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The ExoMars 2016 Mission

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ExoMars is a joint programme of the European Space Agency (ESA) and Roscosmos, Russia. It consists of the ExoMars 2016 mission with the Trace Gas Orbiter, TGO, and the Entry Descent and Landing Demonstrator, EDM, named Schiaparelli, and the ExoMars 2018 mission, which carries a lander and a rover.

The TGO scientific payload consists of four instruments. These are: ACS and NOMAD, both infrared spectrometers for atmospheric measurements in solar occultation mode and in nadir mode, CASSIS, a multichannel camera with stereo imaging capability, and FREND, an epithermal neutron detector to search for subsurface hydrogen (as proxy for water ice and hydrated minerals). The mass of the TGO is 3700 kg, including fuel. The EDM, with a mass of 600 kg, is mounted on top of the TGO as seen in its launch configuration. The EDM is carried to Mars by the TGO and is separated three days before arrival at Mars. In addition to demonstrating the landing capability two scientific investigations are included with the EDM. The AMELIA investigation aims at characterising the Martian atmosphere during the entry and descent using technical and engineering sensors of the EDM, and the DREAMS suite of sensors that will characterise the environment of the landing site for a few days after the landing.

ESA provides the TGO spacecraft and the Schiaparelli Lander demonstrator, ESA member states provide two of the TGO instruments and Roscosmos provides the launcher and the other two TGO instruments. After the arrival of the ExoMars 2018 mission at the surface of Mars, the TGO will handle all communications between the Earth and the Rover. The communication between TGO and the rover/lander is done through a UHF communications system, a contribution from NASA. The 2016 mission will be launched by a Russian Proton rocket from Baikonur in March 2016 (launch window 14-25 March) and will arrive at Mars on 19 October. This presentation will cover a description of the 2016 mission, including the spacecraft, its payload and science and the related plans for scientific operations and measurements.