



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

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FAIR Heritage

Digital Methods, Scholarly Editing and
Tools for Cultural and Natural Heritage



LE STUDIUM
Loire Valley
Institute for Advanced Studies



CONTEXT AND APPROACH

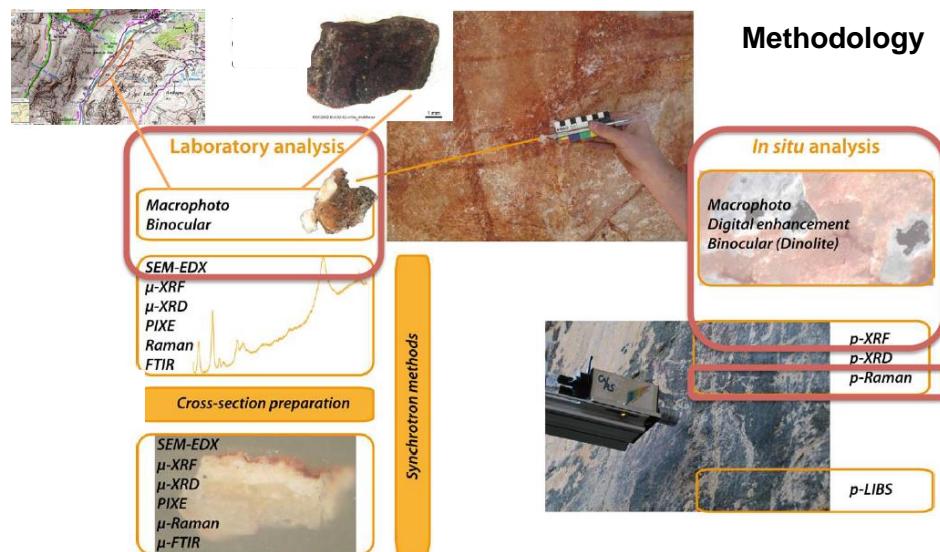
■ Context :

- ▶ Who
 - A cross-disciplinary project :
 - History of art LUHCIE <https://luhcie.univ-grenoble-alpes.fr>, Archaeology <http://edytem.univ-savoie.fr/>, Material sciences institute Néel <http://neel.cnrs.fr/spip.php?rubrique63>, Geosciences <http://edytem.univ-savoie.fr/>, Restauration and conservation <http://www.arc-nucleart.fr/>, Computing sciences <http://www-ljk.imag.fr/> <https://www.liglab.fr/>, Geography <https://www.pacte-grenoble.fr/>
- ▶ 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)



Pigment analysis process as an example		
1 Raw Data		SEM-FEG observation and ESM6 optical microscopy of pigment
2 Processed data		Multiple format, programming language and operating system
3 FAIR metadata		Relations between different coloured excavations
4 Metadata and Data resources		Linked data between different cultural heritage sites in the Alps

- 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

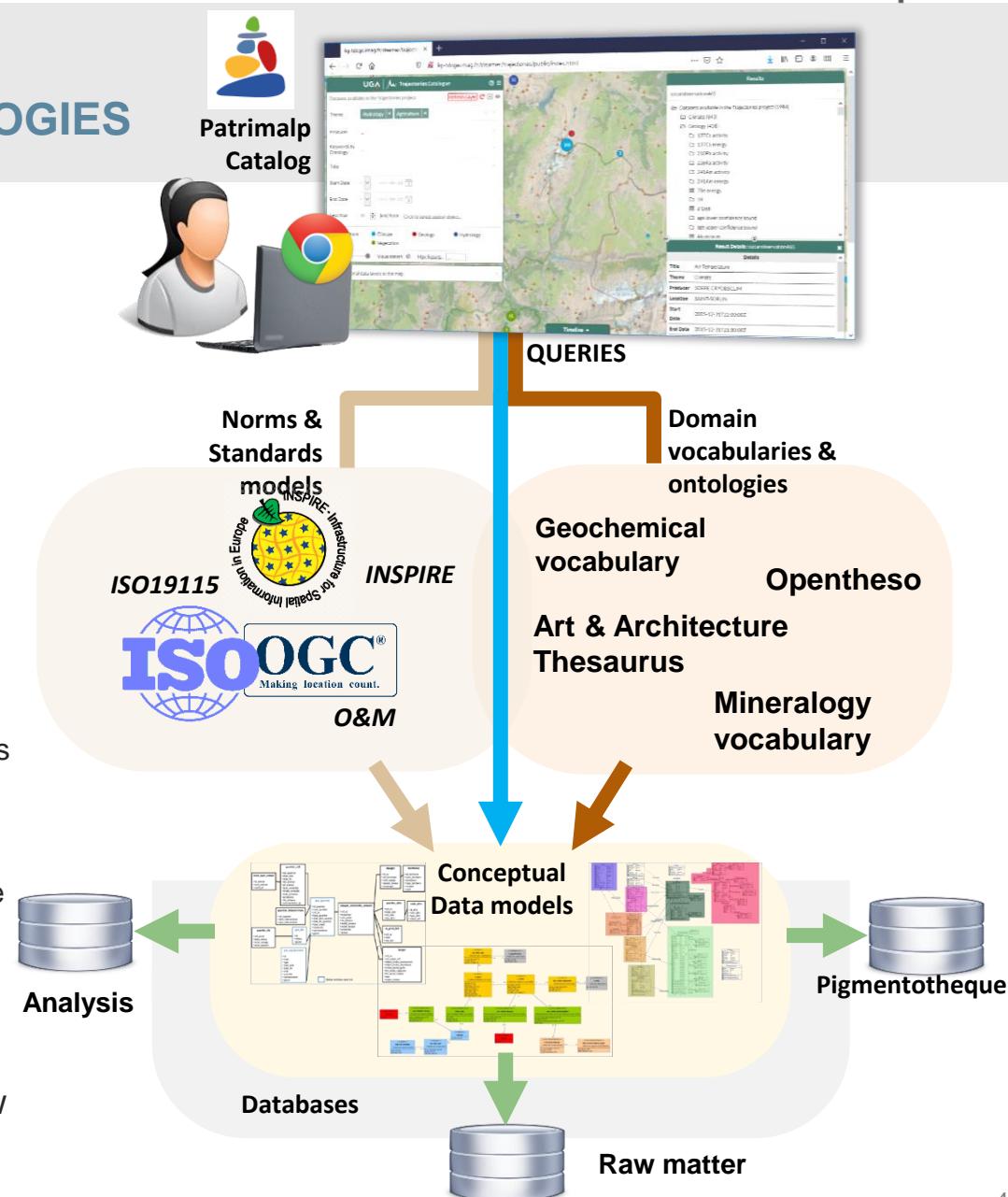
■ Interoperable

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

■ Patrimalp Functional architecture

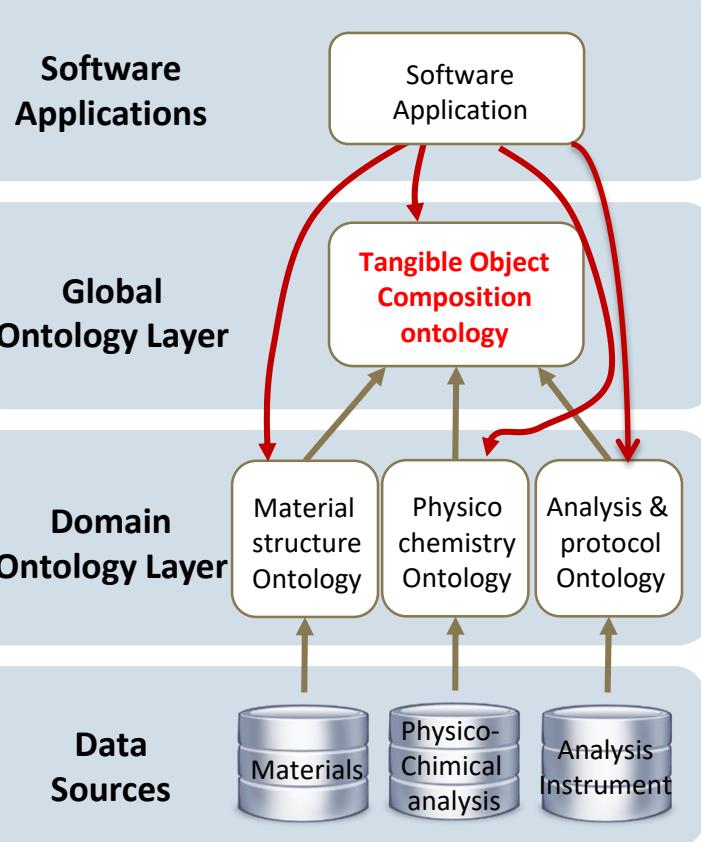
- ▶ Three parts :
 - Integration of the various types of data: databases, conceptual data models (CDM)
 - Standards and norms, and ontologies
 - Interface application with drop down lists for Theme (Raw matter, Chemistry, Geology, Material Science,), Producer (Edytem, Neel Institute, Art Nuclear, etc...), 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



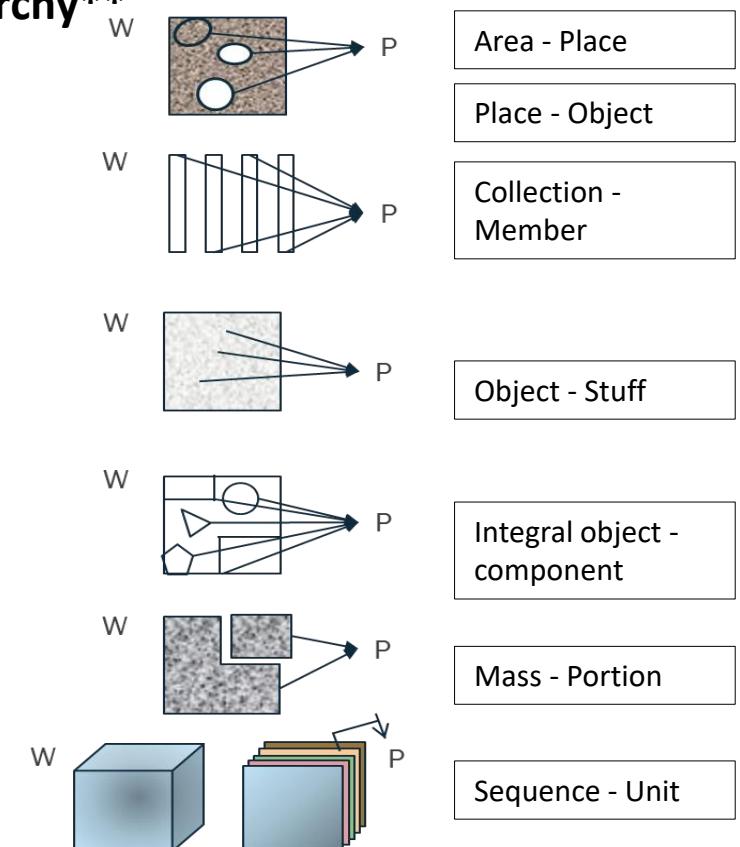
PARTHOD APPROACH

Global as View Approach*



* Adapted from Ekaputra, F.J., Sabou, M., Serral, E., Kiesling, E., Biffl S. : Ontology-based data integration in multi-disciplinary engineering environments: a review, Open Journal of Information Systems (OJIS) Volume 4, Issue 1, 2017

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



** 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

[HTTPS://PATRIMALP.UNIV-GRENOBLE-ALPES.FR/](https://patrimalp.univ-grenoble-alpes.fr/)

Patrimalp

Univ. Grenoble Alpes

Sciences du patrimoine, regards croisés sur l'œuvre

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PATRIMALP

RESSOURCES

MATÉRIAUX ANCIENS

HISTOIRE ET TRAJECTOIRES

MODÉLISATIONS & VISUALISATIONS



CARTE 1

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CARTE 2

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CARTE 3

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Acknowledgement to the ANR project ANR-15-IDEX-02