Jack Mustard, MEPAG Chair

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Developments in Mars Exploration Since September MEPAG Meeting

- Phoenix mission completed is extended mission with great success
- Mars Science Laboratory continues development but due to technical issues the launch has been slipped to 2011
- Mars Atmosphere and Volatile Evolution Mission (MAVEN) is beginning development as the 2013 Scout mission (B. Jakosky PI)
- 3rd Mars Science Laboratory Landing Site Workshop and site evaluation concluded with identification of four landed sites for continued study
- Report on methane presence and variability published
- Architecture planning activities in response to changes in the program
Next Decade Mars Exploration Program 2008

Launch Year

2009: Mars Science Laboratory

2011: ESA ExoMars cooperation

2013: MAVEN

2016: Mars Science Prospector

2018: MSO

2020: MSR Lander

Mars Network Landers
Impacts of MSL Slip

• MSL Launch slip to 2011 needed to complete critical technologies and prepare the mission for success
  – Cost for moving launch to 2011 is ≈$400 million
  – Delete MEP technology development funds for 2010-2014
  – Reduce funding for mission in 2016 launch window
  – Reduce support for EDL technical readiness and ongoing MEP missions
• May substantially alter the pace of Mars exploration and in particular development of the foundation for sample return
### Mars Exploration Program Today

<table>
<thead>
<tr>
<th>Launch Year</th>
<th>2011</th>
<th>2013</th>
<th>2016</th>
<th>2018</th>
<th>2020</th>
<th>2022</th>
<th>2024</th>
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<tbody>
<tr>
<td>MAVEN</td>
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Prepare the optimum program of Mars Exploration
Responses to MSL Slip

- PSS has asked that the Mars Exploration Program Analysis Group (MEPAG), and the Mars community more broadly, reevaluate the MEP architecture to identify the best options currently available, including MSR, to maximize the opportunities for achieving scientific goals of the highest priority.

- MEP, through M. Meyer, has asked two groups to reconsider the Mars architecture in the following ways:
  - The Mars Science Orbiter Science Definition Team (chaired by M. Smith) was asked to reconsider the priorities of that mission in light of the recent methane report and the reduced funding for a 2016 mission.
  - The Mars Architecture Tiger Team (MATT, chaired by P. Christensen) was asked to reconsider the Mars architecture previously endorsed by MATT-2 in light of recent changes.

- These groups were tasked to give interim reports to MEPAG at this meeting and to incorporate results of the discussions in final reports.

- MEP and SMD are in the midst of discussions on possible collaborations with ESA in Mars Exploration.
Goals for this Meeting

- Update the community on progress in the exploration of Mars including NASA, ESA, Japan, and Canada
- Update the community on outcomes of critical meetings in the past 6 months
- Develop inputs from the Mars community to the Planetary Science Decadal Survey now beginning
- Discussion and inputs to the science goals and mission objectives for the next decade of Mars exploration
- Initiate activities from MEPAG to develop positions and inputs to future MEP activities
<table>
<thead>
<tr>
<th>Start</th>
<th>Time</th>
<th>Agenda Item</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 AM</td>
<td>00:15</td>
<td>Welcome; MEPAG Purpose, Scope, Expected Results</td>
<td>J. Mustard</td>
</tr>
<tr>
<td>08:15 AM</td>
<td>00:30</td>
<td>Mars Program Director’s Comments</td>
<td>D. McCuistion</td>
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<tr>
<td>08:45 AM</td>
<td>00:30</td>
<td>Mars Exploration Program Update</td>
<td>F. Li</td>
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<tr>
<td>09:15 AM</td>
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<td>Mars Science Status</td>
<td>M. Meyer</td>
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<td>09:35 AM</td>
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<td>European Space Agency Update</td>
<td>J. Vago</td>
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<td>09:55 AM</td>
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<td>Break</td>
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<td>10:10 AM</td>
<td>00:15</td>
<td>Canadian Space Agency Update</td>
<td>Alain Berinstain</td>
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<td>10:25 AM</td>
<td>00:15</td>
<td>Japanese Aerospace Exploration Agency Update/MELOS</td>
<td>S. Sasaki/T. Satoh</td>
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<td>10:40 AM</td>
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<td>MSL Science Status (including landing site)</td>
<td>J. Grotzinger</td>
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<tr>
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<td>ExoMars Status</td>
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<td>11:20 AM</td>
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<td>Discussion</td>
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<tr>
<td>11:40 AM</td>
<td>01:30</td>
<td>Lunch</td>
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<td>01:10 PM</td>
<td></td>
<td>MEPAG inputs to Decadal Survey</td>
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<td>01:10 PM</td>
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<td>Decadal Survey Introduction and Process</td>
<td>D. Smith</td>
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<td>Planning and draft MEPAG inputs to Decadal Survey with discussion</td>
<td>J. Johnson</td>
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<td>02:00 PM</td>
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<td>Next Decade Planning: Mission Opportunities for ’16, ’18, ’20</td>
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<td>02:00 PM</td>
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<td>Introduction</td>
<td>M. Meyer</td>
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<td>MSO SDT Update</td>
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<td>MATT-3 report and discussion: Next decade planning</td>
<td>P. Christensen</td>
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<td>04:20 PM</td>
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<td>Daily wrap-up</td>
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### MEPAG Agenda, Day 2

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<td><strong>2016-18-20 Building Blocks--Definition, Forward Planning</strong></td>
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<td><strong>Meeting reports</strong></td>
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<td>Lunar Roadmap</td>
<td>J. Volosin</td>
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<td>Discussion</td>
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<td><strong>Meeting reports</strong></td>
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<td>Mars Climate Modeling Center (MCMC)</td>
<td>J. Hollingsworth</td>
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<td>Mars Atmospheric Modeling Workshop</td>
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<td>Report on Ground Truth from Mars Workshop</td>
<td>C. Shearer</td>
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<td>Second Workshop on Mars Valley Networks</td>
<td>R. Craddock</td>
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<td>Workshop on Martian Phyllosilicates</td>
<td>Jean-Pierre Bibring</td>
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<td>Planetary Dunes Workshop</td>
<td>L. Fenton</td>
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<td><strong>Open discussion</strong></td>
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<td>Future Planning for MEPAG Activities</td>
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MEPAG Planning, 2009

**ACTIVITY**

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<tr>
<th>2009</th>
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**MEPAG Meetings**
- Mar. 3-4, Rosslyn
- July 22-23 or 28-29, Brown Univ.? (committee work)
- Feb. 17-18, Monrovia

**Committee work**
- MATT-3 (program architecture)
- Mid-range rover SAG
- Decadal Survey themes
- Goal IV Revision
- IMEWG: Mar. 9, Japan

**NRC Decadal Surv.**
- DRA 5.0
- Refined outputs
- ~Sept. 1
- Mars panel peak activity
- panels report

**IMEWG**
- Possible MEPAG support for iMARS Phase II

*Figures and details may vary.*
Must be up to date when submitted to Decadal Survey

- At our last meeting (09-18-08) we completed a major revision process
  - Substantial changes to Goals II and III
- Major new information since then—are our priorities and descriptions of scientific objectives and investigations still current?
  - methane in martian atmosphere
  - Other?
- Goal IV: Revision process tabled until availability of Design Reference Architecture 5.0. This has not been reconsidered in ~5 years