



Lunar Surface Innovation

C O N S O R T I U M

LSIC ISRU Focus Group

<http://lsic.jhuapl.edu/>

<http://lsic-wiki.jhuapl.edu/> (sign-up required)

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Today's Agenda

- Summary of where the Focus Group stands
 - Last meeting, Jerry Sanders reviewed NASA ISRU strategy, Funding Opportunities, Gaps in technology and knowledge
- New Communications Capabilities
- Upcoming events
 - Supply & Demand Workshop
 - LSIC Fall Meeting
 - Next Monthly tag-up (yes, we're still having it)
- Next Steps
 - Technology gap analysis
- Open discussion
 - What we can do to make these upcoming events as productive as possible
 - Your goals and needs as institutions and participants and how the LSIC ISRU FG can help you meet them

Communications

- We will use Confluence to enable more rapid communications, break out discussions, and as a repository of information.
- Andrea Harman – APL LSIC Confluence Facilitator.



LSIC Objectives – where we are now

1. Harness the creativity, energy and resources of academia, industry and government in order for NASA to keep the United States at the forefront of lunar exploration → Reflected in our membership
2. Provide a central resource for gathering and disseminating information, results, and documentation → Meetings, website, emails.
In work
3. Identify lunar surface technology *and information* developments most in need of sponsor support and communicate those to NASA → **Gap analysis. Next.**

The ISRU Supply & Demand Workshop

- **Objective:** *to bring potential ISRU consumers and potential producers together to discuss ISRU needs and supply issues*
- **September 17, 12-1700, EST**
- **Format**
 - *5-10 minutes per talk. Focused on Quantities, eg. Mass, purity, timeline, locations*
 - *Two sessions. Supply and Demand, with questions/networking sessions between*
- **Website:** <http://lsic.jhuapl.edu/Events/103.php?id=103>

Supply & Demand Workshop Confirmed Speakers

- **Keynote: [Alexander MacDonald](#)**, NASA Chief Economist
- **Paul Wooster**, SpaceX
- **Kathy Laurini**, Dynetics
- **Clive Neal**, University of Notre Dame
- **Joel Sercel**, TransAstra
- **Robert Zubrin**, Pioneer Astronautics
- **Elliot Carol**, Lunar Resources
- **Dan Faber**, Deep Space Industries
- **Ron Jones**, Firehawk Industries
- **Julie Kleinhenz**, NASA



Fall LSIC workshop October 14-15 <http://lsic.jhuapl.edu/Events>

- Virtual; Hosted by ASU in collaboration with APL.
- Technical focus on the interrelationships between the six LSIC focus areas
- Feature keynote addresses, working sessions, and technical poster presentations
- Abstracts for posters are being accepted through Sept. 11



Next Steps

- How can you benefit the most from the upcoming ISRU Supply & Demand Day and the LSIC 2-day workshop?
 - Participate in the breakout sessions (both workshops will have extensive breakout sessions)
 - Submit abstracts to LSIC and come prepared to discuss technology needs, gaps, challenges
- What's next
 - Next FG meetings Sept 16, Oct 21.
 - Technology gap analyses: from components to complete systems



How is the ISRU FG Meeting your Needs?

ISRU FG Goals

- Identify technology needs
 - Is there more we can do to enable your technology to be part of the ISRU solution?
 - We will address the gaps. First is to identify requirements (Supply & Demand workshop)
- Serve as an information clearinghouse
 - Do you have or are you able to get all the information you need?
- Develop talent, Build a community, and Establish Collaborations among members
 - How is and can the FG enable this for you?

Focus Group Goal

(this will be a discussion on the wiki)

- The ISRU FG is charged to define a single 1-year goal. We will discuss it at next month's meeting and hopefully by email or wiki beforehand.
- It needs to be
 - Impactful
 - Address a clear need by NASA (refer to the previously described challenges)
 - Doable within 1 year
 - Uses capabilities of focus group members
 - Can be accomplished by us with existing resources
 - Beneficial broadly-speaking to all stakeholders

Possible draft: There is a need for XXX kg of YYY resource (list multiple resources) per year by 2030. The first-year goal of the ISRU focus group could be to provide specific recommendations to NASA for maturing the technologies (handling, extraction, purification, storage) needed to achieve those production goals and to provide NASA all critical information needed for creating a roadmap for developing and fielding that technology.

Open Discussion

- What in-situ resources are NOT being discussed enough? What resource should we be talking about extracting and why?
- What information do you need about the surface for helping you refine technologies to extract, purify, and store resources?
- ISRU is a system challenge. What system's level questions are not being addressed sufficiently? Storage? Purification? Power?
- Should the ISRU FG work with other FGs to solve ISRU needs? Which ones, if so? What are the major concerns? (This has been on our minds LSIC wide for a while and will be a topic at the Fall LSIC meeting.)
- Related: In what areas should we beware of 'stovepiping'
- Should we develop sub-FG groups on O₂ and H₂O extraction? The response to our query has been tepid. Does that mean we should discuss O₂ and H₂O topics together, or at least at the same meeting? (we can always do breakout groups even if there is interest among only a few for it).
- Add your idea here!



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