Patrimalp, an integrated and interdisciplinary cultural heritage platform for West Alpine region

Danielle ZIEBELIN*, Matthew SREEVES*, Fatima DANASH*, Karine Aubry*, Emilie Chalmin-ALJANABI**

* Université Grenoble-Alpes, ** Université de Savoie-Mont-Blanc

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CONTEXT AND APPROACH

- Context:
  - Who
    - A cross-disciplinary project:
  - What
    - West Alpine region and Rhône corridor
      - Neolithic rock art sites (Rocher du Château, Trou de la Féclaz), Brocades transposed, Costumes and Jewelleries in the Alps, Antic Theater of Lyon, Epigraphical stone of Vaison-la-Romaine, Saint-Michel de Connexe Priory

- Approach:
  - Why
    - Production of a common story of the artefact across the time in its environmental and cultural context
  - What
    - Understand the object itself, in all its composition levels, and at its different extents
  - How
    - Share raw matter resources and contextualization, materials manufacturing process and alteration, history life and trajectories of artefacts by using semantic web technology
MODELING A OBJECT : NEOLITHIC SCHEMATIC ROCK ART AS AN EXAMPLE (ROCHER DU CHATEAU, TROU DE LA FÉCLAZ)

Methodology

<table>
<thead>
<tr>
<th>Pigment analysis process as an example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Raw Data</strong></td>
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<tr>
<td>SEM-FEG observation and ESM6 optical microscopy of pigment</td>
</tr>
<tr>
<td><strong>2 Processed data</strong></td>
</tr>
<tr>
<td>Multiple format, programming language and operating system</td>
</tr>
<tr>
<td><strong>3 FAIR metadata</strong></td>
</tr>
<tr>
<td>Relations between different coloured excavations</td>
</tr>
<tr>
<td><strong>4 Metadata and Data ressources</strong></td>
</tr>
<tr>
<td>Linked data between different cultural heritage sites in the Alps</td>
</tr>
</tbody>
</table>

- Understanding the creation, evolution and transformations of a heritage artefact: for our example conservation of rock art
- Painting mater in rock art
- Analysis methodology: process and analysis description

Apport de la physico-chimie à l'étude de l'art rupestre, Emilie Chalmin Actes de la table ronde d'Aix en Provence, juin 2017 ArcheoPress (accepted)

From archeological layers to schematic rock art? Integrated study of the Neolithic pigments and pigmented rocks at the Rocher du Château (Western Alps, Savoie, France) Claudia Defrasne, Emilie Chalmin, Ludovic Bellot-Gurlet, Eric Thirault & Guy André Archaeological and Anthropological Sciences volume 11, pages6065–6091(2019)
FAIR APPROACH BY USING SEMANTIC WEB TECHNOLOGIES

- **Interoperable**
  - Interoperability of MetaData & Data using standards & norms
  - Semantics interoperability by Ontology

- **Patrimalp Functional architecture**
  - Three parts:
    - Integration of the various types of data: databases, conceptual data models (CDM)
    - Standards and norms, and ontologies
    - Interface application with drop down lists for Theme (Raw matter, Chemistry, Geology, Material Science,), Producer (Edytem, Neel Institute, Art Nuclear, etc...), Keywords by ontology and name of variables allow users to search for datasets by the key fields.
  - Then the domain specific models are linked to common data models / scientific keyword vocabularies to allow cross domain querying using publicly known standards
**PARTHOOD APPROACH**

Global as View Approach*

- **Software Applications**
  - Software Application

Global Ontology Layer

- **Tangible Object Composition ontology**
  - Material structure Ontology
  - Physico chemistry Ontology
  - Analysis & protocol Ontology

Domain Ontology Layer

- **Materials**
- **Physico-Chimical analysis**
- **Analysis Instrument**

Data Sources

- **W**: Whole
- **P**: Part

**Tangible Object Composition Ontology : 7 cases of part-whole relations between entities + Entity types hierarchy**

- **Area - Place**
- **Place - Object**
- **Collection - Member**
- **Object - Stuff**
- **Integral object - component**
- **Mass - Portion**
- **Sequence - Unit**


**A Parthood Approach for the conceptual modelling of Tangible Objects Composition (TOC) - an application on Cultural Heritage (CH) Fatima Danash, Danielle Ziebelin and Emilie Chalmin eswc2020**
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