

# LSIC Surface Power Focus Group

January 28, 2021

Begins at 11:03



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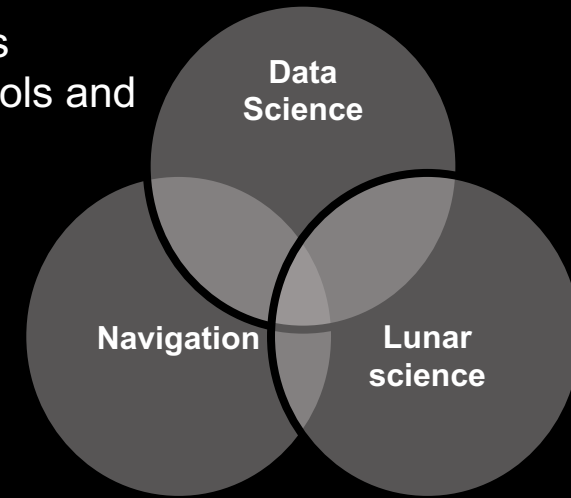
Confluence Discussion:  
<https://lsic-wiki.jhuapl.edu/display/SP/28+January+2021>

# Overview

- LSIC community updates
  - Updates on other FG activities
  - Funding opportunities
  - Subgroups
  - New NASA POC John Scott
- Discussion
  - Annual goal
  - Next steps
- DRPS talk from Dr. Paul Ostdiek
  - DRM and technical discussion



- Upcoming event: Workshop on Lunar Mapping for Precision Landing, March 2-4
  - Bring together as a community lunar scientists, data scientists, and navigation engineers that work on TRN systems for lunar landing
  - Provide insight in the map data and map building process, an overview of map requirements needed to achieve TRN, determine how the community can help NASA catalogue current tools and discuss best practices
- New Subgroup formation to discuss Lunar Sheds/Wadis
  - Requirements, use cases, etc.
- Working to define annual goal. Some questions of note:
  - What are known technology gaps, engineering challenges, and mission needs for extreme locations (e.g., lunar pits, south pole, PSRs)?
  - What are specific use cases and science pull for current STMD technology investments?
- Telecons: Second Thursday of each month, 3 pm ET



<https://jhuapl.zoomgov.com/j/1613074157?pwd=RkpWWklwMGV3a0RnL1FKcHB5TE1BZz09>

Contact: [Facilitator\\_ExtremeAccess@jhuapl.edu](mailto:Facilitator_ExtremeAccess@jhuapl.edu)

# ISRU FG Jan 20 Monthly Meeting Summary

- The “ISRU Library and Resources” page on Confluence ISRU section is active and being populated with resources. We post ISRU tech resources you want to provide to the community, including NASA reports, .pptx presentations, as well as links to peer-reviewed literature.
- 
- Lunar Trailblazer mission from an ISRU perspective - Dr. Bethany Ehlmann
  - The Trailblazer observations and how they can potentially inform on the abundance and distribution of ice in PSRs.
  - Discussions can be followed on Confluence in the ISRU pages under [“ISRU Conversations/Trailblazer”](#)
- 
- ISRU Technology Considerations for Preserving the Lunar Environment – Dr. Parvathy Prem
  - Planetary protection, in terms of protecting/preserving the pristine lunar environment from the effects of human activity.
  - We are just beginning this conversation. Definitions and requirements are needed. Concerns need to be quantified as well as understanding scale of effects due to human activities. This may impact how to optimize technology for operation on the Moon.
  - Discussions can be followed on Confluence in the ISRU pages under [“ISRU Conversations/ISRU Technology Perspective on Impacting the Lunar Environment”](#)

# LSIC Dust Mitigation Workshop

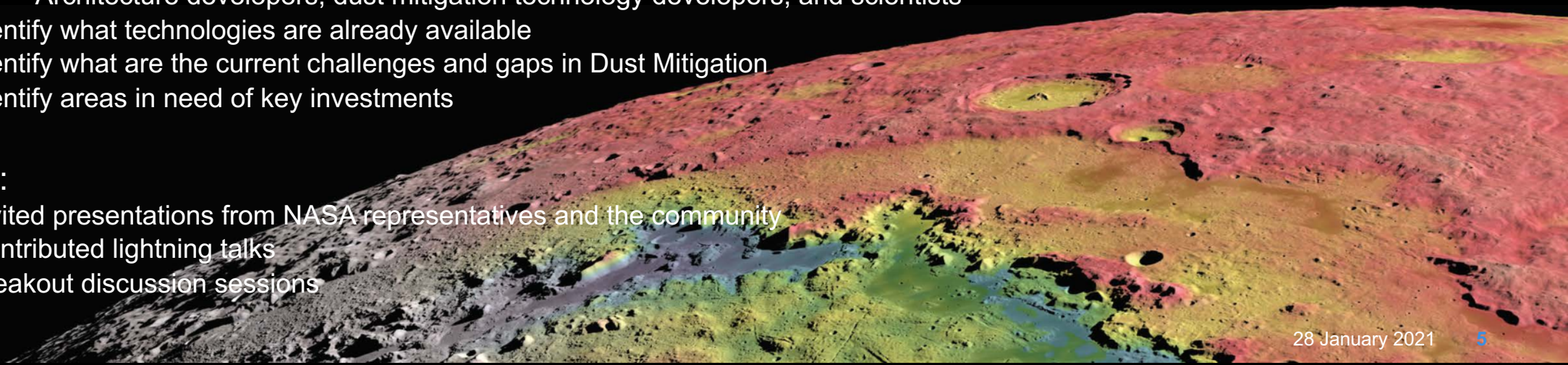
- Dates: Thursday, February 4
- Time: 11 AM to 5 PM Eastern Time
- Registration is required, closes January 31
- Workshop website (Includes Agenda):
- <http://lsic.jhuapl.edu/Events/Agenda/index.php?id=118>

- Workshop Objectives:

- Bring together key stake holders:
  - Government, Industry, Academia, and Non-profit
  - Architecture developers, dust mitigation technology developers, and scientists
- Identify what technologies are already available
- Identify what are the current challenges and gaps in Dust Mitigation
- Identify areas in need of key investments

- Format:

- Invited presentations from NASA representatives and the community
- Contributed lightning talks
- Breakout discussion sessions



# LSIC | Space Tech: Current Funding Opportunities

## Watts on the Moon

*Phase 1 Registration and Submission Deadline: 25 March 2021, up to \$5M*

Energy distribution, management, and/or storage that address NASA technology gaps and can progress toward flight readiness and future operation on the lunar surface.

<https://www.herox.com/WattsOnTheMoon>

## Other opportunities:

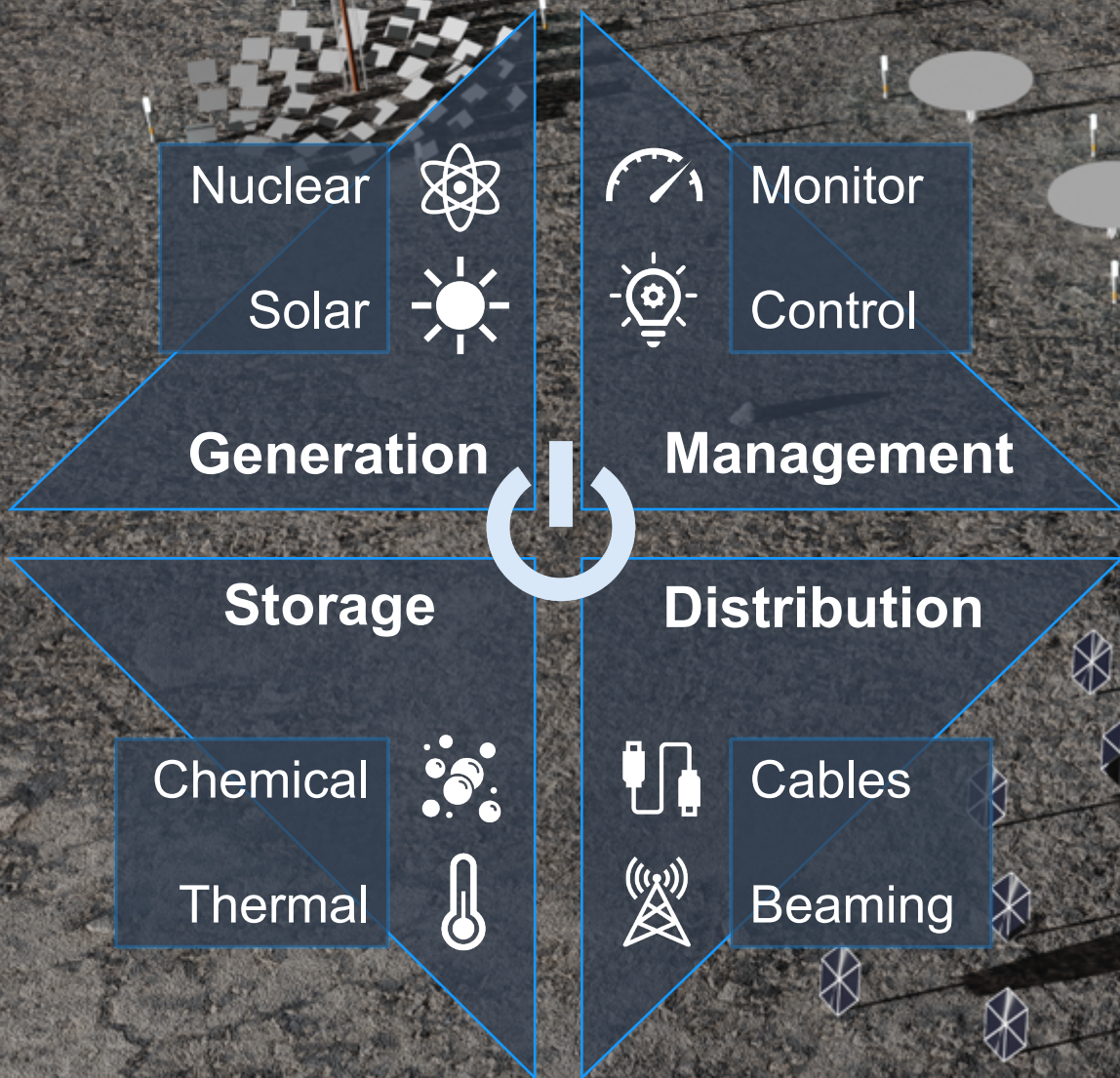
<https://www.nasa.gov/directorates/spacetech/solicitations>

**Future Solicitations include DoE opportunities:**

Nuclear Thermal Propulsion

Fission Surface Power

# LSIC | Surface Power: Subgroups



- **Generation/Storage**
  - General Interest
  - Nuclear generation
  - Fuel Cells
- **PMAD**
- **Inter-relationships with other focus groups?**
- **Requirements and standards?**

# LSII | NASA Surface Power Point of Contact

- **John Scott, Principal Technologist for Power at Space Tech (STMD)**
  - Previously Chief Technologist, NASA Propulsion and Power Division





# LSIC | Surface Power Focus Group annual goal

An aerial view of a lunar base on the dark, cratered surface of the moon. The base consists of several interconnected white and grey modules, some with yellow accents. A large, curved solar panel array is visible in the lower right, and a smaller, circular solar panel is in the upper right. A small rover is moving across the surface in the lower left, leaving a trail of dust. The scene is illuminated from the left, casting long shadows.

*NASA needs power systems which can survive the lunar night and enable exploration. The first annual goal of the surface power focus group is:*

**Provide specific recommendations and a staged road map to NASA for rapidly achieving appropriate-scale power-related technologies needed to enable sustained presence and exploration, in the context of a polar lunar outpost.**

# LSIC | Surface Power Focus Group Next Steps

## Related activities and potential output:

- Determine the “right scale at the right time and place”
  - Understand the economic and institutional drivers that set the scale of power demand
  - Identify near-term needs for immediate prioritization and long-term goals that impact early architecture decisions
- Output could be in the form of:
  - Power scaling roadmap/report
  - Workshop connecting producers and demand
  - Survey of critical parameters needed for power grid model development
  - Long-form telecon on standards to ensure interoperability

# LSIC | Presentation:

## Radioisotope Power Systems Program

- Dr. Paul Ostdiek, JHU APL
  - Previous experience includes Air Force, commercial industry
  - Supports NASA's Radioisotope Power Systems Program
  - Expertise/interests in semiconductor device fabrication, optics, RF/microwaves, lasers, and radiation-hardened electronics - as well as energy conversion for power sources, and time transfer and PNT technology





# RADIOISOTOPE POWER SYSTEMS PROGRAM

Lunar Surface Innovation Consortium : Surface Power Focus Group  
January 28 Group Telecon  
Lunar Design Reference Mission using a Dynamic RPS

Paul Ostdiek, PhD  
JHU/APL Program Manager

# LSIC | Open Discussion

- Discussion captured on Confluence
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