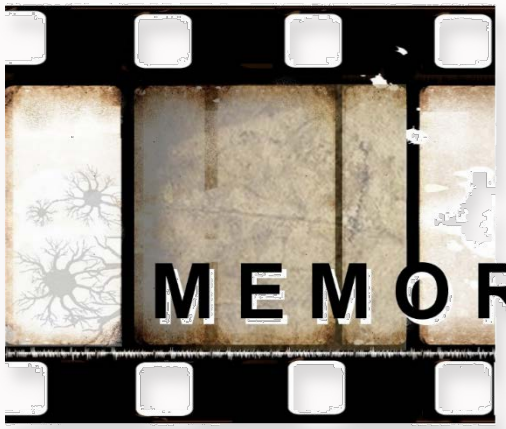
UMR 3495 CNRS/MC MAP (Modèles et simulations pour l'Architecture et le Patrimoine)
I. Dudek, J.Y. Blaise

Enabling the comparability of research workflows: a case study



Mémorisation de ressources numériques et d'activités

Record-keeping of digital resources and activities

CAA 2019, *Check Object Integrity* – 23-27 April 2019, Kraków, Poland

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

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**.

case study > evolution of the ensemble of the Town Hall in Kraków

concepts > output, activity, process, …

methods> using visual reasoning and information visualisation to enable the comparability of research workflows

future works >

Enabling the comparability of research workflows: a case study

I. Dudek, J.Y. Blaise (UMR 3495 CNRS/MC MAP)

Study of the evolution of the old Town Hall of Krakow

Enabling the comparability of research workflows: a case study

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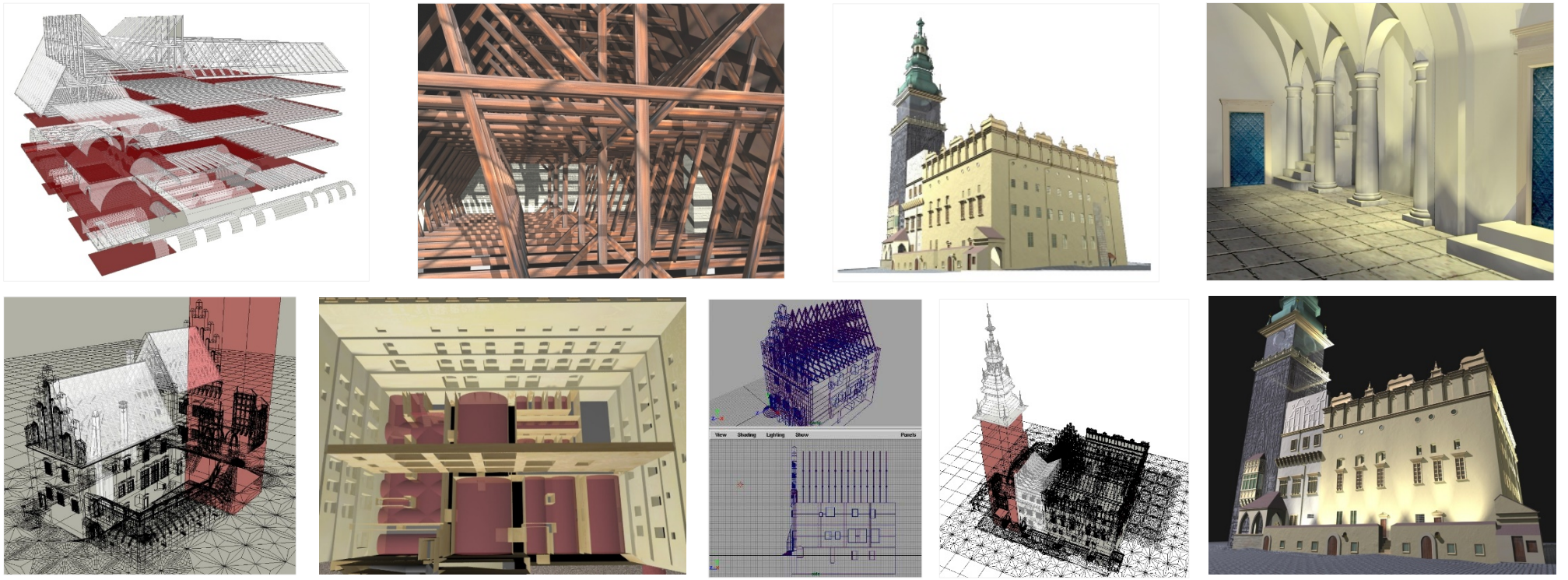
PIXERS fototapety <https://pixers.pl/fototapety/krakow-wieza-ratuszowa-polska-47470463>

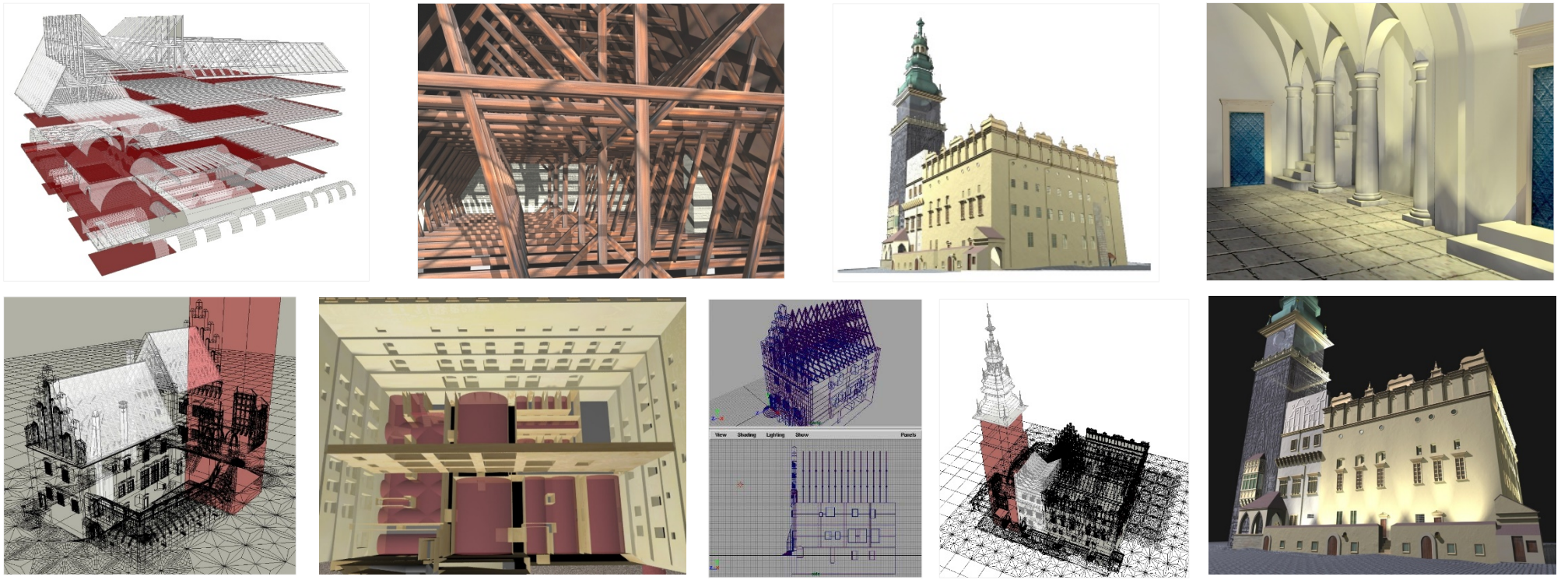
Tangible models (Tactichronie) representing architectural objects present on the Market Square in 1709.

a collection of obsolete 3D Maya files / a set of screenshots / articles



Virtual reconstruction hypotheses of the old Town Hall in Krakow (1997 – 2000)

Can we say something more about the 'production' process of this output ?



Virtual reconstruction hypotheses of the old Town Hall in Krakow (1997 – 2000)

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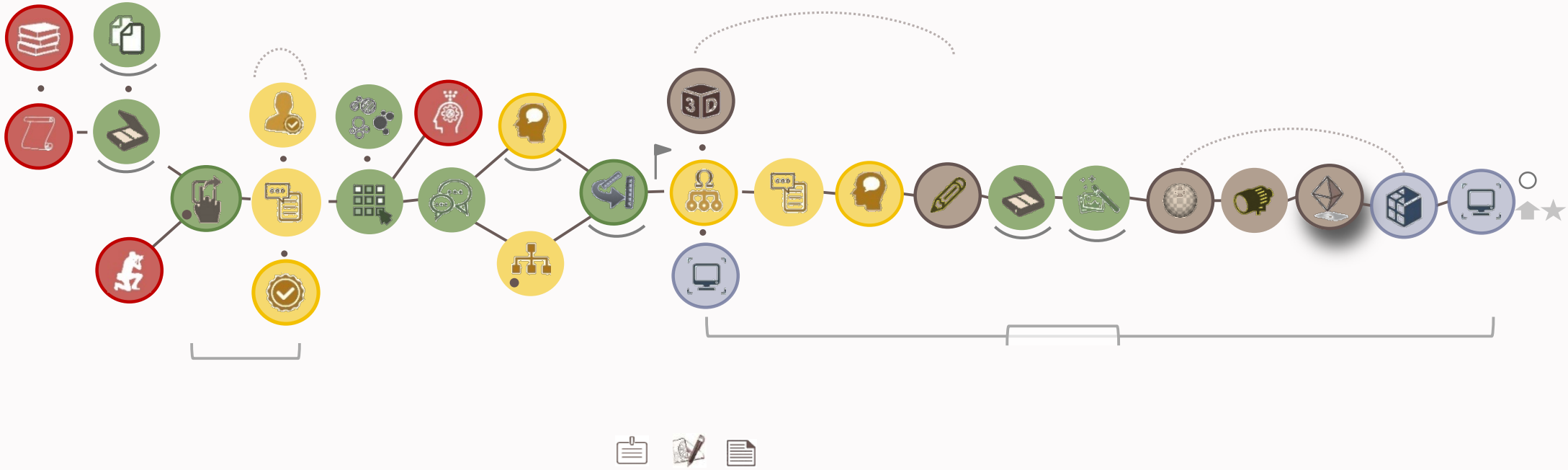
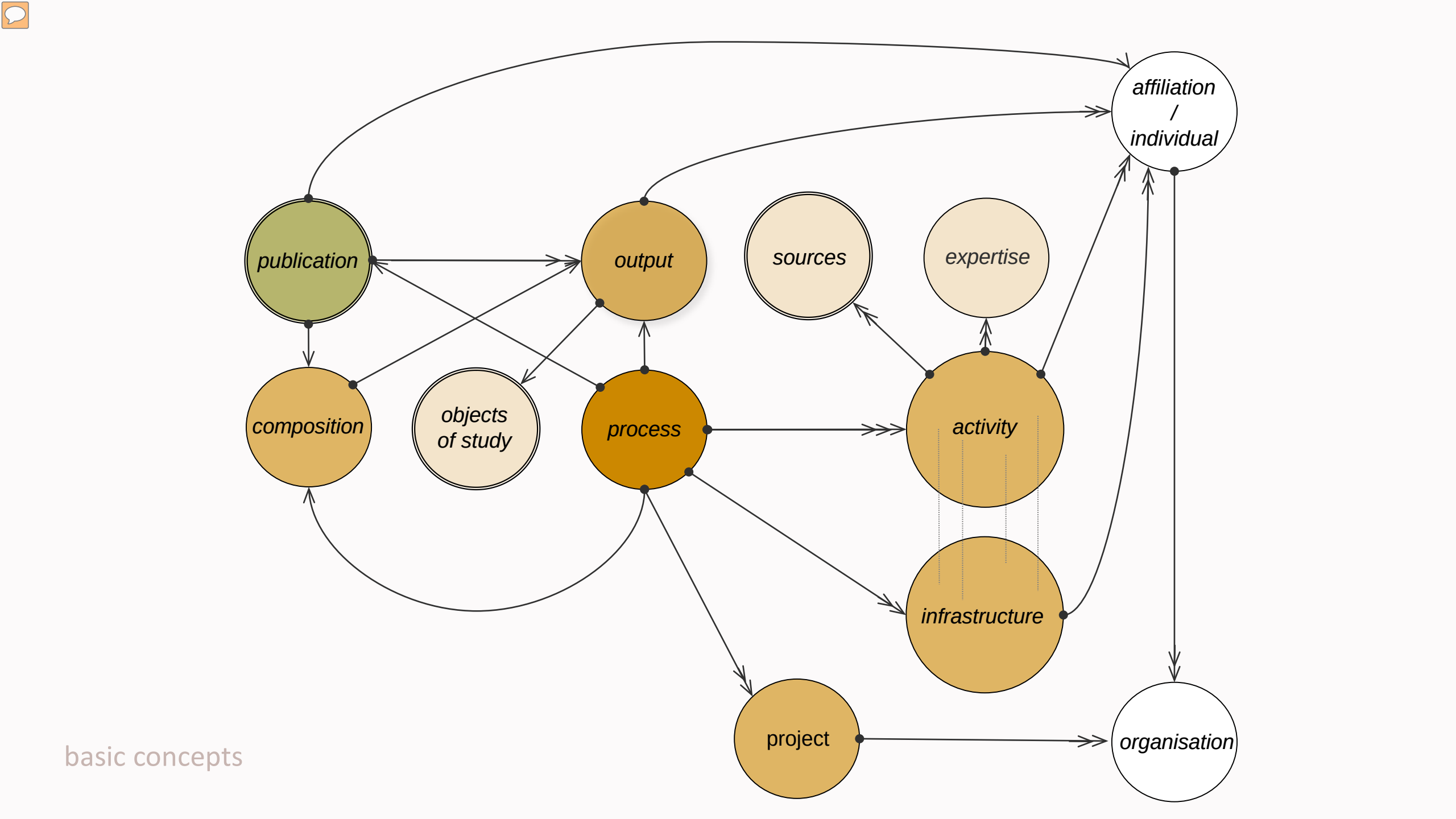
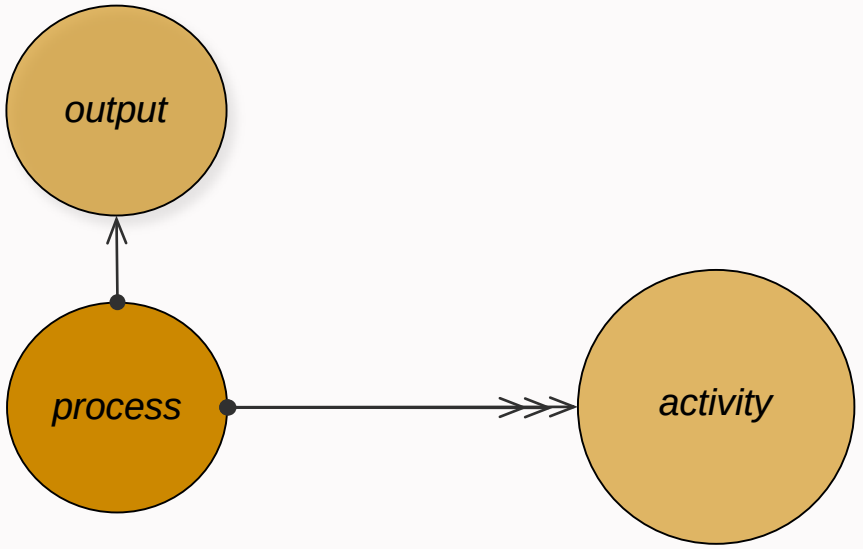
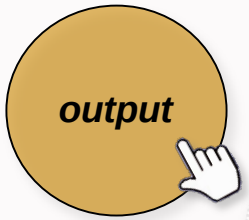
case study



The process of 'production' of 3D models representing virtual reconstruction hypotheses - the old Town Hall in Krakow


affiliation / individual
publication
output
sources
expertise
composition
objects of study
process
activity
infrastructure
project
organisation


output
process
activity

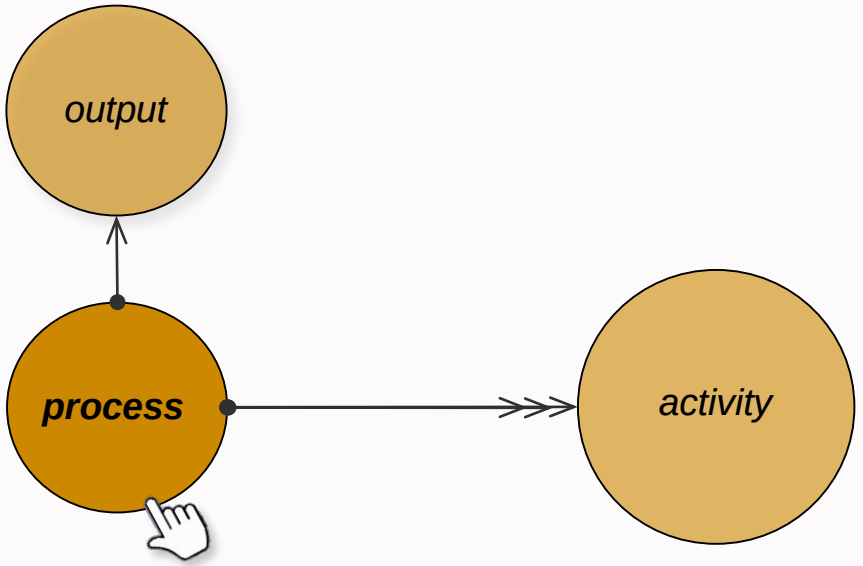


output

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

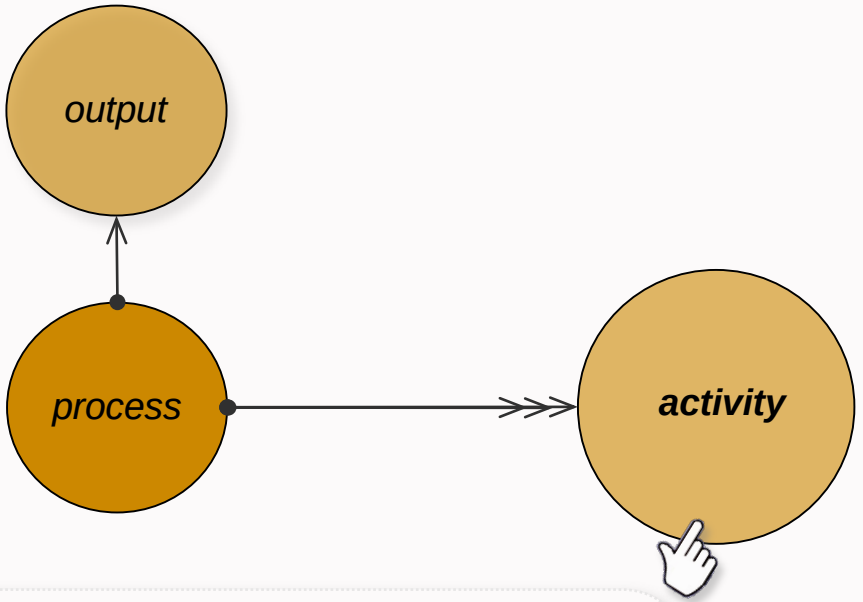
*An output can be a **simple document** or a **set of documents**.*

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., 3D modelling, data conversion, phonological disambiguation

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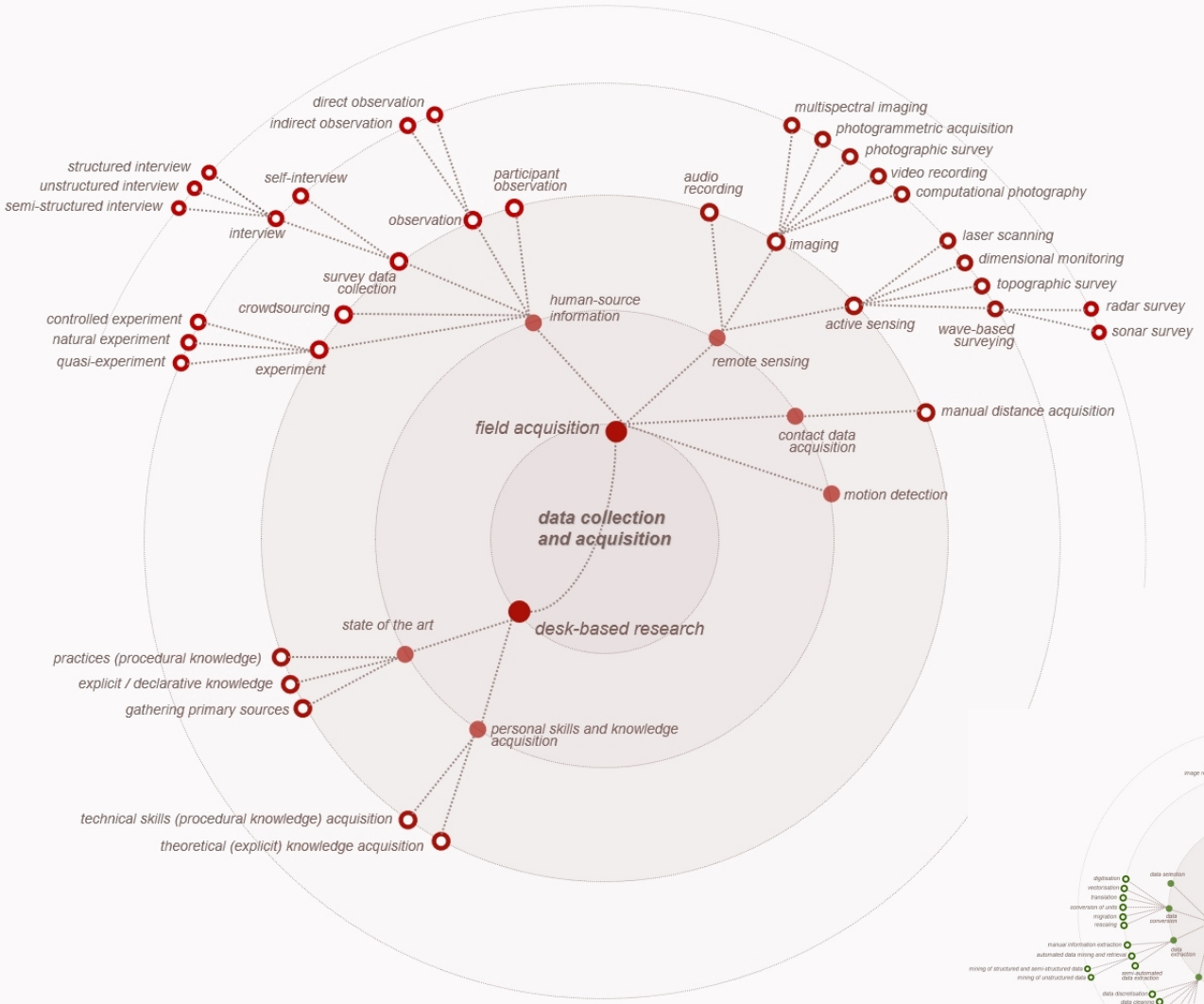

263 activities distributed in 5 groups

I. Dudek, J.Y. Blaise (UMR 3495 CNRS/MC MAP)

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 …).

Enabling the comparability of research workflows: a case study

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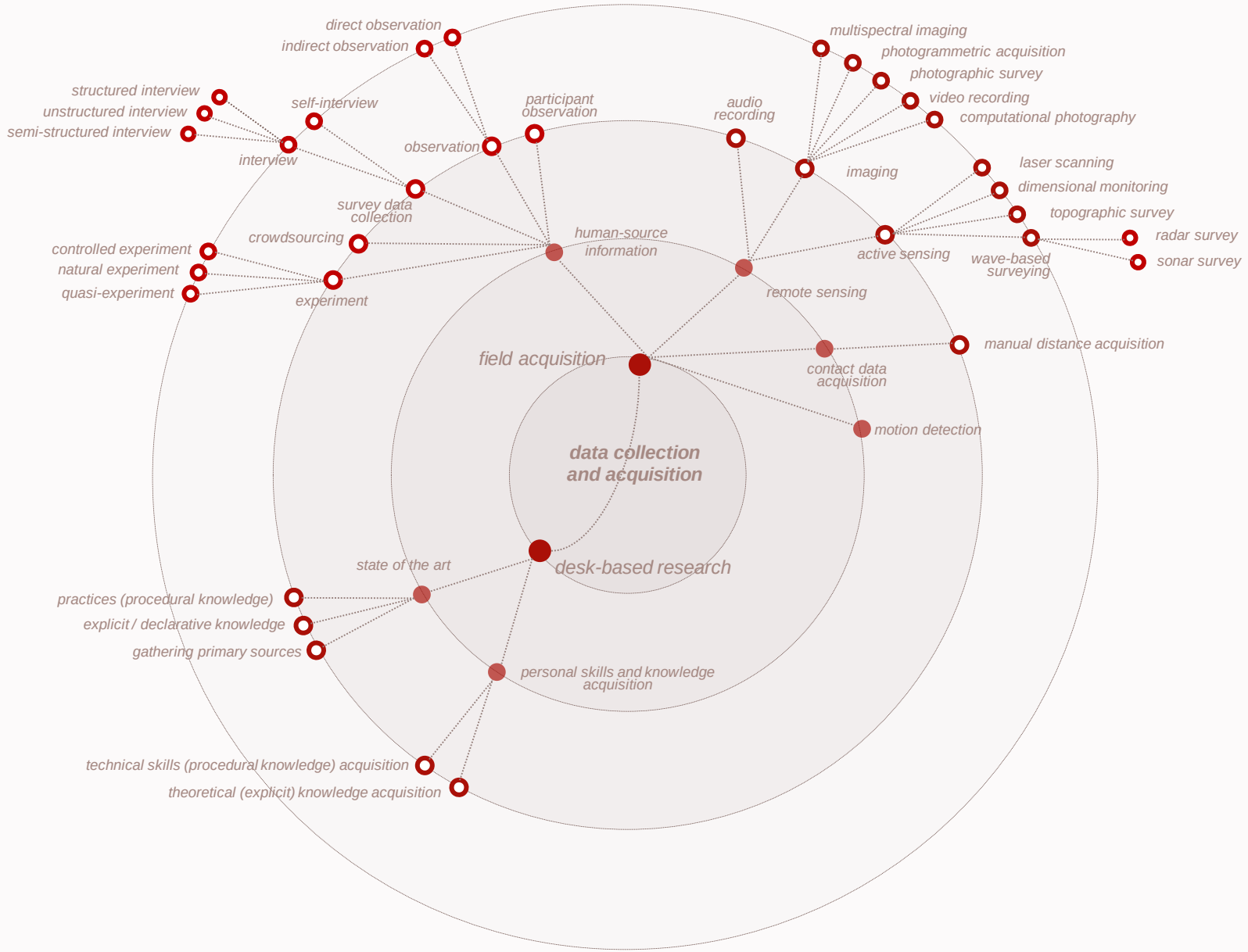
method



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I. Dudek, J.Y. Blaise (UMR 3495 CNRS/MC MAP)

method

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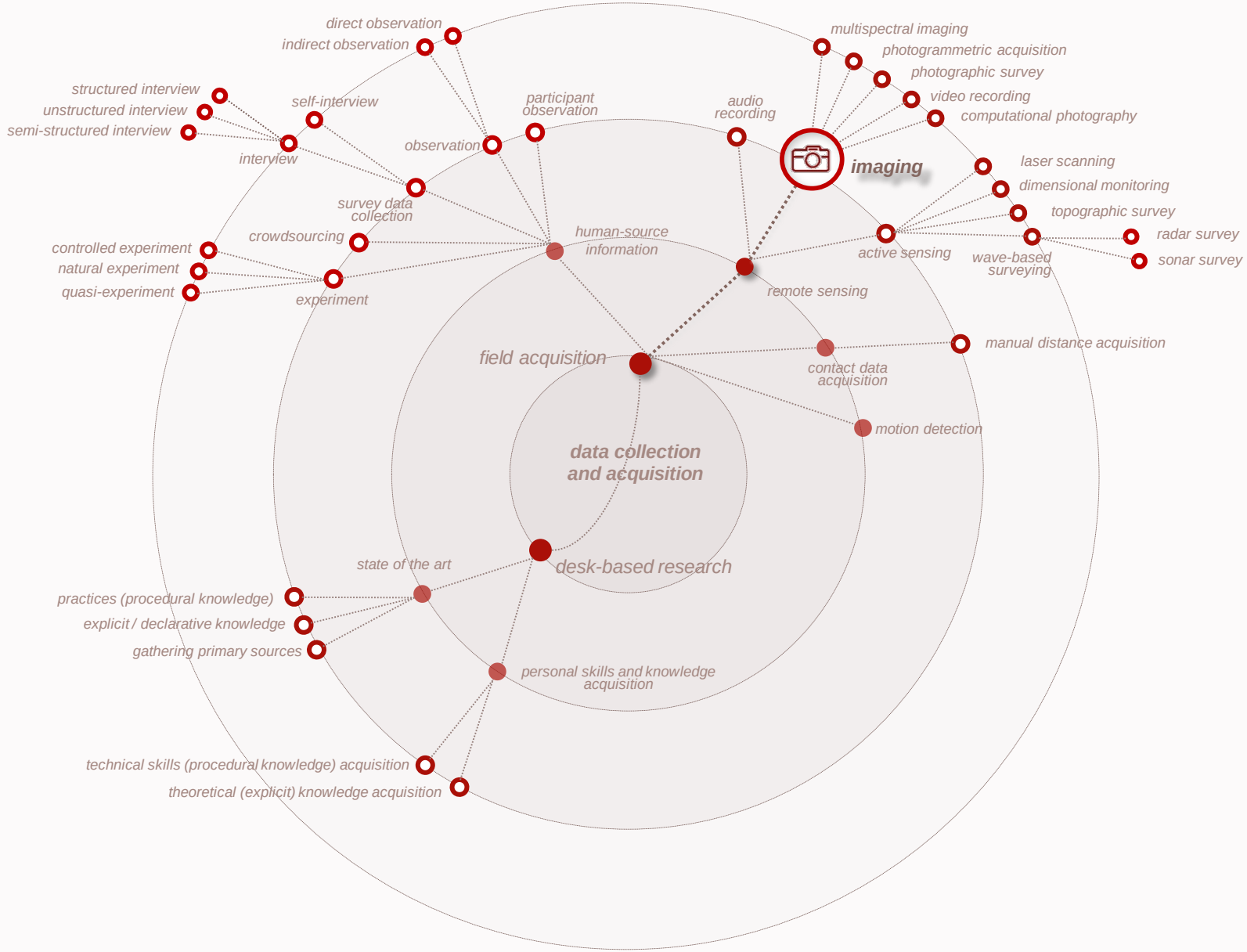

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method

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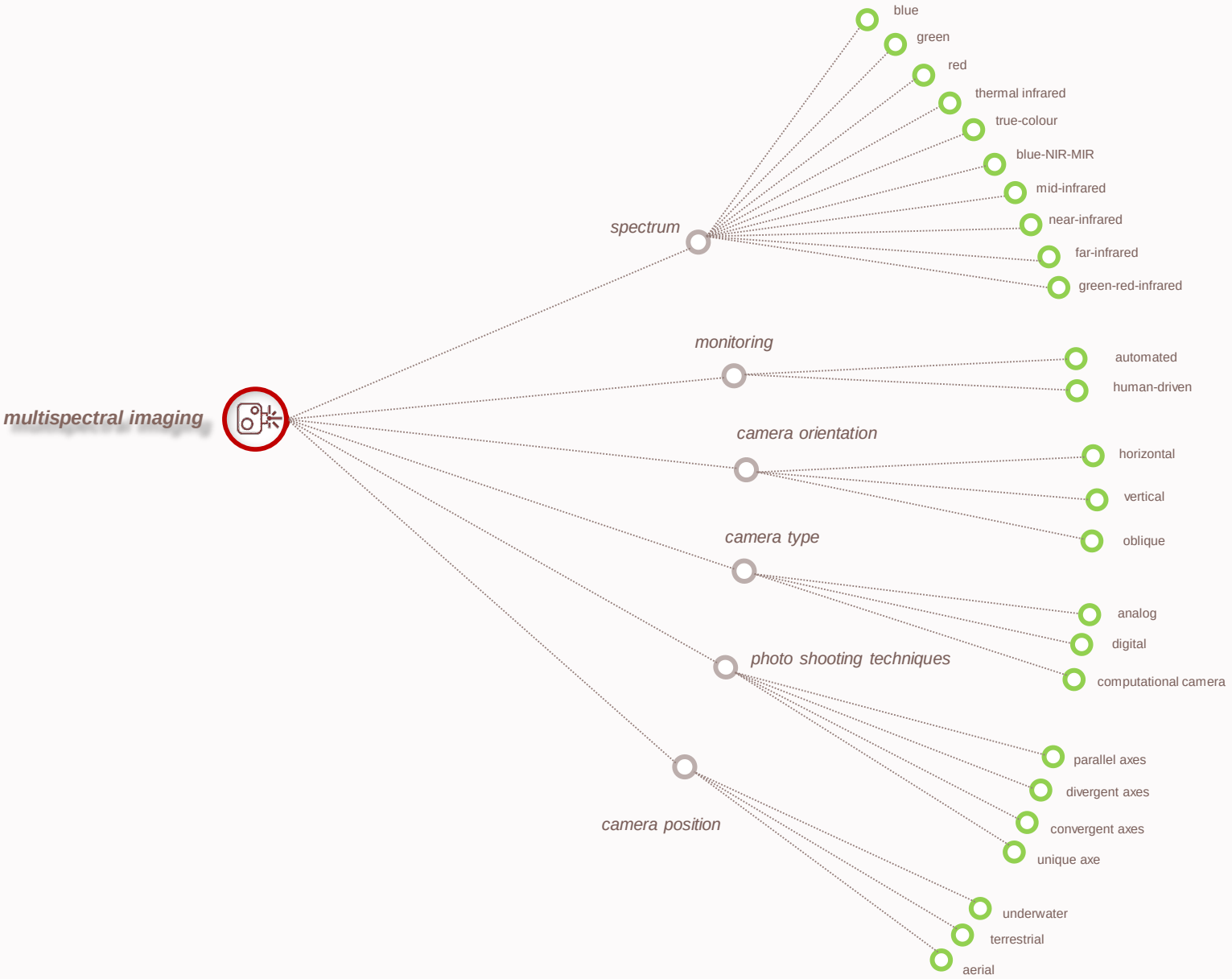

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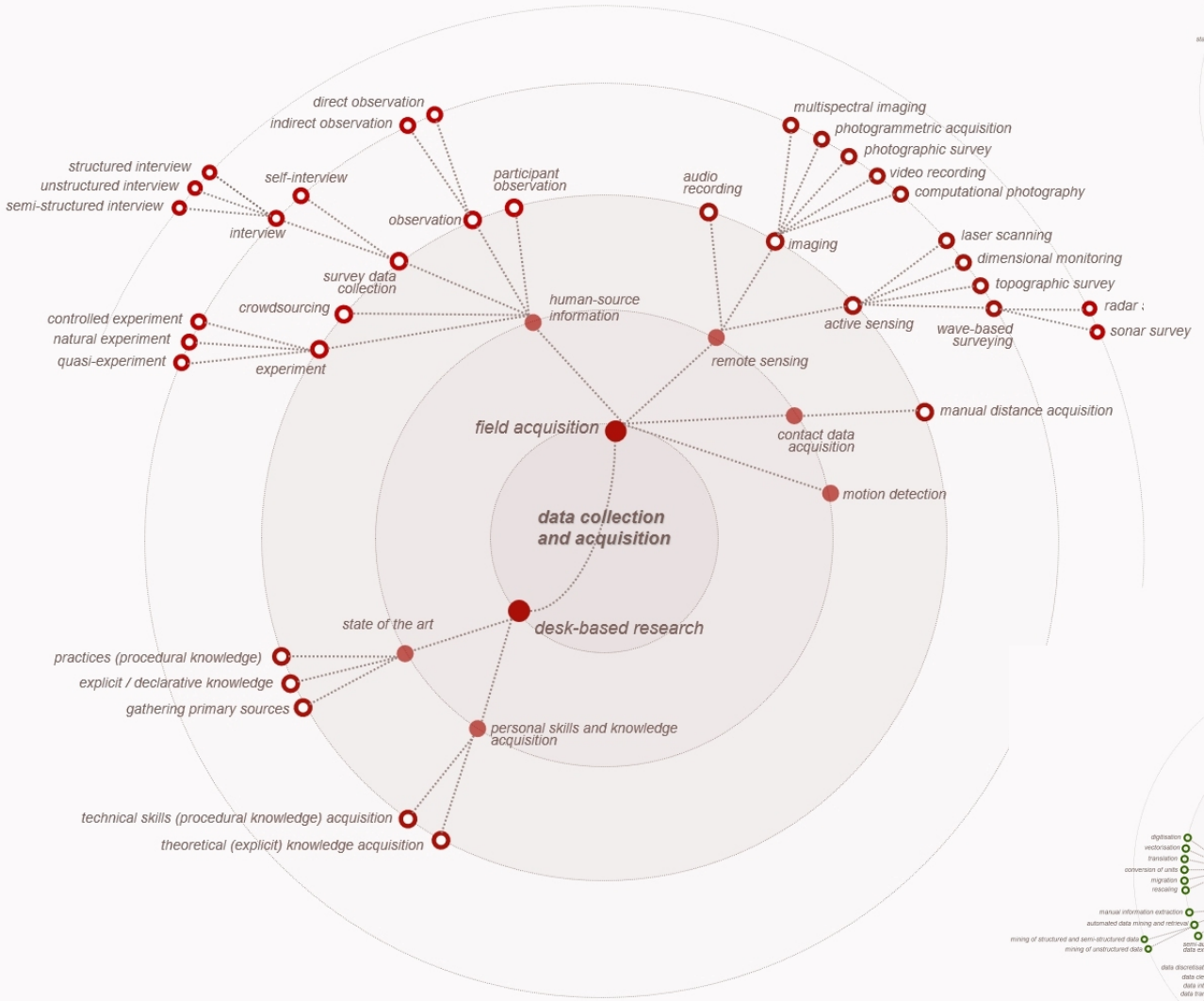
method



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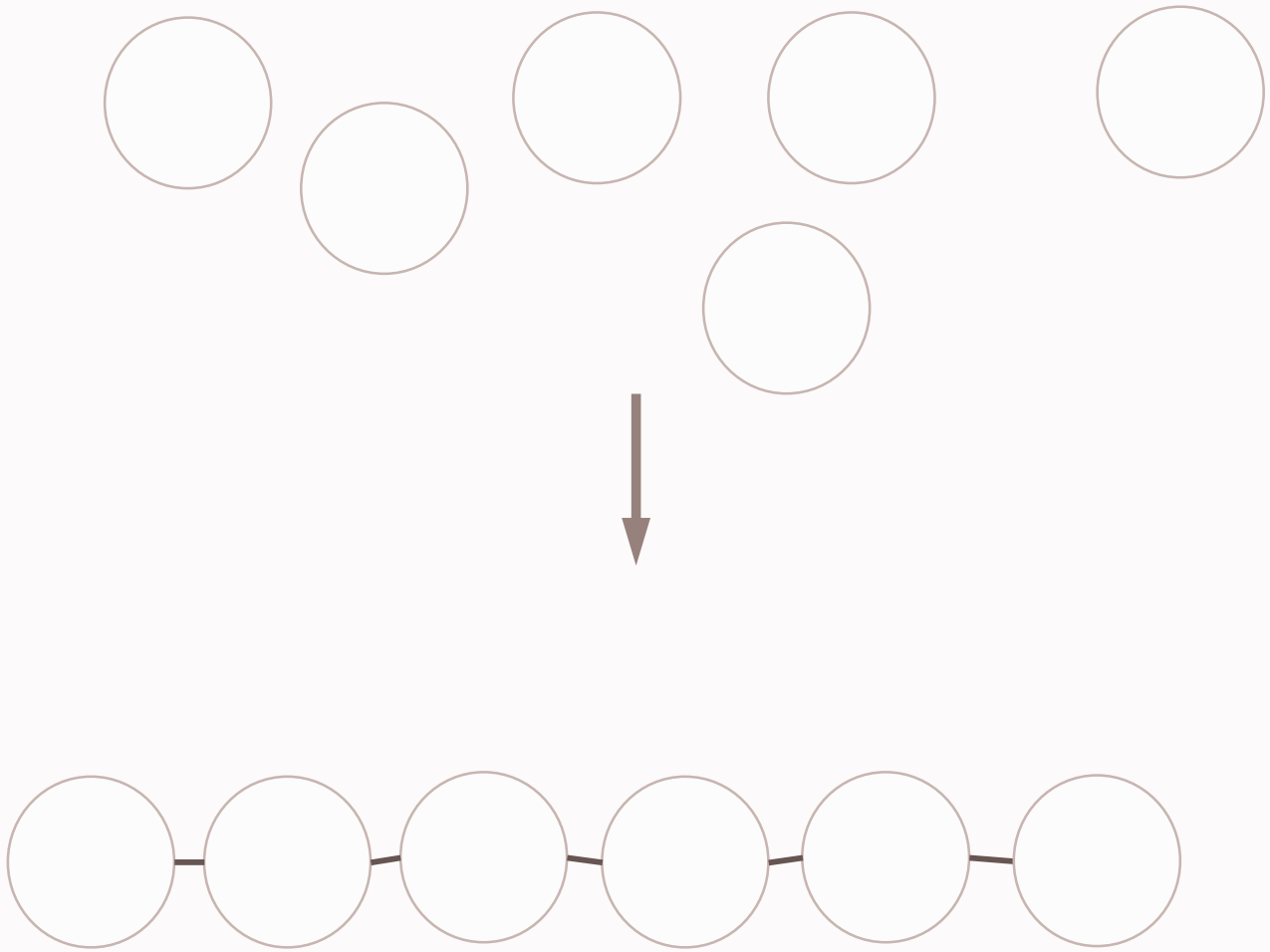

chain of activities

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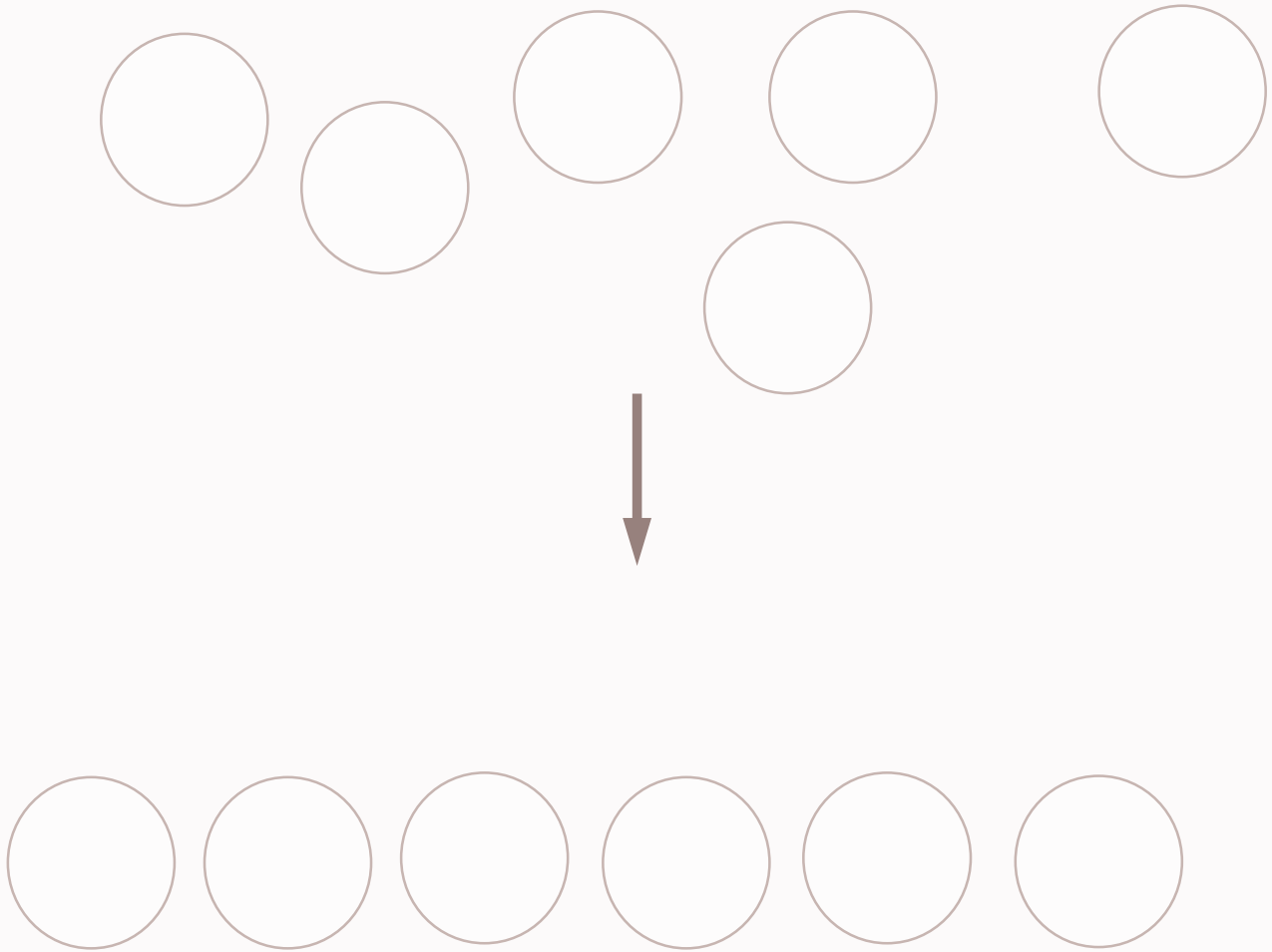
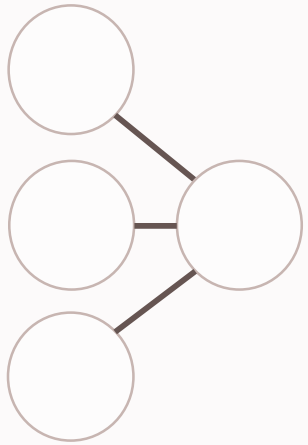


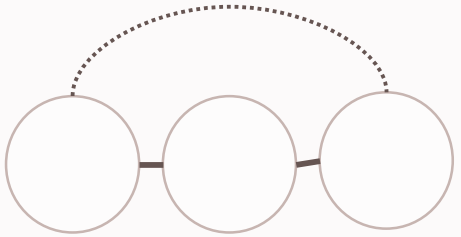
disordered ensemble of activities

knot of activities



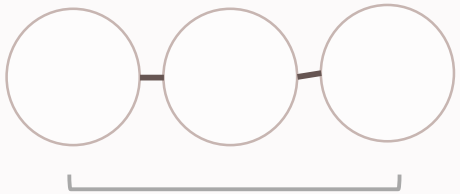
parallel activities

to bring the result closer to a desired end with each iteration

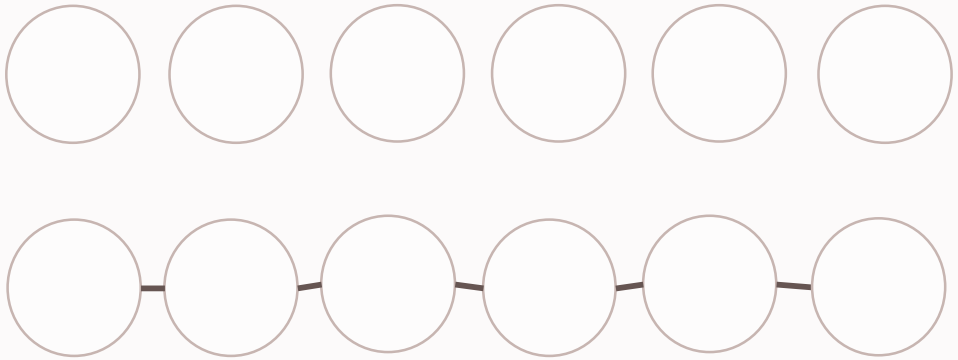


iterative activities

multiple elements > a repeated activity is done once for each element.

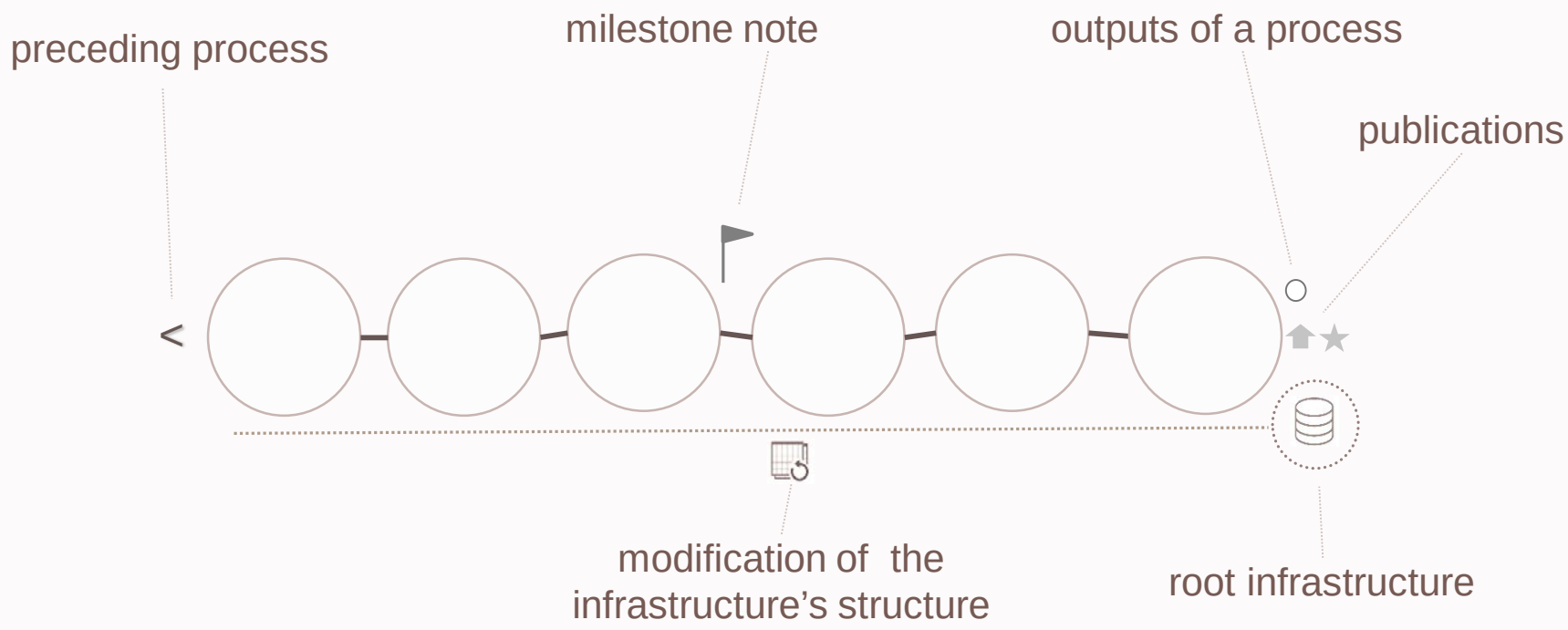


repetitive activities



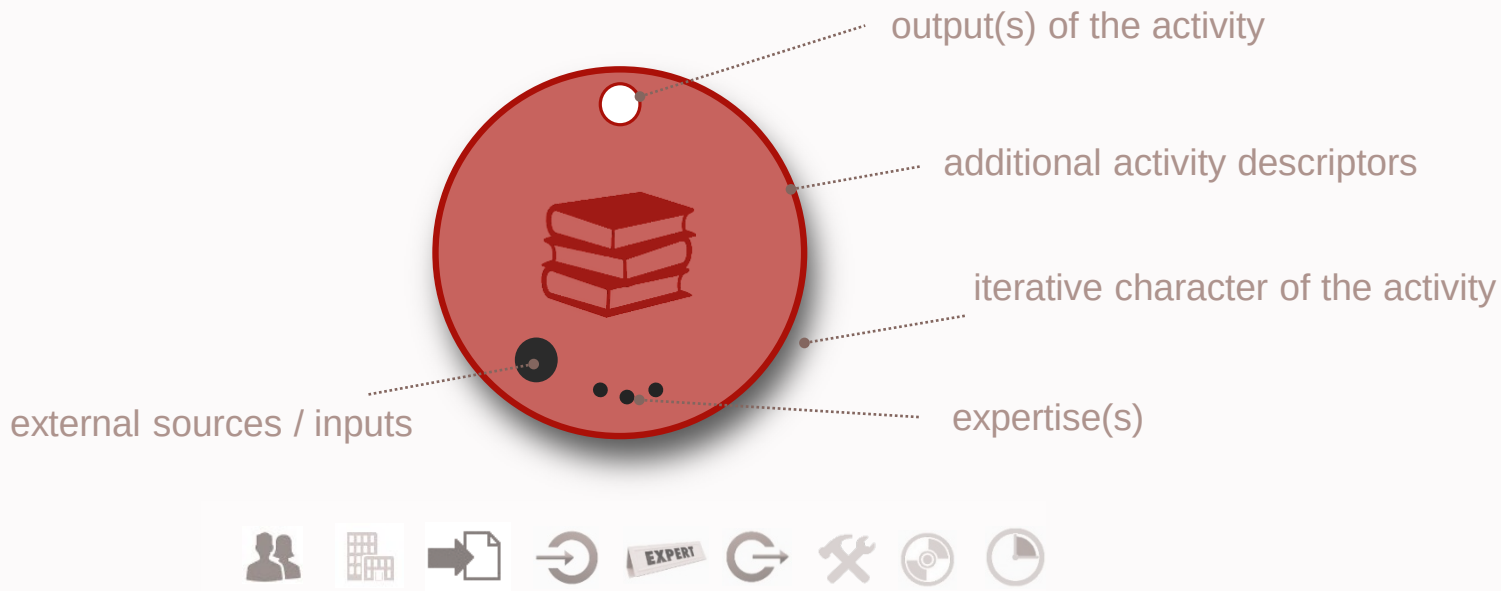
disordered ensemble

chain of activities


preceding process
milestone note
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**



Enabling the comparability of research workflows: a case study

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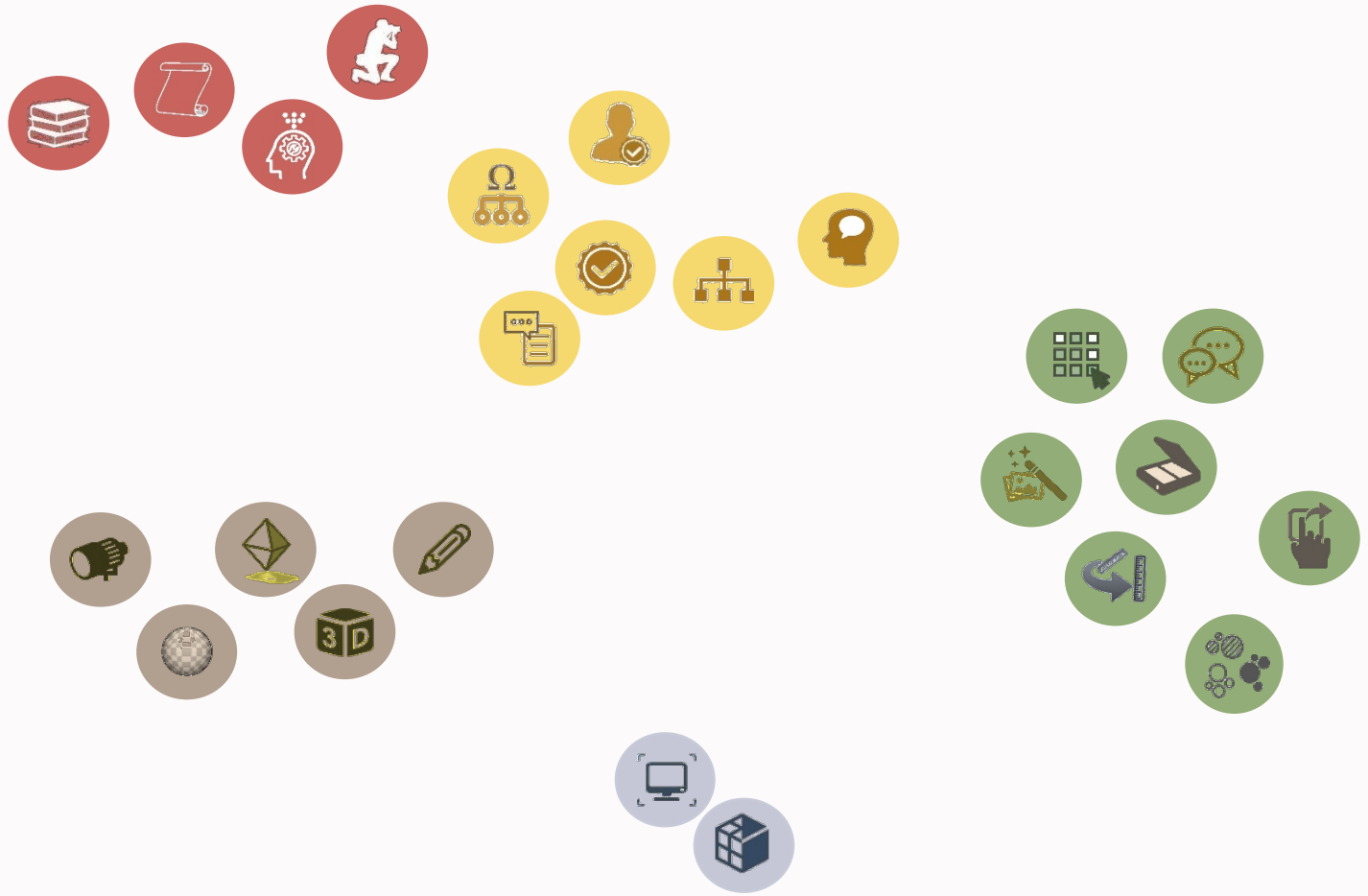
case study



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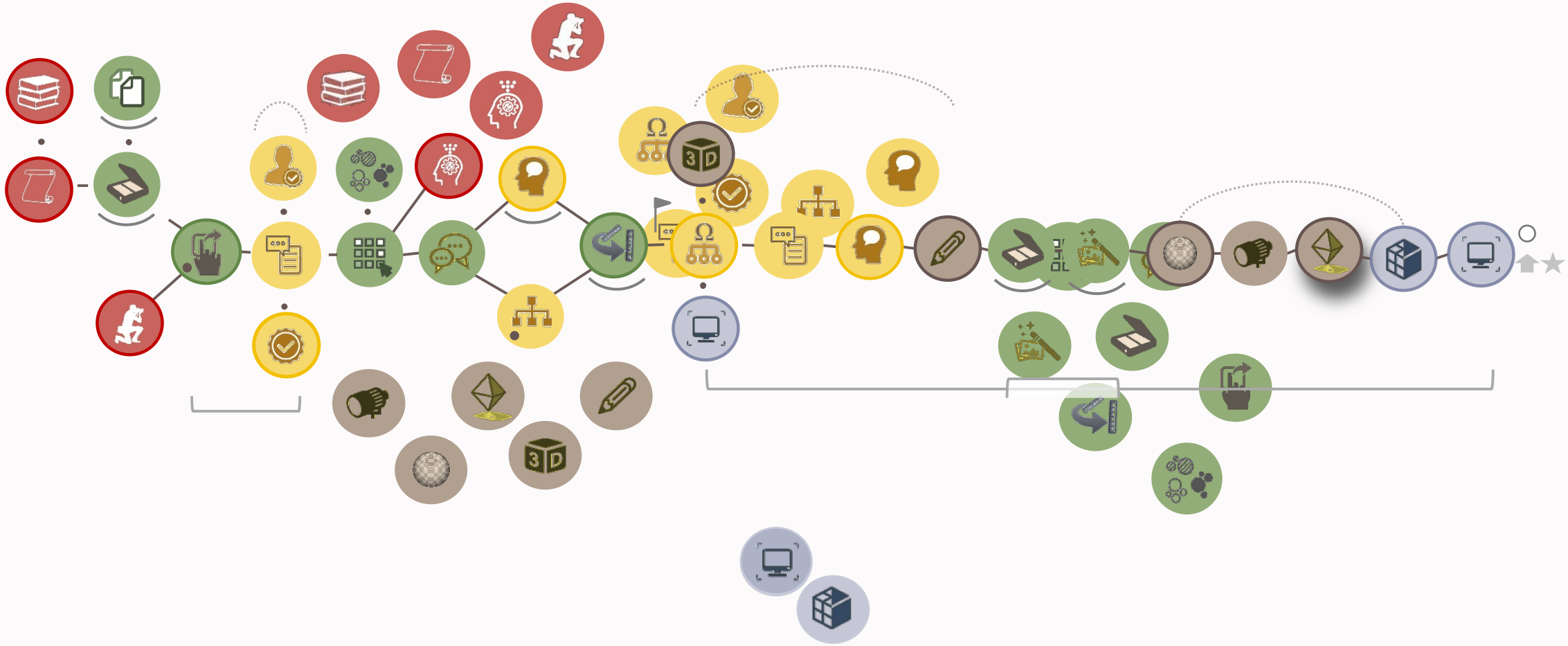

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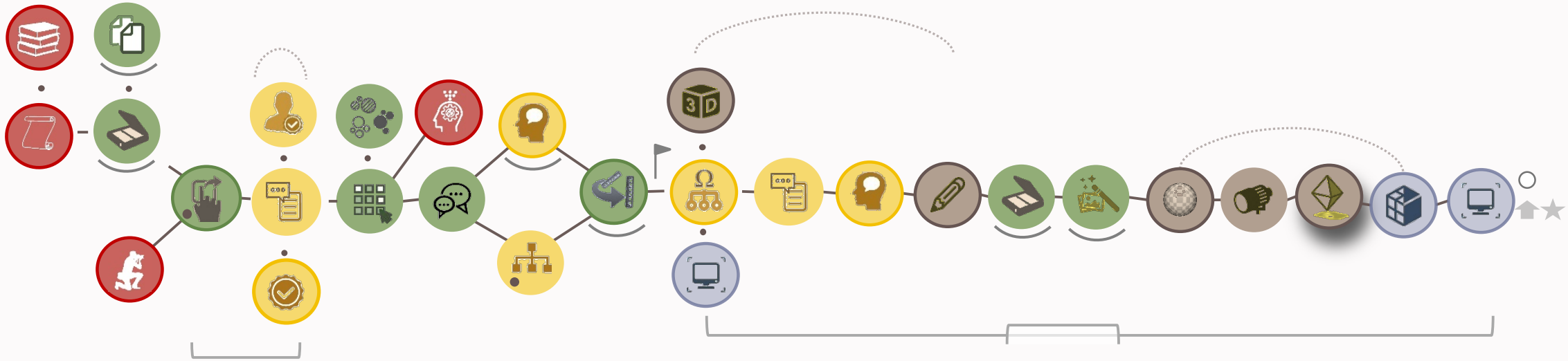
case study

description of the process



data filtering and treatment

data analysis

data collection / acquisition

added value procedural activities

finalisation

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case study

analysis of the process

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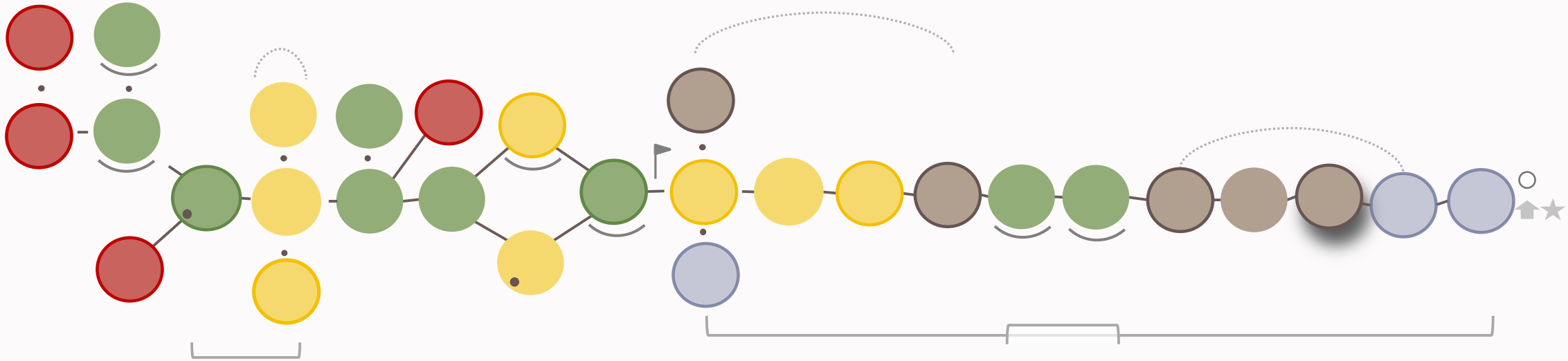

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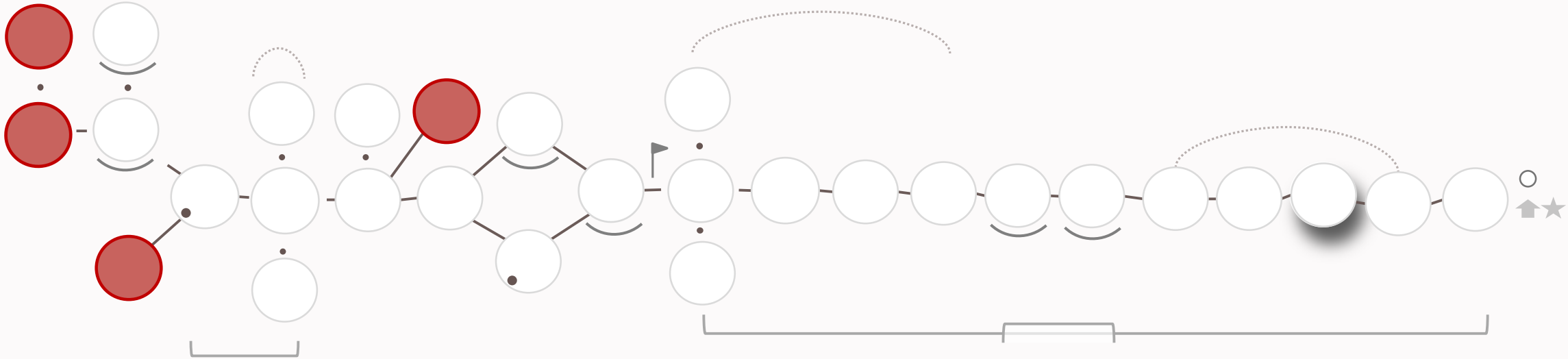

data collection / acquisition

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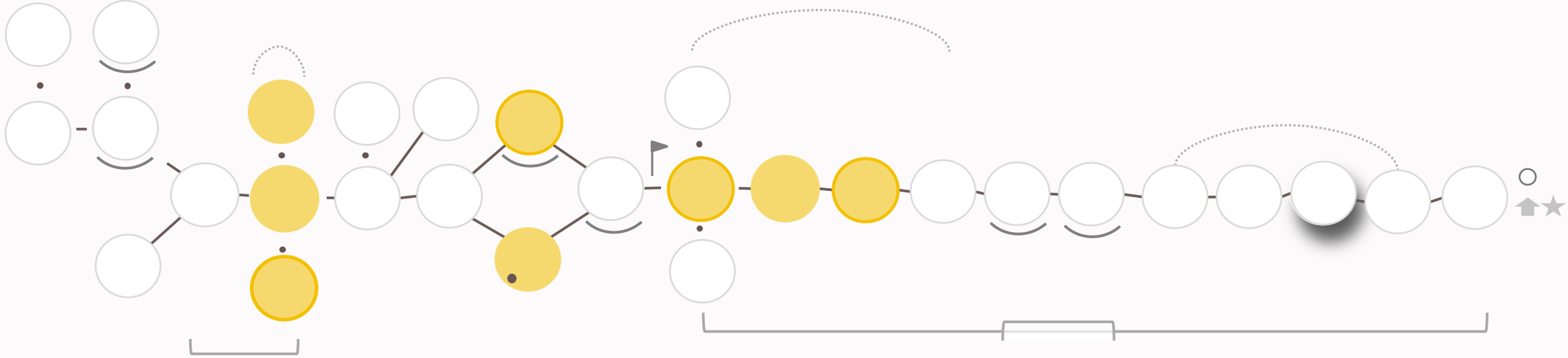

data analysis

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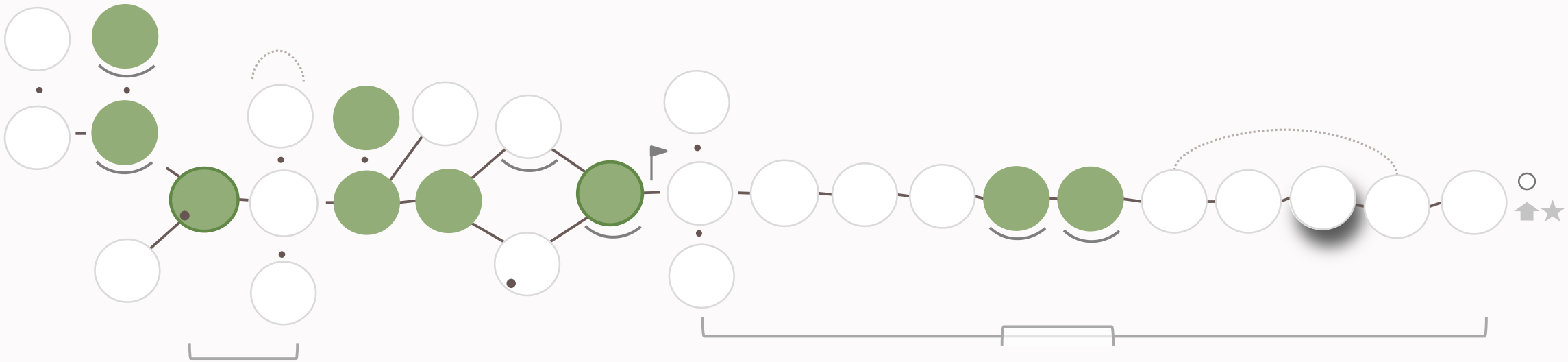

data filtering and treatment

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case study

analysis of the process

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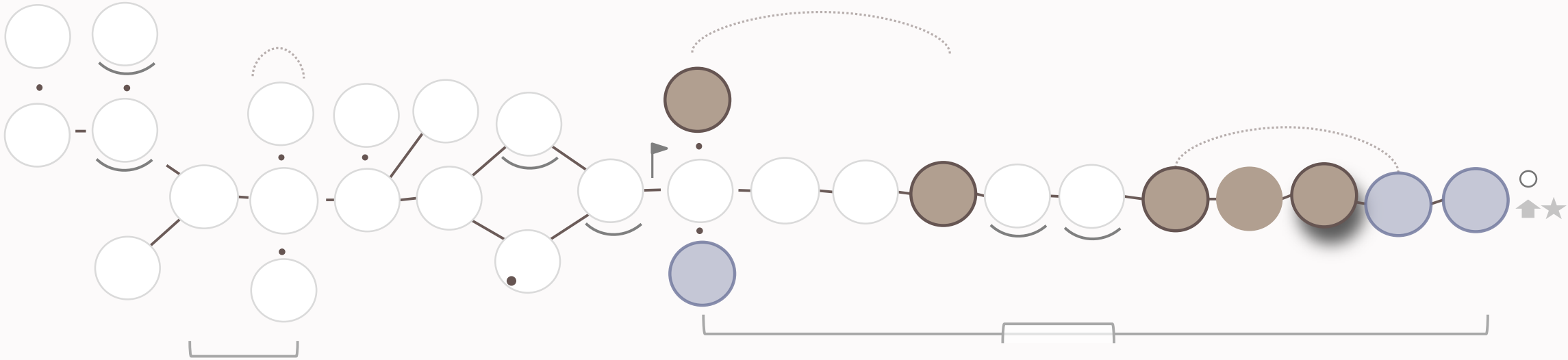

added value procedural activities

finalisation

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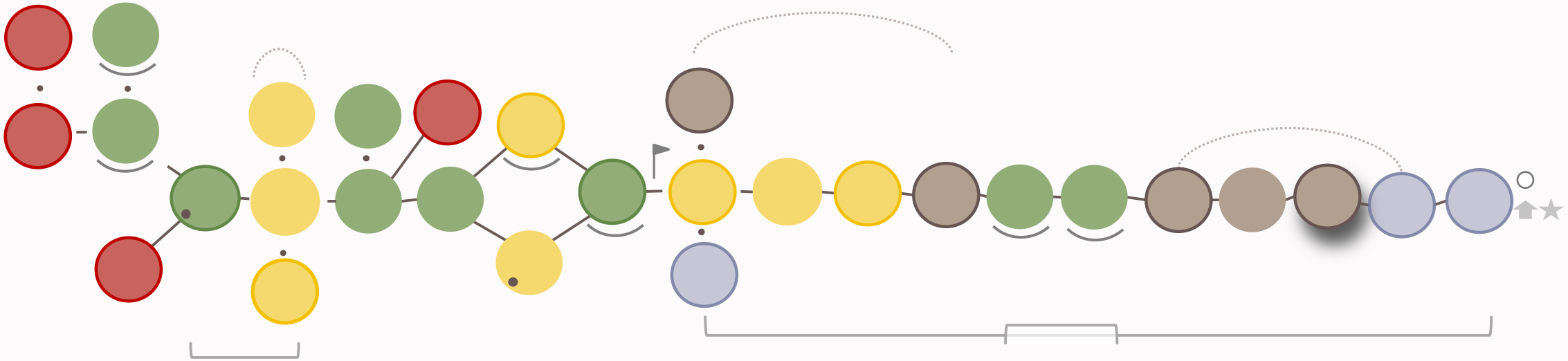
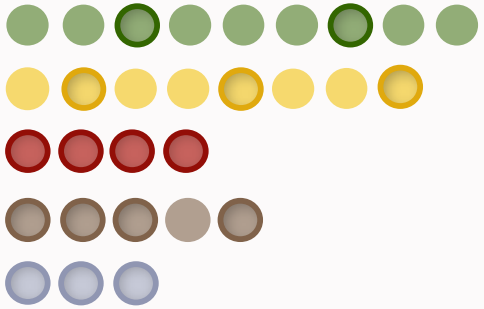
case study

predominant group of activities





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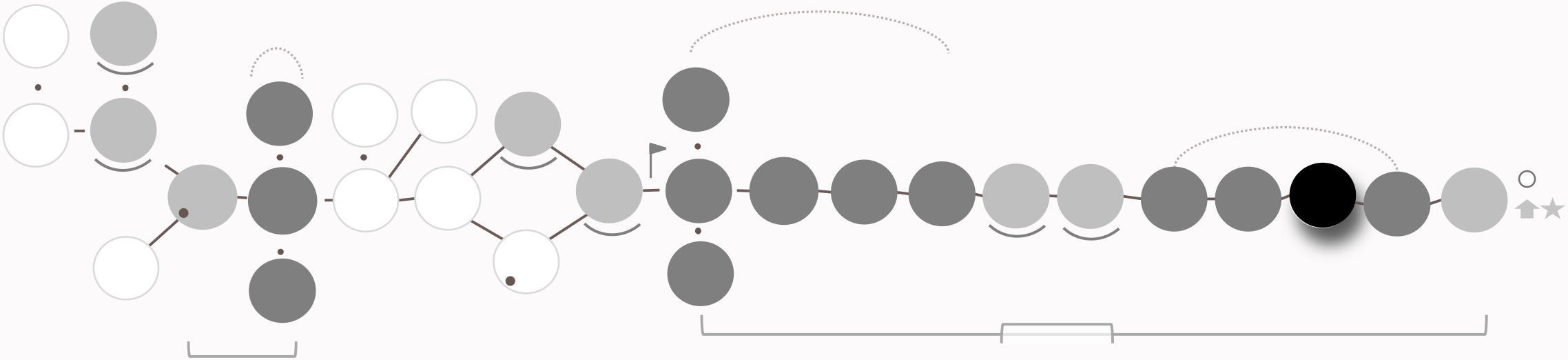
case study

level of recurrences inside a process



repetitive and iterative +

repetitive and iterative

repetitive

simple

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case study

level of recurrences inside a process

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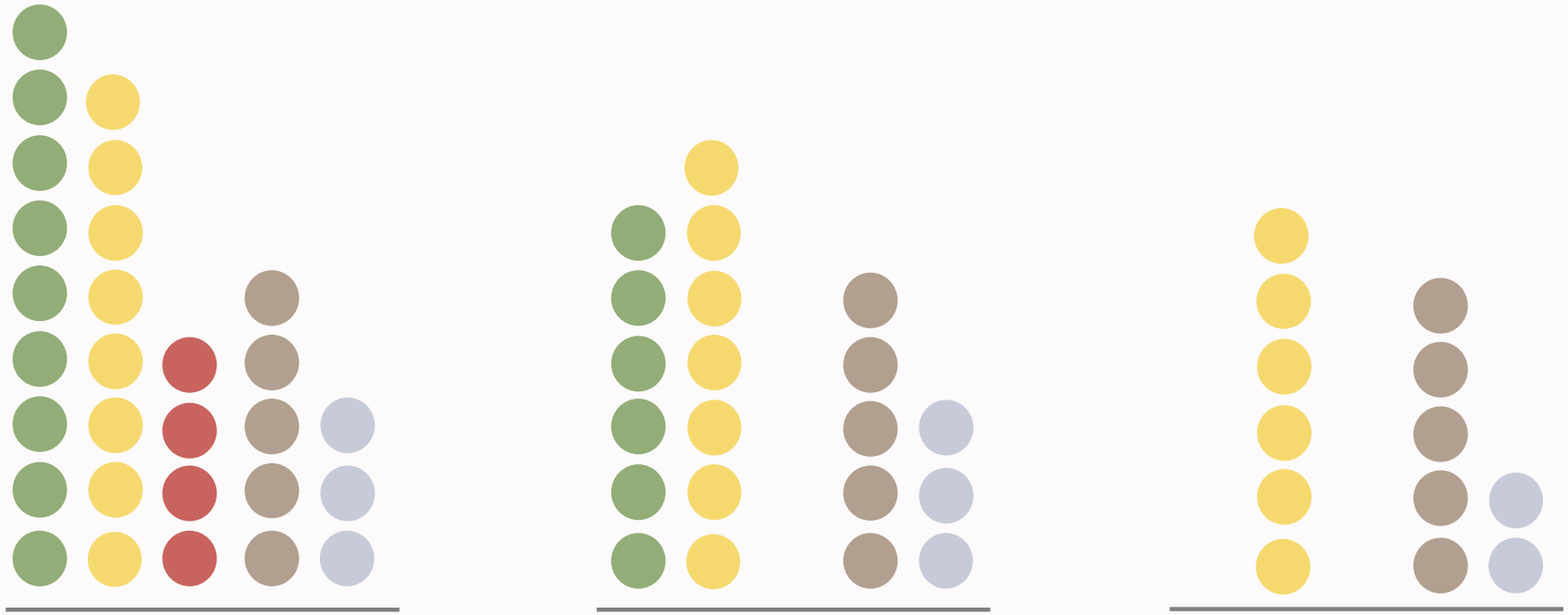

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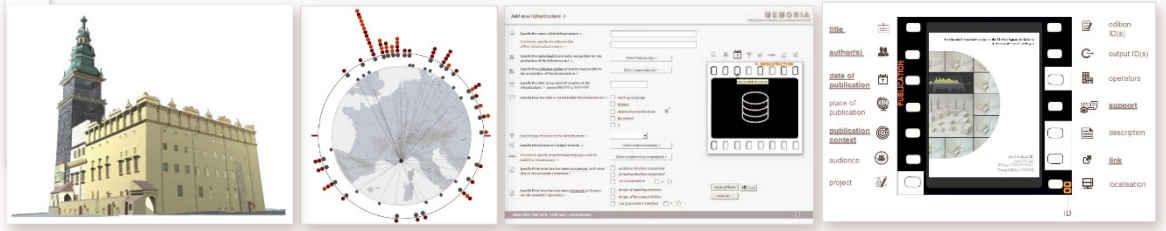

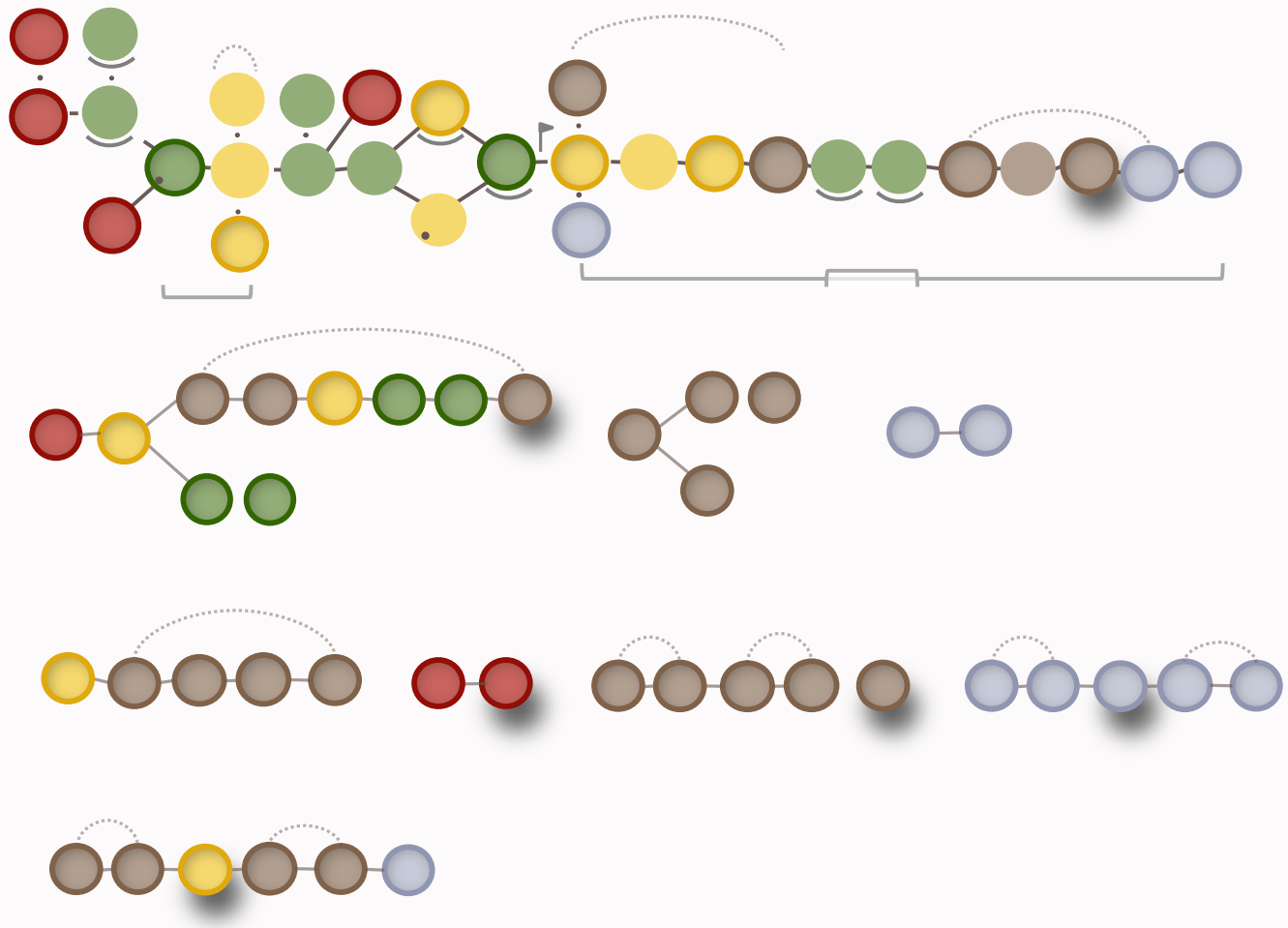

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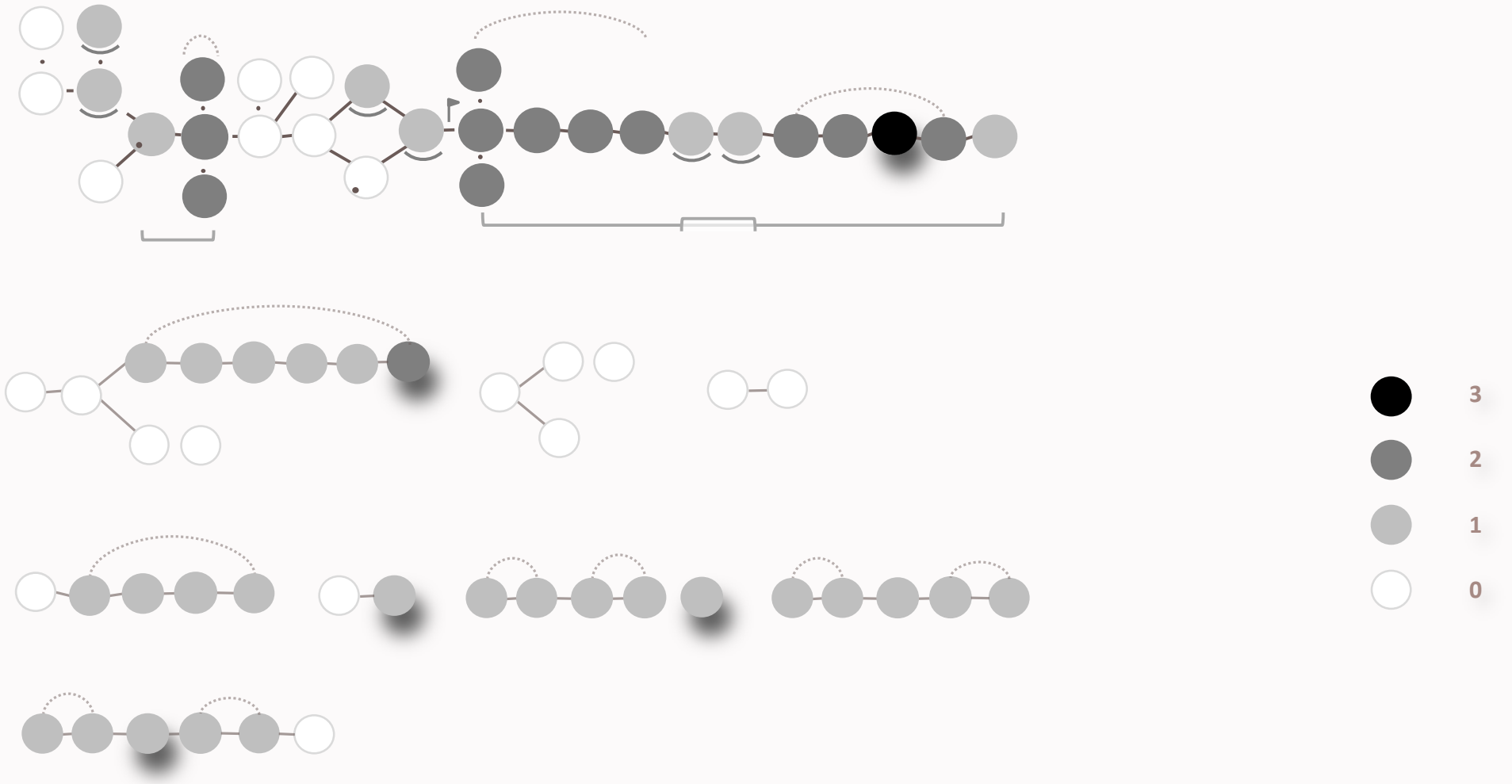
basic concepts

level of recurrences



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data filtering and treatment

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added value procedural activities

finalisation

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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
populating the system
system evaluation

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