

IMA System Design Toolkit

The IMA-SP SDT project intended to specify and develop a System Design Toolkit (SDT) for the IMA-SP development process. The main objectives of the activity were to define a data model reflecting the complete setup of the partitioned system and to develop a prototype of the Partitioning/Resource allocation/configuration tool and the System feasibility verification tools.

The outcome of the activity includes the data model and the SDT consisting of 3 tools: the Edit Export Import tool (EEI); the Validation Tool (VT) and the Xamber/Cortex Tool.

The EEI editing user interface is an Eclipse Rich Client Platform (RCP) application which provides a set of tools to populate and edit all the logical parts in the IMA-SP SDT model. The EEI tool can validate the data model and export or import the data model to or from a Xamber project files. The EEI tool also can redact partitions in the data model.

Xamber/Cortex is an existing commercial tool. It can calculate the Major Frame (MAF), create the partition schedule and create the XtratuM configuration file. The Validation Tool validates the model and verifies the consistency of the XtratuM configuration file with the data model.

The demonstration use case for the SDT was based on Use case B from the IMA-SP project. This project integrated the platform software (based on the TAS sentinel 3 Central Software (CSW)), and a payload software (based on the SCISYS Microwave Imaging Radiometer using Aperture Synthesis (MIRAS) software) onto a Partitioning Kernel. The data model was defined for this project following the workflow specified above.

The objectives of the study were achieved. It was demonstrated that it is possible to use the SDT to perform the activities of partitioning, resource allocation and system feasibility assessment on an IMA-SP system while respecting the confidentiality of the different roles.