

PRESS RELEASE

LEONARDO: KICK OFF FOR THE PROJECT OF THE FIRST SPACE CLOUD SYSTEM FOR DEFENSE

Rome, 19/02/2024 – **Supercomputers, artificial intelligence, and cloud are aboard a constellation of cyber-secure satellites** orbiting the Earth this is the objective of the "*Military Space Cloud Architecture*" (MILSCA) study project assigned to **Leonardo by the Italian Ministry of Defense (through the contractual agency Teledife)**, as part of the National Military Research Plan (PNRM).

For the first time in Europe, similar to what happens with the terrestrial cloud, the project intends to define a space architecture capable of providing government and national Armed Forces with **high-performance computing and storage capacity directly in space**.

The system, **designed with integrated cyber security models**, will guarantee greater speed and flexibility in the processing and sharing information. The *Space Cloud*, which will be tested by creating a **digital twin of the architecture**, will be able to **store over 100 Terabytes of data** generated on Earth and in space on board each constellation satellite. It can perform **processing with a power exceeding 250 TFLOPS** (250 thousand billion operations per second) at single precision, adopting advanced algorithms which use artificial intelligence, machine learning techniques, and extensive data analysis. They can also communicate and exchange data autonomously with other satellites.

A cyber-secure supercomputer and archive system in space will guarantee users **access to strategic data** such as communication, earth observation, and navigation data, **anywhere**, even in the most remote places, **and at any time**. Furthermore, a *Space Cloud* system significantly reduces data processing times, which is processed directly in orbit, **providing real-time information**, and thus **facilitating multi-domain and multi-nation operations**. The transmission networks will be left free for other connections thanks to the only transfer of information of interest to Earth. In addition, storing data in orbit will also represent a useful back-up of the Earth centers, which are most exposed to natural disasters.

The project sees **Leonardo at the forefront with the participation of the joint ventures Telespazio** (67% Leonardo, 33% Thales) **and Thales Alenia Space** (67% Thales, 33% Leonardo). With a duration of 24 months, the study includes a first phase for defining the architecture and a second phase that will end with developing a digital twin of the satellite with the HPC and the multi-constellation satellite terminal demonstrator. The goal is to simulate the different application scenarios in a digital environment. These tests will be carried out thanks to Leonardo's supercomputer, the *davinci-1*, among the first aerospace and defense HPCs in the world in terms of computing power and performance. The study will be a precursor to a further experimental phase, which, if confirmed, will involve the deployment in orbit of a demonstrative constellation of satellites.

Space Cloud is a hi-tech and multi-domain project, which takes advantage of Leonardo's combined capabilities in **data acquisition, management, and cyber protection, as well as artificial intelligence and supercomputing with the HPC davinci-1**; the development of MILSCA is the first project in the Space domain that fits within the growth guidelines of Leonardo's new Industrial Plan.

"In a multi-domain scenario, management, security, and rapid exchange of an ever-increasing amount of data, much of which is tactical, become strategic elements for the country's defense. We will be the first in Europe to develop a Space Cloud project, demonstrating feasibility and benefits deriving from the use of an architecture of this type and enabling a new paradigm of cloud & edge computing," said **Simone Ungaro, Leonardo's Chief Innovation Officer**. *"Leonardo's know-how will allow the development of a Space Cloud network to contribute to digitalization and technological innovation processes, responding to future challenges to guarantee the needs of government and national Armed Forces."*

The *Space Cloud* for Defense project also sets the basis for future uses to support civil Earth observation programs and space exploration missions to the Moon and Mars, which could benefit from an in-orbit cloud computing architecture to download and process data more quickly.

Leonardo is a leading global Aerospace, Defence and Security (AD&S) company. With 51,000 employees worldwide, it operates in the fields of Helicopters, Electronics, Aircraft, Cyber & Security and Space, and is a key partner in major international programmes including Eurofighter, NH-90, FREMM, GCAP and Eurodrone. Leonardo has significant industrial capabilities in Italy, the UK, Poland, and the US and also operates through subsidiaries, joint ventures and stakes, including Leonardo DRS (72.3%), MBDA (25%), ATR (50%), Hensoldt (22.8%), Telespazio (67%), Thales Alenia Space (33%) and Avio (29.6%). Listed on the Milan Stock Exchange (LDO), Leonardo reported new orders of €17.3 billion in 2022, with an order backlog of €37.5 billion and consolidated revenues of €14.7 billion. The company is included in the MIB ESG index and has been part of the Dow Jones Sustainability Indices (DJSI) since 2010.

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