Megalithism Representation in CIDOC-CRM

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«without a data model capable of adequately describing not only the archaeological data contained within records but the archaeological processes used to generate records, any database is limited in terms of its capabilities and suitability for reporting, assessment and analysis and ultimately its suitability as an archive»

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Motivations

- The information treated by History and Archaeology is made up of fragments that allow the portrayal of a past reality
- Archaeological information systems must be able to deal with subjectivity, multivocality, temporality and uncertainty.
- Data models should describe not only the archaeological data contained within records, but the archaeological processes used to generate records
- Institutions and research groups continue to independently develop databases and management application, isolated from each other producing fragmented data

Objectives

- map the information to a CIDOC-CRM-aligned data model;
- constitute a *corpus* from the existing documentation;
- adapt the archaeological data collected to FAIR principles (Findable, Accessible, Interoperable and Reusable);

Goal

We propose a CIDOC CRM extension, regarding the representation of megalithic monuments, having in mind usual aspects included in archaeology grey literature with the objective of organize usual official reports content





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[Portuguese] Archaeologists Portal Portal do Arqueólogo

- ▶ last upgrade in September 2018;
- includes archaeological and empirical observations and interpretations;

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▶ difficult to access and reuse the data;

[Portuguese] Archaeologists Portal The data

In June 2021:

- ▶ there were 36275 entries from archaeological sites;
- ▶ 39947 archaeological works;
- 5855 reports in digital format (PDF) (1151 of the links not working);

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Megalithism:

- 4640 monuments (12.8%);
- ▶ 5494 archaeological works;
- ▶ 826 archaeological work reports;

Challenges

descriptions of different types of archaeological site;

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- ▶ reuses;
- ► concepts;
- ► The degree of detail;
- ► language;
- some articles were accepted as reports;

Defining Megalithism Toponymy

▶ **Toponymy**: An MM is identified by its appellation, which may have alternative forms. It might be a code assigned to the monument by certain institutions, such as the CNS (Portuguese national archaeological site code) code. The monument we are using as an example is identified by appellation "Anta Grande da Comenda da Igreja". It has the CNS code 616 and alternative names "Anta Grande da Herdade da Igreja" and "Anta Grande da Herdade da Comenda".

$\begin{array}{c} \textbf{Defining Megalithism}\\ \mathrm{Type} \end{array}$

▶ **Type**: This class comprises concepts denoted by terms from thesauri and controlled vocabularies used to characterize and classify instances of CRM classes. Instances of (E55 Type) represent concepts in contrast to instances of (E41 Appellation), which are used to name instances of CRM classes. Examples of the architecture type are "Dólmen", "Menir" and "Recinto Megalítico", but others can be added.

Defining Megalithism Legal Protection

▶ Legal Protection: The relation (P104 is subject to) (E30 Right) specifies the legal protection of a monument. The MM "Anta Grande da Comenda da Igreja" is subject to a protection (right) that was created by a protection event (Creation). This protection has a time span of time from 20-01-1936 to the present day.

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Defining Megalithism Component

Component: Component The record of an MM may include one or more MM architectural components which, as far as it is concerned, may also be composed of one or more elements. This is expressed by the relation (P46 is composed of) (MM Component), which is a new concept, subclass of (E19 Physical Object). Types of MM components are chambers, corridors, supports, etc. In this way, the configuration designed allows the registration of MM components with their respective descriptions, but also, if necessary, the registration of each standing stone. Regarding (), mentioned earlier, this would be related to (B2 Morphological Building Section).

Subclasses of Megalithic Monument Another key aspect in the definition of megalithism are its specializations or subclasses. There are defined types of monuments which are related to a unique or isolated standing stone or megalith, such as the concept of a Menhir. Other sub concepts or type of monuments include multiple stones, which may be aligned, or placed in circles (Cromlechs)...



Megalithic Monument





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Anta Grande da Comenda da Igreja MM is composed of...



Anta Grande da Comenda da Igreja MM is composed of...



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Discussion

- Existing extensions deal mainly with construction techniques, materials, visual representations, chronology and provenance of the buildings;
- For megalithic site description, construction techniques were very basic and are mostly unknown.

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Final Remarks

- Knowledge representation is an important step to preserve the context of the megalithic monuments in its various facets:
 - ▶ intrinsic context (archaeological),
 - archaeological interventions and intervenients
- Semantic Web techniques allow the implementation of an archaeological information structures which are relatable, searchable and reusable
- We plan to integrate semantic descriptions and 3D modeling of megalithic monument information in future works

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