63rd Session of UNCOPUOS Legal Subcommittee

Outcomes of the "International Workshop on Space Resources: Perspectives of New Entrant Space Exploration Programs"

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International Workshop on Space Resources: Perspective of New Entrant Space Exploration Programs

Date & Location

- November 29 - December 1, 2023
- Daejeon, South Korea

Organized by

- Korea Aerospace Research Institute (KARI)
- Korea Institute of Geoscience and Mineral Resources (KIGAM)
- Korea Institute of Civil Engineering and Building Technology (KICT)
- Secure World Foundation (SWF)

MOTIVATION & BACKGROUND

- Growing interest and engagement in space resources by new countries participating in space exploration
- Need to consider approaches to effectively engage new entrants to the space resources ecosystem
- Establishing information-sharing links between the space resources community and the new entrant exploration community is the first step

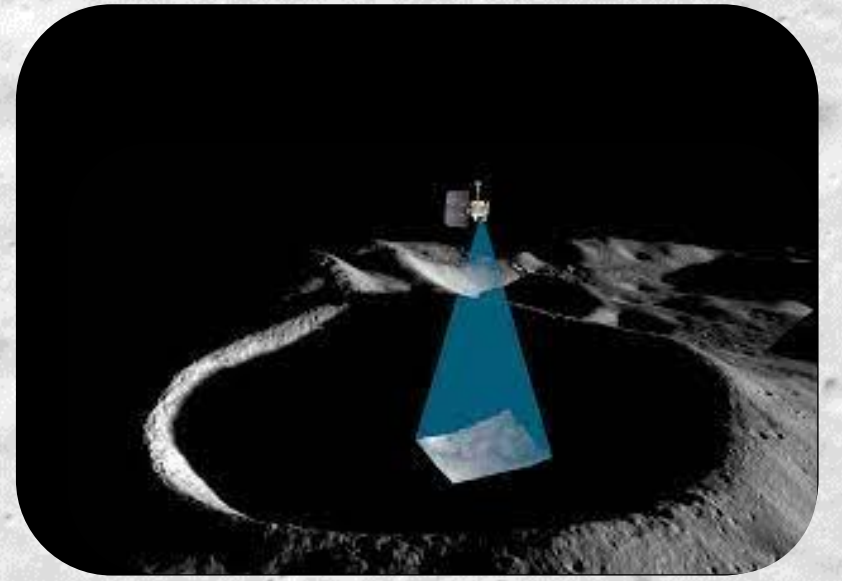


Image: KPLO Shadowcam

MAIN QUESTIONS

- What is the current landscape of participation in the space resources field?
- What is the current state of understanding across science, technology, business, and governance of space resources?
- How can smaller or new entrant countries contribute to the development of space resources activities?
- What partnership models exists to allow smaller or new countries, established countries, and commercial entities to effectively partner in space resources activities? What specific examples of such partnership models can be identified?

WORKSHOP AGENDA OVEVIEW

Day 1 and 2 : **Public Conference**

- Keynotes from ISECG and NASA
- Agency presentations on ISRU activities
- Scientific, Technical, Business and Policy Panels

Day 3 : Expert Workshop

- Scenario exercise
- Moderated discussion

TECHNICAL TOURS

KARI

- AIT Facility
- Ground Station
- KPLO Mission Control Room

KIGAM

- Planetary Payload Development Lab
- Mineral Processing Lab
- Smelting Lab

KICT

- Dusty Thermal Vacuum Chamber
- Simulant Manufacturing Facility
- Extreme Environment Material & Processing Lab

PARTICIPANTS OVERVIEW

Registered Participants: 108

- 33 international
- 75 Koreans

International Speakers: 30

- Government: 18
- Academic: 3
- Industry: 4
- Non-profit/NGO: 5

Countries Represented : 15

- Australia, Brazil, Canada, France, Italy, Japan, Luxembourg, Mexico, Netherlands, Republic of Korea, Romania, Saudi Arabia, Turkey, United Kingdom, United States

AGENCY PRESENTATIONS

Presentation of Space Resources Related Plans and Activities or Interests

- Australia (ASA/CSIRO)
- Brazil (AEB)
- Europe (ESA)
- France (CNES)
- Japan (JAXA)
- Korea (KARI / KIGAM / KICT)
- Luxembourg (LSA)
- Mexico (AEM)
- Turkey (TUBITAK)
- United Kingdom (UKSA)
- United States (NASA)

Planned Missions

- resource assessment
- ISRU technology demo

Use Cases

- propellant, life support
- construction, manufacturing
- agriculture, farming

PANEL DISCUSUSSIONS

1. **Scientific Knowledge and Interests on Space Resources**
2. **In-Situ Resources Utilization (ISRU) Technology**
3. **Private Sector Drivers of Space Resources Activities**
4. **Policy and Governance Issues in Space Resources**

Emphasized Multi-disciplinary

- scientists hearing relevancy of policy, policy makers hearing current status of technology

Exchanged Ideas and Information

- between established and new entrant countries

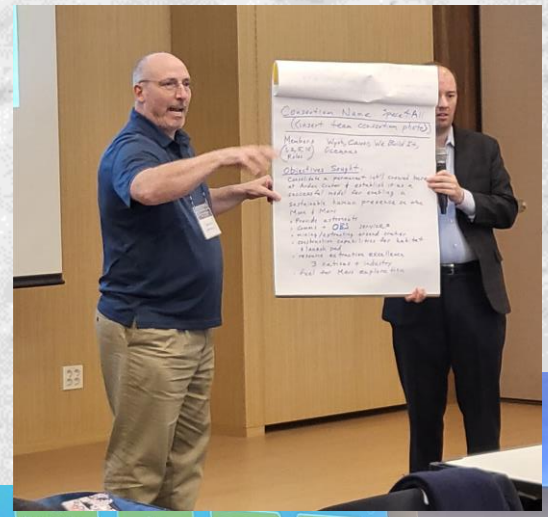
SCENARIO EXERCISE

Space Resources Cooperation Program Design

- Exercise was designed to consider the different objectives, benefits, and challenges in building cooperation in space resources activities
- Participants were asked to build a cooperation model in response a hypothetical scenario
  - The scenario featured an established space agency building a consortium with other actors interested in space resources activities
  - Participants played roles of different actors - commercial, governmental, scientific and civil society organizations
- In proposing this cooperation model the participants considered :
  - The objectives - both individually and as a group
  - The information needed to establish the cooperation
  - The roles each entity will play in the proposed cooperation

SCENARIO EXERCISE - OUTCOMES

- Parties should have clear understanding of their own goals and objectives going into a potential cooperation
- Effective partnerships should consider that each actor may have different priorities for different objectives - not everyone will share all goals equally, but that’s OK
- Governance framework will be needed in near term in order to promote cooperation



MYTH AND CONCERNS

MYTHS

- Large-scale space resources activities are happening in the near future
- Space resources activities are about returning resources to Earth
- Space resources will create “trillionaires” in the near future
- Advanced countries and leading commercial actors will monopolize space resources
- There is immediate potential for geopolitical conflict over space resources

CONCERNS

- Science alone is not a sufficient driver for public support
- Realistic economic assessment is lacking
- Science, commercial, and environmental objectives should be balanced
- Implementation of governance principles should be informed by scientific realities
- New entrant countries should not be left out
- Government-driven competition might increase uncertainty

OVERALL OUTCOMES

- Importance of multidisciplinary interaction and collaboration
- Importance of existence of opportunities to build awareness and partnerships among various actors
- Importance of considering sustainability in developing the space resource ecosystem
- Need for improved communication of the potential benefits of space resources to all stakeholders

RECOMMENDED NEXT STEPS

- More focused efforts should be made in analyzing and communicating the tangible economic and other benefits of space resources
- Platform to enable new entrant nations to share their space resources related plans, capabilities and interests with the space resources community is needed

ANNOUNCEMENT

- AEB and SWF will hold the next workshop in this series in 4Q 2024 hosted by Brazil

THANK YOU

For questions, please contact:

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