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Telespazio VEGA Deutschland to support the ExoMars 2020 mission

The German aerospace company Telespazio VEGA Deutschland, a subsidiary of Telespazio (a joint venture between Leonardo and Thales) has been selected by the European Space Operations Centre (ESA/ESOC) to develop the operational simulator for the second spacecraft of the ExoMars programme. The mission, planned to launch in 2020, will consist of the Carrier Module (CM) and the Descent Module (DM). The latter will bring a Surface Platform (SP) and a Rover Module (RM) to Mars.

The simulator will reproduce the ExoMars 2020's behaviour as realistically as possible with particular focus on the ESOC operational interface, such as telemetry generation and reaction to telecommands. This requires accurate modelling the spacecraft and its modules, among others the electrical power generation storage and distribution on board, attitude control and manoeuvres, internal data traffic as well as telecommunications with ground stations.

The development of the simulator was kicked off in August 2017. It will enable ESA to prepare for the mission in several ways: during the development of the real spacecraft, the simulator will be used for several rounds of System Validation Tests (SVTs), starting in October 2018. Later, the Flight Control Team will start using the simulator to prepare for the launch in 2020, the cruise phase, separation of the DM from the CM, and finally for the descent itself and the surface platform operations in 2021.

The reason for this tight schedule is the narrow launch window in which the next ExoMars mission can launch and make use of the optimal trajectory between Earth and Mars.

"We are very proud to be the selected company for the second ExoMars simulator. It shows us that our client trusts us with delivering a complex system within short time, while respecting the highest standards and quality. We have developed the simulators for other exploration missions with equally tight schedules, launch window constraints and complex scientific instruments, like BepiColombo or Herschel/Planck, and aim to repeat this success on the ExoMars simulator." said Zeina Mounzer, Chief Commercial Officer of Telespazio VEGA Deutschland.

Telespazio VEGA Deutschland has already developed several systems for the first phase of the ExoMars programme, and specifically for the ExoMars Trace Gas Orbiter (TGO). Among these systems were the Mission Control System, the Mission Planning System as well as the Simulator. Although the second phase falls under the same heading, the two spacecraft are technologically very different and so is the simulator: the 2020 mission comes with a completely new hardware design and newly designed on-board computer, which requires a new development of the simulator for this special mission.

About ExoMars

ExoMars is an exciting Mars exploration programme made possible by a large international cooperation between ESA and Roscosmos. The prime contractor responsible for the ExoMars spacecraft in Europe is Thales Alenia Space (a Thales/Leonardo company) and many of the technologies on-board have been developed by Leonardo.

The first phase of the programme involved a Mars Trace Gas Orbiter satellite launched in March 2016 that included an Entry, Descent and Landing Demonstration Module. In a second phase, in 2020, a Mars Rover and a Surface Platform will be launched, building on the experience gained through these first steps. The 2020 ExoMars Rover is designed to search for traces of past and present life by collecting and analysing sub-soil samples with a drill, developed by Leonardo. Telespazio is also involved in the ExoMars 2020 mission: the company has designed, developed, and will be maintaining the communication infrastructure (RGCI) for the Rover Control Centre (ROCC).

ExoMars will demonstrate new technologies that will help to pave the way for a future Mars sample return mission.

Press Contact

Alexandra Sokolowski

alexandra.sokolowski@telespazio-vega.de

Tel: +49 (0) 6151 8257-764

Mobile: +49 (0)162 21 48 175