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AGILE SPACE SYSTEMS MANAGEMENT

Abstract

The purpose of this research is to find optimal applications of agile philosophy to space systems management to reduce schedule and cost of rework in space mission projects. As the space industry matures, it continues to search for methods to achieve Faster-Better-Cheaper space missions. The evolution of project management methods and manufacturing technologies provide an opportunity to reduce cost and schedule. The application of agile philosophy combined with Just-in-Time (JIT) manufacturing and Concurrent Engineering methods can be a powerful tool in increasing the throughput of a project. Additive manufacturing allows hardware projects to quickly assemble low cost prototypes to identify faults and non-conformances early in a project lifetime. Using all of these ideas and technologies allows for space missions to identify and mitigate risks through prototyping as early as phase B, allowing for change in the project when it is at a lower cost. To find the areas that can benefit the most from agile practices, RADARSAT Constellation Mission (RCM) data is reviewed to identify the type and percentage of time used for project management and corrective action tasks. The extracted data is compared to the percentage time used for an ongoing nanosatellite project at each phase and compare programmatic differences between the project. Based on the observed differences, the agile applications are conceptually applied to RCM tasks to generate practices using existing technologies for a more agile large space mission. The use of agile philosophy supplemented with additive manufacturing prototyping reduced corrective action costs and time needed for rework tasks. As part of the agile practices, corrective actions and continuous improvement is part of continuous planning and prototyping. This allows for projects to quickly identify and mitigate risks, able to adapt to new mitigation actions and reduce the volume of tasks needed late in the life of the project to rework non-conformances.