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DEVELOPMENT OF QUALITY AND KNOWLEDGE MANAGEMENT SYSTEM FOR THE FIRST SATELLITE MISSION IN AN EDUCATIONAL INSTITUTION BASED ON ECSS STANDARDS

Abstract

The paper describes detailed practical methods of how to develop and implement ECSS (European Cooperation on Space Standardization) standards as a part for creating a quality and knowledge management system in an educational or business organization on its first satellite or space missions.

The method focuses on establishing quality and knowledge management documentation system, using existing ECSS principles as a major component, without breaking the historical organization structure within the institution and by meeting the unique needs of the space mission. The method has been developed on an example of a public technical university with its unique historical organization structure, in order to implement nano-satellite program for educational and regional space technology development purposes.

The method focuses on following steps and principles:

1. Mapping of existing space related capabilities

2. Based on the mapped capabilities, different satellite subsystems will be allocated to relevant departments and working groups. Individual working groups will be established for each subsystem.

3. Subsystems which direct expertise cannot be found from the organization, will either be fully outsourced or a new interdepartmental working groups will be established to carry out relevant responsibilities.

4. Review of ECSS and other coherent technical standards.

5. Selection of the applicable standards for the mission.

6. Compilation of technical manuals: separate manuals for each sub-system and one for the system architecture. All manuals should consist dedicated sections for Engineering and Product Assurance issues from all relevant ECSS and other applicable standards, by referring in each section to the specific standard used. Separate manual should also be made for stipulating Management related issues in detail, including terms for conducting reviews and describing task management system within the project.

7. Based on the technical manuals, a unique space program or a single project quality and knowledge management system has been created.

8. Compilation of specifications and technical documentation based on the technical manuals.

9. Execution of the project activities by its phases, according to the new and unique quality and knowledge management system, which match the exact needs for the mission and the organization.