Aurora (Robotic Exploration) Programme Update

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Current ExoMars objectives

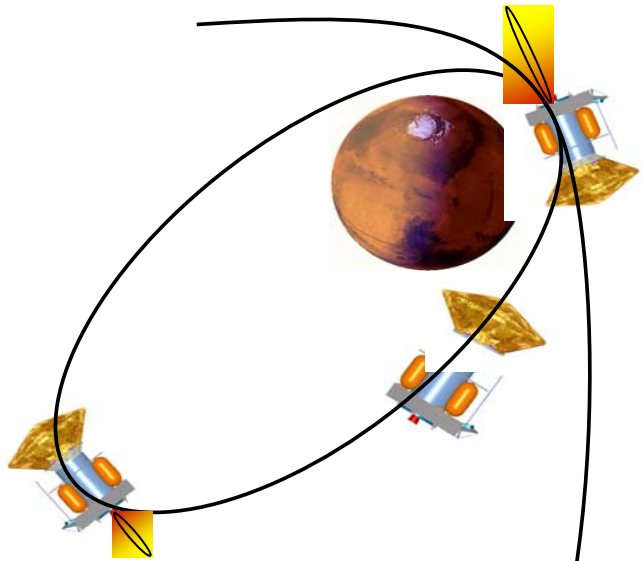
❑ Technology Objectives:

1. Entry, Descent and Landing (EDL) of a large payload on the surface of Mars,
2. Surface mobility via a Rover having several kilometres of mobility range,
3. Access to sub-surface via a Drill to acquire samples down to 2 metres,
4. Automatic sample preparation and distribution for analyses by scientific instruments.

❑ Scientific Objectives in order of priority:

1. To search for signs of past and present life on Mars;
2. To characterise the water/geochemical environment as a function of depth in the shallow subsurface;
3. To study the surface environment and identify hazards to future human missions;
4. To investigate the planet's subsurface and deep interior to better understand the evolution and habitability of Mars.

Recap of Enhanced ExoMars Baseline (1/2)



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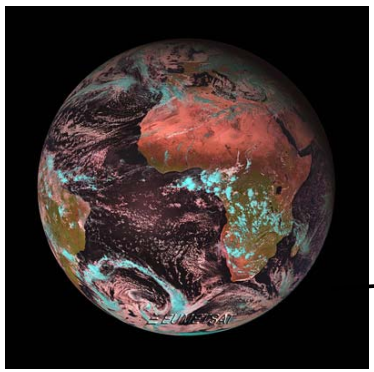
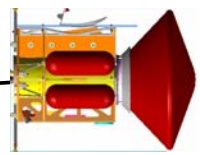
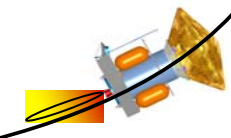
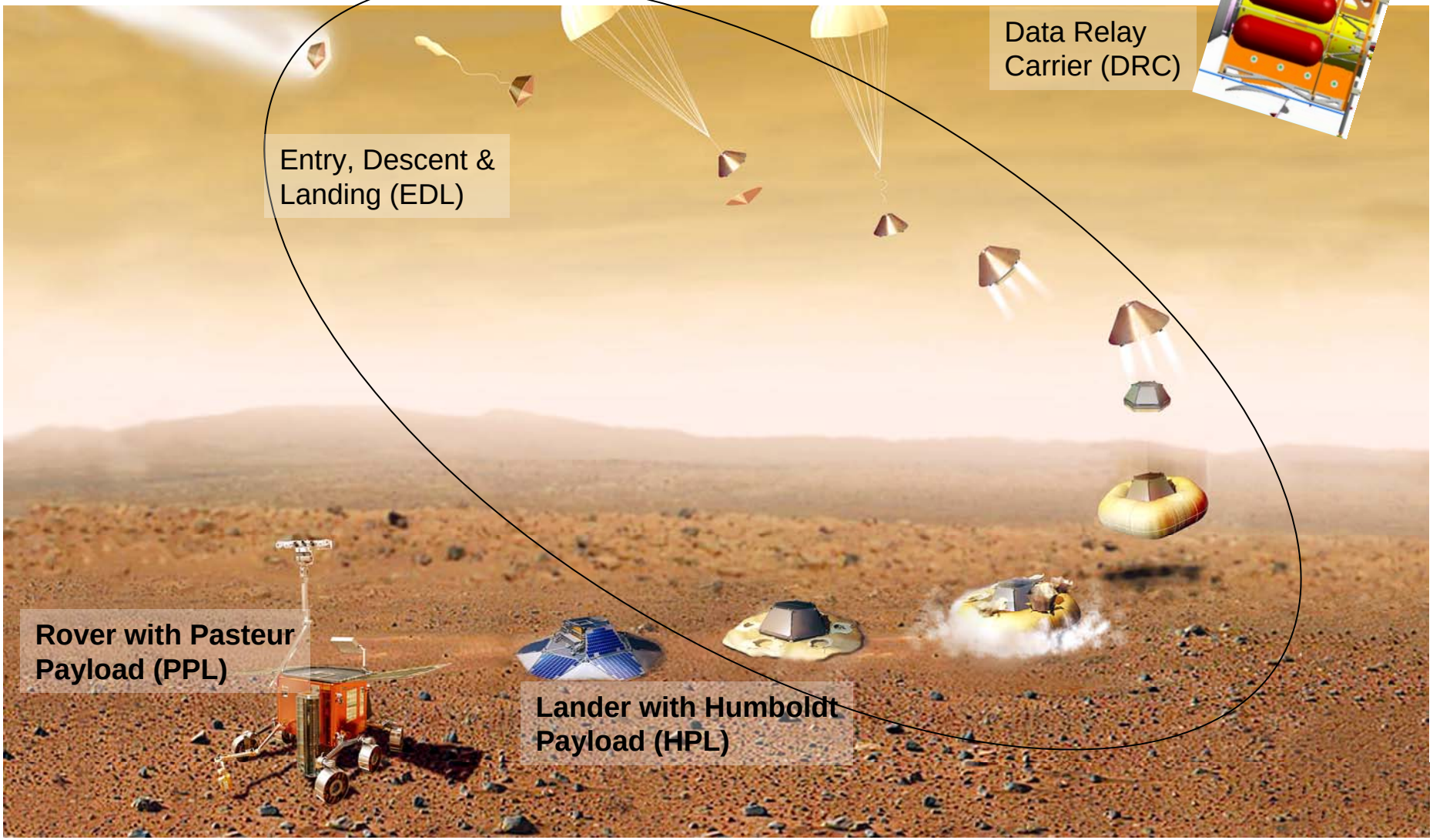
BACK-UP



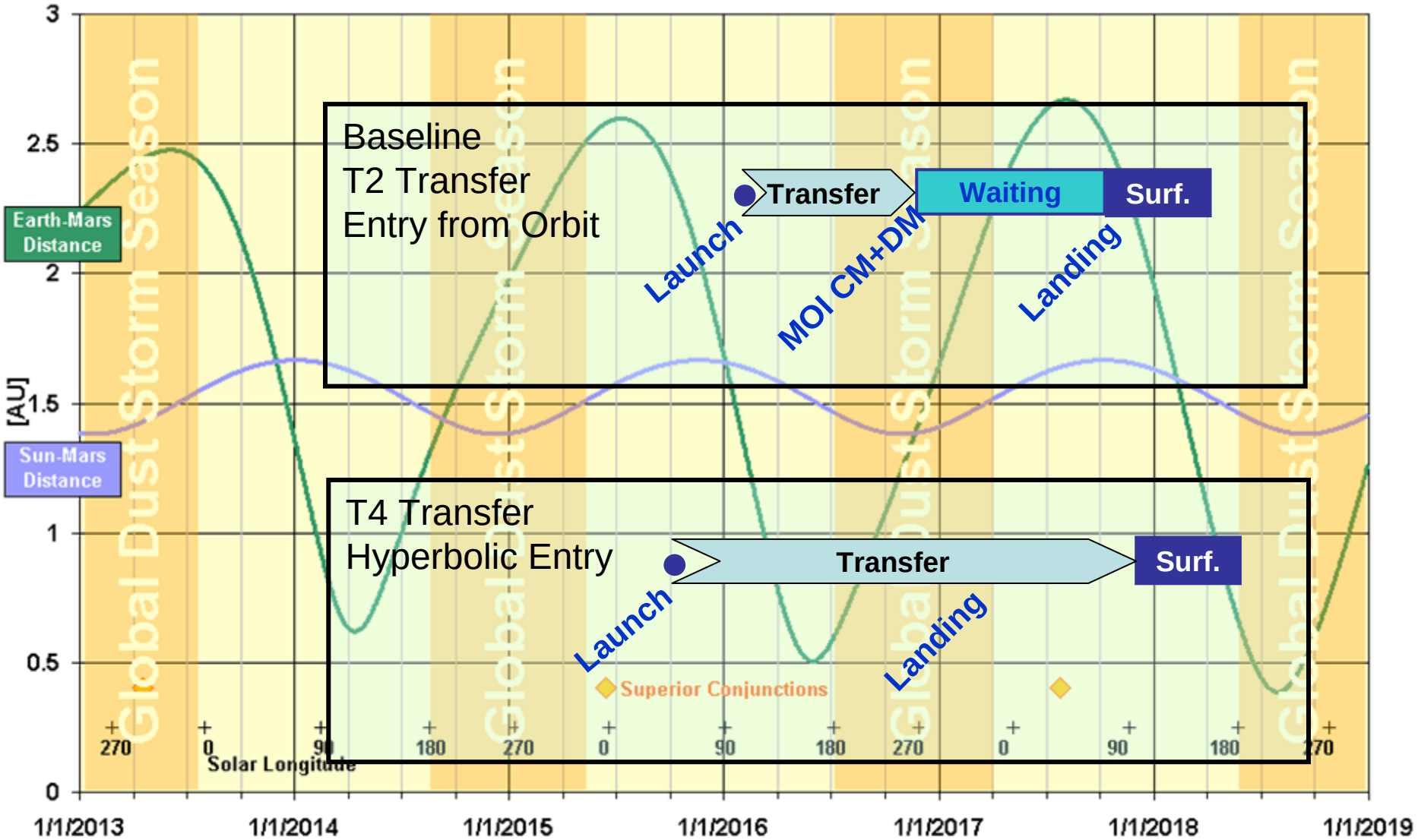




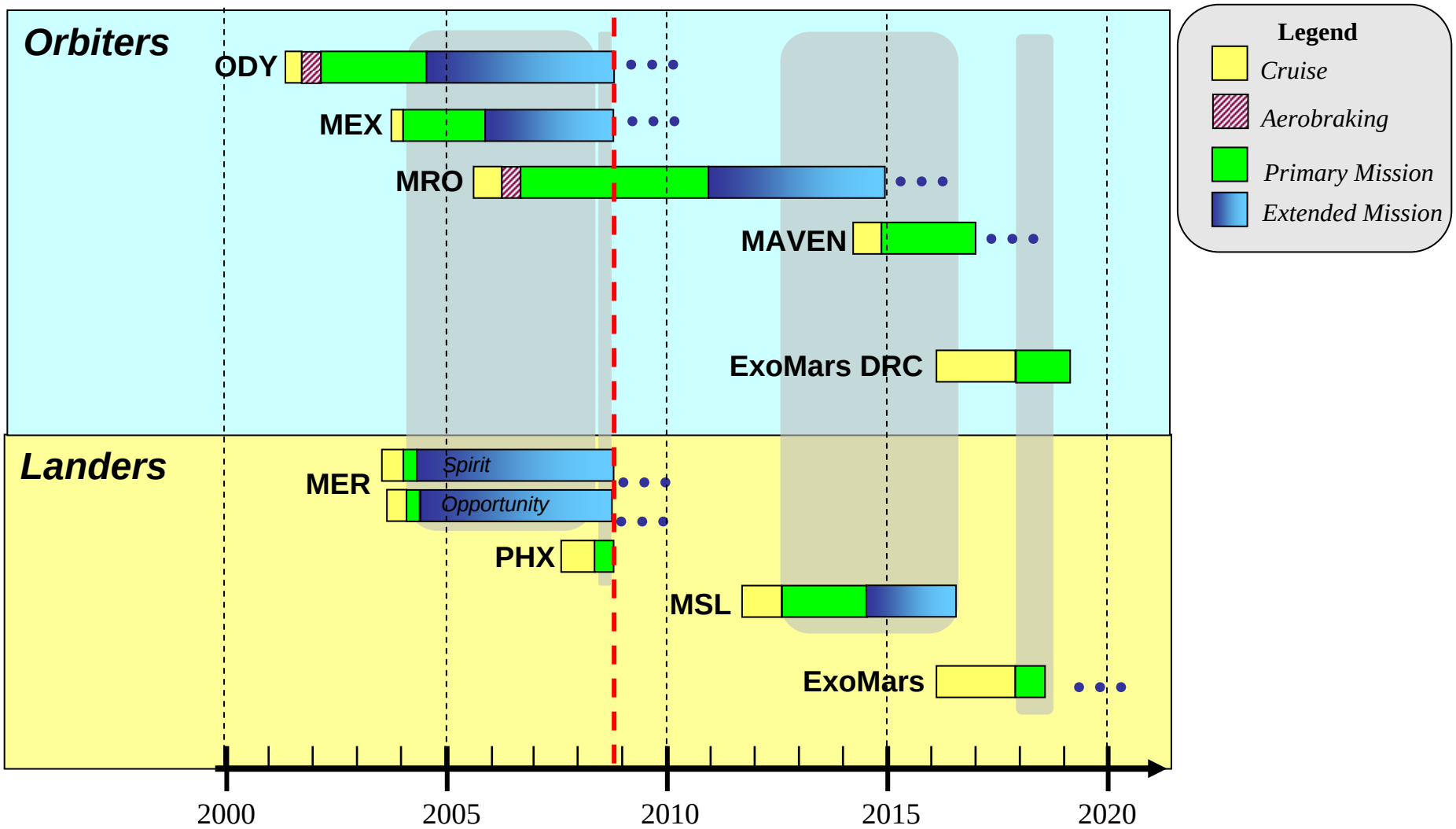
Recap of Enhanced ExoMars Baseline (2/2)



Present transfer timelines to avoid dust storm landing

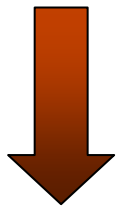


Present and future TLC capability at Mars



Financial Situation

- Estimated Enhanced ExoMars Cost: 1.2 B€
- Budget [possibly available] after CMIN09: 850M€
- 100 M€ spent and/or already committed



Major redesign/descoping required

Which stragety should we adopt?

Descoping strategy

- Respect the highest priority technology objectives, but reduce overall cost and eliminate cost drivers
- Do not denature the scientific goals of the mission, but simplify in number, complexity and reliability the payload
- Search reliable and motivated international partner(s) and define clear interfaces with partner(s), but respect as much as possible the industrial interests of the major missions stake holders
- Make use of ExoMars international collaboration to lay the foundations of a sustainable but long lasting programme of exploration

Next Steps

- We are going to meet with Roskosmos and NASA very quickly in order to verify their availability to support ExoMars
- We will make configuration studies to take into account international participation
- We will proceed with an effort of “rationalisation” of the payload
- We will keep the “industrial machine” running but focused on basic elements which may serve multiple scenarios
- We target a PDR (preliminary design review) in the March/April time frame

MREP(Mars Robotic Exploration Preparation

- C-MIN budget 23.35 M€ (46 requested)
- The programme will develop & test enabling technologies for the exploration of Mars
- Ultimate goal is the MSR mission in collaboration with NASA & other international partners
- Present target is the preparation of two missions in parallel for launches in 2018-2020
- Missions budgets will be requested at C-MIN 2011
- Technologies to develop and mission scenarios will be identified in the course of 2009
- A workshop in April 2009 will be organised to inform delegations and the user community on above activities

Conclusions

- We are determined to make ExoMars fly
- This will require sacrifices for both industry and the science community
- In parallel we want to construct a real, long lasting, programme of robotic exploration
- We will succeed by focusing the interests of all interested parties: scientists, industry, governments

Thanks for your attention