Ontology and Semantic Modelling Documentation and ETL Software

3M

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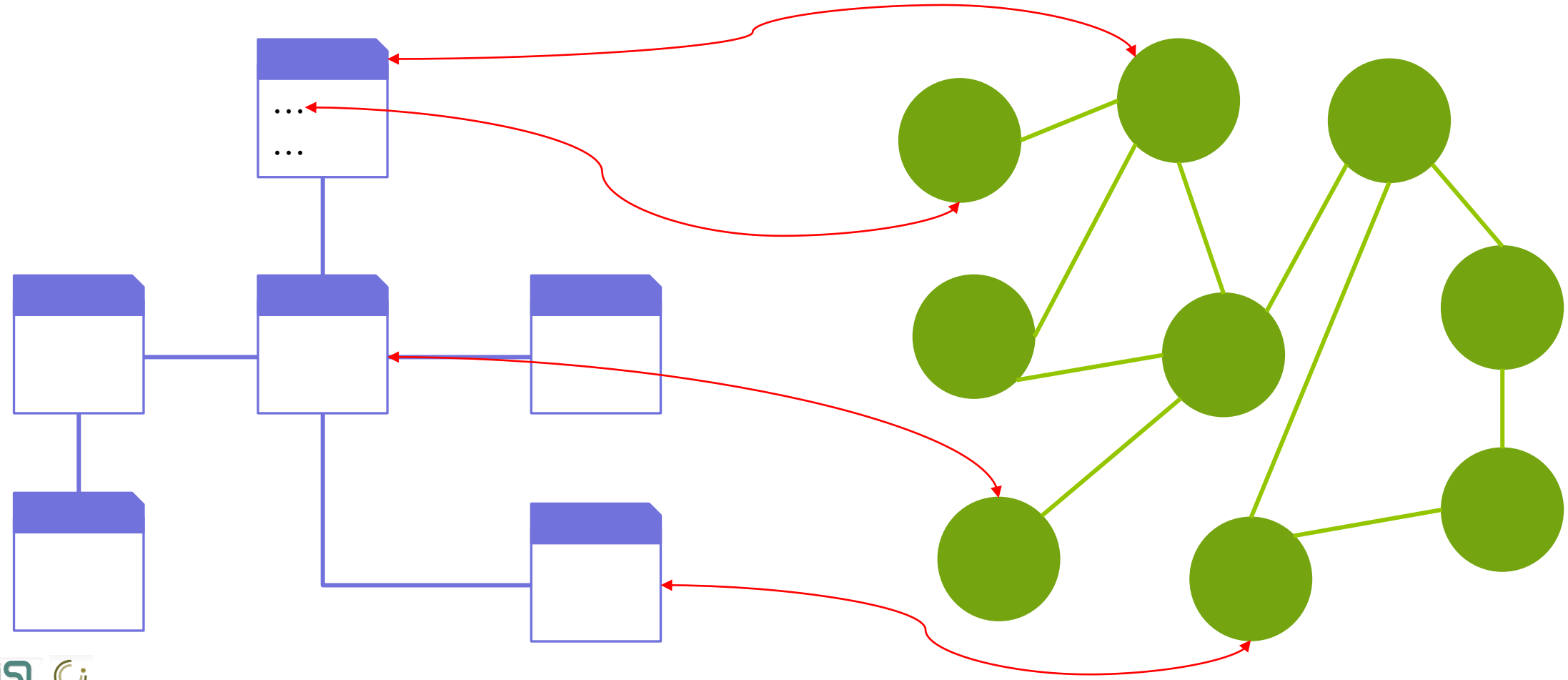
Outline

Background	2’
3M	7’
Latest advancements	4’
Access 3M	1’
Future Steps	1’
Demo	

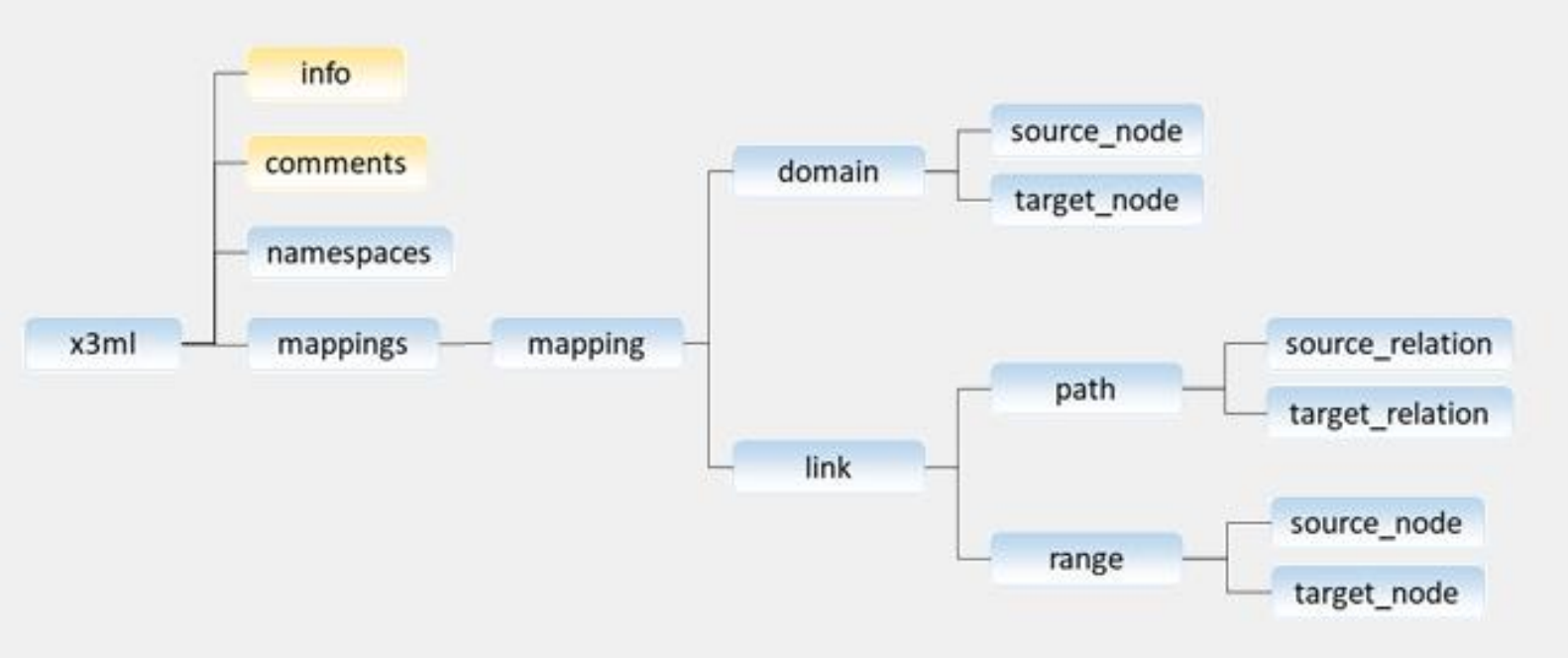
Background - Schema mappings

- The rules or specifications that define the relationships between different schemas or data models
  - How elements, attributes, and structures of different schemata are connected



Background - X3ML

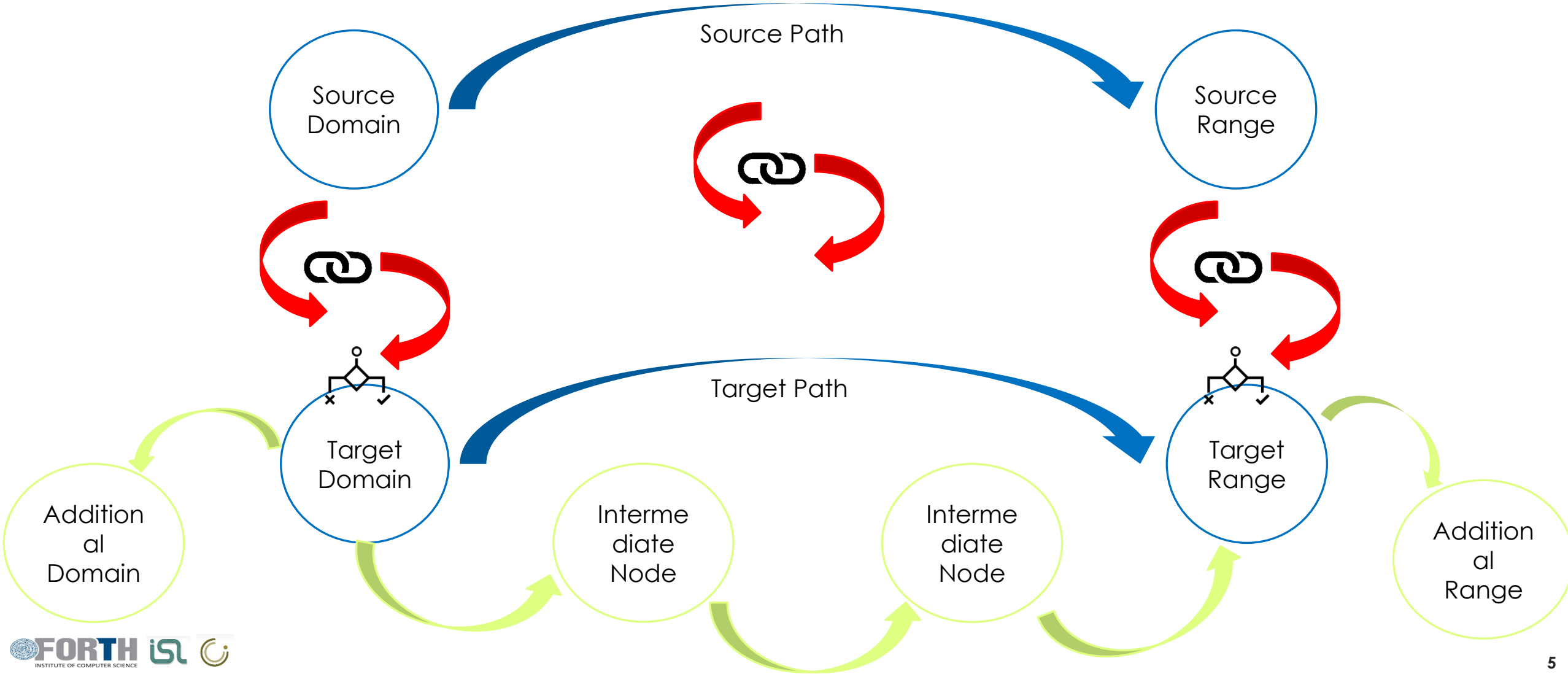
- X3ML Mapping Definition Language
  - Describe schema mappings in a declarative manner
  - Focused on collaborative creation and exchange of mappings
  - Decoupled from URI and values generation
  - XML serialization for efficient storage and exchange



https://github.com/isl/x3ml/blob/master/docs/x3ml-language.md

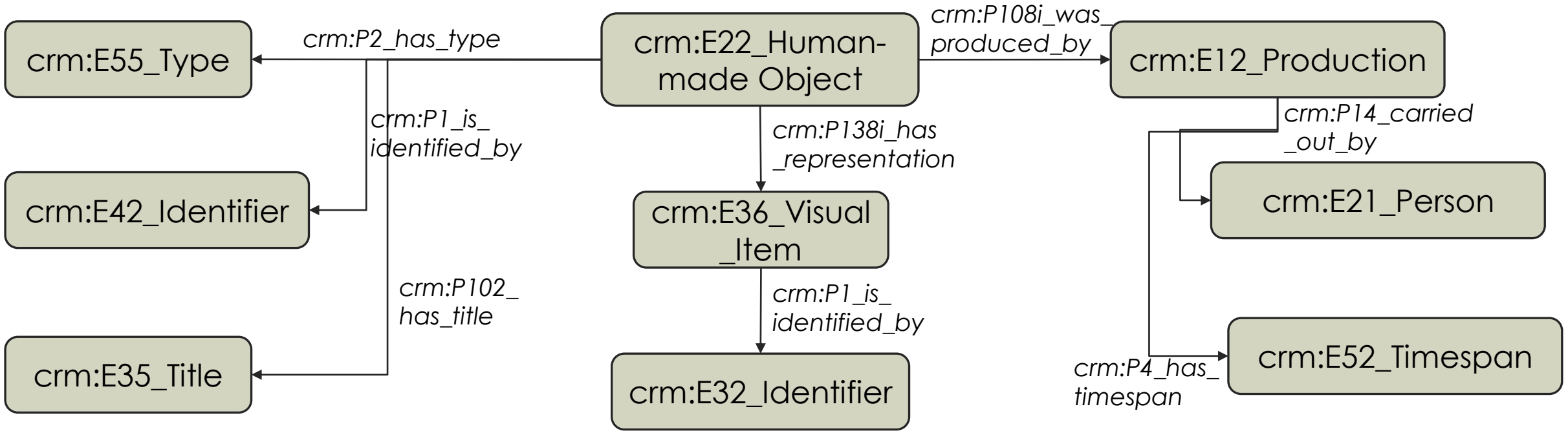
Background - X3ML

- Structure of mapping



Background - example

id	Painting title	painter	Creation date	Filename
p-1	Self-Portrait as a Painter	Vincent van Gogh	1889	p1.jpg
p-2	The Starry Night	Vincent van Gogh	1889	p2.jpg
p-3	The Ballet Class	Edgar Degas	1874	p3.jpg



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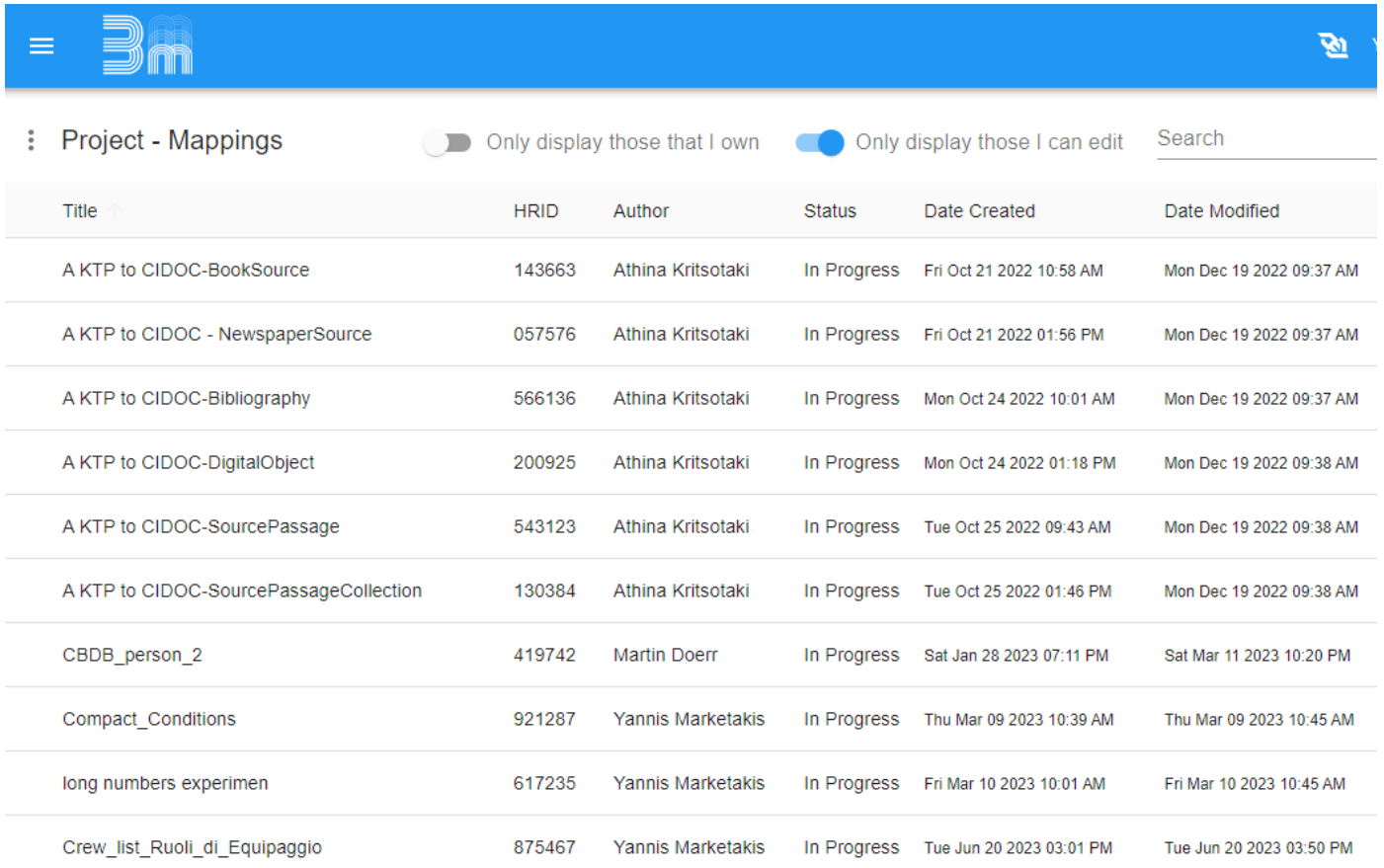
- Supports the collaborative creation and exchange of (X3ML) mapping definitions
  - Mappings definition
  - Mappings storage
  - Organized in projects
  - Collaborative (many users working on the same project)
  - Supports concurrent schema editing (à la google docs)



Project - Mappings

Only display those that I own | Only display those I can edit | Search

Title	HRID	Author	Status	Date Created	Date Modified
A KTP to CIDOC-BookSource	143663	Athina Kritsotaki	In Progress	Fri Oct 21 2022 10:58 AM	Mon Dec 19 2022 09:37 AM
A KTP to CIDOC - NewspaperSource	057576	Athina Kritsotaki	In Progress	Fri Oct 21 2022 01:56 PM	Mon Dec 19 2022 09:37 AM
A KTP to CIDOC-Bibliography	566136	Athina Kritsotaki	In Progress	Mon Oct 24 2022 10:01 AM	Mon Dec 19 2022 09:37 AM
A KTP to CIDOC-DigitalObject	200925	Athina Kritsotaki	In Progress	Mon Oct 24 2022 01:18 PM	Mon Dec 19 2022 09:38 AM
A KTP to CIDOC-SourcePassage	543123	Athina Kritsotaki	In Progress	Tue Oct 25 2022 09:43 AM	Mon Dec 19 2022 09:38 AM
A KTP to CIDOC-SourcePassageCollection	130384	Athina Kritsotaki	In Progress	Tue Oct 25 2022 01:46 PM	Mon Dec 19 2022 09:38 AM
CBDB_person_2	419742	Martin Doerr	In Progress	Sat Jan 28 2023 07:11 PM	Sat Mar 11 2023 10:20 PM
Compact_Conditions	921287	Yannis Marketakis	In Progress	Thu Mar 09 2023 10:39 AM	Thu Mar 09 2023 10:45 AM
long numbers experimen	617235	Yannis Marketakis	In Progress	Fri Mar 10 2023 10:01 AM	Fri Mar 10 2023 10:45 AM
Crew_list_Ruoli_di_Equipaggio	875467	Yannis Marketakis	In Progress	Tue Jun 20 2023 03:01 PM	Tue Jun 20 2023 03:50 PM

A new project is created in the form of a workflow (**5 + 1 steps**)

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https://demos.isl.ics.forth.gr/3m/

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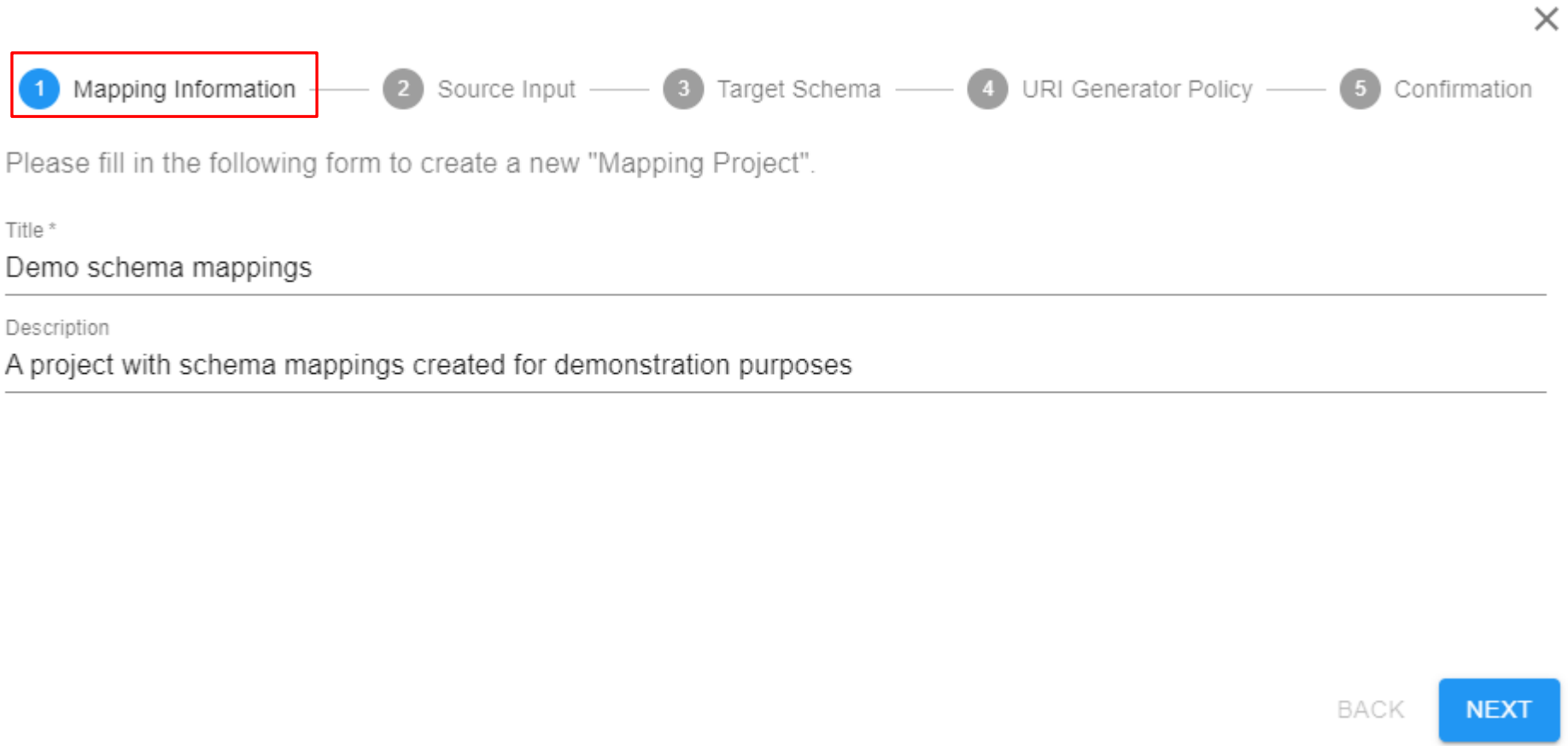
- Step 1: Define a title and a short description for the project



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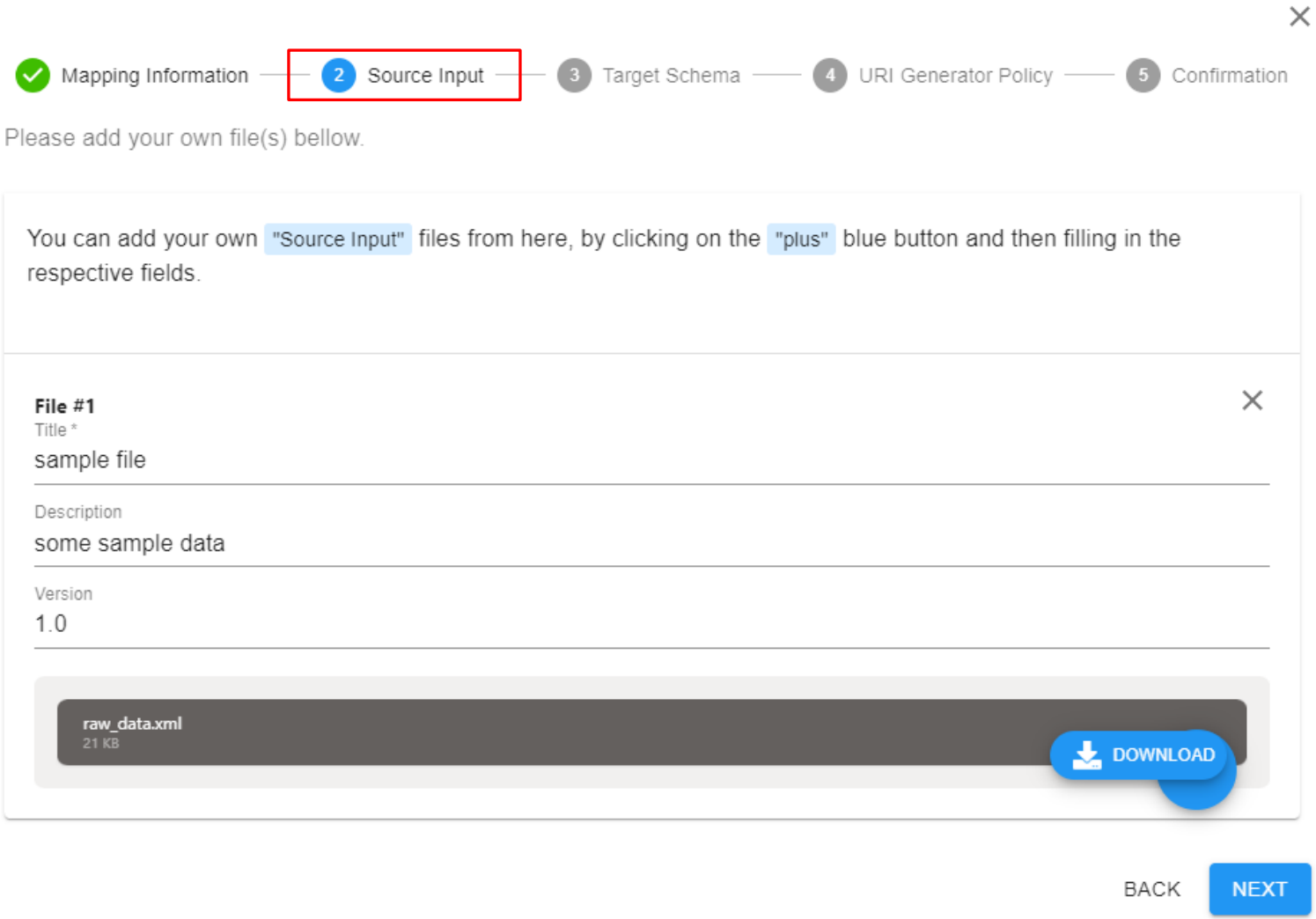
Step 2: Upload (a sample) of the data in their original format



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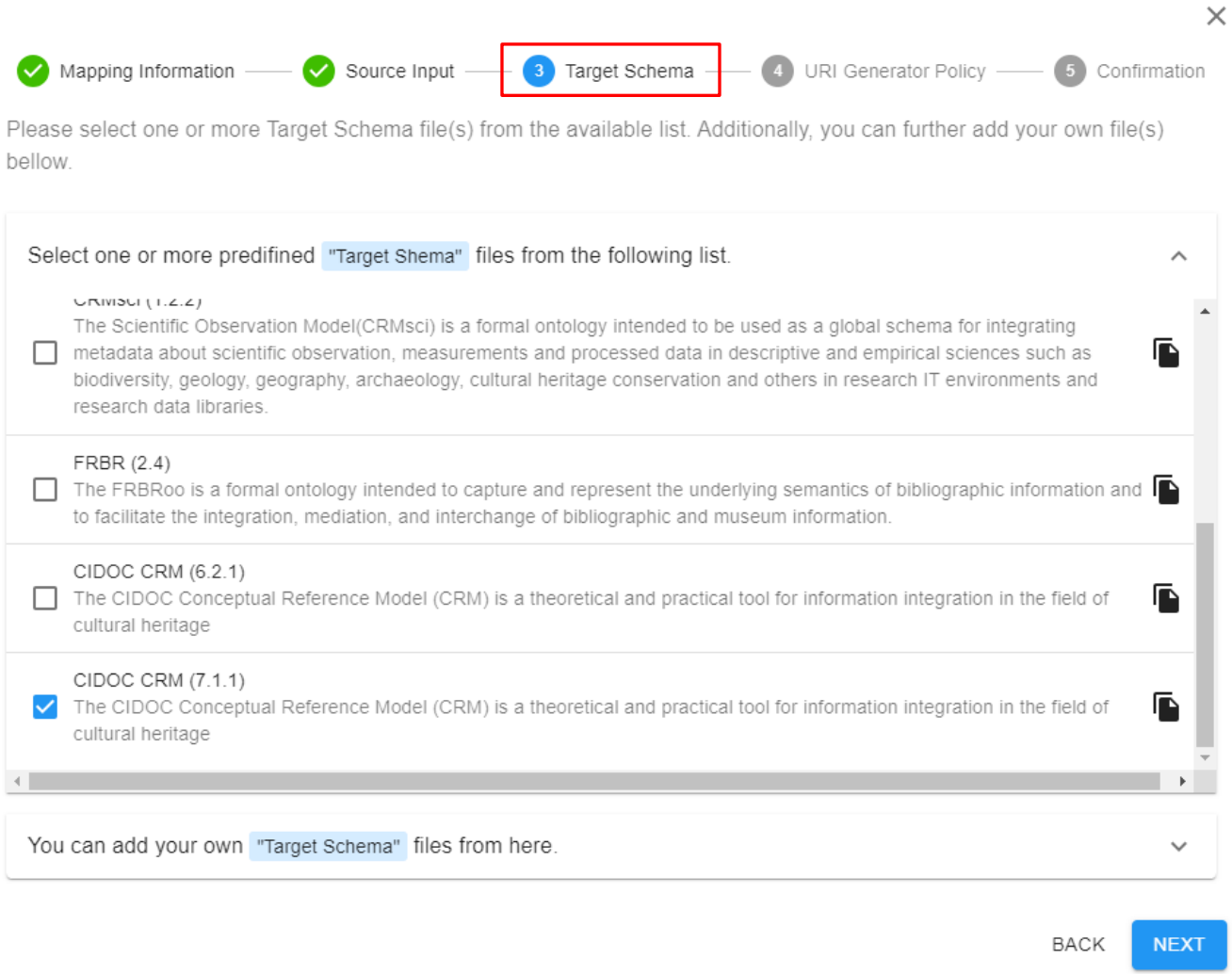
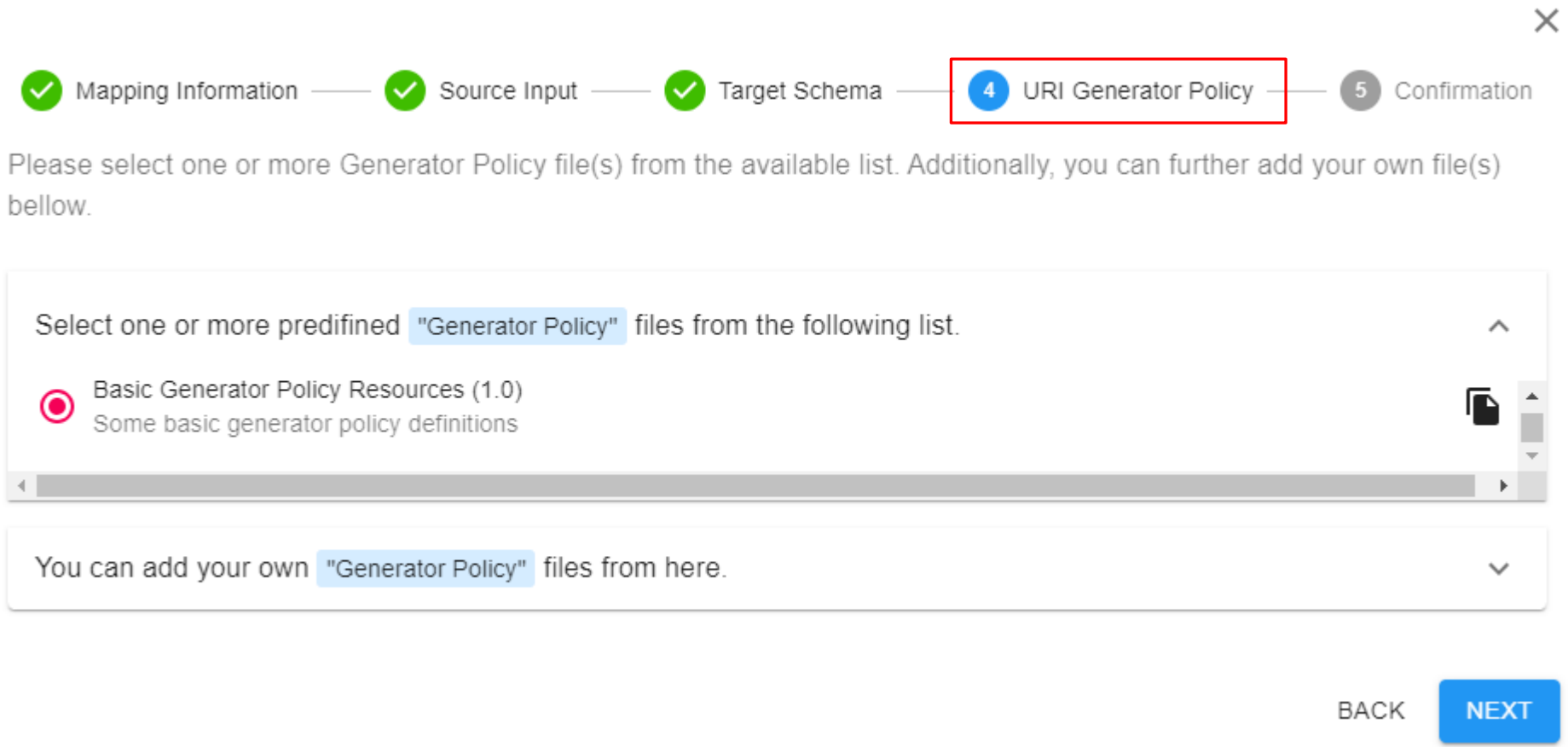
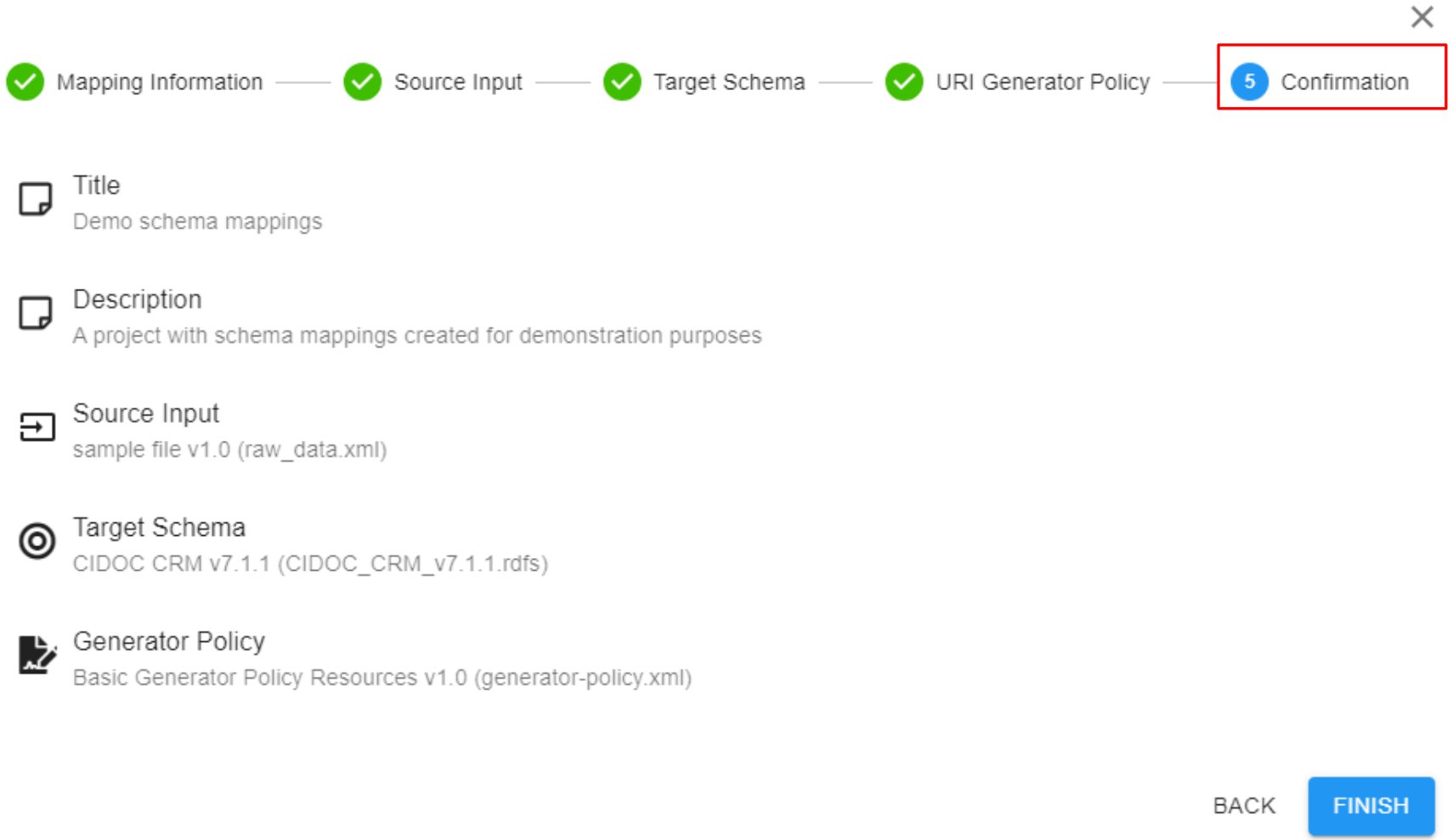
Step 3: Select or upload the target schema/ontology



Step 4: Select or upload the URI and values generation policy



Step 5: Inspect the project configuration and create the project



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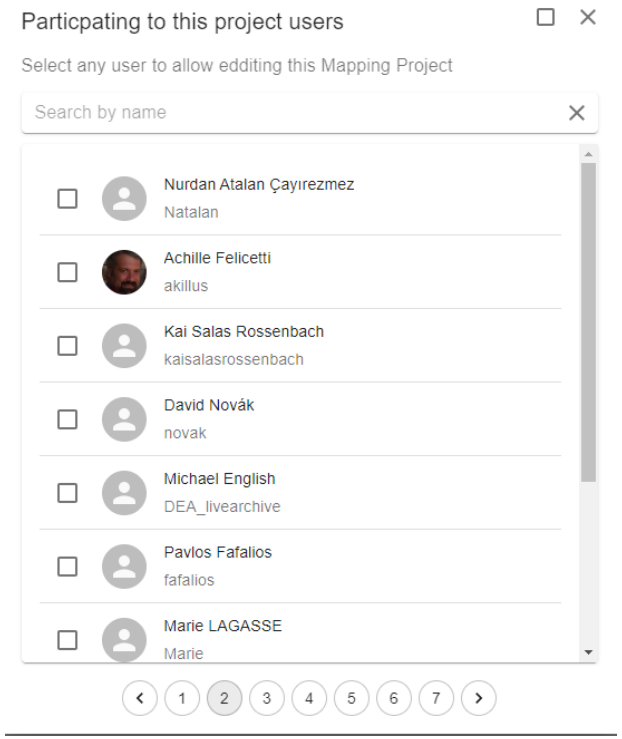
Extra steps

Invite Collaborators



Start your mappings project

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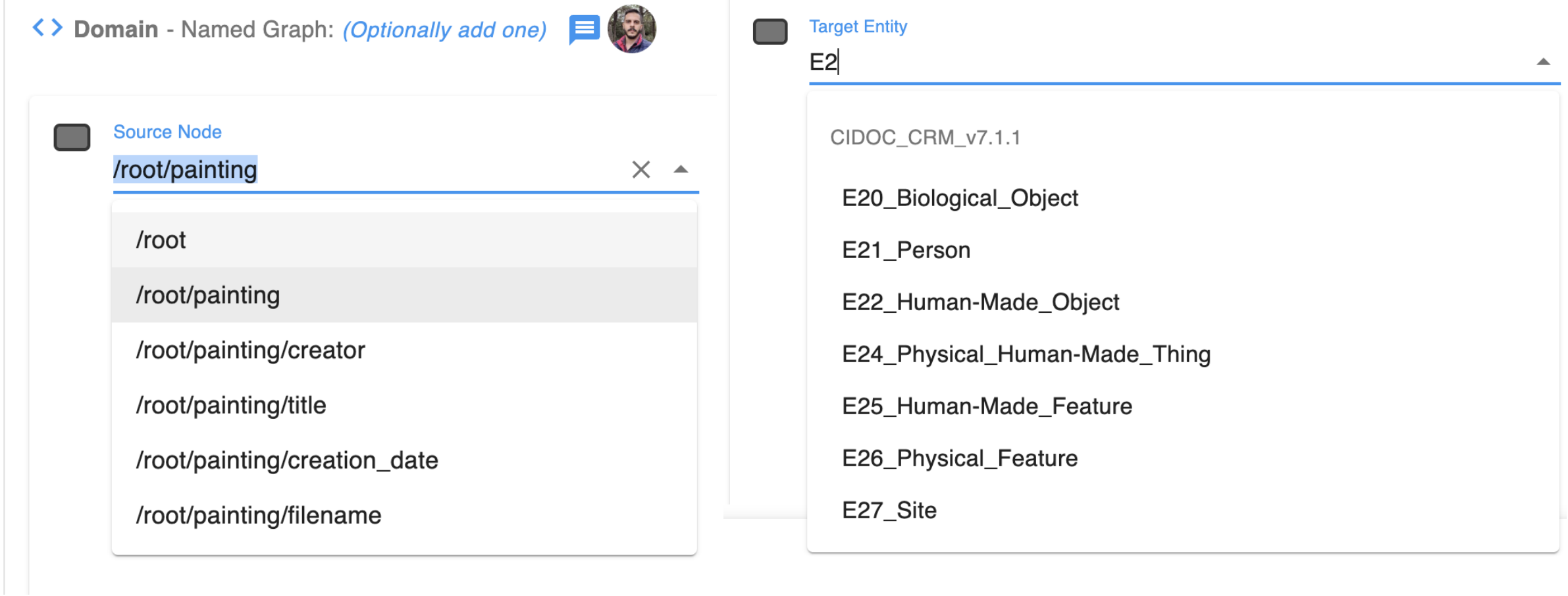
- Guided mappings by analyzing source resources and target schemata



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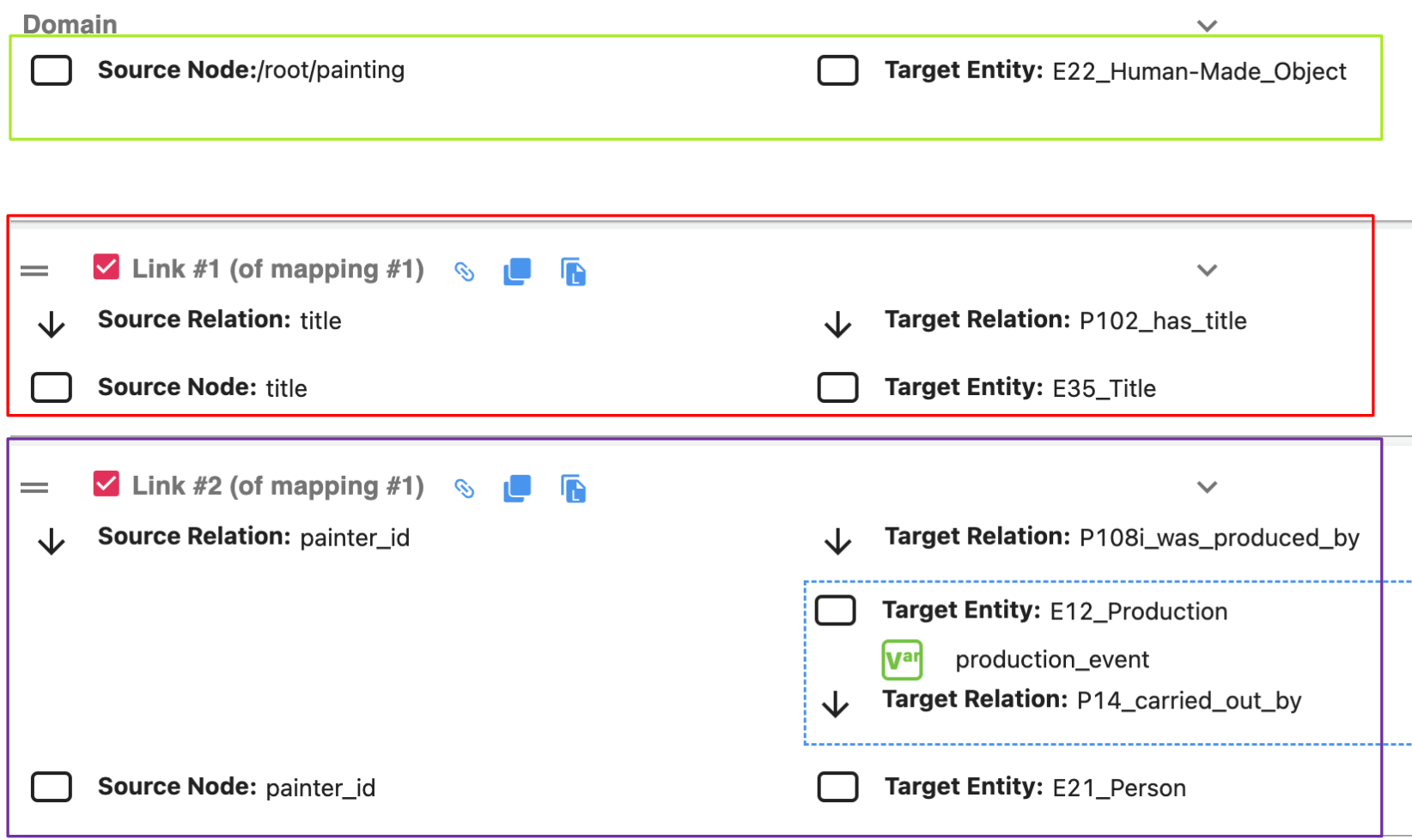
- Guided mappings by analyzing source resources and target schemata

```
<painting>
  <id>p-1</id>
  <painter>Van Gogh</painter>
  <title>Self-Portrait as a Painter</title>
  <creation_date>1889</creation_date>
  <filename>file_p-1.jpg</filename>
</painting>
<painting>
  <id>p-3</id>
  <painter>Degas</painter>
  <title>The Ballet Class</title>
  <creation_date>1874</creation_date>
  <filename>file_p-3.jpg</filename>
</painting>
```



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- Guided mappings by analyzing source resources and target schemata

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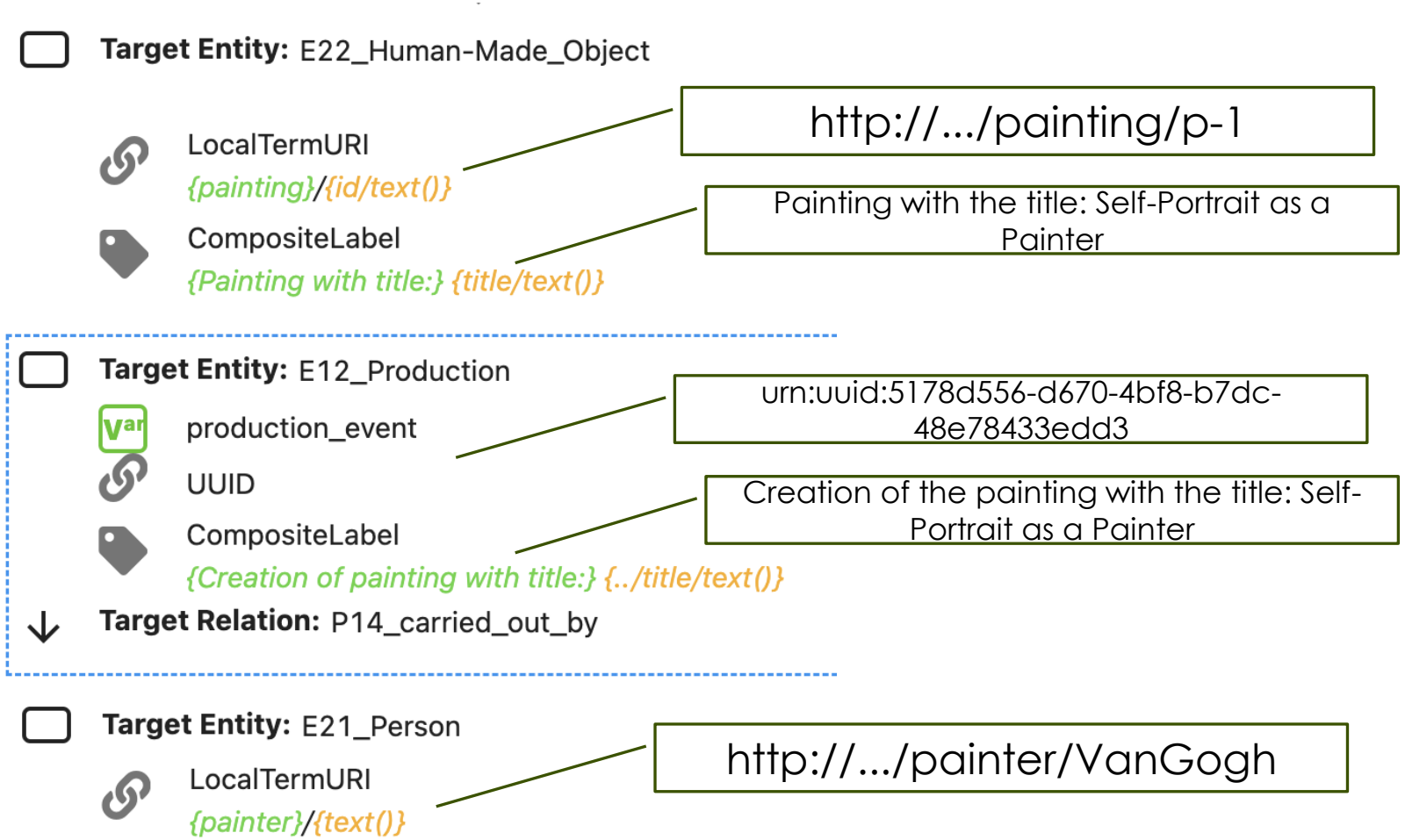
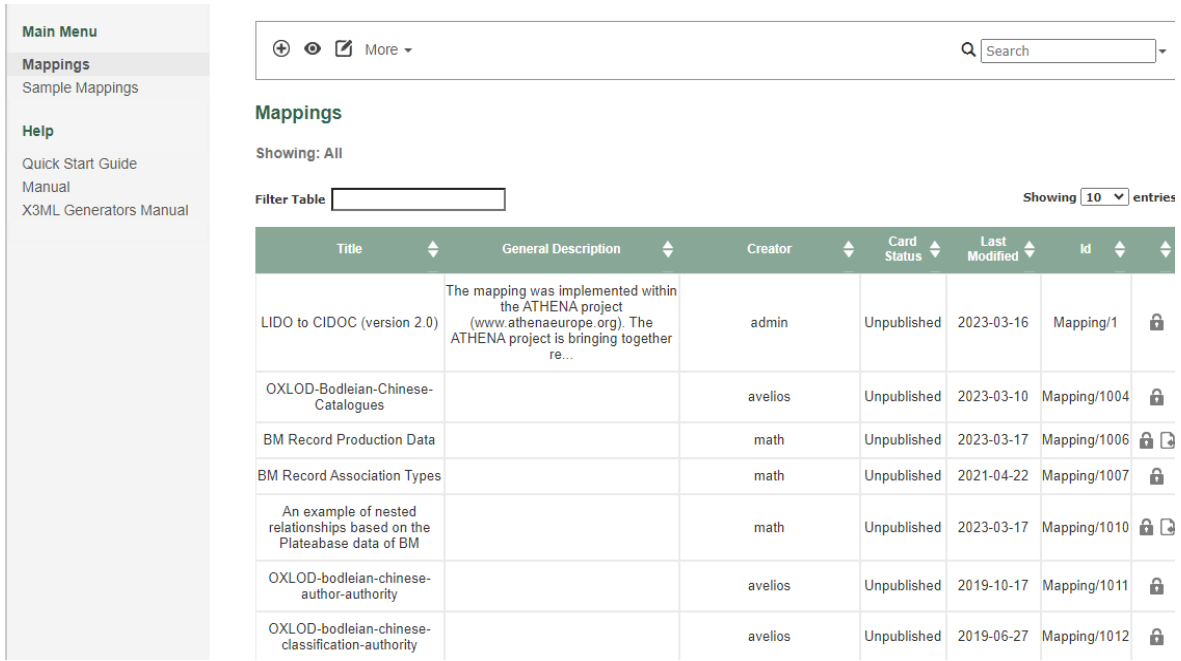
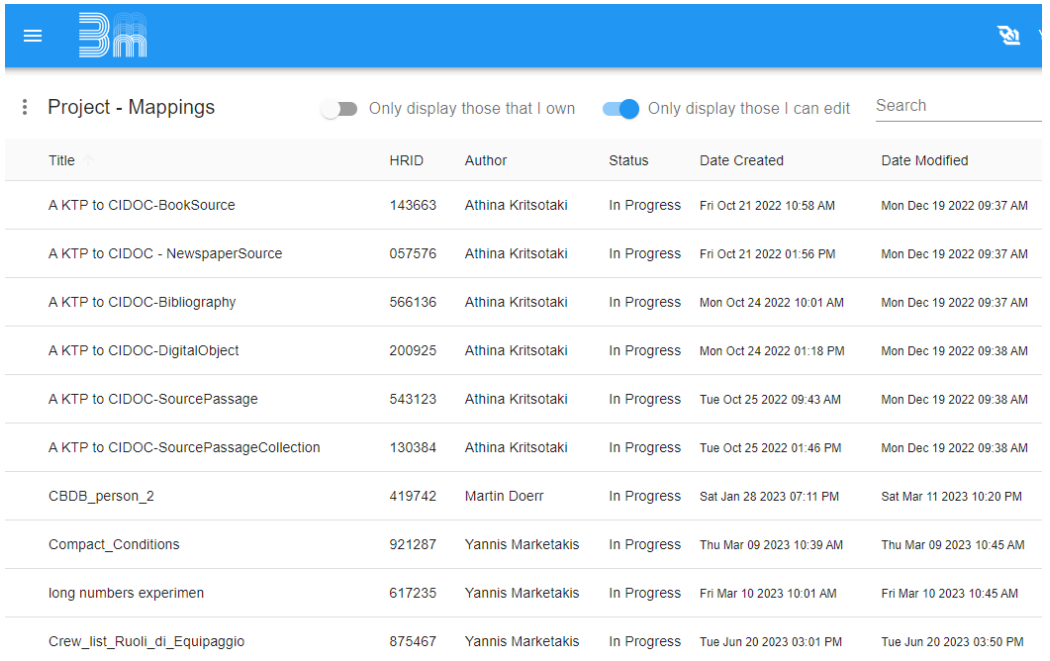
  <painter>Degas</painter>
  <title>The Ballet Class</title>
  <creation_date>1874</creation_date>
  <filename>file_p-3.jpg</filename>
</painting>
```



3M – comparison with old 3M



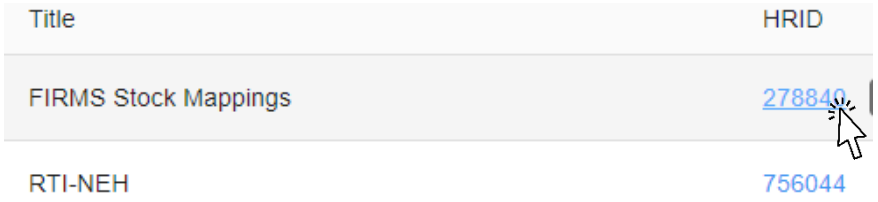


- Old and outdated technology
- Slow and laggy
- Consists of multiple components
- Difficult to scale
- Complicated installation

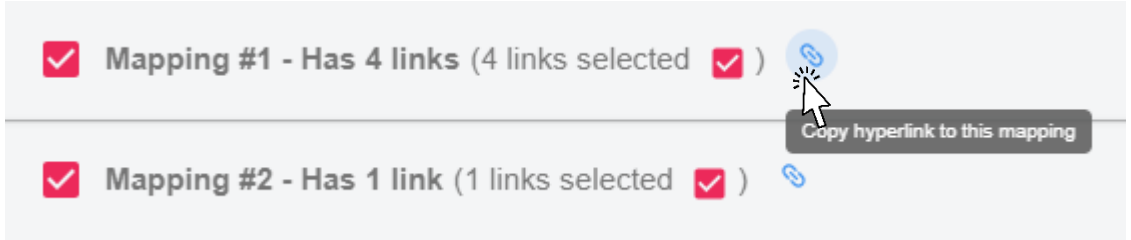
- Modern and state-of-the-art technologies
- Fast and responsive
- Simple MVC design and implementation
- Robust and scalable
- One-command installation

3M – Latest advancements

- Link to share mapping projects

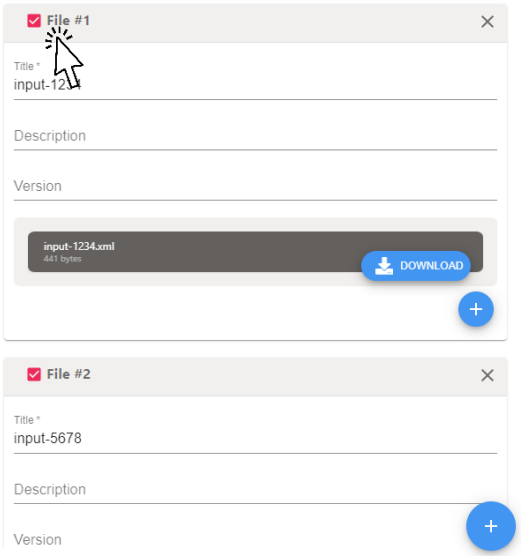


https://demos.isl.ics.forth.gr/3m/MappingTableView/278840



https://demos.isl.ics.forth.gr/3m/MappingTableView/753281/1xcfx2h6

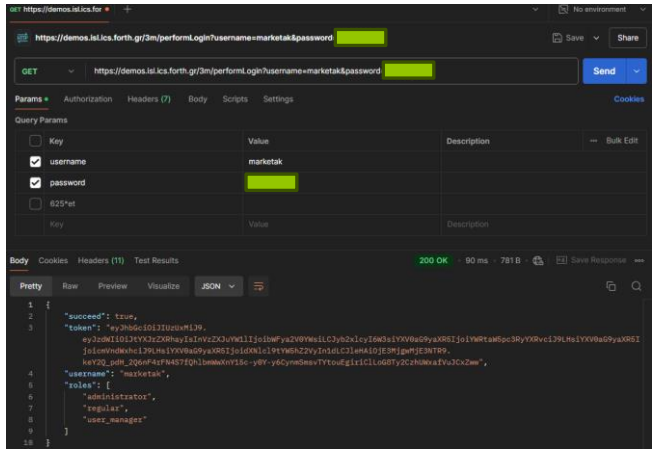
- Select input files to transform

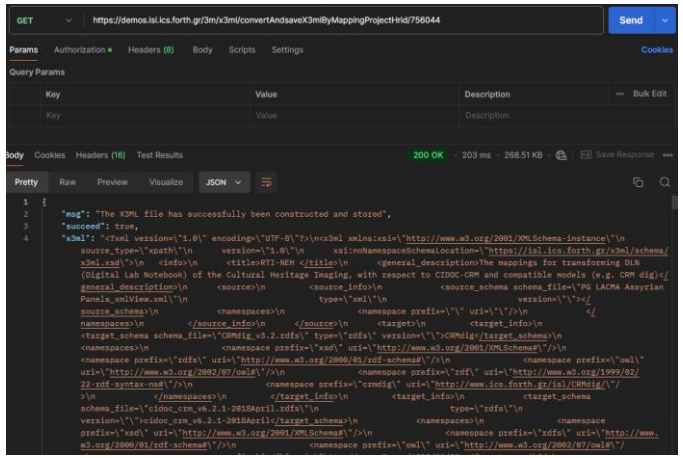


Select which files will be used for the transformation

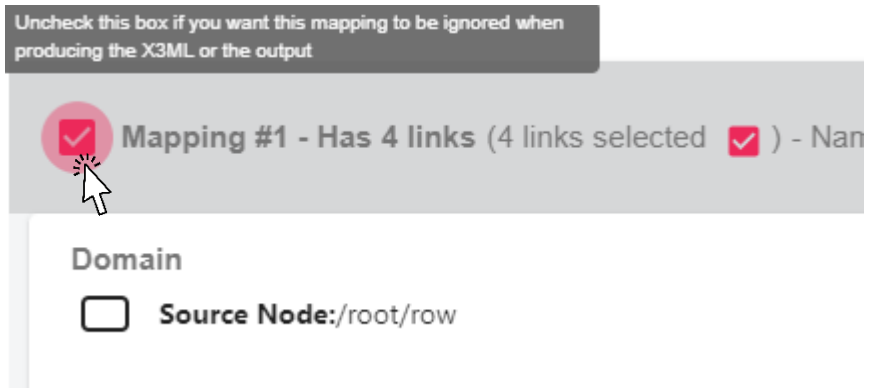
3M – Latest advancements

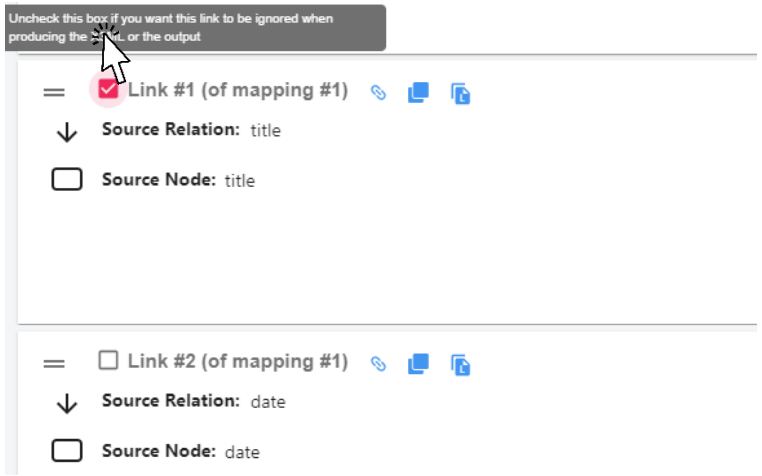
- REST Service to expose the raw data of X3ML mappings





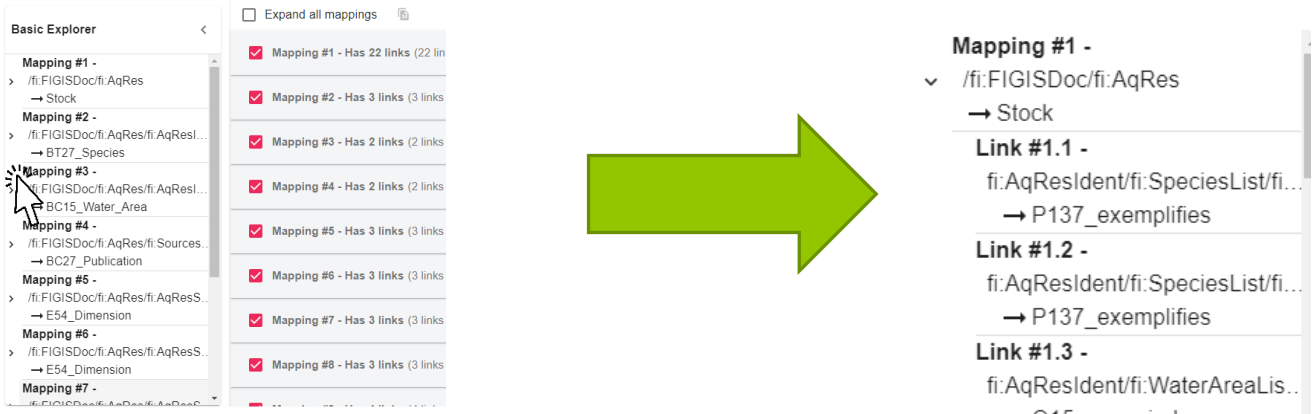
- Enable/Disable mappings and links



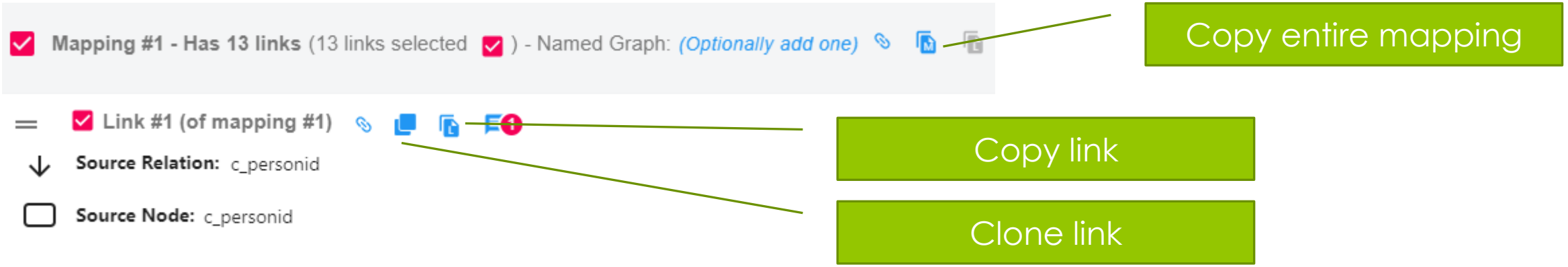


3M – Latest advancements

- Explorer View
  - Provides a dense overview of a mapping project

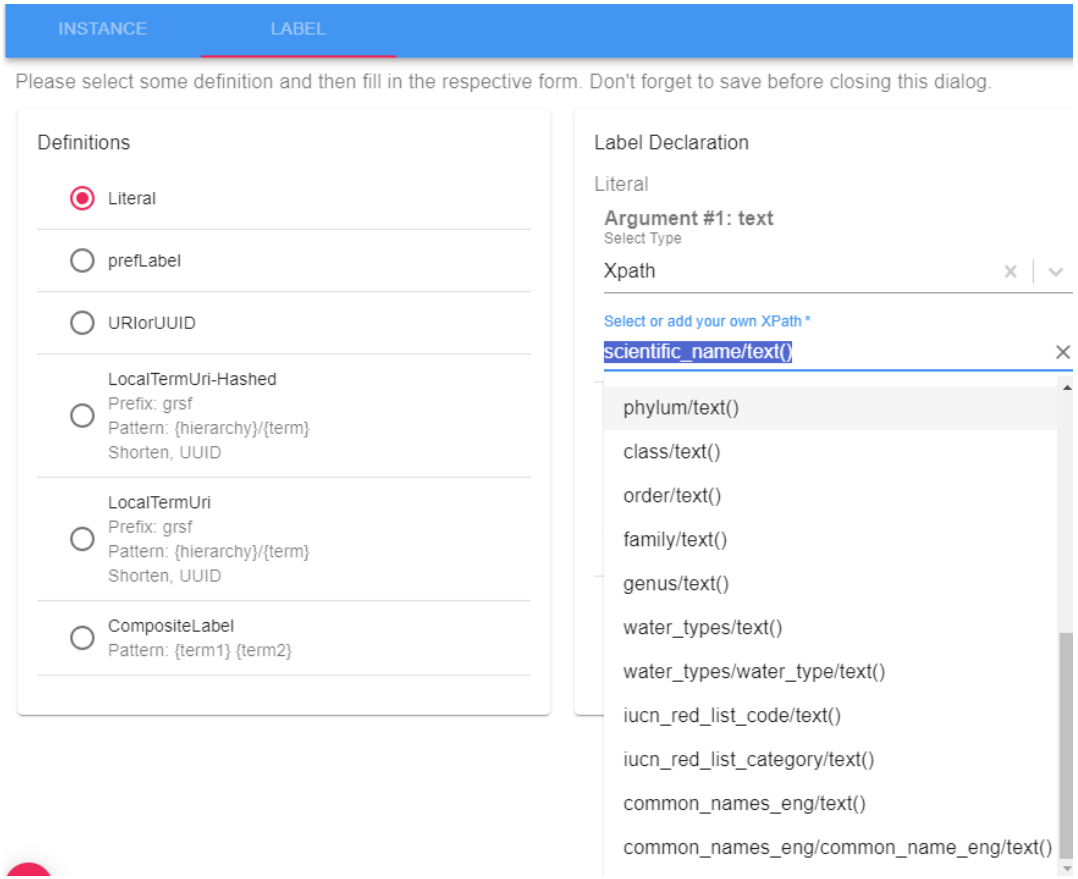


- Copy/Clone entire mappings/links



3M – Latest advancements

- XPATH suggestions in generator policy declarations



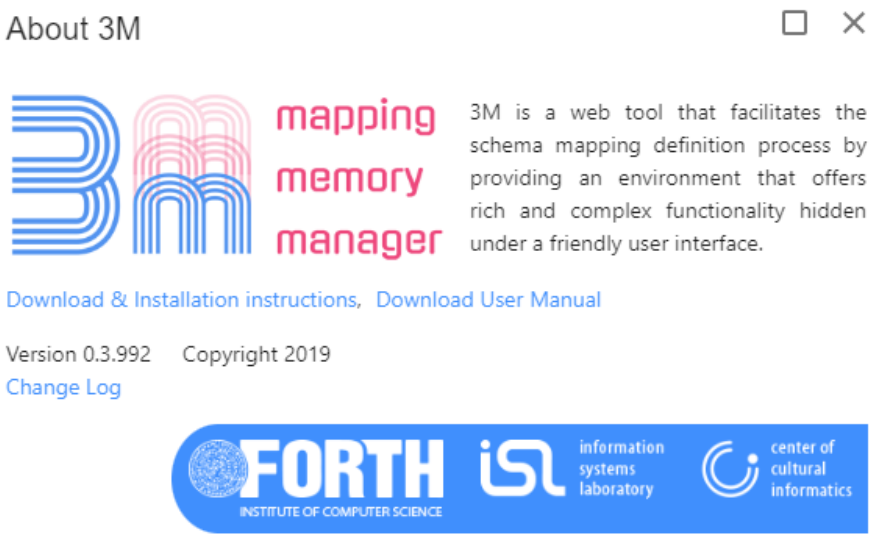
Access 3M

- Online version
  - Just register and use it
  - Available at https://demos.isl.ics.forth.gr/3m
- Build your own deployment
  - Based on docker
    - Download from https://gitlab.isl.ics.forth.gr/cci/3m-docker
    - Update .env accordingly (i.e. mail settings)
    - Execute `docker-compose up`
    - ☺

3M – Future Steps

- 3M is under continuous development
- Short term
  - Improvement of error logging and information messages
  - New ontology reasoner
  - Documentation and user manuals
  - Various fixes and bugs
    - We will open a ticketing mechanism
- Long term
  - Better integration with other components (e.g. AQuB)

3M Demo



- Currently (September 2024)
  - Latest release (September 9, 2024)
    - Overall 6 releases in 2024
  - Contains
    - 120 users
    - 454 mapping projects