International Partnerships

Overarching Question:
How can risk/cost be reduced through cooperation and partnerships in technological developments and demonstrations?

What are the synergies between the exploration goals of potential international partners and the Vision for Space Exploration?

What are the (perceived) obstacles to international cooperation in the Vision for Space Exploration and what are the solutions?

Coordination of missions

Joint participation in missions

Overlap (of instruments, objectives):
Boon or bane?

exploration science resources commerce

Presentations

- CSA
  - Canada wants to participate in VSE by drawing on its strength in robotics, mobility systems, Earth analog sites Lunar outpost and Mars sample return
- ASI
  - Near completion of study on scientific exploration of the Moon Geoscience, Astrophysics, Earth observations. Italian mission will not duplicate existing orbiters
- ISRO
  - Chandrayaan 1 getting ready for launch. Concept for Chandrayaan 2 is orbiter/rover (30-60 kg)
- BNSC
  - Two mission concepts under study. MoonLITE is orbiter/penetrator concept for global network. Moonraker is small soft lander and rover; objectives being defined now
- JAXA
  - Kaguya/SELENE has safely launched and inserted into lunar orbit. Japan objectives are robotic exploration of Moon and Japanese crew member at international lunar base. SELENE is a mission series; SELENE 2 is soft lander/rover with comm. relay (for a far side or polar landing)

Issues discussed

- ITAR effects on cooperation
  - Greatly hinders cooperative work
  - Must comply with law; an overhead cost adding risk and cost to missions
  - Careful writing of TAA avoids largest pitfalls
- Duplication of efforts
  - Recognize that national goals and needs drive missions, so some duplication is inevitable
  - Some cross-checking and calibration between similar data sets is good; also, multiple datasets assure that dropouts are not disastrous
  - Should attempt to keep each other informed on mission plans so as to minimize unnecessary duplication

exploration science resources commerce

Frameworks for Cooperation

- Models of international collaboration efforts
  - GEOSS, program of programs
  - International Conference; joint statement
  - COSPAR; resolution
  - ISS; international legal framework
  - New framework (Kawaguchi); credit exchange system for providing datasets, payload space

Miscellaneous observations

- Develop list of advanced second-generation sensors to fly on future orbital missions
- A lunar GPS system would greatly aid exploration; an opportunity for distributed international participation (could be established and added to by many nations over long period of time)
- International participation in the lunar outpost. Of great value to focus on those elements NASA is NOT base lining (e.g., mobility)