Data description and management in the ULISSE project

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ABSTRACT

The data resulting from the European scientific space experiments operated on board of various space platforms such as the International Space Station, sounding rockets, and others or through microgravity ground-based facilities (bed rest studies,…) now appear important to be preserved, valorised and more widely exploited through the scientific community. This is the initial and main concern of the ULISSE project (USOCs knowLedge Integration and dissemination for Space Science Experimentation) within the European's Seventh Framework programme.

After a preliminary introduction to the project, some important characteristics of the concerned experiments and associated data sets are described despite their various scientific domains, actual means and payload technologies, or custodians' profiles.

The main purpose of this paper is to describe the approach through the ULISSE project for integration of various standards and technologies proposed by partners involved for the necessary description of these experiments, data and information.

Standards studied and/or used include ISO19115/ISO19139 standard, ULISSE specific metadata standard, Topic Maps and ontologies. To these are linked tools for implementation in the specific ULISSE Platform. These last generic tools are detailed in others specific publications.

This paper also focuses on the interfaces and relationships between all these standards and tools and how they are implemented. This approach allows to improve the individual capabilities of the different ones. Furthermore, it also opens the ability to compare different strategies of population or ingestion of information in the Knowledge Bases concerned according to the various sources of data as USOCs, scientists, etc and thereby obtaining a valuable feed-back for a possible follow-up or further exploitation of the ULISSE system.

Defining a system's architecture, developing an infrastructure and tools to provide the functionalities required, services and applications is also a target of the ULISSE project. This is implemented through a demonstrator integrating the available components.

Some actual use cases of the previously proposed data description as implemented in this ULISSE demonstrator are explained.

Feed-back from these different phases and activities of the project is eventually presented.