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STAKEHOLDER ANALYSIS OF AN INTERNATIONAL SPACE ENDEAVOUR. PARADIGMS,
MODELS AND RESULTS FROM AN OPTIMIZATION SOFTWARE APPLICATION.

Abstract

Current visions for human space exploration have seen new stakeholders come into play such as private and commercial enterprises. A detailed look into historical developments in space exploration give us the insight to focus on a variety of stakeholders, which change over time. The added value chain in a space exploration endeavour is discussed. Paradigms and values have been changing for decades, but a clear consensus is that information is the key concept that flows through the added value chain process.

Therefore, an architecture of the information system is proposed to modelize the value chain in a space exploration endeavour. Different scenarios with a variety of metrics involved in the processes are considered. Different stakeholders play different roles and their mutual interaction is modeled with a neural network. A software application was developed to optimize this processes, by building functional blocks simulating the different stakeholders. This approach allow us to quantify and parametrize the different steps that exchange knowledge value in the information system.

The introduction of private commercial partners adds definitely new rules to the model, and therefore a different behaviour of the system is expected. We simulated different interplays with different number of private companies involved, obtaining results from the application that can be trasferred into business recommendations.

Significantly, it was found that the knowledge efficiency throughput, defined as the percentage of new knowledge generated in the process as added value; was optimized when a number higher than 3 small highly specialized technological companies were involved. The results were significantly lower if only one or two companies were involved with the public sector, regardless of their size and previous expertise.

Finally, we conclude that optimization tools are capable of predicting the optimal way to efficiently process knowledge through a complex information system with a variety of stakeholders, like what we find in a multinational private-public space endeavour.