

ENPI CBCMED – Mediterranean Sea Basin Programme 2007-2013

## ARCHEOMEDSITES

**Safeguard, valorisation and management quality. Use of the management models for the archaeological sites and urban contexts**

*Work-package 4.10 (Municipality of Siena in collaboration with the University of Siena): Providing an archaeological Geographic Information System to the 3 Countries involved and supplying the necessary training for its functioning.*



# OpenArcheo2 WebGIS Ontology (Logical model)



## **Introductory notes**

As a premise it is important to note that, as you already explained in the conceptual model and in the requirements analysis, we tried to always keep a high level of abstraction (implying a description of all primary objects mainly in terms of interpretation and not only of physical features).

This allows the researcher to master the complexity of the informative plans by dividing the space he studies into its characterizing material components and, at the same time, it facilitates a consultation of the platform by a wider and non-specialists public.

Following our research interests, and in order to be as general as possible, the higher level modeling for the OpenArcheo2 webGIS has stemmed from the concept of **Landscape**, understood as a portion of land formed in time by the man/environment interaction.

Landscapes are represented in their space/time coordinates and variables on the basis of all possibly available material evidences studied through the methods of multidisciplinary archaeological field and laboratory research. In this sense, OpenArcheo 2, in its current declination, can be assimilated to some kind of large container of all historical/archaeological information of which we can dispose for a particular landscape, and all the relationships between this informations.

In fact, there is no limitation in the size of a landscape; its extension, as well as its nature, depend directly on the research interests of the project which studies it. So we can have urban landscapes, representing only one city; or landscapes based on historical regions, on an environmental/climatic coherence, on geographic/morphological features, on a particular economic activity, and so on. A landscape does not even have to be continuous in space (for example we could study the landscape of river fishers in Iron Age Europe and in this case it would be a punctiform collection of territories where this kind of economic activity is carried out, with its settlements, its environmental modifications, its functional elements, and so on).

According to the layout of the conceptual model, clearly derived from a perspective tied to archaeology and to the study of material culture, a historical landscape is formed by two

types of objects:

- **Landscape Elements**, to be conceptually understood as the high level (interpreted) parts that form a particular landscape; this means that landscape elements can be, for example, settlements, anthropic exploitations, natural environment, networks of various kinds crossing and marking a territory, etc.  
Ultimately, these objects constitute the diachronic plot of the knowledge we have of a specific landscape, which can be more or less dense depending on the data at our disposal and the possible interpretations of these data. Essentially, a landscape element should respond to the questions: What characterizes a landscape at a given time span? And, in a diachronic perspective, what distinguishes it from the landscapes of another chronological period? How are these elements of the landscape distributed in space? What relationships/interactions exist between them?
- **Topographic Elements**, which represent a lower hierarchical level. They are the components that make up each Landscape Element (e.g., buildings, open spaces, productive activities, roads, fortifications, cemeteries, environmental modifications, etc.), of which we have direct knowledge through any kind of historical sources (but, mainly, material sources). Therefore, they respond to the questions: How is a Landscape Element structured? What distinguishes it from other Landscape Elements, of similar or different type? What synchronic and diachronic patterns are detectable between the Landscape Elements? And which patterns can be identified within a single Landscape Element?

Each one of these three primary objects (Landscape, Landscape Element, Topographic Element) are associated with **three groups of fundamental properties** that describe and specify them: **time, space, archaeological interpretation**.

The spatial data is defined as the location and morphology of an object, including its variants or transformations related both to the chronological factor, as to the existence of different possible interpretations; an object can therefore have more than one spatial representations.

The variable "time" represents the diachronic evolution of an object and is expressed through the concept of chronological sequences, phases and ranges.

The set of properties that we have defined as "archaeological interpretation" assumes that,

in order to give a meaning to an archaeological material evidence it is not enough to have a coherent spatial and chronological context: it must also be “interesting” in the eyes of the “archaeologist”; in other words, it must implicitly fall into some interpretive grids that reflect the research interests of the scientific community. Also, given the highly abstract and social-oriented approach of the solution, it must be possible to associate multiple meanings to each object.

This last property and the need of giving a “meaning” to the primary objects of the solution, needs to be explained more in detail, In fact, the meanings will be handled in an extremely dynamic way. All primary objects will be "marked" by simple tags and chronotags. In other words, it will be possible to associate to each object a set of easy to understand labels/keywords (tag, to use a well-known word of the web 2.0). The tags can be simple or they can have a chronological variable (thus turning into chronotags).

Tags allow the user to place each object within an interpretive grid. The peculiarity of the system, compared to the traditional and large use of tags on content-driven Internet sites (web 2.0), is that these keywords are gathered in tag sets (sets of keywords) which can be freely created by users. It therefore becomes possible to correlate each object to analytical or descriptive keywords freely conceived by the individual user. Archaeologists, for example, can create their own more or less standardized tag sets reflecting their personal and very specific research interests or that of a scientific community (for example, representing a definition of the settlement type, or of a building type/technique, or reporting the presence of classes of artefacts, or of decorations, and so on).

Such a bottom-up approach encourages the sharing and exchange of ideas and interpretations at various scales (from the single researcher to a small group of research, to the scientific community as a whole). The ability to create custom sets of keywords configures a totally free system in which researchers can create their own interpretative reading tools and possibly share them so that others can make them their own.

The tag sets in use at any given time will reflect, on the whole, the main (research, but not only) interests of the user community; in a sort of natural selection, those most used and shared survive and continue to replicate, while those more marginal die with the end of the research interest that generated them.

The general public also benefits from this tool, having the opportunity to label the historical and archaeological components of a landscape according to the most diverse criteria (for

example, specific selections intended for the creation of thematic cultural tourism routes or defined through spatial criteria like identifying all sites close to a particular place, and so on). This, together with the simplicity of the conceptual model, keeps our platform open to any kind of user target, respecting the Public Archaeology principles and the “socially sharable” requirements we decided to adopt.

The three large sets of properties described so far (space, time, interpretation) make it also possible to carry out analyses on various scales, from the simplest to the most complex; they will concur in forming historiographical models largely based on archaeological sources, which will reflect the societies and economies that have shaped a historic landscape. Some of them will be implemented directly inside the webGIS, while others (more complex ones) will be done through different and more powerful analytical tools after having exported the needed data from the webGIS.

If we want to try to make an example to be applied to the case of Tunisi, the Landscape object could be the historical territory of the city of Carthage, made by all diachronical landscape elements which form it; or, in alternative, the Landscape could be intended only as the urban (and, in case, peri-urban) space of Carthage, in which case there will probably be only one landscape element, Carthage itself (or, at the most, a few landscape elements: Carthage and the possible peri-urban scattered sites).

Carthage will anyway be the main landscape element; it is clearly of the type “Settlement – urban settlement” and it will be composed by a (high) number of topographic elements of several types derived from the “Topographic element.Type” dictionary (buildings, roads, fortifications, necropolis, etc.).

If there are any decontextualised finds which are important for the understanding of the landscape and, in this case, of the city of Carthage, they can also be added as objects of the class “Decontextualised artefact”.

All additional records can be loaded into the repository and attached to the main objects, preserving the possibility of having detailed data of each landscape, landscape element, topographic element, research project, investigation, etc.

On a more technical basis, instead of producing a typical logical model, which would hardly fit our technological and conceptual choice of adopting a strictly object-oriented

approach within a NoSQL database management system (in our case, the Wakanda datastore), we decided to follow a semantic description of the data model rather than more traditional methods such as, for example, the entity-relationship diagram. This means that, in fact, this document is a foundational ontology of the information system, describing its feature and its language in detail.

The first section of this document deals with the ontology itself, while the second section lists all dictionaries used by the object classes.

As said above, the OpenArcheo2 logical model follows an ontological paradigm, based on:

- Primary object classes (c1), representing the main concepts of the information system.
- Secondary object classes (c2), representing conceptually independent entities of the information system that are not primary objects.
- Service classes (c3), representing objects which are used to describe primary and secondary objects but are not in itself relevant within the conceptual model.

Each object class is described in a table made of four columns.

The first column contains the **domain class** (that is, the object class itself which is being described).

The second column represents a **predicate** linking the domain class to a **rank class** (property), which occupies the third column.

In the fourth column there is a **logical representation** of the rank class, describing exactly to which class or simple type (string, integer, etc) it belongs to; in alternative this column can refer to particular methods which allow us to obtain a specific property. Particular indications are in brackets, such as the dictionaries associated to the rank class; so, the “type of publication” rank class of the “Bibliographic title” domain class refers to a “single dictionary lemma” of the dictionary “Bibliographic title.Type of publication”, as can be seen in the corresponding fourth column of the table. Another indication contained in brackets is the primary key label (“pk”).

**Plural and singular forms** in the rank class indicate the **cardinality** of the established relationship. For example: “Topographic element *is represented by* spatial object(s)”

means that each topographic element has one or more spatial objects which represent it (1.. $n$  cardinality); on the other hand: “Topographic element *belongs to a* landscape element” means that each topographic element always belongs to one and only one landscape element ( $n$ ..1 cardinality, reflected also by the expression “Landscape element *is composed by* topographic element(s)”).

The 0.. $n$  cardinality is expressed through the “can” form of the predicate: thus, “Topographic element *can be described by* tag(s)” expresses the 0.. $n$  cardinality (topographic element can have from no tags to  $n$  tags associated to it), while “Topographic element *can have a* name” expresses a 0..1 cardinality (topographic element can have only one name or no name).

The second section lists all **dictionaries** associated to the single rank classes. They can be simple or hierarchical and are presented in English and in Italian language, following the multilingual approach of OpenArcheo 2.

The former are straight lists of lemmas which compose the vocabulary; for example the dictionary “Bibliographic title.Type of publication” is made of the lemmas “Volume”, “Paper in miscellaneous volume”, “Paper in journal”, “Multimedia publication”.

The latter are based on two hierarchical levels where primary lemmas are further specified by secondary lemmas (corresponding to different properties/rank classes of the domain class which uses the dictionary). If we look at the primary lemma “Settlement” of the “Landscape element.Definition” dictionary, we can notice that it has the following secondary lemmas: “Simple rural settlement”, “Seasonal/temporary rural settlement”, “Complex rural settlement”, “Urban settlement”, “Complex religious place”, “Necropolis”, “Temporary abandonment”. This means that a landscape element could be, for example, a “Settlement: Complex rural settlement” (or, involving other primary lemmas, it could be a “Natural environment – Wetland/Marshland”, an “Anthropic exploitation: Breeding space”, a “Functional element – Hydraulic infrastructure” and so on).

## Section 1. Ontology

### Primary Object Classes (c1)

<b>Decontextualised artefact</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>can have a</i>	name	single string (100 characters)
	<i>is a</i>	definition	single Dictionary lemma (Decontextualised artefact.Definition)
	<i>is located at</i>	main toponym	single Toponym
	<i>is dating to</i>	chronology	single Chronological range
	<i>is represented by</i>	spatial object(s)	collection of GIS features
	<i>can be part of a</i>	landscape element	single Landscape Element
	<i>can be part of a</i>	topographic element	single Topographic Element
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to</i>	other project(s)	collection of Projects
	<i>has its knowledge built on</i>	source(s)	collection of Sources
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can be contained by or intersect</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
	<i>can be represented by</i>	image(s)	collection of Images
	<i>can have attached</i>	repository document(s)	collection of Repo documents
	<i>can have</i>	comment(s)	collection of Comments

<b>Landscape</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>covers a</i>	geographic area	single Toponym
	<i>is dating to</i>	chronology	single Chronological range
	<i>is represented by</i>	spatial object(s)	collection of GIS features
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to</i>	other project(s)	collection of Projects
	<i>has a</i>	brief description	single string (2000 characters)
	<i>is composed by</i>	landscape element(s)	collection of Landscape elements
	<i>can be contained by or intersect</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
	<i>can be represented by</i>	image(s)	collection of Images
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<i>can have</i>	comment(s)	collection of Comments	

<b>Landscape element</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>is a</i>	primary definition	single Dictionary lemma (Landscape element.Definition)
	<i>specifically is a</i>	secondary definition	single Dictionary lemma (Landscape element.Definition)
	<i>is located at</i>	main toponym	single Toponym
	<i>belongs to</i>	landscape(s)	collection of Landscapes
	<i>is dating to</i>	chronology	single Chronological range
	<i>is represented by</i>	spatial object(s)	collection of GIS features
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to</i>	other project(s)	collection of Projects
	<i>has its knowledge built on</i>	source(s)	collection of Sources
	<i>can have</i>	historical toponym(s)	collection of Historical toponyms (historical=true)
	<i>has a</i>	brief description	single string (2000 characters)
	<i>is composed by</i>	topographic elements	collection of Topographic elements
	<i>can be contained by or intersect</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can include</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
<i>can be represented by</i>	image(s)	collection of Images	
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<i>can have</i>	comment(s)	collection of Comments	

<b>Topographic element</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>can have a</i>	name	single string (100 characters)
	<i>can have an</i>	acronym	single string (10 characters)
	<i>is a</i>	primary definition	single Dictionary lemma (Topographic element.Definition)
	<i>specifically is a</i>	secondary definition	single Dictionary lemma (Topographic element.Definition)
	<i>belongs to a</i>	landscape element	single Landscape element
	<i>is dating to</i>	chronology	single Chronological range
	<i>is represented by</i>	spatial object(s)	collection of GIS features
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to</i>	other project(s)	collection of Projects
	<i>has its knowledge built on</i>	source(s)	collection of Sources
	<i>can have</i>	historical toponym(s)	collection of Historical toponyms (historical=true)
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can include</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can be contained by or intersect</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
	<i>can be represented by</i>	image(s)	collection of Images
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<i>can have</i>	comment(s)	collection of Comments	

**Secondary Object Classes (c2)**

<b>Bibliographic title</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	short reference	single string (100 characters: authors & year)
	<i>has</i>	authors	collection of Persons
	<i>has a</i>	title	single string (200 characters)
	<i>can have a</i>	title integration	single string (200 characters)
	<i>has been published in</i>	year	single date
	<i>is a</i>	type of publication	single Dictionary lemma (Bibliographic title.Type of publication)
	<i>has a</i>	record stamp	single Record stamp
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can refer to</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can refer to</i>	landscape(s)	collection of Landscapes
	<i>can refer to</i>	landscape element(s)	collection of Landscape elements
	<i>can refer to</i>	topographic element(s)	collection of Topographic elements
	<i>can refer to</i>	project(s)	collection of Projects
	<i>can refer to</i>	source(s)	collection of Sources
	<i>can refer to</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can refer to</i>	toponym(s)	collection of Toponyms
	<i>can refer to</i>	investigation(s)	collection of Investigations
	<i>can be described by</i>	tag(s)	collection of Tags
<i>can be described by</i>	chronotag(s)	collection of Chronotag refs	
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<i>can have</i>	comment(s)	collection of Comments	
<b>Bibliographic title: volume</b>	<b><i>extends Bibliographic title inheriting all its properties</i></b>		
	<i>has authors as</i>	editors	single boolean
	<i>has been published in</i>	publication place	single string (50)
	<i>has been published by</i>	publisher	single string (100 characters)
	<i>can be in</i>	number of volumes	single integer
	<i>can have a</i>	number of edition	single integer
	<i>can belong to a</i>	series	single string (100 characters)
	<i>can have a</i>	series reference	single string (100 characters)
<i>has</i>	number of pages	single string (20 characters)	

<b>Bibliographic title: paper in miscellaneous volume</b>	<b><i>extends Bibliographic title inheriting all its properties</i></b>		
	<i>is published in</i>	volume	single Bibliographic title: volume
	<i>has a</i>	page range	single string (20)
<b>Bibliographic title: paper in journal</b>	<b><i>extends Bibliographic title inheriting all its properties</i></b>		
	<i>has authors as</i>	editors	single boolean
	<i>has been published in</i>	journal	single string (100)
	<i>has a</i>	journal number	single string (10 characters)
	<i>can have a</i>	journal issue	single string (10 characters)
	<i>has a</i>	page range	single string (20)
<b>Person</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	first/middle name	single string (20 characters)
	<i>has a</i>	last name	single string (20 characters)
	<i>belongs to an</i>	organization	single string (100 characters)
	<i>can be described by a</i>	biography/CV	single string (2000 characters)
	<i>can have</i>	contact information	single string (500 characters)
	<i>has a</i>	record stamp	single Record stamp
	<i>can be author of</i>	bibliographic title(s)	collection of Bibliographic titles
	<i>can be director of</i>	project(s)	collection of Projects
	<i>can be director of</i>	investigation(s)	collection of Investigations
	<i>can be refered to in</i>	producer ref(s)	collection of Producer refs
<i>can be represented by</i>	image(s)	collection of Images	
<b>User</b>	<b><i>extends Person inheriting all its properties</i></b>		
	<i>has a</i>	username	single string (200 characters)
	<i>has a</i>	password	single string (10 characters)
	<i>can be contacted at</i>	mail address	single string (50 characters)
	<i>belongs to a</i>	user group	single string (100 characters)

<b>Project</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>can have an</i>	acronym	single string (10 characters)
	<i>has a</i>	main investigation type	single Dictionary lemma (Project.Investigation type)
	<i>is directed by</i>	person(s)	collection of Persons
	<i>has a</i>	duration	single Chronological range
	<i>has an</i>	actual state	single Dictionary lemma (Generic.Actual state)
	<i>has its research based on a</i>	main investigation	single Investigation
	<i>can have its research based on</i>	other investigation(s)	collection of Investigations
	<i>investigates</i>	source(s)	<i>Method: show all sources of related investigations</i>
	<i>investigates</i>	geographic area(s)	<i>Method: show all toponyms of related investigations</i>
	<i>investigates</i>	historical period(s)	<i>Method: show all phases of related investigations</i>
	<i>is carried out by</i>	participants	<i>Method: show all producer refs of related investigations</i>
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to</i>	other project(s)	collection of Projects
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can study</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can study</i>	landscape(s)	collection of Landscapes
	<i>can study</i>	landscape element(s)	collection of Landscape elements
	<i>can study</i>	topographic element(s)	collection of Topographic elements
	<i>can refer to</i>	other project(s)	collection of Projects
	<i>can be the origin project of</i>	record stamp(s)	collection of Record stamps
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
	<i>can be represented by</i>	image(s)	collection of Images
	<i>can have attached</i>	repository document(s)	collection of Repo documents
	<i>can have</i>	comment(s)	collection of Comments

<b>Repository document</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>is a</i>	file type	single Dictionary lemma (Repository document.File type)
	<i>is a</i>	document type	single Dictionary lemma (Repository document.Document type)
	<i>is stored in a</i>	file	single blob
	<i>has a</i>	record stamp	single Record stamp
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can relate to</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can relate to</i>	landscape(s)	collection of Landscapes
	<i>can relate to</i>	landscape element(s)	collection of Landscape elements
	<i>can relate to</i>	topographic element(s)	collection of Topographic elements
	<i>can relate to</i>	bibliographic title(s)	collection of Bibliographic titles
	<i>can relate to</i>	project(s)	collection of Projects
	<i>can relate to</i>	source(s)	collection of Sources
	<i>can relate to</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can relate to</i>	toponym(s)	collection of Toponyms
	<i>can relate to</i>	investigation(s)	collection of Investigations
	<i>can be described by</i>	tag(s)	collection of Tags
<i>can be described by</i>	chronotag(s)	collection of Chronotag refs	
<i>can have</i>	comment(s)	collection of Comments	

<b>Spatial repartition/zone</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>can have an</i>	acronym/abbreviation	single string (10 characters)
	<i>is of</i>	type	single Dictionary lemma (Spatial repartition.Type)
	<i>has a</i>	spatial extension	single GIS feature
	<i>is part of a</i>	set of spatial repartition	single Set of spatial repartitions/zones
	<i>can be related to</i>	investigation(s)	collection of Investigations
	<i>can have a</i>	chronology	single Chronological range
	<i>covers a</i>	chronological range	single Chronological range
	<i>has a</i>	record stamp	single Record stamp
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can spatially contain/intersect</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can spatially contain/intersect</i>	landscape(s)	collection of Landscapes
	<i>can spatially contain/intersect</i>	landscape element(s)	collection of Landscape elements
	<i>can spatially contain/intersect</i>	topographic element(s)	collection of Topographic elements
	<i>can spatially contain/intersect</i>	toponym(s)	collection of Toponyms
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
<i>can be represented by</i>	image(s)	collection of Images	
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<i>can have</i>	comment(s)	collection of Comments	

<b>Set of spatial repartitions/zones</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>has a</i>	record stamp	single Record stamp
	<i>is</i>	public	single boolean
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>is composed by</i>	spatial repartitions(s)	collection of Spatial repartitions/zones
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can have</i>	comment(s)	collection of Comments

<b>Source (information origin)</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>can have an</i>	acronym/abbreviation	single string (10 characters)
	<i>is of</i>	type	single Dictionary lemma (Source.Type)
	<i>is produced by a</i>	main producer	single Producer refs
	<i>is the main subject of an</i>	investigation	single Investigations
	<i>can be the subject of</i>	other investigation(s)	collection of Investigations
	<i>can have a</i>	chronology	single Chronological range
	<i>covers a</i>	geographic area	single Toponym
	<i>covers a</i>	chronological range	single Chronological range
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to</i>	project(s)	<i>Method: show all projects of related investigations</i>
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can form the knowledge of</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can form the knowledge of</i>	landscape element(s)	collection of Landscape elements
	<i>can form the knowledge of</i>	topographic element(s)	collection of Topographic elements
	<i>can form the knowledge of</i>	toponym(s)	collection of Toponyms
	<i>can be related to</i>	other source(s)	collection of SourceRels
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
	<i>can be represented by</i>	image(s)	collection of Images
	<i>can have attached</i>	repository document(s)	collection of Repo documents
	<i>can have</i>	comment(s)	collection of Comments

<b>Toponym</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>is a</i>	definition	single Dictionary lemma (Toponym.Definition)
	<i>is an</i>	administrative toponym	single boolean
	<i>is a</i>	historical toponym	single boolean
	<i>is represented by</i>	spatial object(s)	collection of GIS features
	<i>has a</i>	record stamp	single Record stamp
	<i>has a</i>	brief description	single string (2000 characters)
	<i>has a relation with</i>	other toponym(s)	collection of ToponymRels
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can be the site of</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can represent the area of</i>	landscape(s)	collection of Landscapes
	<i>can be the site of</i>	landscape element(s)	collection of Landscape elements
	<i>can be the site of</i>	topographic element(s)	collection of Topographic elements
	<i>can represent the study area of</i>	investigation(s)	collection of Investigations
	<i>can represent the coverage area of</i>	sources(s)	collection of Sources
	<i>can be contained by or intersect</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
	<i>can be referenced in</i>	bibliography	collection of Bibliographic titles
<i>can be represented by</i>	image(s)	collection of Images	
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<b>Administrative toponym</b>	<i>extends Toponym inheriting all its properties</i>		
	<i>is of</i>	type	single Dictionary lemma (Toponym.Admtype)
	<i>can have an</i>	address	single string (200 characters)
	<i>can have a</i>	ZIP code	single string (10 characters)
	<i>can have a</i>	town	single string (100 characters)
	<i>can have a</i>	province/region/s tate	single string (100 characters)
<i>has a</i>	nation	single string (100 characters)	
<b>Historical toponym</b>	<i>extends Toponym inheriting all its properties</i>		
	<i>has its knowledge built on</i>	source(s)	collection of Sources

### Service Classes (c3)

<b>Chronological date</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	chronology	single date
	<i>has a</i>	meaning	single Dictionary lemma (Chronological date.Meaning)
	<i>has a</i>	precision	single Dictionary lemma (Chronological date.Precision)

<b>Chronological phase</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>has a</i>	definition	single Dictionary lemma (Chronological phase.Definition)
	<i>is dating to</i>	chronological range	single Chronological range
	<i>belongs to</i>	chronological sequence	single Chronological sequence
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can be the subject of</i>	investigation(s)	collection of Investigations
	<i>can have</i>	comment(s)	collection of Comments

<b>Chronological range</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	start date	single Chronological date
	<i>has a</i>	end date	single Chronological date
	<i>can belong to</i>	chronological phase(s)	collection of Chronological phases
	<i>can date</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can date</i>	landscape(s)	collection of Landscapes
	<i>can date</i>	landscape element(s)	collection of Landscape elements
	<i>can date</i>	topographic element(s)	collection of Topographic elements
	<i>can represent the duration of</i>	project(s)	collection of Projects
	<i>can represent the duration of</i>	investigations(s)	collection of Investigations
	<i>can date</i>	sources(s)	collection of Sources
	<i>can date</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can date</i>	chronotag(s)	collection of Chronotag refs
	<i>can date</i>	chronological phase(s)	collection of Chronological phases
	<i>can have</i>	comment(s)	collection of Comments

<b>Chronological sequence</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>has a</i>	definition	single Dictionary lemma (Chronological sequence.Definition)
	<i>is made by</i>	phase(s)	collection of Chronological phases
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can have</i>	comment(s)	collection of Comments

<b>Chronotag ref</b>	<i>has an</i>	object of origin	single object of c1/c2
	<i>refers to a</i>	tag	single Tag
	<i>has a</i>	chronology	single Chronological range
	<i>can tag</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can tag</i>	landscape(s)	collection of Landscapes
	<i>can tag</i>	landscape element(s)	collection of Landscape elements
	<i>can tag</i>	topographic element(s)	collection of Topographic elements
	<i>can tag</i>	bibliographic title(s)	collection of Bibliographic titles
	<i>can tag</i>	project(s)	collection of Projects
	<i>can tag</i>	sources(s)	collection of Sources
	<i>can tag</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can tag</i>	toponym(s)	collection of Toponyms
	<i>can tag</i>	image(s)	collection of Images
	<i>can tag</i>	investigation(s)	collection of Investigations
<i>can tag</i>	chronology	single Chronological range	

<b>Comment</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	record stamp	single Record stamp
	<i>has a</i>	text	single string (2000 characters)
	<i>can comment a</i>	decontextualised artefact	single Decontextualised artefact
	<i>can comment a</i>	landscape	single Landscape
	<i>can comment a</i>	landscape element	single Landscape element
	<i>can comment a</i>	topographic element	single Topographic element
	<i>can comment a</i>	bibliographic title	single Bibliographic title
	<i>can comment a</i>	project	single Project
	<i>can comment a</i>	repository document	single Repository document
	<i>can comment a</i>	source	single Source
	<i>can comment a</i>	set of spatial repartition	single Set of spatial repartitions/zones
	<i>can comment a</i>	spatial repartition	single Spatial zone/repartition
	<i>can comment a</i>	chronological phase	single Chronological phase
	<i>can comment a</i>	chronological range	single Chronological range
	<i>can comment a</i>	chronological sequence	single Chronological sequence
	<i>can comment a</i>	descriptive text	single Descriptive text
	<i>can comment a</i>	dictionary	single Dictionary
	<i>can comment a</i>	dictionary lemma	single Dictionary lemma
	<i>can comment a</i>	GIS feature	single GIS feature
	<i>can comment a</i>	GIS layer	single GIS layer
	<i>can comment an</i>	image	single Image
	<i>can comment an</i>	investigation	single Investigation
	<i>can comment a</i>	tagset	single Tagset
	<i>can comment a</i>	tag	single Tag

<b>Descriptive text</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	definition	single Dictionary lemma
	<i>has a</i>	title	single string (200 characters)
	<i>has a</i>	text	single string
	<i>has a</i>	record stamp	single Record stamp
	<i>can describe a</i>	decontextualised artefact	single Decontextualised artefact
	<i>can describe a</i>	landscape	single Landscape
	<i>can describe a</i>	landscape element	single Landscape element
	<i>can describe a</i>	topographic element	single Topographic element
	<i>can describe a</i>	project	single Project
	<i>can describe a</i>	source	single Source
	<i>can describe a</i>	set of spatial repartition	single Set of spatial repartitions/zones
	<i>can describe a</i>	spatial repartition	single Spatial zone/repartition
	<i>can describe an</i>	investigation	single Investigation
	<i>can describe a</i>	tagset	single Tagset
<i>can describe a</i>	tag	single Tag	
<i>can have</i>	comment(s)	collection of Comments	

<b>Dictionary</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>is composed by</i>	lemma(s)	collection of Dictionary lemmas
	<i>has a</i>	record stamp	single Record stamp
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can have</i>	comment(s)	collection of Comments

<b>Dictionary lemma</b>	<i>is identified by an</i>	id	integer (pk)
	<i>has a</i>	value	single string (100 characters)
	<i>belongs to a</i>	dictionary	single Dictionary
	<i>can have</i>	comment(s)	collection of Comments

<b>GIS feature</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>belongs to a</i>	layer	single GIS layer
	<i>is linked to</i>	feature on server	<i>method: external link to geoserver/leaflet feature</i>
	<i>can spatially represent a</i>	decontextualised artefact	single Decontextualised artefact
	<i>can spatially represent a</i>	landscape	single Landscape
	<i>can spatially represent a</i>	landscape element	single Landscape element
	<i>can spatially represent a</i>	topographic element	single Topographic element
	<i>can spatially represent a</i>	toponym	single Toponym
	<i>can spatially represent a</i>	spatial repartition	single Spatial zone/repartition
	<i>can have</i>	comment(s)	collection of Comments

<b>GIS layer</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>has a</i>	geometry	single Dictionary lemma (GIS feature.Geometry)
	<i>is made of</i>	feature(s)	collection of GIS features
	<i>is linked to</i>	layer on server	<i>method: external link to geoserver/leaflet layer</i>
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can have</i>	comment(s)	collection of Comments

<b>Image</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>is of</i>	type	single Dictionary lemma (Image.Type)
	<i>is stored in an</i>	image file	single image file
	<i>has</i>	EXIF info	<i>method showing EXIF info of image file</i>
	<i>can have a</i>	caption	single string (300 characters)
	<i>can represent</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can represent</i>	landscape(s)	collection of Landscapes
	<i>can represent</i>	landscape element(s)	collection of Landscape elements
	<i>can represent</i>	topographic element(s)	collection of Topographic elements
	<i>can represent</i>	person(s)	collection of Persons
	<i>can represent</i>	project(s)	collection of Projects
	<i>can represent</i>	source(s)	collection of Sources
	<i>can represent</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can represent</i>	toponym(s)	collection of Toponyms
	<i>can represent</i>	investigation(s)	collection of Investigations
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
<i>can have</i>	comment(s)	collection of Comments	

<b>Investigation</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>can have an</i>	acronym	single string (10 characters)
	<i>is of</i>	type	single Dictionary lemma (Project.Invetstigation type)
	<i>is directed by</i>	person(s)	collection of Persons
	<i>has a</i>	duration	single Chronological range
	<i>has an</i>	actual state	single Dictionary lemma (Generic.Actual state)
	<i>investigates a</i>	geographic area	single Toponym
	<i>investigates</i>	historical period(s)	collection of Chronological phases
	<i>investigates a</i>	main source	single Source
	<i>can investigate</i>	other source(s)	collection of Sources
	<i>is carried out by</i>	participants	collection of Producer refs
	<i>has a</i>	record stamp	single Record stamp
	<i>can refer to a</i>	project	single Project
	<i>has a</i>	brief description	single string (2000 characters)
	<i>can study</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can refer to</i>	other investigation(s)	collection of Investigations
	<i>can be related to</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can be described by</i>	tag(s)	collection of Tags
	<i>can be described by</i>	chronotag(s)	collection of Chronotag refs
<i>can be further described by</i>	text(s)	collection of Descriptive texts	
<i>can be referenced in</i>	bibliography	collection of Bibliographic titles	
<i>can be represented by</i>	image(s)	collection of Images	
<i>can have attached</i>	repository document(s)	collection of Repo documents	
<i>can have</i>	comment(s)	collection of Comments	

<b>Producer ref</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>is the</i>	main producer	single boolean
	<i>refers to an</i>	organization	single string (100 characters)
	<i>has a</i>	role	single Dictionary lemma (Producer ref.Role)
	<i>can refer to a</i>	person	single Person
	<i>can have a</i>	duration	single Chronological range
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can participate to an</i>	investigation	single Investigation
<i>can have produced a</i>	source	single Source	

<b>Record stamp</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	digital owner	single User
	<i>was created on</i>	creation date	single date
	<i>was created on</i>	creation time	single time
	<i>was last modified on</i>	modification date	single date
	<i>was last modified on</i>	modification time	single time
	<i>can have a</i>	project of origin	single Project
	<i>can have a</i>	DOI	<i>method: external link to DOI metadata</i>
	<i>can refer to a</i>	decontextualised artefact	single Decontextualised artefact
	<i>can refer to a</i>	landscape	single Landscape
	<i>can refer to a</i>	landscape element	single Landscape element
	<i>can refer to a</i>	topographic element	single Topographic element
	<i>can refer to a</i>	bibliographic title	single Bibliographic title
	<i>can refer to a</i>	person	single Person
	<i>can refer to an</i>	investigation	single Investigation
	<i>can refer to a</i>	project	single Project
	<i>can refer to a</i>	repository document	single Repository document
	<i>can refer to a</i>	source	single Source
	<i>can refer to a</i>	set of spatial repartition	single Set of spatial repartitions/zones
	<i>can refer to a</i>	spatial repartition	single Spatial zone/repartition
	<i>can refer to a</i>	toponym	single Toponym
	<i>can refer to a</i>	comment	single Comment
<i>can refer to a</i>	text	single Descriptive text	
<i>can refer to a</i>	user group	single User group	
<i>can refer to a</i>	dictionary	single Dictionary	
<b>SourceRel (relation reference between sources)</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>is of</i>	relation type	single Dictionary lemma (Generic.Object relationship)
	<i>expresses a relation with</i>	source	single Source

<b>Tagset</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>has a</i>	record stamp	single Record stamp
	<i>is</i>	public	single boolean
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>is composed by</i>	tag(s)	collection of Tags
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can have</i>	comment(s)	collection of Comments

<b>Tag</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	value	single string (50 characters)
	<i>belongs to</i>	tagset	single Tagset
	<i>can have a</i>	brief description	single string (2000 characters)
	<i>can be further described by</i>	text(s)	collection of Descriptive texts
	<i>can tag</i>	decontextualised artefact(s)	collection of Decontextualised artefacts
	<i>can tag</i>	landscape(s)	collection of Landscapes
	<i>can tag</i>	landscape element(s)	collection of Landscape elements
	<i>can tag</i>	topographic element(s)	collection of Topographic elements
	<i>can tag</i>	bibliographic title(s)	collection of Bibliographic titles
	<i>can tag</i>	project(s)	collection of Projects
	<i>can tag</i>	repository document(s)	collection of Repository documents
	<i>can tag</i>	sources(s)	collection of Sources
	<i>can tag</i>	spatial repartition(s)	collection of Spatial zones/repartitions
	<i>can tag</i>	toponym(s)	collection of Toponyms
	<i>can tag</i>	image(s)	collection of Images
	<i>can tag</i>	investigation(s)	collection of Investigations
<i>can have</i>	comment(s)	collection of Comments	

<b>ToponymRel (relation reference between toponyms)</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>is of</i>	relation type	single Dictionary lemma (Generic.Object relationship)
	<i>expresses a relation with</i>	toponym	single Toponym

Archeomedsites – OA2 webGIS. Ontology (logical model)

<b>User group</b>	<i>is identified by an</i>	id	single integer (pk)
	<i>has a</i>	name	single string (100 characters)
	<i>has</i>	access privileges	<i>method defining access privileges of the user group</i>
	<i>is composed by</i>	user(s)	collection of Users
	<i>has a</i>	record stamp	single Record stamp

## Section 2. Dictionaries

<b>Bibliographic title.Type of publication</b>	
<b>English</b>	<b>Italian</b>
Volume	Volume
Paper in miscellaneous volume	Articolo in miscellanea
Paper in journal	Articolo in periodico
Multimedia publication	Pubblicazione multimediale

<b>Chronological date.Meaning</b>	
<b>English</b>	<b>Italian</b>
Century	Secolo
Half century	Mezzo secolo
Third of century	Terzo di secolo
Quarter of century	Quarto di secolo
Decade	Decennio
Year	Anno
Beginning of the century	Inizi secolo
Mid century	Metà secolo
End of the century	Fine secolo

<b>Chronological date.Precision</b>	
<b>English</b>	<b>Italian</b>
Undetermined	Non riportata
Precise	Precisa
Approximate	Approssimata
Generic	Generica

<b>Chronological phase.Definition</b>	
<b>English</b>	<b>Italian</b>
Historiographical period	Periodo storiografico
Excavation period/phase	Periodo/Fase di scavo
Generic chronological phase	Generica fase cronologica
<b>TO BE COMPLETED</b>	

<b>Chronological sequence.Definition</b>	
<b>English</b>	<b>Italian</b>
Historiographical periods	Periodizzazione storiografica
Excavation periods	Periodizzazione di scavo
Specific diachronic sequence	Sequenza diacronica specifica
Generic sequence	Sequenza generica
<b>TO BE COMPLETED</b>	

<b>Decontextualised artefact.Definition</b>	
<b>English</b>	<b>Italian</b>
Architectural decoration	Decorazione architettonica
Monument/urban installation	Monumento/installazione urbana
Generic decontextualised artefact	Generico manufatto decontestualizzato
<b>TO BE COMPLETED</b>	

<b>Descriptive text.Definition</b>	
<b>English</b>	<b>Italian</b>
Generic description	Descrizione generica
Specific description	Descrizione specifica
Abstract	Abstract
Other text	Altro
<b>TO BE COMPLETED</b>	

<b>Generic.Actual state</b>	
<b>English</b>	<b>Italian</b>
Ongoing	In corso
Suspended	Sospeso
Finished	Concluso
Other	Altro
Undetermined	Non determinabile

<b>Generic.Object relationship</b>	
<b>English</b>	<b>Italian</b>
Belongs to	Appartiene a
Is part of	È parte di
Contains	Contiene
Generic relationship	Generica relazione
<b>TO BE COMPLETED</b>	

<b>GIS layer.Geometry</b>	
<b>English</b>	<b>Italian</b>
Point	Punto
Polyline	Polilinea
Polygon	Poligono

<b>Image.type</b>	
<b>English</b>	<b>Italian</b>
Landscape survey photo	Foto di ricognizione paesaggistica
Archaeological survey photo	Foto di ricognizione archeologica
Excavation photo	Foto di scavo
Aerial photo	Foto aerea
General/panoramic photo	Foto generali/panoramiche
Finds	Reperto
Graphical or 3D reconstruction	Ricostruzione grafica o 3D
Sketch/interpretation	Schizzo/interpretazione
Documentazione grafica	Documentazione grafica
Other	Altro

Landscape element.Definition			
English		Italian	
Primary definition	Secondary definition	Definizione primaria	Definizione secondaria
Natural environment	Hydrography	Ambiente naturale	Idrografia
	Woods/Fallow land		Bosco/incolto
	Wetlands/Marshlands		Area palustre
	Environmental destruction		Dissesto ambientale
	Geological element		Elemento geologico
Anthropic network	Settlement/demic network	Rete antropica	Rete demico/insediativa
	Economic/productive network		Rete economico/produttiva
	Cultural/religious network		Rete culturale/religiosa
	Military/fortifications network		Reti militari/fortificatorie
	Communication network		Reti comunicazione
	Infrastructural network		Rete infrastrutturali
Settlement	Simple rural settlement	Insediamento	Insediamento rurale semplice
	Seasonal/temporary rural settlement		Insediamento rurale stagionale temporaneo
	Complex rural settlement		Insediamento rurale complesso
	Urban settlement		Insediamento urbano
	Complex religious place		Luogo di culto complesso
	Necropolis		Area cimiteriale
	Temporary abandonment		Abbandono temporaneo
Anthropic exploitation	Agricultural space	Sfruttamento antropico	Spazio agricolo
	Breeding space		Spazio allevatizio
	Mining area		Area estrattiva
	Collection/supply area		Spazio di raccolta/approvvigionamento
	Hunting/fishing space		Spazio venatorio o di pesca
Functional element	Transformation/processing productive space	Elemento funzionale	Spazio produttivo di trasformazione/lavorazione
	Commercial space		Spazio commerciale
	Simple religious place		Luogo di culto semplice
	Military/fortification element		Elemento militare/fortificatorio
	Hydraulic infrastructure		Infrastruttura idraulica
	Communication infrastructure		Infrastruttura di comunicazione
	Environmental modification		Sistemazione/modificazione ambientale
	Other functional space		Altro spazio funzionale
Planning	Territorial planning	Pianificazione	Territoriale
	Urban planning		Urbanistica

Undetermined	Undetermined	Non determinabile	n.d.
	Generic natural environment		Generico ambiente naturale
	Generic anthropic presence		Generica frequentazione antropica

<b>Producer ref.Role</b>	
<b>English</b>	<b>Italian</b>
Scientific director	Direttore scientifico
Technical director	Direttore tecnico
On field director	Direttore sul campo
Coordinator/supervisor	Coordinatore/supervisor
Project manager	Project manager
Scientific responsibility	Responsabilità scientifica
Technica responsibility	Responsabilità tecnica
Scientific operator	Operatore scientifico
Technical operator	Operatore tecnico
Other	Altro
Undetermined	Indeterminato

<b>Project. Investigation type</b>			
<b>English</b>	<b>Italian</b>		
Archaeological field investigation	Aerial photograph interpretation	Indagini archeologiche sul campo	Aerofotointerpretazione
	Analysis of architectures		Studio degli elevati
	Archaeological surveillance		Sorveglianza archeologica
	Archaeological survey plan		Rilievo archeologico
	Core sampling		Carotaggio
	Field survey (non-systematic)		Ricognizione di superficie non sistematica
	Field survey (systematic)		Ricognizione di superficie sistematica
	Geophisic prospection		Prospezione geofisica
	Non-stratigraphic excavation		Recupero/scasso/sterro
	Shovel test		Shovel test/Saggio di scavo
	Stratigraphic excavation (emergency)		Scavo stratigrafico di emergenza
	Stratigraphic excavation (preventive)		Scavo stratigrafico preventivo
	Stratigraphic excavation (programmed)		Scavo stratigrafico programmato
Stratigraphic excavation (underwater)	Scavo stratigrafico subacqueo		

Archaeological laboratory investigation	Archaeometric analysis	Indagini archeologiche in laboratorio	Analisi archeometrica
	Morphotypological study of finds		Studio morfotipologico dei reperti
	Remote sensing		Telerilevamento
Other investigation	Accidental finds/discovery	Altre indagini	Ritrovamento casuale
	History of arts investigation		Studio storico-artistico
	Oral testimony		Notizia orale
	Study of iconographic sources		Studio delle fonti iconografiche
	Study of written sources		Studio delle fonti documentarie
	Other		Altro
Undetermined	Non determinabile		

Repository document.Document type	
English	Italian
Scientific report/Grey literature	Relazione scientifica/letteratura grigia
Stratigraphic units list	Elenco US
Stratigraphic units sheets	Schede US
Harris Matrix	Matrix di Harris
Field survey records	Documentazione ricognizione di superficie
Finds inventory/catalog	Inventario/catalogo reperti
Find records	Schede reperti
Quantitative data	Dati Quantitativi
Geospatial layer/feature	Dati geospaziali
Vector drawing	Disegni Vettoriali
Bibliography	Bibliografia
Generic database records/catalog	Generiche schede di database
Generic text	Generico testo
Other document	Altro documento

Repository document.File type	
English	Italian
Acrobat PDF (.pdf)	
Comma Separated Values (.csv)	
Open Document Text (.odt)	
Open Document Sheet (.ods)	
Plain Text (.txt)	
Vector image (.svg, .dxf)	
Vector geospatial data (.shp, .gml)	
Raster geospatial data (geotiff, gml)	

<b>Source.type</b>			
<b>English</b>		<b>Italian</b>	
Material source	Stratigraphic deposit	Fonte materiale	Deposito stratigrafico
	Surface material concentration		Concentrazione materiale di superficie
	Remote sensin anomaly		Anomalia da telerilevamento
	Geophisic prospection anomaly		Anomalia da prospezione geofisica
	Decontextualised finds		Reperti decontestualizzati
	Chronotypological study of finds		Studio cronotipologico dei reperti
	Archaeometric data		Dati archeometrici
	Spatial/statistical analysis		Analisi statistico/spaziali
	Other material source		Altra fonte materiale
Written source	Documentary source	Fonte scritta	Fonte documentarie
	Literary source		Fonte letterarie
	Grey literature		Letteratura grigia
	Epigraphic data		Dato epigrafico
	Other written source		Altra fonte scritta
Cartographic source	Cadastre	Fonte cartografica	Catasto
	Historical cartography		Cartografia storica
	Sketch		Schizzo
	Other cartographic source		Altra fonte cartografica
Iconographic source	Painting	Fonte iconografica	Pittura
	Sculpture		Scultura
	Miniature		Miniatura
	Incision		Incisione
	Print		Stampa
	Decoration		Decorazione
	Other iconographic source		Altra fonte iconografica
Photographic source		Fonte fotografica	
Toponomastic source		Fonte toponomastica	
Reconstructions	Graphical tables	Ricostruzioni	Tavole grafiche
	3D model		Modellazioni 3D
	Reconstructive model		Plastici
	Full scale reconstruction		Ricostruzione in scala reale
	Other reconstructions		Altre ricostruzioni
Historiogrphical hypotesis		Ipotesi storiografica	
Other type of source		Altro tipo di fonte	

<b>Spatial repartition.Type</b>	
<b>English</b>	<b>Italian</b>
Generic investigation repartition	Generica ripartizione di ricerca
Excavation area	Area di scavo
Field survey samples	Campione di ricognizione
Generic urban repartition	Generica ripartizione urbana
Actual urban district	Distretto urbano attuale
Historical urban district	Distretto urbano storico
Actual region/area	Regione/comprendorio attuale
Historical region/area	Regione/comprendorio storico
Other repartition	Altra ripartizione

<b>Topographic element.Definition</b>			
<b>English</b>		<b>Italian</b>	
Built space	Building	Spazio edificato	Edificio
	Achitectural complex		Complesso architettonico
	Other architectural artifact		Altro manufatto architettonico
Open space	Place/Square	Spazio aperto	Piazza/piazzale
	Courtyard		Corte/cortile/aia
	Park/garden		Parco/giardino
	Vegetable garden/field		Orto/campo
	Urban planning		Pianificazione urbanistica
Transportation network	Road network	Viabilità	Stradale
	Waterways network		Fluviale/marittima
	Railroad network		Ferroviaria
Fortification	Defensive walls	Fortificazione	Circuito difensivo
	Fortified complex		Complesso fortificato
	Fortified building		Edificio fortificato
	Morphological element		Elemento morfologico
	Other fortification element		Altro elemento di fortificazione
Necropolis	Necropolis	Area cimiteriale	Necropoli
	Isolated grave(s)		Tomba/tombe
Infrastructure	Hydraulic system	Infrastruttura	Impianto idraulico
	Infrastructure connected with buildings		Infrastruttura connessa a edifici
	Infrastructure connected with transportation network		Infrastruttura connessa alla viabilità/trasporto
	Recreational/sports ground		Impianto sportivo/ricreativo
	Waste disposal infrastructure		Infrastruttura per lo smaltimento rifiuti
	Lighting system infrastructure		Impianto di illuminazione
	Energy/telecommunications infrastructure		Infrastruttura per energia/telecomunicazioni
	Construction yard		Cantiere

Environmental modification	Natural	Modificazione ambientale	Naturale
	Anthropic		Antropica
Artistic, decorative, celebrative elements	Primary/independent	Elementi artistici, decorativi, celebrativi	Primari/indipendenti
	Secondary/dependent		Secondari/dipendenti

<b>Toponym.Definition</b>	
<b>English</b>	<b>Italian</b>
Settlement name	Poleonimo
Hydronym (river/canal)	Idronimo (corso d'acqua/canale)
Hydronym (lake/basin)	Idronimo (lago/bacino)
Hydronym (sea)	Idronimo (mare)
Oronym (mountain or mountain system)	Oronimo (rilievo montuoso)
Oronym (hill or hill system)	Oronimo (rilievo collinare)
Coronym (land/region name)	Coronimo
Odonym	Odonimo
Other toponym	Altro topnimo
Generic toponym	Generico toponimo

<b>Toponym.Admtype</b>	
<b>English</b>	<b>Italian</b>
Nation	Nazione
State/Region	Stato/regione
Province/County	Provincia/Contea
Municipality	Comune
Other administrative toponym	Altro topnimo amministrativo
Generic administrative toponym	Generico toponimo amministrativo