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Knowledge management for space activities in the digital era (2)

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STAKEHOLDERS ANALYSIS IN THE SPACE SECTOR. A DEEP LEARNING VALUE FLOW MODEL SIMULATION.

Abstract

Artificial Intelligence (AI) is being applied in a variety of business models with considerable success. 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. Some metrics can be defined and characterized within the model: individuals, companies, Gross Domestic Product 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 deep neural network that is integrated in the software, with an easy user-friendly interface. Our previous work focused in space mission scenearios. We have updated the core network with a deep learning multi-layer network for enhanced results. We hereby provide simulations for different space mission scenarios, private and public ones, with conclusions and recommendations, regarding the optimal organization of the different stakeholders involved. Compared to previous work, the deep learning core network is faster and allows for in-depth analysis of the different scenarios, providing the possibility of comparing different strategies with a fast classification in therms of optimal characterization. In conclusion, our system is capable of finding the optimatal path for efficiently processing knowledge through a complex information system. Specifically, this is the first deep learning core network including stakeholders' diversity, specifically applied to a public-private space endeavour.