SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)
Space Technology and System Management Practices and Tools (4)

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INDUSTRIAL EXPERIENCE FROM APPLYING TECHNOLOGY READINESS ASSESSMENT – THE VOLVO AERO CASE

Abstract

The overall purpose of the article is to present and discuss experience and lessons learned from using Technology Readiness Levels (TRL), Technology Need Values (TNV) and Research Development Degree of Difficulty (RD3) in an industrial company, Volvo Aero Corporation. These methodologies have their origin from NASA and the work of John C. Mankins but have spread to other organizations as well. Little has however been reported from private industry of the needs and constraints from this type of context. This paper aims to deliver a contribution from such an environment. Volvo Aero Corporation is a Swedish aerospace company working with Space, Military and Civilian rocket and jet engines at different system levels. Substantial work has been done at the company to define a methodology to support management and development of technologies and introduction of these into product development projects. TRL was introduced a few years ago and has helped in structuring the work, articulating and highlighting the need of new structured technology development, setting priorities and assessing maturity. It has also been used as a foundation for defining a stage-gate model for technology development. A generic checklist was defined as a support to individual development teams and to reviewers for assessing maturity in different dimensions important to the organization. This process approach is further discussed in the paper. As a complement to TRL, the risk matrix with TNV and RD3, has been introduced and tested in a pilot project and the experience has been very positive. Using the matrix led to improved focus in the technical discussion and facilitated decision making when setting priorities and planning future work. The positive experience from this case project has led Volvo Aero to test the methodology further in other projects and it is likely that in the future it will be implemented as a standard methodology for technology management in the company. In conclusion, TRL has proven to be a useful tool for structuring technology development and managing the inherent uncertainty during these early phases. In addition, the technology risk matrix, TNV, and RD3, have added additional support for planning and decision making. In the paper aspects which are unique to an industrial context will be further discussed, such as requirements on reusability for many types of applications and what that implies when applying the methodology.