

PLAYFAIR: BUILDING A FAIR DATABASE FOR HISTORICAL GAMES

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1. Research Overview

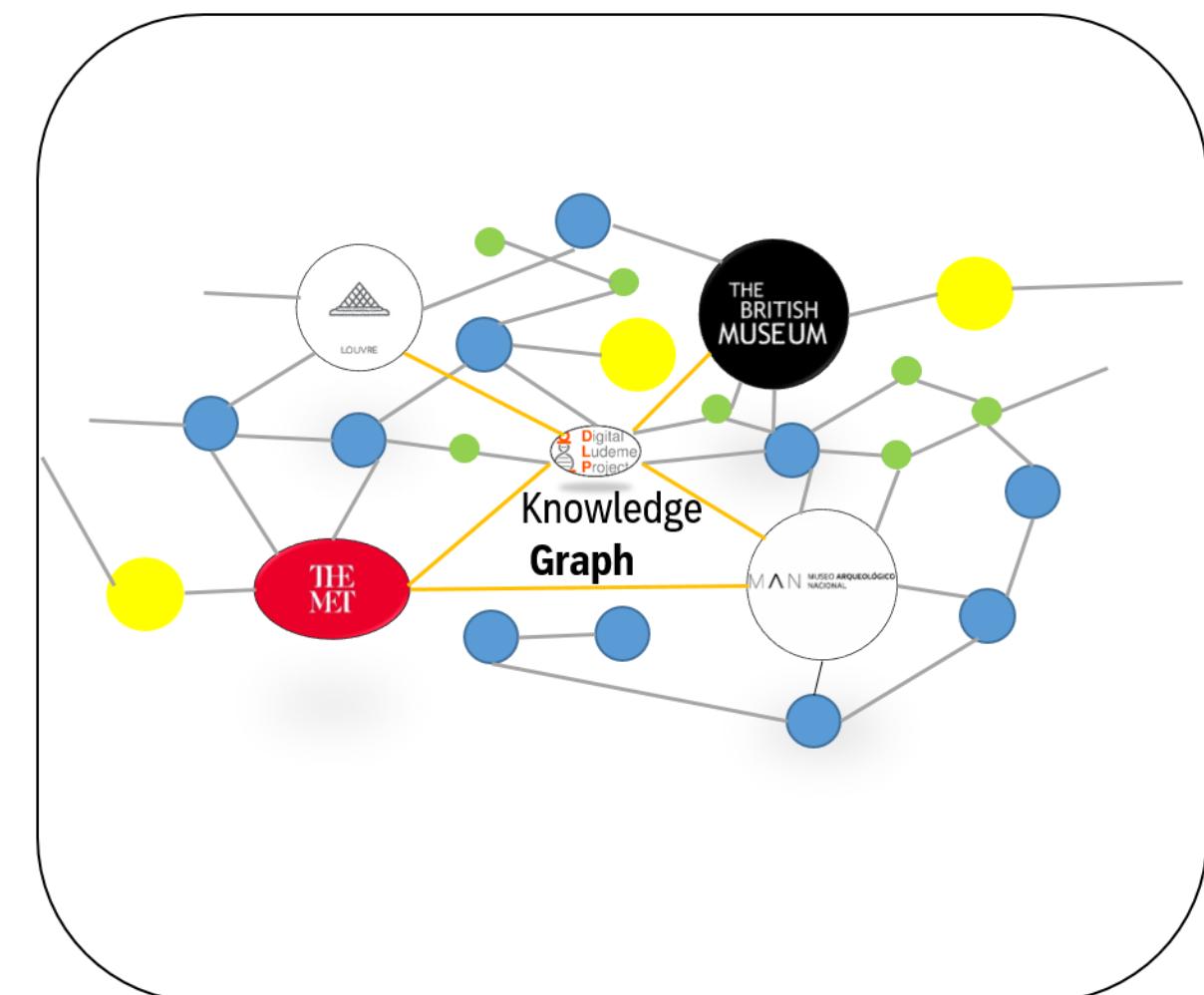
PLAYFAIR[1] is concerned with how semantic web technologies can help connect Ancient games data available from various sources and formats, in a FAIR(Findable, Accessible, Interoperable, and Reusable)[2] manner.

We aim to help cultural heritage organisations make content re-usable and help researchers, data scientists and citizens get access to and **PLAY** with cultural content through open and **FAIR** data to explore the historical context of ancient games.

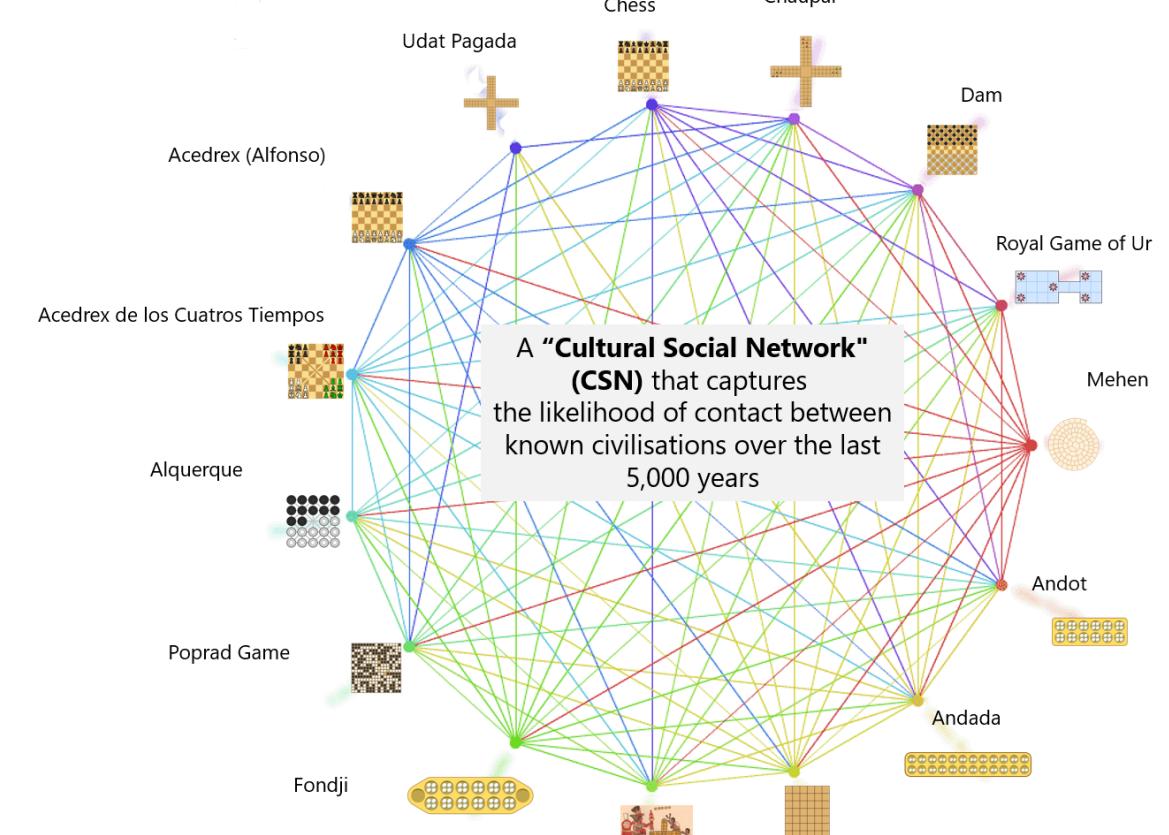
2. Research Approach

PLAYFAIR organizes data from multiple museum's digital collection, capture information about entities of interest in a given ancient game (like image, rules and archaeological evidences) and forge connections between them. Our approach is:

- Build a FAIR database as knowledge graph (**KG**) using CLARIAH[3] and other existing semantic tools.

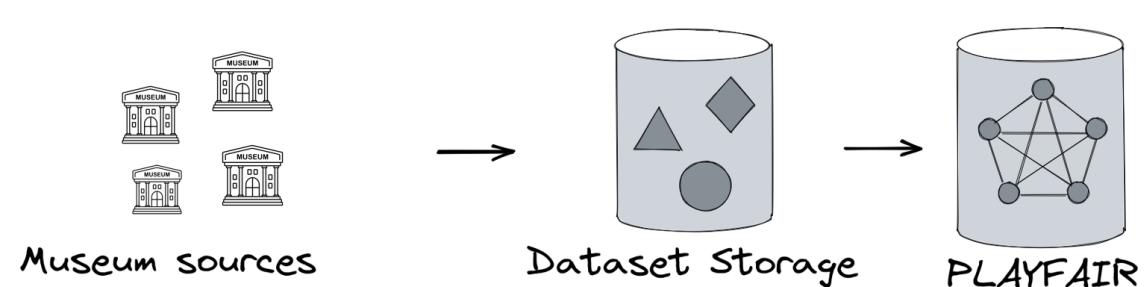


- Apply network analysis showing relations between games.



3. Research Questions

- How do we bring the data set generated by **Digital Ludeme Project (DLP)**[4] in line with existing datasets in similar Digital Humanities projects?



- How to visualise our Cultural Social Network? ☀️

4. Data Sources

The museum's digital collection to be integrated are:

- **Digital Ludeme Project (DLP):**
 - <https://ludii.games/download.php>
 - 2000 game-related pieces of evidence.
- **British Museum:**
 - <https://www.britishmuseum.org/collection>
 - 1601 game-related pieces of evidence.
- **Louvre Collection:**
 - <https://collections.louvre.fr/>
 - 500 game-related pieces of evidence.
- **Metropolitan Museum of Art:**
 - <https://www.metmuseum.org/>
 - 1500 game-related pieces of evidence.



5. Data Modeling

How do we go from tabular data format to PLAY-FAIR KG?

- Tabular data to describe ancient games in the DLP dataset:

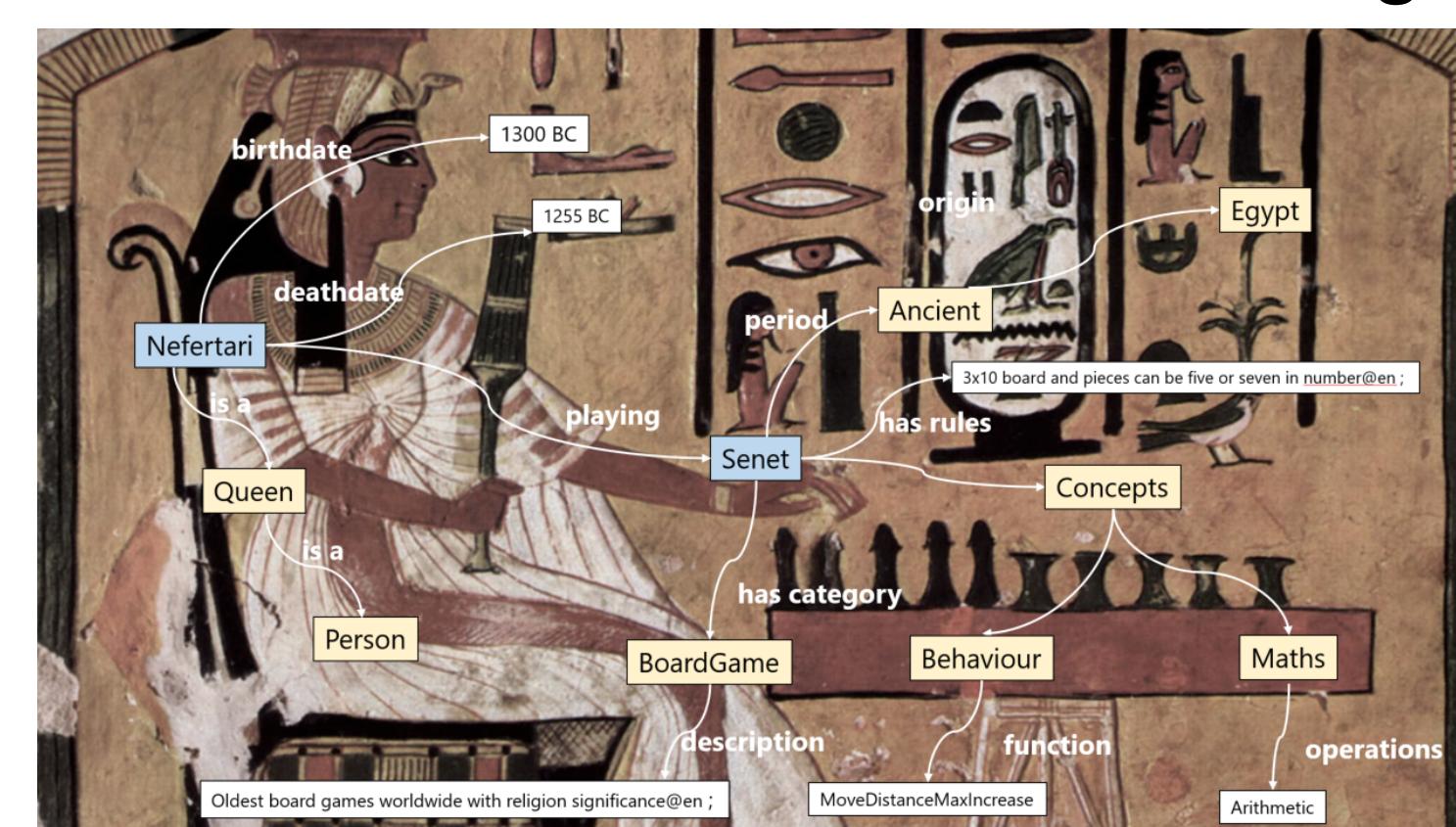
Game	Period	Rules	Maths
Kanji Guti	Ancient	6	Arithm
Baralie	Medieval	3	Algor
Senet	Ancient	12	Arithm
Chess	Modern	34	Arithm

- Use ontologies for Digital Humanities[5] and persistent identifiers to provide stable digital representations of concepts to describe ancient games.



- Resource Description Framework (RDF) reification for machine-readable data:

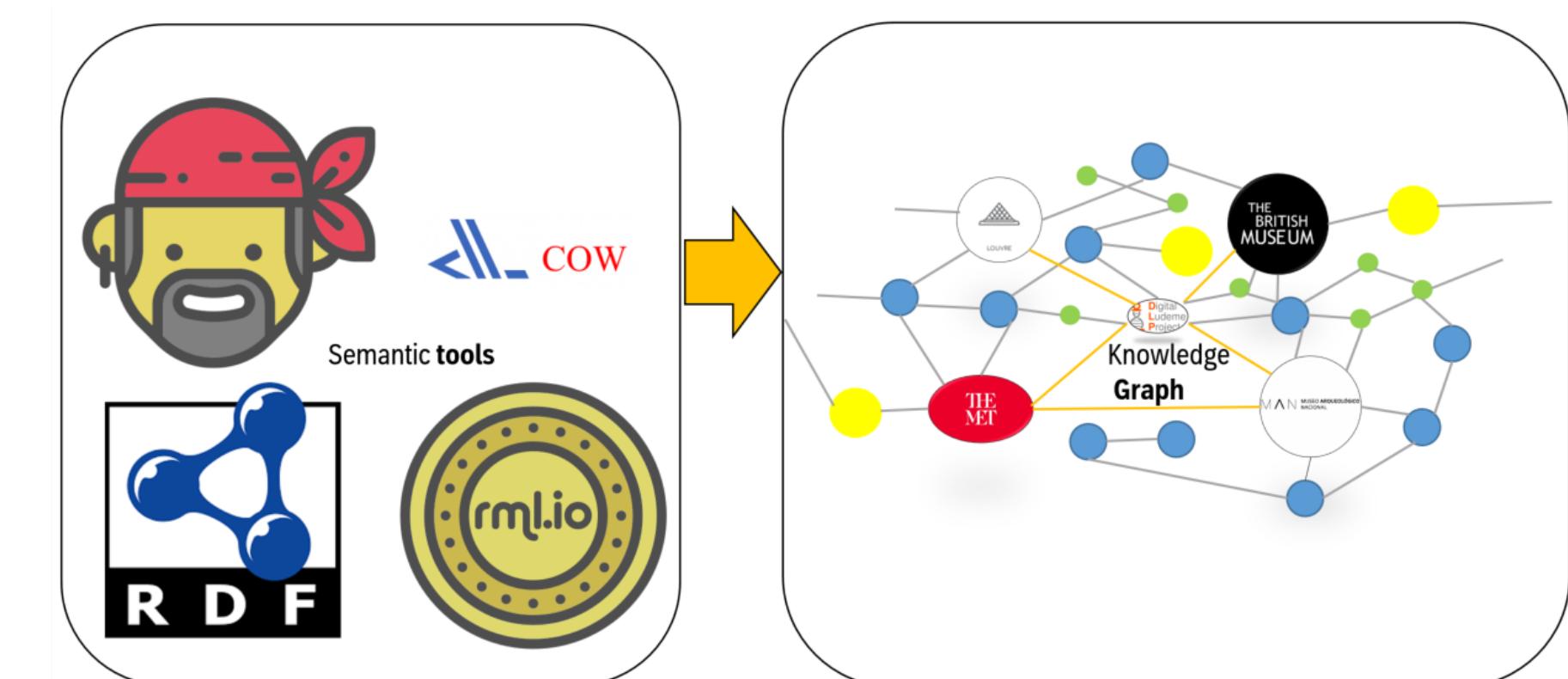
Who was "Nefertari" and what is "senet" game?



6. Data Conversion and Linking

Use semantic tools to transform source data into computable representations and link these to other resources:

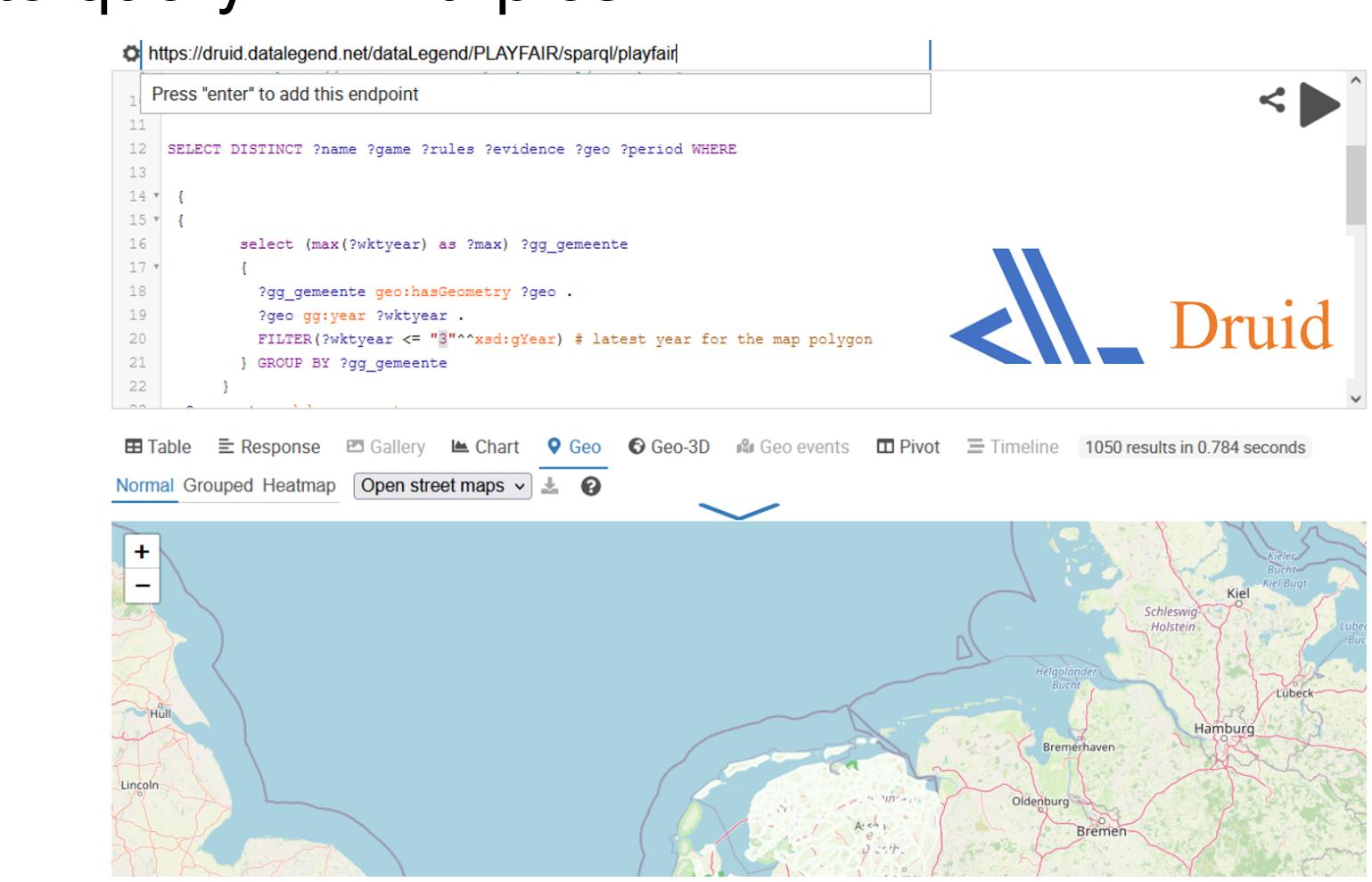
- **CLARIAH COW.**
- **RML Mapper.**



7. Data Storage and Publication

The resulting RDF will be hosted in a triplestore such as Druid data catalogue:

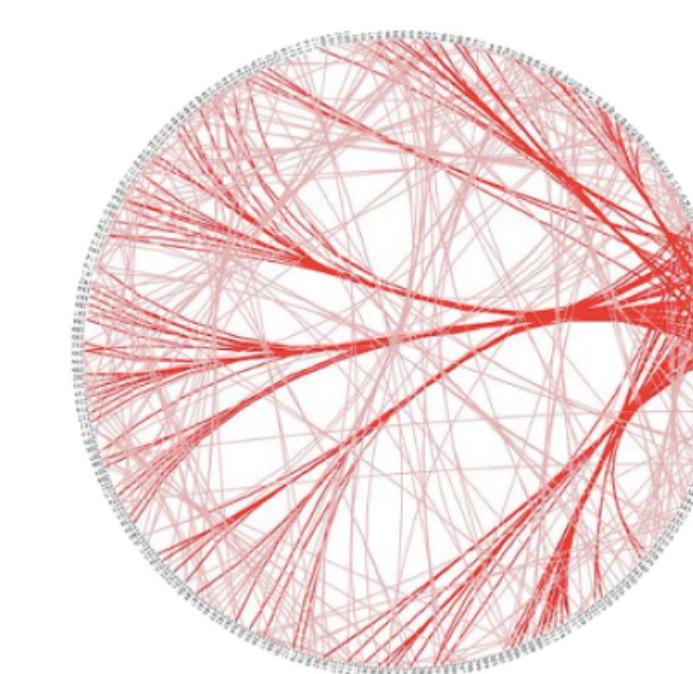
- Provide access to the data in SPARQL endpoint to query RDF triples.



8. Statistical Analysis and Visualisations

• **Visualise the Cultural Social Network:**

- Phylogenetic network [6] for showing the relations between games.



- **Host relevant SPARQL queries and visualisation:**

- Use **CLARIAH Data Stories** and **grlc** tools.



References

- [1] Grant number: Clariah-plus wp4: Cp-21-f-i 5 - fair data for historical games. <https://github.com/MaastrichtU-IDS/play-fair>.
- [2] Mark D Wilkinson, Michel Dumontier, and et al. Aalbersberg. The fair guiding principles for scientific data management and stewardship. *Scientific data*, 3, 2016.
- [3] CLARIAH (Common Lab Research Infrastructure for the Arts and Humanities). Clariah w4: Socio-economic history. <https://www.clariah.nl/tools>.
- [4] Matthew Stephenson et al. Digital ludeme project database guide - (erc consolidator grant 771292). <https://ludii.games/downloads>, 2021.
- [5] Richard Zijdeman. A curated list of ontologies for digital humanities. <https://github.com/rzijdeman/awesome-humanities-ontologies>, 2021.
- [6] C Browne. Ai for ancient games. <https://doi.org/10.1007/s13218-019-00600-6>, 2020.

Partners:

