

Attaching Geographical Meaning to Learning Objects

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30.11. 2012 / Bolzano-Bozen



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Motivation

We think a territory as a place where citizens need

- to learn and
- to know where and how to learn

in order to actively contribute to the life and development of their territory.

Motivation

Geoscience studies estimate that in the last 20 years about 80% of all information contains some geographic reference.

Today this percentage could be update to 95% because of new technology such as cell phones, GPS devices and electronic toll collectors.

GOAL

We are investigating our hypothesis that in most e-learning content, expressed as learning objects, there is hidden geographic information, that can be revealed and used to improve the learning content and its search and traceability.

By mixing topics from Geographic Information Systems (GIS) and E-learning Systems

LOR and LOM

We analyzed different Learning Object Repositories and Learning Object Metadata standards in order

- to have an overview of the state of art in terms of *de jure* and *de facto* e-learning standards, and
- to verify whether and how the geographic context is taken into account within such repositories and metadata.

IEEE LOM STANDARD

IEEE LOM standard has been published in 2002, and proposes around 50 different elements grouped into 9 categories:

General,

Lifecycle,

Meta-Metadata,

Technical,

Educational,

Rights,

Relation,

Annotation and

Classification.

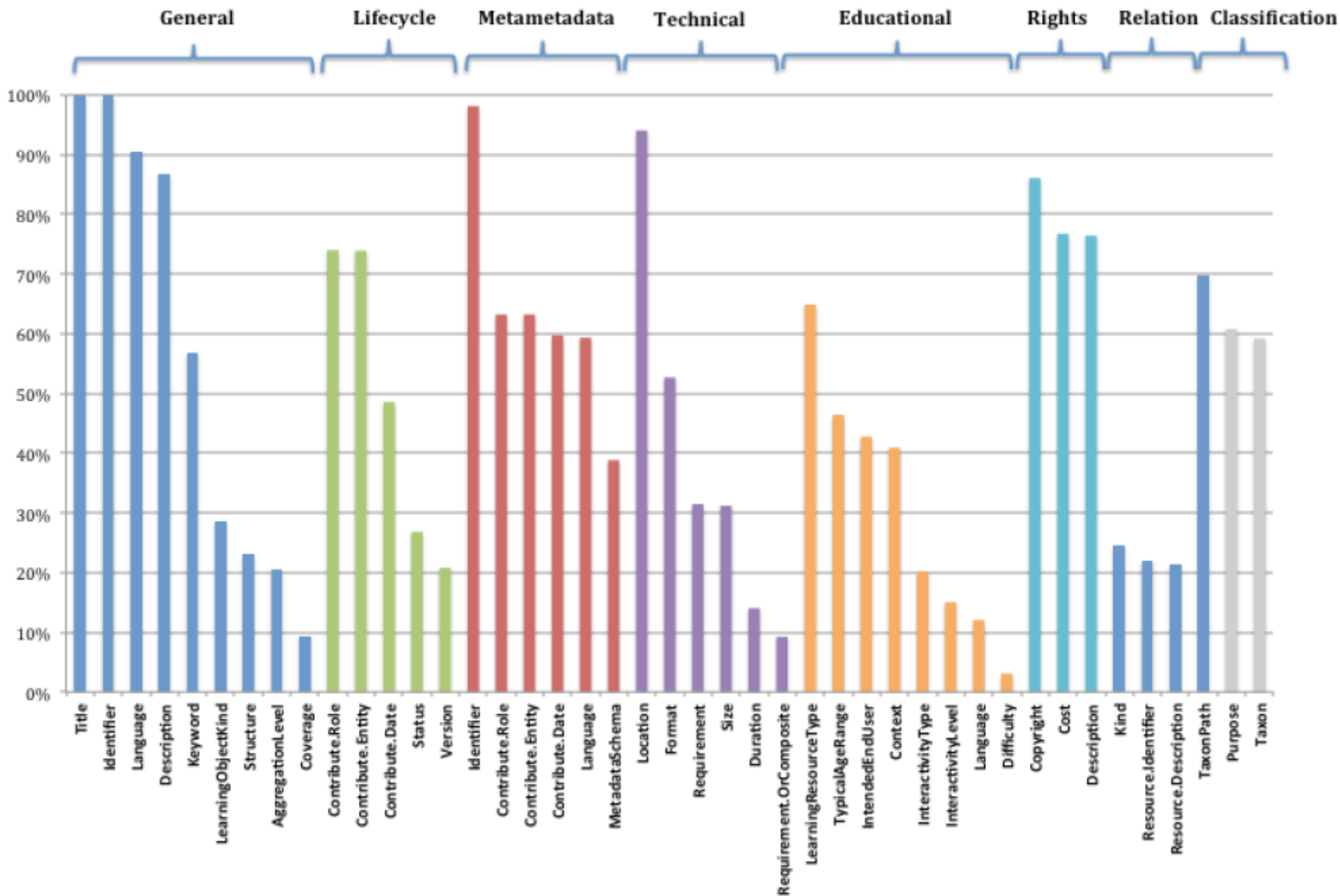
GLOBE

The Global Learning Objects Brokering Exchange alliance is a project which federates several LORs and whose purpose is to manage LORs that aggregate high quality learning content.

Inside it about 1,2 million learning objects can be shared.

GLOBE uses IEEE LOM as a common medium to enable the sharing of learning materials.

Repository	Instances	Provenance	Creation
ARIADNE Foundation	374 857	Aggregated	Mostly Manual
Learning Resource Exchange (LRE)	169 736	Enriched	Manual
Community on Learning Objects (LACLO)	49 943	Single	Automatic
OER Commons (OER)	25 794	Enriched	Manual
Korean OCW (KOCW)	7 183	Single	Manual
LO Repository Network (LORNET)	1 804	Enriched	Manual
Open University Japan (OUJ)	1 000	Single	Manual



Percentage of Usage of Different LOM Data Elements in GLOBE

GLOBE

Three main extended data elements have been found which were used by GLOBE providers, but are not present in LOM standard:

- `general:learningobjectkind`,
- *technical:geolocation*,
- `general:subtitle`.

The need to enrich LOM standard clearly suggests that in LOM standard there are insufficient elements to associate a significant and usable geographic context to the learning objects.

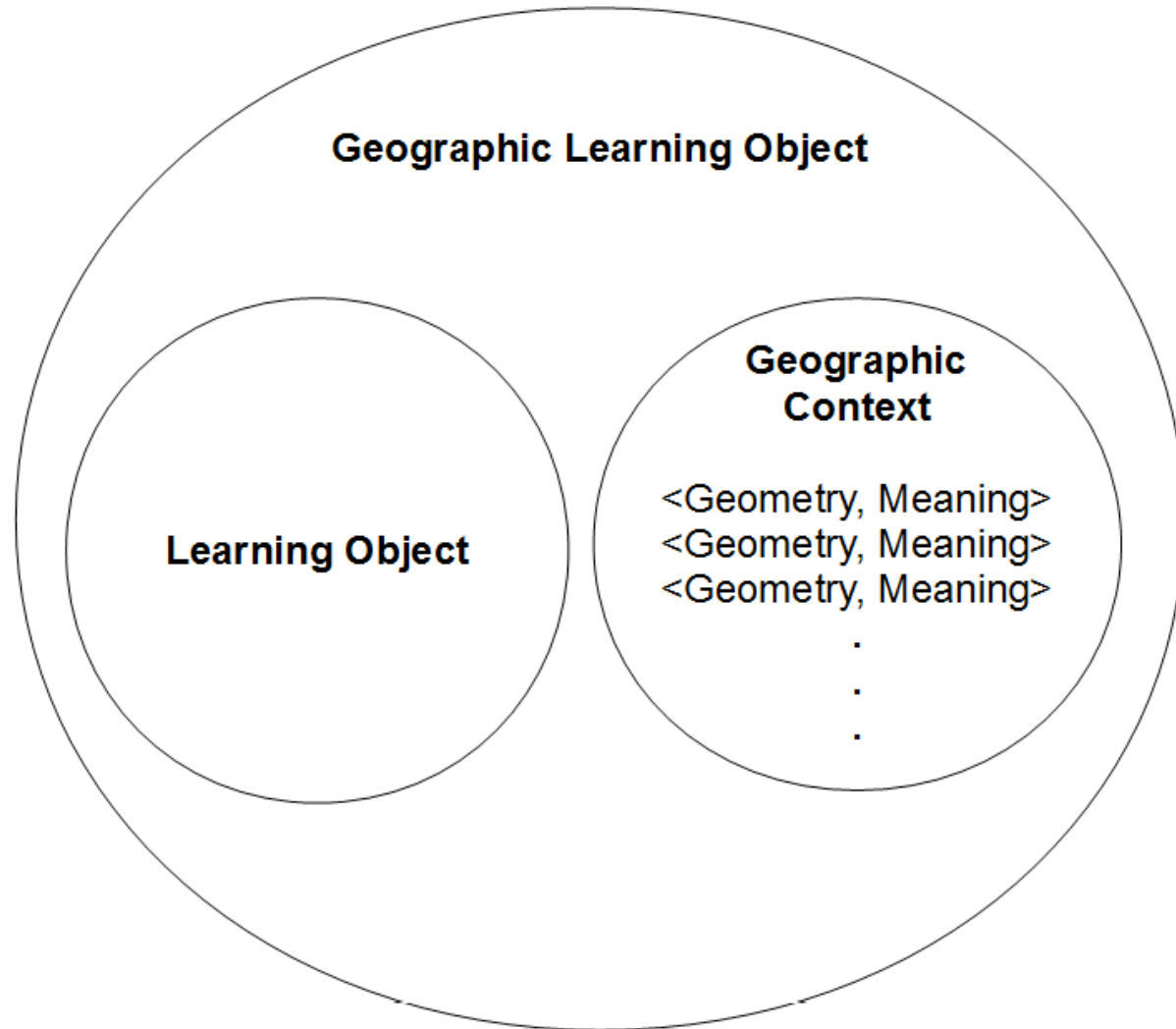
In fact, there are two elements used for this purpose in the LOM standard, *coverage* and *location*.

Geographic Learning Objects

we define the new entity which is the focus of our proposal, the Geographic Learning Object (GLO).

A GLO is defined as an extension of a Learning Object which embeds information about geographic contexts where the Learning Object is valid and/or applicable

Geographic Learning Objects



Learning Object Sample

Title:	School at home". "Look what we do!" Woodland and forest fires (Verge del Tallat Primary School in Blancafort)
Description:	With the help of forestry agents in the Conca de Barbera area, pupils at Verge del Tallat Primary School in Blancafort get to know the characteristics of the Mediterranean woodland, with special emphasis on the disastrous ecological effects of forest fires.
User's Tags:	Not Available
Descriptors:	environmental education environmental protection forest
Keywords:	Not Available
Age range:	18-99
Resource type:	website
Available in:	ca
License:	See License
Provider:	XTEC, Spain
Read about in:	ca de en es fr it pt

Learning Object Sample

Geographic information could be explicated and stored as different geometries:

- a polygon representing the Blancafort municipality,
- a point representing the address of the Verge del Tallat Primary School,
- a Polygon representing the Conca de Barbera area.
- a Linestring representing the route taken,
- a MultiPoint representing the points where the children have planted trees.

Learning Object Sample



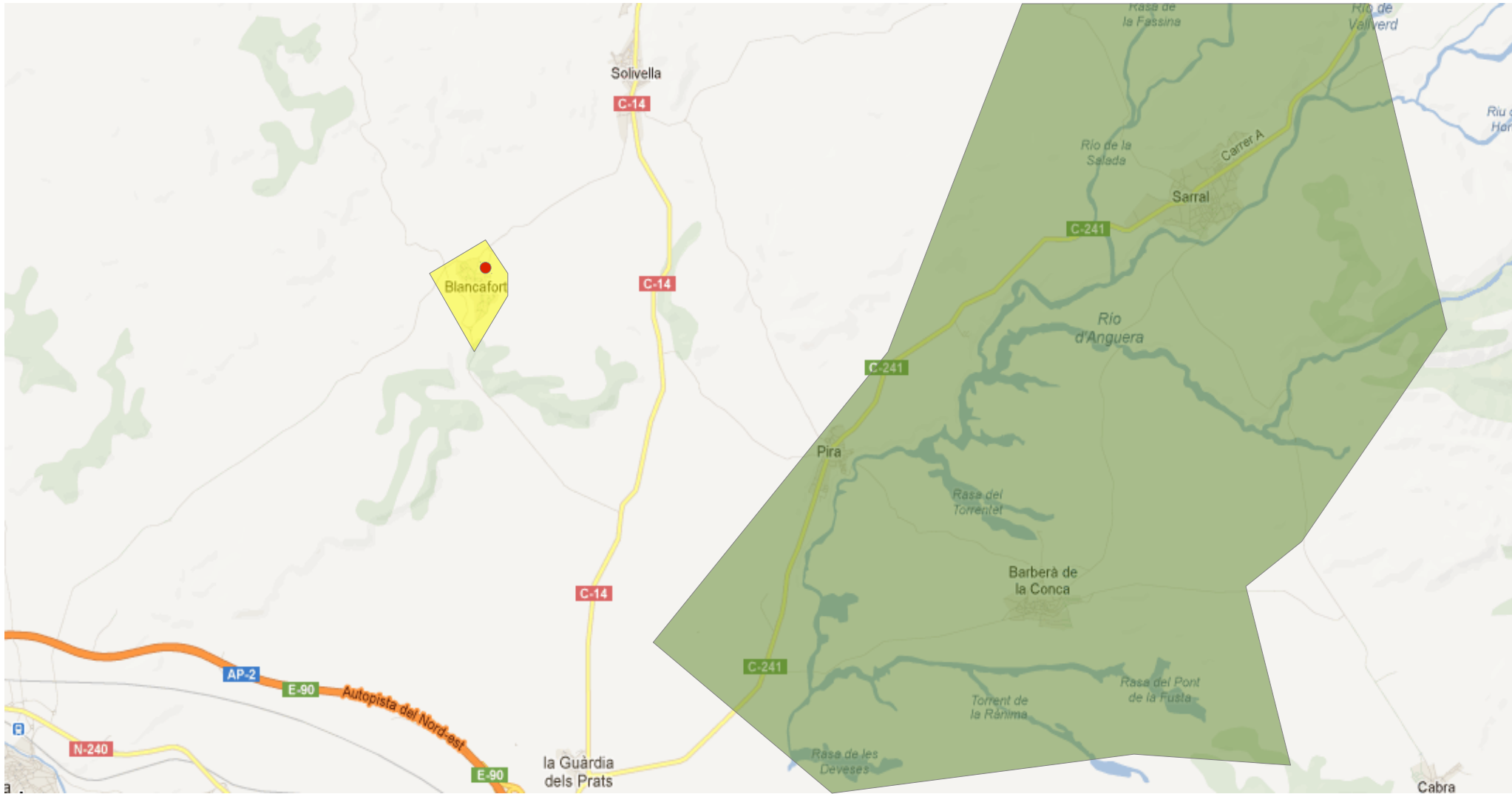
Learning Object Sample



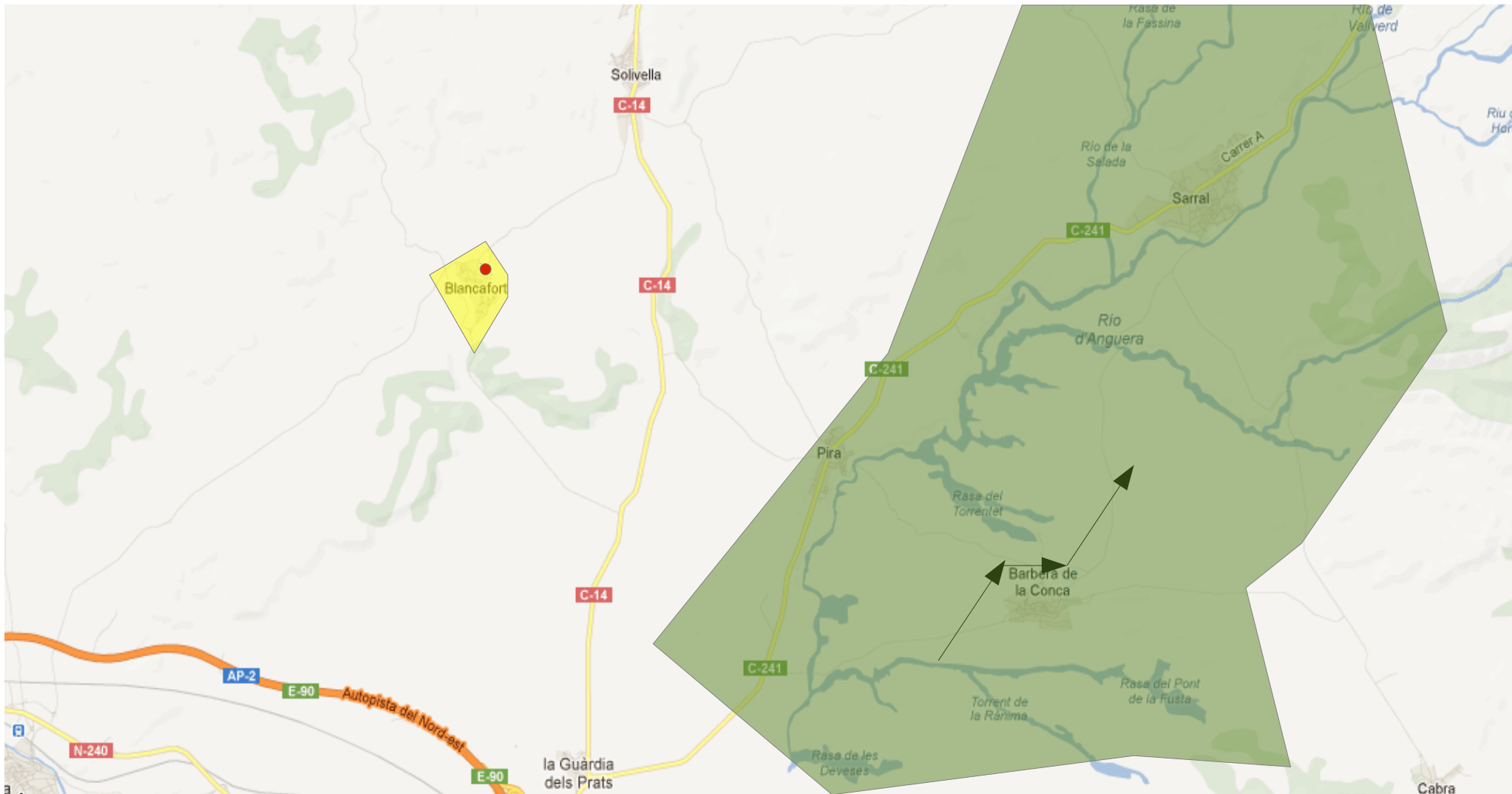
Learning Object Sample



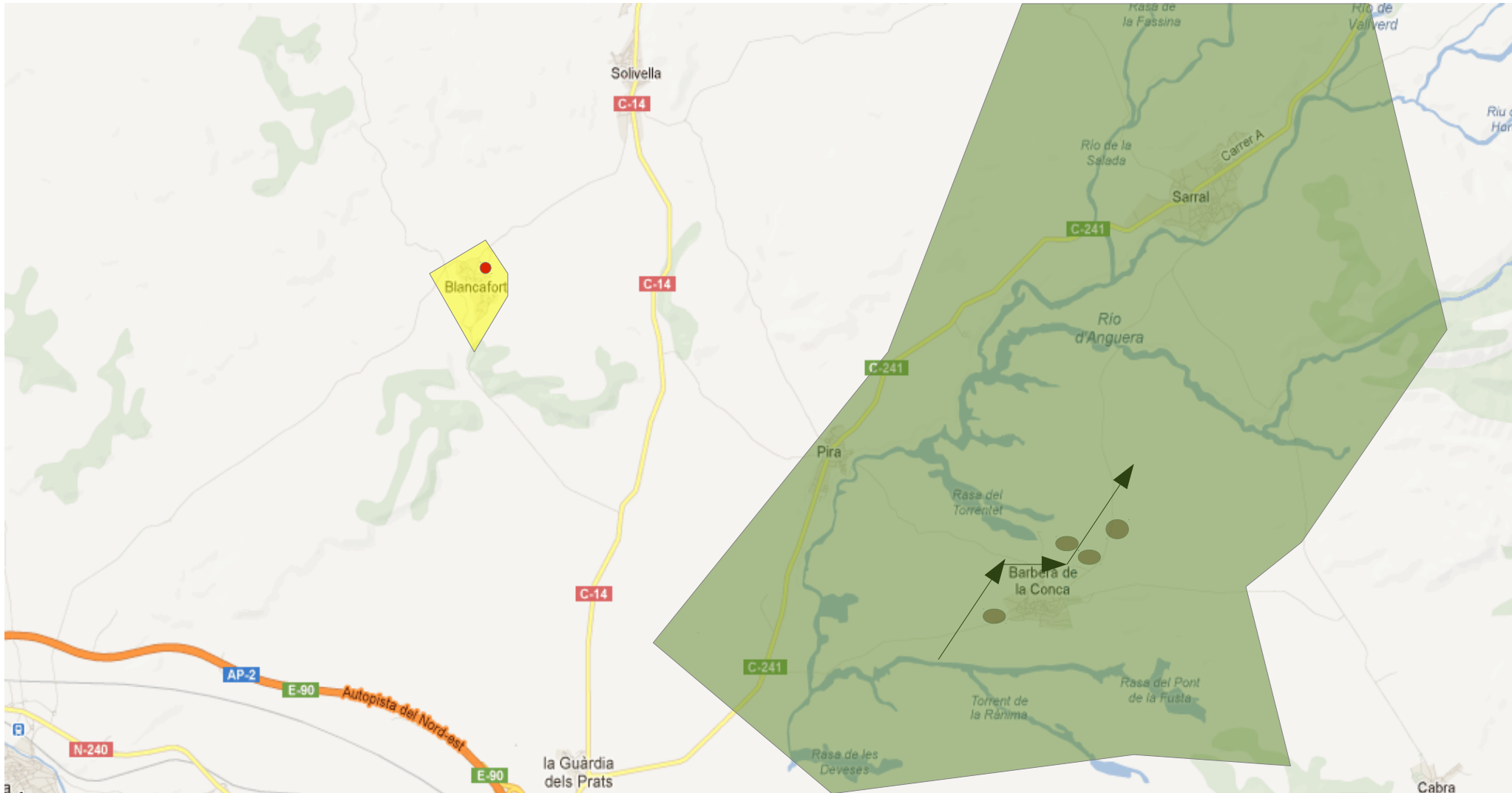
Learning Object Sample



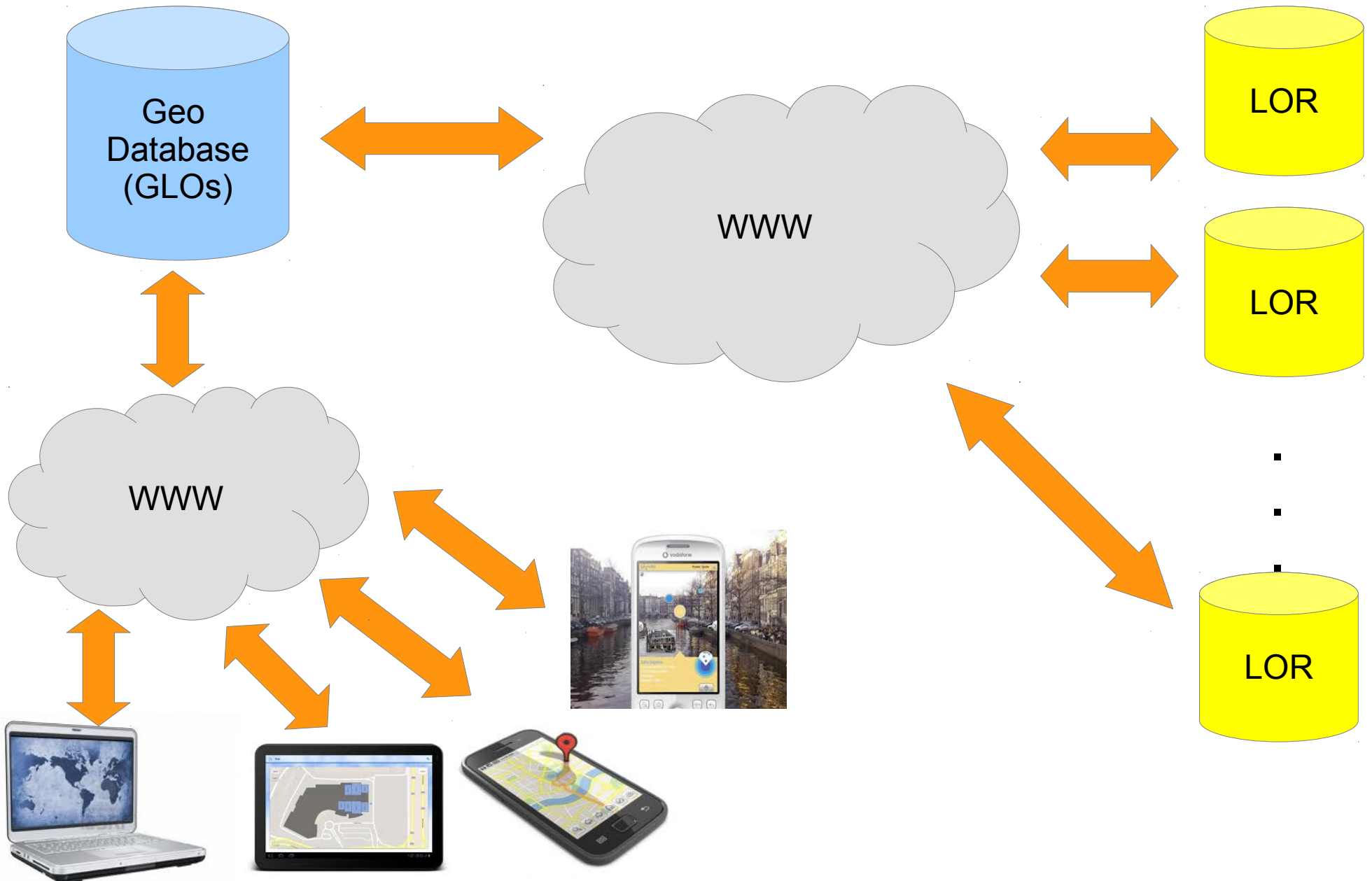
Learning Object Sample



Learning Object Sample



GLO System Architecture



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Thanks for your attention!

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