Operational Software Maturity: An Aerospace Industry Analysis

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Abstract : Software applications have become crucial to the aerospace industry, providing a wide range of functionalities and capabilities used during the design, manufacturing and support of aircraft. However, as this criticality increases, so too does the risk for business operations when facing a software failure. Hence, there is a need for new methodologies to be developed to support aerospace companies in effectively managing their software portfolios, avoiding the hazards of business disruption and additional costs. This paper aims to provide a definition of operational software maturity, and how this can be used to assess software operational behaviour, as well as a view on the different aspects that drive software maturity within the aerospace industry. The key research question addressed is, how can operational software maturity monitoring assist the aerospace industry in effectively managing large software portfolios? This question has been addressed by conducting an in depth review of current literature, by working closely with aerospace professionals and by running an industry case study within a major aircraft manufacturer. The results are a software maturity model composed of a set of drivers and a prototype tool used for the testing and validation of the research findings. By utilising these methodologies to assess the operational maturity of software applications in aerospace, benefits in maintenance activities and operations disruption avoidance have been observed, supporting business cases for system improvement.

Keywords : aerospace, software lifecycle, software maintenance, software maturity

Conference Title : ICSM 2017 : International Conference on Software Maintenance

Conference Location : Rome, Italy

Conference Dates : September 18-19, 2017