Creating Topic Maps Ontologies for Space Experiments

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ABSTRACT

The ULISSE (**U**SOCs Know**L**edge **I**ntegration and Dissemination for **S**pace **S**cience **E**xperiments) project aims at better dissemination and exploitation of space experiment results. As part of the project, a domain knowledge modeling effort was undertaken to add semantic information to those space experiments. Topic Maps (ISO/IEC 13250:200) was chosen as the knowledge representation technology for this data.

This poster outlines the design process that was used to create Topic Maps Ontologies for space experiments in a wide range of scientific domains. This design process was implemented in three iterations:

1. Creating initial Topic Maps Ontologies.
2. Refinement for completeness.
3. Refinement for correctness.

The poster focuses on the first iteration that was implemented through nine Ontology Workshops with various providers of space experiment data, each active in different scientific and technological disciplines.

This effort demonstrated that the flexible representation of knowledge as supported by Topic Maps was instrumental in overcoming the modeling challenges related to space experiments. For instance, the different uses of time (absolute time, relative time and time intervals) employed by scientists involved in space experiments could be gracefully represented using the scope mechanism. The subject-centric nature of Topic Maps also allows scientists to author topic maps using their own nomenclature that remain interoperable with topic maps coming from other organizations.

Furthermore, results from the workshops are shown and conclusions that will direct future work done in ULISSE are provided as well.