



Space Cluster: a Solution-Oriented Quicker Collaboration Suite

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Cluster 3 - Space



1 Cluster Objectives

The **Use-it-Wisely** general objective is to enhance the capability of responding to rapidly changing markets, business environment and business goals, being able to respond quickly to changes and upgrades in products and services.

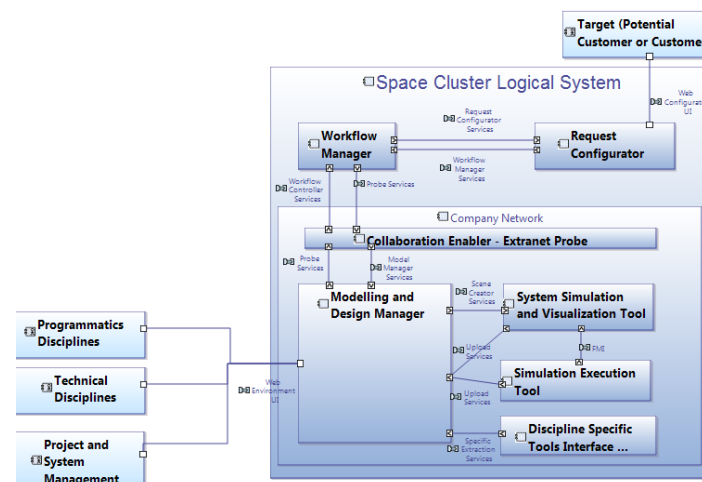
In Space business the mission success is the key, and it is guaranteed through a well-established process ruled by the **System Engineering** approach, driving the design, realization and verification of the space products during the entire lifecycle, in a very complex industrial team. Responding in a quicker way means to **enhance the efficiency of the work**, while keeping the high level of quality and reducing the risks as much as possible with regard to the cost target.

The Space cluster identified the introduction of modelling to improve the system and multidisciplinary activities, identifying potential issues and providing a **methodology** and an **architecture** for a supporting tool-chain with focus of **user experience**, in order to provide quicker engineering or other technical services during the space project lifecycle.

2 System Model, Changes and Collaboration

The main concepts behind the proposed methodologies are:

- **Engineering as a Service:** Models are not only related to the product, but also to the activities leading to the product design and development. Each actor of the process is taken into account, with clear task input and output. This allows the optimization of each task in advance.
- **Focus on data security:** The baseline is not fully shared between customer, suppliers and sub-contractors. Only relevant data are passed through.
- **Focus on the customer:** The customer shall be satisfied,



Logical Architecture Supporting the Overall Methodology

involved from the beginning to the end of each task and the feedback captured and processed.

3 The demonstrated architecture

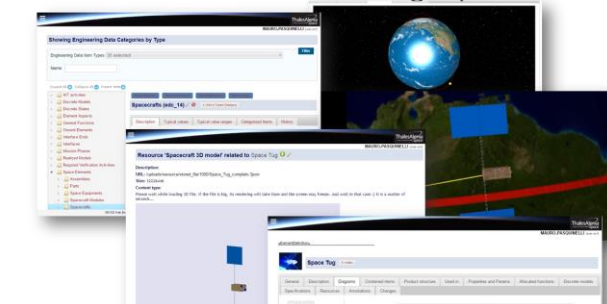
A practical implementation of this innovative approach have been experimented and demonstrated using as reference case the involvement of a potential customer for the selection of a space transportation system in study in Thales Alenia Space and ALTEC. Main focus is given to collaboration inside the technical team, between companies and with the customer. The following components have been used:

- **Web-based modelling environment:** easy user interface, customizable in different companies, based on a sound semantic data model
- **Immediate presentation of data:** using Virtual Reality or other 2D/3D visualization means to enhance the overall understanding
- **Model interfaces according to the type of user:** from a form, to an Excel file, up to complex REST API.
- **Workflow Manager:** Based on engineering services defined directly by the engineering team, allowing

collaboration between different companies

- **Extranet Probe:** acting as a gatekeeper, controlling the semantics and direction of any data that is leaving the protected area
- **Request Configurator:** Web based tool fully configurable according to the defined engineering services, it is the customer front-end, letting her following the service from the bid to the end.

The technical baseline is shared, but also commercial data, and all the stakeholders can understand the status of the process and of the technical baseline. This approach is independent from the product, and it is applicable to any mission-critical high-complex product/service development., and it is an enabler for a more agile process.



User-oriented Modelling and Collaboration



Data Security and Semantics-driven approach

Customer-involving interface

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