Thesis objective: To improve the mapping languages regarding expressiveness, usage and adoption to comply with the current evolving needs in knowledge graph construction. O2: To help knowledge engineers and domain experts to build O1: To understand and gather the current necessities for knowledge O3: To assess the value of mapping technologies for mapping documents providing the means for a user-friendly graph construction from heterogeneous data sources supporting the evolution of knowledge graphs experience C1: Comparison framework of current mapping languages H1 A1, A2, A3 C4: Design of a user-friendly C2: Definition and C5: Update of user-friendly C6: Identification of scenarios where implementation of approach for writing mapping syntax for mapping languages mapping-compliant technologies R1, R2 rules based on spreadsheets requirements for KGC with extended features support KG evolution H1 Н3 H1, H2 H4 A1, A2, A3 C3: Development of new features A1, A2, A4 A1, A2 A1, A2, A4 for mapping languages up to date R1, R2 to current KGC needs R1, R2 R1 R3, R4 H1. H2 A1, A2, A4

## **Assumptions**

- A1: Mapping languages provide human readable documentation available online.
- A2: Mapping languages are declarative and follow W3C standards.

R1, R2

- A3: Features characteristic of procedural languages are not requirements for KG construction.
- A3. Features characteristic of procedural languages are not requirements for K5 construction.

  A4: The schema of knowledge graphs (ontology) used for creating mapping documents is available online, and implemented in OWL or RDF(S).

## Hypotheses

- H1: Current mapping languages do not cover the entire extension of features required to construct knowledge graphs from heterogeneous data sources.
- H2: It is possible to include in current mapping languages new features that address the evolving needs in construction of knowledge graphs.
- H3: Writing the mapping rules in spreadsheet environments can improve the user experience for practitioners of different backgrounds for writing mappings reducing errors.
- H4: Mapping-compliant technologies can bring benefits in the evolution of knowledge graphs within their life cycle, not only in their construction.

## Restrictions

- R1: Requirements for KG construction are considered up to the beginning of 2023.
- R2: The point of reference for the RML specification is the release on 2014.
- R3: The evaluation of the value of mappings in KG evolution considers only schema changes, not data changes.
- R4: Changes considered in KG evolution are a result of the schema changes for switching among reification approaches for RDF graphs.