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eContentplus

europeana
think culture

ATHENA Plenary Meeting

Guidelines for geographic location of cultural content

Franc J. Zakrajšek

7th ATHENA plenary meeting, 22nd-23rd of November 2010, Budapest, Hungary

Why GIS?

Europeana – European digital library

Collections momentarily consist of several millions of objects but soon expected to be counted in several hundreds of milions.
The efficient search engine could not be imagined without consideration of **spatial and time dimension** of objects, their historical and cultural context.

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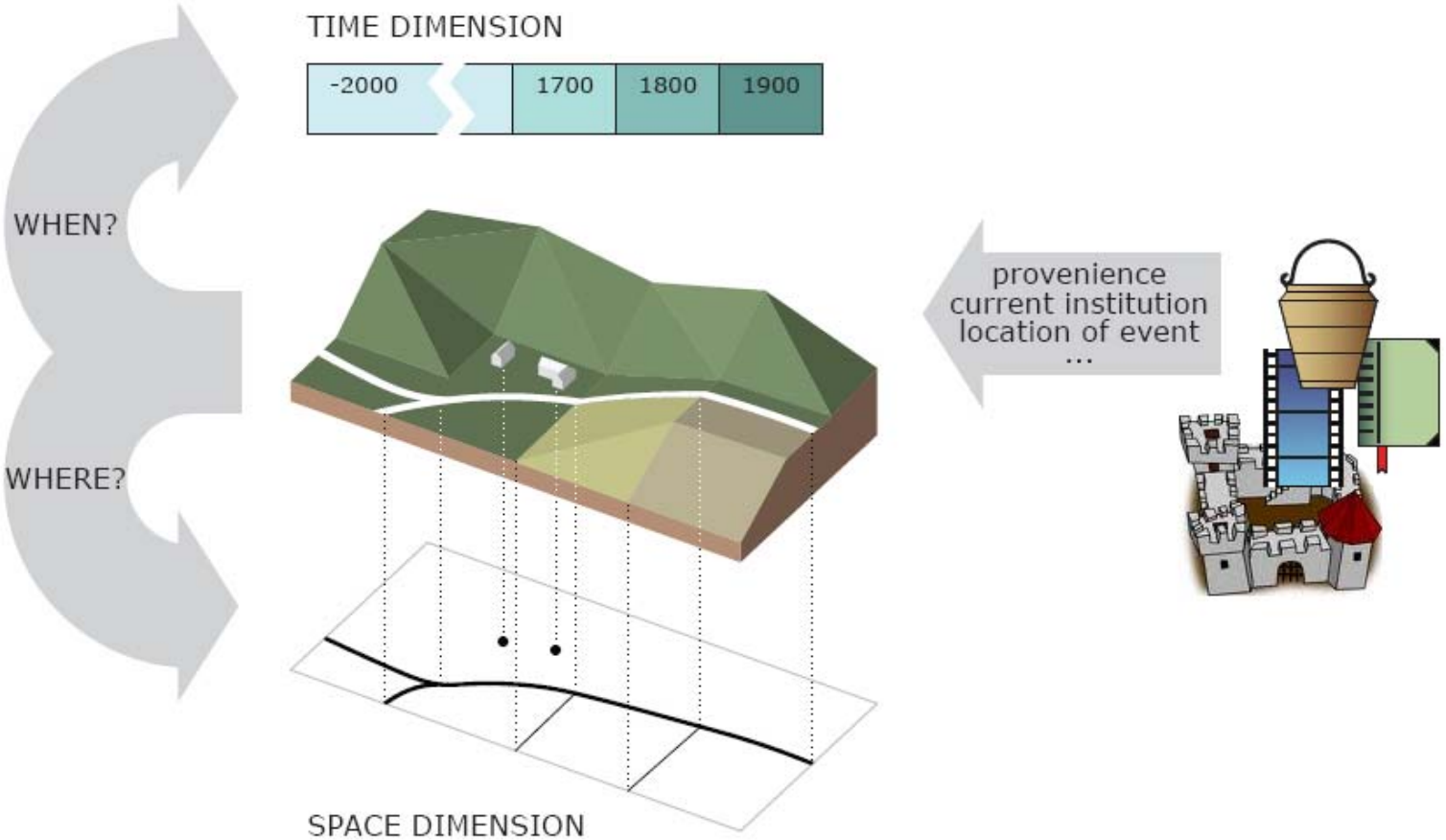
Cultural content in space and time



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GIS layering

Topograpic, imaginery maps

- ortho photo
- land use
- ...

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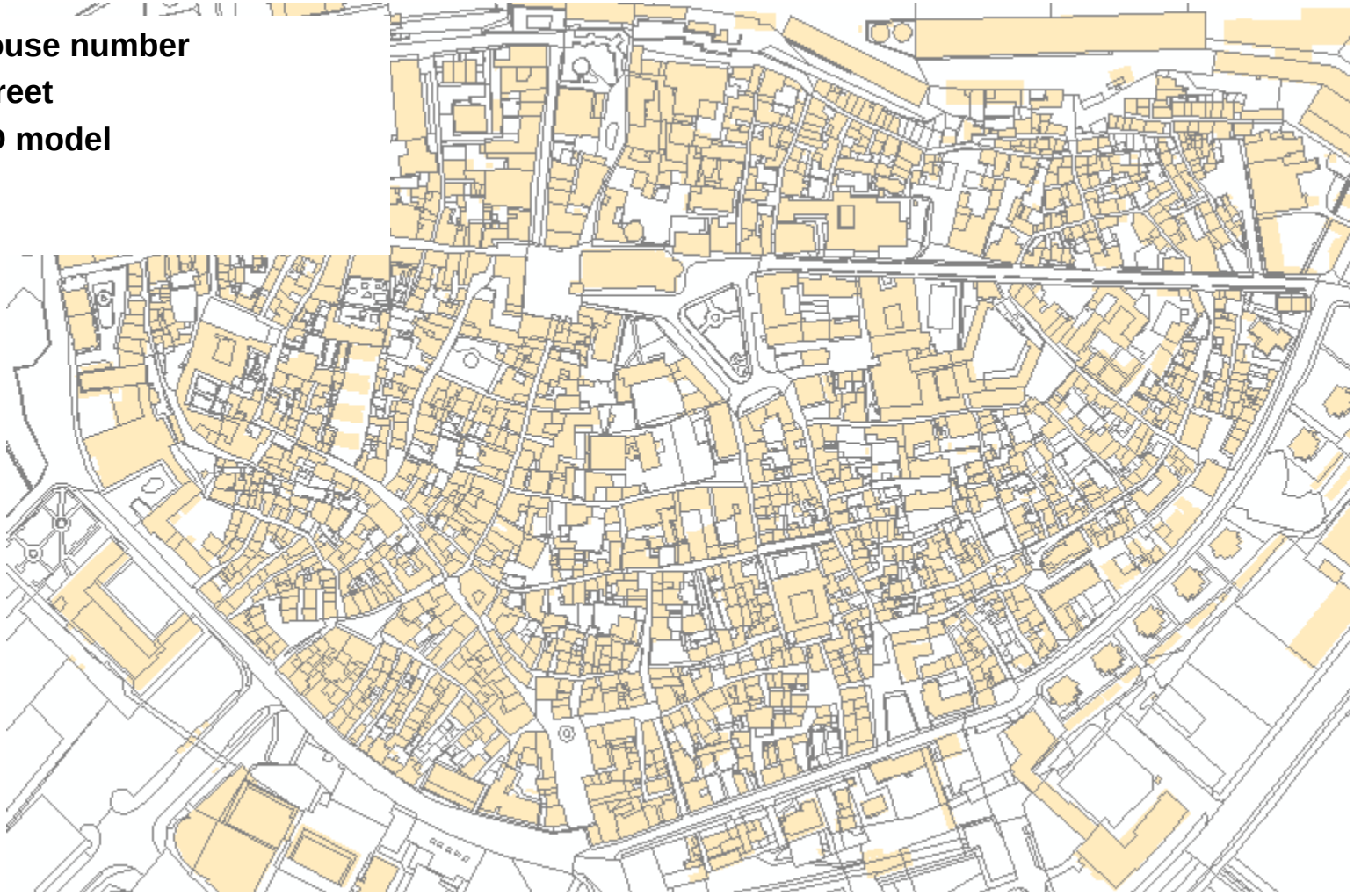
GIS layering

Buildings

- house number
- street
- 3D model
- ...



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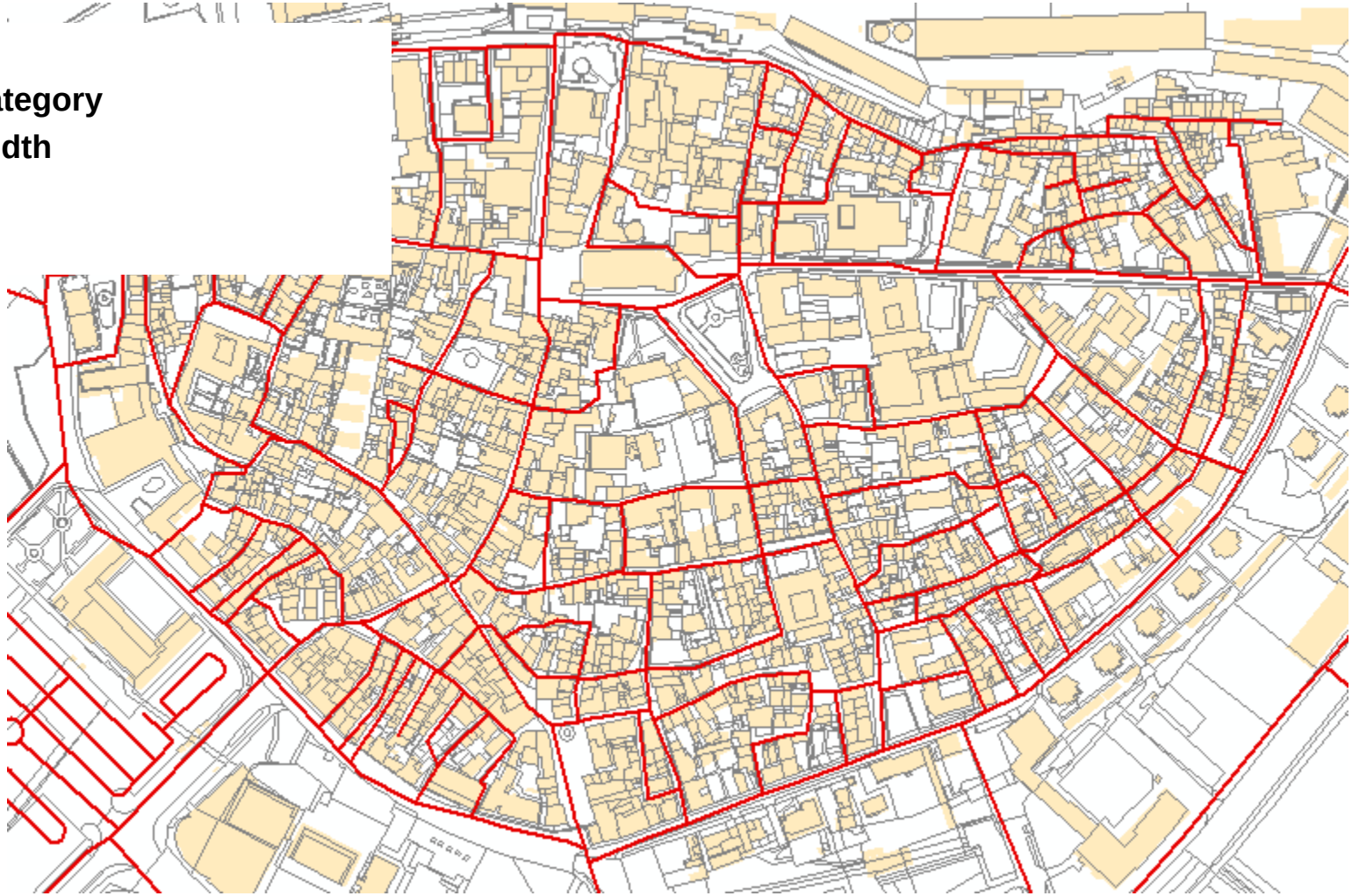
GIS layering

Network of roads

- ID
- category
- width
- ...



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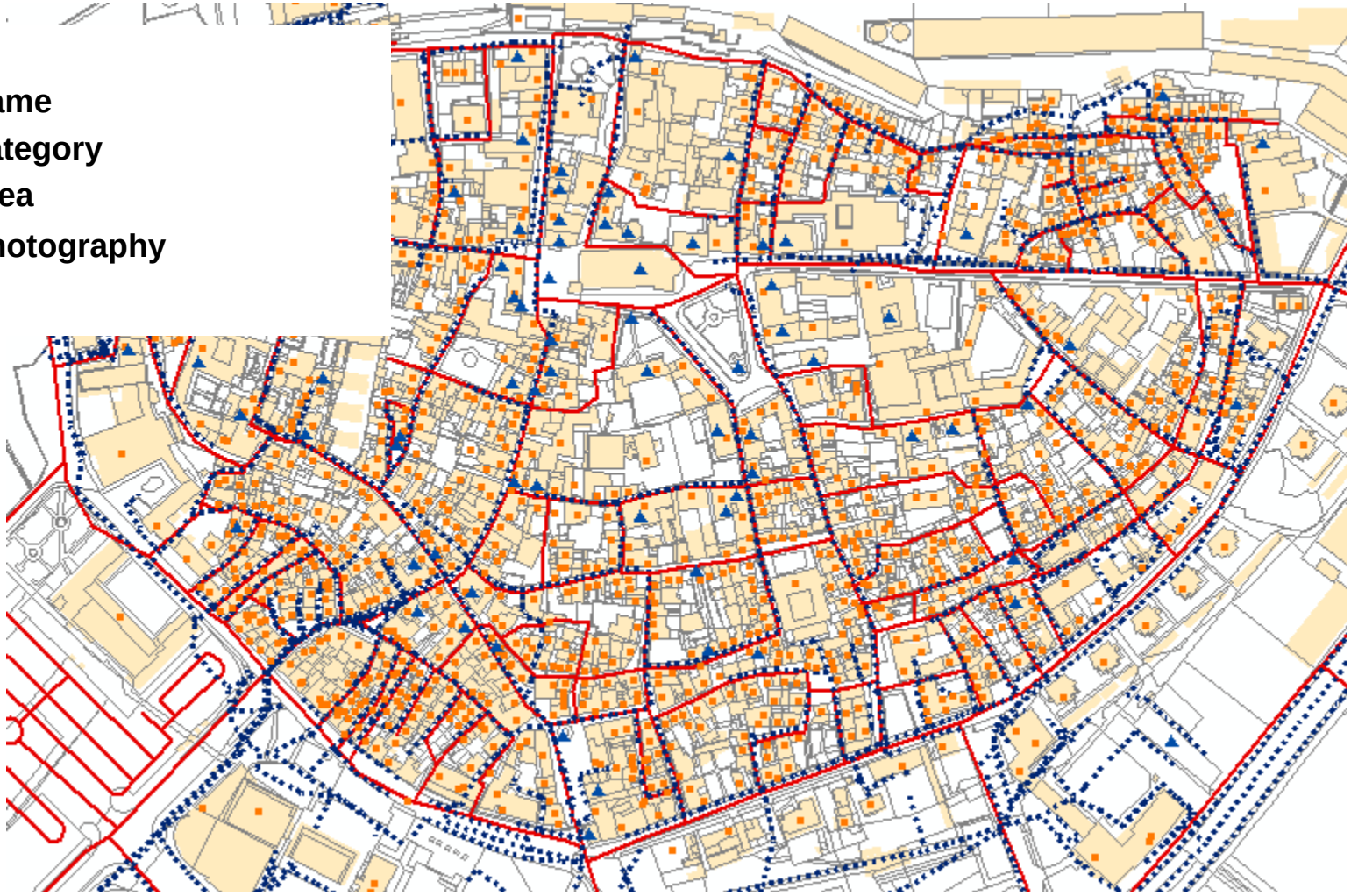
Cultural heritage

- ID
- name
- category
- area
- photography
- ...



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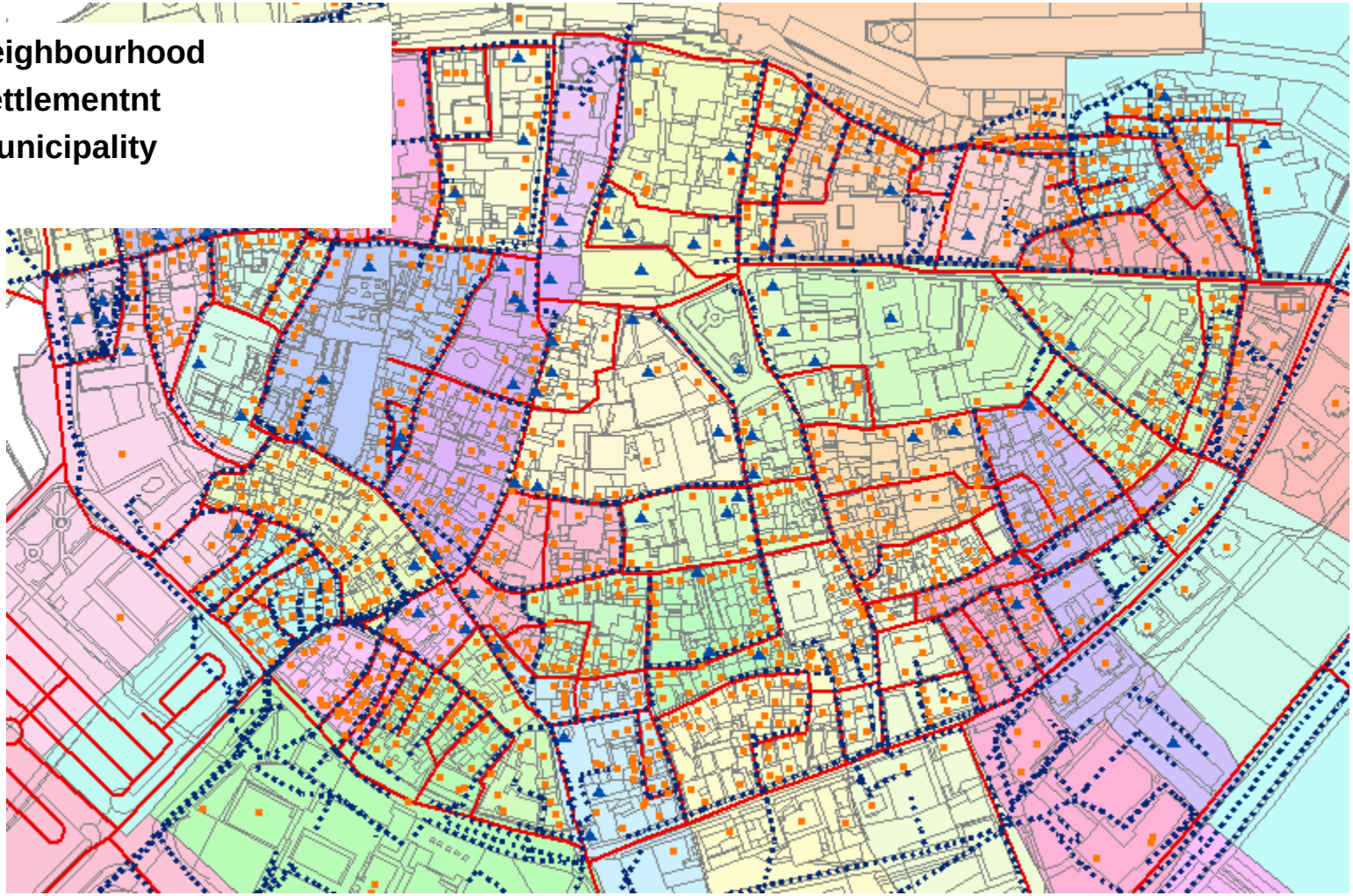
GIS layering

Geographical areas

- neighbourhood
- settlementnt
- municipality
- ...



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Added value

Added value of inclusion of geographic location to cultural collections:

- browsing cultural content efficiently through space and time;
- searching the content more user friendly, without need to type geographical names;
- make possible discovery of overlapping cultural content on the same location but originating from different sources and different times;
- mapping and visualizing the cultural content;
- performing GIS calculations and simulations.

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GIS for digital cultural content???

Moveable digital cultural content

Museums, libraries, archives, audiovisuel institutions, and other...

But they do not have geographic coordinates!

Geographic information in Athena

Do you use a standard set of terms for geographic names?

yes	no
27,2%	72,8%

Are the geographic co-ordinates used to describe this collection?

yes	no
4,9%	95,1%

Source: ATHENA-WP3 Standards Survey

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Guidelines for geographic information

Provide basic information for geographic location description of digital cultural content, which could be used by museums, other cultural institutions, content holders, curators, and information engineers.

- how to meet cultural documentation standards with the requirements of geographic information standards (ISO, OpenGIS, ...);
- how to create the appropriate structure of geographic model for cultural content;
- how to automatically encode geographic data of the cultural content;
- how to exploit geographic information when using digital cultural content;
- how to take the advantages of the infrastructure for spatial information established by EU Inspire Directive.

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Content of guidelines

1. **PURPOSE OF GUIDELINES**
2. **INTRODUCTION TO GIS**
   - 2.1. GIS Concept
   - 2.2. GIS Technology
   - 2.3. GIS as Tool
   - 2.4. GIS History Milestones
3. **BASIC TERMINOLOGY OF GIS**
4. **GEOGRAPHIC LOCATION ASPECT IN ATHENA PROJECT CONTENT**
   - 4.1. Geographic Name Terminology and Co-ordinate Standards
   - 4.2. Using Geographic Co-Ordinates Standards to Describe Their Collections
   - 4.3. Survey Results
5. **GEOGRAPHIC INFORMATION IN STANDARDS CONCERNING DIGITAL CULTURAL CONTENT**
   - 5.1. CIDOC Conceptual Reference Model (CRM)
   - 5.2. Museum Documentation Standard SPECTRUM

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Content of guidelines

5.3. Europeana Semantic Elements Specifications (ESE)
5.4. Dublin Core Metadata Element Set (DCMES)
5.5. Simple Knowledge Organization System (SKOS)
5.6. ISO/TC 211 Geographic Information/Geomatics
5.7. OpenGIS: Open Geospatial Consortium
5.8. INSPIRE EU Directive

6. IMPLEMENTATION OF GIS IN DIGITAL CULTURAL CONTENT

6.1. Conceptual Model
6.2. Possible GIS Cases/Models
6.3. Quick Thoughts
6.4. Curriculum of Training: Introduction of GIS

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Content of guidelines

APPENDICES

Appendix 1: GIS Resources and Links

Appendix 2: Detail Answers in ATHENA Survey

Appendix 2.1: Standards for Geographic Names

Appendix 2.2: Standards for Geographic Co-ordinates

Appendix 3: Geographic Information in Standards Concerning Digital Cultural Content

Appendix 3.1: CIDOC Conceptual Reference Model

Appendix 3.2: Museum Documentation Standard SPECTRUM

Appendix 3.3: Europeana Semantic Elements Specifications (SEM)

Appendix 3.4: Dublin Core Metadata Element Set (DCMES)

Appendix 3.5: Simple Knowledge Organization System (SKOS)

Appendix 3.6: ISO/TC 211 Geographic Information/Geomatics

Appendix 3.7: OPENGIS: Open Geospatial Consortium

Appendix 3.8: INSPIRE EU Directive

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Content of guidelines

Appendix 4: Further Elaboration for Implementation of GIS in Digital Cultural Content

Appendix 4.1: Literature on Data Structure Supported by GIS

Appendix 4.2: Geocoding

Appendix 4.3: Retrieval with Ontology

What is What?

- ...
- Geoontology
- GeoParsing
- Geocoding

> Geocoding is the process of determinig the geographic co-ordinates of a location by its address, postcode, or other explicitly non-geographic descriptor.

- Geographic information
- Geographic metadata
- Reverse geocoding
- OpenGIS
- Raster data
- Topographic map
- WMS (Web Map Service)

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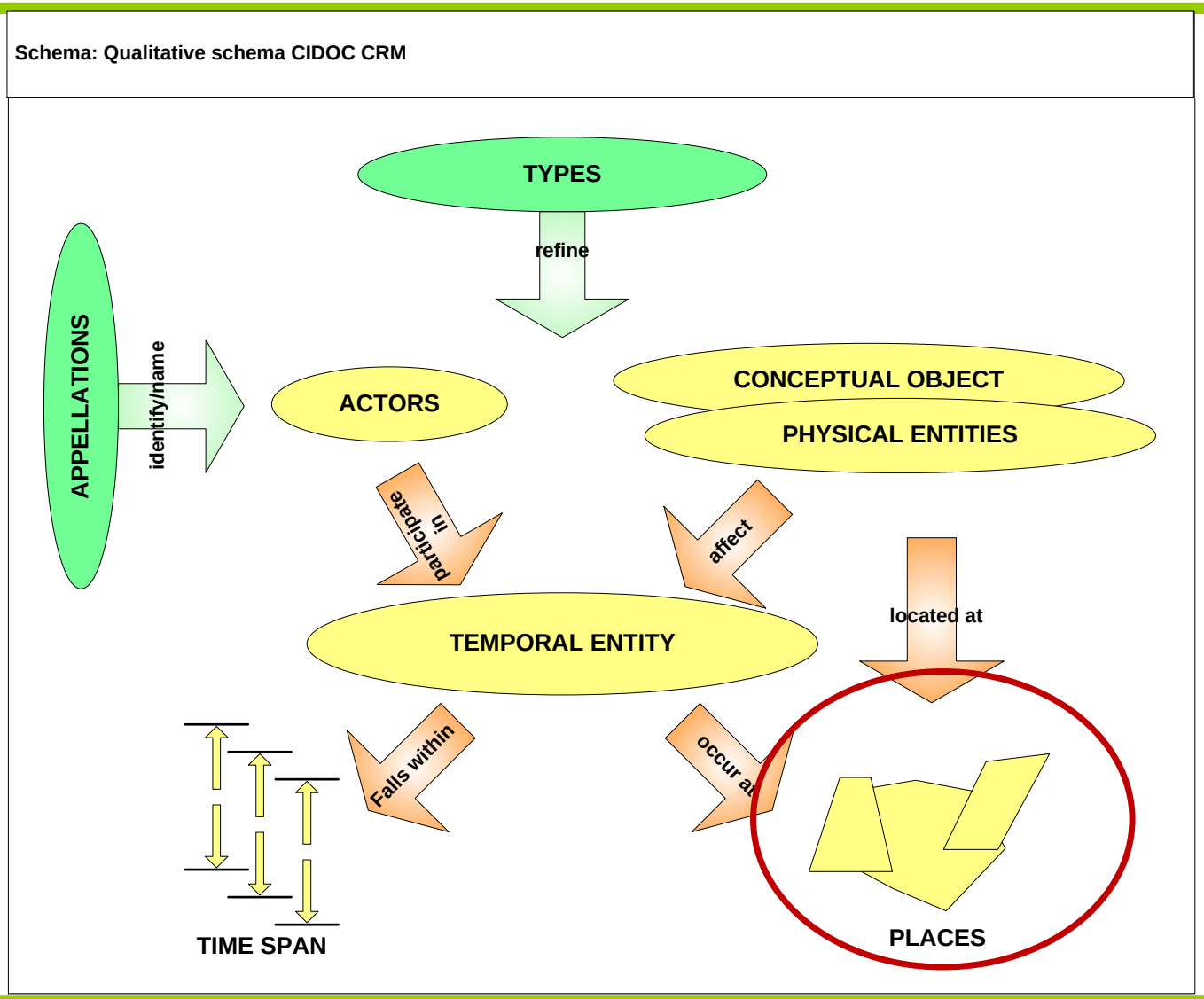
CIDOC CRM Schema



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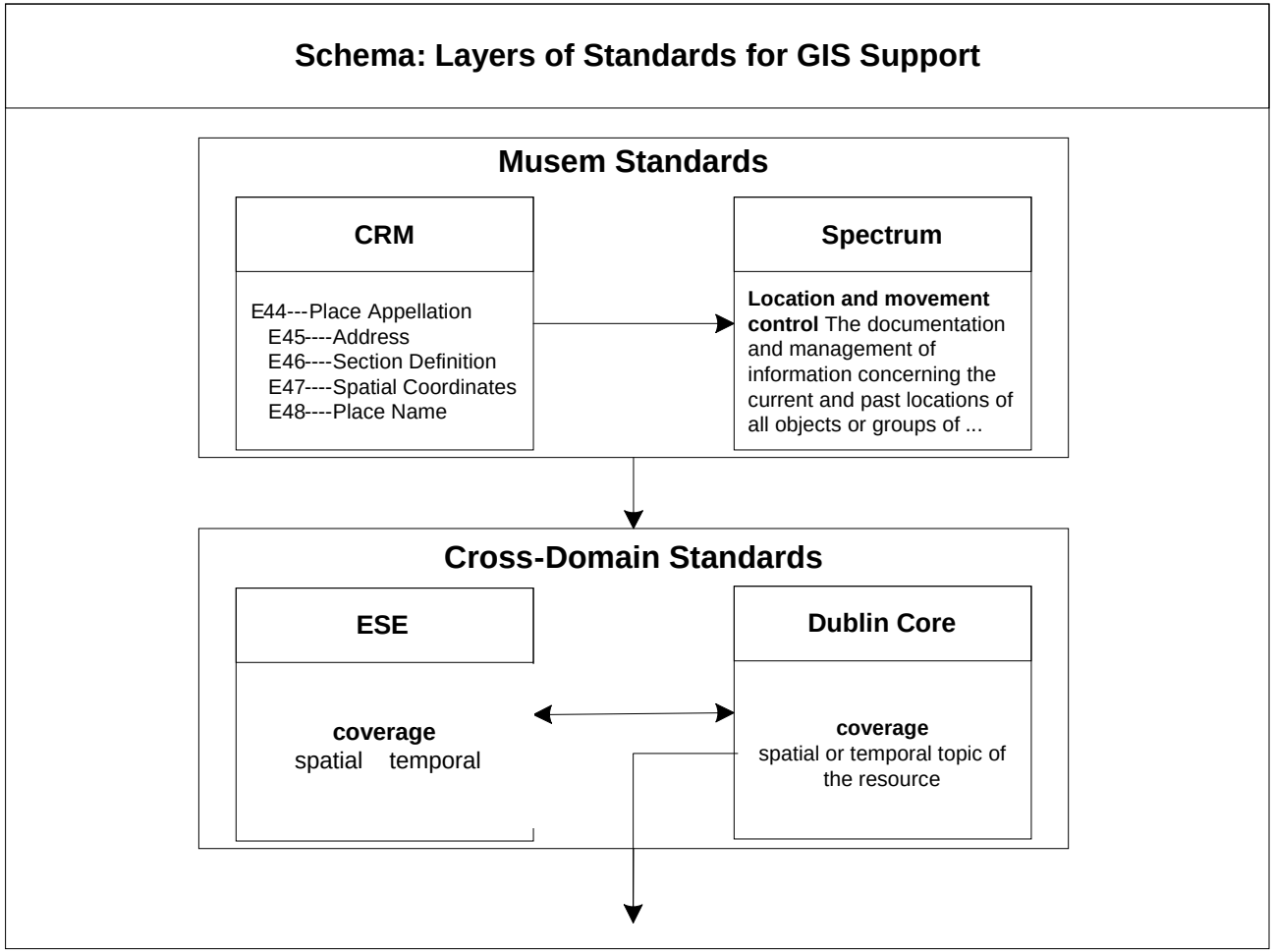
Standards for GIS Support



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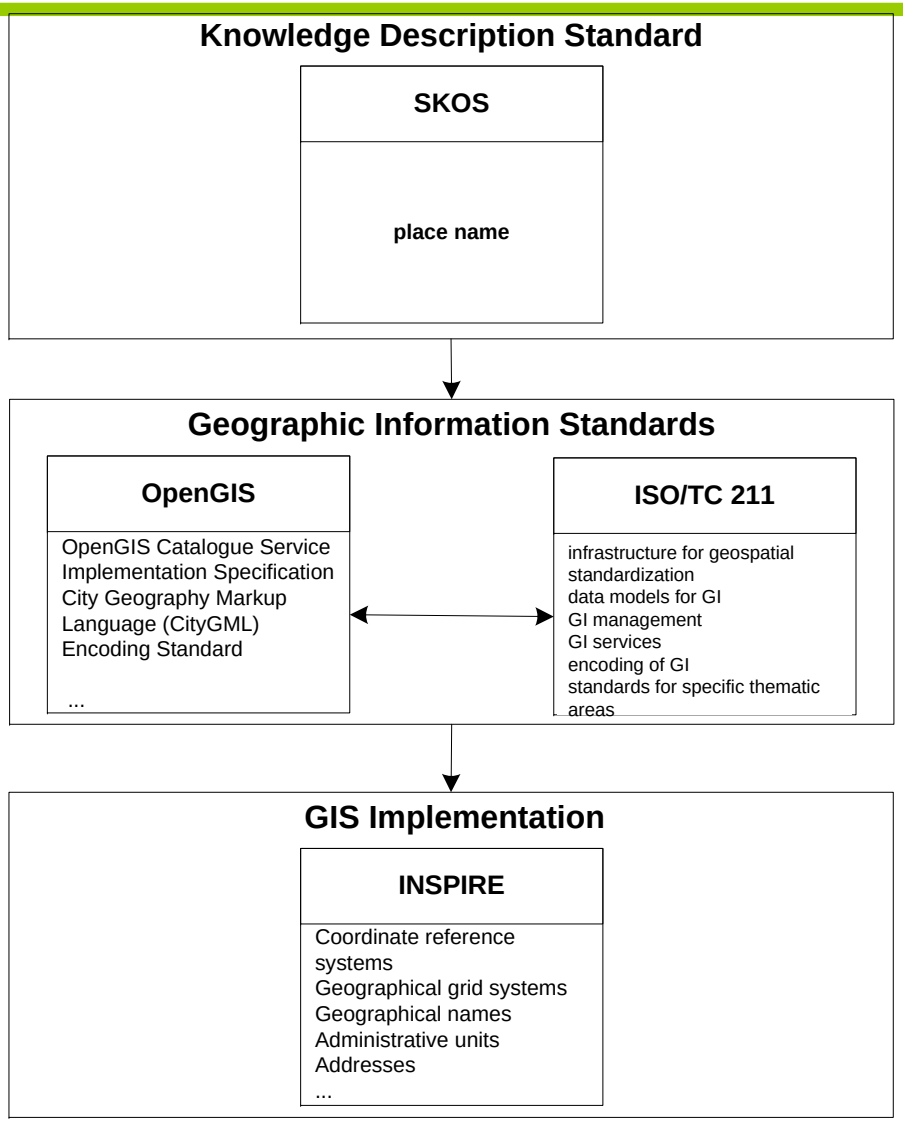
Standards for GIS Support



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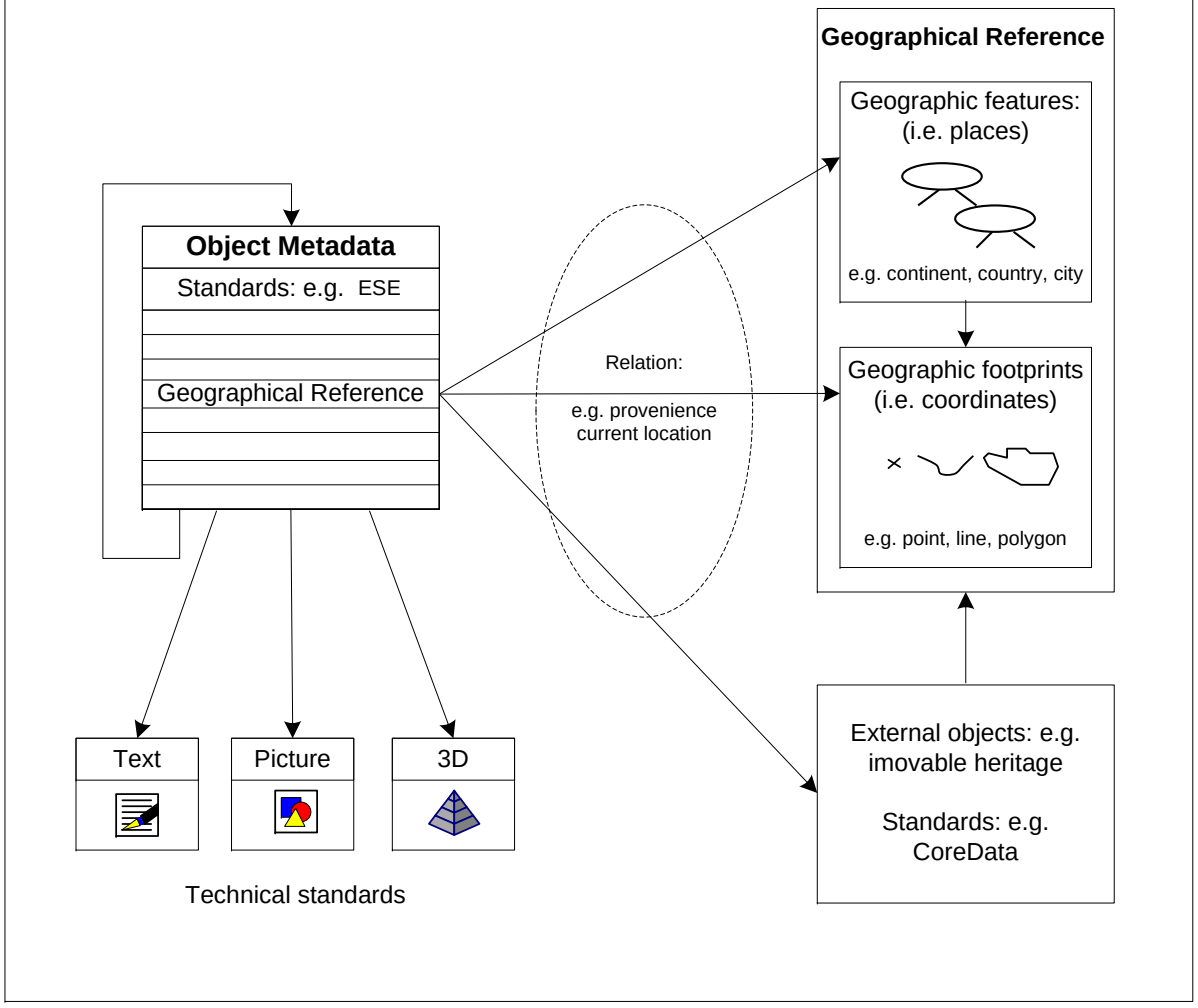
Geographic information in cultural content

Scheme: GIS Supported Data Model



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GIS cases

The GIS cases / models are listed below:

- »Provider« which contains only geographic locations of content providers,
- »Country« which represents graphical representation of country of content providers,
- »Current« which contains current geographic location of the physical objects,
- »Event« which contains geographic locations of events concerning physical objects,
- »Identify« makes use of geo topological relations among several GIS entities.
- »Historical maps« which refer to geocoded historical maps
- »3D« which refers to three dimensional representation of movable or immovable cultural objects
- These basic models could be implemented as single one or in combination.

Link to videos !!!!!!!

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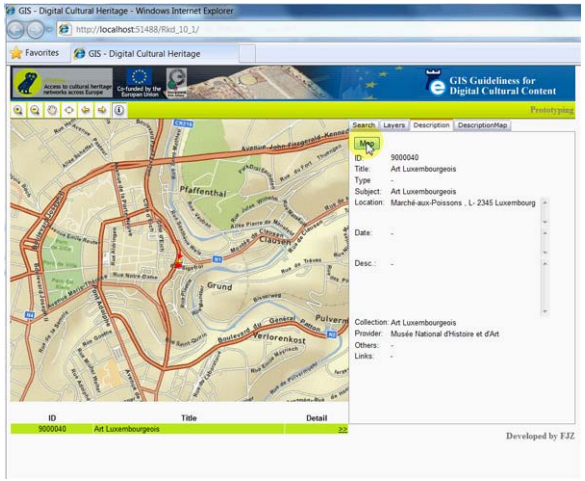
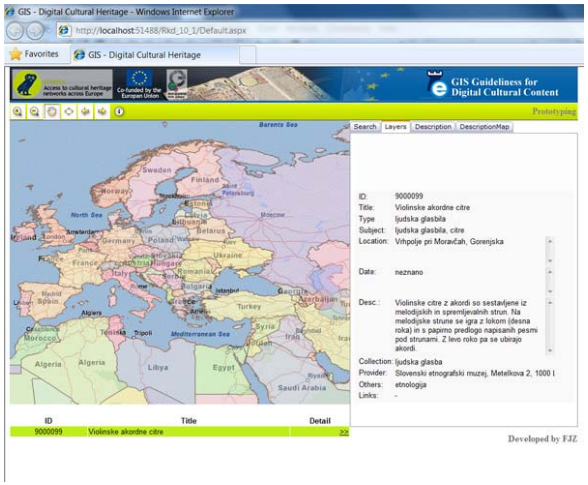
GIS cases

1. GIS case: Provider



2. GIS case: Country



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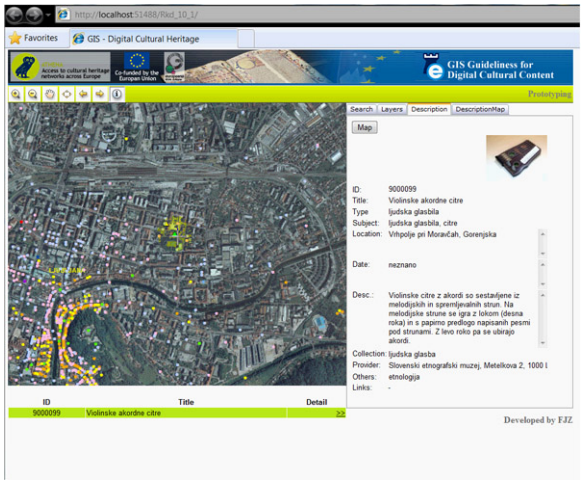
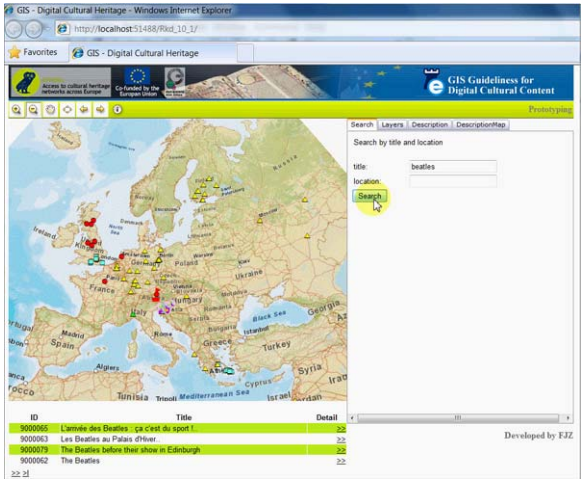
GIS cases

3. GIS cases: Current



4. GIS cases: Event



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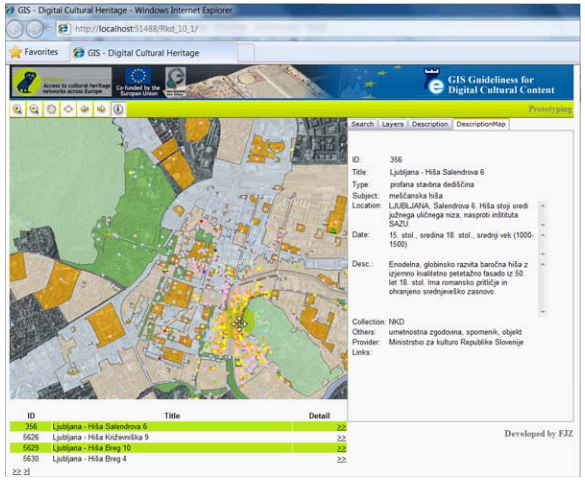
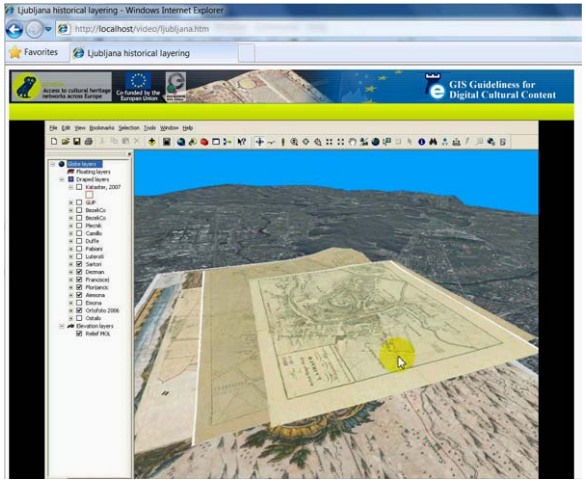
GIS cases

5. GIS case: Identify



6. GIS case: Historical maps



GIS cases

7. GIS Case: 3D

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Purpose of guidelines

- raising awareness of GIS technologies potential in cultural sector;
- to make introduction to fundamental GIS concepts by explaining basic GIS terms to all readers thus furthering better understanding;
- demonstrating benefits that can be achieved by inclusion of geographic information in process of creating digital cultural content;
- to offer basic recommendations and tools how to tackle problems for overcoming bottlenecks in introducing GIS;
- to make strong suggestions to all Athena and Europeana content providers on ways how to enrich current content with appropriate geographic information in short but also long term.

GIS in Europeana

europeana
connect

Europeana Geoparsing Service

Unstructured text and semi-structured text (metadata records) may contain mentions to places and historical periods that are not directly usable by software applications. Geoparsing consists in automatically extracting structured information about places and historical periods from these textual resources. The Geoparser is a web service where users can provide textual sentences or metadata records, and it will reply with an XML document containing the geoparsing results.

Geoparse free text

Slovenia. Bistra - Samostan Bistra

Display result in: XML

Geoparse

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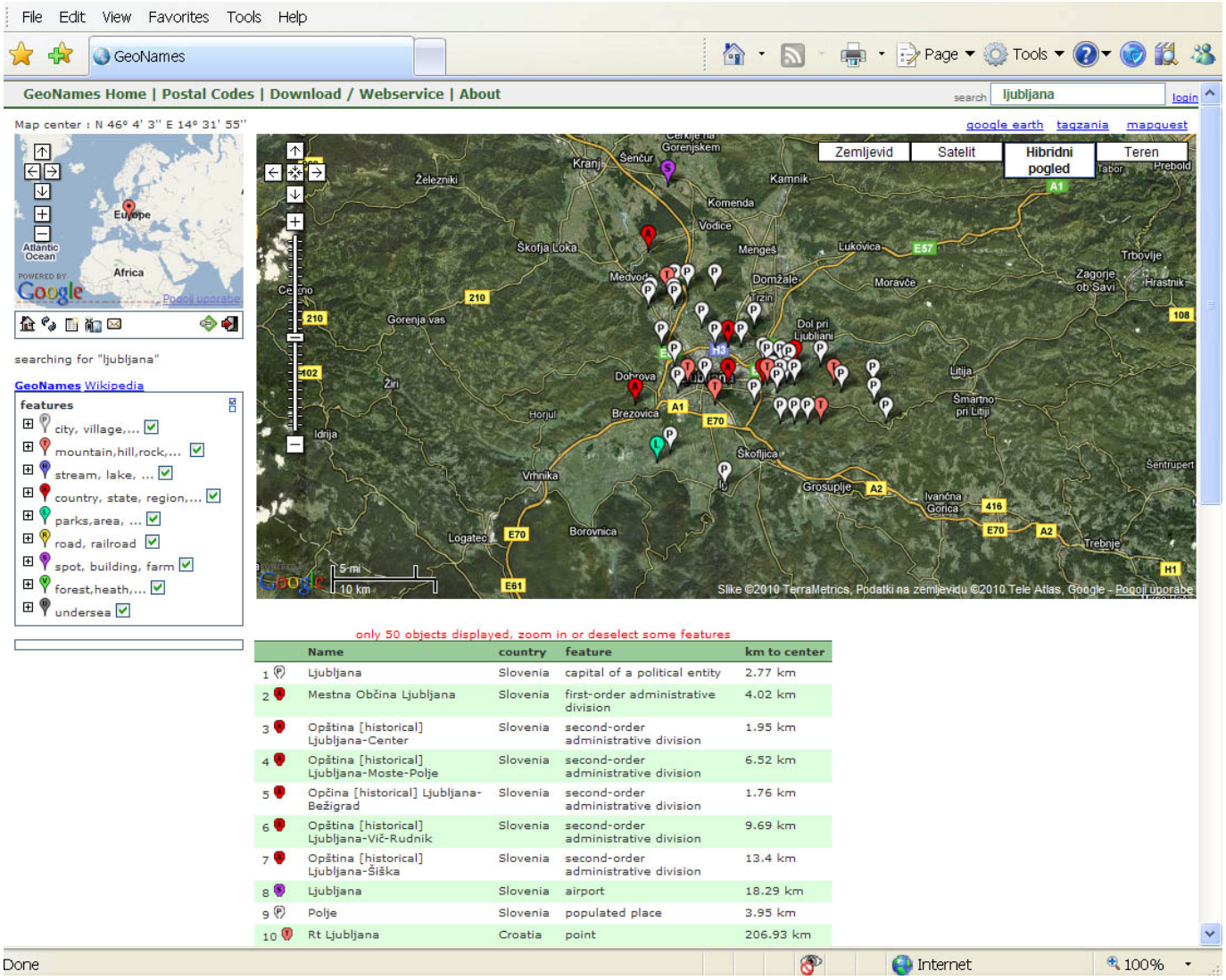
GIS in Europeana



	Name	country	feature	km to center
1	Ljubljana	Slovenia	capital of a political entity	2.77 km
2	Mestna Občina Ljubljana	Slovenia	first-order administrative division	4.02 km
3	Opština [historical] Ljubljana-Center	Slovenia	second-order administrative division	1.95 km
4	Opština [historical] Ljubljana-Moste-Polje	Slovenia	second-order administrative division	6.52 km
5	Općina [historical] Ljubljana-Bežigrad	Slovenia	second-order administrative division	1.76 km
6	Opština [historical] Ljubljana-Vič-Rudnik	Slovenia	second-order administrative division	9.69 km
7	Opština [historical] Ljubljana-Šiška	Slovenia	second-order administrative division	13.4 km
8	Ljubljana	Slovenia	airport	18.29 km
9	Polje	Slovenia	populated place	3.95 km
10	Rt Ljubljana	Croatia	point	206.93 km

GIS in Europeana

AUSTRIAN INSTITUTE OF TECHNOLOGY

Map Annotation Prototype | Semantic Tagging Screencast

Source: Rainer Simon : An End User Annotation & ExplorationTool for Digitised Old Maps, EuropeanaConnect WP5 Cross Project Workshop on Place, Cultural Heritage and the Internet, November 5, 2010, Vienna, Austria

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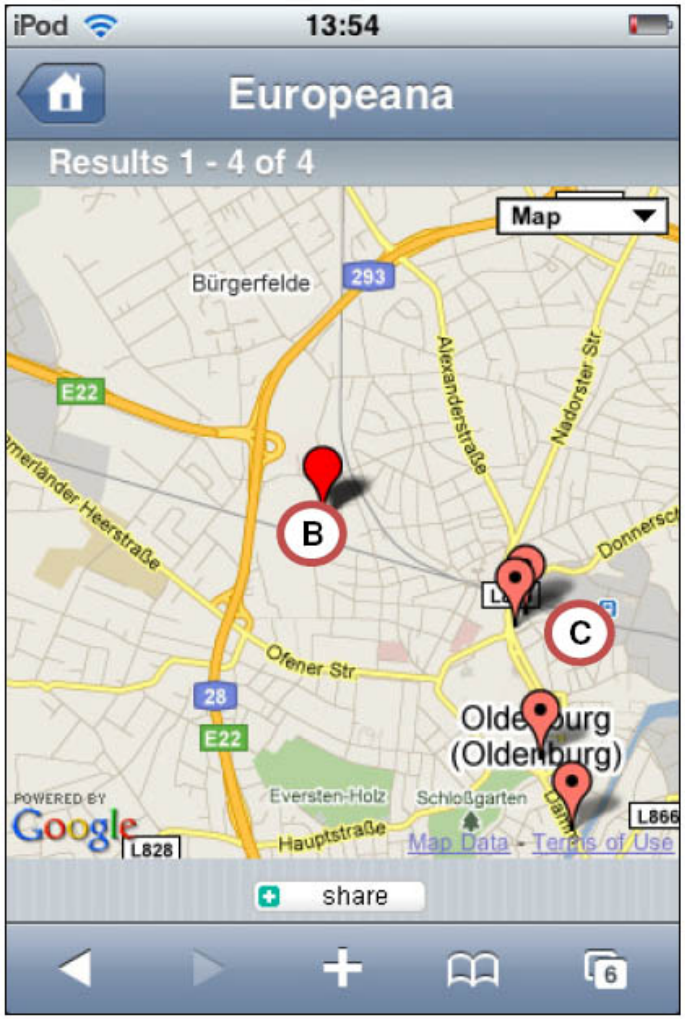
GIS in Europeana



Source: D3.4.3 – Rich mobile client for accessing Europeana, EuropeanaConnect 2010

Carare project

Scope: Archaeological Sites, Architectural buildings, Monuments, Archaeological excavations, ...

Type	Collections	Items	Countries
Point	20	4.702.294	
Line	13	25.900	
Polygon	23	1.042.354	
Image/Grid	13	4.165.023	
Total Spatial«Yes«	33		14
Total Spatial«No«	47		

Source: Carare Survey

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Thank you

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