Mémorisation de ressources numériques et d’activités
Record-keeping of digital resources and activities
As a result of the massive introduction of computer-assisted research workflows in and around the analysis of heritage items, we are today witnessing a blooming of highly specialized and sometimes obscure for outsiders data processing chains. preserve and explain research processes on the long term ensure the verifiability and reproducibility of our work.
Record-keeping of digital resources and activities

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SHARE — STORE — PRESERVE
Methodologies, Tools and Challenges for 3D Use in Social Sciences and Humanities

Collect
Share
Visualise
Publish

Reality-based 3D annotation
3D Visualization
Documentation and Long-Term Archiving
Production of documentation(s) and/or publication(s)
research outputs

description > how outputs were produced

enabling the comparability of research workflows

information visualisation

methods, tools and challenges in elicitation, analysis and comparison of our cognitive / procedural approaches

3D Use in Social Sciences and Humanities

Collect

Share

Publish

Reality-based 3D annotation

3D Visualization

Production of documentation

Long-Term Archiving
Description and comparative analysis of our working methods and of their evolution.
The MEMORIA project searches to comply with a logic of **scientific integrity** and **good practices**.

**concepts** > output, activity, process, ...

**methods** > elicitation and description > cognitive approach/process of production

visual reasoning, information visualisation > enabling the comparability of research workflows

**presentation roundup** >
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basic concepts

- publication
- edition
- objects of study
- output
- process
- activity
- source
- expertise
- infrastructure
- project
- organisation
- affiliation
  - individual

...
A resource, usually digital or digital-born, resulting from a research activity.

An output can be a **simple document** or a **set of documents**.

e.g., a 3D model, a video, a collection of models, a collection of charts
creator
An individual or an organization primarily engaged in activities leading to the production of the output.

e.g., UMR 694 MAP, Nicolas Nony
A set of activities mobilised to produce an output. A process may include one or several activities.
activity

A *series of actions* undertaken to produce an output all along a project’s workflow.

e.g., imaging, phonological disambiguation, data conversion, graphical composing
**input**

An output produced previously and described by a separate process.

*Example:* a 3D reconstruction of a Greek temple produced previously and described as an output in the Memoria database.

**source**

Any *external piece of information and knowledge, raw data or material* that is used in order to carry out an activity.

*Example:* a collection of 19th century maps, a book, an article, survey results - as far as they are external resources.
fundamental principles
basic concepts
How do we describe the production process of an output?

Virtual reconstruction hypotheses of the old Town Hall in Krakow (1998 – 2000)
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262 activities distributed in 5 groups
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methods

**data collection / acquisition**
Gathering data which is to become the subject of further analysis, filtering and processing.

**data filtering and treatment**
Transforming 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 data steps. Editing, cleaning or modifying the raw data results in processed data.

**data analysis**
Methods of acquisition or gaining of scientific - theoretical, explicit - knowledge, as well as manners of its articulation and transmission in a formal language.

**added value procedural activities**
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.

**finalisation**
Finalisation activities correspond 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, transmitting research results to various audiences. It encompasses activities that lead to the reprocessing of existing outputs (modification, adjustment, reformation, optimisation, adaptation ...) or activities that lead to the creation of new ones (video capture, voice-over narration ...).
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methods

- Record-keeping of digital resources and activities
- Methodologies, Tools and Challenges for 3D Use in Social Sciences and Humanities

- Theoretical (explicit) knowledge acquisition
- Technical skills (procedural knowledge) acquisition
- Personal skills and knowledge acquisition
- State of the art

- Field acquisition
- Desk-based research
- Data collection and acquisition

- Observation
- Interview
- Experiment
- Crowdsourcing

- Direct observation
- Indirect observation
- Self-interview
- Semi-structured interview
- Structured interview
- Unstructured interview
- Natural experiment
- Quasi-experiment

- Survey data collection
- Participants
- Contact data acquisition
- Motion detection
- Dimensional monitoring
- Wave-based surveying
- Radar survey
- Sonar survey
- Remote sensing
- Photogrammetric acquisition
- Photographic survey

- Data collection and acquisition
- Computer photography
- Human-source information
- Video recording
- Audio recording
- Imaging
- Recoding
- Active sensing
- Photographic survey
- Laser scanning
- Topographic survey
- Radar survey
- Sonar survey

- Contact data acquisition
- Motion detection
- Dimensional monitoring
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- Radar survey
- Sonar survey
- Remote sensing
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- Field acquisition
- Desk-based research
- Data collection and acquisition
- State of the art
- Personal skills and knowledge acquisition
- Technical skills (procedural knowledge) acquisition
- Theoretical (explicit) knowledge acquisition
- Gathering primary sources
- State of the art
- Practices (procedural knowledge)
Record-keeping of digital resources and activities

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methods

- structured interview
- unstructured interview
- semi-structured interview
- self-interview
- interview
- direct observation
- indirect observation
- observation
- controlled experiment
- natural experiment
- quasi-experiment
- experiment
- crowdsourcing
- survey data collection
- human-source information
- participant observation
- audio recording
- video recording
- computational photography
- multispectral imaging
- photogrammetric acquisition
- photographic survey
- remote sensing
- active sensing
- laser scanning
- dimensional monitoring
- wave-based surveying
- radar survey
- sonar survey
- contact data acquisition
- motion detection
- manual distance acquisition
- data collection and acquisition
- field acquisition
- desk-based research
- personal skills and knowledge acquisition
- state of the art
- practices (procedural knowledge)
- explicit / declarative knowledge
- gathering primary sources
- technical skills (procedural knowledge) acquisition
- theoretical (explicit) knowledge acquisition
- methods
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Theoretical (explicit) knowledge acquisition

Technical skills (procedural knowledge) acquisition

Personal skills and knowledge acquisition

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Gathering primary sources

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methods

preceding process

outputs of a process

publications

modification of the infrastructure’s structure

root infrastructure
Within a process each activity keeps track of:

- **institutional framework** in which the work took place (*creator(s)*, *organizations*).
- **primary sources** used and *expertise(s)*,
- **outputs** if resulting from the activity,
- **techniques** and **tools** used during the activity (*instruments*, *software*, ...)
- **duration** of the activity
- **recurrent character** of the activity
- **activity group** and **type**
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How to enable the comparability of research workflows?

information visualisation

visual reasoning

process of analysing visual information and being able to solve problems based upon it.

It is a component of nonverbal intelligence. Allows to identify patterns, trends in data, spotting causes, ...
> allows us to identify relations and patterns, spot trends and exceptions in data, causes, ...

> enables comparisons
> limits dependence on languages
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methods

\[(A_A)(B)(C)||D.:_E.F:G_H_I||(J)(K)||L_M_N::_O_P_Q_:R_S._T_U_V:Y_X_Z::Ł.\]
Record-keeping of digital resources and activities

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- data filtering and treatment
- data analysis
- data collection / acquisition
- added value procedural activities
- finalisation

reason using types of activities
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methods
patterns, regularities or exceptions

data collection / acquisition
Record-keeping of digital resources and activities

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methods

patterns, regularities or exceptions

data filtering and treatment
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methods

patterns, regularities or exceptions

added value procedural activities

finalisation
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methods
predominant group of activities

data filtering and treatment
data analysis
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finalisation

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  Methodologies, Tools and Challenges for 3D Use in Social Sciences and Humanities
  - 27 February 2019, Marseilles
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Methods

level of recurrences inside a process

recurrent activities

methods

level of recurrences inside a process
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methods

comparisons between processes

predominant group of activities

data filtering and treatment

data analysis

data collection / acquisition

added value procedural activities

finalisation
A significant point – a will to privilege visual languages

Multidimensional icon of an activity
(state of the art > explicit / declarative knowledge)
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A significant point – a will to privilege visual languages

A “film” metaphor to sum up the completion of the documentation effort.
A significant point – a will to privilege visual languages

A “film” metaphor to sum up the completion of the documentation effort.
Record-keeping of digital resources and activities

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- an infrastructure
- a project
- a source
- an object of study
Visual interfaces are used to:

- show query results
- add new information
- show the evolution of working methods or techniques/tools used over time
- show types of activities mobilized to produce a resource

A “film” metaphor to sum up the completion of the documentation effort.
These interfaces should be used to:

- show query results
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- show query results
- add new information
- show the evolution of working methods or techniques/tools used over time
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The MEMORIA project searches to comply with a logic of **scientific integrity** and **good practices** by experimenting practical solutions for the **formalization and description** of **research workflows**.

- ensure the **verifiability**, **reproducibility** and **comparability** of research workflows
- facilitate the **reasoning** (including comparative) on our **working methods** and their evolution
- ensure the **intersubjectivity** of these processes

Ensure the interpretability, verifiability and reproducibility of results by other members of the **scientific community**.
The MEMORIA project searches to comply with a logic of **scientific integrity** and **good practices**.

It aims to develop an **experimental information system** enabling the **description, structuring, sustainability** and **analysis** of our methods of work.

challenges ahead >

**full-scale implementation**
**extending and updating evaluation**
Thank you