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

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1997: Assumptions at start of the project ....

Initial boundary condition:
- low orbit
- 120 kg orbiter payload
- up to 4 landers (~ 180 kg)
Early Configurations ....

Spacecraft configuration (proposal version)

Noordwijk, January, 16th 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 63 - Starsem Paris - March 8th, 2000

Proposed Drop Zone
L = 1130 km

Optimal Drop Zone
L = 900 km
Project Constraints

• Mission approved at a level of 150 M€ in 1996 prices
  - New management methods to be applied
  - Smaller team, increase efficiency -> empower prime contractor (Astrium SAS)
  - 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 😊