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Building an Infrastructure at Mars.

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The Mars Telecom Orbiter (MTO) to be launched in 2009, is a NASA project funded by the Mars Exploration Program. The MTO relay capability will enable next decadal missions at Mars collecting gigabits of data a day to be relayed back at speeds exceeding 4 Mbps and it will enable small missions whose limited resources do not permit them to have a direct link to Earth. Specifically, MTO will carry in addition to the X-band a high frequency Ka-band capability enabling it to perform telecommunication relay functions in support of the Mars Science Laboratory (MSL), Mars Scouts, and other NASA and non-NASA missions at Mars during the time frame between 2010 and 2016, and a possible four-year extension. In addition MTO will perform significant technology demonstrations for the Laser Communication Experiment and the Mars Sample Rendezvous demonstration. And finally MTO is also discussing the possibility of carrying science instrument(s) as an important addition to the reference mission consisting of telecom relay and laser communication demonstrations.

This paper will address the capabilities and services MTO offers its customers at Mars. The relay concept will explore a "day in the life" of MTO. We shall address the steps required to execute the technology demonstrations, the commissioning of the flight system, and the critical events related to Mars Orbit Insertion, and MSL EDL. The paper will cover the data flow and team architecture to manage the operations of the spacecraft, the payloads and the ground data system.