

SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE  
ACTIVITIES (D5)

Knowledge Management and Collaboration in Space Activities (2)

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THE ULISSE ENVIRONMENT FOR COLLABORATION ON ISS EXPERIMENT DATA AND  
KNOWLEDGE REPRESENTATION

**Abstract**

The USOCs Knowledge Integration and dissemination for Space Science Experimentation (ULISSE) project aims at developing an infrastructure and tools for improving preservation, valorisation and exploitation of data produced by European experimentation in space. The USOCs (User Support and Operation Centres) are a network of space operative centres; they have been established in various EU countries with the support of national space agencies and are engaged by the European Space Agency (ESA) to conduct the operations for European scientific experiments on board the International Space Station. ULISSE is a Seventh Framework project funded by the European Commission.

To be able to support and improve utilisation next to the experiment data archives meta data and knowledge about the experiments needs to be extracted, represented and preserved allowing access to a European community for further scientific uses. Tools need to be developed to exploit the use of the information for the broad range of disciplines being represented in the European Columbus experiment facilities on ISS.

As part of the project an inventory has been made of requirements, methodologies, datasets and services which would be considered for ULISSE demonstration and exploitation. Topic map technology was used to develop the knowledge representation. Dedicated workshops have been held for gathering relevant information from scientists and space engineers. All topic maps are merged into one map that will be integrated in the platform to support navigation and data browsing and finding in the ULISSE platform.

The tools being developed include generic web-services for both detailed data and public relations oriented data. A sciencecast collaboration tool is being developed which will be based on topic map technology to disseminate knowledge about experiments. For metadata development dedicated tools will be tailored to application for ISS experiment data. To allow data valorisation of different datasets data integration and organisation tools will be developed. In addition the use of Augmented Reality, planning and validation tools will be explored. The tools will be implemented on a platform consistent with the distributed ground infrastructure architecture implemented for the European USOCs.

The authors are willing to present both the tools and technologies that are going to be developed for ULISSE and the different issues to be addressed for preservation and valorisation of space data, like data

and intellectual ownership, data dissemination policy, international cooperation, interfaces with space agencies and operative ground segments.