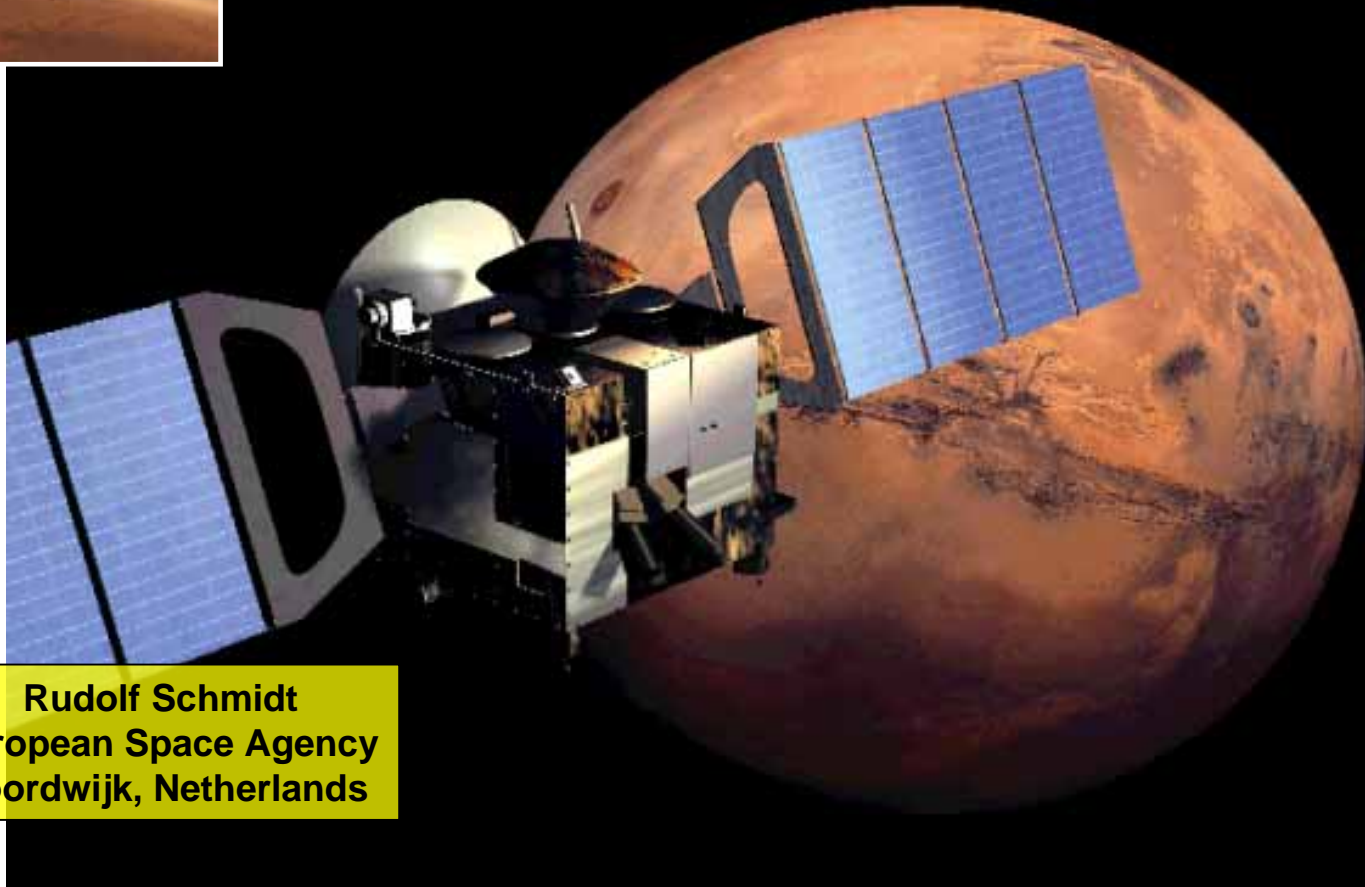


Mars Express - A Fast-track Mission to the Red Planet



Rudolf Schmidt
European Space Agency
Noordwijk, Netherlands

1997: Assumptions at start of the project



Volume 2 Technical Proposal
 Part 1 Technical approach for the Mars Express system design
 Chapter 2 Mars Express payloads requirements

Initial boundary condition:

- low orbit
- 120 kg orbiter payload
- up to 4 landers (~ 180 kg)

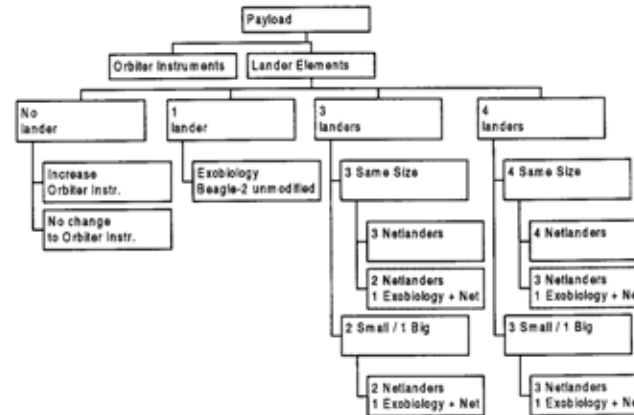


Figure 2.8/A : Some Lander Combination Possibilities

The Lander concept is not finalised yet and several combinations can be considered. The proposed spacecraft concept shall be flexible and accommodate these permutations.

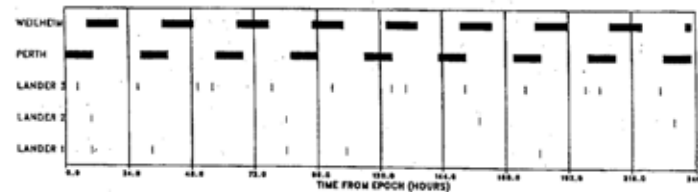
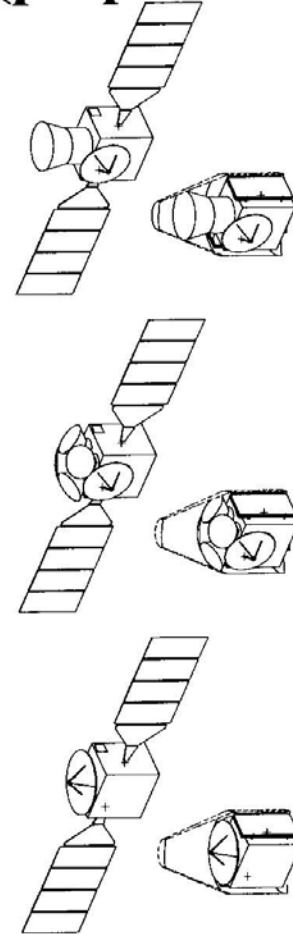
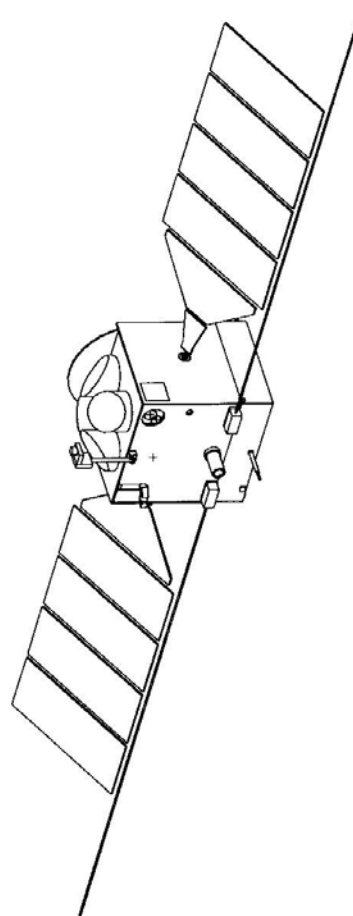


Figure 2.8/B : Communications Schedule for the first 10 days

The suggested orbit authorises a specific pattern of contacts between the Orbiter and the Landers for a given set of three Martian sites. Also shown are the contact periods with Earth ground stations.

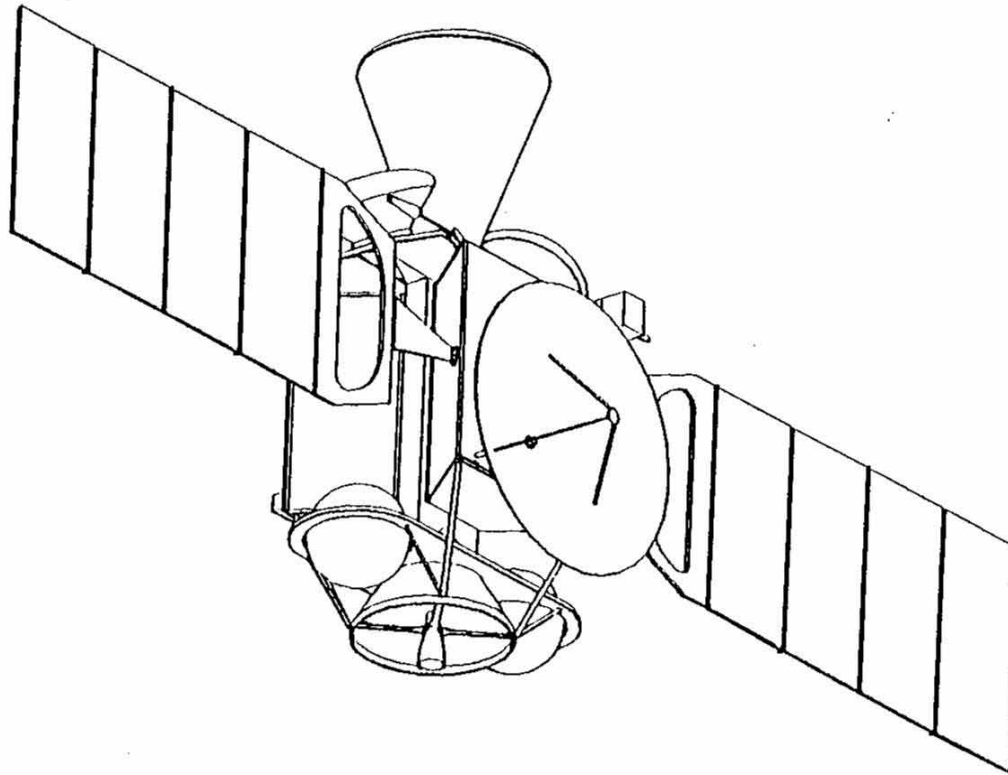


Spacecraft configuration (proposal version)

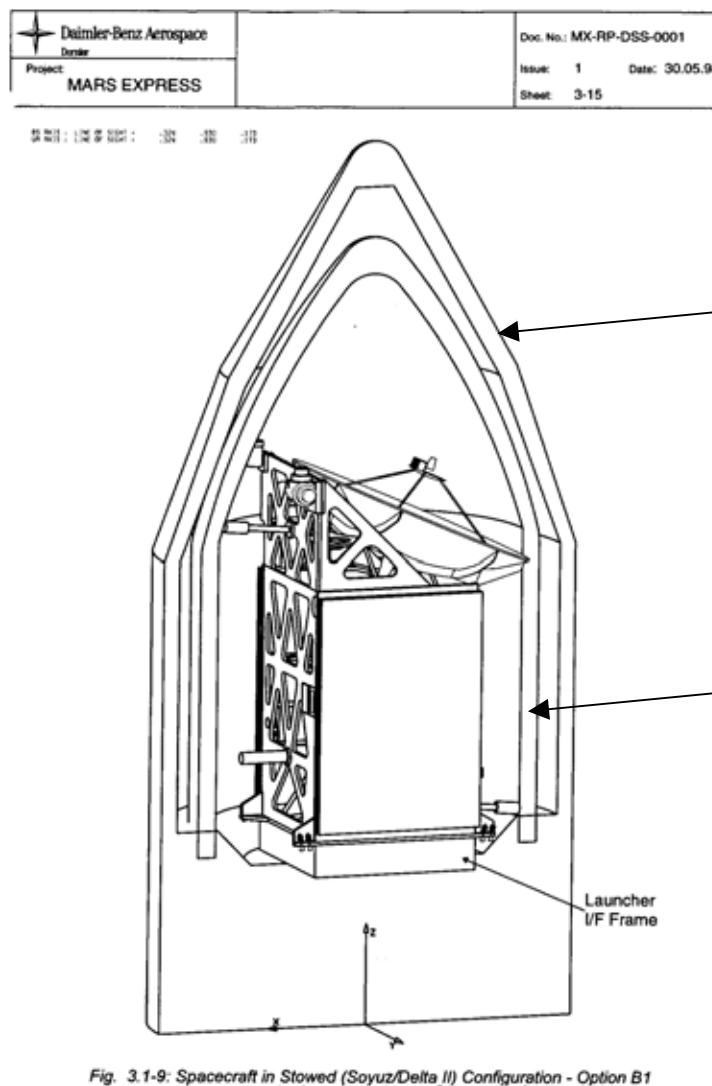


Noordwijk, January, 16 th 1998

Early ideas about s/c configuration



Fregat did not exist at that time, thus

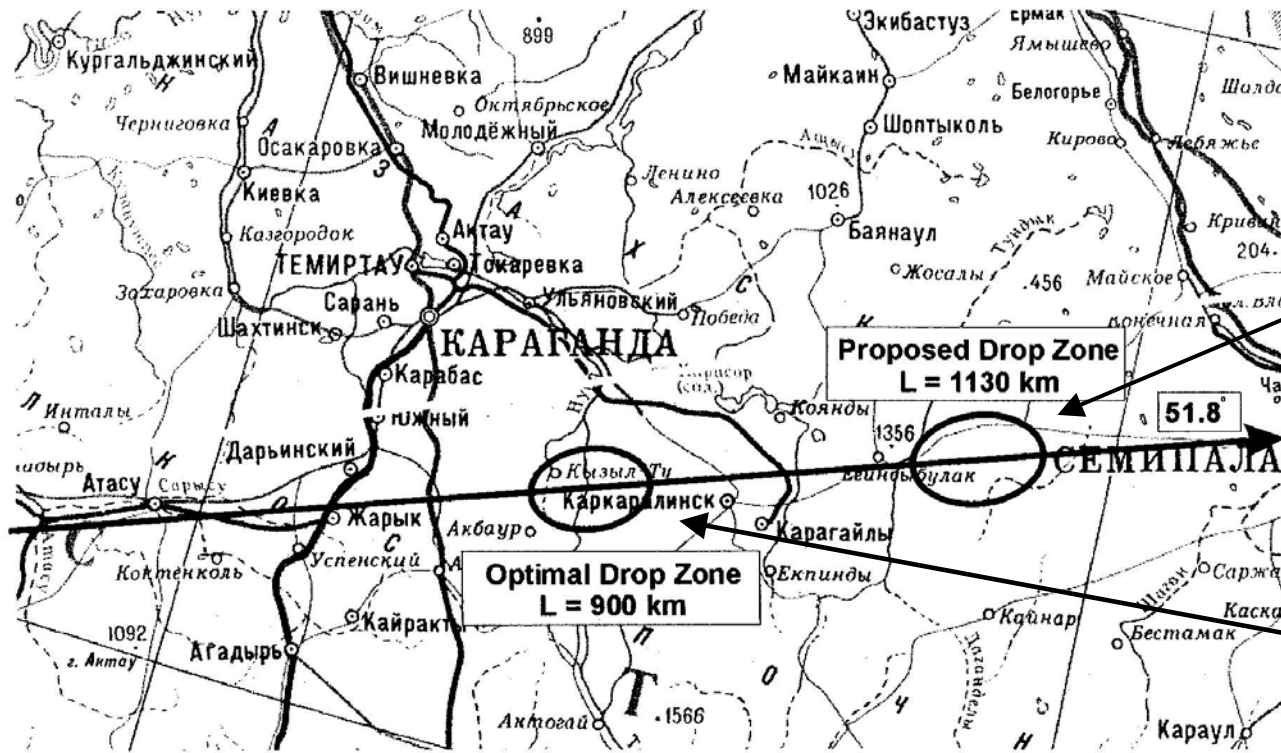


History preserved in the design





3.3 ALLOCATION ON THE MAP



Local residents got electricity, pasta factory, hard surface on roads,...

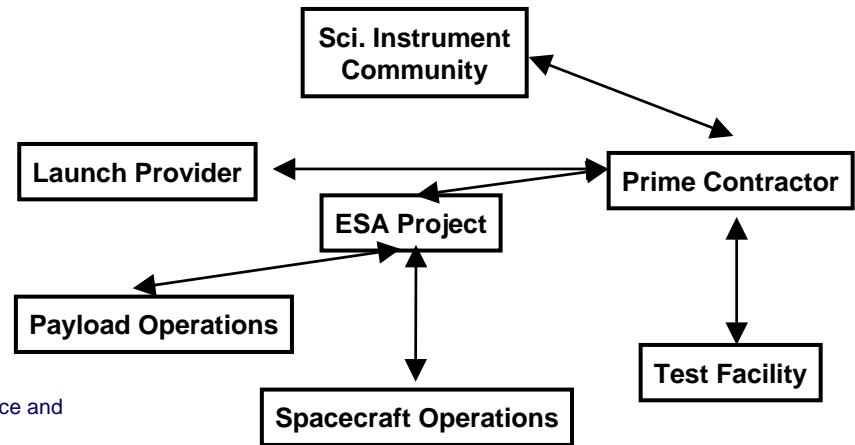
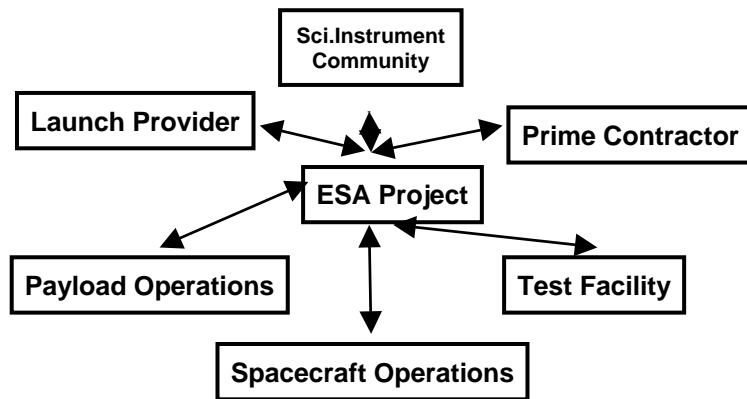
Villages, drop zone not feasible

Mars Express QPM #3 - Starsem Paris - March 8th, 2000





- **Mission approved at a level of 150 M€ in 1996 prices**
 - μ New management methods to be applied
 - μ Smaller team, increase efficiency -> empower prime contractor (Astrium SAS)
 - μ Management tasks transferred to industry
 - Launcher interface
 - Interface to science community providing instrumentation
 - Procurement of test facilities
 - Increased flexibility for decisions



Exceptions: Interfaces between [Science Community and ESA](#) for instrument performance and flight operations, [ESA and Launch Provider](#) for contractual matters

Evolution



Mass: 1130 kg -> 1220 kg due to move of drop zone (remember the pasta factory !)

Compatibility with Delta 2 maintained until 2001 (was about time of CDR)

Launch date: 1 June 2003 -> 2 June 2003 (1 June was Sunday, „no launch“ in Baikonur)

Budget: Achieved the canonical 150 MEuro (96EC)

Payload performance: 😊, however MARSIS booms not yet deployed, assumed to happen in early May

Spacecraft performance: 😊

Science: see this conference, also 😊