# NASA PI-Team Masters Forum

## *Staying in the Box: Managing Critical Resources*

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**Jet Propulsion Laboratory**
**California Institute of Technology**

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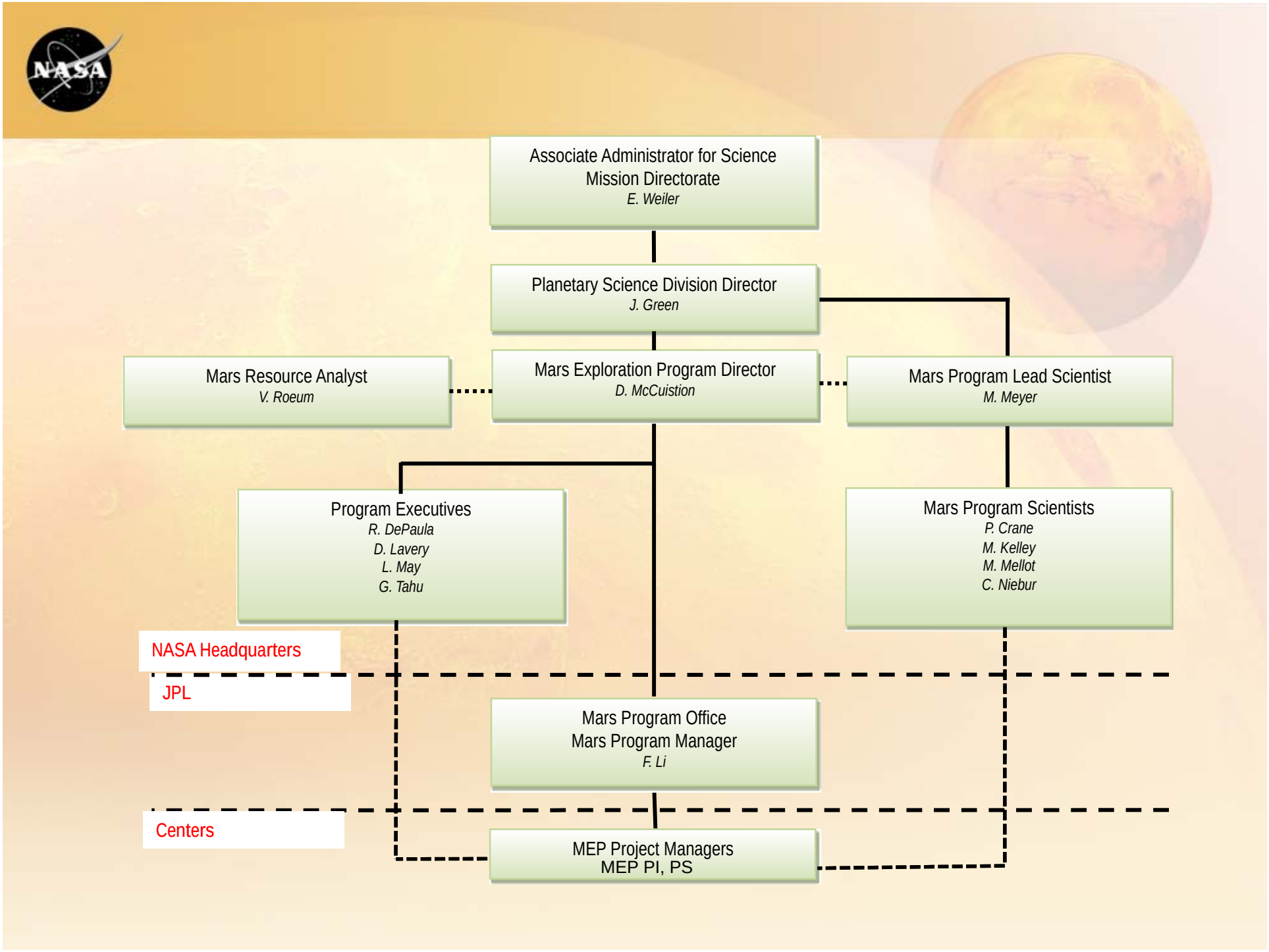
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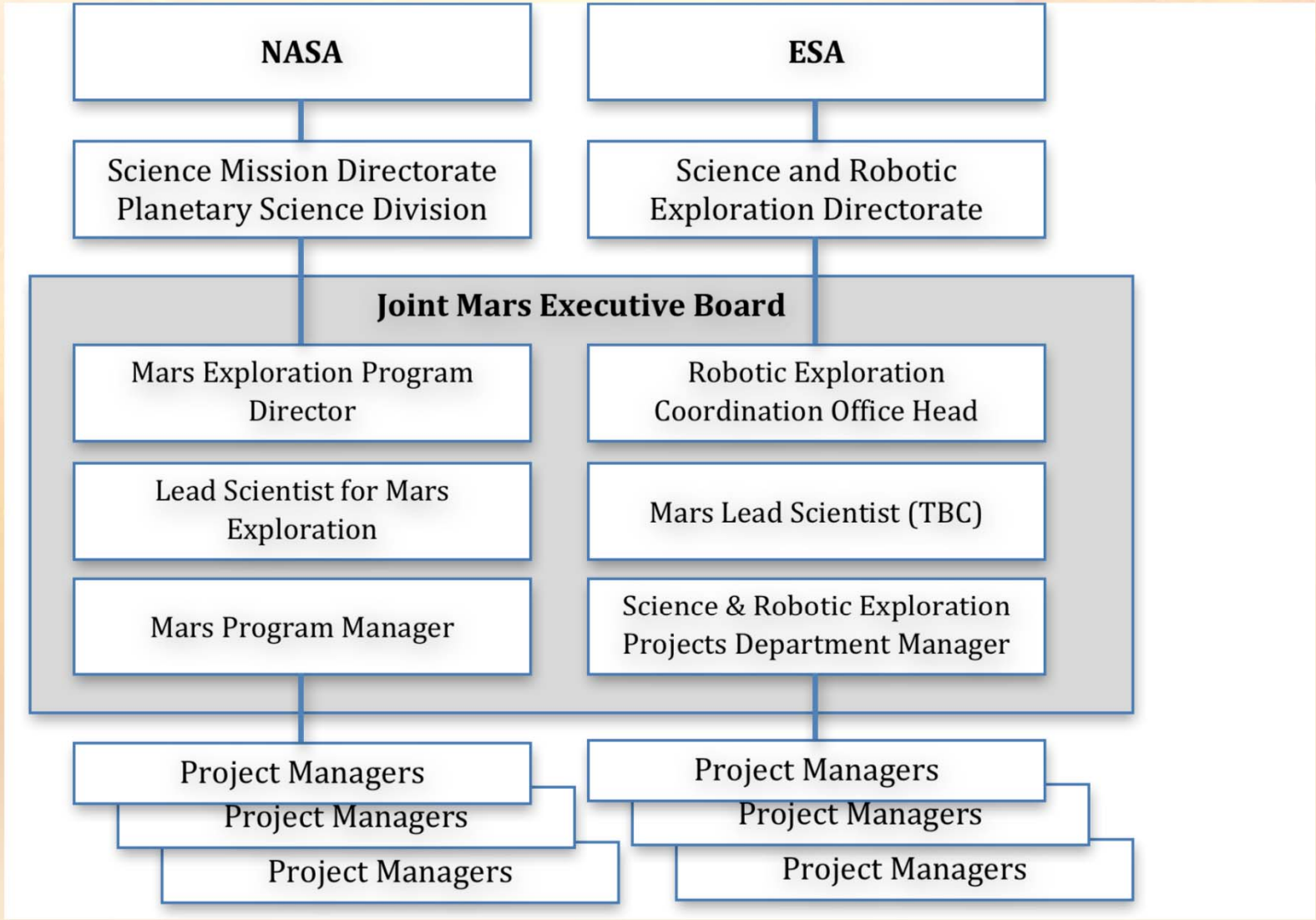
NASA
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Joint Mars Executive Board
Mars Exploration Program
Director
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Coordination Office Head
Lead Scientist for Mars
Exploration
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Mars Program Manager
Science & Robotic Exploration
Projects Department Manager
Project Managers
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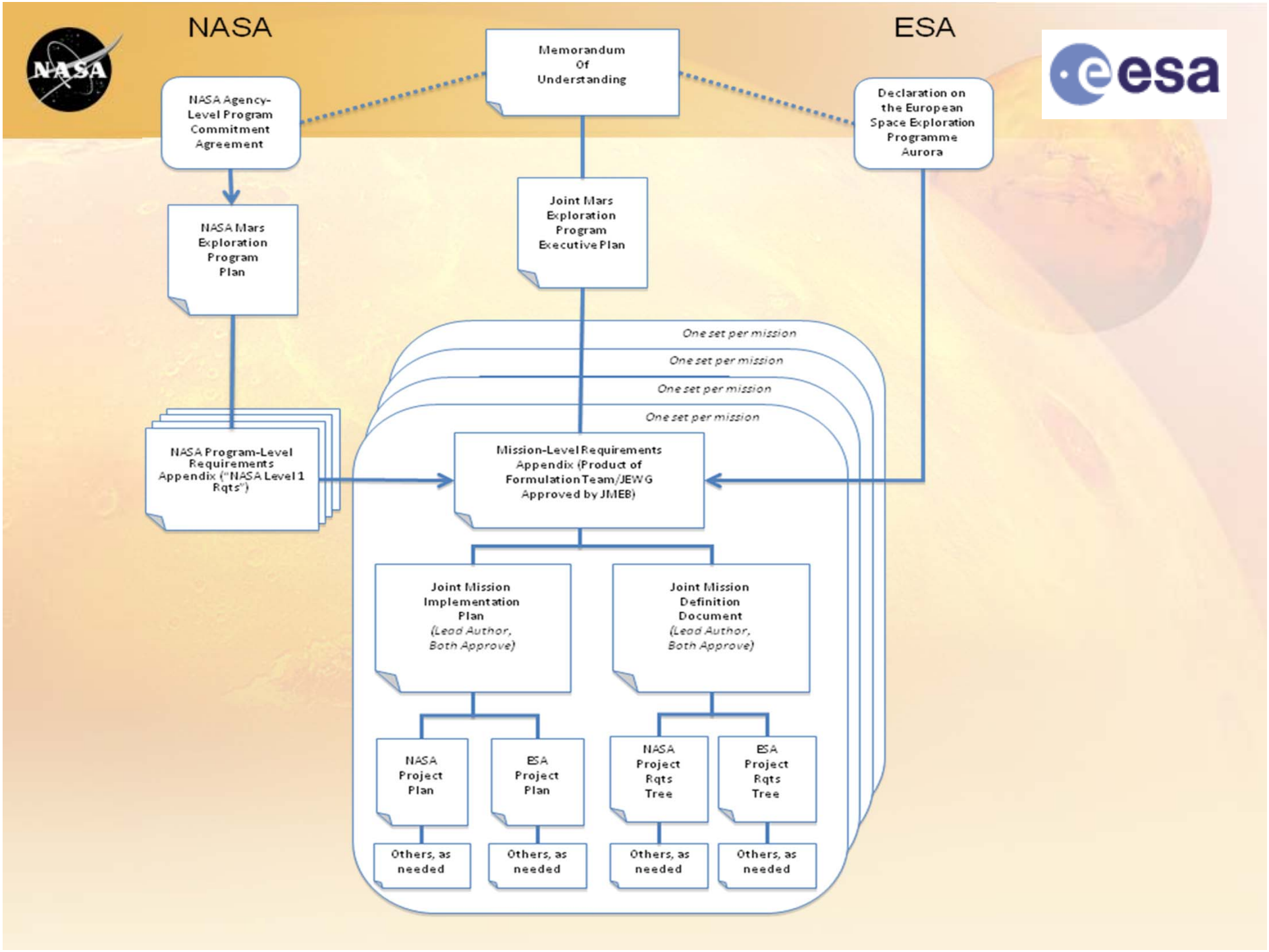
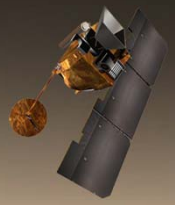
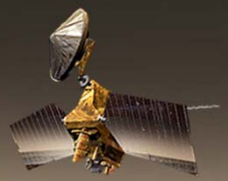
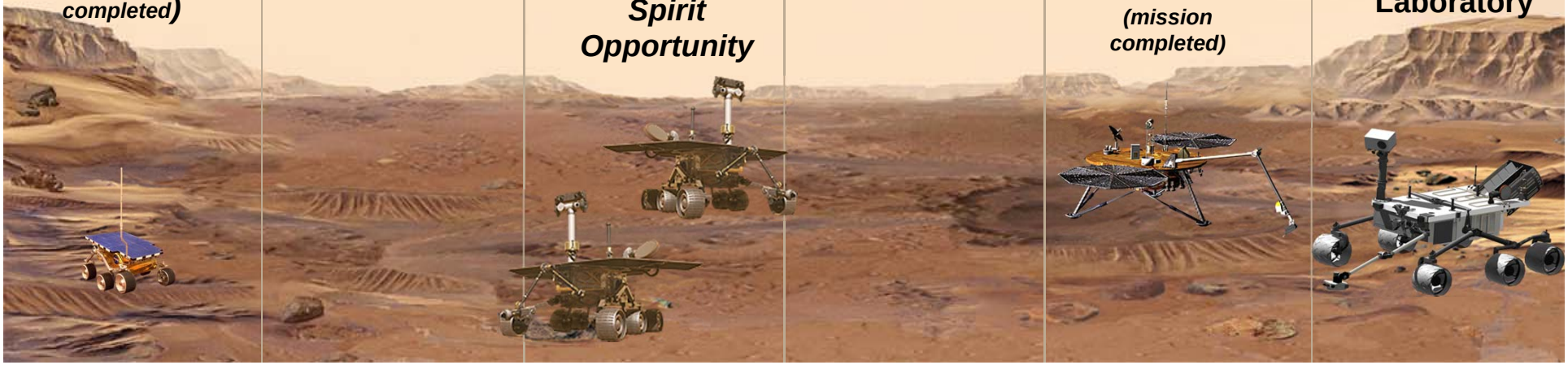

NASA
ESA
Memorandum Of Understanding
NASA Agency-Level Program Commitment Agreement
Declaration on the European Space Exploration Programme Aurora
NASA Mars Exploration Program Plan
Joint Mars Exploration Program Executive Plan
One set per mission
One set per mission
One set per mission
One set per mission
NASA Program-Level Requirements Appendix ("NASA Level 1 Rqts")
Mission-Level Requirements Appendix (Product of Formulation Team/JEWG Approved by JMEB)
Joint Mission Implementation Plan (Lead Author, Both Approve)
Joint Mission Definition Document (Lead Author, Both Approve)
NASA Project Plan
ESA Project Plan
NASA Project Rqts Tree
ESA Project Rqts Tree
Others, as needed
Others, as needed
Others, as needed
Others, as needed

# *This Decade Mars Exploration*

***Launch Year***

| 1996 | 2001 | 2003 | 2005 | 2007 | 2011 |
|---|---|---|---|---|---|
| |  | Mars Express Collaboration |  | | |
| **Mars Global Surveyor** (mission completed) | **Mars Odyssey** | | **Mars Reconnaissance Orbiter** | | |
| **Mars Pathfinder** *(mission completed)* | | **MEP Rovers** ***Spirit*** ***Opportunity*** | | **Phoenix** *(mission completed)* | **Mars Science Laboratory** |



## *Guidelines for Managing Critical Resources*

- **Know what is required, not just desired**
  - *"need, not want"—The Forbin Project*
  - Get consensus with external players, communicate within team
- **Remember that there will be unknowns that become known problems**
- **There will also be knowns that become problems**
  - Give special attention early on to heritage items
- **Be pro-active**
  - Use your reserves (but don't squander them)
- **Balance your portfolio of risks appropriately**

# *Critical Resources*

- **Mass, Power, Money, Schedule**
- **Value**
  - Scientific, Technical & Programmatic Goals
- **Mission Design**
- **Risk**
  - Involved in almost all trades
  - Proactive as well as reactive management
- **Knowledge**
  - What do I know—what can I find out
  - Self/team:  how do I manage when data are not in hand?
  - Heritage comes with liens—do I know what I have?
- **Time**
- **Personnel:  Managing / Working with People**
  - Skill / Experience
  - Aptitude / Motivation / Attitude
  - Level of Effort/Stamina