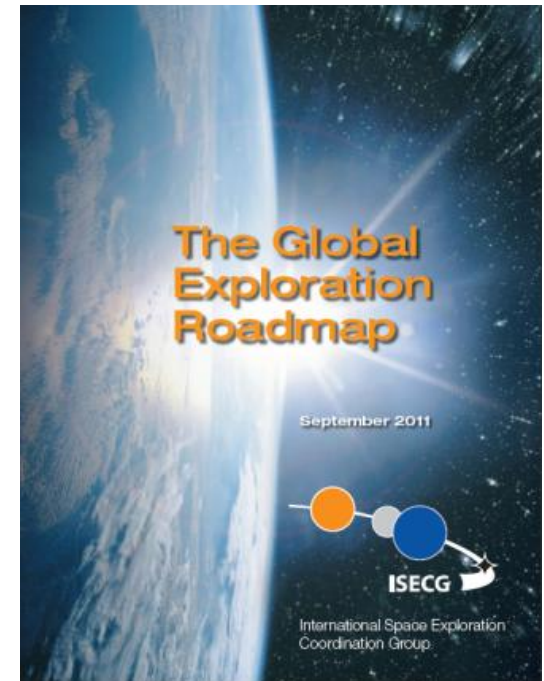


# The ISECG Global Exploration Roadmap

NASA/K. Laurini  
14 November 2011

- ◆ In developing the *Global Exploration Strategy*, agencies agreed to establish a coordination mechanism to advance opportunities for coordination and cooperation
  - ISECG “terms of reference” were developed along these lines
  - First meeting took place in November 2007
- ◆ **ISECG is an agency coordination forum**
  - Focus is on exchange of information regarding current and future plans, and developing products considered important and timely to inform individual agency decision making
  - Avoid duplication with other existing agency coordination forums
- ◆ **ISECG chairmanship rotates approximately once per year**

- ◆ **The first iteration of the Global Exploration Roadmap (GER) was released by ISECG in September 2011**
  - ◆ Second iteration planned Sept 2012
- ◆ **The GER reflects the international effort to collaboratively define technically feasible and programmatically implementable exploration mission scenarios with the common goal of humans on the surface of Mars**
  - ◆ Asteroid Next, Moon Next
- ◆ **A non-binding reference for agencies to inform near-term decisions related to exploration preparatory activities**



# Participating Agencies



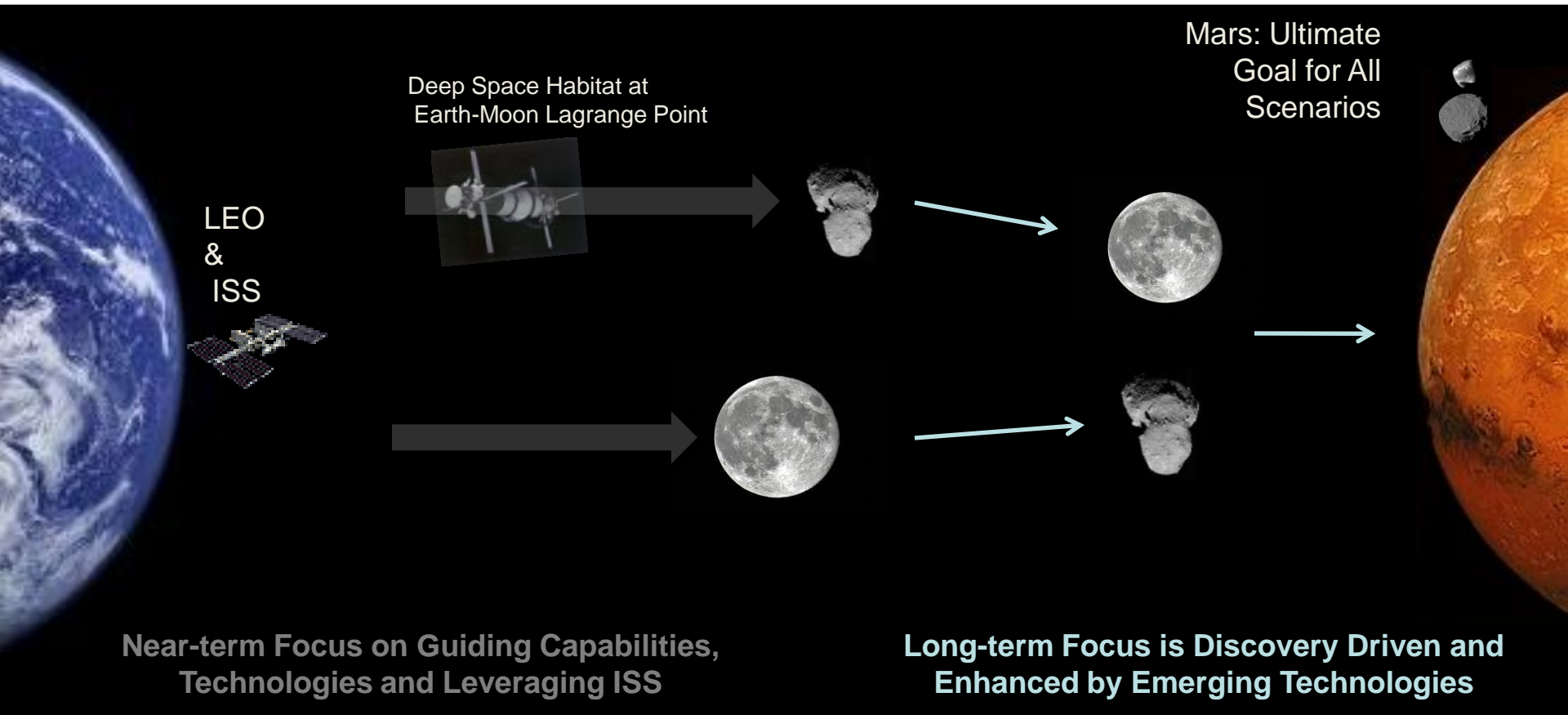
12 space agencies participated in the GER development



## ◆ Three major areas of international discussion

- Goals and objectives
- Mission scenarios which are technically feasible and programmatically implementable
- Near-term collaboration and cooperation of preparatory activities

# Global Exploration Roadmap: Exploration Pathways



# Destination Assessment



	Mars	Moon	Near-Earth Asteroid	LaGrange Points/Cis-Lunar Space
Key Objectives	<p>Search for Life</p> <p>Advance understanding of planetary evolution</p> <p>Learn to live on other planetary surfaces</p>	<p>Characterize availability of water and other resources</p> <p>Test technologies and capabilities for human space exploration</p> <p>Advance understanding of solar system evolution</p> <p>Utilize the Moon's unique importance to engage the public</p>	<p>Demonstrate innovative deep space exploration technologies and capabilities</p> <p>Advance understanding of these primitive bodies in solar system evolution and origin of life</p> <p>Test methods to defend the Earth from risk of collisions with near-Earth asteroids</p>	<p>Expand capability of humans to operate in this strategic region beyond low-Earth orbit</p> <p>Demonstrate innovative deep space exploration technologies and capabilities</p>
Considerations	<p>Significant technology advancements essential for safe and affordable missions</p> <p>Radiation risks and mitigation techniques must be better understood</p> <p>Highly reliable space systems and infrastructure are needed</p> <p>Demonstrated ability to use local resources is essential</p>	<p>Expenses associated with extended surface activities</p>	<p>Need to better understand and characterize the NEA population</p> <p>Technology advancements are needed before missions to NEA</p>	<p>Understand the benefit of human presence vs. robots</p>

# Common Goals in the GER



◆ **Common goals are needed, but recognize that individual agency goals are what is important to an agency**

- Search for Life
- Extend Human Presence
- Perform Space, Earth, and Applied Science
- Perform Science to Support Human Exploration
- Develop Exploration Technologies and Capabilities
- Stimulate Economic Expansion
- Enhance Earth Safety
- Engage the Public in Exploration

◆ **These are to be iterated and will reflect agency/national priorities**



- ◆ **Capability driven framework – follow a step-wise approach to evolving capabilities**
- ◆ **Exploration value – generate public benefits and meet exploration objectives**
- ◆ **International partnerships – provide early and sustained opportunities for diverse partners**
- ◆ **Robustness – provide resilience to programmatic and technical challenges**
- ◆ **Affordability – take into account budget constraints**
- ◆ **Human/Robotic partnership – maximize synergy**

- ◆ **The GER will be updated by agencies to reflect evolving policies and plans and consensus on exploration scenario planning work**
- ◆ **Multiple opportunities to input are expected with each GER iteration**
- ◆ **Main expectations for second iteration, planned for Sept 2012**
  - Reflecting consensus on any updates to Asteroid Next and Moon Next scenarios
  - Reflecting any ISS Partnership decisions regarding additional uses of ISS for exploration
  - 2<sup>nd</sup> iteration will maintain at least 2 mission scenarios considered technically feasible and programmatically implementable
- ◆ **IAF/AIAA Global Space Exploration Conference (GLEX) May 2012**