

ExoMars Programme

ExoMars Industrial Day
Torino – 23 September 2010

D. McCoy and the ExoMars Project Team

ExoMars Reformation

- **The Enhanced ExoMars was not approved at C-MIN 08**
- **Directions to the Executive from C-MIN 08**
 - Reduce overall cost to 1000 M€
 - Pursue broader International Cooperation
 - Maintain essential objectives of the mission
- **NASA was interested in a large cooperation with ESA for Mars Exploration**
- **Numerous studies during 2009 were jointly conducted to find a mutually acceptable mix of contributions**
- **ExoMars Programme approved at Council in December 2009 with 1000 M€ cap and 850 M€ contributions confirmed**

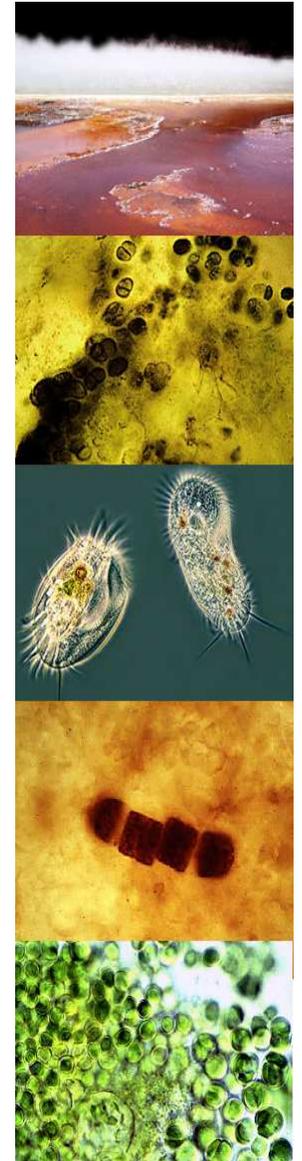
ExoMars Programme Objectives

- **Main Technology Demonstration Objectives:**

- Entry, Descent and Landing (EDL) of a payload on the surface of Mars;
- Surface mobility with a Rover;
- Access to the sub-surface to acquire samples;
- Sample acquisition, preparation, distribution and analysis.

- **Main Scientific Objectives:**

- To search for signs of past and present life on Mars;
- To investigate the water/geochemical environment as a function of depth in the shallow subsurface;
- To investigate Martian atmospheric trace gases and their sources.

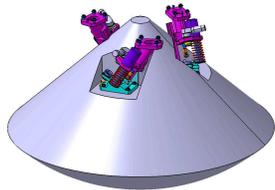
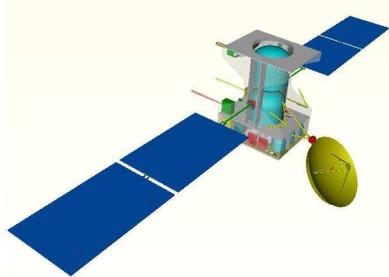


ExoMars Programme Mission Architecture

- **ExoMars Programme:**
 - *two missions launched in 2016 and 2018 on NASA supplied launchers.*
- The 2016 mission is ESA lead consisting of a Trace Gas Orbiter and an EDL Demonstrator Module with NASA contributions on Payload, UHF and Ka Band.
- The 2018 mission is NASA lead consisting of the ESA Rover accommodated with a NASA Rover of equal size inside a NASA spacecraft and descent module (Sky Crane)

2016 Lead

Trace Gas Orbiter (TGO)



EDL Demonstrator Module (EDM)



Atlas V Series 4

ExoMars Industry Day
Torino, 23 Sept 2010



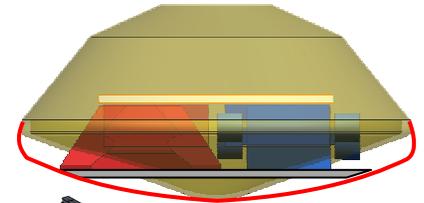
ESA
DSN



NASA
DSN

2018 Lead

Sky Crane Aeroshell

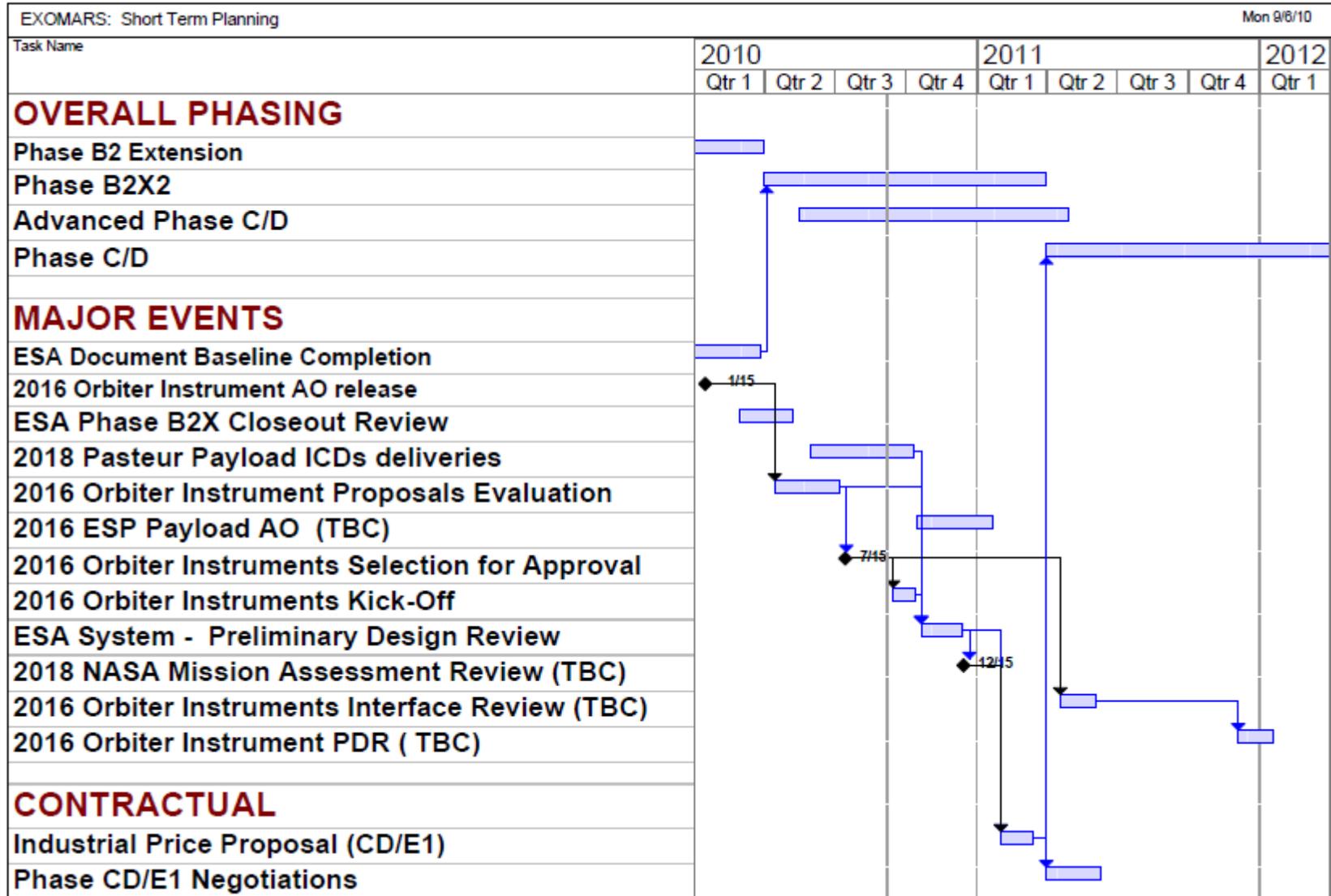


Atlas V Series 5

ESA Rover +ROCC



ESA ExoMars Short Term Planning



Present Programme Status

- **Phase B2X2 and Advanced C/D Slice 2 industrial negotiations completed in July**
- **TGO instruments kick-off based on proposals accommodated in selection process: occurring through October**
- **Essential interface agreement with NASA/JPL for Rover in place defining basic resources, i.e. Mass, Volume, etc (IRD v0)**
- **Final agreement ESA and NASA at Director level Bi-lateral on 9 September confirming Ka Band downlink in TGO baseline**
 - NASA to provide integrated package of Antenna, APM, Amplifiers and associated support for all related aspects
- **Numerous breadboard & test activities in both missions: de-risking technology developments where necessary**
- **Next major milestone is the System-PDR in Oct - Dec**

Conclusions

- **ExoMars is an approved Agency programme consisting of two mission in cooperation with NASA**
- **Procurements for schedule critical and technology critical items has already started and will ramp up in the coming months**
- **Phase C/D will begin in the second quarter of 2011**