

49th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE  
ACTIVITIES (D5)  
Interactive Presentations (IP)

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A SOFTWARE ARCHITECTURE INTENDED FOR STAKEHOLDER MANAGEMENT, ANALYSIS  
AND OPTIMIZATION.

**Abstract**

We propose a new software architecture based on the stakeholder analysis of a space endeavour. The information system architectures currently in consideration in the space area are mostly atomized and do not take into account the relevant role of the stakeholders that create value and momentum to the space activities. We first propose that the value chain vector should be considered, in order to identify which stakeholders are most relevant to any space endeavor. We state that from a strategic point of view, the identification and analysis of stakeholders adding value to the process should be the core of the design process.

Exploration missions require that people involved in these areas make flow the benefit, tangible or intangible that emerges from the space activity. In the process of creating a value flow model framework, a number of decisions have to be made in order to simplify the value loops, and make the model easily understood. Value loops are defined as value chains that return to the starting stakeholder.

Simplification of this map has no standard procedure, and is dependent on the level of detail needed in the reengineering system. The overall system is then redesigned in order to help the value chain grow, and to lessen interferences and expenditure of resources on to areas that do not really add value in the system.

Some metrics can be defined and characterized within the model: individuals, companies, Gross Domestic Product (GDP) created, public awareness, capital flow, etc. The software is able then to simulate the process of industry development and growth, providing clues on which are the optimal stakeholders architecture for maximizing the overall benefits for all partners. The implementation of such simulation is done via a neural network that is integrated in the software, with an easy user-friendly interface. Results from different scenarios simulation show consistent findings with what are the recent developments in the space sectors due to the appearance of more private companies in the space exploration field. Results are provided in the paper for different space mission scenarios, private and public ones, with conclusions and recommendations, regarding the optimal organization of the different stakeholders involved.

In summary, our system shows to be capable of predicting the optimal way to efficiently process knowledge through a complex information system, including a stakeholders diversity, as we usually find in an international public-private space endeavor.