

57th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE  
ACTIVITIES (D5)

Interactive Presentations - 57th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE  
MANAGEMENT IN SPACE ACTIVITIES (IP)

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CENTRALIZING CODES AND KNOWLEDGE FOR STREAMLINED INTEGRATION IN THE  
SPACE SECTOR: A FRAMEWORK FOR UNIVERSAL ACCESS TO SPACE AND EFFECTIVE  
KNOWLEDGE MANAGEMENT

**Abstract**

The space industry is expanding rapidly and becoming more diverse, as more businesses and organizations are getting involved in it. Nevertheless, this expansion has led to a fragmentation of coding practices and standards, making it challenging to integrate various payloads into satellites, since the developer has to develop a code set from scratch. A centralized code management framework is suggested as a solution to this problem, with the goals of facilitating universal access to space and streamlining the integration process. The centralization of codes for the space sector is presented in this research, with a focus on the advantages it provides for the integration of satellite payloads. Through the establishment of a consolidated platform and management structure, the space sector may scale current obstacles and enhance efficacy and interoperability. There are various benefits associated with the centralized code management structure. By providing a uniform set of coding conventions and procedures, it first streamlines the integration process. By ensuring compatibility across various payloads, this standardization cuts down on the time and effort needed for integration and testing. It also makes it easier for different stakeholders to work together and exchange knowledge and skills. In addition, the central platform makes the area more accessible to all attendees. Regardless of their size or resources, organizations can utilize and expand upon pre-existing codes by establishing a shared code repository. The democratization of access promotes innovation and attracts new investors to the space industry, propelling progress and expansion on the whole. The research discusses the important factors that need to be taken into account before implementing the centralized code management architecture. These include creating procedures for code sharing and version control, as well as guaranteeing the security and integrity of the centralized platform. They also involve constructing a strong governance structure to supervise code management. Developing thorough coding standards and best practices also requires cooperation with international organizations, regulatory agencies, and industry specialists. The centralized knowledge management strategy facilitates the easy access and utilization of pre-existing codes, algorithms, and solutions by developers and engineers. It makes it unnecessary to start from scratch and promotes cooperation and knowledge exchange between various businesses and individuals. Consequently, this quickens the rate at which the space sector is innovating and solving problems.