Developing a Metadata Model for Historic Buildings

Architecture Metadata Object Schema

ARMOS Draft Version

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Records of Architecture…What happens;

• Traditional flat metadata descriptions of works of architecture - Building is not a finished and irremovable object
• Architecture: A need for a movable perspective of continuous transformation
• Isolated and disconnected information
• From “Records” ……to Linked Data
• Starting to exam…relationships in architecture
Relationships

- Works – Images
- Works – Works
- Works – Authority Files Records
- Authority Files Records – Authority Files

![Diagram showing relationships between Works, Images, and Authorities

CCO, 2006]
The Battistero of San Giovann – Gates of Paradise- Florence Italy (CCO, example)
Related Works

**Intrinsic Relationships:** Essential direct relationship between two works.
(whole – part Relationships)

e.g. Dome + Façade +

**Extrinsic Relationships:** Informative / not essential  see also

e.g. Record for a building + interpretive documentation:
plans, sketches, models
Intrinsic Relationships

• In Case of Architecture – institutions owns only a part of a Work
• A part inherit information of the whole
• A record of the whole is essential
• Separate Records / Lack of Resource

Solution: A single record may be used for a group or collection of works (FRBR calls this an aggregation)
Extrinsic Relationship Types

Temporal
A building… *is a successor of*…*is a predecessor of*
A building is a preparatory work of another

Conceptual
A Building… *inspired from* …. *is influenced from*…*is a variation of*…

Spatial
Two or more works intended to be seen together or share a common purpose …*is similar of*..

...some institutions may find it unnecessary to identify them. (CCO)
Rue Rivoli (Paris) inspired from Liston (Corfu).

Town Hall (Gr. - Corfu) is similar to Town Hall (Gr. Heraklion).
An ideal model could...

- Group buildings logically
- Connecting them
- Facilitate the discovery of all instances of a particular building type in a single search [find]
- Distinguish between the different morphological and typological features [identify]
- Navigate the user easily to the most appropriate. [select, obtain]
Adopting FRBR?

- “Work” for FRBR ≠ “Work” for material of our culture (CCO)

- A work is an abstract entity; there is no single material object - we recognize the work through individual realizations or expressions of the work,

- FRBR - push reasonable and helpful boundaries of work/expression

(Baca, Clarke 2007)
Architecture Theories - Morphology

• **Building**: Form+ Structure+ Content

• **Architectural Composition**: is the beginning of the existence of a structure

• **Morphology** refers to features such as: position in place, relationship with environment, relation between openings and solids, expression of materials such as texture and own color and the functional applied ornamentation.

• **Morphology** is not referred so much to the decoration of the building (this is style or the rhythm) as to the **elements** of its **general composition** such as facades, plans, walls, windows, balconies etc.
Architecture Theories - Typology

- **Typology**: In typological science, the term typology can be understood as a term purely used to classify individuals within a group.

- In the field of architectural design, **typology** is considered as a rigorous method for analysis, organization, and classification of a variety of buildings into representative classes (Lawrence, 1994; Schneekloth & Franck, 1994).

- **Typology** is a comparative classification of dominant architectural solutions with objective and rationally criteria.

- **Typological examination**: desire to simplify, reducing shapes to their basic geometries.

- **Type = thinking in groups**
Typology

Building Class  ■  Educational Building

Building Type  ■  High school

Typology Group  ■  Two storey L shaped
Architecture Theories - Patterns

- The process that produces architecture is originally based on repeatability, just like any other technical process.
- Our entire way of thinking and seeing is controlled by typological perception of patterns that are based on repetitions.
- **Patterns**: in architecture is the capturing of architectural design ideas as archetypal and reusable descriptions (visual or textual) grouping objects by certain inherent structural similarities.

Patterns=typical samples
Patterns in Morphology

Roof Details
Patterns in Typology

Floor plan types
Conceptual Modeling Tasks

- A CM identifying the entities - relationships - attributes.
- Syntax: A lightweight ER Model
- We use concepts that are meta, generic, abstract and philosophical, and therefore are general enough to address (at a high level) a broad range of domain areas.

Dual Attention: the model must be sufficiently accurate for its intended purpose / accurate with architecture theories
ArMOS Conceptual Model

Architectural Composition Building

- is realized through
- derives/derived from
- is composed of

MORPHOLOGY

- is created by
- is constructed within
- has physical location
- depicted in/depicts

TYPOLOGY

AGENT

PERIOD

PLACE

PATTERN (S)

EXEMPLARS

associated with
ArMOS Draft Version
Architecture Metadata Object Schema

In reality….ArMOS is an **Harmonization Profile** of Inventory Systems

- Descriptive – Structural Information for a Building
- Descriptive  - Technical Metadata for an Image of the building
- Administrative Metadata for Management Purpose (Designation Information)
- Descriptive metadata for: Area - Immovable Monument
- Descriptive metadata for a citation
- Descriptive metadata for an archival collection
- Extrinsic - Intrinsic Relationships
Element Vocabulary

Drawn elements from the following Namespaces

[CDI]
http://archives.icom.museum/object-id/heritage/core.html

[CDWA] [CDWALITE]
http://www.getty.edu/research/publications/electronic_publications/cdwa/

[ADAG]
http://www.getty.edu/research/publications/electronic_publications/fda/

[OBJECT –ID]
http://archives.icom.museum/object-id/

[ARMOS] new elements locally defined
Element set for Management Purpose
http://dlib.ionio.gr/standards/armos
Appropriate Identification - Readability

Term URI: http://dlib.ionio.gr/standards/armos/protectedSection
Name: protectedSection
Label: Protected Section
Defined By: http://dlib.ionio.gr/standards/armos
Definition: -
Source Definition: -
Local Definition: The term identifies the part(s) of the building, which is protected
Local Comment: Values:
Local Comments: Examples: Listing may protect some fixtures and fittings, as well as
outbuildings, boundary walls and all other structures 'within the curtilage'.
Type of term: Element
Refines: http://dlib.ionio.gr/standards/armos/typeOfProtection
Refined By: -
Has Encoding Scheme: -
Similar To: -
Broader Than: -
Narrower Than: -
Obligation: O
Condition: -
Datatype: string
Occurrence: R
The Community
Studying Inventory Systems

- 11 National Monument Inventories - Systems (Unesco, 1984)
  
  Argentina, France, Canada, India, Italy, Japan, Mexico, Morocco, NY, Poland, Zambia

- On line National Monument Catalogues
  Greece, Ireland, England…

- 60 - Organizations / Institutions from Greece
# Metadata Types

<table>
<thead>
<tr>
<th>Metadata Types</th>
<th>ARMOS Harmonization Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Structural</td>
<td>★★★★★ Extended</td>
</tr>
<tr>
<td>Administrative</td>
<td>★★★★★ Extended</td>
</tr>
</tbody>
</table>
ARMOS Structure

- Abstract Hierarchical Model with no Formal Semantics
- Belongs to: IEEE LOM family of specifications
- Hierarchy of elements grouped into 16 categories
- Each category is comprised of sub-elements
- Single Elements or Aggregation of other elements

- Elements for:
  - Indexing information – searching and retrieval (for Administrative – Technical Metadata)
  - Display information – optimized for presenting information to the user (Descriptive – Structural Metadata)
Interoperability / Harmonization Issues

- Specification of URIs for metadata elements (CORES Resolution)
- Terms identified by source/value pairs can be assigned URIs.
- ARMOS is able to extend the hierarchy, while the entity-relationship-based models (e.g. DC) have no notion of "extensions" - base set elements

Open Issues

- A Model for ARMOS AP independent of ARMOS element set able to handle high structural complexity / specificity.
- The Notion of "Category" / no correspondence
- Different syntaxes useful in different contexts.