

Systems Engineering and Project Management Process Modeling in the Aeronautics Context: Case Study of SMEs

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Abstract : The aeronautics sector is currently living an unprecedented growth largely due to innovative projects. In several cases, such innovative developments are being carried out by Small and Medium sized-Enterprises (SMEs). For instance, in Europe, a handful of SMEs are leading projects like airships, large civil drones, or flying cars. These SMEs have all limited resources, must make strategic decisions, take considerable financial risks and in the same time must take into account the constraints of safety, cost, time and performance as any commercial organization in this industry. Moreover, today, no international regulations fully exist for the development and certification of this kind of projects. The absence of such a precise and sufficiently detailed regulatory framework requires a very close contact with regulatory instances. But, SMEs do not always have sufficient resources and internal knowledge to handle this complexity and to discuss these issues. This poses additional challenges for those SMEs that have system integration responsibilities and that must provide all the necessary means of compliance to demonstrate their ability to design, produce, and operate airships with the expected level of safety and reliability. The final objective of our research is thus to provide a methodological framework supporting SMEs in their development taking into account recent innovation and institutional rules of the sector. We aim to provide a contribution to the problematic by developing a specific Model-Based Systems Engineering (MBSE) approach. Airspace regulation, aeronautics standards and international norms on systems engineering are taken on board to be formalized in a set of models. This paper presents the on-going research project combining Systems Engineering and Project Management process modeling and taking into account the metamodeling problematic.

Keywords : aeronautics, certification, process modeling, project management, SME, systems engineering

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