



Who wants to buy and sell on the Moon?

**A community-based approach to techno-economic analysis
for the (cis-)lunar economy**

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LSIC ISRU FG meeting

Background & motivation

- ISRU has no value on its own
- Requires a larger-order system or system-of-systems approach
- Through collaboration, we can identify how our systems will work together
- Historically, functional flow diagrams have been used to do this
- Today, we propose a new method for organic network analysis



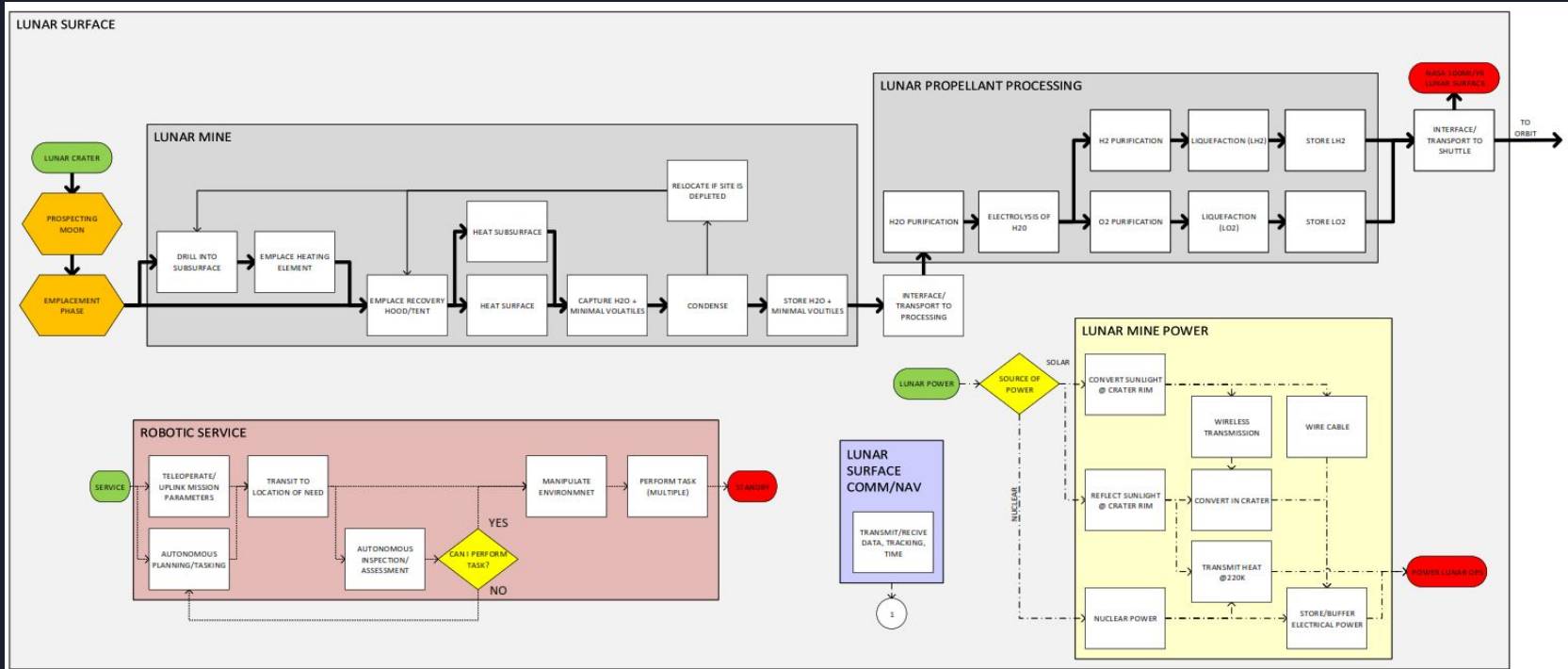


Functional flow methodology

1. Provide objective of functional flow, including what product is being produced (top-down)
2. Collaboratively develop/identify functional flow diagram for desired process
3. Organizations self-identify to functions on the flow that they are currently developing
4. Those organizations can then assign key attributes to that function (e.g., required power, mass, current TRL, etc.)

Example: Lunar propellant production

(Kornuta, et al., 2019)

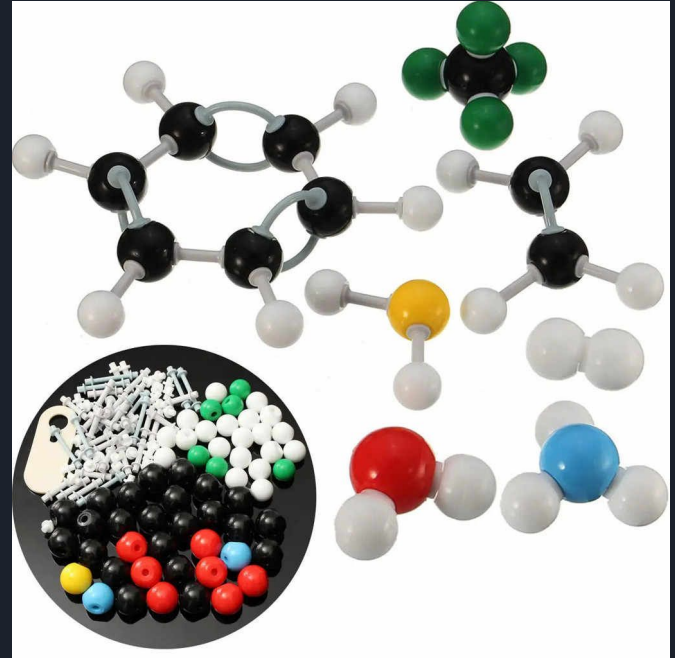




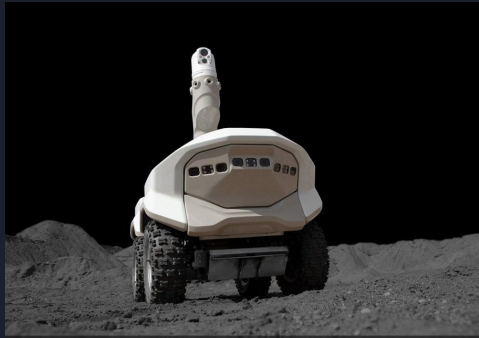
New: Organic Network Methodology

1. Each participant identifies inputs and outputs of their product
2. We then link those inputs and outputs to adjacent products
3. This organically forms the network of intermediate and ultimate product assemblies and customers
4. Possibility that non-obvious relationships and customers will emerge, enabling strengthening of existing business cases and creation of new ones

Chemistry analogy



What might emerge from this study?

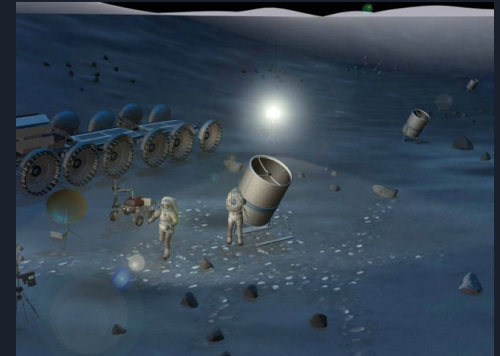


Prototype from SMP Robotics

Lunar prospecting
business case



Lunar GPS consortium



Lunar observatory data
community



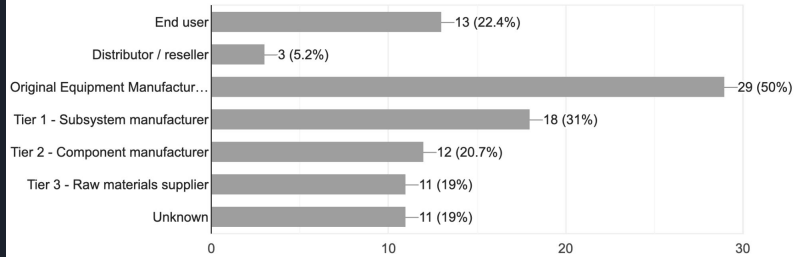
Envisioned benefits of this effort

- Provides platform for organizations to showcase solutions
- Fleshes out areas of the flow that are under or over-saturated
- Can be used to guide development funding in deficient areas
- Enables identification of intermediate and ultimate product assemblies & customers for participants
- Enables bottoms-up estimation of system characteristics

Initial LSIC community survey results

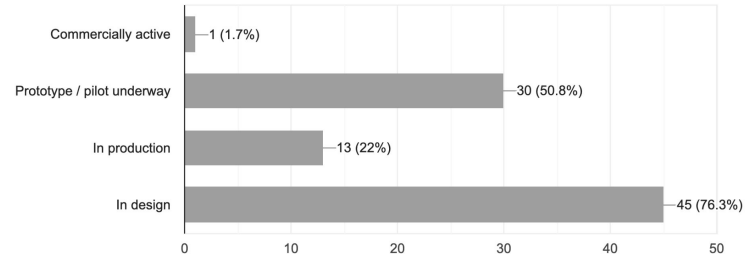
Which of the following describe your organization's Lunar activities?

58 responses



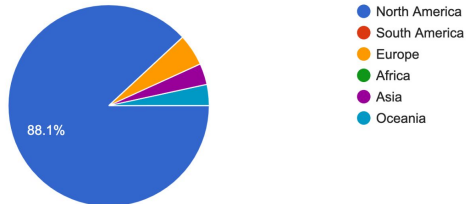
At what stage of development are your core activities relating to the Moon?

59 responses



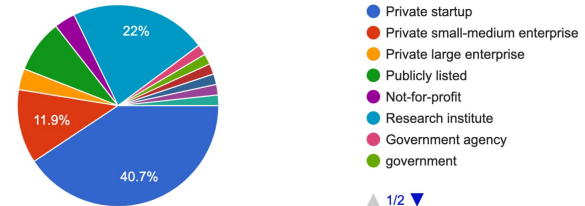
Where is your organization located?

59 responses



How would you classify your organization?

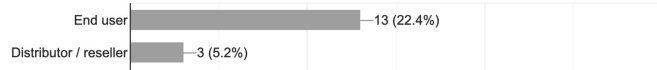
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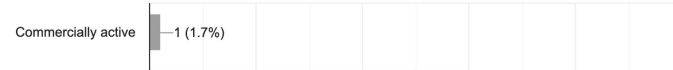
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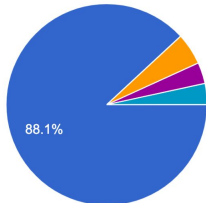


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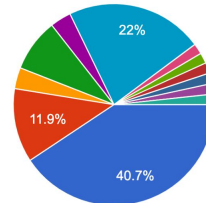
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Participate in the survey:
<https://forms.gle/2KJh4GBMVU5itneH6>



- North America
- South America
- Europe
- Africa
- Asia
- Oceania



- Private startup
- Private small-medium enterprise
- Private large enterprise
- Publicly listed
- Not-for-profit
- Research institute
- Government agency
- government

▲ 1/2 ▼