CRMBA and CRMarchaeo models harmonization

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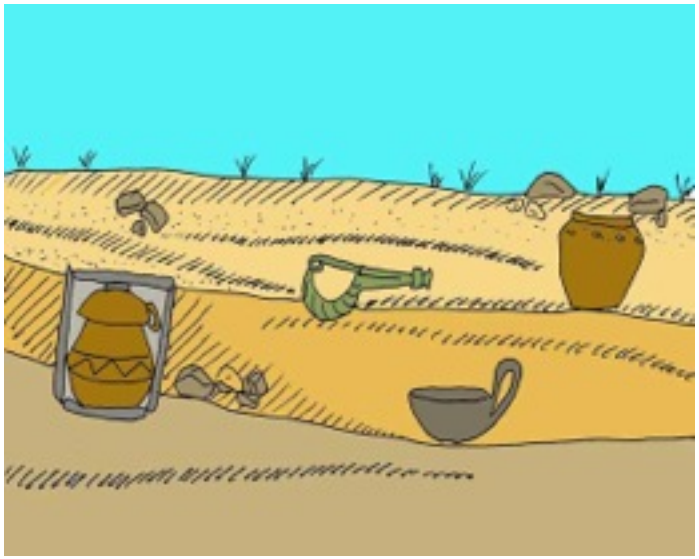
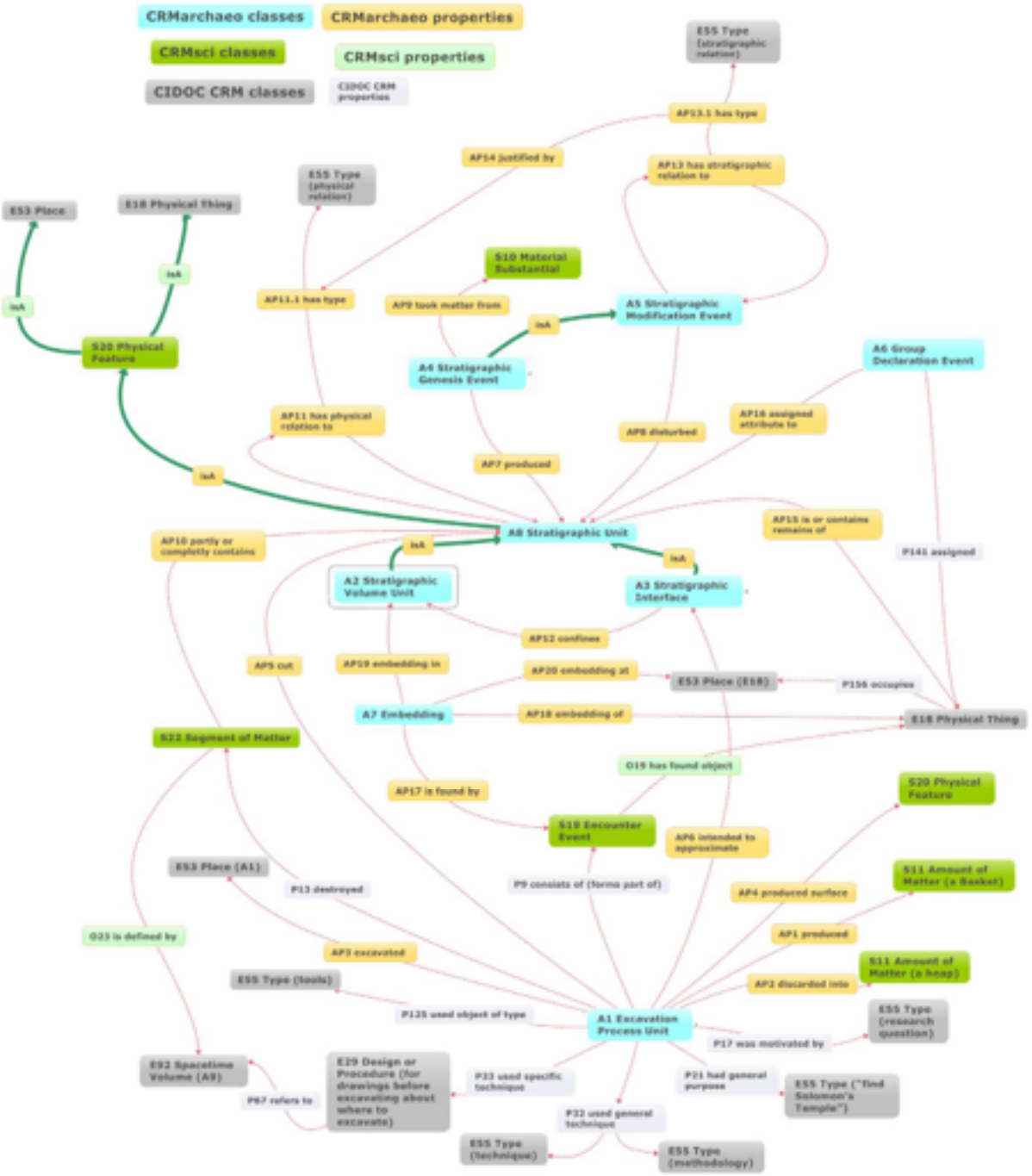
Archaeology and the stratigraphic method

Archaeological stratification of subsurface deposits - **CRMarchaeo**



Archaeological stratification of standing structures -**CRMBA**

CRMarchaeo model



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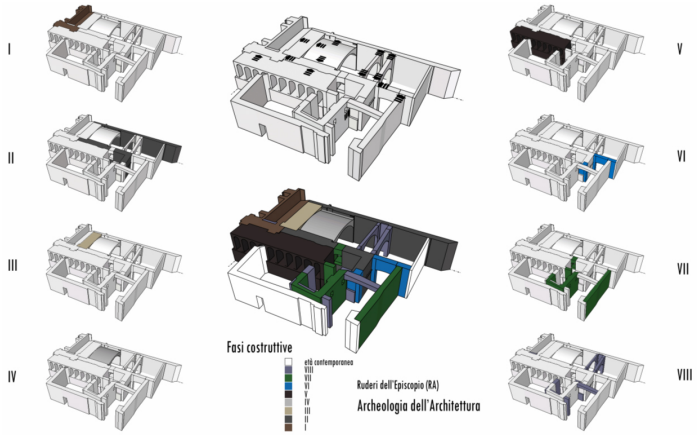
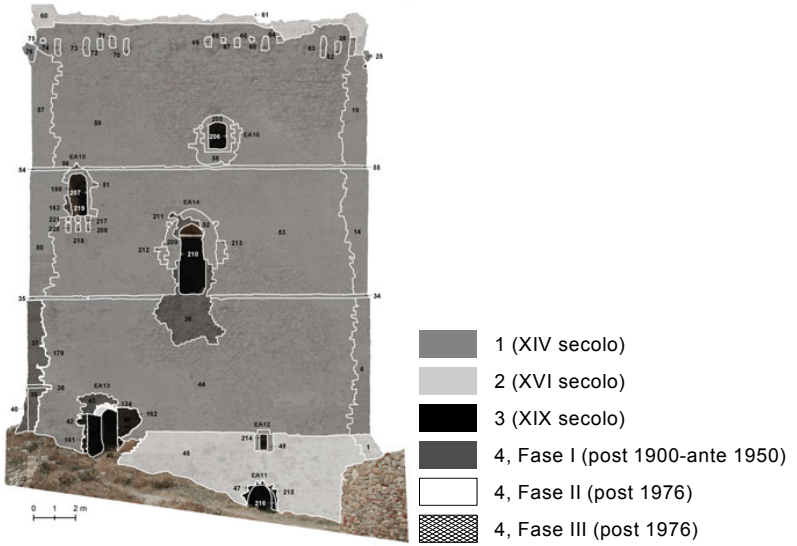
CRMBA - model

- It focuses on the mereological and mereo-topological relations between the constituent parts and the whole structure
- introduces the concepts of “empty spaces”
- “space functions” defined by form
- Make explicit the relations between building components, functional spaces, topological relations and construction phases through time and space





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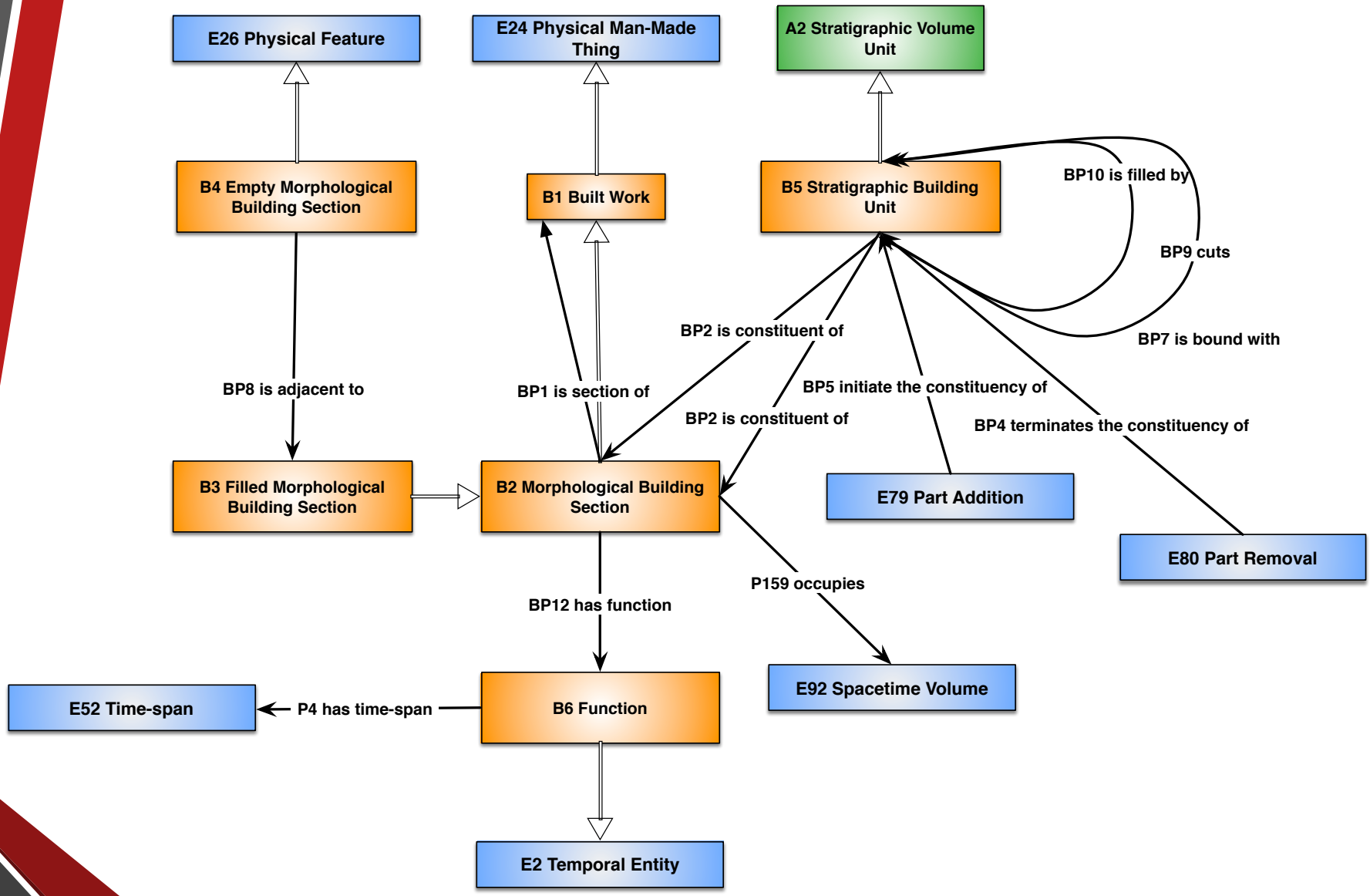
CRMBA model



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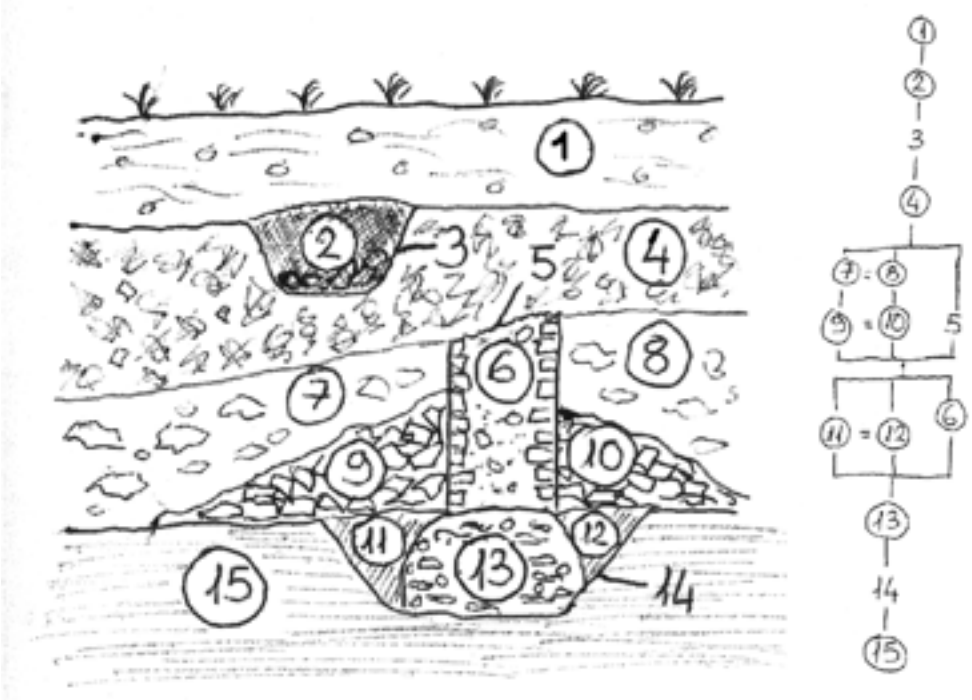
Archaeology and the stratigraphic method



- How do we deal with unconnected built structures found in a stratified context unearthed during an archaeological excavation?

- Which extension is more appropriate in this case?

Towards the ontological harmonisation of CRMarchaeo and CRM BA models - 1

The stratigraphic logic involved in the observation of different stratigraphic units in a standing building derives from the scientific methods of the archaeological excavation

Differences from the archaeological deposits:

- In a built structure most of the observed stratigraphic units are the result of human activities, which are **intentionally** performed
- The archaeological deposits are, instead, mainly the result of natural deposits, regularization of land, abandonment, and collapse of the buildings

Towards the ontological harmonisation of CRMarchaeo and CRM BA models - 2

- The main difference from a subsurface natural deposit and the stratification of a built work is that it **does not follow the natural stratigraphy** from where Harris has derived his principles (Hoggett)

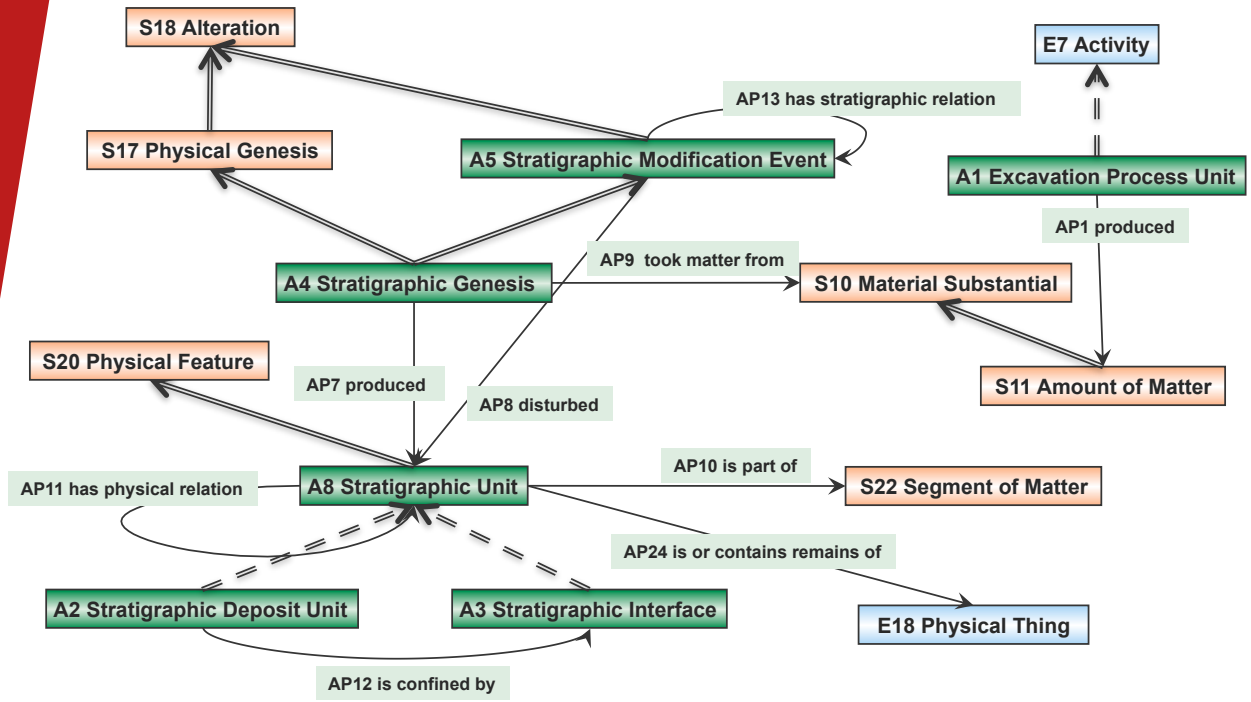
- In the case of buildings, it is not gravity and the surrounding strata that define the shape of a context, but the **deliberate intentions** of the creator of the structure (Harvey)

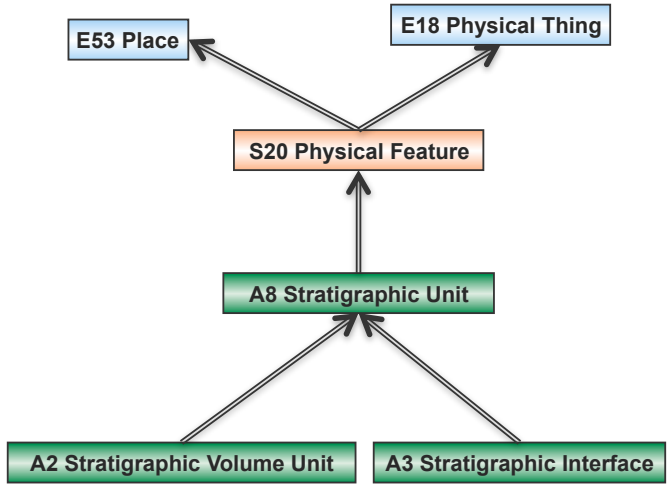
Towards the ontological harmonisation of CRMarchaeo and CRM BA models - 3

- Stratigraphic unit genesis
- The stratigraphic interfaces
- Stratigraphic volume and embedded physical objects

- Stratigraphic unit genesis
- The stratigraphic interfaces
- Stratigraphic volume and embedded physical objects

Stratigraphic unit genesis - CRMarchaeo





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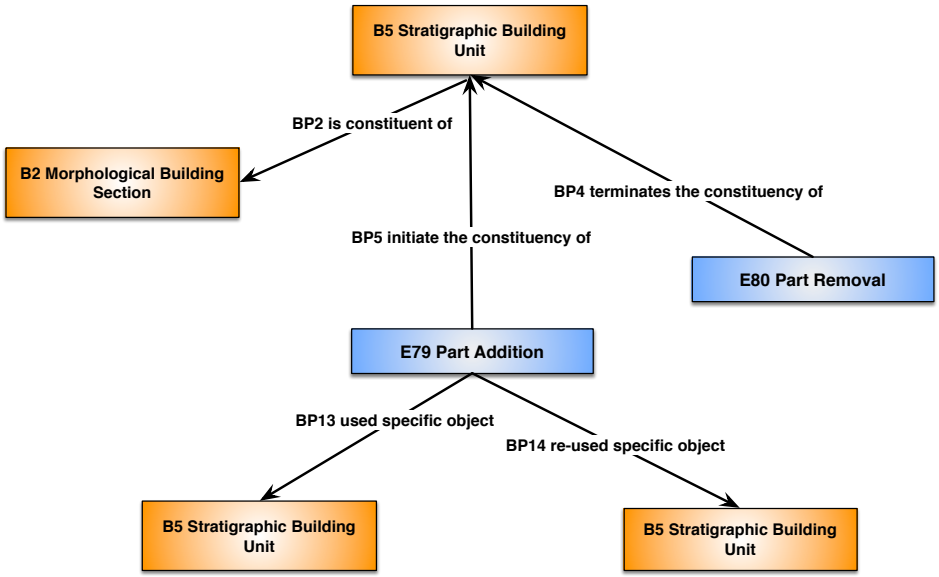
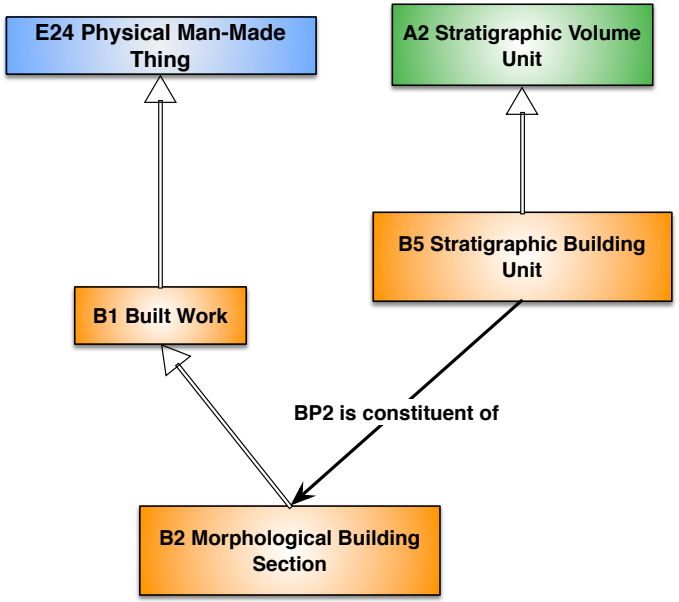
Stratigraphic Building Unit - CRMarchaeo





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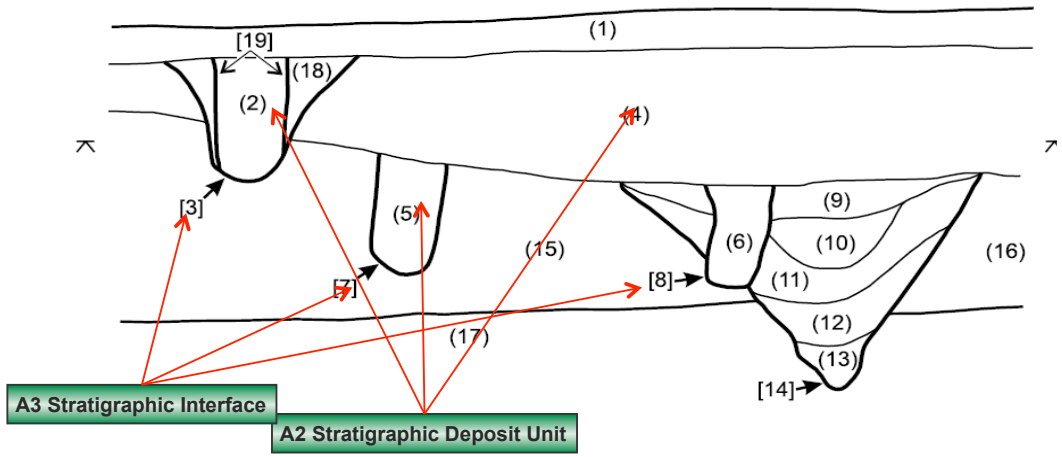
- Stratigraphic unit genesis
- The stratigraphic interfaces
- Stratigraphic volume and embedded physical objects

The stratigraphic interfaces



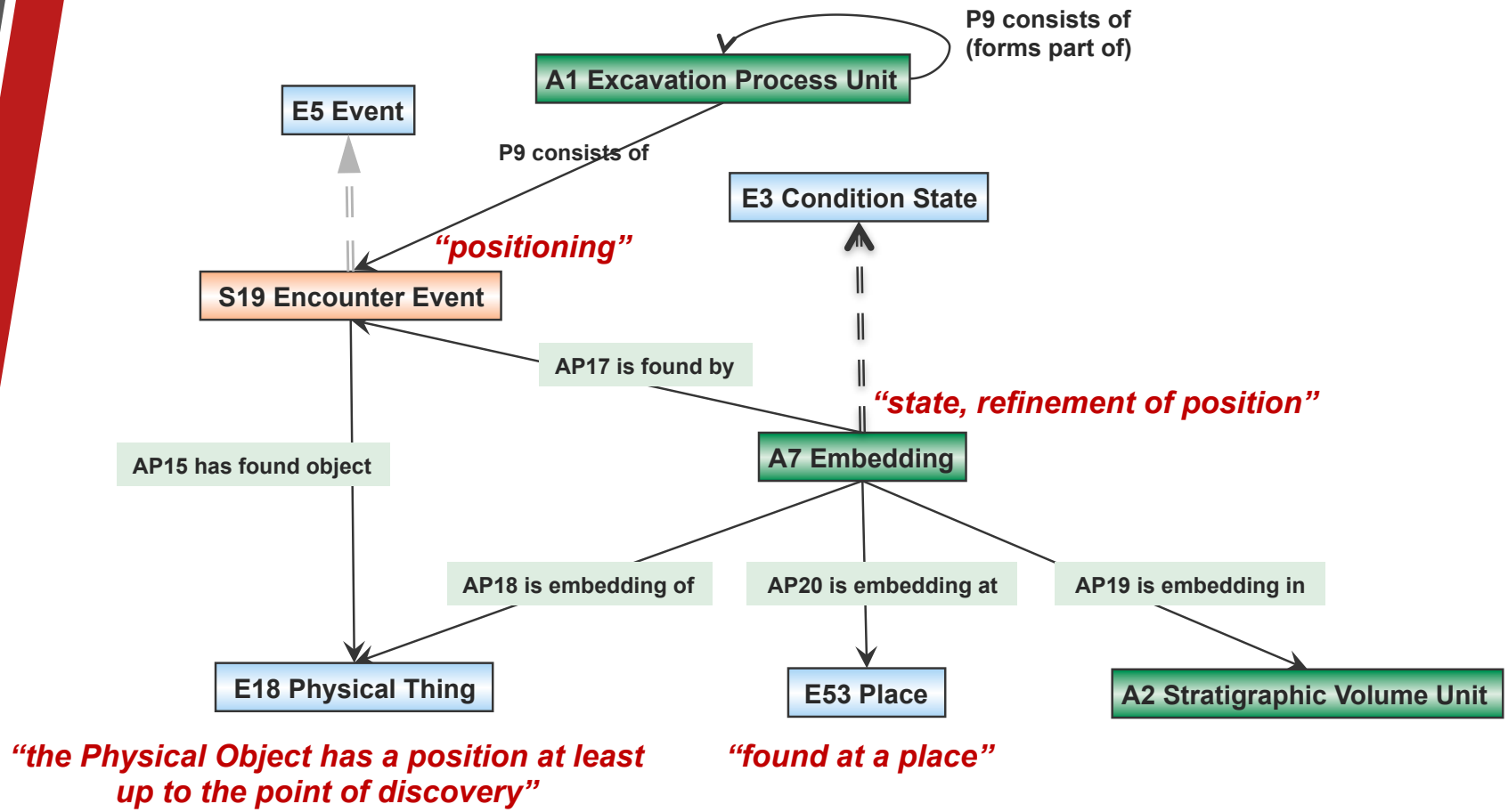
Scope note This class comprises coherent parts of the boundary surface, which appears as the result of a stratigraphic genesis event or modification process. The interface marks the extreme limit of the effect of a genesis or modification event, and indicates in particular where the effect of this event ended. Each event of creation/ destruction of a deposition layer implies the creation of new interfaces. Thus there are two main types of interface: those that are surfaces of strata (that can be directly related to the corresponding stratum via the AP12 confines property), and those that are only surfaces, formed by the removal or destruction of existing stratifications.

Use AP12 to relate A3 Stratigraphic Interface with a B5 Stratigraphic Building Unit

AP12 confines (is confined by)
Domain: A3 Stratigraphic Interface
Range: A2 Stratigraphic Volume Unit
Scope note:
This property identifies partly or completely the surface (A3 Stratigraphic Interface) of an A2 Stratigraphic Volume Unit or a B5 Stratigraphic Building Section. One A3 Stratigraphic Interface may confine two or more A2 Stratigraphic Volume Units or a B5 Stratigraphic Building Section.

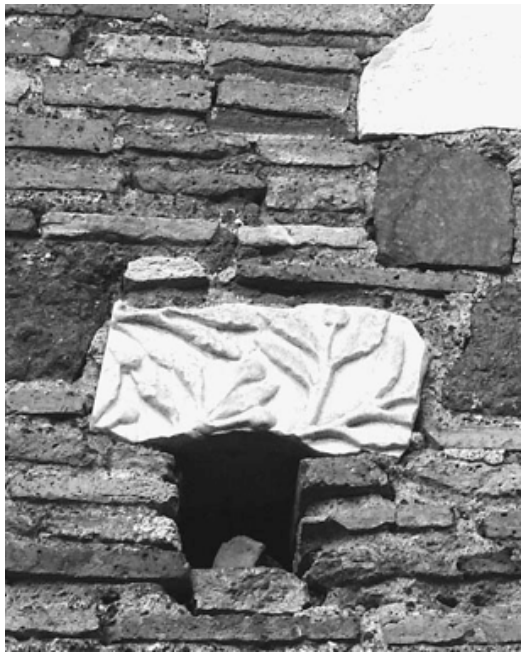
- Stratigraphic unit genesis
- The stratigraphic interfaces
- Stratigraphic volume and embedded physical objects

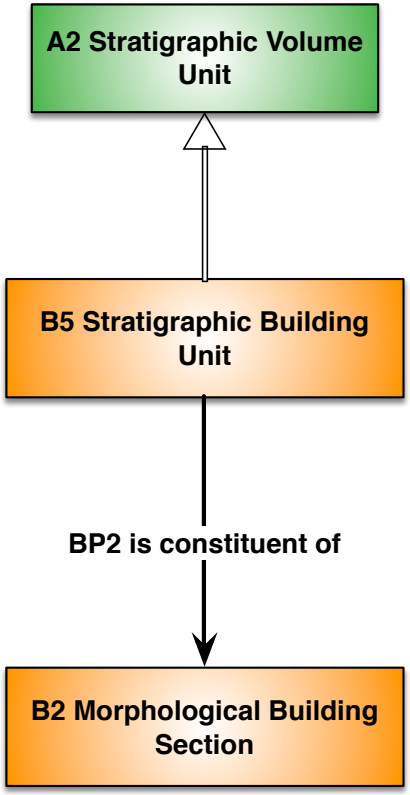
Stratigraphic volume and embedded physical objects



E18 Physical Thing -> AP18 is embedded in -> the A7 Embedding -> AP 19 is embedding in -> A2 Stratigraphic Volume Unit.

Stratigraphic volume and embedded physical objects





Stratigraphic volume and embedded physical objects - scenario 1

1. Object found in a stratigraphic unit

E18 Physical Thing -> AP15 is or has remains contained in -> A2 Stratigraphic Volume Unit

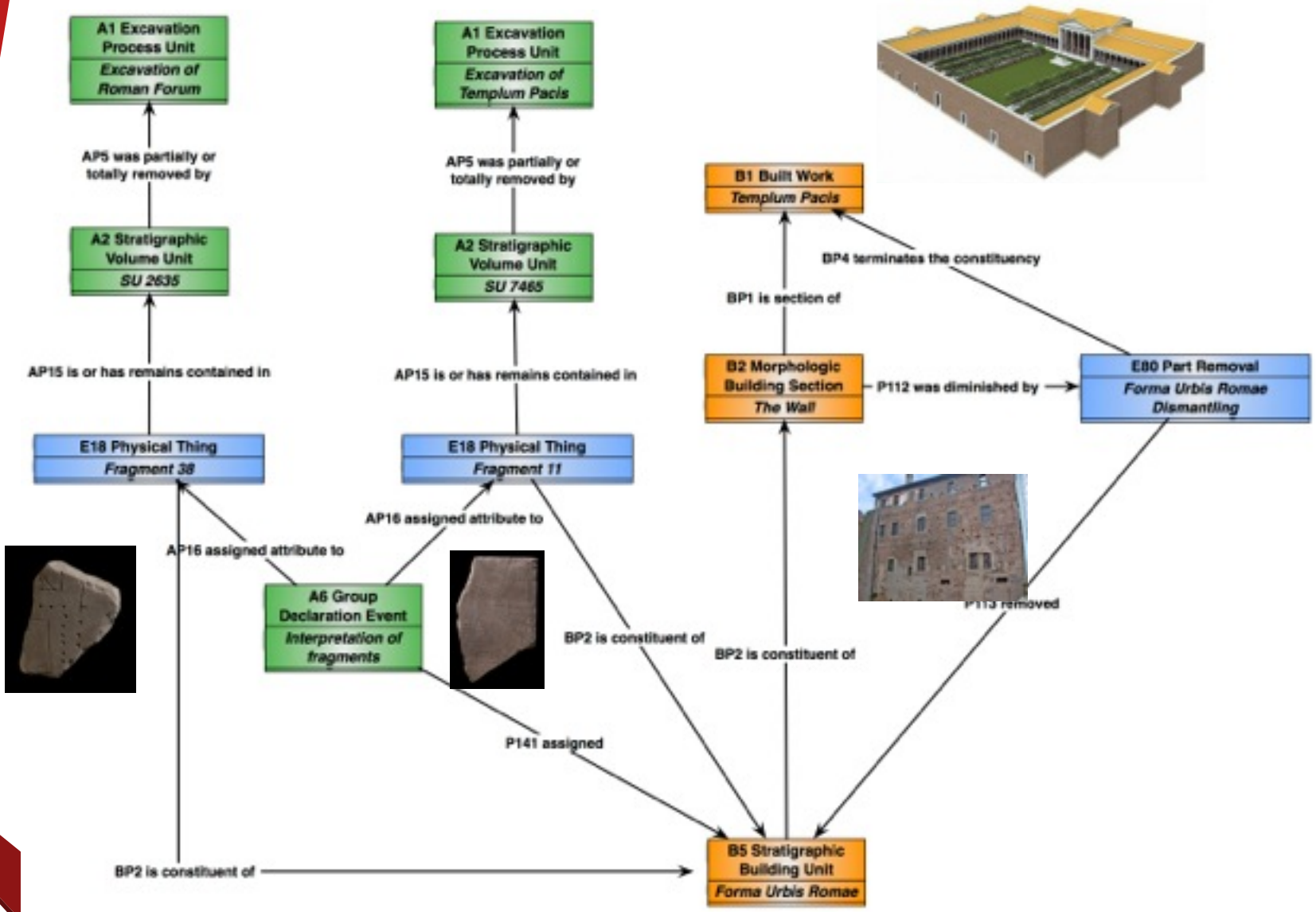
B5 Stratigraphic Building Unit -> BP2 is constituent of ->B1 Built Work

Stratigraphic volume and embedded physical objects - scenario 2

A6 Group Declaration Event : This class comprises activities resulting in the assignment of a common attribute to several Stratigraphic Units. This may be due to an archaeological interpretation of them being part of one physical thing, like postholes being part of one building.

Proposed scope note: This class comprises activities resulting in the assignment of a common attribute to several Stratigraphic Units (A8), Stratigraphic Building Units (B5) and Physical Man-Made Thing (E18). This may be due to an archaeological interpretation of them being part of one physical thing, like postholes being part of one building, fragmentary structures being part of a wall or pieces of clay being part of an artifact.

A case study - The discovery of the Forma Urbis Romae fragments



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To sum up

- Extend use of *AP12 confines* to relate A3 Stratigraphic Interface with a B5 Stratigraphic Building Unit

- Use B5 instead of E18 after interpretation

- Modify **A6 Group Declaration Event** to include B5

- By end of December formalize the topological connections and finalize harmonization

CRMarchaeo:
Current Status and Issues

A1 Excavation Process Unit

Scope note: This class comprises activities of excavating in the sense of archaeology which are documented as a coherent set of actions of progressively recording and removing matter from a pre-specified location under specific rules. Typically, an excavation process unit would be terminated if significant discontinuities of substance or finds come to light, or if the activity should be interrupted due to external factors, such as end of a working day. In other cases, the termination would be based on predefined physical specifications, such as the boundaries of a maximal volume of matter intended to be excavated in one unit of excavation (basket, volume unit, etc.)….

Ax Archaeological excavation/Excavation Process?: is an investigation activity which may involve one or more excavation process units (A1) that may be conducted over as little as several weeks to over a number of years.

A1 Excavation Process Unit

Now is subclass of **S4 Observation**
Properties

AP1 produced (was produced by): S11 Amount of Matter
AP2 discarded into (was discarded by): S11 Amount of Matter
AP3 excavated (was excavated by): E53 Place
AP4 produced surface (was surface produced by): S20 Physical Feature
AP5 removed part or all of (was partially or totally removed by): A8 Stratigraphic Unit
AP6 intended to approximate (was approximated by): A3 Stratigraphic Interface

S1 Matter Removal

Scope notes

This class comprises the activities that result in an instance of S10 Material Substantial being decreased by the removal of an amount of matter.

Typical scenarios include the removal of a component or piece of a physical object, removal of an archaeological or geological layer, taking a tissue sample from a body or a sample of fluid from a body of water. The removed matter may acquire a persistent identity of different nature beyond the act of its removal, such as becoming a physical object in the narrower sense. Such cases should be modeled by using multiple instantiation with adequate concepts of creating the respective items.

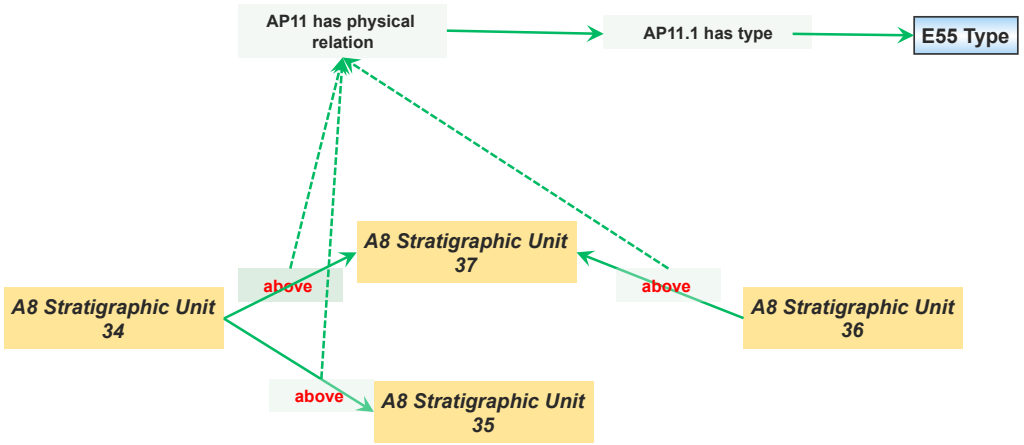
Properties:

O1 diminished (was diminished by): S10 Material Substantial
O2 removed (was removed by): S11 Amount of Matter

Pending issue - Physical relationships

AP13 has stratigraphic relation (is stratigraphic relation of)
Domain: A5 Stratigraphic Modification Range: A5 Stratigraphic Modification Properties:
Scope note: This property identifies the stratigraphic relation between two A5 Stratigraphic modification events. This relation may be inferenced from the kind of physical relation that exists between the two AP 8 Stratigraphic Units that have been created or modified during the corresponding A5 Stratigraphic Modification events. The type of stratigraphic relationships in archaeological documentation assigned to two A5 Stratigraphic Modification events is documented through the property AP 13.1 has type. Examples of stratigraphic relationships found in archaeological documentation are:

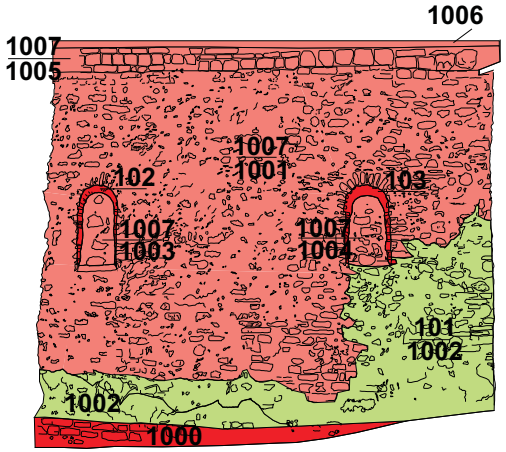
- before
- after
- same as

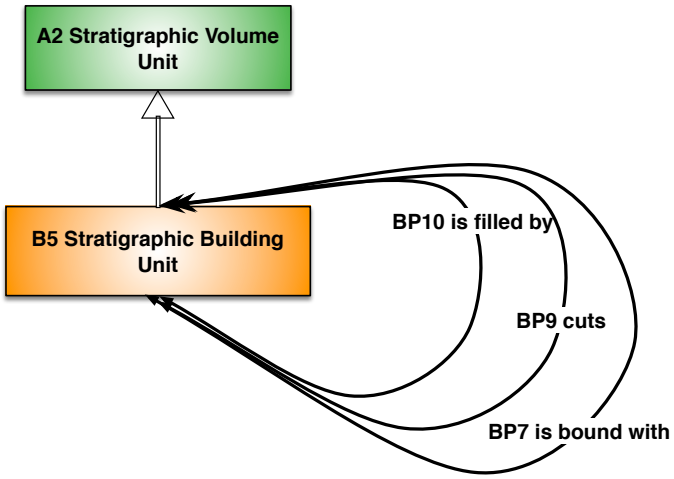


Properties:

AP14 justified by: AP11 has physical relation
AP13.1 has type: E55 Type
AP14 justified by: AP11.1 has type (type of physical relation)

Pending issue - Physical relationships





Issue 243

In the 32nd joined meeting of the CIDOC CRM SIG and ISO/TC46/SC4/WG9 and the 25th FRBR - CIDOC CRM Harmonization meeting, the crm-sig decided to introduce a link from

E55 Type.PXX objects of a type appear in: E4 Period.

Also we decided to add this link in the CRM Core

PXX objects of a type appear in: objects of a specific type are ascribed to a specific period: the Etruscan fibulae appear in the Etruscan Period

PXX object of a type define: objects of a specific style define an artistic period: the geometric class of vases define the Geometric Period of Greek art

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Thank you for listening

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European Commission

SEVENTH FRAMEWORK PROGRAMME