

# ***NASA Lunar Science Institute***

## ***Commercial Development Summit***

### ***On NASA's Lunar Activities***

***May 13, 2008***

***Greg Schmidt***  
***Deputy Director, NLSI***





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## INTRODUCTION

The NASA Lunar Science Institute (NLSI) is a new organization that supplements and extends existing NASA lunar science programs. NLSI is sponsored by the NASA Science Directorate, but anticipates significant involvement as well with the Exploration Directorate. It focuses on lunar science, helping to re-energize the lunar community in support of NASA missions.



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## NLSI MISSION

- Carrying out and supporting collaborative research in lunar science, investigating the Moon itself and using the Moon as a unique platform for other investigations;
- Providing scientific and technical perspectives to NASA on its lunar research programs, including developing investigations for current and future space missions;
- Supporting and catalyzing the lunar science community and training the next generation of lunar science researchers; and
- Supporting education and public outreach by providing scientific content for K-14 education programs, and communicating directly with the public.



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## WHAT IS LUNAR SCIENCE?

For the NLSI, lunar science is broadly defined to include studies:

- *Of the Moon:* Investigations the nature and history of the Moon (including research on lunar samples) to learn about this specific object and thereby provide insights into the evolution of our solar system
- *On the Moon:* Investigations of the effects of the lunar environment on terrestrial life and the equipment that supports lunar inhabitants, and the effects of robotic and human presence on the lunar environment
- *From the Moon:* Use of the Moon as a platform for performing scientific investigations, including observations of the Earth and other celestial phenomena that are uniquely enabled by being on the lunar surface.



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## KEY QUESTIONS FOR INVESTIGATION

- How did the Moon form and how did its interior structure arise?
- How has the impact history of the Earth-Moon system been recorded on the lunar surface?
- How have volcanic processes on the Moon been initiated over lunar history and how do the volcanic flows reflect the interior composition.
- How have solar processes and space weather altered the lunar surface over time and been recorded in the lunar regolith?
- How will the lunar environment (e.g., dust) affect surface operations and influence designs for living on the Moon?
- What are the environmental conditions and the volatile content of the lunar poles?
- How will increased human activities alter the lunar environment?
- How can life from Earth adapt to long stays on the Moon?
- How can the Moon be used as a platform to advance important science goals in astronomy, Earth observation, and basic physics?



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## KEY DATES

- 10/07 Alan Stern announces NLSI at DPS meeting, assigns management to Ames Research Center
- 11/07 Chris McKay selected to organize first LSC
- 01/08 David Morrison appointed Interim Director
- 02/08 Website up (*[lunarscience.arc.nasa.gov](http://lunarscience.arc.nasa.gov)*)
- 03/08 Search begins for permanent Director
- 03/08 Implementation plan & budgets defined
- 03/08 LSI-central office opens in NASA Research Park
- 04/08 Formal Dedication (April 11)
- 05/08 CAN released for initial team selections
- 06/08 NOIs due from potential proposers
- 07/08 NLSI Lunar Science Conference (July 20-23)
- 08/08 Proposals for membership due
- 11/08 Initial member teams selected
- 12/08 First FY09 funding for selected teams



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## INTERNATIONAL PARTNERSHIPS

NLSI will initiate a program of partnerships with international lunar science organizations to provide collaborative research opportunities for all members of the international science community. Non-U.S. lunar science organizations can propose to become either Associate or Affiliate Members of the NLSI on a no-exchange-of-funds basis.

International partner membership requires long-term commitment from both the partner and the NLSI, together with tangible and specific plans for scientific interaction that will produce results of mutual benefit. Although the focus of this program is research in lunar science, it also includes collaborative activities that address any of the objectives defined in the NLSI Mission Statement, particularly space flight mission support and training of the next generation of lunar scientists. It is preferred that organizations proposing partnership be drawn from a broad range of academic or research groups that are able to represent the lunar science activity within a country.



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## Potential Opportunities for Commercial Development: NLSI contributions

- NLSI Lunar Science Conference (7/20-23/08)
  - Potential for parallel session focusing on commercial opportunities
    - C. McKay (SOC chair) agreed 5/7/08
    - Large, lunar-focused audience dealing with new, broad lunar science focus of NLSI
- IAC Abstract focusing on new opportunities in lunar commerce (9/08)
  - Schmidt, Kelso, Nall, Richards
  - Potential for NLSI talk as well at IAC
- Focus Groups
  - Initiated by NAI; broad impact
  - NAI commercial focus group?





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- Discussion
  - Impact of focus groups
    - NAI Mars focus group
  - Integrating ESMD and SMD interests
    - Technology/Science integration
  - Continuing the spirit of LESC
  - NLSI needs
    - PI-driven; difficult to quantify - but
    - Strategic role for agency

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