

TECHNICAL CHALLENGE

REAL-TIME VIDEO SURVEILLANCE FROM LOW EARTH ORBIT



What kind of ground and onboard infrastructure should be envisioned to deploy real-time video capabilities in low Earth orbit ?

The real-time surveillance of LEO from space through video (EXO² video) is an emerging field, particularly in the civil sector for monitoring space debris.

This developing discipline also plays a key role in military operations. It enables the monitoring of adversary satellites by detecting and tracking their movements to anticipate their capabilities, such as reconnaissance or communication espionage attempts. It also protects space assets by identifying threats like debris to avoid collisions or suspicious satellite maneuvers. Moreover, it contributes to maintaining space superiority by providing real-time data to coordinate military operations in orbit.

Programs led by organizations such as NATO and the U.S. Space Force illustrate the strategic importance of this technology, despite several challenges including bandwidth limitations, data processing speed, and cybersecurity.



You have 24 hours to find solutions to improve the intelligence loop and its dissemination with the aim of reducing the time it takes to access information from space sensors and speeding up its use in order to provide the Armed Forces with critical data for conducting operations.

TO DO THIS, YOU CAN :

Present the dimensions of the satellite system you are considering, the choice of optics, on-board preprocessing, and the methodology for downloading video streams, etc.

Present the systems that you consider most promising for accelerating, in real time, the acquisition, download, processing, and use of video streams and, finally, the dissemination of value-added information that improves knowledge of the conflict-ridden environment that space has become.



Presentation of an optimization plan promoting the implementation of innovative military activity detection automation solutions within a unified operations control and command (C2) tool.



Present an action plan that would enable (depending on the military use cases identified, which you will detail) rapid implementation using off-the-shelf technology.

Present a business plan that allows you to control the costs and deadlines of an as-a-product solution.



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