SPACE OPERATIONS SYMPOSIUM (B6)
Human Spaceflight Operations Concept (1)

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SECURITY AND SAFETY IN A DISTRIBUTED AND COOPERATIVE GROUND SYSTEM

Abstract

In human space flight operations executed by Europe in their participation to the International Space Station (Columbus and ATV programmes, science payloads), the chosen policy is one of distribution and coordination of scientific and operations objectives and responsibilities over the participating countries. This distribution is amplified by the availability of technology and work culture that allows end users to operate their in-flight equipment or use the mission data from remote locations, even from home. This has resulted in a network of 18 European facilities, all interconnected, plus a significant number of science User Home Bases (UHB) where science data is acquired and analyzed. Those 18 facilities are also connected to NASA and RSA facilities.

At the same time, safety requirements are imposed on this infrastructure, primarily to control inadvertent hazardous commanding, which might result in safety hazards n the on-board crew or in the loss of mission. Similarly, security requirements are imposed on the infrastructure aiming at ensuring the protection of data and assets as well as protecting the interest of the international partners connected to our facilities.

Both safety and security require added controls in terms of designs and operational processes. Securities of information and systems, as well as safety of operations, are potentially at odds with a wide distribution and delegation of responsibilities. In view of these potentially contradictory objectives, the European Space Agency operations directorate has adopted a set of strategies and implementation choices aiming at reconciling these objectives: to ensure safe and secure operations in a widely distributed and multi-organization environment.

The paper will describe briefly the way the responsibilities are distributed (the operational concepts) and the top level requirements in the area of security and safety It will then address the potential contradictions between security and safety on one side and the distribution of responsibilities across Europe on the other, as well as which risks this generates. Finally the strategies and implementation which have been adopted to mitigate the risks created by these contradictions will be explained.