



Mars-Next, a Mars Sample Return precursor mission

F. Mura (1), V. Giorgio (2), and E.D. Bertuccio (3)

(1) Thales-Alenia Space, Turin, Italy (francesco.mura@thalesalieniaspace.com), (2) Thales-Alenia Space, Turin, Italy (vincenzo.giorgio@thalesalieniaspace.com), (3) Thales-Alenia Space, Turin, Italy (enrico.bertuccio1@thalesalieniaspace.com)

Mars Sample Return is a very challenging mission that presents several technical/operations problems that have never been faced before. Moreover MSR, even if based on two single launches by Ariane-5 class launcher, presents mass budget criticalities so that particular mass saving manoeuvres will likely be implemented; this is the case of Aerobraking for partial Target Orbit Acquisition (TOA) after the Mars Orbit Insertion (MOI) manoeuvre.

Mars-Next has the following objectives:

- delivery at least 3 small landers for Network science
- carry on 30 kg of P/L instruments for Orbital science.
- perform Aerobraking and acquire experience on it for partial TOA
- simulate in real environment the autonomous RendezVous and Capture phase of the Sample Container released in orbit, in the actual MSR mission, by the Mars Ascent Vehicle (MAV)

The Mars-Next program has started the Phase-A beginning 2008 under ESA contract.