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## COORDINATED GROUND SYSTEM FOR JOINT SCIENCE OPERATIONS FOR THE EXOMARS MISSION.

### Abstract

International collaboration is increasingly important for space science missions, often requiring joint operations activity. Such an approach is extremely important for studies of planets and other bodies of the Solar system that usually require high budget for their realization. In addition, as the development of international payloads for such missions is a well-established practice, the establishment of common ground systems for joint science operations is an important feature.

Benefits of such an approach are evident:

- • More science return
- Reduced cost
- More redundancy
- Technology exchange

But on the other hand, common systems for joint operations pose some specific difficulties, such as:

- • Different review procedures in the developing organisations
- Incompatible documentation structures (“document tree”)
- A risk of producing a “multiheaded dragon” (inefficient/duplicated task distributions)
- Different base technologies

- Language problems

Successful examples of such joint systems include the Science Ground Segment of the ExoMars Trace Gas Orbiter (TGO) project. In this system we've tried to solve the mentioned problems and get the maximum benefit from the implementation of the cooperative approach.

ExoMars is a joint ESA-Roscosmos project which includes two missions: 2016 which was launched in January 2016 and 2022 mission which will be launched in September-October 2022. This article describes the Science Ground Segment for 2016 mission which successfully provides all needed services for science space operations of the mission since the ExoMars 2016 launch up to the present. The architecture of the system, the scenario of distributed but joint data management, as well as some methodological and technological aspects, will be discussed.