



Mémorisation de ressources numériques et d'activités  
Record-keeping of digital resources and activities



Record-keeping of digital resources and activities

objectives

MAP- Gamsau / I. Dudek

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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objectives

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Methodologies, Tools and Challenges for 3D Use in Social Sciences and Humanities

Collect

Share

Visualise

Publish

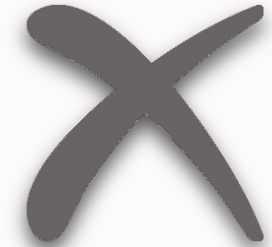


Reality-based 3D annotation

3D Visualization

Documentation and Long-Term Archiving

Production of documentation(s) and/or publication(s)





## Record-keeping of digital resources and activities

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objectives

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



## Record-keeping of digital resources and activities

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objectives

Description and comparative analysis of our working methods and of their evolution.



## Record-keeping of digital resources and activities

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presentation  
plan

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

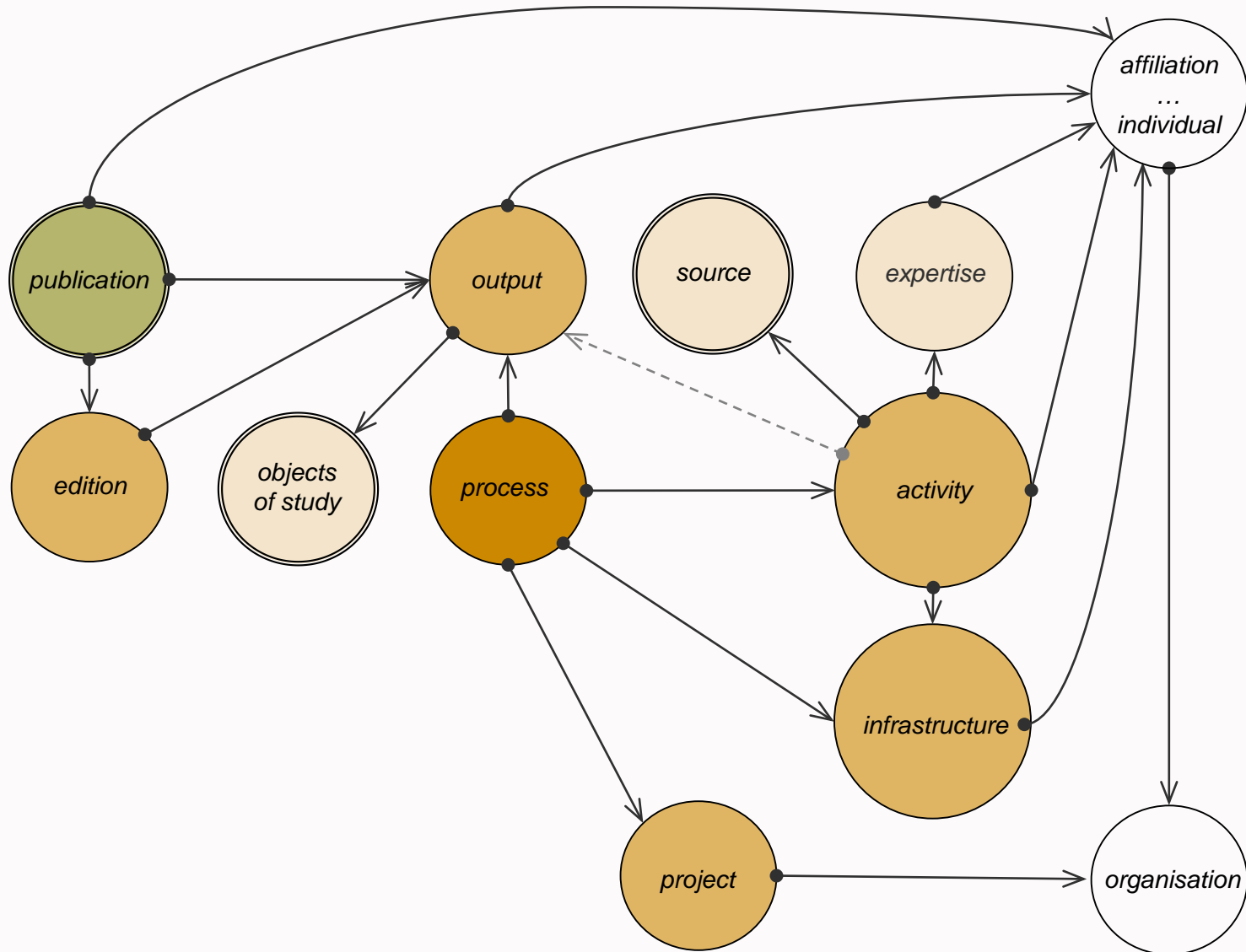
**presentation  
roundup** >

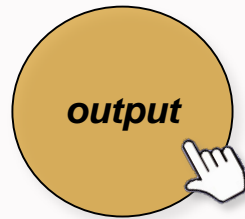


# Record-keeping of digital resources and activities

basic concepts

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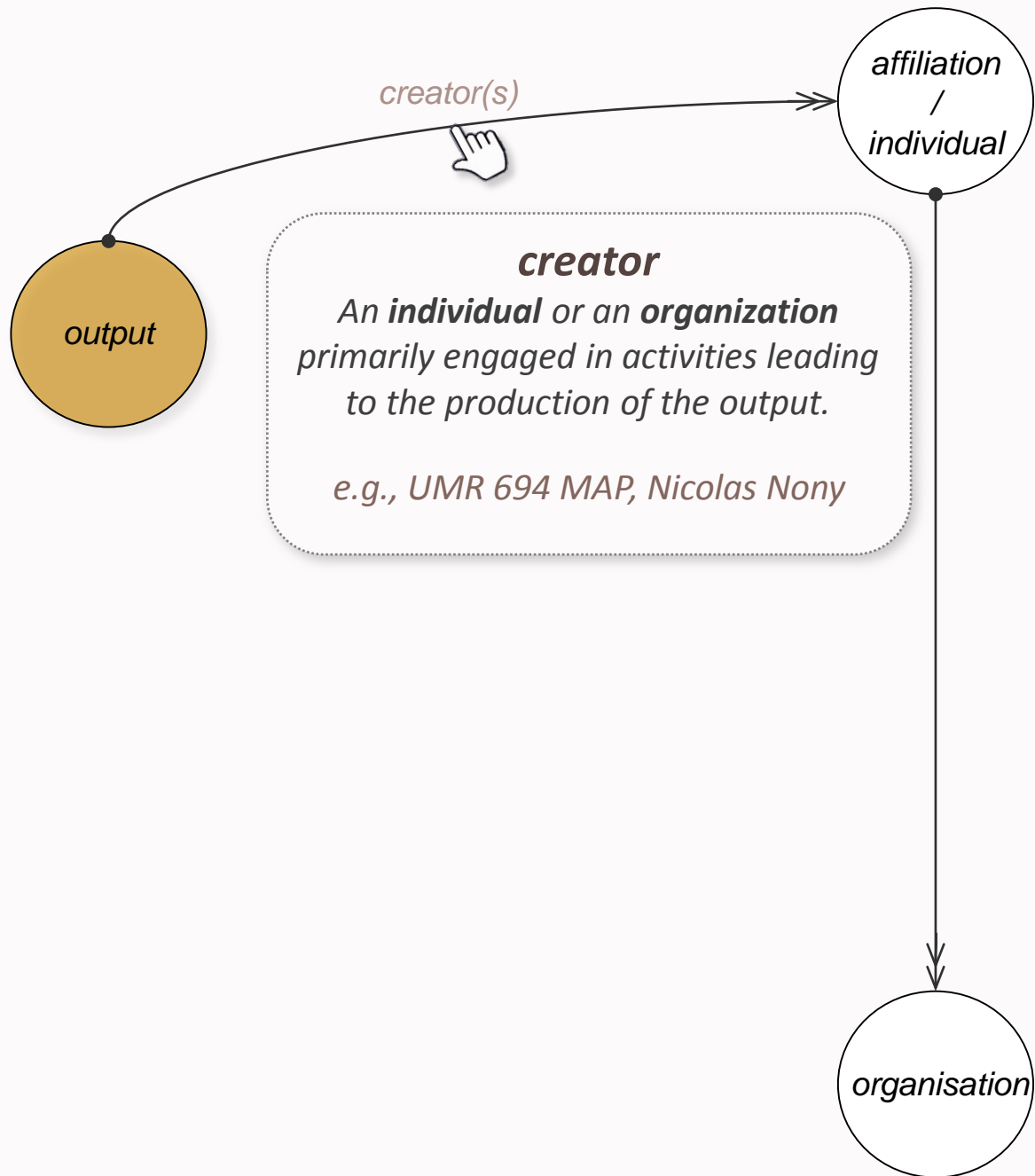
### **output**

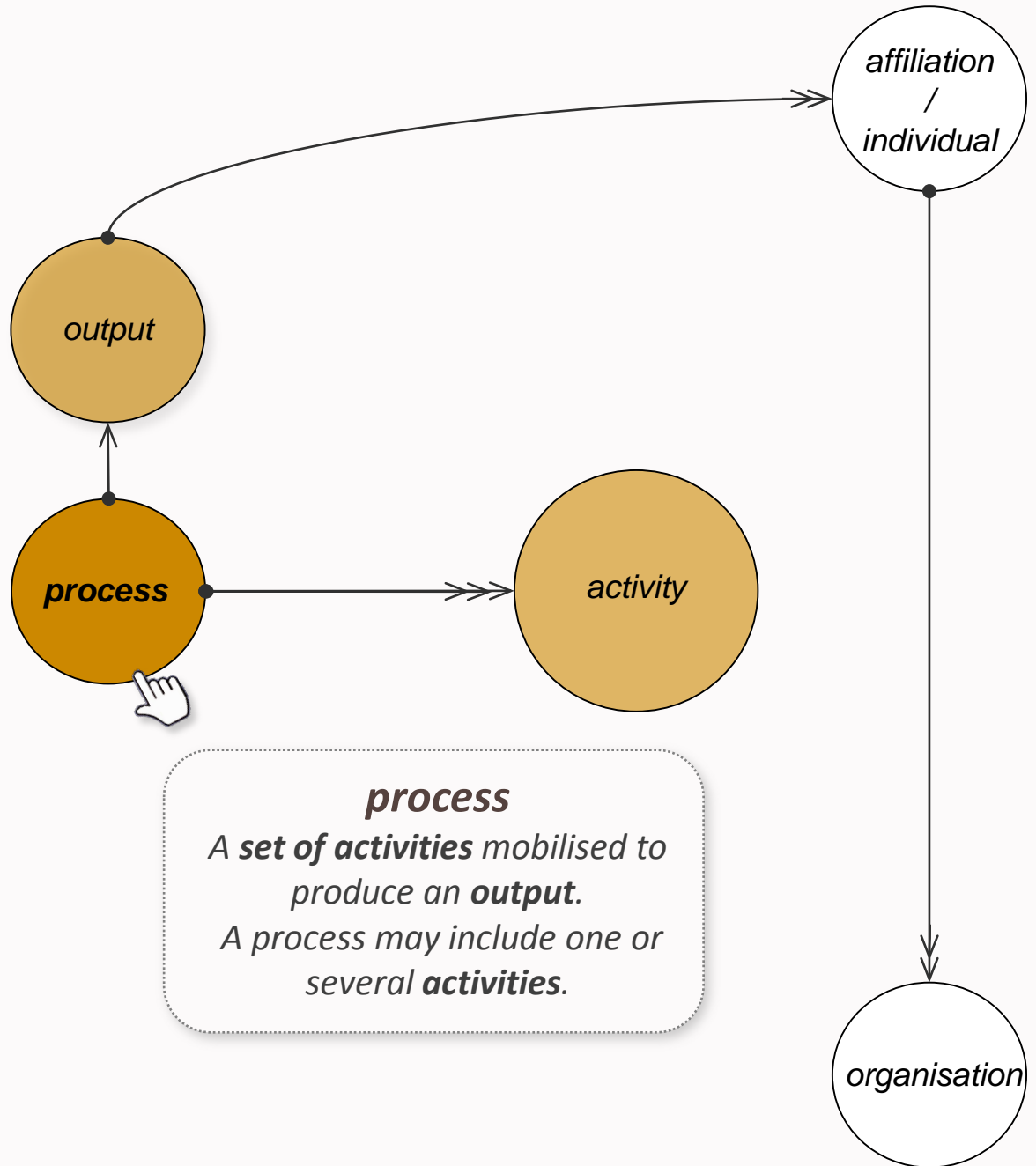
*A resource, usually digital or digital-born, resulting from a research activity.*

*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*



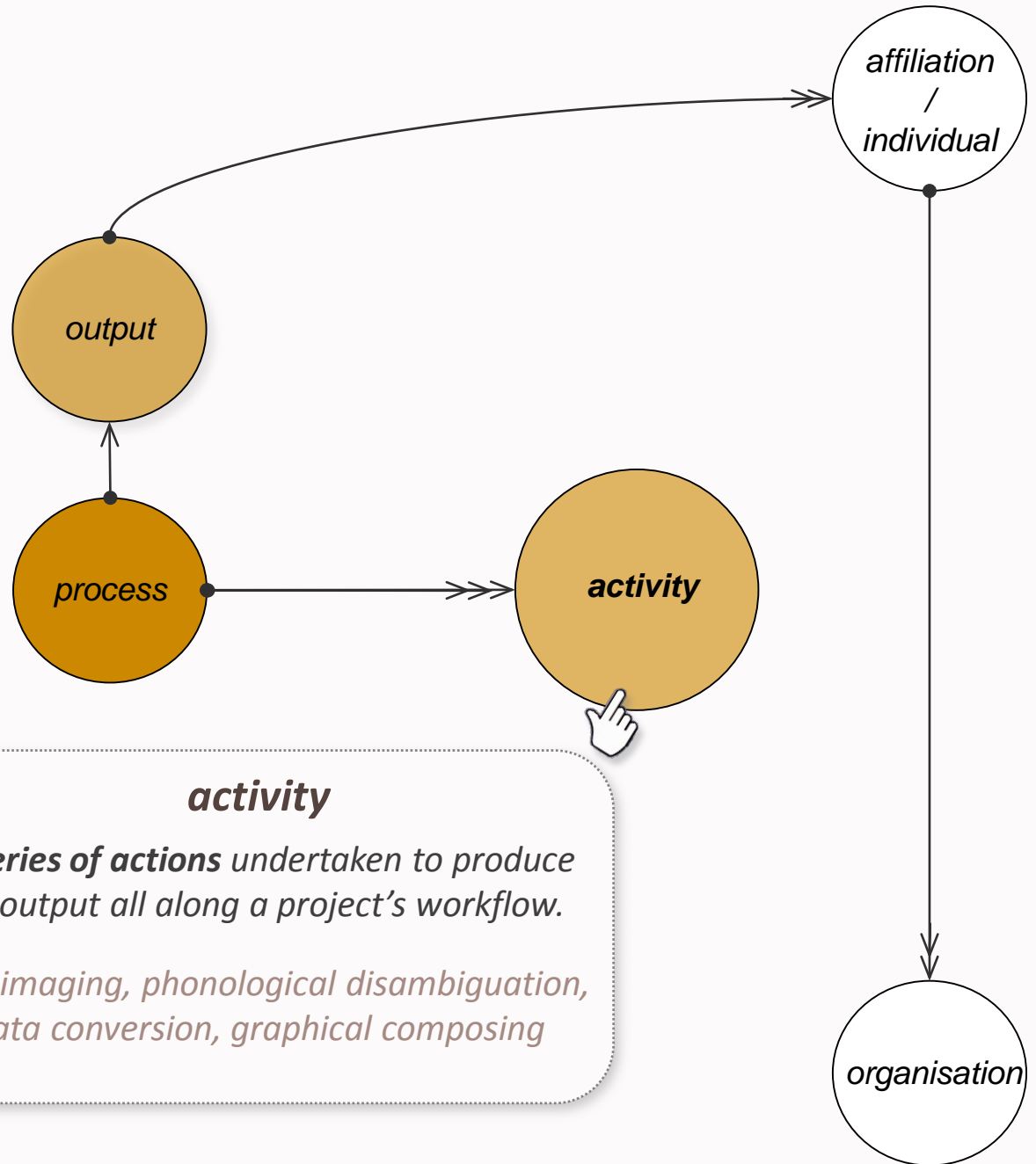




***process***

*A set of activities mobilised to produce an **output**.*

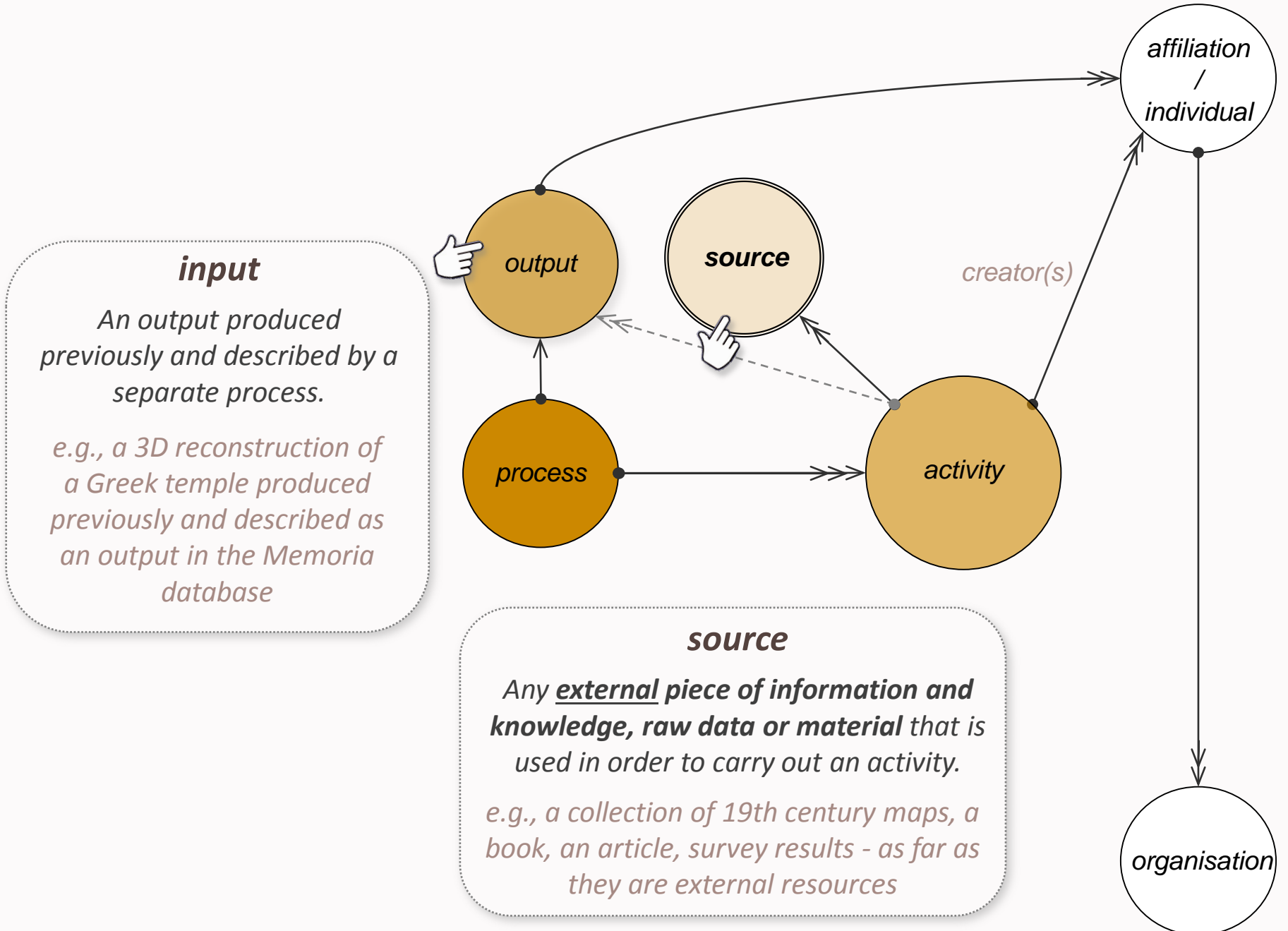
*A process may include one or several **activities**.*



### **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.

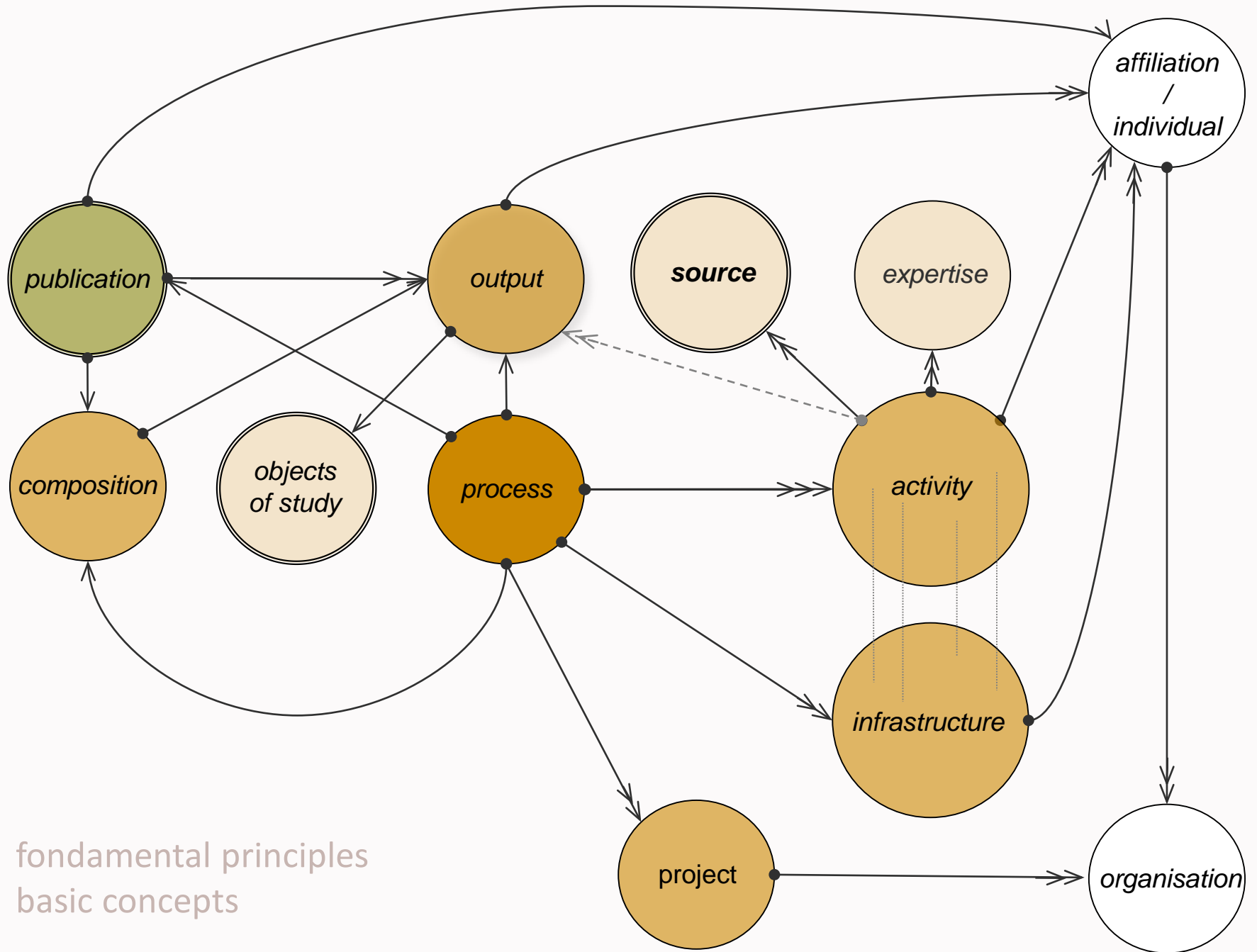
e.g., a 3D reconstruction of a Greek temple produced previously and described as an output in the Memoria database

**source**

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

e.g., a collection of 19th century maps, a book, an article, survey results - as far as they are external resources

organisation



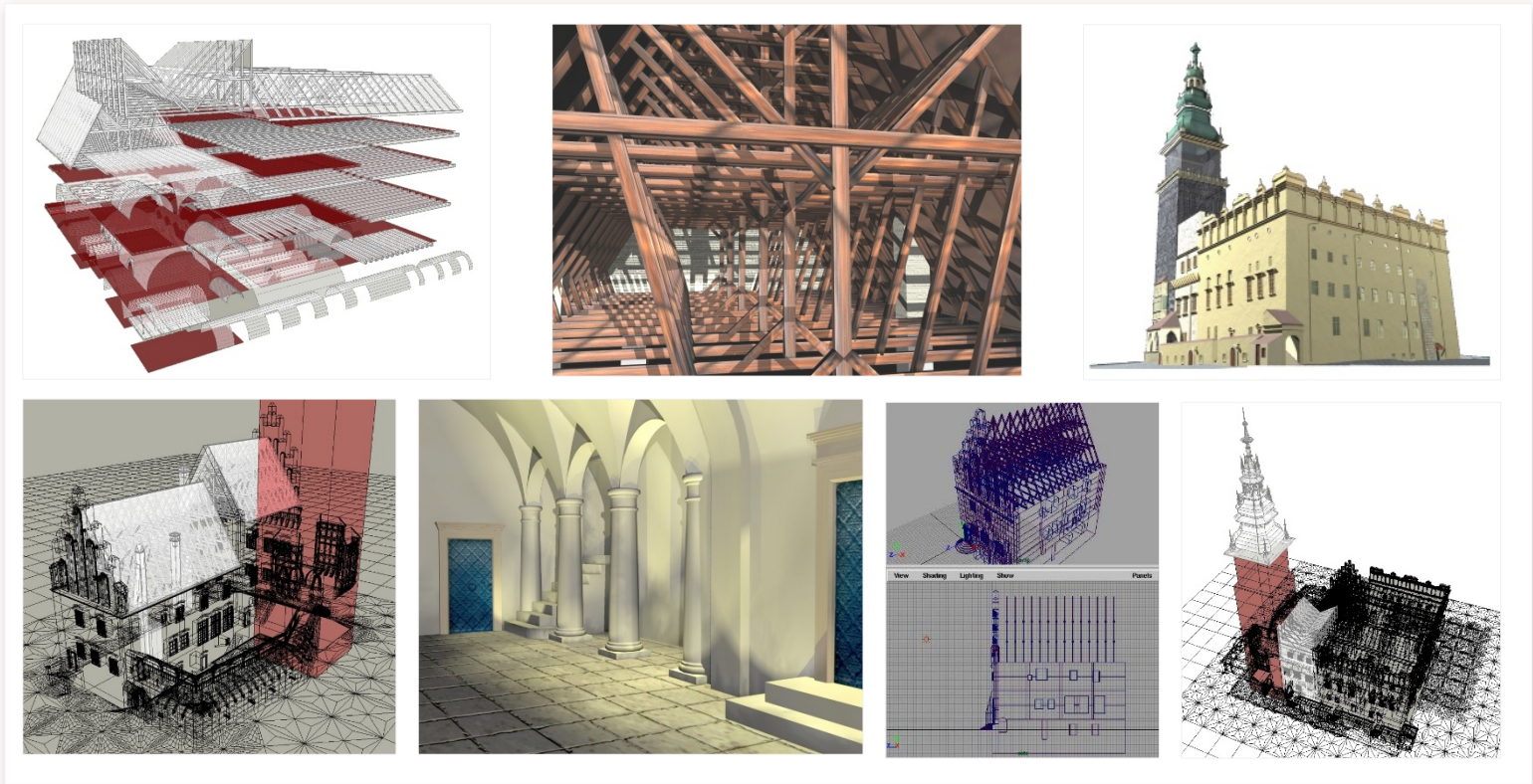


# Record-keeping of digital resources and activities

methods

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How do we describe the production process of an output ?



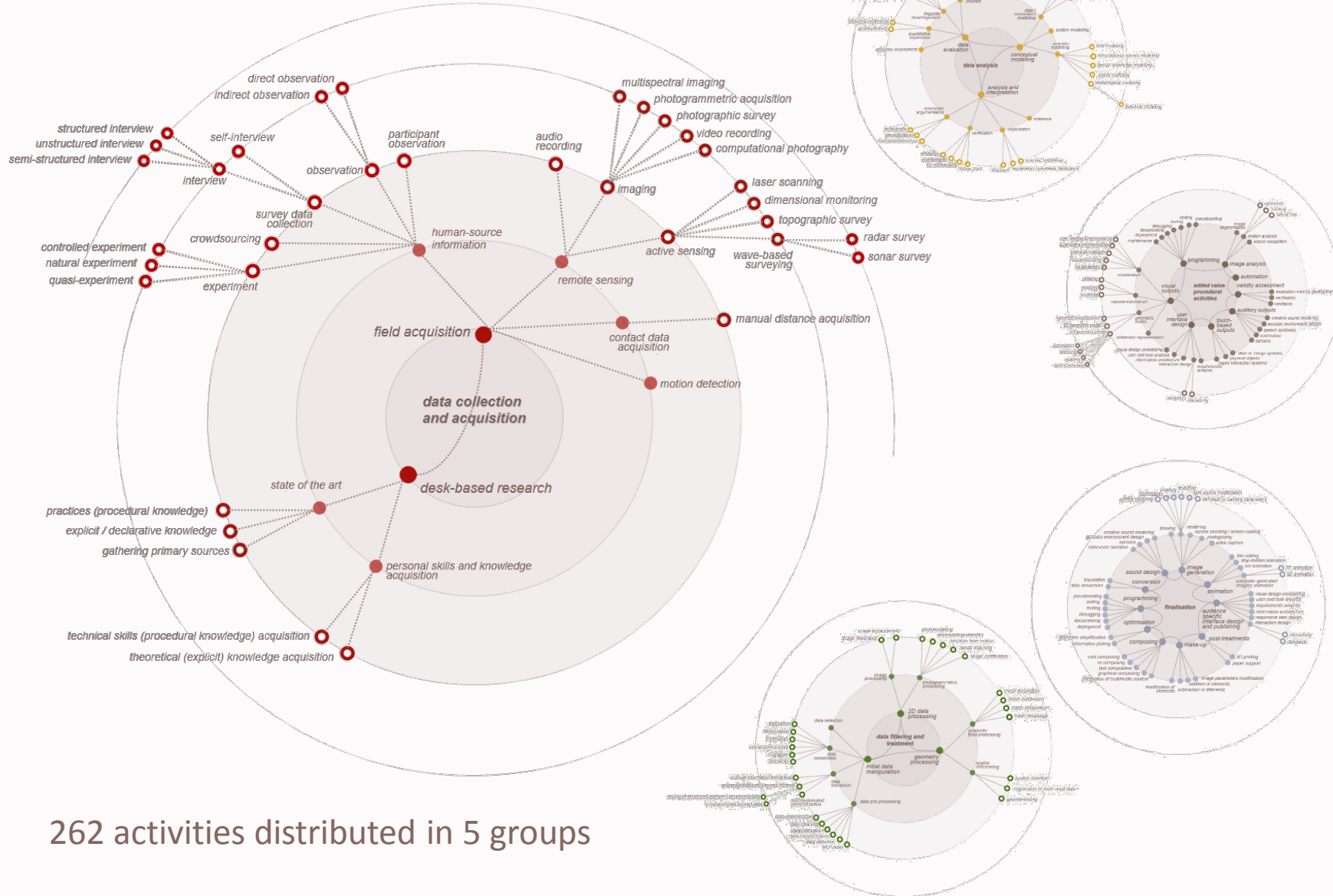
*Virtual reconstruction hypotheses of the old Town Hall in Krakow (1998 – 2000)*



# Record-keeping of digital resources and activities

methods

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262 activities distributed in 5 groups



# Record-keeping of digital resources and activities

methods

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## 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 ...).

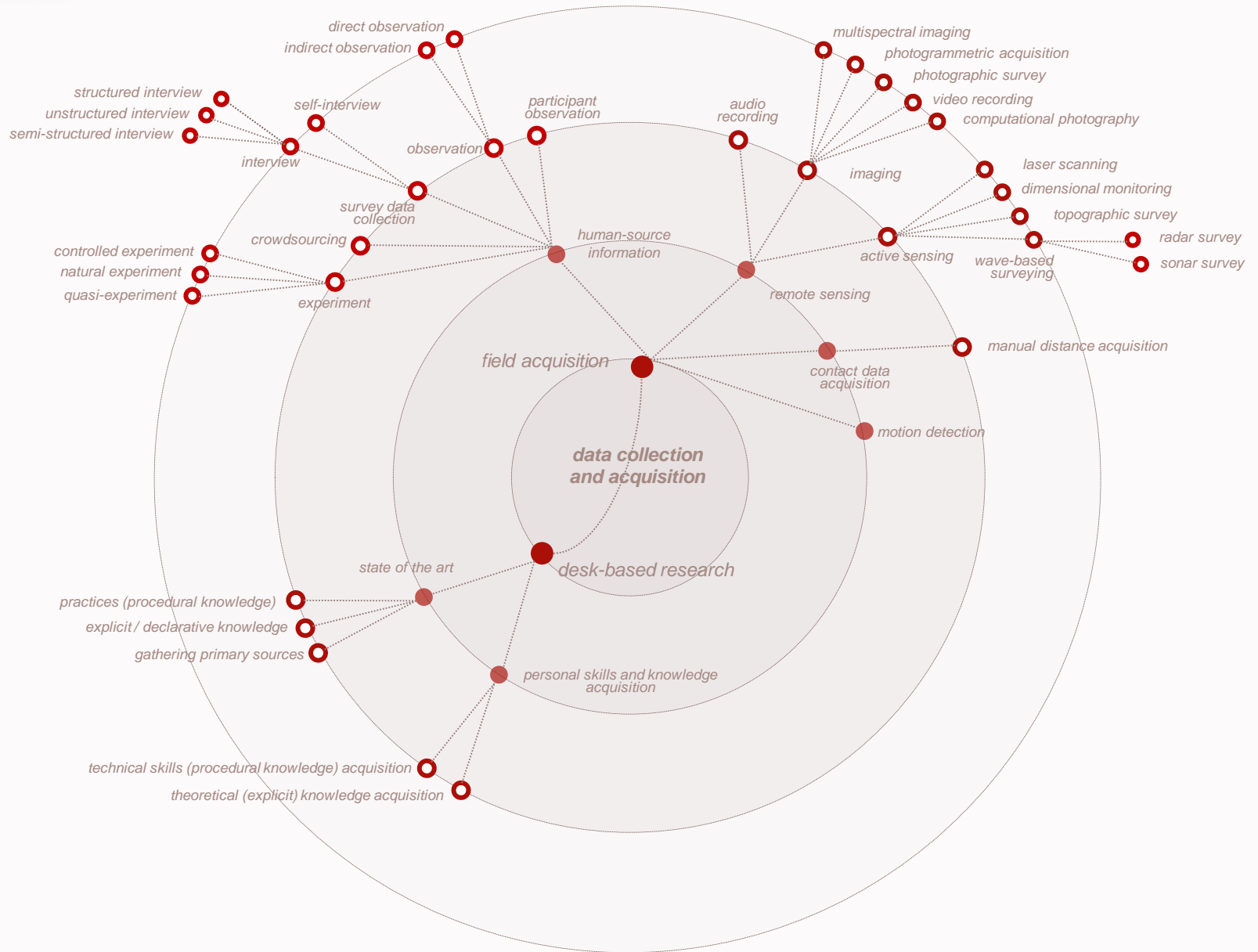




# Record-keeping of digital resources and activities

methods

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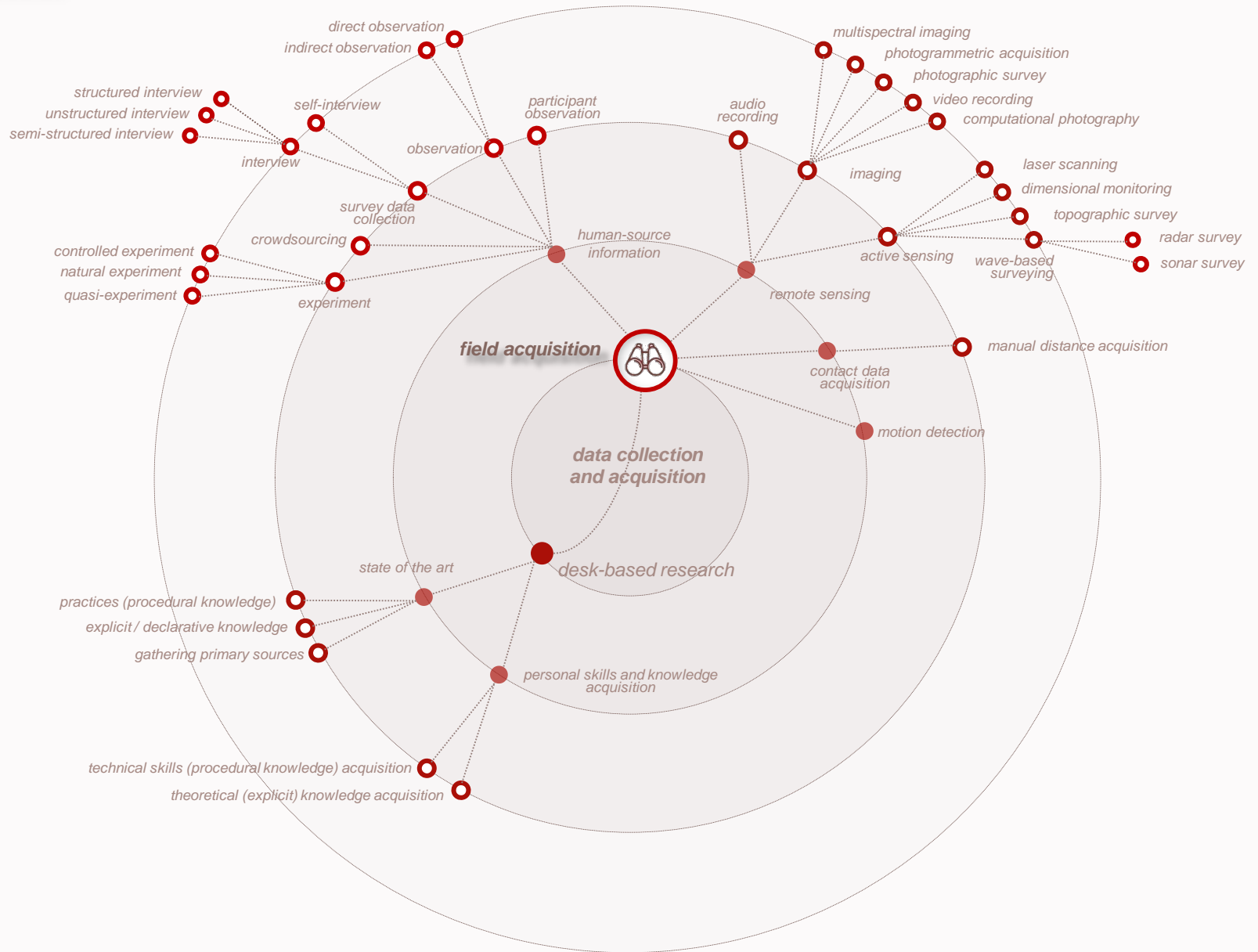




# Record-keeping of digital resources and activities

methods

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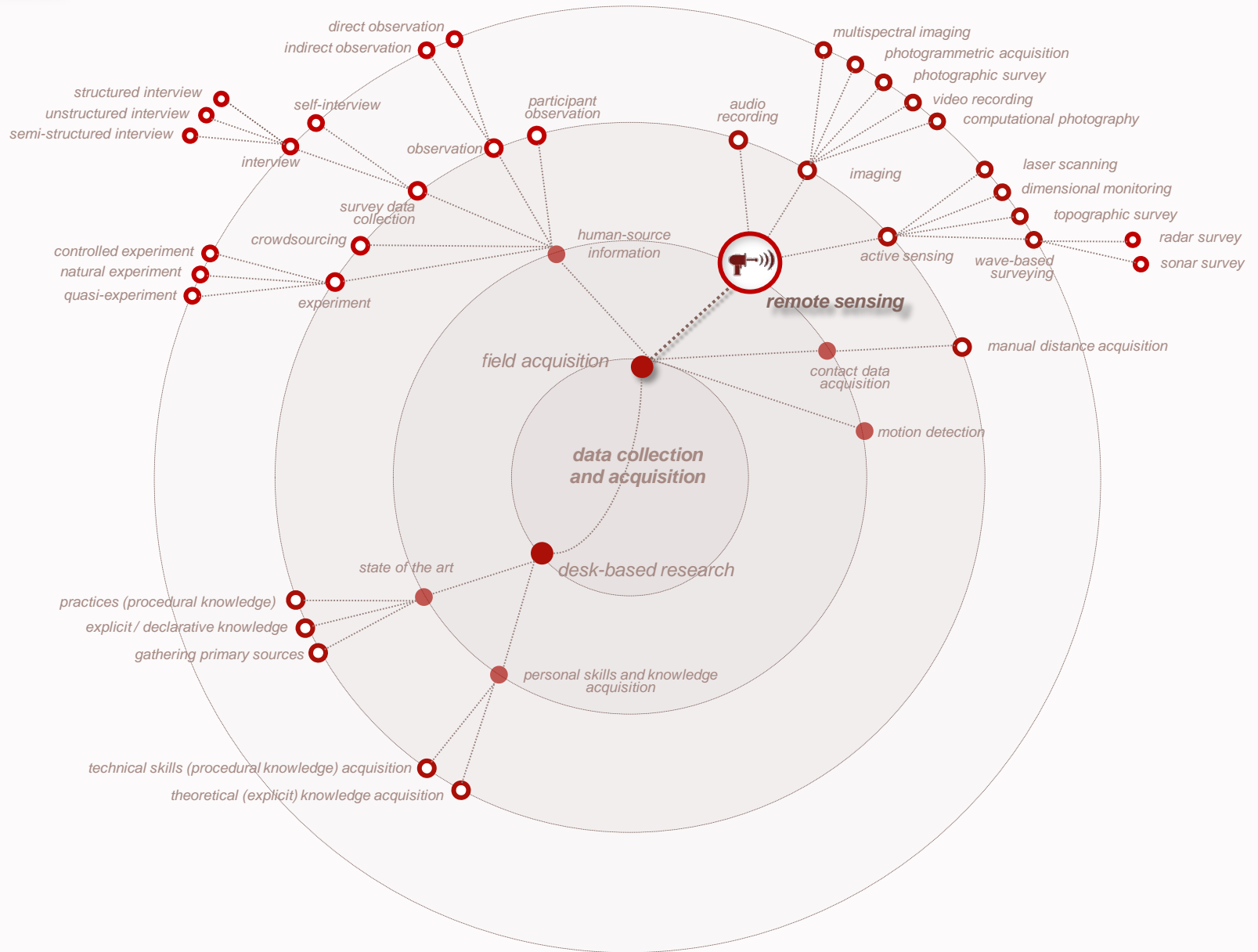




# Record-keeping of digital resources and activities

methods

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# Record-keeping of digital resources and activities

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methods

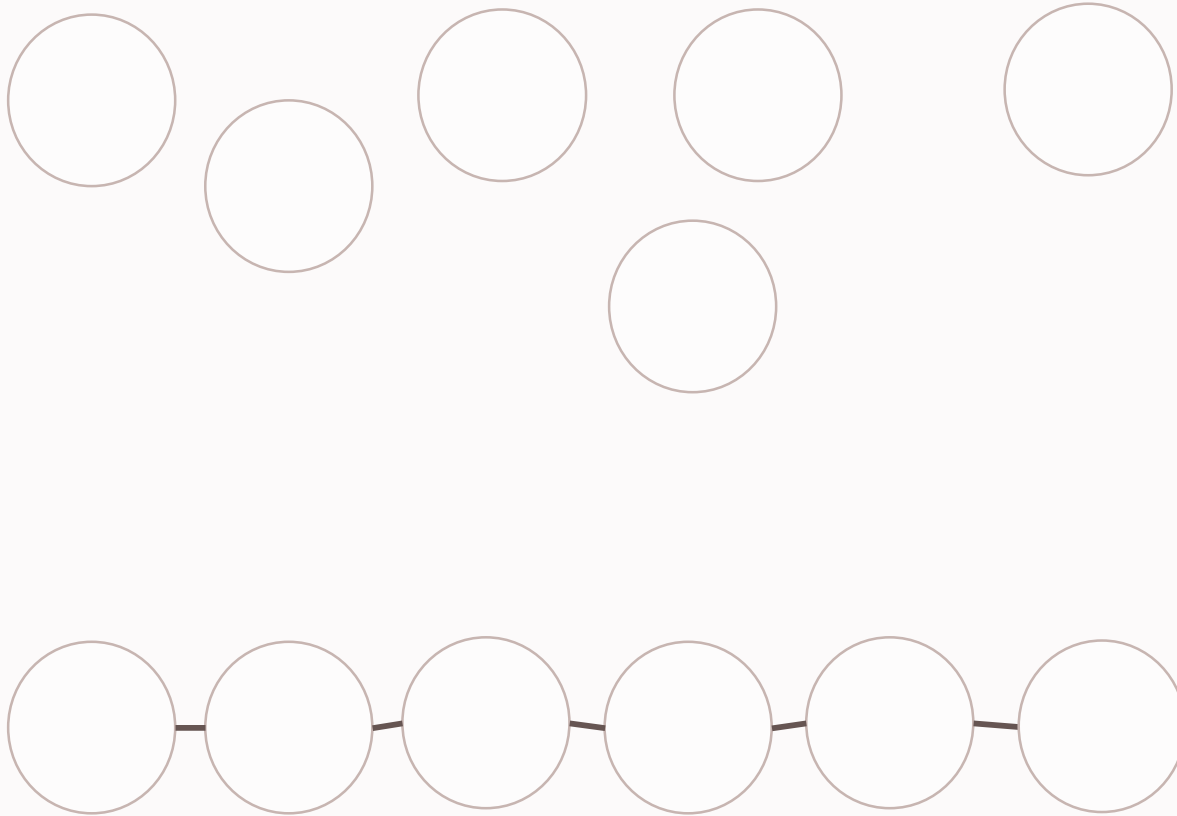




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methods

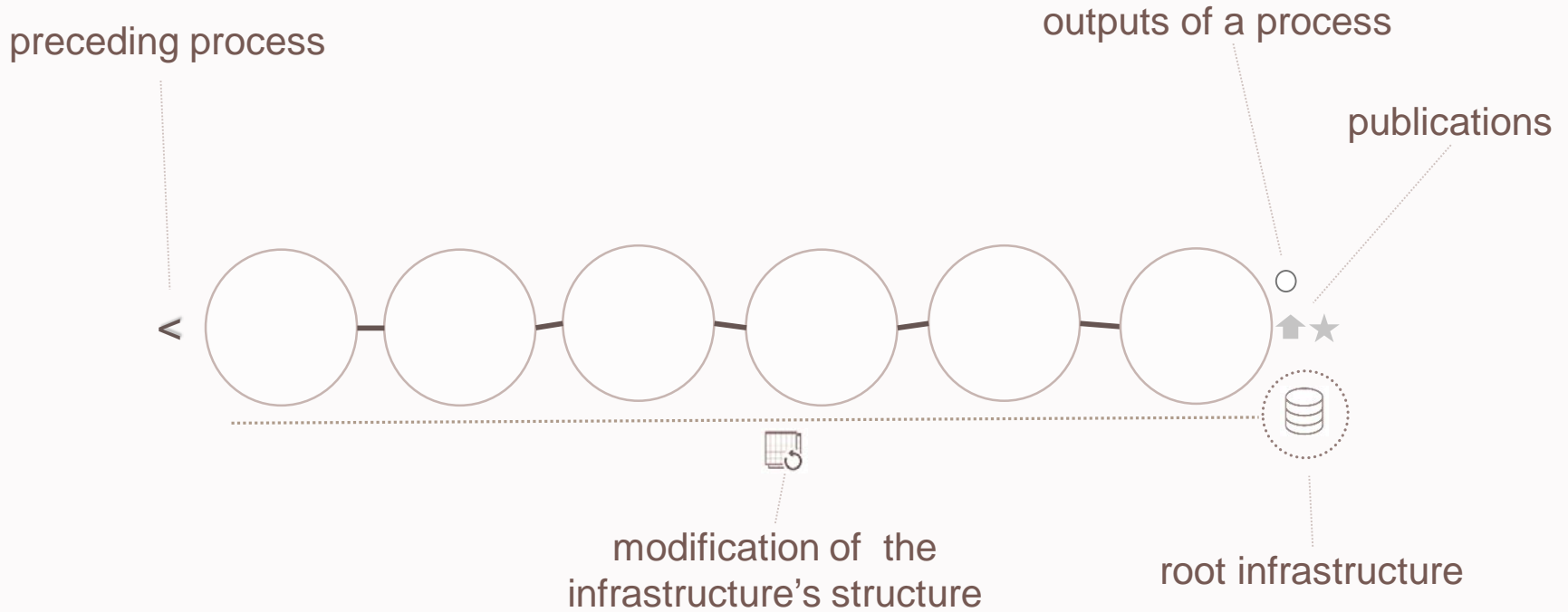




# Record-keeping of digital resources and activities

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methods





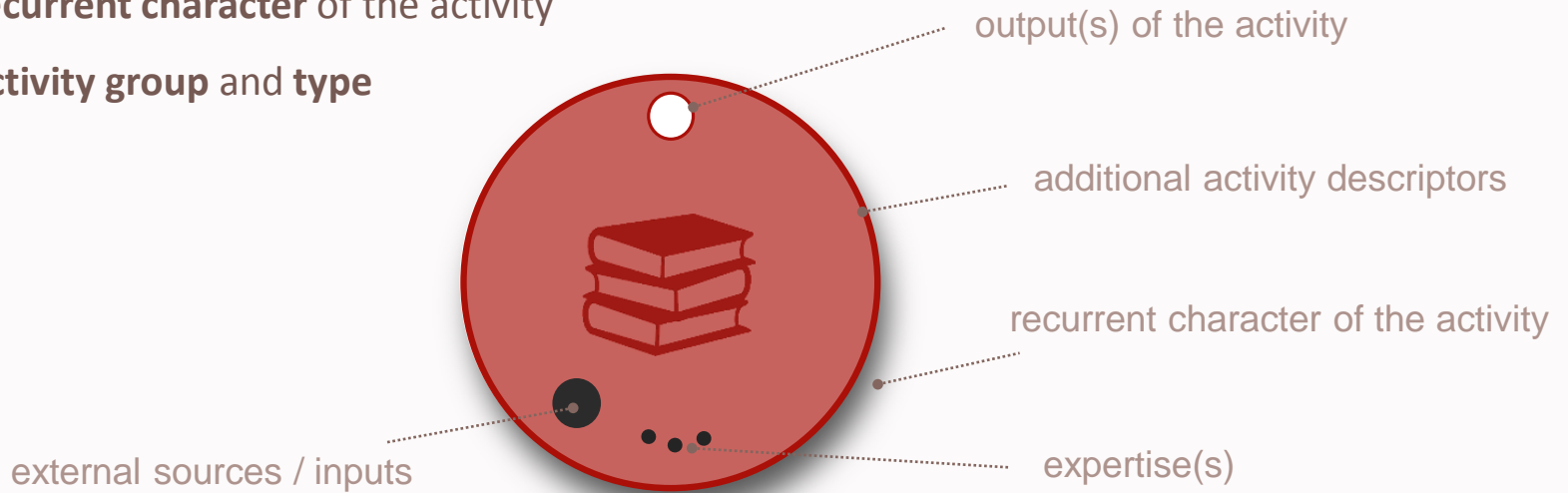
# Record-keeping of digital resources and activities

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methods

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**

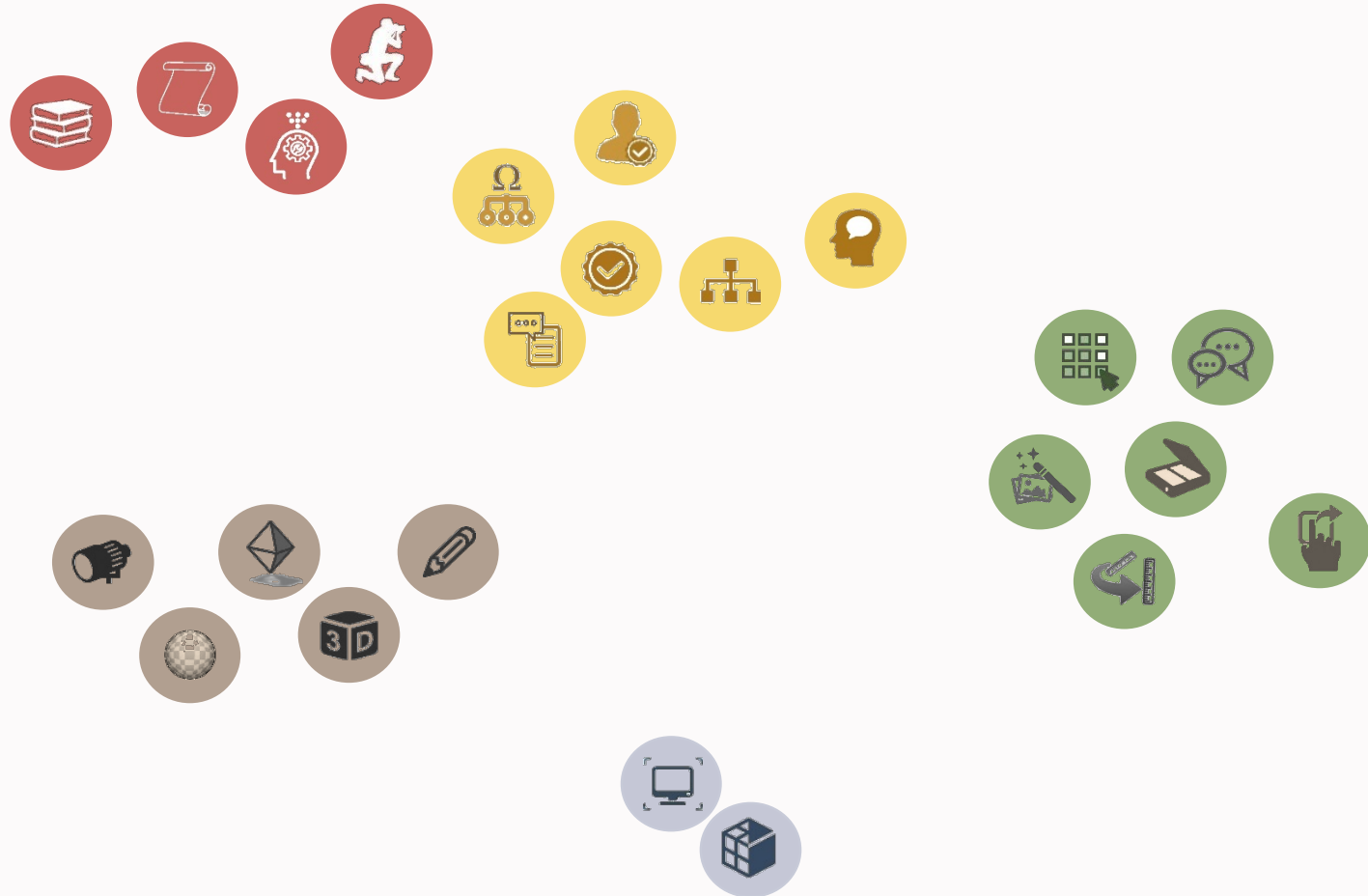




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methods





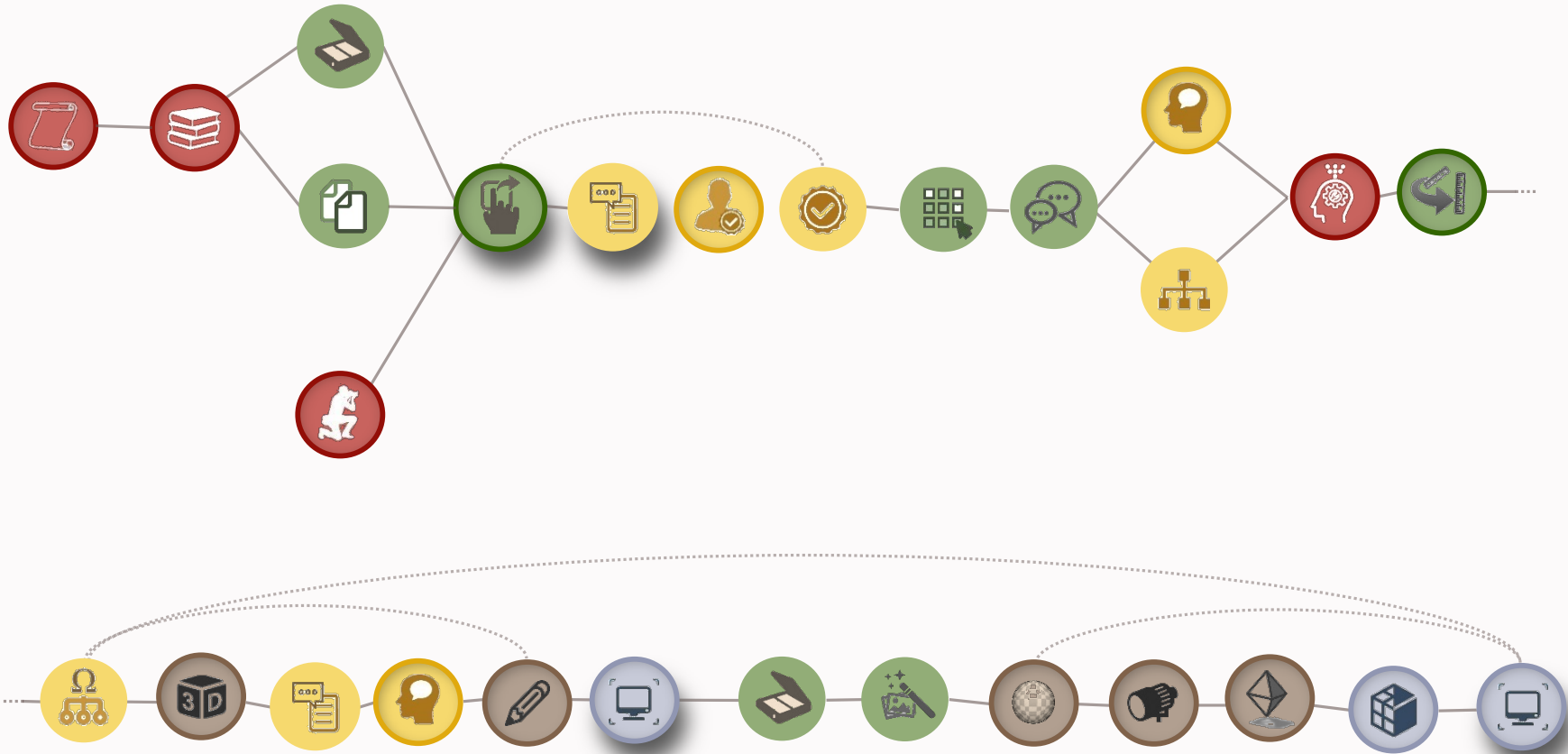


# Record-keeping of digital resources and activities

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methods

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## Record-keeping of digital resources and activities

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methods

How to enable the comparability of research workflows ?

### information visualisation

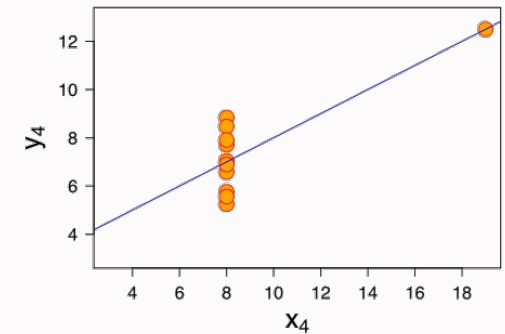
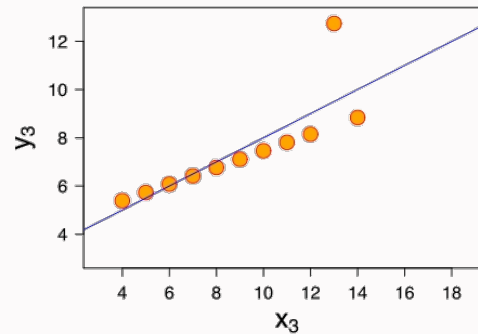
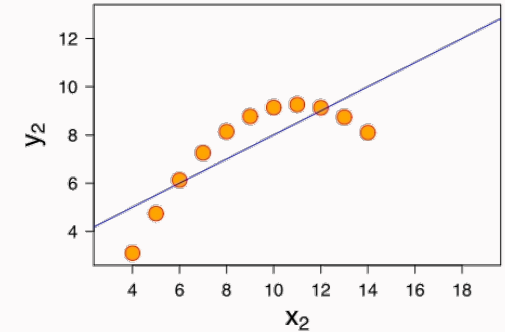
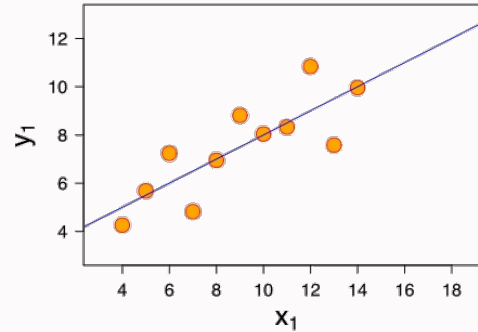
#### visual reasoning

*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, ...***

### Anscombe's quartet

| I    |       | II   |      | III  |       | IV   |       |
|------|-------|------|------|------|-------|------|-------|
| x    | y     | x    | y    | x    | y     | x    | y     |
| 10.0 | 8.04  | 10.0 | 9.14 | 10.0 | 7.46  | 8.0  | 6.58  |
| 8.0  | 6.95  | 8.0  | 8.14 | 8.0  | 6.77  | 8.0  | 5.76  |
| 13.0 | 7.58  | 13.0 | 8.74 | 13.0 | 12.74 | 8.0  | 7.71  |
| 9.0  | 8.81  | 9.0  | 8.77 | 9.0  | 7.11  | 8.0  | 8.84  |
| 11.0 | 8.33  | 11.0 | 9.26 | 11.0 | 7.81  | 8.0  | 8.47  |
| 14.0 | 9.96  | 14.0 | 8.10 | 14.0 | 8.84  | 8.0  | 7.04  |
| 6.0  | 7.24  | 6.0  | 6.13 | 6.0  | 6.08  | 8.0  | 5.25  |
| 4.0  | 4.26  | 4.0  | 3.10 | 4.0  | 5.39  | 19.0 | 12.50 |
| 12.0 | 10.84 | 12.0 | 9.13 | 12.0 | 8.15  | 8.0  | 5.56  |
| 7.0  | 4.82  | 7.0  | 7.26 | 7.0  | 6.42  | 8.0  | 7.91  |
| 5.0  | 5.68  | 5.0  | 4.74 | 5.0  | 5.73  | 8.0  | 6.89  |



*> allows us to identify relations and patterns, spot trends and exceptions in data, causes, ...*

*> enables comparisons*

search  
rechercher  
durchsuchen  
otsi  
deursoek  
szukaj  
uzerinde ara



*> limits dependence on languages*

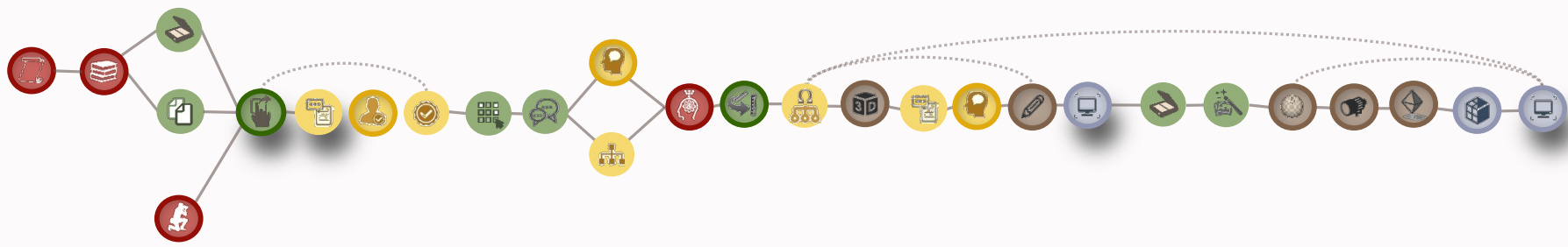


# Record-keeping of digital resources and activities

methods

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(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.



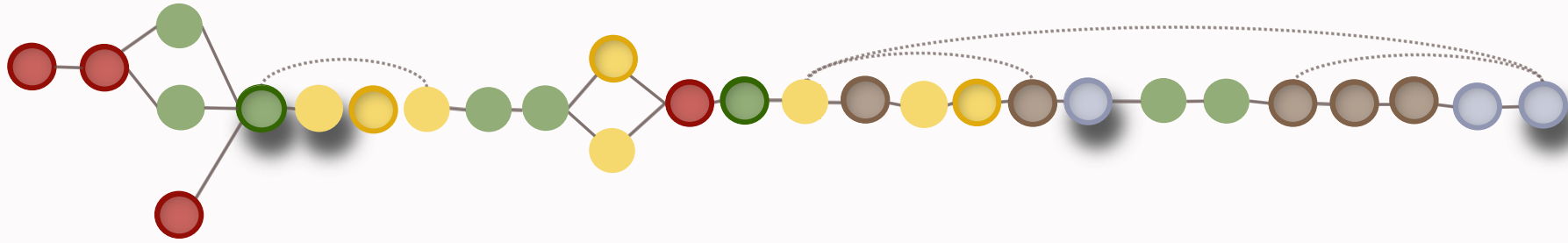
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methods

reason using types of activities

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data filtering and treatment

data analysis

data collection / acquisition

added value procedural activities

finalisation



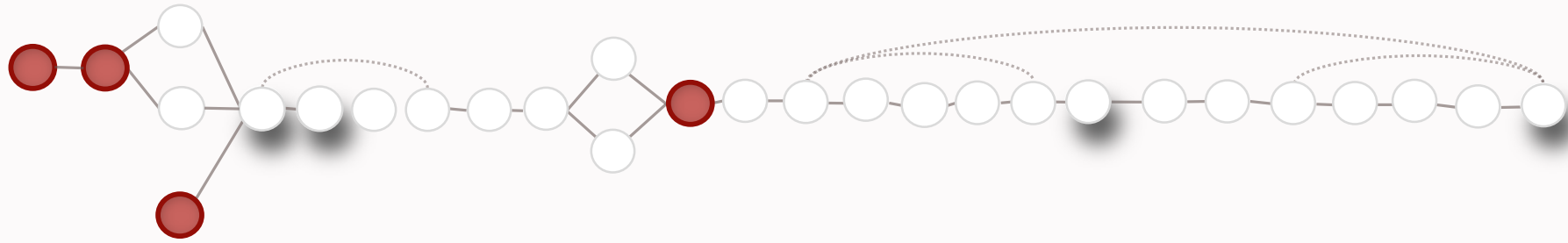
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methods

patterns, regularities or exceptions

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**data collection / acquisition**



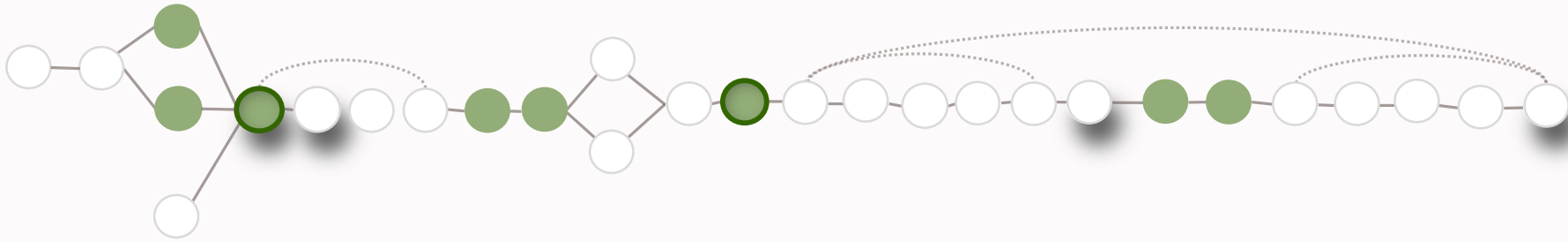
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data filtering and treatment





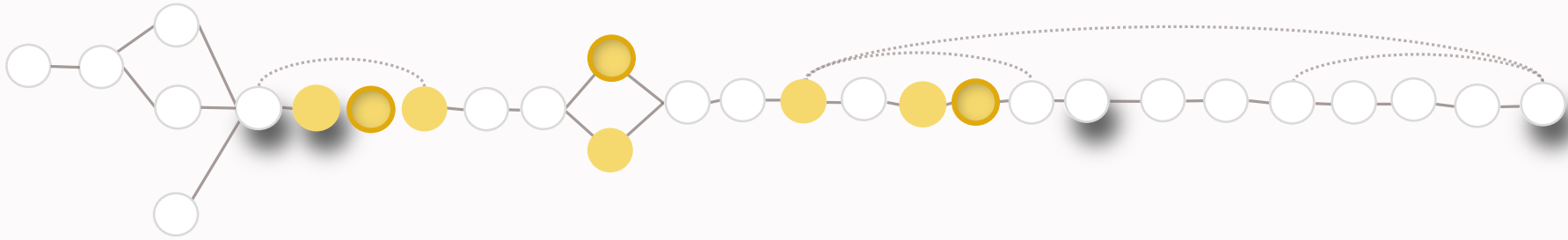
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patterns, regularities or exceptions

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data analysis



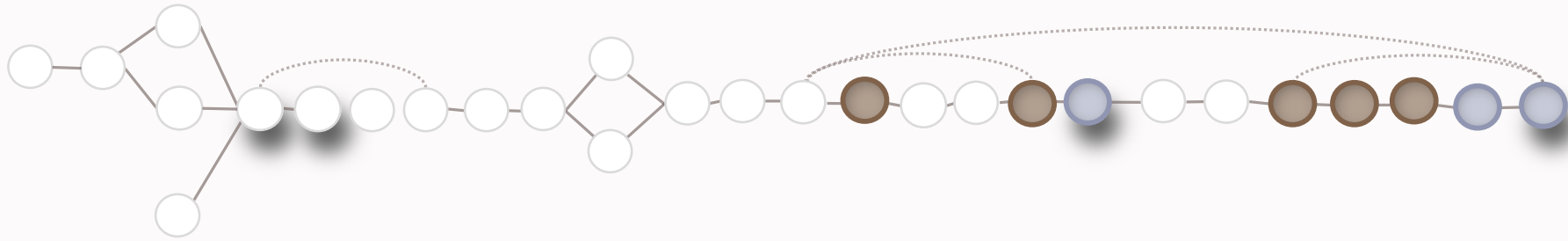
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methods

patterns, regularities or exceptions

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added value procedural activities

finalisation



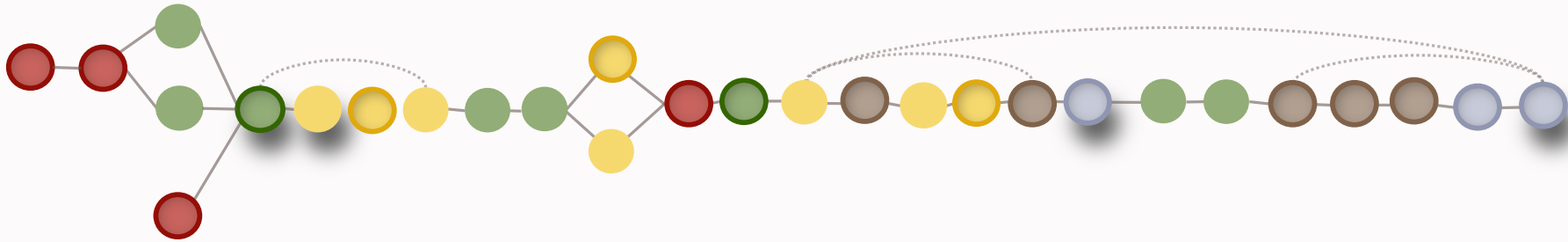
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methods

predominant group of activities

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data filtering and treatment



data analysis



data collection / acquisition



added value procedural activities



finalisation

data filtering and treatment

data analysis

data collection / acquisition

added value procedural activities

finalisation



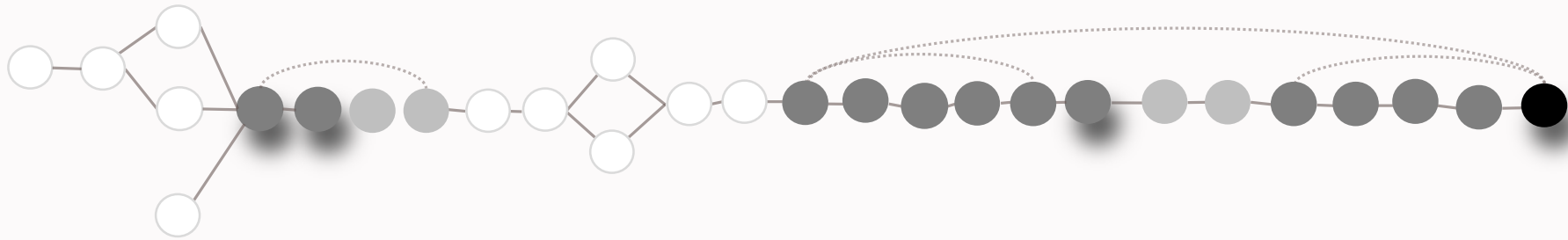
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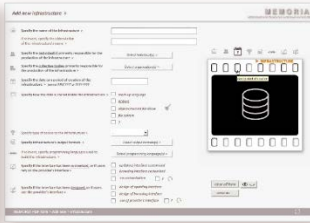
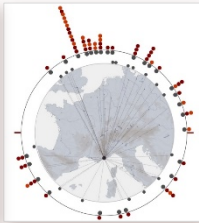
methods

level of recurrences inside a process

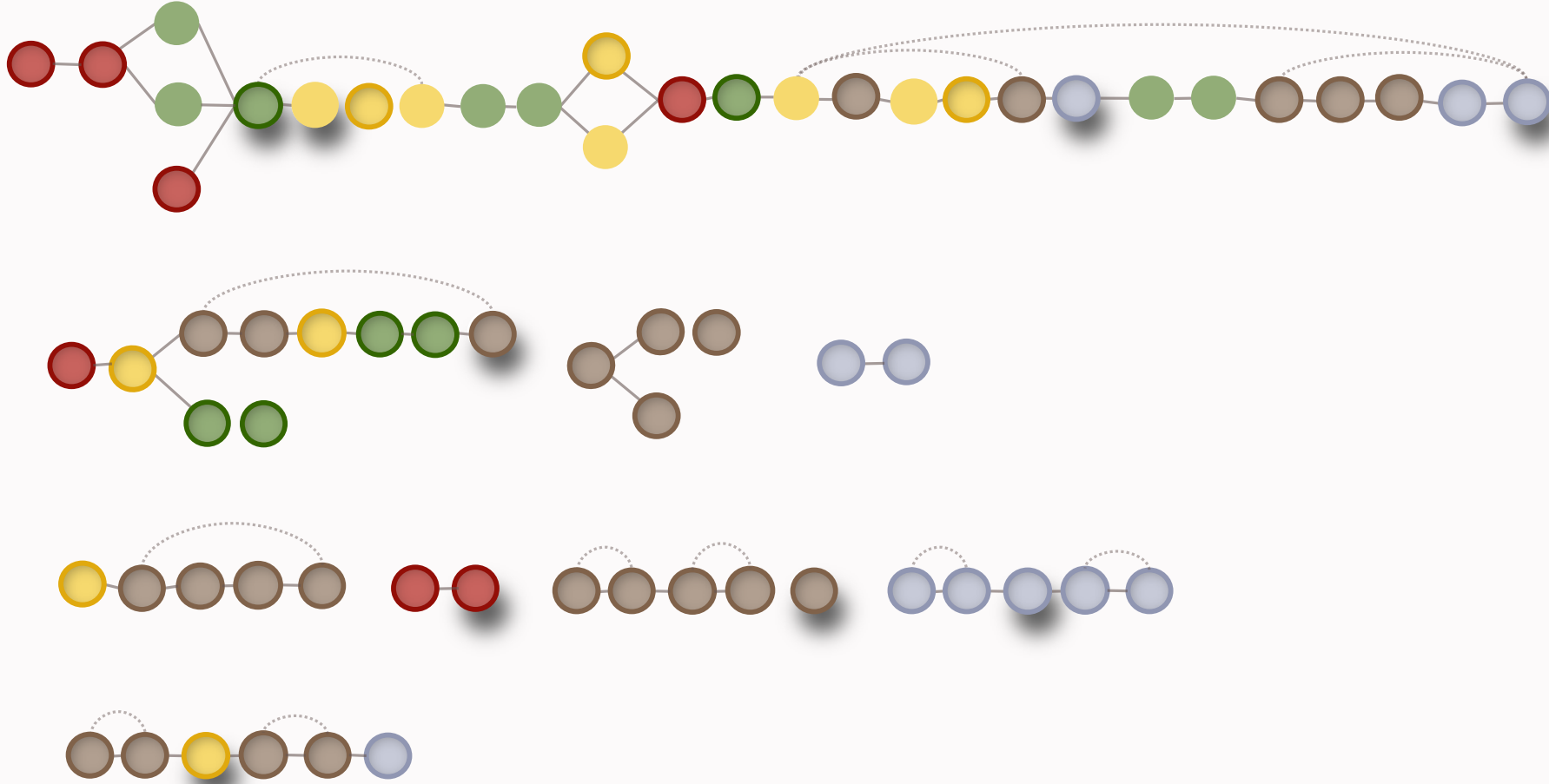
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recurrent activities



# methods comparisons between processes





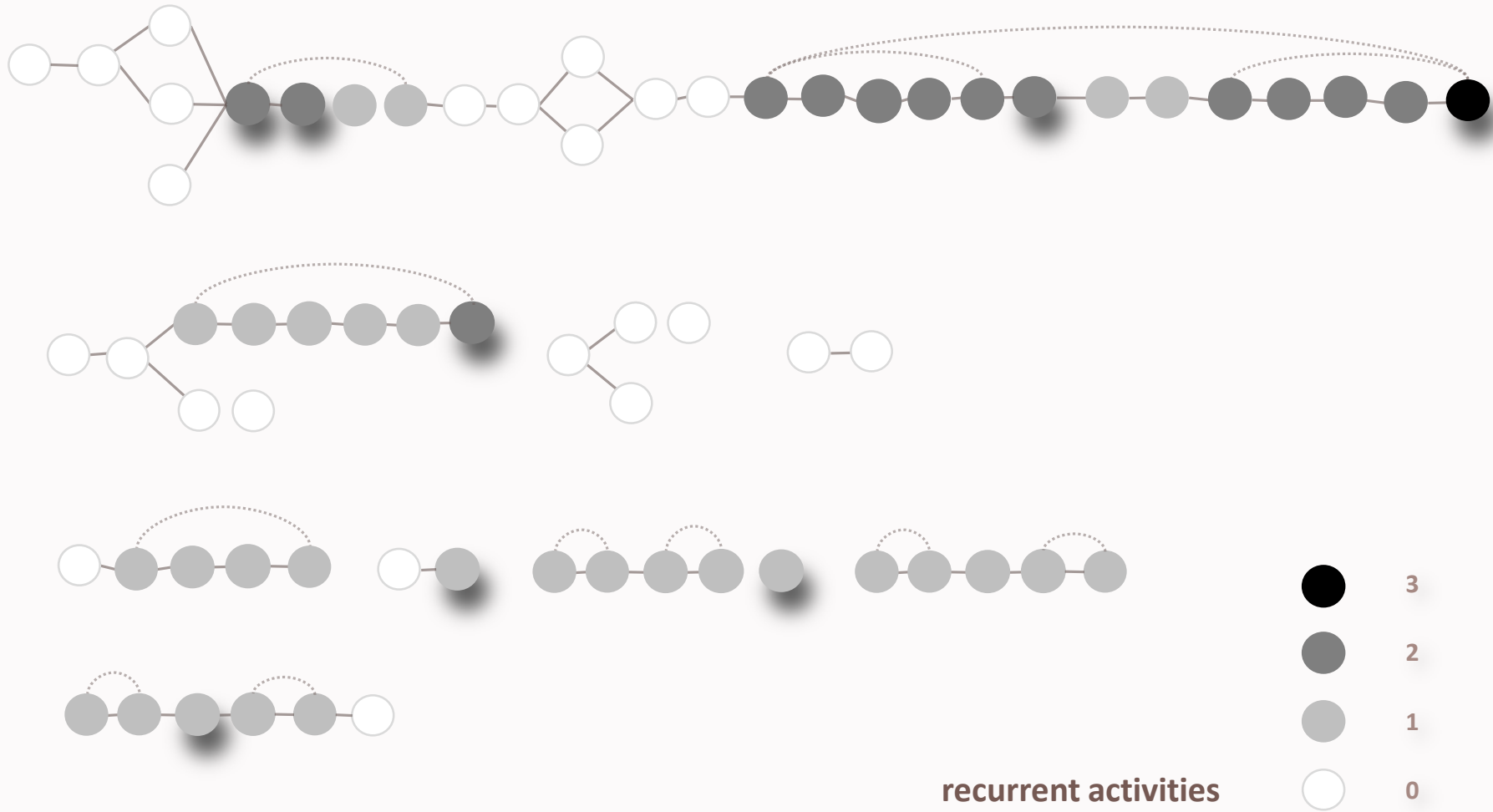
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methods

comparisons between processes  
level of recurrences

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recurrent activities

-  3
-  2
-  1
-  0

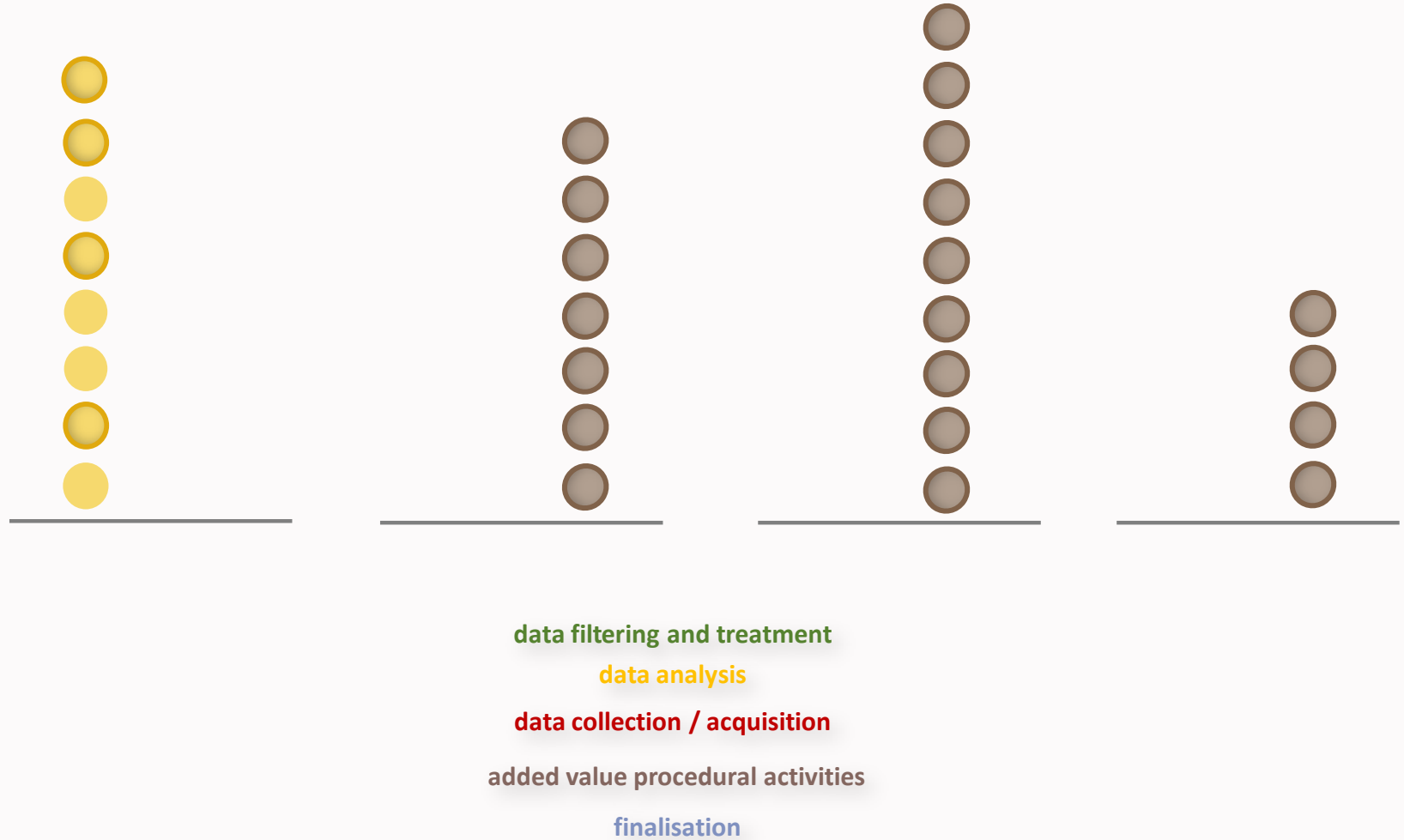


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methods

comparisons between processes  
predominant group of activities



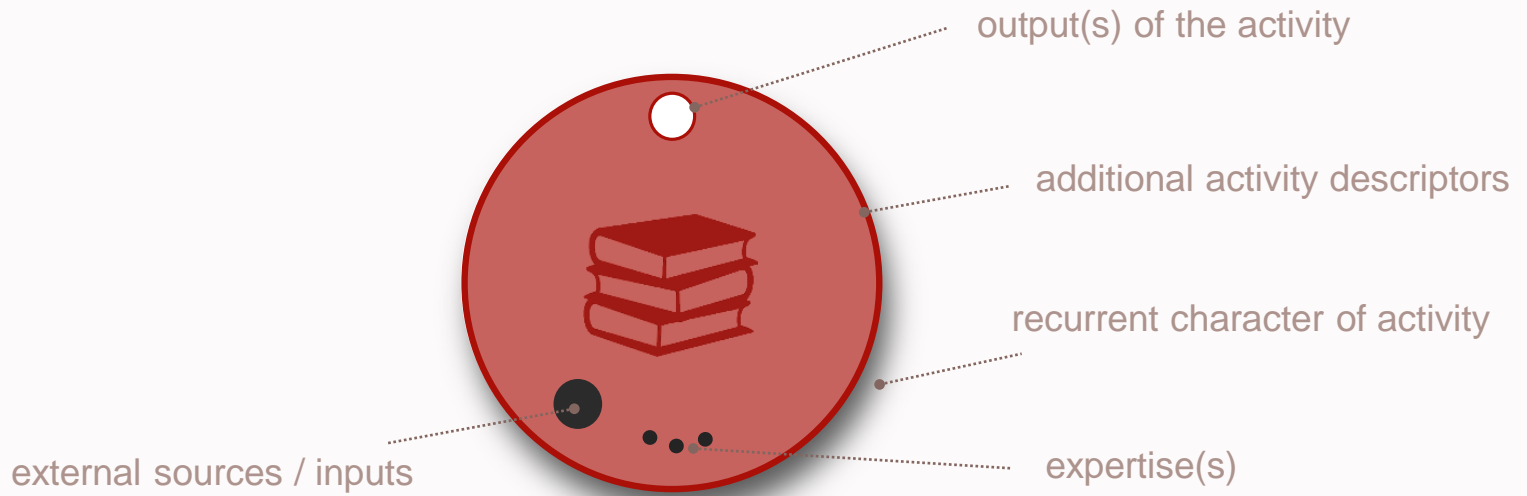


# Record-keeping of digital resources and activities

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methods  
visual language

A significant point – a will to privilege visual languages



*Multidimensional icon of an activity  
(state of the art > explicit / declarative knowledge )*





# Record-keeping of digital resources and activities

methods

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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.



# Record-keeping of digital resources and activities

methods

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A significant point – a will to privilege visual languages



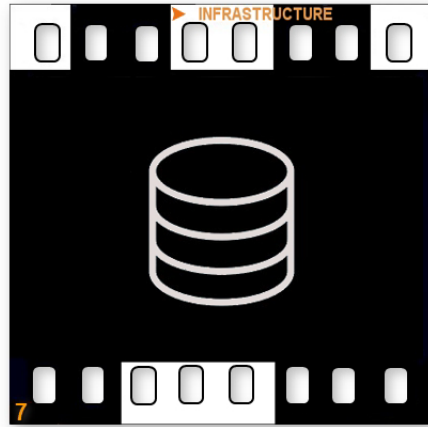
A “film” metaphor to sum up the completion of the documentation effort.



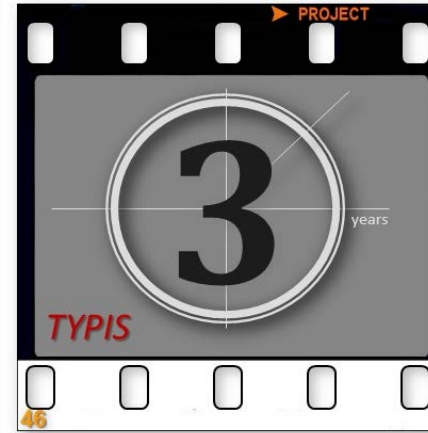
# Record-keeping of digital resources and activities

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methods



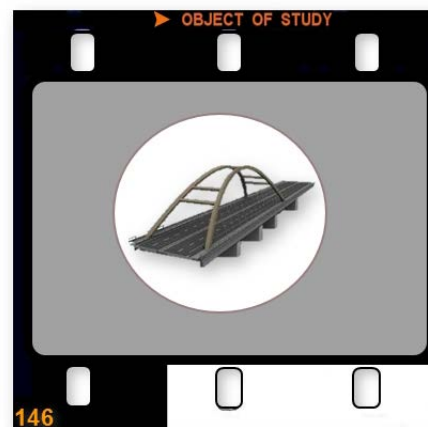
*an infrastructure*



*a project*



*a source*



*an object of study*



# Record-keeping of digital resources and activities

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methods

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



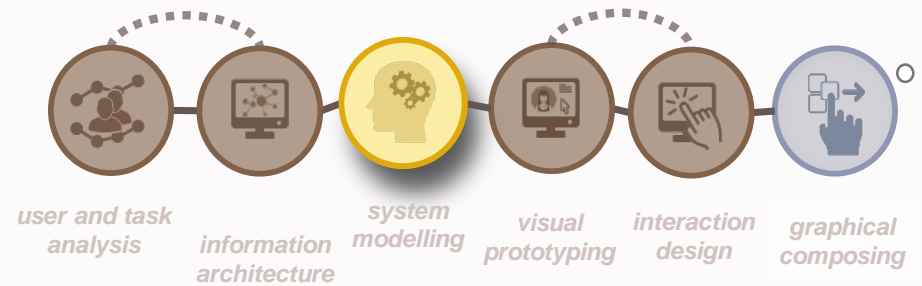
*A “film” metaphor to sum up the completion of the documentation effort.*





These interfaces should be used to:

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





## Record-keeping of digital resources and activities

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presentation  
roundup

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.*



Record-keeping of digital resources and activities  
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presentation  
roundup

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*

*<http://memoria.gamsau.archi.fr/projet/objectives.php?lang=en>*