



## 3D-COFORM Mapping Tool

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- **Work Package 6**
  - Tools for the **semi-automatic processing** of legacy information
  - To guarantee the **preservation of the original data** together with further additions
  - **Co-referencing and cross-referencing** issues
  - Definition of a **common domain specific CH terminology**
  - Task 6.1: Tool for **semi-automatic conversion** of existing datasets based on **mappings** to the 3D-COFORM standard

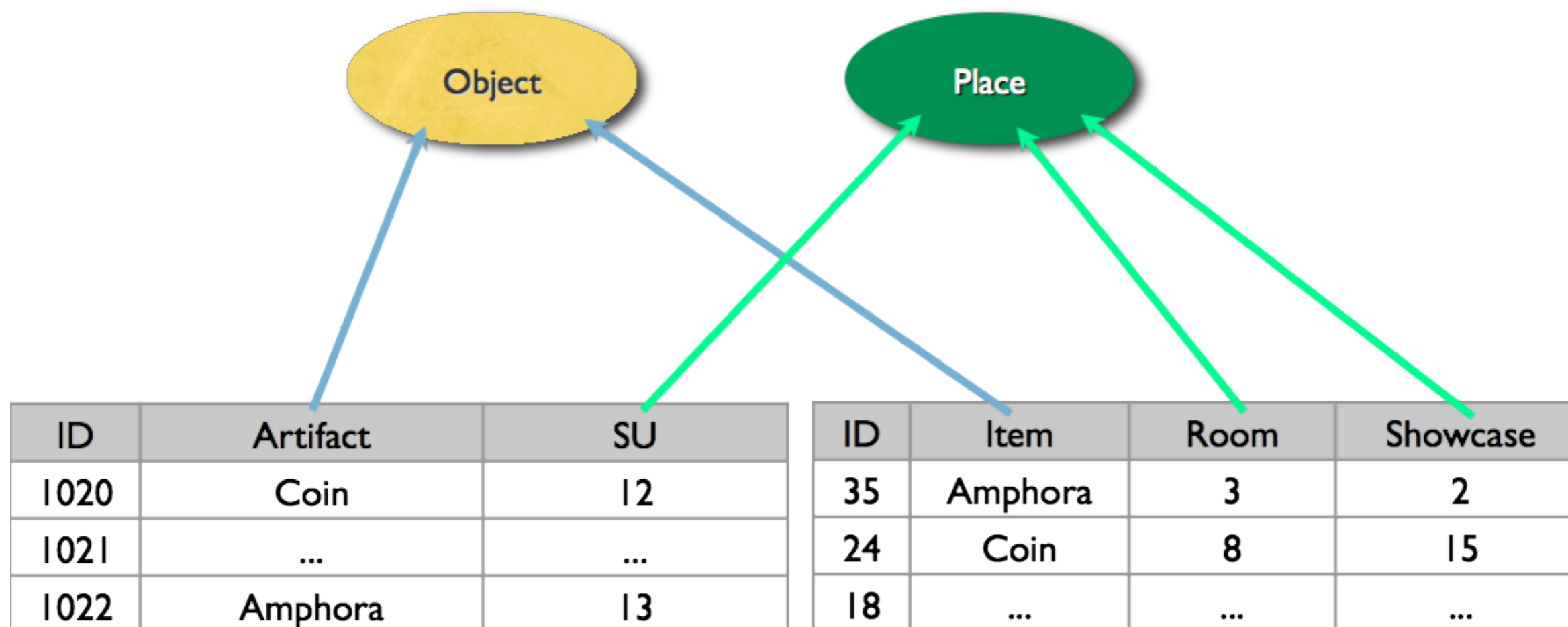


# 3DC Mapping Tool – Main Goals

- To create **high level conceptual meanings** of metadata related to digital objects
- To **extract semantic information** from digital repositories, databases, HTML pages, descriptive texts, metadata tags ...
- To put semantic information into **standard formats**
- Syntax: W3C Standards (**RDF** and **SPARQL**)
- Grammar: Ontologies (**CIDOC-CRM** for Cultural Heritage)



## Mapping Scenarios

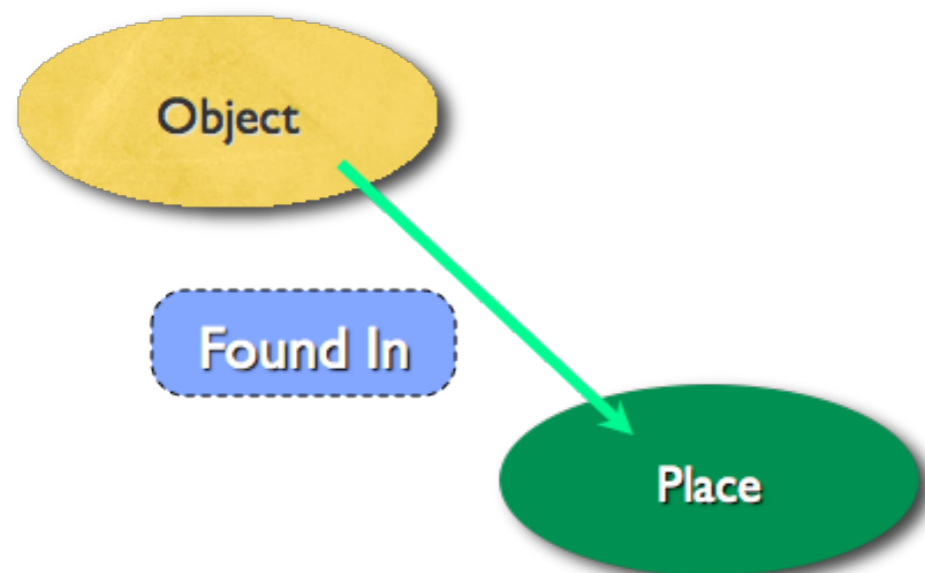


Excavation DB:  
Artifacts Table

Museum DB:  
Items Table

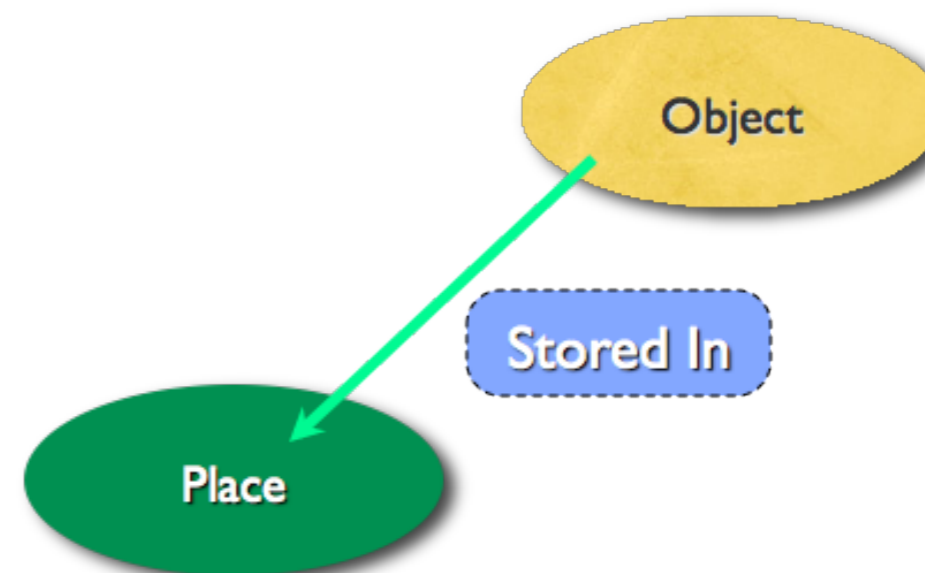


## Mapping Scenarios



ID	Artifact	SU
1020	Coin	12
1021	...	...
1022	Amphora	13

Excavation DB:  
Artifacts Table



ID	Item	Room	Showcase
35	Amphora	3	2
24	Coin	8	15
18	...	...	...

Museum DB:  
Items Table



# Mapping Tool - Development History

**2004 - EPOCH:** European Network of Excellence in Open Cultural Heritage (<http://www.epoch.eu>)

- **MAD Semantic Repository** (VAST-LAB, PIN)
- **MAD Firefox plugin** (VAST-LAB, PIN)



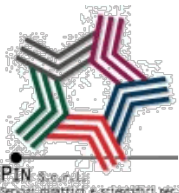
**2006 - AMA:** Archive Mapper for Archaeology (<http://www.epoch.eu/AMA/>)

- **AMA Mapping Tool** (VAST-LAB, PIN – UNIOR)
- **AMA Text Tool** (EDD, University of Oslo)



**2008 - 3D-COFORM:** Tools and expertise for 3D collection formation (<http://www.3d-coform.eu>)

- **3DC Mapping Tool** (VAST-LAB, PIN)



# The AMA Mapping Tool



property: LucasArts

- Open Source tool for mapping existing archaeological datasets to **CIDOC-CRM**
- **Stand-Alone (Java, Adobe AIR) and Online Application (PHP)**

# The AMA Mapping Tool

## AMA GUI: Mapping to CIDOC-CRM

The screenshot shows the AMA Mapping Tool interface. The browser address bar displays `http://ama.ilbello.com/mapping.php`. The interface is divided into three main sections:

- Left Panel (File(s)):** Shows the source file `CUMA_SYSLAT.rdfs` with a tree view containing `US`, `prosp`, `scatto`, `sez`, and `tav`. Below the tree, it indicates `Exec. Time: 0.000357151031494 sec`.
- Middle Panel (New mapping):** Contains a table with columns `Name`, `Left`, `Right`, and `I/A`.

Name	Left	Right	I/A
Strat_unit	US	E53.Place	↔
Strt_Image	scatto	E38.Image	↔
Strat_Section	sez	E37.Mark	↔

Below the table are buttons for `Save Changes` and `Download MAP File (XML)`. A partial XML snippet is visible:

```
<?xml version="1.0" encoding="iso-8859-1" >
<mapping_idx="center.0"><file_left_id
```
- Right Panel (File(s)):** Shows the target file `cidoc_v4.2.rdfs` with a tree view of CIDOC-CRM classes such as `E1.CRM_Entity`, `E2.Temporal_Entity`, `E52.Time-Span`, `E53.Place`, `E54.Dimension`, `E77.Persistent_Item`, `E39.Actor`, `E41.Appellation`, `E51.Contact_Point`, `E70.Thing`, `E71.Man-Made_Thing`, `E24.Physical_Man-Made_Thing`, `E28.Conceptual_Object`, `E30.Right`, `E55.Type`, `E73.Information_Object`, `E29.Design_or_Procedure`, `E31.Document`, `E33.Linguistic_Object`, `E36.Visual_Item`, `E37.Mark`, `E38.Image`, `E72.Legal_Object`, and `E59.Primitive_Value`. Below the tree, it indicates `Exec. Time: 0.00189900398254 sec`.

At the bottom left of the interface, there are logos for PIN S.p.A. and the University of Florence. The status bar at the bottom shows `Completato`.

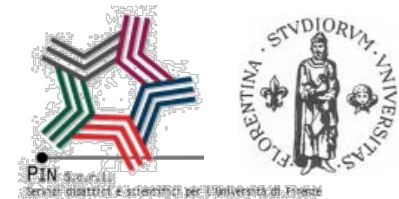




# Using the 3D-COFORM Mapping Tool

## Preliminary operations

- Creating a **schema** (XML or RDF) representing the **DB structure**
- Schema creation: performed by **database experts** of the CH institutions, aware of the details of database tables and fields
- **Existing tools: D2R** to convert the schema of the legacy database to XML or RDF



## Provided Features

- To assist **CH professionals** in describing the legacy data stored in relational databases in a standard way.
- To give the user the possibility to **create matching schemas** describing the matching between legacy database structures and CIDOC-CRM ontology
- To perform the operations of **semi-automatic encoding** of the legacy data



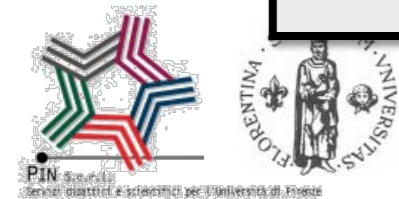
# 3D-COFORM Mapping Tool - Main Window

3D-COFORM Legacy Mapping & Exporting Tool

Legacy Data Schema  Mapped Elements (CIDOC-CRM)

mus\_part\_location\_history\_data\_fitness  
mus\_part\_location\_history\_data\_normal  
mus\_part\_location\_history\_data\_normal  
mus\_part\_location\_history\_data\_normal  
mus\_part\_location\_history\_data\_normal  
mus\_part\_location\_history\_data\_normal  
mus\_part\_location\_history\_data\_note  
mus\_part\_location\_history\_data\_user  
mus\_part\_location\_history\_date  
mus\_part\_location\_history\_user  
mus\_part\_location\_normal  
mus\_part\_location\_normal\_free  
mus\_part\_location\_normal\_th\_h  
mus\_part\_location\_normal\_th\_i  
mus\_part\_location\_normal\_val  
mus\_part\_location\_note  
mus\_part\_location\_user  
mus\_part\_name  
mus\_part\_name\_currency  
mus\_part\_name\_currency\_th\_h  
mus\_part\_name\_currency\_th\_i  
mus\_part\_name\_currency\_val  
mus\_part\_name\_field  
mus\_part\_name\_field\_th\_h  
mus\_part\_name\_field\_th\_i  
mus\_part\_name\_field\_val  
mus\_part\_name\_language  
mus\_part\_name\_level  
mus\_part\_name\_level\_th\_h  
mus\_part\_name\_level\_th\_i

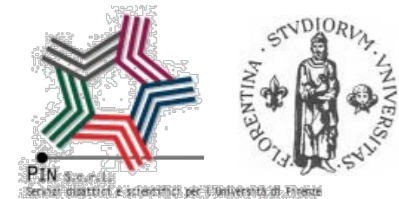
mus\_obj\_images\_association\_val: E3.Condition\_State => P5B.forms\_part\_of => E3.Condition\_State  
mus\_part\_description: E31.Document => P70F.documents => E24.Physical\_Man-Made\_Thing  
mus\_part\_location\_note: E17.Type\_Assignment => P41F.classified => E14.Condition\_Assessment



# 3D-COFORM Mapping Features

## Matching Operations

- Functions to upload legacy XML / RDF database schema
- Functions for loading, visualize and edit CIDOC-CRM schema
- Functions for defining identifiers for the new entities (URN / UUID)
- Rules for the URN / UUID creation:
  - Defined by IT experts according to the identifiers of their databases
  - Automatically created by reading the mapped elements
- Save / Load functions to create and make available the XML matching schema file containing matching information
- FORTH Mapping Language: used to express the matchings





## Namespaces and Thesauri

- Definition a **default namespace** to be used for the encoding of the final mapped data
- Instantiation of **thesauri** that can be used for the definition of legacy elements as “thesaurus concepts”
- Abbreviations and related **URLs** can be provided **for each thesaurus** defined within the Mapping Tool



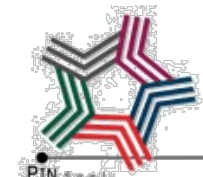
# 3D-COFORM Mapping Tool - Namespaces and Thesauri

Add Thesauri for Mapping

Define thesauri to be used for the mapping process (e.g. <http://www.getty.edu/research/tools/vocabularies/aat/>)

Label	Thesaurus URI
<input type="text"/>	<input type="text"/>

AAT => <http://www.getty.edu/research/tools/vocabularies/>  
TGN => <http://www.getty.edu/research/tools/vocabularies/tgn/>  
PICO => <http://culturaitalia.it/pico/thesaurus/4.2>



## Ontology Browser

- **Mini browser** of the CIDOC-CRM ontology
- Shows the various **entities** and **properties** in a bi-dimensional way
- Creation of **mapping scenarios** showing all the possible relationships between various entities
- **Map extensions** and **path definitions** for legacy database fields



# 3D-COFORM Mapping – Ontology Browser

CIDOC-CRM Ontology Browser

Use

[All Classes](#) | [Upper Class](#)

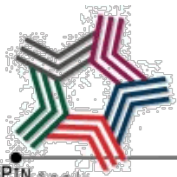
[E24.Physical\\_Man-Made\\_Thing \(Use\)](#)

- [E22.Man-Made\\_Object \(Use\)](#)
- [E84.Information\\_Carrier \(Use\)](#)
- [E78.Collection \(Use\)](#)
- [E25.Man-Made\\_Feature \(Use\)](#)

Selected Property:  
[P62F.depicts \(Use\)](#)

- [E46.Section\\_Definition \(Use\)](#)
- [E39.Actor \(Use\)](#)
- [E21.Person \(Use\)](#)
- [E74.Group \(Use\)](#)
- [E40.Legal\\_Body \(Use\)](#)
- [E70.Thing \(Use\)](#)
- [E71.Man-Made\\_Thing \(Use\)](#)
- [E24.Physical\\_Man-Made\\_Thing \(Use\)](#)
- [E22.Man-Made\\_Object \(Use\)](#)
- [E84.Information\\_Carrier \(Use\)](#)
- [E78.Collection \(Use\)](#)
- [E25.Man-Made\\_Feature \(Use\)](#)
- [E28.Conceptual\\_Object \(Use\)](#)
- [E73.Information\\_Object \(Use\)](#)
- [E33.Linguistic\\_Object \(Use\)](#)
- [E34.Inscription \(Use\)](#)
- [E35.Title \(Use\)](#)
- [E36.Visual\\_Item \(Use\)](#)
- [E37.Mark \(Use\)](#)
- [E34.Inscription \(Use\)](#)
- [E38.Image \(Use\)](#)
- [E29.Design\\_or\\_Procedure \(Use\)](#)
- [E34.Document \(Use\)](#)

Mapping Element  
**mus\_obj\_images\_field** => E84.Information\_Carrier => P62F.depicts => E22.Man-Made\_Object

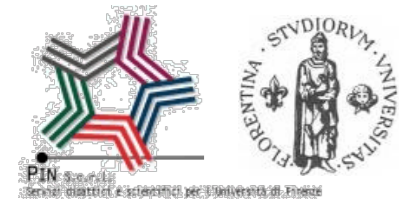
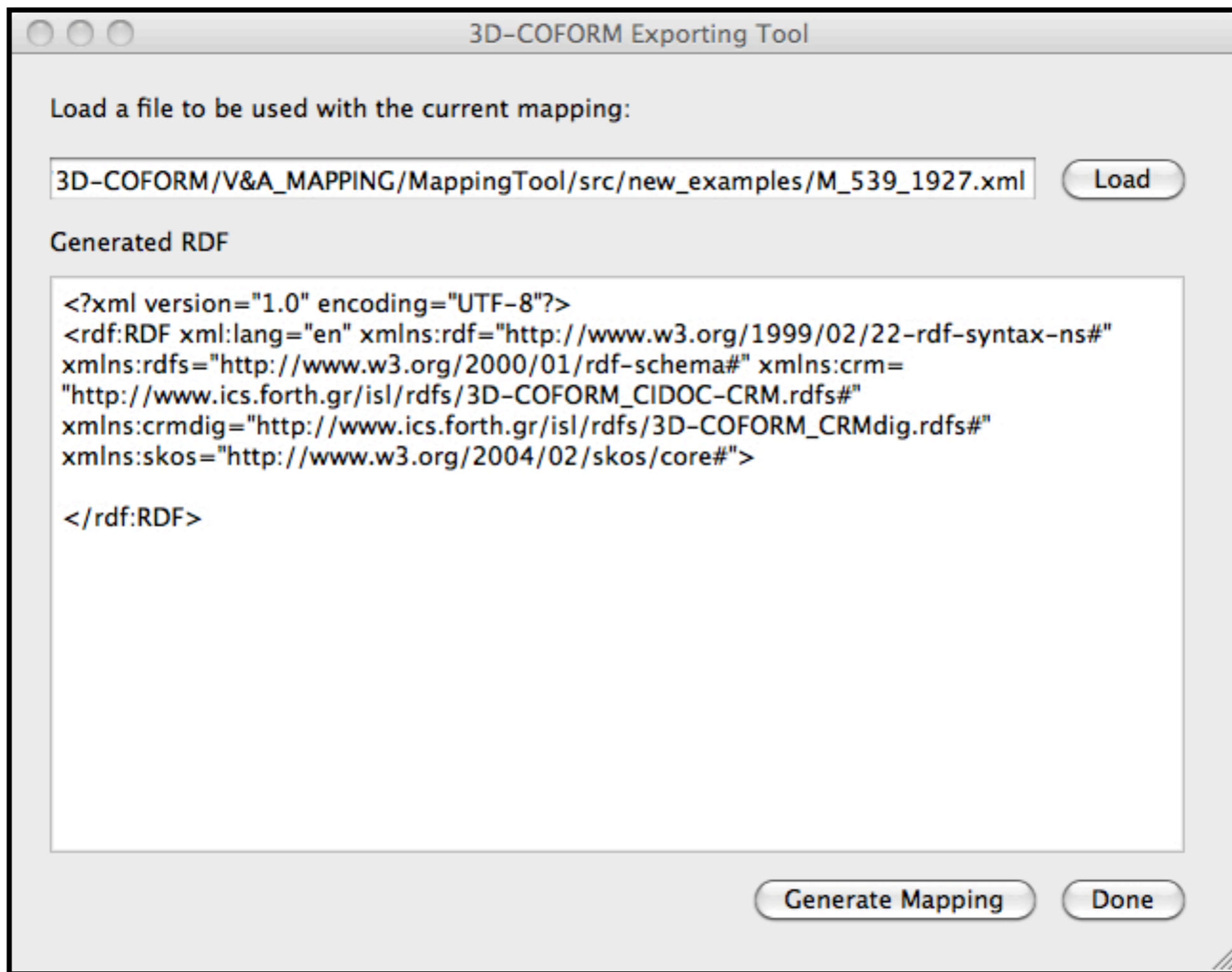




## Exporting Operations

- Combining the matching files and the XML representation of the data stored into the source legacy databases to perform the data conversion to **CIDOC-CRM in RDF format**
- Sending all the RDF encoded semantic information of the original archive to the 3D-COFORM Repository Infrastructure (*triple store*)

# 3D-COFORM Mapping Tool – Exporting Facilities





**AMA: Archive Mapper for Archaeology**  
(<http://www.epoch-net.org/AMA/>)



**MAD: Managing Archaeological Data** (<http://www.epoch-net.org/MAD/>)

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