Integration of knowledge and data in the COSCH^KR STSM Report

Purpose of the STSM

With the good knowledge and strong mathematical background, about knowledge representation (data and knowledge bases, ontologies, reasoning), particularly, with focus on uncertain reasoning (probability logics), the short term scientific mission "Integration of knowledge and data in the COSCH^KR" had two major topics:

1. Transferring experience with knowledge handling to i3Mainz
2. Transferring the idea of COSCH^KR, its structure and logical set up from i3Mainz

With this experience this STSM had an aim to build mutual understanding and to define the general framework for procedures for gathering and processing various meta-data on objects (scanned using different 3D techniques).

COSCH^KR Ontology

COSCH^KR is an interdisciplinary framework dedicated to scholars, technicians and the cultural heritage specialists with the purpose to bridge between their expertise and to reuse known best practices in domain of 3D digitisation and restoration. The key role in this process belongs to COSCH^KR ontology knowledge model. Its version which was actual at the beginning of this STSM was the starting point of the carried work. During the preparations, the plan came out as a result of the dialog about the ways how this model could be improved.

The previous version of the COSCH^KR ontology knowledge model contained several residuum from the older versions, such as:

- Characterization class was empty and all the properties were part of the original classes,
- unused relations,
- absolute numerical definition of some properties;

which are removed in the new version.

The new version of the COSCH^{KR} ontology knowledge model follows the following graphic:
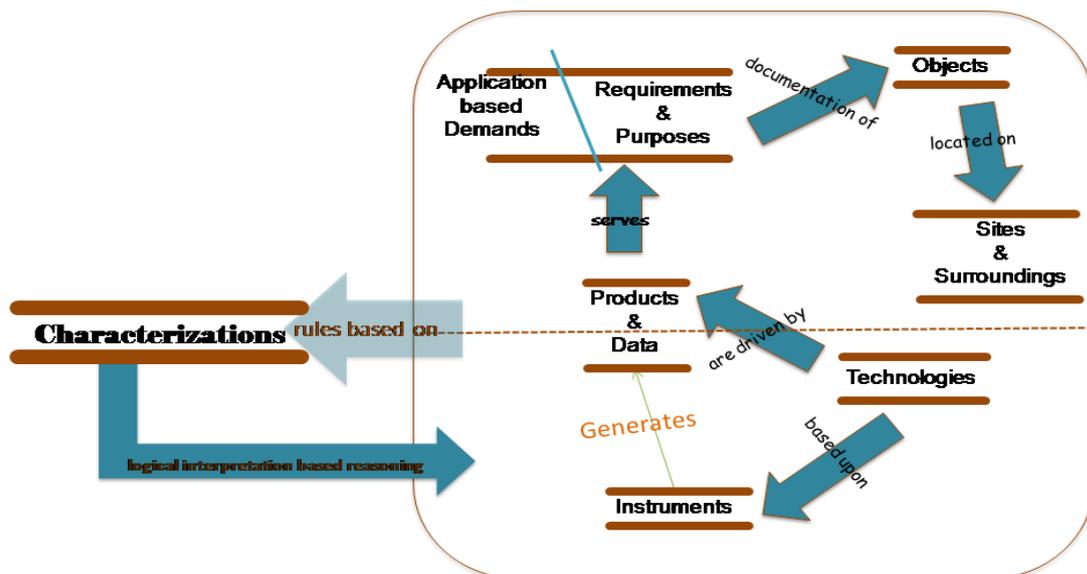

Figure 1: Current structure of the top level ontology classes

In the new version, all the properties of the top level classes are part of the Characterization subclasses and the appropriate relations are introduced between main and property classes. All the conditions for classes become necessary and sufficient, and the resulting version of the ontology passed soundness check.