate information to the user.

e.g., digitized speech, synthesized speech

Based on:  
[350] Wikipedia <[https://en.wikipedia.org/wiki/Auditory\\_display](https://en.wikipedia.org/wiki/Auditory_display)>

**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital.

[3] Memoria team, Memoria project

**digital**  
Refers to outputs that are created in a digital form.

[3] Memoria team, Memoria project



D2.1

**sonification**

Production of non-speech audios to convey information or perceptualize data.

e.g., the rate of clicking of a Geiger counter conveys the level of radiation in the immediate vicinity of the device

Based on:  
[31] Wikipedia <<https://en.wikipedia.org/wiki/Sonification>>



**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital. [3] Memoria team, Memoria project

**digital**  
Refers to outputs that are created in a digital form. [3] Memoria team, Memoria project



## D2.2

### earcons

The use of brief, distinctive sounds to represent a specific event or convey other information.

*e.g., earcons are a common feature of computer operating systems and applications, ranging from beeping when an error occurs to the customizable sound schemes of Windows 7 that indicate start-up, shutdown and many other events.*

Based on:  
[352] Wikipedia <<https://en.wikipedia.org/wiki/Earcon>>

**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital. [3] Memoria team, Memoria project

**digital**  
Refers to outputs that are created in a digital form. [3] Memoria team, Memoria project



## D2.3

### speech synthesis

Artificial production of human speech.

*e.g., letters are typed into the device, which then translates them into 'synthesized speech' output*

Based on:  
[353] Wikipedia <[https://en.wikipedia.org/wiki/Speech\\_synthesis](https://en.wikipedia.org/wiki/Speech_synthesis)>

**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital. [3] Memoria team, Memoria project

**digital**  
Refers to outputs that are created in a digital form. [3] Memoria team, Memoria project



## D2.4

### acoustic environment design

Creation, design and/or reconstruction of sounds related to a particular acoustic environment (*i.e.*, the combination of the acoustic resources within a given area - natural sounds and human-caused sounds - as modified by the environment).

*e.g., a soundscape reconstruction, a production of soundmarks (sounds that are unique to a particular area), sound signatures generated by humans*

Based on:  
[354] Wikipedia <<https://en.wikipedia.org/wiki/Soundscape>>

**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital. *[3] Memoria team, Memoria project*

**digital**  
Refers to outputs that are created in a digital form. *[3] Memoria team, Memoria project*



D2.5

**creative sound rendering**

The use of sounds to convey the feelings or effects associated with the situation on a screen, by which sounds tell the story and not just the auditory reality of the event. A creative sound may encompass musical elements, speech or other sound.

*e.g., a soundtrack*

*Based on:  
[600] Michel Chion, FilmSound.org <<http://filmsound.org/chion/rendering.htm>>*

**OUTPUT'S NATURE**  
Specifies the nature of the output in terms of final result.

**nondigital**  
Refers to outputs that are created as nondigital. *[3] Memoria team, Memoria project*

**digital**  
Refers to outputs that are created in a digital form. *[3] Memoria team, Memoria project*



D3

**touch-based outputs**

Production of the outputs that involve the sense of touch, either by producing objects targeting that sense, or by making the use of it through mediation devices.

*e.g., tangible plaster models, 3D prints, linkage-based hand controllers (haptic interface)*

*[3] Memoria team, Memoria project*



D3.1

**physical objects**

Production of objects that are created by sculptural processes that use carving (the removal of material) or modelling (the addition of material, such as clay), in stone, metal, ceramics, wood, etc. They can be handmade or produced through a machine-driven process such as 3D printing.

*e.g., wooden model of St. Peter's Basilica, 3D print of The Old Town in Nuremberg, clay model of the ancient Herod's Temple*

*Based on:  
[355] Wikipedia <[https://en.wikipedia.org/wiki/Haptic\\_technology](https://en.wikipedia.org/wiki/Haptic_technology)>*

**CHROMATIC SCALE**  
Specifies number of colours used in the representation.

**monochrome**  
A representation in one colour, or allowing a range shades of that colour.  
*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>*

**coloured**

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project

**PRODUCTION AUTOMATION LEVEL**

Specifies the amount of automatic procedures in the production of a geometric model.

**automated production**

Processes used to create a three-dimensional object in which layers of material are formed under computer control to create an object.

*e.g., 3D printing (additive manufacturing)*

Based on:  
[63] Wikipedia <[https://en.wikipedia.org/wiki/3D\\_printing](https://en.wikipedia.org/wiki/3D_printing)>

**semi-automated production**

A process combining automatic modelling and human intervention.

*e.g., finishing manually a 3D object that has been produced by additive manufacturing*

[3] Memoria team, Memoria project

**manual production**

A 3D object produced entirely by a human.

*e.g., a scale building model, a flying model aircraft*

[3] Memoria team, Memoria project

**PERCEPTION MODE**

Specifies the sensory modalities involved in the transmission of information.

**vision**

Using visual perception of an organism.

*e.g., A scale model of the Tower of London produced to visualise Her Majesty's Royal Palace and Fortress as it appeared after the final period of expansion under Edward I.*

[3] Memoria team, Memoria project

**audition**

Using capacities of an organism to hear sounds.

[3] Memoria team, Memoria project

**olfaction**

Using the sense of smell.

[3] Memoria team, Memoria project

**touch**

Using the sense of touch

*e.g., using tangible pictures.*

[3] Memoria team, Memoria project

**gustation**

Using capacities to feel the taste of things.

[3] Memoria team, Memoria project

**thermoception**

Using sense by which an organism perceives temperatures.

[3] Memoria team, Memoria project

**MATERIAL-MAIN COMPONENT(S)**  
Specifies types of main components used in 3D printing.

○ **RTV silicone**  
room-temperature-vulcanizing silicone.

[3] Memoria team, Memoria project

○ **paper**

○ **metal**

○ **ceramic powder**

○ **thermoplastic**  
e.g., PLA, ABS, Polycarbonate

○ **plaster**  
e.g., zp 310 Plus (Zcorporation, zp 180 powder (Zcorporation)

**MATERIAL-ADDITIONAL COMPONENT(S)**  
Specifies types of additional components used in 3D printing.

○ **liquid binder**  
Any material or substance that holds or draws other materials together to form a cohesive whole mechanically, chemically, by adhesion or cohesion...  
e.g., zb61 Clear Binder (Zcorporation).

Based on:  
[1138] Wikipedia <[https://en.wikipedia.org/wiki/Binder\\_\(material\)](https://en.wikipedia.org/wiki/Binder_(material))>

○ **infiltrants**  
A substance that penetrates an object to give it some property, such as waterproofing.  
e.g., epoxy resin, ZBond 100 (Zcorporation)

Based on:  
[1139] Wiktionary <<https://en.wiktionary.org/wiki/infiltrant>>



D3.2  
**haptic interaction systems**

Designing and producing outputs (haptic devices) that use the sense of touch, pressure, or position, and act as interfaces to computers or networks.

e.g., a joystick with force feedback, cell phones vibrators

Based on:  
[682] K. E. MacLean <<https://web.stanford.edu/class/me327/readings/1-MacLean08-RHFE-Design.pdf>>  
[355] Wikipedia <[https://en.wikipedia.org/wiki/Haptic\\_technology](https://en.wikipedia.org/wiki/Haptic_technology)>

**PERCEPTION TYPE**  
Specifies the manner of haptic interaction with a user.

○ **tactile perception**  
Designing devices that concern tactile subsystem of the haptic sense –i.e., sensations arising from stimulus to the skin (i.e., temperature, pain, discriminative touch).

e.g., tracing a pattern upon an individual's skin

Based on:  
[682] K. E. MacLean <<https://web.stanford.edu/class/me327/readings/1-MacLean08-RHFE-Design.pdf>>  
[1006] Ben Challis, Interaction Design Foundation <<https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/tactile-interaction>>

○ **proprioceptive and kinaesthetic perception**

Designing devices that concern the sense of the relative position of one's own parts of the body and strength of effort being employed in movement. It is the sense that indicates whether one's body is moving with required effort, as well as where the various parts of the body are located in relationship to each other...

*e.g., force feedback devices designed to act by providing forces that react to our movement in space*

*Based on:*  
[682] K. E. MacLean <<https://web.stanford.edu/class/me327/readings/1-MacLean08-RHFE-Design.pdf>>  
[1005] Athena Oden, *Ready Bodies, Learning Minds* <<http://www.readybodies.com/tactile-vestibular-proprioceptive/>>

○ **FORCE DISPLAY**

Distinctions resulting from a consideration of the force display subsystems in an interface.

○ **ground-based interface**

Also called desk-based interface, a stand-alone device resting on a surface external to the user. A ground-based haptic interface has a stable point in the environment (ground or desktop).

*e.g., joysticks, linkage-based hand controllers, tension-based hand controllers*

*Based on:*  
[999] National Research Council, National Academies Press <<https://www.nap.edu/read/4761/chapter/8>>  
[1000] Larry R. Squire, *Encyclopedia of Neuroscience: Volume One, 2009*

○ **body-based interface**

Haptic interface devices that are worn by users.

*e.g., gloves, exoskeletal devices*

*Based on:*  
[999] National Research Council, National Academies Press <<https://www.nap.edu/read/4761/chapter/8>>  
[1000] Larry R. Squire, *Encyclopedia of Neuroscience: Volume One, 2009*

● **MEDIATION DEVICE**

Specifies the type of a mediation device.

○ **tool-based interface**

A haptic interface system that requires a tool or receives signals through a tool.

*e.g., a computer mouse, a keyboard*

*Based on:*  
[1000] Larry R. Squire, *Encyclopedia of Neuroscience: Volume One, 2009*

○ **direct interface**

A haptic interface system that works without using a mediation device.

*e.g., using the position of a user's finger to interact with a system*

*Based on:*  
[1000] Larry R. Squire, *Encyclopedia of Neuroscience: Volume One, 2009*

● **ACTUATORS**

Specifies a type of technology involved in the actuation.

○ **electrostatic**

Electrostatic actuators rely on the force between two conducting electrodes when a voltage is applied between them.

*Based on:*  
[1007] Johnstone R.W., Parameswaran M. (2004) *Electrostatic Actuators*. <[https://link.springer.com/chapter/10.1007/978-1-4020-8021-0\\_11](https://link.springer.com/chapter/10.1007/978-1-4020-8021-0_11)>

○ **electromechanical**

- rheological fluid
- air jet
- thermal
- hydraulic
- electro-cutaneous
- pneumatic
- magnetic
- gyroscopic



D3.3

### Web of Things systems

Physical objects, embedded with electronics, software, sensors and network connectivity that enables these objects to collect and exchange data.

*e.g., object with embedded RFID technology*

*Based on:*  
[356] Wikipedia <[https://en.wikipedia.org/wiki/Internet\\_of\\_Things](https://en.wikipedia.org/wiki/Internet_of_Things)>



D4

### image analysis

The analysis of a picture using techniques that can identify shades, colours and relationships that cannot be perceived by the human eye. Image processing is used to solve identification problems, such as in forensic medicine or in creating weather maps from satellite pictures. It deals with images in bitmapped graphics format that have been scanned in or captured with digital cameras.

*e.g., image analysis tasks can be as simple as reading bar-coded tags or as sophisticated as identifying a person from his/her face.*

*Based on:*  
[540] Alan Freedman, PC Magazine Encyclopedia <<http://www.pcmag.com/encyclopedia/term/44796/image-processing>>



D4.1

### image segmentation

An activity dedicated to partitioning an image into a set of non-overlapping regions that can be united to reveal the entire image. The purpose of segmentation is to decompose the image into parts that are meaningful with respect to a particular application.

*e.g., colour-based segmentation (e.g., K-means clustering) thresholding methods (e.g., Otsu's method)*

*Based on:*  
[683] Robert M. Haralick, Linda G. Shapiro <<http://pages.cs.wisc.edu/~dyer/cs766/slides/segmentation/segment-4up.pdf>>

## METHODS AND TECHNIQUES

Specifies methods and techniques of image segmentation.

### ○ threshold-based segmentation

The simplest non-contextual segmentation technique. With a single threshold, it transforms a greyscale or colour image into a binary image considered a binary region map. The binary map contains two possibly disjointed regions, one of them containing pixels with input data values smaller than a threshold and another relating to the input values that are at or above the threshold.

*e.g., multispectral thresholding, histogram-based thresholding, simple thresholding, adaptive thresholding, colour thresholding*

*Based on:*  
[967] Department of Computer University of Auckland Science <<https://www.cs.auckland.ac.nz/courses/com-psi773s1c/lectures/ImageProcessing-html/topic3.htm>>

### ○ edge-based segmentation

A set of mathematical methods aimed at identifying points in a digital image at which the image brightness changes sharply or, more formally, has discontinuities. The points at which image brightness changes sharply are typically organised into a set of curved line segments termed edges. With this technique, detected edges in an image are assumed to represent object boundaries and are used to identify these objects.

*e.g., watershed segmentation*

*Based on:*  
[958] Ronald Poppe, Universiteit Utrecht <<http://www.cs.uu.nl/docs/vakken/ibv/reader/chapter10.pdf>>  
[959] Chris Glasbey, Biomathematics and Statistics Scotland <<http://www.bioss.ac.uk/people/chris/ch4.pdf>>  
[872] Wikipedia <[https://en.wikipedia.org/wiki/Edge\\_detection](https://en.wikipedia.org/wiki/Edge_detection)>

### ○ region-based segmentation

Region-based segmentation is a technique for determining the region directly. It relies on the assumption that the neighbouring pixels within one region have similar value. The common procedure is to compare one pixel with its neighbours. If a similarity criterion is satisfied, the pixel can be said to belong to the same cluster as one or more of its neighbours.

*e.g., region growing, region merging, split and merge method, pyramid, tree, scale space methods, texture segmentation*

*Based on:*  
[1034] Yu-Hsiang Wang, Digital Image and Signal Processing <<http://disp.ee.ntu.edu.tw/meeting/%E6%98%B1%E7%BF%94/Segmentation%20tutorial.pdf>>

### ○ clustering techniques

Methods that attempt to identify geometric patterns inside the segmentation process.

*e.g., agglomerative clustering, hierarchical clustering, partitional clustering*

*Based on:*  
[958] Ronald Poppe, Universiteit Utrecht <<http://www.cs.uu.nl/docs/vakken/ibv/reader/chapter10.pdf>>  
[959] Chris Glasbey, Biomathematics and Statistics Scotland <<http://www.bioss.ac.uk/people/chris/ch4.pdf>>

### ○ matching

When we know what object we wish to identify in an image (approximately), we can use this knowledge to locate the object in an image. This approach to segmentation is called matching.

*Based on:*  
[958] Ronald Poppe, Universiteit Utrecht <<http://www.cs.uu.nl/docs/vakken/ibv/reader/chapter10.pdf>>  
[959] Chris Glasbey, Biomathematics and Statistics Scotland <<http://www.bioss.ac.uk/people/chris/ch4.pdf>>

## ○ AUTOMATION LEVEL

Differentiation from point of view of an intensity of human intervention in the process of image segmentation..

### ○ automated

Produced with no direct human control.

*e.g., an automatic region-based images segmentation*

*Based on:*  
[933] Merriam-Webster <<http://www.merriam-webster.com/dictionary/automatic>>

### ○ semi-automated

Produced with limited human intervention.

*e.g., Photoshop's magic wand*

*Based on:*  
[923] The Free Dictionary <<http://www.thefreedictionary.com/semiautomatic>>

**manual**

Done by a human rather than by automatic means.

*e.g., manual selection of region in an image*

[3] Memoria team, Memoria project



D4.2

**object recognition**

A process for identifying a specific object in a digital image or video.

Object recognition algorithms rely on matching, learning, or pattern recognition algorithms using appearance-based or feature-based techniques.

*e.g., facial recognition*

[575] MATLAB team, MathWorks <<https://www.mathworks.com/solutions/deep-learning/object-recognition.html?w.mathworks.com>>

**TASKS**

Specifies specialised tasks based on object recognition.

**content-based image retrieval**

Finding all images in a larger set of images that have a specific content. The content can be specified in different ways, for example in terms of similarity relative to a target image, or in terms of high-level search criteria.

*e.g., give me all images that contain many houses, are taken during winter, and have no cars in them. Give me all images similar to image X.*

[267] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision](https://en.wikipedia.org/wiki/Computer_vision)>

**pose estimation**

Estimating the position or orientation of a specific object relative to the camera.

*e.g., assisting a robot arm in retrieving objects from a conveyor belt in an assembly line or picking parts from a bin*

[267] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision](https://en.wikipedia.org/wiki/Computer_vision)>

**optical character recognition (OCR)**

Identifying characters in images of printed or handwritten text, usually with a view to encoding the text in a format more amenable to editing or indexing (e.g., ASCII).

*e.g., conversion of images of handwritten or printed text into machine-encoded text*

[267] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision](https://en.wikipedia.org/wiki/Computer_vision)>  
[873] Wikipedia <[https://en.wikipedia.org/wiki/Optical\\_character\\_recognition](https://en.wikipedia.org/wiki/Optical_character_recognition)>

**2D code reading**

Reading of 2D codes such as data matrix and QR codes.

[267] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision](https://en.wikipedia.org/wiki/Computer_vision)>

**facial recognition**

Identifying or verifying a person from a digital image or a video frame from a video source.

*e.g., three-dimensional facial recognition, skin texture analysis*

[3] Memoria team, Memoria project

**shape recognition technology**

(SRT) In people counter systems, differentiating human beings (head and shoulder patterns) from objects.

[267] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision](https://en.wikipedia.org/wiki/Computer_vision)>





D4.3

### **motion analysis**

An activity dedicated to recording of the three-dimensional movements of human (or animal) body segments or objects, and the subsequent computation of meaningful parameters that describe the movement from raw kinematic data.

*e.g., tracking a specific object in the image over time, determining the magnitude and direction of the motion*

*Based on:*  
[665] Stephen J. Piazza, <[https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2\\_3567](https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2_3567)>  
[357] Wikipedia <[https://en.wikipedia.org/wiki/Motion\\_analysis](https://en.wikipedia.org/wiki/Motion_analysis)>



D4.3.1

### **egomotion**

Estimating a camera's motion (rotation and translation) relative to rigidly placed objects in a scene.

*e.g., estimating a car's moving position relative to lines on the road or street signs observed from the car itself*

*Based on:*  
[358] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision#Recognition](https://en.wikipedia.org/wiki/Computer_vision#Recognition)>



D4.3.2

### **tracking**

Following the movements of a (usually) smaller set of interest points or objects (e.g., vehicles or humans) in the image sequence.

*e.g., video tracing*

*Based on:*  
[358] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision#Recognition](https://en.wikipedia.org/wiki/Computer_vision#Recognition)>



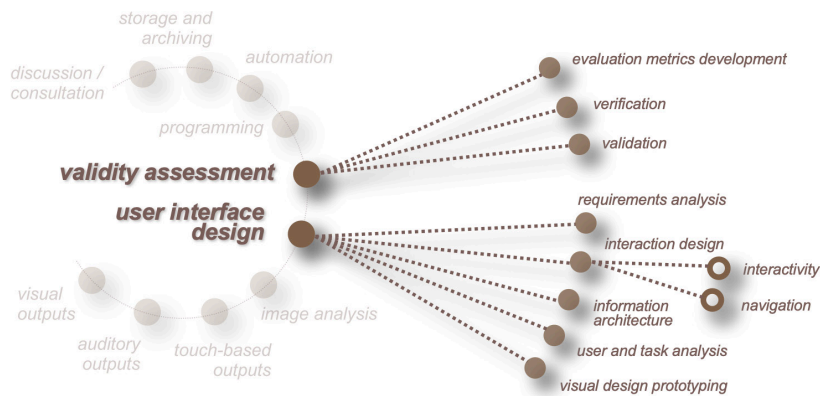
D4.3.3

### **optical flow**

Determining, for each point in the image, how that point is moving relative to the image plane, *i.e.*, its apparent motion.

This motion is a result both of how the corresponding 3D point is moving in the scene and how the camera is moving relative to the scene.

*Based on:*  
[359] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision#Typical\\_tasks\\_of\\_computer\\_vision](https://en.wikipedia.org/wiki/Computer_vision#Typical_tasks_of_computer_vision)>



D5

### user interface design

User Interface (UI) design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions.

UI brings together concepts from interaction design, user and task analysis visual design, and information architecture.

*e.g., designing menus and sub-menus in a website*

*Based on:*  
[573] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/user-interface-design.html>>



D5.1

### requirements analysis

Assembling a list of the functionality required by the system to accomplish the goals of the project and the potential needs of the users.

*e.g., selection of the services expected from a website including the target audience and the content to deliver*

*Based on:*  
[347] Wikipedia <[https://en.wikipedia.org/wiki/User\\_interface\\_design](https://en.wikipedia.org/wiki/User_interface_design)>



D5.2

### information architecture

An activity dedicated to structural design of shared information environments. It focuses on organising, structuring and labelling content in an effective and sustainable way.

The purpose of IA is to help users understand where they are, what they've found, what's around and what to expect. To do this, one needs to understand how the pieces fit together to create the larger picture and how items relate to each other within the system.

*e.g., defining the hierarchical structure of a website, how users browse or move through information, how users look for information, etc.*

Based on:  
[572] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/information-architecture.html>>  
[360] Wikipedia <[https://en.wikipedia.org/wiki/Information\\_architecture](https://en.wikipedia.org/wiki/Information_architecture)>



D5.3

### user and task analysis

An activity dedicated to analysis of the potential users of the system by studying how they perform the tasks that the design must support and elucidating their goals, backgrounds, capacities or any user specificity that can impact the actual interaction modalities.

*e.g., taking into consideration visual disabilities of a potential user, identifying a specific audience such as children aged 3 to 5*

Based on:  
[347] Wikipedia <[https://en.wikipedia.org/wiki/User\\_interface\\_design](https://en.wikipedia.org/wiki/User_interface_design)>



D5.4

### interaction design

An activity dedicated to designing modes of interaction with a digital or analogue work or a means of navigation inside digital content. Interaction design implies the understanding of how users and technology communicate with each other.

*e.g., defining how the users will interact with the system, typically hypertexts, mouse events, form components in a web page*

Based on:  
[346] Wikipedia <[https://en.wikipedia.org/wiki/Interaction\\_design](https://en.wikipedia.org/wiki/Interaction_design)>  
[571] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/interaction-design.html>>

## DESIGN PHASES

Distinguishes different phases of design.

### conception

The act/process of conceiving the interaction or the navigation modes.

*e.g., deciding how users will browse through a website (visual menus, keyboard shortcuts, mouse clicks, etc.)*

[3] Memoria team, Memoria project

### realisation

The act/process of giving a form to a concept or work, may it be through an implementation (digital works) or a construction (physical objects).

*e.g., publishing a website using a given content management system (CMS)*

Based on:  
[998] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/realization>>

## WORKSPACE SIZING

Identifies the number of users a system targets and the level of interaction between these users.

### single-user

A mode in which a system is usable only by one person at a time.

*e.g., a stand-alone game on a CD-ROM*

Based on:  
[875] Wikipedia <<https://en.wikipedia.org/wiki/Multi-user>>

### multi-user

An environment that allows access by multiple users/to which multiple remote users have access.

*e.g., multiple X Window sessions spread across multiple terminals powered by a single machine*

Based on:  
[875] Wikipedia <<https://en.wikipedia.org/wiki/Multi-user>>

**collaborative environment**

Systems designed to allow teamwork by supporting the sharing and flow of information. Collaborative environments should allow real-time collaboration, conferencing, documentation management systems, application sharing, etc.

*e.g., a cloud-based collaborative task management application*

*Based on:*

[874] Wikipedia <[https://en.wikipedia.org/wiki/Integrated\\_collaboration\\_environment](https://en.wikipedia.org/wiki/Integrated_collaboration_environment)>



D5.4.1

**navigation**

Designing the means by which the user can interact with and move within a multimedia content, whether it be text-, image-, 3D- or moving-image-based.

The use of the term 'navigation' implies work that is more or less fixed in its content and through which the reader can 'navigate' in a non-linear fashion.

*e.g., deciding on how users will be allowed to move inside a 3D scene*

*Based on:*

[603] Simon Biggs <<http://littlepig.org.uk/wall/navigation.htm>>



D5.4.2

**interactivity**

Designing the specifics of the user interface, so it accepts and responds to input from people (or possibly another live creature) by altering the content of the work.

*e.g., crowdsourcing platforms.*

*Based on:*

[602] Simon Biggs <<http://littlepig.org.uk/wall/navigate1.htm>>

[361] Wikipedia <<https://en.wikipedia.org/wiki/Interactivity>>

[462] WhatIs.com <<http://searchsoa.techtarget.com/definition/interactivity>>



D5.4.3

**visual design prototyping**

Visual design focuses on the aesthetics of a work and its related materials by strategically implementing images, colours, fonts, and other elements.

*e.g., defining a website's graphic charter, creation of a wireframe*

*Based on:*

[570] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/visual-design.html>>



D6

**validity assessment**

Procedures that are used for checking that a product, service, or system meets requirements and specifications and fulfils its intended purpose.

*e.g., evaluation of the visualisation by the target users, checking the compatibility of a website with several browsers*

*Based on:*

[362] Wikipedia <[http://en.wikipedia.org/wiki/Verification\\_and\\_validation](http://en.wikipedia.org/wiki/Verification_and_validation)>

**AUTOMATION LEVEL**

Specifies the extent to which the verification process is automated.

**automated**

The validity assessment process is performed automatically.

*e.g., automatic log analysis in information retrieval systems*

[3] Memoria team, Memoria project

**semi-automated**

The validity assessment process is a combination of automated and manual processes.

[3] Memoria team, Memoria project

- **manual**  
The validity assessment process is performed manually.

[3] Memoria team, Memoria project

- **OUTPUT TYPE**  
Specifies the type of an output under evaluation.

- **visualisation**  
Compact graphical presentation and user interface for manipulating large numbers of items possibly extracted from far larger datasets.  
Enables users to make discoveries, decisions, or explanations about patterns (trend, cluster, gap, outlier, etc.), groups of items, or individual items.  
*e.g., a visualisation of a directory structure using a botanical model*

Based on:  
[543] InfoVis:Wiki <[https://infovis-wiki.net/wiki/Information\\_Visualization](https://infovis-wiki.net/wiki/Information_Visualization)>

- **system**  
A set of interacting or interdependent component parts forming a complex/intricate whole.  
*e.g., a software system that has components as its structure and observable inter-process communications as its behaviour.*  
*A group of related hardware units or programs, or both, especially when dedicated to a single application.*

Based on:  
[876] Wikipedia <<https://en.wikipedia.org/wiki/System>>  
[1066] Lexico Dictionaries <<https://www.lexico.com/en/definition/system>>

- **service**  
A set of components used to provide assistance for a user.  
*e.g., FAQ (frequently asked questions).*

Based on:  
[997] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/service>>



## D6.1 validation

The process of validation involves acceptance and suitability assessment conducted with external customers.

*e.g., evaluation of the visualisation by the target users*

Based on:  
[362] Wikipedia <[http://en.wikipedia.org/wiki/Verification\\_and\\_validation](http://en.wikipedia.org/wiki/Verification_and_validation)>

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● **VERIFIED ASPECTS OF VISUALISATION**

Specifies the characteristics of a visualisation that have been evaluated.

○ **readability assessment**

Evaluation of visualisation readability.  
*e.g., readability of encoding: can colours be clearly differentiated by users?*

*[3] Memoria team, Memoria project*

○ **problem accuracy**

Evaluation of the accuracy of the problem represented by the visualisation.  
*e.g., visualising the cultural background of individuals based on the only criterion of where they live will prevent a correct assessment of other influential factors such as family, language spoken, etc..*

*Based on:*  
 [973] Munzner Tamara, *Visualization Analysis and Design*, AK Peters Visualization Series, CRC Press, 2014>

○ **efficiency assessment**

Evaluation of the effectiveness of the interface.  
*e.g., effectiveness of the interaction design: how much time spent before getting an answer from the system.*

*Based on:*  
 [684] Heidi Lam, et al. <<https://hal.archives-ouvertes.fr/hal-00932606/document>>

○ **reasoning and hypothesis generation**

Evaluation of how the visualisation supports hypothesis generation and interactive cross-examination of data.  
*e.g., capacity of the visualisation to suggest potential cause-and-effect relationships.*

*Based on:*  
 [684] Heidi Lam, et al. <<https://hal.archives-ouvertes.fr/hal-00932606/document>>

○ **knowledge communication**

Evaluation of the capacities of the visualisation to help users understand pieces of knowledge or to help knowledge holders transfer their knowledge.  
*e.g., verifying to that extent a climate expert is supported in his effort to share his understanding of climate patterns*

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 [684] Heidi Lam, et al. <<https://hal.archives-ouvertes.fr/hal-00932606/document>>

**collaboration**

Evaluation of how visualisation supports collaboration activities.

*e.g., teamwork support.*

*Based on:*  
[684] Heidi Lam, et al. <<https://hal.archives-ouvertes.fr/hal-00932606/document>>

**computational performance analysis**

Verification of validity of choices made in the implementation phase (e.g., performance of the algorithm that renders the visualisation).

*e.g., slow algorithm - measure system time/memory  
Which algorithm performs best in terms of speed?*

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**adoption and reuse**

Evaluation of how a visualisation is adopted after deployment, and of its compatibility with potential users' work environments and practices.

*e.g., checking if a visualisation is used on regular bases, or if it is easily disseminated. Soliciting users' opinions on how the visualisation may be useful.*

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D6.2

**verification**

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## ● SERVICE/SYSTEM VERIFIED ASPECTS

Characteristics of a service or a system that have been verified.

### ○ user guidance

Verification of the means available to advise, orient, inform, instruct, and guide users throughout their interactions with a computer (messages, alarms, labels, etc.), including from a lexical point of view.

*e.g., in case of data entry, verification of if a user was informed about the required formats and acceptable values. Verification of if on-line help and guidance are provided.*

*Based on:  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>*

### ○ visual organisation

Verification of the visual organisation of information items in relationship to one another. This criterion takes into account the topology (location) and some graphical characteristics (format) to indicate the relationships between the various items displayed, to indicate whether they belong to a given class or else to indicate differences between classes.

*e.g., verification if the options of a menu dialogue were organised as a function of the objects to which they apply.  
When several options are presented, their organisation must be logical, i.e., the organisation must represent a significant or relevant functional organisation (alphabetic order, functional, frequency of use, etc.).*

*Based on:  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>*

### ○ immediate feedback

Verification of the system's responses to users' actions. These actions may be simple keyed entries or more complex transactions such as stacked commands. In all cases, computer responses should be fast, with appropriate and consistent timing for different types of transactions.

*e.g., verification of if following user interruption of data processing, an advisory message assuring the user that the system has returned to its previous status was displayed.  
Verification of if information concerning the state of the processing is provided to the user when the computer is processing slowly.*

*Based on:  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>*

### ○ legibility

Verification of the lexical characteristics of the information presented on the screen that may hamper or facilitate the reading of this information (character brightness, contrast between the letter and the background, font size, interword spacing, line spacing, paragraphs spacing, line length, etc.).

*e.g., in display of textual material, verify if words are kept intact, with minimal breaking by hyphenation between lines.*

*Based on:  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>*

### ○ workload

Verification of all interface elements that play a role in the reduction of the users' perceptual or cognitive load, and in the increase of dialogue efficiency. It encompasses such criteria as brevity (which includes concision and minimal actions) and information density.

*e.g., verification of if the system allows users' short data entries.  
Verification of if the number of steps required to make a selection in a menu was minimised.  
Do not require users to remember data accurately from one display frame to another..*

*Based on:*  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>

### ○ explicit control

Verification of both the system's processing of explicit users' actions and the control users have on the processing of their actions by the system.

It encompasses explicit user action (the computer must process only those actions requested by the users and only when requested to do so) and user control (the users should always be in control of the system processing, e.g., interrupt, cancel, pause and continue).

*e.g., verification of if users have the control over the screen pages.  
Always require a user to take an explicit ENTER action to initiate processing of entered data; do not initiate processing as a side effect (e.g., updating a file) of some other action..*

*Based on:*  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>

### ○ adaptability

The adaptability of a system refers to its capacity to behave contextually and according to the users' needs and preferences.

This criterion is subdivided into two criteria: flexibility (the means available to the users to customise the interface to take into account their working strategies and/or their habits, and the task requirements) and user experience (the means available to take into account the level of user experience).

*e.g., when some displays are unnecessary, the users should be able to remove them temporarily.  
Allow experienced users to bypass a series of menu selections and make an equivalent command entry or keyboard shortcut directly.*

*Based on:*  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>

### ○ error management

The criterion that refers to the means available to prevent or reduce errors and to recover from them when they occur.

Errors are defined in this context as invalid data entry, invalid format for data entry, incorrect command syntax, etc.

*e.g., error protection - when a user requests LOG-OFF and if any pending transaction will not be completed, or if data will be lost, display an advisory message requesting user confirmation.*

*Based on:*  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>

### ○ consistency

Refers to the way interface design choices (codes, naming, formats, procedures, etc.) are maintained in similar contexts, and are different when applied to different contexts.

*e.g., verify if window titles are always located in the same place.*

*Based on:*  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>

### ○ compatibility

This criterion refers to the match between task and users' characteristics (memory, perceptions, customs, skills, age, expectations, etc.) on the one hand, and the organisation of the output, input and dialogue for a given application on the other hand.

*e.g., units of measurement should be familiar to the user.  
Calendar formats should follow users' customs (American vs European calendar).*

*Based on:*  
[1013] J. M. Christian Bastien, Dominique Louis Scapin, CocoaHeads France <[http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic\\_Criteria.pdf](http://www.cocoaheads.fr/wp-content/uploads/files/Ergonomic_Criteria.pdf)>

**○ collaboration**

Studying whether a system allows for collaboration or collaborative analysis as well as understanding to what extent a system supports collaborative data analysis by groups of people and/or collaborative decision-making processes.

*e.g., evaluating the comfort and efficiency of teamworking application.*

*Based on:*  
[684] Heidi Lam, et al. <<https://hal.archives-ouvertes.fr/hal-00932606/document>>



D6.3

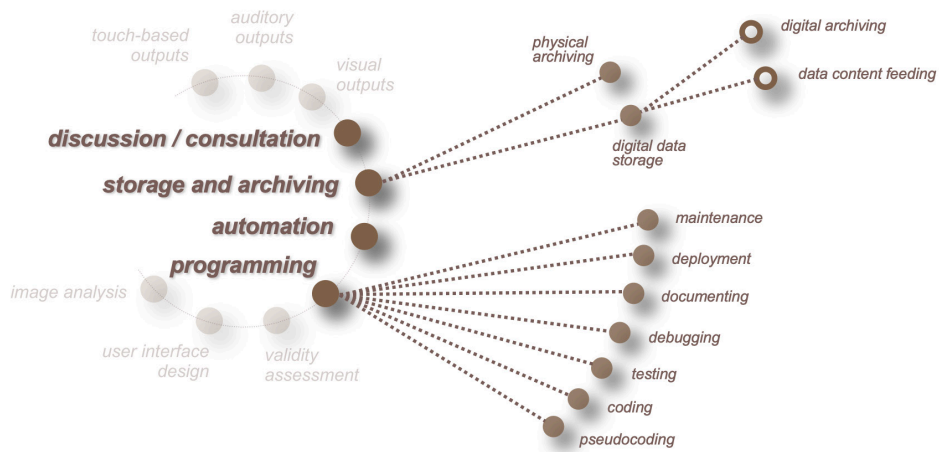
**evaluation metrics development**

An activity dedicated to drawing up new evaluation metrics or methods.

*e.g., definition of new performance indicators aimed at supporting the development, monitoring and evaluation of Youth Tutoring Programs.*

*Developments of a new method to measure, describe, monitor and evaluate poverty.*

*Based on:*  
[684] Heidi Lam, et al. <<https://hal.archives-ouvertes.fr/hal-00932606/document>>  
[670] Better Evaluation <[http://www.betterevaluation.org/en/plan/describe/measures\\_indicators](http://www.betterevaluation.org/en/plan/describe/measures_indicators)>



D7

**programming**

The process of developing and implementing various sets of instructions to enable a computer to do a certain task.

*e.g., development and implementation of an information system based on a set of specifications.*

*[437] Business Dictionary <<http://www.businessdictionary.com/definition/computer-programming.html#ix-zz3x8WdDnZH>>* *Based on:*

**PROGRAMMING PARADIGM**  
Specifies the programming paradigm applied.

**modular programming**

Design technique that emphasises separating the functionality of a program into independent, interchangeable modules. A module that is a separate software component can often be used in a variety of applications and functions with other components of the system. Modules enforce logical boundaries between components and improve maintainability.

*[891] Wikipedia <[https://en.wikipedia.org/wiki/Modular\\_programming](https://en.wikipedia.org/wiki/Modular_programming)>*  
*[1067] Techopedia <<https://www.techopedia.com/definition/25972/modular-programming>>*

**procedural programming**

Also known as imperative programming, it is a concept of programming that specifies a sequence of well-structured steps and procedures (functions or sub-routines) within its programming context to create a program. It is a set of step-by-step instructions that a computer must follow.

*[1053] Techopedia <<https://www.techopedia.com/definition/21481/procedural-programming>>*  
*[1052] The-definition.com <<http://the-definition.com/programming/procedural-programming>>*  
*[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>*

### ○ functional programming

Functional paradigm is a style of programming that emphasises the evaluation of expressions rather than the execution of commands. It views all subprograms as functions in the mathematical sense. Informally, they take in arguments and return a single solution. The solution returned is based entirely on the input, and the time at which a function is called has no relevance.

*Based on:*  
[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>

### ○ logic programming

In this paradigm, we express computation exclusively in terms of mathematical logic (Boolean algebra). The programmer specifies a set of facts and rules, and an engine infers the answers to questions.

*Based on:*  
[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>  
[820] Robin Popplestone, School of Computer Science University of Birmingham <[http://www.cs.bham.ac.uk/research/projects/poplog/paradigms\\_lectures/lecture1.html](http://www.cs.bham.ac.uk/research/projects/poplog/paradigms_lectures/lecture1.html)>  
[1047] Ray Toal, College of Science and Engineering Loyola Marymount University <<https://cs.lmu.edu/~ray/notes/paradigms/>>

### ○ object-oriented programming

A programming paradigm based on the concept of 'objects' and 'classes', which may contain data in the form of fields, often known as attributes, and code in the form of procedures, often known as methods.

*Based on:*  
[895] Wikipedia <[https://en.wikipedia.org/wiki/Object-oriented\\_programming](https://en.wikipedia.org/wiki/Object-oriented_programming)>

### ○ event-driven programming

The flow of the program is determined by events, such as sensor outputs or user actions (mouse clicks, key presses) or messages from other programs or threads.

*Based on:*  
[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>

### ○ agent-oriented programming

Agent-oriented programming (AOP) is a programming paradigm in which the construction of the software is centered on the concept of software agents. In contrast to object-oriented programming, which has objects (providing methods with variable parameters) at its core, AOP has externally specified agents (with interfaces and messaging capabilities) at its core.

*Based on:*  
[894] Wikipedia <[https://en.wikipedia.org/wiki/Agent-oriented\\_programming](https://en.wikipedia.org/wiki/Agent-oriented_programming)>

### ○ inductive programming

A special area of automatic programming covering research from artificial intelligence and programming that addresses learning of typically declarative (logic or functional) and often recursive programs from incomplete specifications, such as input/output examples or constraints.

*Based on:*  
[893] Wikipedia <[https://en.wikipedia.org/wiki/Inductive\\_programming](https://en.wikipedia.org/wiki/Inductive_programming)>

### ○ array programming

Array programming languages (also known as vector or multidimensional languages) generalize operations on scalars to apply transparently to vectors, matrices, and higher-dimensional arrays.

*Based on:*  
[892] Wikipedia <[https://en.wikipedia.org/wiki/Array\\_programming](https://en.wikipedia.org/wiki/Array_programming)>



D7.1

**pseudocoding**

A detailed, yet readable, description of what a computer program or algorithm must do, expressed in a formally styled natural language rather than in a programming language.

*e.g., If student's grade is greater than or equal to 60  
print 'passed'  
otherwise  
print 'failed'*

*Based on:  
[460] WhatIs.com <<http://whatis.techtarget.com/definition/pseudocode>>*

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[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>  
[820] Robin Popplestone, School of Computer Science University of Birmingham <[http://www.cs.bham.ac.uk/research/projects/poplog/paradigms\\_lectures/lecture1.html](http://www.cs.bham.ac.uk/research/projects/poplog/paradigms_lectures/lecture1.html)>  
[1047] Ray Toal, College of Science and Engineering Loyola Marymount University <<https://cs.lmu.edu/~ray/notes/paradigms/>>*

○ **object-oriented programming**

A programming paradigm based on the concept of 'objects' and 'classes', which may contain data in the form of fields, often known as attributes, and code in the form of procedures, often known as methods.

*Based on:  
[895] Wikipedia <[https://en.wikipedia.org/wiki/Object-oriented\\_programming](https://en.wikipedia.org/wiki/Object-oriented_programming)>*

○ **event-driven programming**

The flow of the program is determined by events, such as sensor outputs or user actions (mouse clicks, key presses) or messages from other programs or threads.

*Based on:*  
[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>

○ **agent-oriented programming**

Agent-oriented programming (AOP) is a programming paradigm in which the construction of the software is centered on the concept of software agents. In contrast to object-oriented programming, which has objects (providing methods with variable parameters) at its core, AOP has externally specified agents (with interfaces and messaging capabilities) at its core.

*Based on:*  
[894] Wikipedia <[https://en.wikipedia.org/wiki/Agent-oriented\\_programming](https://en.wikipedia.org/wiki/Agent-oriented_programming)>

○ **inductive programming**

A special area of automatic programming covering research from artificial intelligence and programming that addresses learning of typically declarative (logic or functional) and often recursive programs from incomplete specifications, such as input/output examples or constraints.

*Based on:*  
[893] Wikipedia <[https://en.wikipedia.org/wiki/Inductive\\_programming](https://en.wikipedia.org/wiki/Inductive_programming)>

○ **array programming**

Array programming languages (also known as vector or multidimensional languages) generalize operations on scalars to apply transparently to vectors, matrices, and higher-dimensional arrays.

*Based on:*  
[892] Wikipedia <[https://en.wikipedia.org/wiki/Array\\_programming](https://en.wikipedia.org/wiki/Array_programming)>



D7.2

**coding**

Computer instructions written in a programming language.

*e.g., writing an HTML page and its JavaScript instructions for interaction, binary search tree program in C++*

*Based on:*  
[436] Business Dictionary <<http://www.businessdictionary.com/definition/programming-code.html>>

● **PROGRAMMING PARADIGM**

Specifies the programming paradigm applied.

○ **modular programming**

Design technique that emphasises separating the functionality of a program into independent, interchangeable modules.

A module that is a separate software component can often be used in a variety of applications and functions with other components of the system. Modules enforce logical boundaries between components and improve maintainability.

*Based on:*  
[891] Wikipedia <[https://en.wikipedia.org/wiki/Modular\\_programming](https://en.wikipedia.org/wiki/Modular_programming)>  
[1067] Techopedia <<https://www.techopedia.com/definition/25972/modular-programming>>

○ **procedural programming**

Also known as imperative programming, it is a concept of programming that specifies a sequence of well-structured steps and procedures (functions or sub-routines) within its programming context to create a program.

It is a set of step-by-step instructions that a computer must follow.

*Based on:*  
[1053] Techopedia <<https://www.techopedia.com/definition/21481/procedural-programming>>  
[1052] The-definition.com <<http://the-definition.com/programming/procedural-programming>>  
[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>

### ○ functional programming

Functional paradigm is a style of programming that emphasises the evaluation of expressions rather than the execution of commands. It views all subprograms as functions in the mathematical sense. Informally, they take in arguments and return a single solution. The solution returned is based entirely on the input, and the time at which a function is called has no relevance.

*Based on:*  
[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>

### ○ logic programming

In this paradigm, we express computation exclusively in terms of mathematical logic (Boolean algebra). The programmer specifies a set of facts and rules, and an engine infers the answers to questions.

*Based on:*  
[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>  
[820] Robin Popplestone, School of Computer Science University of Birmingham <[http://www.cs.bham.ac.uk/research/projects/poplog/paradigms\\_lectures/lecture1.html](http://www.cs.bham.ac.uk/research/projects/poplog/paradigms_lectures/lecture1.html)>  
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[895] Wikipedia <[https://en.wikipedia.org/wiki/Object-oriented\\_programming](https://en.wikipedia.org/wiki/Object-oriented_programming)>

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[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>

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[894] Wikipedia <[https://en.wikipedia.org/wiki/Agent-oriented\\_programming](https://en.wikipedia.org/wiki/Agent-oriented_programming)>

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[893] Wikipedia <[https://en.wikipedia.org/wiki/Inductive\\_programming](https://en.wikipedia.org/wiki/Inductive_programming)>

### ○ array programming

Array programming languages (also known as vector or multidimensional languages) generalize operations on scalars to apply transparently to vectors, matrices, and higher-dimensional arrays.

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[892] Wikipedia <[https://en.wikipedia.org/wiki/Array\\_programming](https://en.wikipedia.org/wiki/Array_programming)>



**● CODING SCOPE**

Specifies to which extent a general competence in programming is required to write lines of code.

**○ indirect coding**

Using the capability of a software to translate a series of actions into a code.

*e.g., using a macro in Word to automatize a series of actions, using a language embedded in a software like Maya Embedded Language (MEL)*

[3] Memoria team, Memoria project

**○ direct coding**

Typing a new code based on one's knowledge of programming.

*e.g., writing new code lines in PHP*

[3] Memoria team, Memoria project

**● REUSE LEVEL**

Defines whether, and if so, to what extent the code was reused and adapted from pre-existing lines of code.

**○ new code**

Writing new lines of code.

*e.g., writing new code lines in PHP*

[3] Memoria team, Memoria project

**○ internal copy-and-paste reuse**

A team or a programmer reuses its own code simply by copying it.

[3] Memoria team, Memoria project

**○ internal code refactoring**

A team or a programmer restructures and improves its own code without changing its external behaviour.

Refactoring improves non-functional attributes of the software. Advantages include improved code readability and reduced complexity.

*e.g., using the extract method to turn part of a larger method into a new method. Breaking down code in smaller pieces makes it more easily understandable.*

Based on:  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>

**○ internal code modification**

A team or a programmer restructures or modifies its own code by changing its external behaviour (modification of functional attributes).

Based on:  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>

**○ external copy-and-paste reuse**

A team or a programmer reuses a third-party component simply by copying it.

*e.g., integrating a piece of code from a code library as it is*

Based on:  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[890] Wikipedia <[https://en.wikipedia.org/wiki/Copy\\_and\\_paste\\_programming](https://en.wikipedia.org/wiki/Copy_and_paste_programming)>

**○ external code refactoring**

A team or a programmer reuses and improves a third-party component without changing its external behaviour.

It encompasses finding, learning and integrating the component.

*e.g., creating more general types to allow more code sharing from a third-party component*

Based on:  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>

### external code modification

A reuse and modification of functional attributes of a piece of existing code written by someone else.

Based on:  
 [888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
 [889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>



D7.3

### testing

Investigating a programme to reveal its failures.

Test techniques include the process of executing a program or application with the intent of finding software bugs (errors or other defects).

*e.g., checking if data entered through HTML forms are duly recorded*

Based on:  
 [363] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing](https://en.wikipedia.org/wiki/Software_testing)>

#### TYPE

Specifies the general type of testing.

### exploratory testing

Exploratory testing seeks to find out how the software actually works, and to ask questions about how it will handle difficult and easy cases.

The tester does not follow any rigorous testing procedure, but rather explores the user interface of the application using as many of its features as possible, using information gained in prior tests to intuitively derive additional tests.

Based on:  
 [881] Wikipedia <[https://en.wikipedia.org/wiki/Exploratory\\_testing](https://en.wikipedia.org/wiki/Exploratory_testing)>  
 [882] Wikipedia <[https://en.wikipedia.org/wiki/Manual\\_testing](https://en.wikipedia.org/wiki/Manual_testing)>

### end-to-end testing

Tests conducted on a complete, integrated system to evaluate its compliance with its specified requirements. System testing falls within the scope of black-box testing, and as such should require no knowledge of the inner design of the code or logic. It seeks to detect defects both within the 'inter-assemblages' and within the system as a whole.

*e.g., an end-to-end test might involve testing a logon interface, then creating and editing an entry, plus sending or printing results, followed by summary processing or deletion (or archiving) of entries, then logoff.*

Based on:  
 [363] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing](https://en.wikipedia.org/wiki/Software_testing)>  
 [883] Wikipedia <[https://en.wikipedia.org/wiki/System\\_testing](https://en.wikipedia.org/wiki/System_testing)>

### operational acceptance testing

Operational acceptance is used to conduct operational readiness (pre-release) of a product, service or system as part of a quality management system. This type of testing focuses on the operational readiness of the system to be supported and/or to become part of the production environment. Hence, it is also known as operational readiness testing (ORT) or operations readiness and assurance (OR&A) testing.

*e.g., it may include checking the backup/restore facilities, IT disaster recovery procedures, maintenance tasks and periodic check of security vulnerabilities.*

Based on:  
 [363] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing](https://en.wikipedia.org/wiki/Software_testing)>

### functional testing

Functional testing is concerned only with the functional requirements of a system or subsystem and covers how well (if at all) the system executes its functions. These include any user commands, data manipulation, searches and business processes, user screens and integrations.

*e.g., Functional test tends to answer the questions like 'can the user do this?' or 'does this particular feature work?'*

*Based on:*  
[1070] Arthur Fox, ReQuest <<http://reqtest.com/testing-blog/functional-vs-non-functional-testing/>>  
[1071] Tutorials Point <[https://www.tutorialspoint.com/software\\_testing\\_dictionary/functional\\_testing.htm](https://www.tutorialspoint.com/software_testing_dictionary/functional_testing.htm)>  
[899] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing#Functional\\_vs\\_non-functional\\_testing](https://en.wikipedia.org/wiki/Software_testing#Functional_vs_non-functional_testing)>

### ○ non-functional testing

Non-functional testing is designed to figure out if your product will provide a good user experience.

It should determine the breaking point, the point at which extremes of scalability or performance leads to unstable execution. Non-functional requirements tend to be those that reflect the quality of the product, particularly in the context of the suitability perspective of its users.

*e.g., testing performance criteria, common libraries to the backend, or data retention rules.*

*Based on:*  
[899] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing#Functional\\_vs\\_non-functional\\_testing](https://en.wikipedia.org/wiki/Software_testing#Functional_vs_non-functional_testing)>  
[1069] iBeta <<https://www.ibeta.com/functional-vs-non-functional-testing-whats-difference/>>

## ○ APPROACH

Specifies different testing approaches.

### ○ black-box testing

Examines the functionality of an application without peering into its internal structures or workings. A black-box tester is unaware of the internal structure of the application to be tested, has no access to the source code, and no knowledge of the architecture.

*Based on:*  
[886] Wikipedia <[https://en.wikipedia.org/wiki/Black-box\\_testing](https://en.wikipedia.org/wiki/Black-box_testing)>  
[884] Wikipedia <[https://en.wikipedia.org/wiki/Gray\\_box\\_testing](https://en.wikipedia.org/wiki/Gray_box_testing)>  
[1065] Dan Cornell, SearchSoftwareQuality.com <<http://searchsoftwarequality.techtarget.com/tip/Web-application-testing-The-difference-between-black-gray-and-white-box-testing>>

### ○ white-box testing

White-box testing (also known as clear box testing, glass box testing, transparent box testing, and structural testing) refers to testing a system with full knowledge and access to all source code and architecture documents.

In white-box testing, an internal perspective of the system and programming skills are used to design test cases. The tester chooses inputs to exercise paths through the code and determine the appropriate outputs.

*Based on:*  
[885] Wikipedia <[https://en.wikipedia.org/wiki/White-box\\_testing](https://en.wikipedia.org/wiki/White-box_testing)>  
[1065] Dan Cornell, SearchSoftwareQuality.com <<http://searchsoftwarequality.techtarget.com/tip/Web-application-testing-The-difference-between-black-gray-and-white-box-testing>>

### ○ grey-box testing

A combination of white-box testing and black-box testing. The aim of this testing is to search for the defects, if any, that are due to improper structure or improper usage of applications.

A grey-box tester partially knows the internal structure, which includes access to the documentation of internal data structures and the algorithms used. Grey-box testers require both high level and detailed documents describing the application, which they collect to define test cases.

*Based on:*  
[884] Wikipedia <[https://en.wikipedia.org/wiki/Gray\\_box\\_testing](https://en.wikipedia.org/wiki/Gray_box_testing)>

## ○ AUTOMATION LEVEL

Specifies the level of automation in a testing process.

### ○ automated

Produced with the use of special software (separate from the software being tested) to control the execution of tests and the comparison of actual outcomes with predicted outcomes.

*e.g., graphical user interface testing framework that generates user interface events such as keystrokes and mouse clicks, and observes the changes that result in the user interface, to validate that the observable behaviour of the program is correct.*

*Based on:*  
[887] Wikipedia <[https://en.wikipedia.org/wiki/Test\\_automation](https://en.wikipedia.org/wiki/Test_automation)>

**semi-automated**

Produces by combining automated and manual tests.

[3] Memoria team, Memoria project

**manual**

Process of manually testing programs for defects. Usually it requires a tester to play the role of an end user and use most of the features of the application to ensure correct behaviour. To ensure completeness of testing, the tester often follows a written test plan that leads him/her through a set of important test cases.

Based on:  
[882] Wikipedia <[https://en.wikipedia.org/wiki/Manual\\_testing](https://en.wikipedia.org/wiki/Manual_testing)>



D7.4

**documenting**

Writing a detailed description of the programming cycle and specific facts about the program.

Typical program documentation materials include the origin and nature of the problem, a brief narrative description of the program, logic tools such as flowcharts and pseudocode, data-record descriptions, program listings, and testing results.

e.g., comments in the program itself

Based on:  
[605] Department of Computer Science and Statistics University of Rhode Island <<https://homepage.cs.uri.edu/faculty/wolfe/book/Readings/Reading13.htm>>

**OUTPUT'S NATURE**

Specifies the nature of the output in terms of final result.

**nondigital**

Refers to outputs that are created as nondigital.

[3] Memoria team, Memoria project

**digital**

Refers to outputs that are created in a digital form.

[3] Memoria team, Memoria project



D7.5

**debugging**

Debugging is a process of ridding a computer program of logical or syntactical errors. This is commonly achieved by manually examining the program's source code. Debugging is often a consequence of testing activities.

e.g., removing errors in JavaScript instructions

Based on:  
[604] Computer Hope <<http://www.computerhope.com/jargon/d/debuggin.htm>>



D7.6

**deployment**

All the activities that make a software system available for use.

e.g., install and activate, deactivate adapt, update, version tracking, uninstall

Based on:  
[364] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_deployment](https://en.wikipedia.org/wiki/Software_deployment)>



D7.7

**maintenance**

The updating of computer programs both by error correction and by alteration of programs to meet changing needs.

Based on:  
[162] The free Dictionary <<http://encyclopedia2.thefreedictionary.com/program+maintenance>>



D8

### automation

Developing automated methods to produce outputs.

Processes that have been automated require less human intervention and less human time to deliver.

*e.g., a model is produced as an answer to a query (model calculated on the fly)*

*Based on:*  
[527] Vangie Beal, Webopedia <[http://www.webopedia.com/TERM/P/process\\_automation.html](http://www.webopedia.com/TERM/P/process_automation.html)>

### COMPONENTS

Specifies the components used in automation.

#### electronic devices

Devices that accomplish their purposes electronically, combining components to create an electronic circuit with a particular function.

*e.g., motherboard*

*Based on:*  
[924] The Free Dictionary <<http://www.thefreedictionary.com/electronic+device>>  
[877] Wikipedia <[https://en.wikipedia.org/wiki/Electronics#Electronic\\_devices\\_and\\_components](https://en.wikipedia.org/wiki/Electronics#Electronic_devices_and_components)>

#### computers

Programmable electronic machines that performs high-speed mathematical or logical operations.

*e.g., programming a 3D printing activity, developing macros using Automator on Apple systems*

*Based on:*  
[924] The Free Dictionary <<http://www.thefreedictionary.com/electronic+device>>

#### mechanical elements

Elementary mechanical component of a machine.

*e.g., a motor*

*Based on:*  
[878] Wikipedia <[https://en.wikipedia.org/wiki/Machine\\_element](https://en.wikipedia.org/wiki/Machine_element)>

#### hydraulic components

Elements that use liquid fluid power to do simple work.

*e.g., an hydraulic actuator, a device that converts hydraulic power into mechanical force and motion*

*Based on:*  
[879] Wikipedia <[https://en.wikipedia.org/wiki/Hydraulic\\_machinery](https://en.wikipedia.org/wiki/Hydraulic_machinery)>

#### pneumatic components

Elements that operate by compressed air or by a vacuum.

*e.g., a pressure sensor, a vacuum pump*

*Based on:*  
[925] The Free Dictionary <<http://www.thefreedictionary.com/pneumatic>>

#### electrical components

Any basic discrete device or physical entity in an electronic system used to affect electrons or their associated fields.

*e.g., an amplifier, radio receiver, or oscillator*

*Based on:*  
[880] Wikipedia <[https://en.wikipedia.org/wiki/Electronic\\_component](https://en.wikipedia.org/wiki/Electronic_component)>



D9

### storage and archiving

An activity that consists of storing documents and/or objects may they be digital or physical ones.

*e.g., storing an electronic documents on a server, storing handwritten documents inside a physical archive*

[3] Memoria team, Memoria project

**DATA TYPE**

Specifies the type of data that have been added during the update.

**still image**

a static visual representation (handmade or electronically produced).

*e.g., photographs, cartographic documents, drawings, schemas*

*Based on:*

*[2] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-StillImage>>*

**moving image**

A series of visual representations imparting an impression of motion when shown in succession.

*e.g., animations, movies, videos*

*Based on:*

*[4] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-MovingImage>>*

**text**

the written words.

*[3] Memoria team, Memoria project*

**digital dataset**

A collection of data or information encoded in a defined structure primarily intended for direct machine processing (computation).

*e.g., a cloud of points, 3D models*

*Based on:*

*[9] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Dataset>>*

**structured data**

Data or information organised in a predefined manner intended to be read and interpreted by human analysts.

*e.g., lists, tables, database schemas*

*[3] Memoria team, Memoria project*

**interactive resource**

A resource requiring interaction from the user to be understood, executed, or experienced.

*e.g., website, multimedia objects, 3D interactive scenes, virtual reality environments, interactive visualisations, 3D interactive objects*

*Based on:*

*[8] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-InteractiveResource>>*

**heterogeneous collection**

A heterogeneous collection is an ensemble composed of disparate types of outputs.

*e.g., a collection composed of photographs and XML files*

*[3] Memoria team, Memoria project*

**sound**

A resource primarily intended to be heard.

*e.g., music file format, recorded speech*

*Based on:*

*[5] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Sound>>*

**human-made artefact**

Objects and remains of objects made by a human being.

*e.g., pottery samples*

*[3] Memoria team, Memoria project*

**ecofact**

In archaeology, an organic material found at an archaeological site consisting of natural remains, as opposed to an object of human workmanship.

*e.g., animal bones, charcoal, plants, and pollen*

Based on:  
[1271] Wikipedia <[https://en.wikipedia.org/wiki/Biofact\\_\(archaeology\)](https://en.wikipedia.org/wiki/Biofact_(archaeology))>  
[1272] Lexico Dictionaries <<https://www.lexico.com/definition/ecofact>>

**software**

The programs that control the functioning of the hardware and direct its operation (in source or compiled form). It consists of lines of code written by computer programmers that have been compiled into a computer program.

*e.g., C source file, MS-Windows .exe executable, Perl script*

Based on:  
[10] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Software>>  
[11] The Free Dictionary <<http://www.thefreedictionary.com/software>>  
[12] TechTerms <<https://techterms.com/definition/software>>



D9.1

**physical archiving**

An activity that consists of storing and preserving physical objects (e.g., books, microfilms) in an adequate repository.

*e.g., microfilms stored in an institutional archive*

[3] Memoria team, Memoria project

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*e.g., photographs, cartographic documents, drawings, schemas*

Based on:  
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**moving image**

A series of visual representations imparting an impression of motion when shown in succession.

*e.g., films recorded on magnetic tapes*

Based on:  
[4] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-MovingImage>>

**text**

the written words.

*e.g., paper-based report*

[3] Memoria team, Memoria project

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Data or information organised in a predefined manner intended to be read and interpreted by human analysts.

*e.g., lists, tables, database schemas*

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**interactive resource**

A resource requiring interaction from the user to be understood, executed, or experienced.

*e.g., 3D interactive objects*

Based on:  
[8] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-InteractiveResource>>

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*e.g., a collection composed of photographs and films*

[3] Memoria team, Memoria project

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A resource primarily intended to be heard.

*e.g., speech recorded on magnetic tapes*

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[5] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Sound>>

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Objects and remains of objects made by a human being.

*e.g., pottery samples*

[3] Memoria team, Memoria project

**ecofact**

In archaeology, an organic material found at an archaeological site consisting of natural remains, as opposed to an object of human workmanship.

*e.g., animal bones, charcoal, plants, and pollen*

Based on:  
[1271] Wikipedia <[https://en.wikipedia.org/wiki/Biofact\\_\(archaeology\)](https://en.wikipedia.org/wiki/Biofact_(archaeology))>  
[1272] Lexico Dictionaries <<https://www.lexico.com/definition/ecofact>>



D9.2

**digital storage**

An activity that consists of storing data and information in a digital form.

*e.g., storing an electronic documents on a server*

[3] Memoria team, Memoria project

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**digital dataset**

A collection of data or information encoded in a defined structure primarily intended for direct machine processing (computation).

*e.g., a cloud of points, 3D models*

Based on:  
[9] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Dataset>>



- structured data**

Data or information organised in a predefined manner intended to be read and interpreted by human analysts.

*e.g., lists, tables, database schemas*

*[3] Memoria team, Memoria project*
  
- interactive resource**

A resource requiring interaction from the user to be understood, executed, or experienced.

*e.g., website, multimedia objects, 3D interactive scenes, virtual reality environments, interactive visualisations, 3D interactive objects*

*Based on:  
[8] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-InteractiveResource>>*
  
- heterogeneous collection**

A heterogeneous collection is an ensemble composed of disparate types of outputs.

*e.g., a collection composed of photographs and XML files*

*[3] Memoria team, Memoria project*
  
- sound**

A resource primarily intended to be heard.

*e.g., music file format, recorded speech*

*Based on:  
[5] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Sound>>*
  
- software**

The programs that control the functioning of the hardware and direct its operation (in source or compiled form). It consists of lines of code written by computer programmers that have been compiled into a computer program.

*e.g., C source file, MS-Windows .exe executable, Perl script*

*Based on:  
[10] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Software>>  
[11] The Free Dictionary <<http://www.thefreedictionary.com/software>>  
[12] TechTerms <<https://techterms.com/definition/software>>*

**AUTOMATION LEVEL**  
Differentiation from point of view of an intensity of human intervention in the process of data entry.

- manual data entry**

Data entry done and controlled by a human rather than by automatic means.

*e.g., manual file transfer*

*[3] Memoria team, Memoria project*
  
- semi-automated data entry**

A process combining automatic modelling and human intervention.

*[3] Memoria team, Memoria project*
  
- automated data entry**

Data entry performed automatically with no direct human control.

*Based on:  
[933] Merriam-Webster <<http://www.merriam-webster.com/dictionary/automatic>>*



D9.2.1

**data content feeding**

An activity that consists of updating or complementing the content of an existing electronic (broadcast or storage) media.

*e.g., adding new data/information into a database, into a website, into a document*

*[3] Memoria team, Memoria project*

**DATA TYPE**

Specifies the type of data that have been added during the update.

**still image**

a static visual representation (handmade or electronically produced).

*e.g., photographs, cartographic documents, drawings, schemas*

*Based on:*

[2] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-StillImage>>

**moving image**

A series of visual representations imparting an impression of motion when shown in succession.

*e.g., animations, movies, videos*

*Based on:*

[4] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-MovingImage>>

**text**

the written words.

[3] Memoria team, Memoria project

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[10] DCMI Metadata Terms <<http://dublincore.org/documents/dcmi-terms/#dcmitype-Software>>

[11] The Free Dictionary <<http://www.thefreedictionary.com/software>>

[12] TechTerms <<https://techterms.com/definition/software>>

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[3] Memoria team, Memoria project

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Based on:  
[933] Merriam-Webster <<http://www.merriam-webster.com/dictionary/automatic>>

## **TARGET TECHNOLOGICAL SETTING**

Specifies the technological setting that has been updated.

### **website**

A website is a collection of publicly accessible, interlinked Web pages that share a single domain name.

*e.g., organisation website, personal website*

Based on:  
[1105] Techopedia <<https://www.techopedia.com/definition/5411/website>>

### **database**

An organised structure that allows the storage of large quantities of data or information in order to facilitate their exploitation (addition, update, search of data, etc.). It is generally stored and accessed electronically from a computer system.

*e.g., Joconde database*

Based on:  
[48] Per Christensson <<http://techterms.com/definition/database>>  
[964] Keith C. Clarke, Department of Geography University of California Santa Barbara <[https://www.google.fr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwi\\_wtuoyvfLhUKvRoKHQwiDW0QFgg5MAI&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FG176B%2FLecture04.ppt&usg=AFQjCNGzIErcudlvEYqQHs6-PagkwDVc1Q&bvm=bv.118443451,d.d2s](https://www.google.fr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwi_wtuoyvfLhUKvRoKHQwiDW0QFgg5MAI&url=http%3A%2F%2Fwww.geog.ucsb.edu%2F-kclarke%2FG176B%2FLecture04.ppt&usg=AFQjCNGzIErcudlvEYqQHs6-PagkwDVc1Q&bvm=bv.118443451,d.d2s)>

### **digital documents**

Documents that exist physically in a digital environment. Such documents can be texts, images, videos, or any combination of these formats.

*e.g., a technical report generated by a word processor, a PowerPoint presentation, a collection of photographs distributed in several directories*

Based on:  
[1107] IGI Global <<https://www.igi-global.com/dictionary/personal-digital-libraries/7604>>  
[1108] Michael Buckland <<http://people.ischool.berkeley.edu/~buckland/digdoc.html>>  
[1109] Richard Pearce-Moses, Society of American Archivists <<https://www2.archivists.org/glossary/terms/d/digital-document>>

### **server**

A computer or computer program which manages access to a centralized resource or service in a network.

*e.g., database servers, file servers, mail servers, web servers, ...*

Based on:  
[1159] Slide Player <<https://slideplayer.com/slide/9284904/>>

**cloud service**

A cloud service is any service made available to users on demand via the Internet from a cloud computing provider's servers as opposed to being provided from a company's own on-premises servers. Cloud services are designed to provide easy, scalable access to applications, resources and services, and are fully managed by a cloud services provider.

*e.g., Sesam space on My CoRe*

*Based on:*  
 [1106] Vangie Beal, Webopedia <[https://www.webopedia.com/TERM/C/cloud\\_services.html](https://www.webopedia.com/TERM/C/cloud_services.html)>



D9.2.2

**digital archiving**

Data archiving is intended to protect older information that is not needed for everyday operations but may have to be accessed occasionally. Some data archives allow data to be read-only to protect it from modification, while other data archiving products treat data as to allow users to modify it.

*e.g., storing files on the FTP server, an external hard drive or in a 'Cloud'*

*Based on:*  
 [1285] Komprise <[https://www.komprise.com/glossary\\_terms/data-archiving/](https://www.komprise.com/glossary_terms/data-archiving/)>

**STORAGE MEDIA**

Specifies the technological setting used to store data.

**computer memory**

The memory of a computer.

*Based on:*  
 [1286] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_data\\_storage](https://en.wikipedia.org/wiki/Computer_data_storage)>

**direct attached storage**

Digital external storage devices directly attached to the computer accessing it, and not accessible to other computers, as opposed to storage accessed over a computer network (*i.e.* network-attached storage). Secondary or tertiary storage devices that can be physically removed or disconnected from a computer.

*e.g., hard drives, solid-state drives and data tapes, optical disc drives, external drives, USB flash drives, floppy disks*

*Based on:*  
 [1288] Jenna Phips, Webopedia <<https://www.webopedia.com/TERM/D/data-storage.html>>  
 [1289] Michael Price, DataCenters.com <<https://www.datacenters.com/news/different-data-storage-types-which-is-right-for-your-business>>  
 [1290] Robert Sheldon, TechTarget <<https://searchstorage.techtarget.com/definition/direct-attached-storage>>  
 [1286] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_data\\_storage](https://en.wikipedia.org/wiki/Computer_data_storage)>

**network based storage**

A Network Attached Storage (NAS) system is a storage device connected to a network that allows storage and retrieval of data from a centralized location.

*e.g., Sesames Network-attached storage*

*Based on:*  
 [1287] Komprise <[https://www.komprise.com/glossary\\_terms/network-attached-storage-nas/](https://www.komprise.com/glossary_terms/network-attached-storage-nas/)>

**cloud storage**

Cloud storage is a service model based on highly virtualised infrastructure in which data is transmitted and stored on remote storage systems (multiple servers, sometimes in multiple locations) and the physical environment is typically owned and managed by a hosting company.

*e.g., Sesam space on My CoRe, Google Drive, Dropbox*

*Based on:*  
 [1141] Wikipedia <[https://en.wikipedia.org/wiki/Cloud\\_storage](https://en.wikipedia.org/wiki/Cloud_storage)>  
 [1106] Vangie Beal, Webopedia <[https://www.webopedia.com/TERM/C/cloud\\_services.html](https://www.webopedia.com/TERM/C/cloud_services.html)>



D10

### discussion / consultation

A talk between two or more people (during a phase of research centred on the use of procedural knowledge, such as scientific procedures and technological protocols, and implicating the use of technical skills and abilities acquired and developed by training or practice) in which thoughts and ideas are expressed, questions are asked and answered, and solutions are explored especially in order to reach a decision.

*e.g., a brief exchange of ideas during production of a 3D geometric model, in-depth discussion during user interface design*

*Based on:*  
[1240] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/conversation>>

[1241] Cambridge English Dictionary <<https://www.dictionary.com/browse/discussion>>

[1242] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/discussion>>

#### ● INTERACTION MODE

Classification of discussions/consultations based on the interaction mode.

##### ○ face-to-face discussion

A discussion involving participants that are present at the same place.

*e.g., an informal exchange during an activity*

[3] Memoria team, Memoria project

##### ○ remote discussion

A discussion involving participants that are separated in distance typically facilitated through technology, such as video conferencing software.

*e.g., interacting via two-way communication technologies (videoconferencing, by telephone, etc.)*

*Based on:*  
[1243] Top Hat Glossary <<https://tophat.com/glossary/r/remote-teaching/>>

#### ○ GROUP TYPE

Classification of discussions/consultations according to the number of participants and to the presence of a moderator.

##### ○ informal group discussion

A discussion involving several people exchanging without a moderator in charge of conducting the discussion in an organized way.

[3] Memoria team, Memoria project

##### ○ one-to-one discussion

A discussion involving two people.

*Based on:*  
[1244] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/one-to-one>>

##### ○ moderated discussion

A discussion that involves a group of people who have been brought together to discuss a particular subject in order to solve a problem or suggest ideas. The discussion is led by a person who is in charge of the discussion and makes sure that it is conducted in an organized way.

*e.g., instructions given and discussed during a training session, a briefing*

*Based on:*  
[1245] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/moderator>>  
[1246] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/focus-group>>

**STRUCTURATION LEVEL**

Determines the level of structuration before the discussion.

**structured**

A discussion with strict guidelines, which can be both content-oriented, logistical, or technical, and privileging pre-set questions.

*[1247] Moodle, Moodle <<https://etrp.wmo.int/mod/book/view.php?id=8628&chapterid=1582&lang=en>>* *Based on:*

**unstructured**

The key feature of the unstructured discussion is the free-ranging nature of the questions asked and ideas participants may come up with. It is non-directive in nature. It is similar to an everyday conversation because of its informal and free-flowing nature.

*e.g., unprompted exchange during an activity (e.g., a field acquisition process)*

*[1249] Formplus, Formplus <<https://www.formpl.us/blog/unstructured-interview>>*  
*[1248] Tom Pollock, The Difference Between Structured, Unstructured & Semi-Structured Interviews <<https://www.oliverparks.com/blog-news/the-difference-between-structured-unstructured-amp-semi-structured-interviews>>* *Based on:*

**ANTICIPATION LEVEL**

Determines whether the exchange was planned and scheduled or not.

**spontaneous**

A spontaneous discussion is not planned or arranged, but takes place because someone suddenly needs or wants it to happen.

*e.g., voluntary discussion between a student and his/her supervisor*

*[1250] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/spontaneous>>* *Based on:*

**programmed**

Discussion planned and arranged according to a schedule.

*e.g., mid-term project session*

*[1251] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/arrange-a-schedule>>* *Based on:*

**REPORTING MODE**

Classification of discussion according to techniques used to report on its results.

**unreported**

No traces of a discussion are kept.

*[3] Memoria team, Memoria project*

**paper-and-pencil**

Decisions or conclusions resulting from the conversation are reported on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*[1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>* *Based on:*

**audio-video recording**

An entire conversation, its fragments, or conclusions, are recorded (audio or video).

*e.g., voice recording, videoing*

*[3] Memoria team, Memoria project*

**computer-assisted**

Decisions or conclusions resulting from the conversation are directly formatted and stored via a computer programme and using a computer, a laptop, a tablet, etc

*[838] Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>* *Based on:*





## FINALISATION

A class of activities that corresponds to those stages in a research process that are specifically undertaken in such contexts as publication, communication, dissemination, *etc.* These activities focus on presenting, disseminating, and transmitting research results to various audiences.

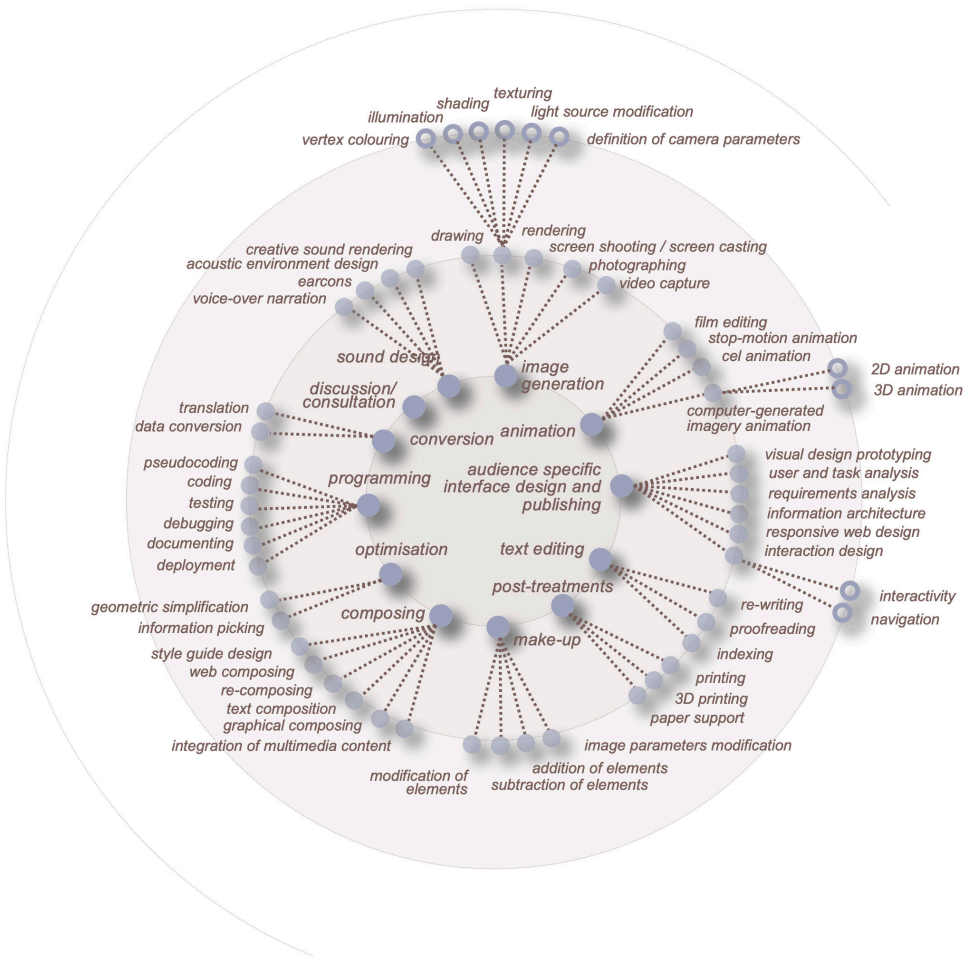
The group encompasses activities that lead to reprocessing existing outputs (modification, adjustment, reformation, optimisation, adaptation) or activities that lead to the creation of new ones (video capture, voice-over narration).

e.g., photographing a scene with a motion picture camera, converting a video file into a format supported by HTML5, sanding and polishing of 3D prints, modification of visual outputs.



E





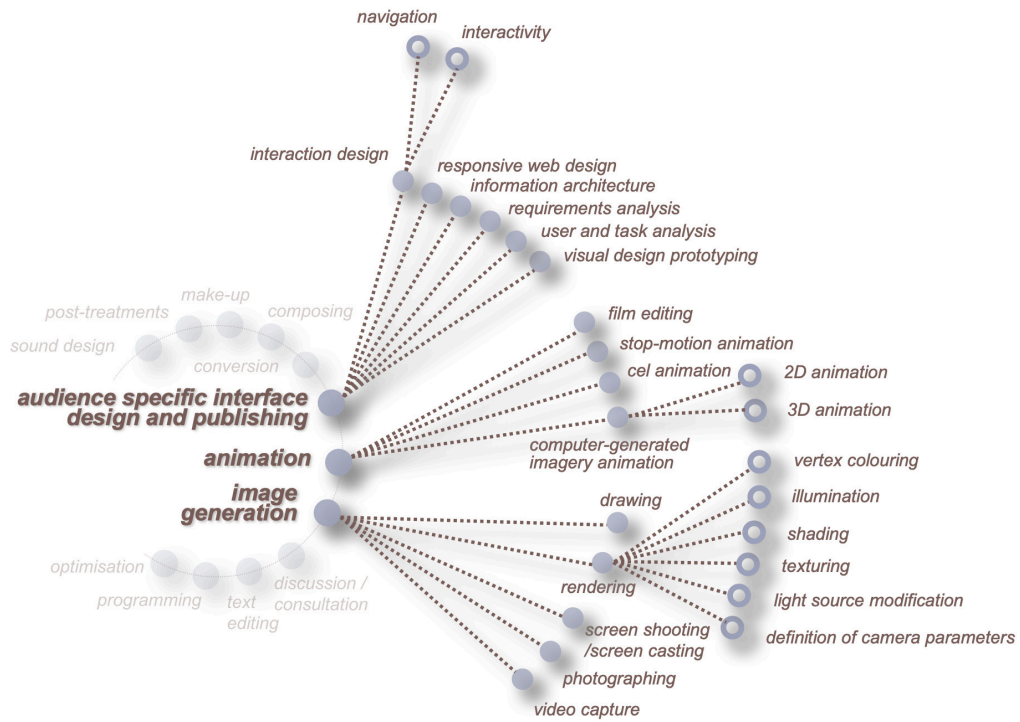
# FINALISATION

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E1

**image generation**

The act of producing new images (still or moving ones) or other visual elements for communication or dissemination purposes.

*e.g., a screen capture of a system, of a 3D model, or of a visualisation, a photograph of a 3D plaster model, a video capture of the system*

[3] Memoria team, Memoria project



**OUTPUT'S NATURE**

Specifies the nature of the output in terms of a final result.



**nondigital**

Refers to outputs that are created as nondigital.

*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project



**digital**

Refers to outputs that are created in a digital form.

*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



## E1.1

### rendering

The process of generating an image from a 2D or 3D model (or models in what collectively could be called a scene file), by means of computer programs. This activity may be limited to a modification of the graphics pipeline – *i.e.*, the sequence of steps used to generate an image (modification of a viewpoint, texture, lighting, or shading for example).

*e.g., adding lighting and shading information to the description of 3D scene*

*Based on:*  
[365] Wikipedia <[https://en.wikipedia.org/wiki/Rendering\\_%28computer\\_graphics%29](https://en.wikipedia.org/wiki/Rendering_%28computer_graphics%29)>

#### ○ RENDER PROCESSING TYPE

Differentiates rendering done on-the-fly from rendering done ahead of time.

#### ○ real-time rendering

A rendering for interactive media such as games and simulations, calculated and displayed in real time.

*e.g., real-time rendering in computer games*

*Based on:*  
[896] Wikipedia <[https://en.wikipedia.org/wiki/3D\\_rendering](https://en.wikipedia.org/wiki/3D_rendering)>

#### ○ non-real-time rendering

A rendering technique used in environments in which speed is not a concern. Non-real-time rendering enables the leveraging of limited processing power to obtain higher image quality.

This rendering technique is mostly used in animation and visual effects, in which photorealism needs to be at the highest standard possible.

*e.g., pre-calculated videos, pre-calculated renderings of 3D models (still images)*

*Based on:*  
[896] Wikipedia <[https://en.wikipedia.org/wiki/3D\\_rendering](https://en.wikipedia.org/wiki/3D_rendering)>  
[1068] Techopedia <<https://www.techopedia.com/definition/9163/rendering>>



## E1.1.1

### illumination

A deliberate use of light sources combined with rendering methods to achieve a practical or aesthetic effect.

*Based on:*  
[341] Wikipedia <<https://en.wikipedia.org/wiki/Lighting>>

#### ○ RENDERING METHODS

Specifies the rendering methods used in computer graphics to add realistic lighting to 3D scenes.

#### ○ radiosity

A global illumination algorithm based on a detailed analysis of light reflections off diffuse surfaces. The images that result from a radiosity renderer are characterised by soft, gradual shadows.

*Based on:*  
[1044] Matthew Ward, Matthew Ward's Home Page <<http://web.cs.wpi.edu/~matt/courses/cs563/talks/radiosity.html>>

#### ○ ray tracing

A general technique of modelling the path taken by light by following rays of light as they interact with optical surfaces.

*Based on:*  
[1028] FANDOM <[http://graphics.wikia.com/wiki/Ray\\_tracing](http://graphics.wikia.com/wiki/Ray_tracing)>

### ○ cone tracing

A derivative of the ray tracing algorithm in which cones are projected from the camera centre through each pixel, where the intersection of the cone and the scene model is used to determine the pixel's colour.

Based on:

[856] Wikipedia <[https://en.wikipedia.org/wiki/Cone\\_tracing](https://en.wikipedia.org/wiki/Cone_tracing)>

[1061] Edinburgh Online Graphics Dictionary <<http://homepages.inf.ed.ac.uk/rbf/GRDICT/grdict.htm#C>>

### ○ beam tracing

A derivative of the ray tracing algorithm that replaces rays, which have no thickness, with beams. Beams are shaped like unbounded pyramids, with (possibly complex) polygonal cross sections.

Based on:

[857] Wikipedia <[https://en.wikipedia.org/wiki/Beam\\_tracing](https://en.wikipedia.org/wiki/Beam_tracing)>

### ○ path tracing

Path tracing is an improvement on general ray-tracing techniques. Normal ray-tracing uses a constant factor to estimate the contribution of ambient light at a given surface point but path-tracing estimates the global illumination using, for example, Monte Carlo techniques. Images are thus generated using many paths through each pixel.

Based on:

[1033] Edinburgh Online Graphics Dictionary <<http://homepages.inf.ed.ac.uk/rbf/GRDICT/grdict.htm#P>>

### ○ Metropolis light transport

An application of a variant of the Monte Carlo method called the Metropolis-Hastings algorithm to the rendering equation for generating images from detailed physical descriptions of three-dimensional scenes. Builds upon bi-directional path tracing.

Based on:

[858] Wikipedia <[https://en.wikipedia.org/wiki/Metropolis\\_light\\_transport](https://en.wikipedia.org/wiki/Metropolis_light_transport)>

### ○ ambient occlusion

A shading and rendering technique used to calculate how exposed each point in a scene is to ambient lighting.

Based on:

[859] Wikipedia <[https://en.wikipedia.org/wiki/Ambient\\_occlusion](https://en.wikipedia.org/wiki/Ambient_occlusion)>

### ○ photon mapping

A global illumination algorithm based on ray tracing used to realistically simulate the interaction of light with different objects. Specifically, it is capable of simulating the refraction of light through a transparent substance, such as glass or water, diffuse interreflections between illuminated objects, and some of the effects caused by particulate matter such as smoke or water vapour.

Based on:

[1027] FANDOM <[http://graphics.wikia.com/wiki/Photon\\_mapping](http://graphics.wikia.com/wiki/Photon_mapping)>

### ○ point-based global illumination

Uses a dense point sampling of the scene's surfaces to approximate indirect light transport and is intensively used in 3D motion pictures and special effects. Each point caches the reflected light using a spherical function and is typically used in a subsequent rasterization process to compute colour bleeding and ambient occlusion in an economic, noise-free fashion.

Based on:

[1041] Tamy Boubekeur, Tamy Boubekeur's Homepage <<http://perso.telecom-paristech.fr/~boubek/papers/QPBG/>>

### ○ image-based lighting

The process of illuminating scenes and objects (real or synthetic) with images of light from the 'real world'.

Based on:

[992] Paul Debevec, USC Institute for Creative Technologies <<http://ict.usc.edu/pubs/Image-Based%20Lighting.pdf>>

## ● LIGHT ENVIRONMENT ANALYSIS

Identification, positioning and configuration of sources of illumination of a 3D scene.

### ○ sun position calculation

Illuminating objects using sun position calculation. Specific longitude, latitude, date and time parameters are required to calculate the exact position of the sun and to determine amount and type of sunshine applied to a 3D scene.

*e.g., simulating the sun's position and trajectory for a given day of a year in verify visibility patterns*

Based on:

[1045] Hoshang Kolivand ,Mohd Shahril Sunar, CiteSeerX <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.301.4105&rep=rep1&type=pdf>>

### ○ real-light-source sampling

Illuminating objects using measurements of real light.

*e.g., highly polished metallic spheres photographed to capture the real environment. Direct HDR capture of the sun and sky.*

Based on:

[1039] Clément Poline <<http://graphics.cs.cmu.edu/nsp/course/15-462/Fall07/462/lectures/EnvMap.pdf>>



## E1.1.2

### texturing

An activity aiming at adding detail, surface texture (a bitmap or raster image), or colour to a computer-generated graphic or 3D model.

*e.g., the use of photographs to texture a 3D model*

Based on:

[343] Wikipedia <[https://en.wikipedia.org/wiki/Texture\\_mapping](https://en.wikipedia.org/wiki/Texture_mapping)>

## ● TEXTURE TYPE

Differentiation of textures from point of view of their realism and expected effects.

### ○ photorealistic photography

Methods of adding texture to a computer-generated graphic or 3D model by applying/projecting photorealistic photographs of the object on it.

*e.g., 3D virtual model of an edifice produced from photographs reused for texturing*

[3] Memoria team, Memoria project

### ○ photorealistic image samples

Methods of adding texture to a computer-generated graphic or 3D model by applying/projecting photorealistic samples of photographs on it.

*e.g., combining several photographic samples into one texture that will be applied on a wall.*

[3] Memoria team, Memoria project

### ○ photorealistic generic materials

Textures chosen from general material libraries.

*e.g., using Autodesk shared material library*

[3] Memoria team, Memoria project

### ○ procedural texture

A computer-generated image created using an algorithm intended to create a realistic representation of natural elements such as wood, marble, granite, metal and stone.

*e.g., a procedural floor grate texture generated with the texture editor.*

Based on:

[863] Wikipedia <[https://en.wikipedia.org/wiki/Procedural\\_texture](https://en.wikipedia.org/wiki/Procedural_texture)>

### ○ non-photorealistic expressive textures

Techniques that apply illustrative, stylistic, and artistic depiction techniques to generate visual representations that partially or completely dismiss photorealism in favour of abstraction, inspired by artistic styles such as painting, drawing, technical illustration, and animated cartoons.

*e.g., painterly rendering, using silhouettes and 'suggestive contours'*

*Based on:*  
[1063] Jürgen Döllner, Springer <[http://link.springer.com/referenceworkentry/10.1007%2F978-0-387-35973-1\\_1458](http://link.springer.com/referenceworkentry/10.1007%2F978-0-387-35973-1_1458)>

[864] Wikipedia <[https://en.wikipedia.org/wiki/Non-photorealistic\\_rendering](https://en.wikipedia.org/wiki/Non-photorealistic_rendering)>

### ○ non-photorealistic semantic textures

Texturing using semantic encoding through which meaningful information about the content is delivered.

*e.g., using alternative textures to differentiate the rebuilt from the original*

*Based on:*  
Psychology Glossary <<http://www.alleydog.com/glossary/definition.php?term=Semantic%20Encoding>>

## ● TEXTURE MAPPING TECHNIQUES

Specifies techniques through which a two-dimensional (2D) surface, called a texture map, is 'wrapped around' a 3D object.

### ○ bump mapping

Simulating bumps and wrinkles on the surface of an object by perturbing the surface norms of the object and using the perturbed normal during lighting calculations without actually modifying the size or shape of the surface.

*Based on:*  
[869] Wikipedia <[https://en.wikipedia.org/wiki/Bump\\_mapping](https://en.wikipedia.org/wiki/Bump_mapping)>

### ○ heightmap

A heightmap - is a two-dimensional raster image used to store surface elevations that can later be applied to a three-dimensional object.

*Based on:*  
[950] YourDictionary.com <<https://www.yourdictionary.com/heightmap>>

### ○ normal mapping

(Dot3 bump mapping) A technique used for faking the lighting of bumps and dents. It is used to add details without using more polygons. A common use of this technique is to greatly enhance the appearance and details of a low polygon model by generating a normal map from a high polygon model or height map.

*Based on:*  
[868] Wikipedia <[https://en.wikipedia.org/wiki/Normal\\_mapping](https://en.wikipedia.org/wiki/Normal_mapping)>

### ○ displacement mapping

A technique using a (procedural) texture or height map to cause an effect in which the actual geometric position of points over the textured surface are displaced, often along the local surface normal, according to the value the texture function evaluates to at each point on the surface.

It gives surfaces a great sense of depth and detail, permitting in particular self-occlusion, self-shadowing and silhouettes; on the other hand, it is the most costly of this class of techniques owing to the large amount of additional geometry.

*Based on:*  
[867] Wikipedia <[https://en.wikipedia.org/wiki/Displacement\\_mapping](https://en.wikipedia.org/wiki/Displacement_mapping)>

### ○ reflection mapping

An efficient image-based lighting technique for approximating the appearance of a reflective surface by means of a precomputed texture image. The texture is used to store the image of the distant environment surrounding the rendered object.

*Based on:*  
[866] Wikipedia <[https://en.wikipedia.org/wiki/Reflection\\_mapping](https://en.wikipedia.org/wiki/Reflection_mapping)>



○ **mipmaps**

(also MIP maps) Pre-calculated, optimized sequences of textures, each of which is a progressively lower resolution representation of the same image. They are intended to increase rendering speed and reduce aliasing artefacts.

Based on:  
[865] Wikipedia <<https://en.wikipedia.org/wiki/Mipmap>>



E1.1.3

**shading**

The process of altering the colour of an object in the 3D scene, based on its angle to lights and its distance from lights and its material properties. Shading is performed during the rendering process by a program called a shader.

Based on:  
[342] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Computer\\_graphics](https://en.wikipedia.org/wiki/Shading#Computer_graphics)>

● **MATERIAL PROPERTIES**

Specifies materials properties used to calculate objects appearance.

○ **specularity**

The degree to which a material is specular (*i.e.*, has the properties of a mirror).

Based on:  
[995] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/specular>>  
[996] Wiktionary <<https://en.wiktionary.org/wiki/specularity>>

○ **fluorescence**

The capacities of emission of light (or other electromagnetic radiation) by a material when stimulated by the absorption of light. Fluorescent materials cease to glow immediately upon removal of the excitation source.

*e.g., fluorescent minerals emit visible light when exposed to ultraviolet light.*

Based on:  
[1062] Wiktionary <<https://en.wiktionary.org/wiki/fluorescence>>  
[860] Wikipedia <<https://en.wikipedia.org/wiki/Fluorescence>>

○ **phosphorescence**

The capacities of an object's phosphorescence. Unlike fluorescence, a phosphorescent material does not immediately re-emit the radiation it absorbs. Absorbed radiation may be re-emitted at a lower intensity for up to several hours after the original excitation.

*e.g., commonly seen examples of phosphorescent materials are glow-in-the-dark toys, paint, and clock dials that glow for some time after being charged with a bright light such as in any normal reading or room light.*

Based on:  
[861] Wikipedia <<https://en.wikipedia.org/wiki/Phosphorescence>>

○ **transparency**

The physical propriety of a material allowing light to pass through it without being scattered. A transparent medium not only allows the transport of light but also allows for image formation (objects or images that are behind it remain visible).

*e.g., a windowpane.*

Based on:  
[862] Wikipedia <[https://en.wikipedia.org/wiki/Transparency\\_and\\_translucency](https://en.wikipedia.org/wiki/Transparency_and_translucency)>

○ **translucency**

The physical property of a material allowing light to pass through it diffusely. A translucent medium allows only the transport of light.

*e.g., something that has a glowing appearance, as light is passing through it, stained glass.*

Based on:  
[862] Wikipedia <[https://en.wikipedia.org/wiki/Transparency\\_and\\_translucency](https://en.wikipedia.org/wiki/Transparency_and_translucency)>

○ **material library**

Use of predefined material types library.

*e.g., porcelain, cherrywood, rubber, blue metallic.*

[3] Memoria team, Memoria project

○ **heterogeneity of the material**

Taking into account heterogeneous properties of the same material.

*e.g., degraded marble, skin, leaves, and minerals.*

[3] Memoria team, Memoria project

● **SHADING METHODS**

Differentiation between reusing existing predefined shading methods and development of new ones.

○ **preexisting**

Use of existing shading methods such as Blinn, Lambert, Phong...

*e.g., Blinn, Lambert, Phong*

[3] Memoria team, Memoria project

○ **self-built**

Development and use of a custom shading method.

*e.g., BRDF, BSDF, BSSRDF.*

[3] Memoria team, Memoria project



E1.1.4

**light source modification**

Identification, positioning and configuration of sources of illumination of a 3D scene

[3] Memoria team, Memoria project

● **LIGHT SOURCE DESIGN**

Specifies identification, positioning and configuration of sources of illumination of a 3D scene.

○ **ambient light**

Also called global ambience, a fixed-intensity and fixed-colour light source that affects all objects in the scene equally in an unrealistic way (it makes every side of every surface the same colour).

*e.g., Upon rendering, all objects in the scene are brightened with the specified intensity and colour.*

Based on:  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

○ **directional light**

A light source that illuminates all objects equally from a given direction, like an area light of infinite size and infinite distance from the scene -there is shading, but cannot be any distance falloff.

*e.g., simulating direct sunlight*

Based on:  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

○ **point light**

Also called omnidirectional lights, light originating from a single point, and spreading outward in all directions.

*e.g., a lightbulb hanging in the middle of a room*

Based on:  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**spotlight**

Light originates from a single point, but it is limited to a specified cone or beam of light in a certain direction.

*e.g., a light from a pocket torch lighting selected objects*

*Based on:*  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**area light**

Light originates from a small area on a single plane. Area lights are often available in a variety of shapes, including spherical area lights, rectangles, discs, and linear lights.

*Based on:*  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**volumetric lighting**

Light originating from a small volume, an enclosed space lighting objects within that space.

*e.g., using an object as a light - fluorescent rings or neon tubes.*

*Based on:*  
[855] Wikipedia <[https://en.wikipedia.org/wiki/Shading#Ambient\\_lighting](https://en.wikipedia.org/wiki/Shading#Ambient_lighting)>  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**environment sphere**

Also called a sky dome, a special light source that surrounds and provides illumination from all around the scene. Used in image-based lighting (IBL)...

*Based on:*  
[1060] 150m.com <<http://digital-lighting.150m.com/cho2lev1sec2.html>>

**photometric light**

Uses photometric (light energy) values that enable to more accurately define lights as they would be in the real world.

*e.g., creating lights with various distribution and colour characteristics, or importing specific photometric files available from lighting manufacturers.*

*Based on:*  
[971] The Autodesk Knowledge Network <<https://knowledge.autodesk.com/support/3ds-max/learn-explore/caas/CloudHelp/cloudhelp/2015/ENU/3DSMax/files/GUID-E337DCA6-6B8D-4689-BCB8-6A6EEF06E6EE-htm.html>>



E1.1.5

**definition of camera parameters**

An activity dedicated to setting parameters of the cameras (position, orientation, movement, field of view of the "lens", projection type) to obtain a given aesthetic effect.

*Based on:*  
[574] MATLAB team, MathWorks <[https://www.mathworks.com/help/matlab/creating\\_plots/low-level-camera-properties.html](https://www.mathworks.com/help/matlab/creating_plots/low-level-camera-properties.html)>



E1.1.6

**vertex colouring**

A method for colouring the mesh assigning an RGB value to each vertex. The colour is generally projected from spatially oriented pictures (using spatial resection or photogrammetric registration).

The level of detail is lower than a texture mapping technique and depends of the definition of the mesh and the resolution of the pictures because the colours in between the vertex are just interpolated.

*Based on:*  
[548] Autodesk Knowledge Network <<https://knowledge.autodesk.com/search-result/caas/CloudHelp/cloudhelp/2017/ENU/MAXScript-Help/files/GUID-CBBA20AD-F7D5-46BC-9F5E-5EDA109F9CF4-htm.html>>  
[549] Kyle Youngblom, K. Youngblom <<http://vertexcoloring.webflow.io/>>



## E1.2

**screen shooting/ screen casting**

An activity dedicated to taking still (screen shooting) or moving (screen casting) images to record the visible items displayed on a screen, television, or other visual output device.

Screencasts, often containing voice-over narration, are useful for demonstrating how to use specific operating systems, software applications, or website features.

*e.g., a digital video recording actions taking place on a computer desktop, an image of a computer desktop*

*Based on:*

[366] Wikipedia <<https://en.wikipedia.org/wiki/Screenshot>>

[367] Wikipedia <<https://en.wikipedia.org/wiki/Screencast>>

[463] WhatIs.com <<http://whatis.techtarget.com/definition/screencast>>

[21] WhatIs.com <<http://whatis.techtarget.com/definition/screen-shot-screen-capture>>

#### ○ OUTPUT'S NATURE

Specifies the nature of the output in terms of a final result.

##### ○ nondigital

Refers to outputs that are created as nondigital.

*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project

##### ○ digital

Refers to outputs that are created in a digital form.

*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



## E1.3

**photographing**

An activity dedicated to reporting on an output, on its making or on a setup in relationship with an output by taking pictures with a camera.

*e.g., taking pictures of a physical model for presentation purposes*

*Based on:*

[409] Merriam-Webster <<http://www.merriam-webster.com/dictionary/photography>>

#### ○ CAMERA TYPE

specifies how the signal is processed and stored.

##### ○ digital camera

A camera in which a sensor detects and conveys the information that constitutes an image in the form of digital signals.

*e.g., Nikon D810*

*Based on:*

[1054] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/digital>>

[835] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_sensor](https://en.wikipedia.org/wiki/Image_sensor)>

[1055] Rock Mallin <<http://www.mallincam.net/blog/digital-camera-analog-camera-whats-the-difference>>

[936] Cambridge Dictionary <<http://dictionary.cambridge.org/fr/dictionnaire/anglais/video-camera>>

##### ○ analogue camera

A camera that uses film to take photographs rather than producing images digitally.

*e.g., daguerreotype cameras, Lewis-type camera, single-lens reflex camera (SLR)*

*Based on:*

[948] Macmillan Dictionary <<http://www.macmillandictionary.com/dictionary/british/analogue-camera>>

**computational camera**

A camera that uses unconventional optics and software to produce new forms of visual information, including wide field-of-view images, high dynamic range images, multispectral images, and depth images. It samples the light field in radically different ways to create new and useful forms of visual information. A computational camera embodies the convergence of the camera and the computer.

*e.g., Light 16, Lytro Illum*

*Based on:*  
[985] Shree K. Nayar, Stanford Computer Graphics Laboratory  
<<https://graphics.stanford.edu/papers/lfphoto/comp-photo-articles/Data/NAYAR.pdf>>

**SPECTRUM**

Specifies the range and scope of frequencies of electromagnetic radiation that captures image data.

**near-infrared**

Wavelength range (0.7-1) to 5 microns.

*e.g., used primarily for imaging vegetation*

*Based on:*  
[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

**mid-infrared**

Wavelength range 5 to (25-40) microns

*e.g., used for imaging vegetation, soil moisture content, and some forest fires*

*Based on:*  
[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

**far-infrared**

Wavelength range (25-40) to (200-350) microns.

*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

*Based on:*  
[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

**blue**

450-515..520 nm.

*e.g., used for atmosphere and deep water imaging*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

**green**

515..520-590..600 nm

*e.g., used for imaging man-made objects*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

**red**

600..630-680..690 nm

*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

**thermal infrared**

10400-12500 nm

*e.g., uses emitted instead of reflected radiation to image geological structures, thermal differences in water currents, and fires, and for night studies*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

**green-red-infrared**

The combination in which the blue channel is replaced with near infrared.

*e.g., used for vegetation, which is highly reflective in near IR; it then shows as blue*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

**blue-NIR-MIR**

The combination in which the blue channel uses visible blue, green uses NIR (so vegetation stays green), and MIR is shown as red.

*e.g., such images allow the water depth, vegetation coverage, soil moisture content, and fires to be seen, all in a single image.*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

**true-colour**

Uses only red, green, and blue channels, mapped to their respective colours.

*e.g., good for analysing man-made objects, and is easy to understand for beginning analysts*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>



E1.4

**video capture**

An activity dedicated to reporting on an output, on its making or on a setup in relationship with an output by recording moving images.

*e.g., photographing a scene with a motion picture camera (digitally or on videotape)*

*Based on:*  
[433] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/video>>

**CAMERA TYPE**

specifies how the signal is processed and stored.

**digital camera**

A camera in which a sensor detects and conveys the information that constitutes an image in the form of digital signals.

*e.g., Nikon D810*

*Based on:*  
[1054] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/digital>>,  
[835] Wikipedia <[https://en.wikipedia.org/wiki/Image\\_sensor](https://en.wikipedia.org/wiki/Image_sensor)>,  
[1055] Rock Mallin <<http://www.mallincam.net/blog/digital-camera-analog-camera-whats-the-difference>>,  
[936] Cambridge Dictionary <<http://dictionary.cambridge.org/fr/dictionnaire/anglais/video-camera>>

**analogue camera**

A camera that uses film to take photographs rather than producing images digitally.

*e.g., daguerreotype cameras, Lewis-type camera, single-lens reflex camera (SLR)*

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[948] Macmillan Dictionary <<http://www.macmillandictionary.com/dictionary/british/analogue-camera>>

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It samples the light field in radically different ways to create new and useful forms of visual information. A computational camera embodies the convergence of the camera and the computer.

*e.g., Light 16, Lytro Illum*

*Based on:*  
[985] Shree K. Nayar, Stanford Computer Graphics Laboratory  
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**SPECTRUM**  
Specifies the range and scope of frequencies of electromagnetic radiation that captures image data.

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Wavelength range (0.7-1) to 5 microns.  
*e.g., used primarily for imaging vegetation*

[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

Based on:

**mid-infrared**  
Wavelength range 5 to (25-40) microns  
*e.g., used for imaging vegetation, soil moisture content, and some forest fires*

[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

Based on:

**far-infrared**  
Wavelength range (25-40) to (200-350) microns.  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

[1010] coolcosmos <[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ir\\_tutorial/irregions.html](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ir_tutorial/irregions.html)>

Based on:

**blue**  
450-515..520 nm.  
*e.g., used for atmosphere and deep water imaging*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

Based on:

**green**  
515..520-590..600 nm  
*e.g., used for imaging man-made objects*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

Based on:

**red**  
600..630-680..690 nm  
*e.g., is used for imaging soil, moisture, geological features, silicates, clays, and fires*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

Based on:

**thermal infrared**  
10400-12500 nm  
*e.g., uses emitted instead of reflected radiation to image geological structures, thermal differences in water currents, and fires, and for night studies*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

Based on:

**green-red-infrared**  
The combination in which the blue channel is replaced with near infrared.  
*e.g., used for vegetation, which is highly reflective in near IR; it then shows as blue*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

Based on:

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The combination in which the blue channel uses visible blue, green uses NIR (so vegetation stays green), and MIR is shown as red.  
*e.g., such images allow the water depth, vegetation coverage, soil moisture content, and fires to be seen, all in a single image.*

[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>

Based on:

**○ true-colour**

Uses only red, green, and blue channels, mapped to their respective colours.

*e.g., good for analysing man-made objects, and is easy to understand for beginning analysts*

*Based on:*  
[836] Wikipedia <[https://en.wikipedia.org/wiki/Multispectral\\_image#Classification](https://en.wikipedia.org/wiki/Multispectral_image#Classification)>



E1.5

**drawing**

A creative process in which an actor uses various drawing instruments to mark paper or another two-dimensional medium. Instruments include graphite pencils, pen and ink, inked brushes, wax colour pencils, crayons, charcoal, chalk, pastels, various kinds of erasers, markers, styluses, various metals (such as silverpoint), and electronic drawing.

*e.g., a sketch of an object, a hand-drawn panorama, a digital sketch*

*Based on:*  
[366] Wikipedia <<https://en.wikipedia.org/wiki/Screenshot>>  
[367] Wikipedia <<https://en.wikipedia.org/wiki/Screencast>>  
[463] WhatIs.com <<http://whatis.techtarget.com/definition/screencast>>  
[21] WhatIs.com <<http://whatis.techtarget.com/definition/screen-shot-screen-capture>>

**○ OUTPUT'S NATURE**

Specifies the nature of a result of the activity.

**○ nondigital**

Refers to outputs that are created as nondigital.

*e.g., a manual drawing*

[3] Memoria team, Memoria project

**○ digital**

Refers to outputs that are created in a digital form.

*e.g., an image in a JPG format*

[3] Memoria team, Memoria project

**● CHROMATIC SCALE**

Specifies number of colours used in the representation.

**○ monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

*Based on:*  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

**○ coloured**

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project



E2

**animation**

A process of making movies with drawings, computer graphics, or photographs of static objects, including all techniques other than the continuous filming of live-action images.

*e.g., Flash animation, 3D realistic animation*

*Based on:*  
[163] The Free Dictionary <<http://www.thefreedictionary.com/animation>>



- **OUTPUT'S NATURE**  
Specifies the nature of the output in terms of a final result.

- **nondigital**  
Refers to outputs that are created as nondigital.  
*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project

- **digital**  
Refers to outputs that are created in a digital form.  
*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



E2.1

### stop-motion animation

An activity dedicated to creation of animation by physically manipulating real-world objects and photographing or filming them to create the illusion of movement.

*e.g., object animation - involves the animated movements of any non-drawn objects*

Based on:  
[828] Wikipedia <<https://en.wikipedia.org/wiki/Animation>>

- **OUTPUT'S NATURE**  
Specifies the nature of the output in terms of a final result.

- **nondigital**  
Refers to outputs that are created as nondigital.  
*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project

- **digital**  
Refers to outputs that are created in a digital form.  
*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



E2.2

### computer-generated imagery animation

An activity dedicated to creating moving images (animation) using computer technology.

CGI may refer to static or animated content, whereas computer animation specifically refers to displays of objects in motion.

*e.g., 2D animation, pre-calculated fly-through of a 3D model*

Based on:  
[526] Vangie Beal, Webopedia <[http://www.webopedia.com/TERM/C/computer\\_animation.html](http://www.webopedia.com/TERM/C/computer_animation.html)>  
[535] Techopedia <<https://www.techopedia.com/definition/102/computer-animation>>



E2.2.1

### 2D animation

An activity dedicated to creating moving images in a two-dimensional environment created or edited using computer technology.

*e.g., Flash animation, PowerPoint animation, animated GIF*

Based on:  
[669] IAC Publishing <<https://www.reference.com/technology/2d-computer-animation-ef53a131f59fccd2>>  
[828] Wikipedia <<https://en.wikipedia.org/wiki/Animation>>



## E2.2.2

**3D animation**

Creating of moving images using 3D computer generated models.

*e.g., computer-generated animation movies such as 'Ice Age' (2002, US), 'Polar Express' (2004, US)*

Based on:  
[560] Science Daily <[https://www.sciencedaily.com/terms/computer\\_animation.htm](https://www.sciencedaily.com/terms/computer_animation.htm)>

**TECHNIQUES**

Specifies the techniques used in production of 3D animation.

**machinima**

The use of real-time computer graphics engines to create a cinematic production.

Based on:  
[898] Wikipedia <<https://en.wikipedia.org/wiki/Machinima>>

**motion capture**

Used when live-action actors wear special suits that allow computers to copy their movements into CG characters.

*e.g., Polar Express (2004, US), Beowulf (2007, US), A Christmas Carol (2009, US), The Adventures of Tintin (film) (2011, US) Kochadiyan (2014, India)*

Based on:  
[828] Wikipedia <<https://en.wikipedia.org/wiki/Animation>>

**photo-realistic animation**

Used primarily for animation that attempts to resemble real life, using advanced rendering that mimics in detail skin, plants, water, fire, clouds, *etc.*

*e.g., Up (2009, US), How to Train Your Dragon (2010, US), Ice Age (2002, US)*

Based on:  
[828] Wikipedia <<https://en.wikipedia.org/wiki/Animation>>

**non-photorealistic animation**

The use of imagery and motion that is expressive, rather than photorealistic, although they may incorporate realistic elements.

*e.g., cel-shaded animation*

Based on:  
[972] ACM Digital Library <<http://dl.acm.org/event.cfm?id=RE267>>



## E2.3

**cel animation**

(also called hand-drawn animation) An activity dedicated to creating moving images in which individual frames are photographs of drawings.

They are traced or photocopied onto transparent acetate sheets called cels, which are filled in with paints in assigned colours or tones on the side opposite the line drawings. The completed character cels are photographed one by one against a painted background by a rostrum camera onto motion picture film.

*e.g., Pinocchio (1940) of Walt Disney Productions*

Based on:  
[828] Wikipedia <<https://en.wikipedia.org/wiki/Animation>>

**OUTPUT'S NATURE**

Specifies the nature of the output in terms of a final result.

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Refers to outputs that are created as nondigital.

*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project

- **digital**  
Refers to outputs that are created in a digital form.  
*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



#### E2.4 **film editing**

Creative post-production process involving selecting shots and combining them into sequences to create a finished motion picture.

*e.g., combining in film video interviews with computer generated 3D animations*

Based on:  
[368] Wikipedia <[https://en.wikipedia.org/wiki/Film\\_editing](https://en.wikipedia.org/wiki/Film_editing)>

- **TECHNOLOGY**  
Specifies the technology used in film editing.

- **nondigital**  
Refers to films that are created and edited as nondigital analogue.  
*e.g., editing of a positive copy of the film negative by physically cutting and pasting together pieces of film.*

[3] Memoria team, Memoria project

- **digital**  
Refers to outputs that are edited in a digital form.  
*e.g., using digital intermediate ("DI") of a physical negative*

[3] Memoria team, Memoria project



#### E3 **audience specific interface design and publishing**

User interface design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions.

In the specific context of finalisation activities this group of tasks is carried out with regards to a given publication, communication, or dissemination objective. The target audience is here key, rather than research or system development as such.

*e.g., the Memoria project Website targeting the general public has a design of its own independently of the Memoria Information System*

Based on:  
[573] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/user-interface-design.html>>



#### E3.1 **requirements analysis**

Defining the potential needs of the audience that the finalisation activity targets and the 'message' that should be conveyed by the interface.

*e.g., selection of content that is considered relevant in a specific publication, dissemination or communication context*

[3] Memoria team, Memoria project



#### E3.2 **information architecture**

An activity dedicated to organising, structuring, and labelling content in an effective and sustainable way. The goal is to help users find information and complete tasks.

*e.g., defining the hierarchical structure of a website, how users browse or move through information, etc.*

Based on:  
[572] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/information-architecture.html>>



## E3.3

**user and task analysis**

An activity dedicated to analysis of the potential users of the system by studying how they perform the tasks that the design must support and elucidating their goals, backgrounds, capacities, or any user specificity that can impact the actual interaction modalities.

*e.g., taking into consideration visual disabilities of a potential user, identifying a specific audience such as children aged 3 to 5*

Based on:  
[347] Wikipedia <[https://en.wikipedia.org/wiki/User\\_interface\\_design](https://en.wikipedia.org/wiki/User_interface_design)>



## E3.4

**interaction design**

The practice of designing modes of interaction with a digital or analogue work, or a means of navigation inside digital content.

*e.g., defining how the user will interact with the system*

Based on:  
[346] Wikipedia <[https://en.wikipedia.org/wiki/Interaction\\_design](https://en.wikipedia.org/wiki/Interaction_design)>  
[571] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/interaction-design.html>>

- **DESIGN PHASES**

Distinguishes different phases of design.

- **conception**

The act/process of conceiving the interaction or the navigation modes.

*e.g., deciding how users will browse through a website (visual menus, keyboard shortcuts, mouse clicks, etc.)*

[3] Memoria team, Memoria project

- **realisation**

The act/process of giving a form to a concept or work, may it be through an implementation (digital works) or a construction (physical objects).

*e.g., publishing a website using a given content management system (CMS)*

Based on:  
[998] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/realization>>

- **WORKSPACE SIZING**

Identifies the number of users a system targets and the level of interaction between these users.

- **single-user**

A mode in which a system is usable only by one person at a time.

*e.g., a stand-alone game on a CD-ROM*

Based on:  
[875] Wikipedia <<https://en.wikipedia.org/wiki/Multi-user>>

- **multi-user**

An environment that allows access by multiple users/to which multiple remote users have access.

*e.g., multiple X Window sessions spread across multiple terminals powered by a single machine*

Based on:  
[875] Wikipedia <<https://en.wikipedia.org/wiki/Multi-user>>

- **collaborative environment**

Systems designed to allow teamwork by supporting the sharing and flow of information. Collaborative environments should allow real-time collaboration, conferencing, documentation management systems, application sharing, etc.

*e.g., a cloud-based collaborative task management application*

Based on:  
[874] Wikipedia <[https://en.wikipedia.org/wiki/Integrated\\_collaboration\\_environment](https://en.wikipedia.org/wiki/Integrated_collaboration_environment)>



E3.4.1

### navigation

Designing the means by which the user can interact with and move within a multimedia content, whether it be text-, image-, 3D- or moving-image-based.  
The use of the term 'navigation' implies work that is more or less fixed in its content and through which the reader can 'navigate' in a non-linear fashion.

*e.g., deciding on how users will be allowed to move inside a 3D scene*

*Based on:*

[603] Simon Biggs <<http://littlepig.org.uk/wall/navigation.htm>>



E3.4.2

### interactivity

Designing the specifics of the user interface so it accepts and responds to input from people (or possibly another live creature) by altering the content of the work.

*e.g., crowdsourcing platforms*

*Based on:*

[602] Simon Biggs <<http://littlepig.org.uk/wall/navigate1.htm>>

[361] Wikipedia <<https://en.wikipedia.org/wiki/Interactivity>>

[462] WhatIs.com <<http://searchsoa.techtarget.com/definition/interactivity>>



E3.5

### visual design prototyping

An activity that focuses on the aesthetics of a work and its related materials by strategically implementing images, colours, fonts and other elements.

*e.g., defining a website's graphic charter, creation of a wireframe*

*Based on:*

[570] U.S. Department of Health & Human Services <<http://www.usability.gov/what-and-why/visual-design.html>>



E3.6

### responsive web design

An approach to web design that allows desktop webpages to be viewed in response to the size of the screen or web browser one is viewing with.

*Based on:*

[369] Wikipedia <[https://en.wikipedia.org/wiki/Responsive\\_web\\_design](https://en.wikipedia.org/wiki/Responsive_web_design)>

#### **TARGET**

Specifies the range of viewing devices considered.

#### **adaptation to web browsers**

Adaptation of content to different web browsers and their versions.

*e.g., adapting a web page to Microsoft Internet Explorer, Google Chrome and Safari browsers*

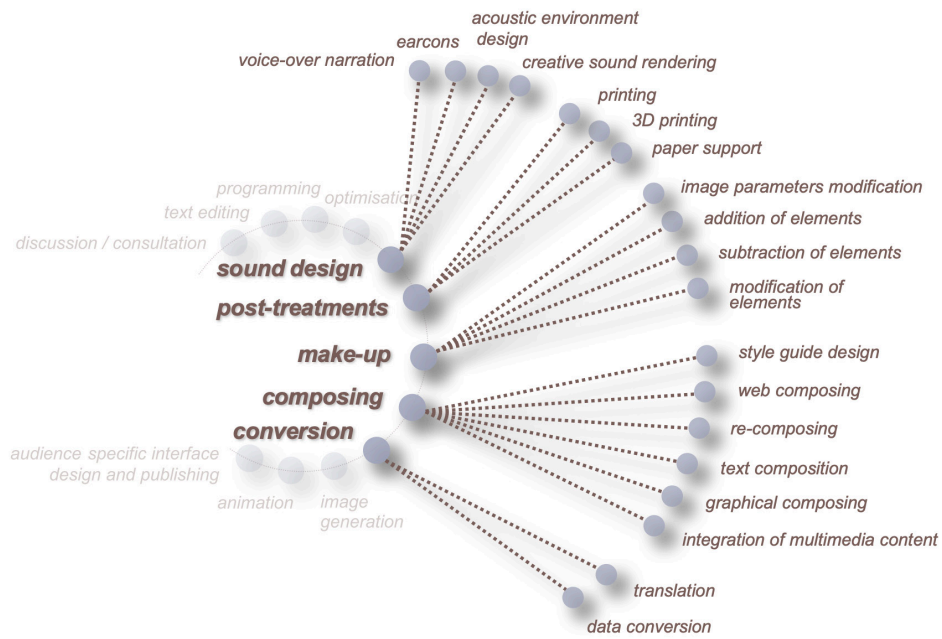
[3] Memoria team, Memoria project

#### **adaptation to screens**

Adaptation of content to alternative screens and interaction modalities.

*e.g., adapting a web page to mobile devices such as smartphones*

[3] Memoria team, Memoria project



E4

**conversion**

A transformation of a document, in whole or in part, from one state to another.

*e.g., translation of an abstract, conversion of an image from JPG to GIF*

*Based on:*  
 [410] Merriam-Webster <<https://www.merriam-webster.com/dictionary/conversion>>

● **AUTONOMY LEVEL**  
 Specifies the autonomy level of a conversion procedure.

○ **developed by the actors of the activity**  
 Conversion procedure developed by the actors of the activity.  
*[3] Memoria team, Memoria project*

○ **using existing software**  
 Conversion procedure using existing software.  
*[3] Memoria team, Memoria project*



E4.1

**data conversion**

The act of converting a document from one format to another for communication or dissemination purposes.

*e.g., converting a video file into a format supported by HTML5*

*Based on:*  
 [370] Wikipedia <[https://en.wikipedia.org/wiki/Document\\_conversion](https://en.wikipedia.org/wiki/Document_conversion)>  
 [371] Wikipedia <[https://en.wikipedia.org/wiki/Data\\_conversion](https://en.wikipedia.org/wiki/Data_conversion)>

**AUTOMATION LEVEL**  
Specifies an automation level of a data conversion procedure.

- automated**  
Automatic conversion procedure (*i.e.*, without being directly controlled by a person).  
*[3] Memoria team, Memoria project*
- non-automated**  
The evaluation is carried out by a human being.  
*[3] Memoria team, Memoria project*
- semi-automated**  
A process combining automatic conversion with human intervention.  
*[3] Memoria team, Memoria project*



E4.2

### translation

The process of translating words or text from one ethnic language into another.

*e.g., translating the legend of a map, or a text of a scientific publication*

*Based on:*  
*[442] Oxford Dictionaries <<https://en.oxforddictionaries.com/definition/translation>>*

**AUTOMATION LEVEL**  
Specifies an automation level of a data conversion procedure.

- automated**  
Automatic conversion procedure (*i.e.*, without being directly controlled by a person).  
*e.g., using machine translation services like DeepL Traduction*  
*[3] Memoria team, Memoria project*
- non-automated**  
The evaluation is carried out by a human being.  
*e.g., conversion of a text by a native speaker*  
*[3] Memoria team, Memoria project*
- semi-automated**  
A process combining automatic conversion with human intervention.  
*e.g., using the Google Translate online application, and then verifying and manually modifying the result*  
*[3] Memoria team, Memoria project*

**SOURCE LANGUAGE**  
Specifies a language that is to be translated into another language (used from the perspective of individuals).

- mother tongue**  
One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.  
*e.g., A person who have been living in Great Britain since his childhood, and has used English at home, can say that English is a native language to him or her.  
A French speaker living in France can say that Italian is a native language to him or her if he or him uses Italian at home.*

*Based on:*  
*[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>*  
*[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>*

### ○ second language

A language that is not a speaker's native language but that may be used in daily life in the country he or she lives in.

*e.g., Russian in Ukraine, English in India, French in Morocco, English in Quebec*

*Based on:*  
[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

### ○ foreign language

A language learnt by a speaker but that he was not exposed to as a child at home, nor is used on a regular basis in his or her country of residence.

*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

*Based on:*  
[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>

## ● TARGET LANGUAGE

Specifies a language which a written text is translated into (used from the perspective of individuals).

### ○ mother tongue

One's native language. A language that a person has been exposed to from birth, a language that a person learned as a child at home. A person may have been exposed to two (bilingual) or more (multilingual) such languages.

*e.g., A person who have been living in Great Britain since his childhood, and has used English at home, can say that English is a native language to him or her.  
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[911] Wikipedia <[https://en.wikipedia.org/wiki/First\\_language](https://en.wikipedia.org/wiki/First_language)>  
[935] Merriam-Webster <<https://www.merriam-webster.com/dictionary/mother%20tongue>>

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[912] Wikipedia <[https://en.wikipedia.org/wiki/Second\\_language#Foreign\\_language](https://en.wikipedia.org/wiki/Second_language#Foreign_language)>

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*e.g., an English speaker living in Spain can say that Spanish is a foreign language to him or her*

*Based on:*  
[913] Wikipedia <[https://en.wikipedia.org/wiki/Foreign\\_language](https://en.wikipedia.org/wiki/Foreign_language)>

## ● TRANSLATOR

Identifies the person(s) who translate texts.

### ○ self-translation

Self-translation corresponds to situations when the translation of a source text into a target text is done by the writer of the source text.

*e.g., translating one's own article into a foreign language.*

*Based on:*  
[1352] Wikipedia <<https://en.wikipedia.org/wiki/Self-translation>>

### ○ third-party

Third-party translation corresponds to situations when someone who was not directly involved in the writing contributes to the text translation. Situations when a professional is hired and paid to do the job are excluded.

*e.g., translation tasks carried out by colleagues*

*Based on:*  
[945] BusinessDictionary.com <<http://www.businessdictionary.com/definition/third-party.html>>



 **translation services**

This situation occurs when the translation is carried out by a company or an individual paid to do the job.

*e.g., using services of a professional translation agency*

[3] Memoria team, Memoria project



E5

**composing**

The action of producing a final document by combining various elements into one composition.

*e.g., arrangement of the parts of a picture, preparation of text for printing by setting up characters or by establishing its style and appearance electronically*

Based on:  
[411] Merriam-Webster <<http://www.merriam-webster.com/dictionary/composition>>  
[668] K. Pointer <<https://605.wikispaces.com/Composition+and+Layout>>



E5.1

**graphical composing**

Creative arrangement and organisation of visual elements.

*e.g., use of multiple photos to create a single image*

[3] Memoria team, Memoria project



E5.2

**integration of multimedia content**

Arrangement and organisation of more than one concurrent presentation medium.

*e.g., integrating text, sound and video content*

Based on:  
[461] WhatIs.com <<http://searchsoa.techtarget.com/definition/multimedia>>



E5.3

**text composition**

Preparation of text for printing by setting up characters or by establishing its style and appearance electronically.

Text composition deals specifically with how text is arranged on the page. It involves manipulating its placement and altering its visual appearance.

*e.g., applying a style sheet, changing text alignment or changing font sizes, making text bold or using italics, deciding how much space to put between lines of text or columns of text, and using typographical embellishments*

Based on:  
[441] Oxford Dictionaries <<http://www.oxforddictionaries.com/definition/english/composition>>  
[601] Jacci Howard Bear, Lifewire <<https://www.lifewire.com/text-composition-informatio-1073837>>



E5.4

**re-composing**

The action of rearranging or reorganising an existing composition as a consequence of changing constraints (language, format, etc.).

*e.g., redesign of a poster following its translation from one language into another*

[3] Memoria team, Memoria project



E5.5

**web composing**

Web composing is comprised of all actions and choices that are needed in the design and organisation of a website, such as selection, arrangement and organisation of elements (text, graphics), definition of a graphic charter, and selection of components used for browsing.

*e.g., publishing a website using WordPress*

[3] Memoria team, Memoria project



E5.6

**style guide design**

The activity of preparing instructions that that define the house style of a particular publisher, publication, *etc.*

A style guide also called template, ensures consistency within a document and across multiple documents.

*e.g., preparing a template for posters to be presented during a given seminar*

Based on:

[525] Webopedia <[https://www.webopedia.com/TERM/S/style\\_sheet.html](https://www.webopedia.com/TERM/S/style_sheet.html)>

[393] Whikipedia <[https://en.wikipedia.org/wiki/Style\\_guide](https://en.wikipedia.org/wiki/Style_guide)>



E6

**make-up**

Changes and rearrangements that make final results to appear more attractive, and pleasing.

Based on:

[372] Wikipedia <[https://en.wikipedia.org/wiki/Photo\\_manipulation](https://en.wikipedia.org/wiki/Photo_manipulation)>



E6.1

**subtraction of elements**

Modification of an existing output by removing unwanted elements.

*e.g., removing lines, volumes and graphic elements from an image or a 3D scene to maximise the visual effect*

[3] Memoria team, Memoria project



E6.2

**addition of elements**

Modification of an existing output by adding new elements or duplicating existing ones.

*e.g., introducing lines, volumes and graphic elements in an image or a 3D scene to maximise the visual effect*

[3] Memoria team, Memoria project



E6.3

**image parameters modification**

Modification of an existing digital image to adapt it to a specific requirement by adjusting particular parameters of the image.

*e.g., removal of noise (sensor noise, motion blur, etc.) from images. Correction of colour and exposure, using Photoshop for skin retouching*

Based on:

[372] Wikipedia <[https://en.wikipedia.org/wiki/Photo\\_manipulation](https://en.wikipedia.org/wiki/Photo_manipulation)>

[358] Wikipedia <[https://en.wikipedia.org/wiki/Computer\\_vision#Recognition](https://en.wikipedia.org/wiki/Computer_vision#Recognition)>



E6.4

#### **modification of elements**

Modification of an existing output by transforming elements it is composed of in size position or appearance.

*e.g., stretching of an image or rescaling sub-parts of an image or a 3D scene*

*[3] Memoria team, Memoria project*



E7

#### **post-treatments**

Finishing techniques applied to physical outputs.

*e.g., depowdering of a 3D printed object, laminating of a printed image*

*[3] Memoria team, Memoria project*



E7.1

#### **3D printing**

Finishing techniques used to transform the raw products of a 3D printer into fully realised models.

*e.g., straightening, glossing, shining*

*[3] Memoria team, Memoria project*

#### **FINISHING TECHNIQUES**

Specifies techniques related to 3D printing (*i.e.*, everything that takes place after printing).

##### **gap filling**

Removing gaps that emerged on the print during a printing process or as a result of joining a multi-print assembly.

*[3] Memoria team, Memoria project*

##### **bending or straightening**

Forcing an object from a straight form into a curved or angular one, or otherwise making it to become straight using fire, hot air, *etc.*

*[3] Memoria team, Memoria project*

##### **painting**

Coating surfaces on objects with a paint or another covering product.

*[3] Memoria team, Memoria project*

##### **bonding**

Joining objects by means of an adhesive substance, heat, or pressure.

*[3] Memoria team, Memoria project*

##### **glossing and shining**

Making an appearance of a surface of an object smooth and shiny.

*[3] Memoria team, Memoria project*

##### **sanding and polishing**

Smoothing a surface on an object by rubbing it with sandpaper, wetordry polishing paper, or sanding/polishing/buffing disks for rotary tool.

*[3] Memoria team, Memoria project*

##### **strengthenin**

Making an object stronger using infiltrations with epoxy resin, infiltrations with epoxy resin and heating, short or long hot wax immersion, short cold wax infiltration, *etc.*

*[3] Memoria team, Memoria project*

**carving**

Shaping solid material by cutting into with rotation-tools, abrasive files, etc.

[3] Memoria team, Memoria project

**cleaning**

Removing of small imperfections with abrasive files, knives, pliers, scissors, rotation-tool with a set of accessories, hot air, ultrasonic cleaning.

[3] Memoria team, Memoria project



E7.2

**paper support**

Finishing techniques used to transform the 2D paper prints into fully finished results.

*e.g., some printed materials need to be cut or creased after printing, varnishing, laminating, embossing, gluing*

[3] Memoria team, Memoria project



E7.3

**printing**

Reproducing writing or images on paper or other material with a machine.

*e.g., production of printed proceedings in 200 copies, printing a pdf document, reproduction of an image in printed form*

Based on:  
[121] Cambridge Dictionary <<https://dictionary.cambridge.org/dictionary/english/printing>>

**PRINTING PROCESS**

The nature of the printing process.

**analog process**

A technique during which a master image is reproduced from a print plate on multiple surfaces.

*e.g., woodblock printing, screen printing, rotogravure printing*

[3] Memoria team, Memoria project

**digital process**

A printing technique using digital or electronic files from a personal computer or other digital storage device as a source.

*e.g., inkjet printing, laser printing*

Based on:  
[1212] Techopedia <<https://www.techopedia.com/definition/14338/digital-printing>>

**CHROMATIC SCALE**

Specifies number of colours used in the final print.

**monochrome**

A representation in one colour, or allowing a range shades of that colour.

*e.g., grayscale, black-and-white, green-and-white, sepia*

Based on:  
[852] Wikipedia <<https://en.wikipedia.org/wiki/Monochrome>>

**coloured**

A representation in various colours.

*e.g., 256-colour image*

[3] Memoria team, Memoria project

● **ALTERATION**

Specifies if the original source document has been altered during printing.

○ **unaltered**

The original source document has not been altered.

[3] Memoria team, Memoria project

○ **colour alteration**

The colour palette has been altered.

*e.g., losing colours present in the original by switching to a monochromatic scale*

[3] Memoria team, Memoria project

○ **scale alteration**

The dimensional relation between the original material and the copy is not 1:1.

*e.g., Making a photocopy with a 50% reduction*

[3] Memoria team, Memoria project



E8

**sound design**

The process of manipulating or generating audio elements for communication, presentation or dissemination. Most commonly it involves the manipulation of previously composed or recorded audio.

*e.g., manipulation of sound effects in human-computer interfaces*

Based on:  
[373] Wikipedia <[https://en.wikipedia.org/wiki/Sound\\_design](https://en.wikipedia.org/wiki/Sound_design)>

○ **OUTPUT'S NATURE**

Specifies the nature of the output in terms of a final result.

○ **nondigital**

Refers to outputs that are created as nondigital.

*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project

○ **digital**

Refers to outputs that are created in a digital form.

*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



E8.1

**voice-over narration**

An activity during which the voice of an off-screen narrator is usually pre-recorded and placed over the top of a film or video. It is commonly used in documentaries or news reports to explain information.

*e.g., commentary added to explain scenes that appear in a video showing a 3D reconstruction*

Based on:  
[374] Wikipedia <<https://en.wikipedia.org/wiki/Voice-over>>  
[414] The Free Dictionary <<http://www.thefreedictionary.com/voice-over>>



E8.2

**earcons**

The use of brief, distinctive sounds to represent a specific event or convey other information.

*e.g., in a computer application sounds informing a user when an error occurs*

Based on:  
[352] Wikipedia <<https://en.wikipedia.org/wiki/Earcon>>



E8.3

**acoustic environment design**

Creation, design and/or reconstruction of sounds related to a particular acoustic environment (*i.e.*, the combination of the acoustic resources within a given area - natural sounds and human-caused sounds - as modified by the environment).

*e.g.*, combination of particular groups of sounds for distinct sequences of a video showing a 3D reconstruction of a town

*Based on:*  
[354] Wikipedia <<https://en.wikipedia.org/wiki/Soundscape>>



E8.4

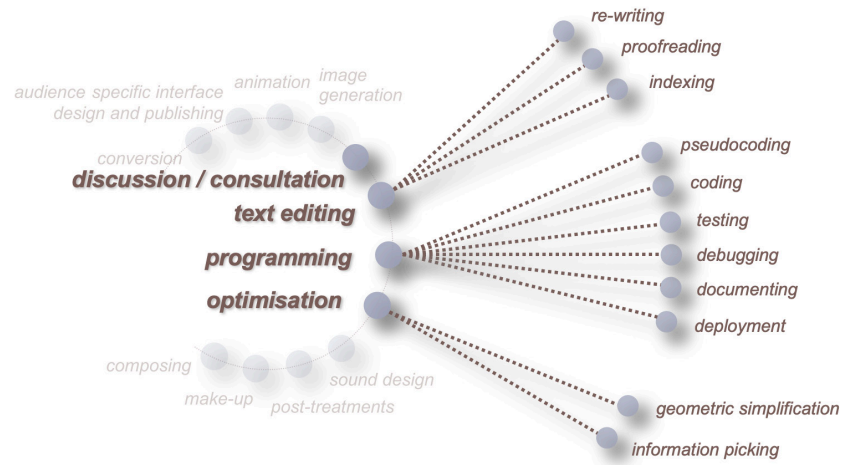
**creative sound rendering**

The use of sounds to convey the feelings or effects associated with the situation on a screen, by which sounds tell the story and not just the auditory reality of the event. A creative sound may encompass musical elements, speech or other sound.

*e.g.*, a soundtrack

*Based on:*  
[600] Michel Chion, FilmSound.org <<http://filmsound.org/chion/rendering.htm>>





E9

**optimisation**

A process of making something (such as a design, system, or 3D model) as fully functional and effective as possible.

*e.g., efforts done on the content of the output to accelerate the rendering of graphics*

*Based on:*  
 [412] Merriam-Webster <<http://www.merriam-webster.com/dictionary/optimization>>

**AUTOMATION LEVEL**

Specifies an automation level of an optimisation procedure.

**automated**

Automatic optimisation procedure.

*e.g., algorithmic optimisation*

[3] Memoria team, Memoria project

**manual**

Manual optimisation procedure.

*e.g., selection of tiles by the designer of cartography*

[3] Memoria team, Memoria project

**semi-automated**

A process combining automated optimisation procedure with a human intervention.

[3] Memoria team, Memoria project





E9.1

### geometric simplification

Optimisation of the geometric complexity of a model.

*e.g., geometric simplification of the 3D model to exploit it in a web application*

[3] Memoria team, Memoria project

#### **AUTOMATION LEVEL**

Specifies an automation level of a data conversion procedure.

##### **automated**

Automatic conversion procedure (*i.e.*, without being directly controlled by a person).

[3] Memoria team, Memoria project

##### **non-automated**

The evaluation is carried out by a human being.

[3] Memoria team, Memoria project

##### **semi-automated**

A process combining automatic conversion with human intervention.

[3] Memoria team, Memoria project

#### **SIMPLIFIED ELEMENT**

Specifies the element that has been simplified.

##### **curve simplification**

Simplification of curves embedded in a two-dimensional or three-dimensional space.

*Based on:*  
[963] Carlos Andújar, Computer Science Department Universitat Politècnica de Catalunya <<http://www.cs.upc.edu/~pere/PapersWeb/SGI/ReportSimplificacio.pdf>>

##### **surface simplification**

Simplification of surfaces embedded in a three-dimensional space. space.

*Based on:*  
[963] Carlos Andújar, Computer Science Department Universitat Politècnica de Catalunya <<http://www.cs.upc.edu/~pere/PapersWeb/SGI/ReportSimplificacio.pdf>>

##### **solid simplification**

Simplification of three-dimensional solids.

*Based on:*  
[963] Carlos Andújar, Computer Science Department Universitat Politècnica de Catalunya <<http://www.cs.upc.edu/~pere/PapersWeb/SGI/ReportSimplificacio.pdf>>

##### **volume simplification**

Simplification of volume models.

*Based on:*  
[963] Carlos Andújar, Computer Science Department Universitat Politècnica de Catalunya <<http://www.cs.upc.edu/~pere/PapersWeb/SGI/ReportSimplificacio.pdf>>



E9.2

### information picking

A simplification of an output that implies withdrawing selected information layers, for readability or performance purposes.

*e.g., selecting a limited number of cartographic backgrounds ('tiles') in a Leaflet-based online cartography to accelerate its rendering.*

[3] Memoria team, Memoria project



E10

**programming**

The process of developing and implementing various sets of instructions to enable a computer to do a certain task.

In the context of finalisation activities, 'programming' refers to actions undertaken to deliver a final product that can be either an online or offline computer application.

*e.g., development of the on-line web applications related to "MoveReal" CNRS workshop and tutorials.*

*Based on:  
[437] Business Dictionary <<http://www.businessdictionary.com/definition/computer-programming.html#ix-zz3x8WdDnZH>>*

- **PROGRAMMING PARADIGM**

Specifies the programming paradigm applied.

- **modular programming**

Design technique that emphasises separating the functionality of a program into independent, interchangeable modules.

A module that is a separate software component can often be used in a variety of applications and functions with other components of the system. Modules enforce logical boundaries between components and improve maintainability.

*Based on:  
[891] Wikipedia <[https://en.wikipedia.org/wiki/Modular\\_programming](https://en.wikipedia.org/wiki/Modular_programming)>  
[1067] Techopedia <<https://www.techopedia.com/definition/25972/modular-programming>>*

- **procedural programming**

Also known as imperative programming, it is a concept of programming that specifies a sequence of well-structured steps and procedures (functions or sub-routines) within its programming context to create a program.

It is a set of step-by-step instructions that a computer must follow.

*Based on:  
[1053] Techopedia <<https://www.techopedia.com/definition/21481/procedural-programming>>  
[1052] The-definition.com <<http://the-definition.com/programming/procedural-programming>>  
[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>*

- **functional programming**

Functional paradigm is a style of programming that emphasises the evaluation of expressions rather than the execution of commands. It views all subprograms as functions in the mathematical sense. Informally, they take in arguments and return a single solution. The solution returned is based entirely on the input, and the time at which a function is called has no relevance.

*Based on:  
[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>*

- **logic programming**

In this paradigm, we express computation exclusively in terms of mathematical logic (Boolean algebra). The programmer specifies a set of facts and rules, and an engine infers the answers to questions.

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[1026] Gary T. Leavens <<http://www.eecs.ucf.edu/~leavens/ComS541Fall97/hw-pages/paradigms/major.html>>  
[820] Robin Popplestone, School of Computer Science University of Birmingham <[http://www.cs.bham.ac.uk/research/projects/poplog/paradigms\\_lectures/lecture1.html](http://www.cs.bham.ac.uk/research/projects/poplog/paradigms_lectures/lecture1.html)>  
[1047] Ray Toal, College of Science and Engineering Loyola Marymount University <<https://cs.lmu.edu/~ray/notes/paradigms/>>*

- **object-oriented programming**

A programming paradigm based on the concept of 'objects' and 'classes', which may contain data in the form of fields, often known as attributes, and code in the form of procedures, often known as methods.

*Based on:  
[895] Wikipedia <[https://en.wikipedia.org/wiki/Object-oriented\\_programming](https://en.wikipedia.org/wiki/Object-oriented_programming)>*

○ **event-driven programming**

The flow of the program is determined by events, such as sensor outputs or user actions (mouse clicks, key presses) or messages from other programs or threads.

*Based on:*  
[819] Wikipedia <[https://en.wikipedia.org/wiki/Comparison\\_of\\_programming\\_paradigms](https://en.wikipedia.org/wiki/Comparison_of_programming_paradigms)>

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*Based on:*  
[894] Wikipedia <[https://en.wikipedia.org/wiki/Agent-oriented\\_programming](https://en.wikipedia.org/wiki/Agent-oriented_programming)>

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*Based on:*  
[893] Wikipedia <[https://en.wikipedia.org/wiki/Inductive\\_programming](https://en.wikipedia.org/wiki/Inductive_programming)>

○ **array programming**

Array programming languages (also known as vector or multidimensional languages) generalize operations on scalars to apply transparently to vectors, matrices, and higher-dimensional arrays.

*Based on:*  
[892] Wikipedia <[https://en.wikipedia.org/wiki/Array\\_programming](https://en.wikipedia.org/wiki/Array_programming)>



E10.1

**pseudocoding**

A detailed, yet readable, description of what a computer program or algorithm must do, expressed in a formally styled natural language rather than in a programming language.

*e.g., If student's grade is greater than or equal to 60*  
*print 'passed'*  
*otherwise*  
*print 'failed'*

*Based on:*  
[460] WhatIs.com <<http://whatis.techtarget.com/definition/pseudocode>>

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[891] Wikipedia <[https://en.wikipedia.org/wiki/Modular\\_programming](https://en.wikipedia.org/wiki/Modular_programming)>  
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 [1052] The-definition.com <<http://the-definition.com/programming/procedural-programming>>  
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 [820] Robin Popplestone, School of Computer Science University of Birmingham <[http://www.cs.bham.ac.uk/research/projects/poplog/paradigms\\_lectures/lecture1.html](http://www.cs.bham.ac.uk/research/projects/poplog/paradigms_lectures/lecture1.html)>  
 [1047] Ray Toal, College of Science and Engineering Loyola Marymount University <<https://cs.lmu.edu/~ray/notes/paradigms/>>

### ○ object-oriented programming

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### ○ array programming

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*Based on:*  
 [892] Wikipedia <[https://en.wikipedia.org/wiki/Array\\_programming](https://en.wikipedia.org/wiki/Array_programming)>



E10.2

### coding

Computer instructions written in a programming language.

*e.g., writing an HTML page and its JavaScript instructions for interaction.*

*Based on:*  
[436] Business Dictionary <<http://www.businessdictionary.com/definition/programming-code.html>>

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#### modular programming

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[1067] Techopedia <<https://www.techopedia.com/definition/25972/modular-programming>>

#### procedural programming

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[892] Wikipedia <[https://en.wikipedia.org/wiki/Array\\_programming](https://en.wikipedia.org/wiki/Array_programming)>

## ● CODING SCOPE

Specifies to which extent a general competence in programming is required to write lines of code.

### ○ indirect coding

Using the capability of a software to translate a series of actions into a code.

*e.g., using a macro in Word to automatize a series of actions, using a language embedded in a software like Maya Embedded Language (MEL)*

[3] Memoria team, Memoria project

### ○ direct coding

Typing a new code based on one's knowledge of programming.

*e.g., writing new code lines in PHP*

[3] Memoria team, Memoria project

## ● REUSE LEVEL

Defines whether, and if so, to what extent the code was reused and adapted from pre-existing lines of code.

### ○ new code

Writing new lines of code.

*e.g., writing new code lines in PHP*

[3] Memoria team, Memoria project

### ○ internal copy-and-paste reuse

A team or a programmer reuses its own code simply by copying it.

[3] Memoria team, Memoria project

### ○ internal code refactoring

A team or a programmer restructures and improves its own code without changing its external behaviour.

Refactoring improves non-functional attributes of the software. Advantages include improved code readability and reduced complexity.

*e.g., using the extract method to turn part of a larger method into a new method. Breaking down code in smaller pieces makes it more easily understandable.*

Based on:  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>

○ **internal code modification**

A team or a programmer restructures or modifies its own code by changing its external behaviour (modification of functional attributes).

*Based on:*  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>

○ **external copy-and-paste reuse**

A team or a programmer reuses a third-party component simply by copying it.

*e.g., integrating a piece of code from a code library as it is*

*Based on:*  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[890] Wikipedia <[https://en.wikipedia.org/wiki/Copy\\_and\\_paste\\_programming](https://en.wikipedia.org/wiki/Copy_and_paste_programming)>

○ **external code refactoring**

A team or a programmer reuses and improves a third-party component without changing its external behaviour.

It encompasses finding, learning and integrating the component.

*e.g., creating more general types to allow more code sharing from a third-party component*

*Based on:*  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>

○ **external code modification**

A reuse and modification of functional attributes of a piece of existing code written by someone else.

*Based on:*  
[888] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_reuse](https://en.wikipedia.org/wiki/Code_reuse)>  
[889] Wikipedia <[https://en.wikipedia.org/wiki/Code\\_refactoring](https://en.wikipedia.org/wiki/Code_refactoring)>



E10.3

**testing**

Investigating a programme in order to reveal its failures.

Test techniques include the process of executing a program or application with the intent of finding software bugs (errors or other defects).

*e.g., checking if data entered through HTML forms is duly recorded.*

*Based on:*  
[363] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing](https://en.wikipedia.org/wiki/Software_testing)>

● **TYPE**

Specifies the general type of testing.

○ **exploratory testing**

Exploratory testing seeks to find out how the software actually works, and to ask questions about how it will handle difficult and easy cases.

The tester does not follow any rigorous testing procedure, but rather explores the user interface of the application using as many of its features as possible, using information gained in prior tests to intuitively derive additional tests.

*Based on:*  
[881] Wikipedia <[https://en.wikipedia.org/wiki/Exploratory\\_testing](https://en.wikipedia.org/wiki/Exploratory_testing)>  
[882] Wikipedia <[https://en.wikipedia.org/wiki/Manual\\_testing](https://en.wikipedia.org/wiki/Manual_testing)>

○ **end-to-end testing**

Tests conducted on a complete, integrated system to evaluate its compliance with its specified requirements. System testing falls within the scope of black-box testing, and as such should require no knowledge of the inner design of the code or logic. It seeks to detect defects both within the 'inter-assemblages' and within the system as a whole.

*e.g., an end-to-end test might involve testing a logon interface, then creating and editing an entry, plus sending or printing results, followed by summary processing or deletion (or archiving) of entries, then logoff.*

Based on:  
 [363] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing](https://en.wikipedia.org/wiki/Software_testing)>  
 [883] Wikipedia <[https://en.wikipedia.org/wiki/System\\_testing](https://en.wikipedia.org/wiki/System_testing)>

### ○ operational acceptance testing

Operational acceptance is used to conduct operational readiness (pre-release) of a product, service or system as part of a quality management system. This type of testing focuses on the operational readiness of the system to be supported and/or to become part of the production environment. Hence, it is also known as operational readiness testing (ORT) or operations readiness and assurance (OR&A) testing.

*e.g., it may include checking the backup/restore facilities, IT disaster recovery procedures, maintenance tasks and periodic check of security vulnerabilities.*

Based on:  
 [363] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing](https://en.wikipedia.org/wiki/Software_testing)>

### ○ functional testing

Functional testing is concerned only with the functional requirements of a system or subsystem and covers how well (if at all) the system executes its functions. These include any user commands, data manipulation, searches and business processes, user screens and integrations.

*e.g., Functional test tends to answer the questions like 'can the user do this?' or 'does this particular feature work?'*

Based on:  
 [1070] Arthur Fox, ReQuest <<http://reqtest.com/testing-blog/functional-vs-non-functional-testing/>>  
 [1071] Tutorials Point <[https://www.tutorialspoint.com/software\\_testing\\_dictionary/functional\\_testing.htm](https://www.tutorialspoint.com/software_testing_dictionary/functional_testing.htm)>  
 [899] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing#Functional\\_vs\\_non-functional\\_testing](https://en.wikipedia.org/wiki/Software_testing#Functional_vs_non-functional_testing)>

### ○ non-functional testing

Non-functional testing is designed to figure out if your product will provide a good user experience.

It should determine the breaking point, the point at which extremes of scalability or performance leads to unstable execution. Non-functional requirements tend to be those that reflect the quality of the product, particularly in the context of the suitability perspective of its users.

*e.g., testing performance criteria, common libraries to the backend, or data retention rules.*

Based on:  
 [899] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_testing#Functional\\_vs\\_non-functional\\_testing](https://en.wikipedia.org/wiki/Software_testing#Functional_vs_non-functional_testing)>  
 [1069] iBeta <<https://www.ibeta.com/functional-vs-non-functional-testing-whats-difference/>>

## ○ APPROACH

Specifies different testing approaches.

### ○ black-box testing

Examines the functionality of an application without peering into its internal structures or workings. A black-box tester is unaware of the internal structure of the application to be tested, has no access to the source code, and no knowledge of the architecture.

Based on:  
 [886] Wikipedia <[https://en.wikipedia.org/wiki/Black-box\\_testing](https://en.wikipedia.org/wiki/Black-box_testing)>  
 [884] Wikipedia <[https://en.wikipedia.org/wiki/Gray\\_box\\_testing](https://en.wikipedia.org/wiki/Gray_box_testing)>  
 [1065] Dan Cornell, SearchSoftwareQuality.com <<http://searchsoftwarequality.techtarget.com/tip/Web-application-testing-The-difference-between-black-gray-and-white-box-testing>>

### ○ white-box testing

White-box testing (also known as clear box testing, glass box testing, transparent box testing, and structural testing) refers to testing a system with full knowledge and access to all source code and architecture documents.

In white-box testing, an internal perspective of the system and programming skills are used to design test cases. The tester chooses inputs to exercise paths through the code and determine the appropriate outputs.

Based on:  
 [885] Wikipedia <[https://en.wikipedia.org/wiki/White-box\\_testing](https://en.wikipedia.org/wiki/White-box_testing)>  
 [1065] Dan Cornell, SearchSoftwareQuality.com <<http://searchsoftwarequality.techtarget.com/tip/Web-application-testing-The-difference-between-black-gray-and-white-box-testing>>



**grey-box testing**

A combination of white-box testing and black-box testing. The aim of this testing is to search for the defects, if any, that are due to improper structure or improper usage of applications.

A grey-box tester partially knows the internal structure, which includes access to the documentation of internal data structures and the algorithms used. Grey-box testers require both high level and detailed documents describing the application, which they collect to define test cases.

*Based on:*  
[884] Wikipedia <[https://en.wikipedia.org/wiki/Gray\\_box\\_testing](https://en.wikipedia.org/wiki/Gray_box_testing)>

**AUTOMATION LEVEL**

Specifies the level of automation in a testing process.

**automated**

Produced with the use of special software (separate from the software being tested) to control the execution of tests and the comparison of actual outcomes with predicted outcomes.

*e.g., graphical user interface testing framework that generates user interface events such as keystrokes and mouse clicks, and observes the changes that result in the user interface, to validate that the observable behaviour of the program is correct.*

*Based on:*  
[887] Wikipedia <[https://en.wikipedia.org/wiki/Test\\_automation](https://en.wikipedia.org/wiki/Test_automation)>

**semi-automated**

Produces by combining automated and manual tests.

[3] Memoria team, Memoria project

**manual**

Process of manually testing programs for defects.

Usually it requires a tester to play the role of an end user and use most of the features of the application to ensure correct behaviour. To ensure completeness of testing, the tester often follows a written test plan that leads him/her through a set of important test cases.

*Based on:*  
[882] Wikipedia <[https://en.wikipedia.org/wiki/Manual\\_testing](https://en.wikipedia.org/wiki/Manual_testing)>



E10.4

**documenting**

Writing a detailed description of the programming cycle and specific facts about the program.

*e.g., comments in the program itself.*

*Based on:*  
[605] Department of Computer Science and Statistics University of Rhode Island <<https://homepage.cs.uri.edu/faculty/wolfe/book/Readings/Reading13.htm>>

**OUTPUT'S NATURE**

Specifies the nature of the output in terms of a final result.

**nondigital**

Refers to outputs that are created as nondigital.

*e.g., a manual technical drawing showing a section of a building*

[3] Memoria team, Memoria project

**digital**

Refers to outputs that are created in a digital form.

*e.g., Maya 3D model, SVG vector graphics, Solid Works model*

[3] Memoria team, Memoria project



E10.5

**debugging**

Debugging is a process of ridding a computer program of logical or syntactical errors. This is commonly achieved by manually examining the program's source code. Debugging is often a consequence of testing activities.

*e.g., removing errors in JavaScript instructions.*

*Based on:*  
[364] Computer Hope <<http://www.computerhope.com/jargon/d/debuggin.htm>>



E10.6

**deployment**

All of the activities that make a software system available for use.

*e.g., installing a web application on the web server to publish it.*

*Based on:*  
[364] Wikipedia <[https://en.wikipedia.org/wiki/Software\\_deployment](https://en.wikipedia.org/wiki/Software_deployment)>



E11

**text editing**

Editing is the process of selecting and preparing written content. It can involve correction, condensation, organization, and many other modifications performed with an intention of producing a correct, consistent, accurate and complete text. The activity does not cover all the steps needed to control the visual appearance and layout of the text (cf. text composition activity).

*e.g., misspelling removal, grammatical corrections, stylistic improvements.*

*Based on:*  
[394] Wikipedia <<https://en.wikipedia.org/wiki/Editing>>

- **EDITOR**

Identifies the people who correct and make changes to texts. .

- **self-editing**

Self-editing corresponds to situations when the author himself conducts the activity.

*Based on:*  
[395] Wikipedia <<https://en.wikipedia.org/wiki/Proofreading>>

- **third-party**

Third-party editing corresponds to situations when someone who was not directly involved in the writing contributes to the text editing activity. Situations when a professional is hired and paid to do the job are excluded.

*e.g., editing tasks done by colleagues.*

*Based on:*  
[945] BusinessDictionary.com <<http://www.businessdictionary.com/definition/third-party.html>>

- **editing services**

This situation occurs when the editing activity is carried out by a company or an individual for commercial purposes.

*e.g., using Scribendi services*

[3] Memoria team, Memoria project

- **AUTOMATION DEGREE**

Identifies degree of human intervention in text editing. .

- **manual process**

Employing human capacities rather than automated methods.

*e.g., correct and annotate a paper copy of an article using a pen*

[3] Memoria team, Memoria project

○ **computed process**

Calculated by means of a computer.

*e.g., automatic spell checking tools, used without human validation.*

*Based on:*  
[934] Merriam-Webster <<http://www.merriam-webster.com/dictionary/compute>>

○ **semi-automated process**

A process that is partly computerised and partly requires human intervention/ decision (*i.e.*, expertise, knowledge).

*e.g., using a grammar checking computer tool*

[3] Memoria team, Memoria project



E11.1

**re-writing**

The activity is dedicated to heavy content re-writing for style, clarity and tone. It may also include a querying of facts.

*e.g., condensation of a text.*

*Based on:*  
[395] Wikipedia <<https://en.wikipedia.org/wiki/Proofreading>>

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[3] Memoria team, Memoria project



E11.2

**proofreading**

A sentence-by-sentence analysis of the text to "clean it up" by improving grammar, spelling, punctuation, syntax, consistency of usage (terms, acronyms ...) and structure.

*e.g., spelling corrections prior to final publication.*

Based on:

[395] Wikipedia <<https://en.wikipedia.org/wiki/Proofreading>>

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*e.g., editing tasks done by colleagues.*

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*e.g., using a grammar checking computer tool*

[3] Memoria team, Memoria project



E11.3

### Indexing

The aim of this activity is to provide readers with clear and easy to use means to understand the structure of the text and to look through its content. Indexing results in a sequential arrangement of material, especially in alphabetical or numerical order.

*e.g., providing a book with an index, a table of content, ...*

*Based on:*  
[418] Dictionary.com <<https://www.dictionary.com/browse/index>>

#### EDITOR

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Self-editing corresponds to situations when the author himself conducts the activity.

*Based on:*  
[395] Wikipedia <<https://en.wikipedia.org/wiki/Proofreading>>

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[945] BusinessDictionary.com <<http://www.businessdictionary.com/definition/third-party.html>>

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[934] Merriam-Webster <<http://www.merriam-webster.com/dictionary/compute>>

#### semi-automated process

A process that is partly computerised and partly requires human intervention/decision (*i.e.*, expertise, knowledge).

*e.g., using a grammar checking computer tool*

[3] Memoria team, Memoria project



E12

**discussion /consultation**

A talk between two or more people (during a phase of data collection) in which thoughts and ideas are expressed, questions are asked and answered, and solutions are explored especially in order to reach a decision.

*e.g., a brief exchange of ideas about publication strategy, a discussion focused on selection of post-treatment techniques to transform the raw products of a 3D printer into fully realised models*

*Based on:*  
[1240] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/conversation>>

[1241] Cambridge English Dictionary <<https://www.dictionary.com/browse/discussion>>

[1242] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/discussion>>

**INTERACTION MODE**

Classification of discussions/consultations based on the interaction mode.

**face-to-face discussion**

A discussion involving participants that are present at the same place.

*e.g., an informal exchange during an activity*

[3] Memoria team, Memoria project

**remote discussion**

A discussion involving participants that are separated in distance typically facilitated through technology, such as video conferencing software.

*e.g., interacting via two-way communication technologies (videoconferencing, by telephone, etc.)*

*Based on:*  
[1243] Top Hat Glossary <<https://tophat.com/glossary/r/remote-teaching/>>

**GROUP TYPE**

Classification of discussions/consultations according to the number of participants and to the presence of a moderator.

**informal group discussion**

A discussion involving several people exchanging without a moderator in charge of conducting the discussion in an organized way.

[3] Memoria team, Memoria project

**one-to-one discussion**

A discussion involving two people.

*Based on:*  
[1244] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/one-to-one>>

**moderated discussion**

A discussion that involves a group of people who have been brought together to discuss a particular subject in order to solve a problem or suggest ideas. The discussion is led by a person who is in charge of the discussion and makes sure that it is conducted in an organized way.

*e.g., instructions given and discussed during a training session, a briefing*

*Based on:*  
[1245] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/moderator>>  
[1246] Cambridge English Dictionary <<https://dictionary.cambridge.org/fr/dictionnaire/anglais/focus-group>>

**STRUCTURATION LEVEL**

Determines the level of structuration before the discussion.

**structured**

A discussion with strict guidelines, which can be both content-oriented, logistical, or technical, and privileging pre-set questions.

*Based on:*  
[1247] Moodle, Moodle <<https://etrp.wmo.int/mod/book/view.php?id=8628&chapterid=1582&lang=en>>

**unstructured**

The key feature of the unstructured discussion is the free-ranging nature of the questions asked and ideas participants may come up with. It is non-directive in nature. It is similar to an everyday conversation because of its informal and free-flowing nature.

*e.g., unprompted exchange during an activity*

*Based on:*  
[1248] Tom Pollock, Tom Pollock <<https://www.oliverparks.com/blog-news/the-difference-between-structured-unstructured-amp-semi-structured-interviews>>

[1249] Formplus, Formplus <<https://www.formpl.us/blog/unstructured-interview>>

**ANTICIPATION LEVEL**

Determines whether the exchange was planned and scheduled or not.

**spontaneous**

A spontaneous discussion is not planned or arranged, but takes place because someone suddenly needs or wants it to happen.

*e.g., voluntary discussion between a student and his/her supervisor*

*Based on:*  
[1250] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/spontaneous>>

**programmed**

Discussion planned and arranged according to a schedule.

*e.g., mid-term project session*

*Based on:*  
[1251] Collins English Dictionary <<https://www.collinsdictionary.com/dictionary/english/arrange-a-schedule>>

**REPORTING MODE**

Classification of discussion according to techniques used to report on its results.

**unreported**

No traces of a discussion are kept.

[3] Memoria team, Memoria project

**paper-and-pencil**

Decisions or conclusions resulting from the conversation are reported on a paper form using a writing implement (e.g., a pencil, a ballpoint pen).

*Based on:*  
[1011] Inview Veldwerk <[http://www.inviewfieldwork.com/papi\\_capi\\_wapi\\_etc.htm](http://www.inviewfieldwork.com/papi_capi_wapi_etc.htm)>

**audio-video recording**

An entire conversation, its fragments, or conclusions, are recorded (audio or video).

*e.g., voice recording, videoing*

[3] Memoria team, Memoria project

**computer-assisted**

Decisions or conclusions resulting from the conversation are directly formatted and stored via a computer programme and using a computer, a laptop, a tablet, etc.

*Based on:*  
[838] Wiki-authors, Wikipedia <[http://en.wikipedia.org/wiki/Computer-assisted\\_personal\\_interviewing](http://en.wikipedia.org/wiki/Computer-assisted_personal_interviewing)>





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Ce document présente la classification des 285 activités que comporte le système d'informations MEMORIA en mai 2022.

Les activités sont les éléments 'atomiques' de ce système. Elles identifient les différentes actions menées au cours d'un processus de recherche. Ces activités sont utilisées dans le système MEMORIA pour construire des graphes représentant les flux de recherche mis en œuvre pour produire des résultats (outputs).

Dans l'étape de structuration d'un processus les activités sont organisées dans des séquences décrivant leur ordre relatif (ex. séquences en chaîne, séquences parallèles, séquences itératives ...). Ensuite, au stade de la spécification, elles sont détaillées et annotées- on sélectionne les descripteurs appropriés, on identifie les personnes impliquées dans l'activité, les sources et les intrants utilisés, les instruments, les indices temporels (ex. les dates ou la durée des activités), etc.

Pour permettre cette utilisation les activités ont d'abord dû être identifiées au travers d'une étape d'élicitation. Chaque activité ainsi identifiée a été définie, exemplifiée et documentée, et dans la majorité des cas caractérisée par une série de descripteurs spécifiques. Les activités sont réparties en 5 groupes correspondants à différentes phases de travail (acquisition de données, filtrage et traitement de données, analyse des données, protocoles d'exploitation, finalisation). À l'intérieur de chaque groupe, elles sont organisées de manière hiérarchique, des plus générales aux plus spécifiques et représentées dans ce que nous appelons des « roues d'activités ». Cette hiérarchie est conçue pour apporter une forme de flexibilité à l'usage : cela permet à l'utilisateur au besoin de sélectionner une activité relativement générale en cas d'informations imprécises ou lacunaires.

Il convient de noter que la liste structurée des activités présente dans le SI MEMORIA à ce stade n'est pas universelle : elle ne correspond qu'aux besoins de ceux qui l'ont créée puis étendue. Par conséquent, les définitions et leur descripteurs correspondent à un contexte spécifique – celui des travaux de recherche et de développement du laboratoire d'origine du système (UMR 3495 CNRS/MC MAP) - les définitions proposées sont donc à comprendre comme alignées avec les pratiques, connaissances ou savoir-faire de ce laboratoire. Les activités présentées dans ce document représentent un point d'étape dans le développement du système, qui a vocation à s'enrichir au fur et à mesure de collaborations à venir.

This document presents the classification of the 285 activities present in the MEMORIA information system in May 2022.

Activities are the 'atomic' elements of this system. They identify the different actions carried out during a research process. Within the MEMORIA IS activities are used in to build/elaborate graphs representing workflows mobilised to produce research outputs.

In the structuring stage of a process, activities are organised in sequences reflecting their relative order (e.g., chain sequences, parallel sequences, iterative sequences ...). Then, at the specification stage, they are detailed and annotated – picking up the relevant descriptors, singling out people involved in the activity, mentioning sources and inputs upon which the activity is based, instruments, temporal clues (e.g. dates or duration of activities), and so on.

To enable this use, activities were first identified through an elicitation campaign. Each activity was defined, exemplified and documented, and in most cases characterised by a set of specific descriptors. Activities are divided into five groups corresponding to different phases of work (data acquisition, data filtering and treatment, data analysis, exploitation protocols, finalisation). Within each group, activities are organised hierarchically from the most general to the most specific ones and represented in what we call "wheels of activities". This hierarchy is intended to provide flexibility: it allows the user to select a relatively generic activity where information is unclear or incomplete.

It should be noted that the list of activities present in the MEMORIA IS at this stage is not universal: it only corresponds to the needs of those who created and then extended it. Consequently, the definitions and their descriptors correspond to a specific context - this of the research and development activities of the laboratory of origin of the system (UMR 3495 CNRS/MC MAP) - the proposed definitions are therefore to be understood as aligned with the practices, knowledge or know-how of this laboratory. The initial set of activities was extended so as to include a group of activities related to building archaeology as a result of collaboration between UMR MAP-Gamsau and the LAT team (UMR 7324 CITERES).

It should be mentioned that the list of activities presented in this document represents a milestone in the development of the system, which we expect to be enriched as future collaborations are initiated. It therefore does not claim to be exhaustive, and the reader will note that while certain branches of the wheels of activities are quite developed, while others remain very general. Each extension will require the identification and organisation of discipline- or user- specific activities, and therefore will require further knowledge elicitation campaigns.