



# Lunar Surface Innovation

C O N S O R T I U M

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## Extreme Access Focus Group Telecon

January 13, 2022

We'll start around 3:03-3:05

Dr. Angela Stickle  
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JHU Applied Physics Laboratory

Facilitator\_ExtremeAccess@jhuapl.edu



JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY

# Today's Agenda



- LSIC Updates
- Upcoming Meetings/Opportunities
- SpaceROS RFI Discussion
- Technology Spotlights
- Open floor and Discussion

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## 13 January 2022

<https://lsic-wiki.jhuapl.edu/x/64uXAQ>

Created by Sarah Withee, last modified by Angela Stickle just a moment ago

Add a comment below to sign in and discuss.

Please add yourself to the [Who's Who](#) if you haven't had a chance. Feel free to add any info about what you're hoping to get out of the LSIC network (collaborations, etc) in "other comments"

[Check out the LSIC Facilities Database!!](#)

1. Add a comment to sign in
2. Select an agenda topic and comment your thoughts
3. Follow-up after the telecon to continue to discussion!

[Questions/discussion around ROS RFI](#)

### Technology Spotlights

[Will Chambers and Amalaye Oyake SpaceROS](#)

[Steve Hart Traclabs Integrating ROS 2 with Core Flight System](#)

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Confluence is an important resource to provide asynchronous discussion opportunities and a record of conversations



Write a comment...

# LSIC Updates

## *Funding Opportunities*

- 2022 Breakthrough, Innovative and Game-Changing (BIG) Idea Challenge: Extreme Terrain Mobility Challenge
  - <http://bigidea.nianet.org/competition-basics/>
  - Proposal and Video deadline: January 18, 2022
- NIAC Phase III
  - Preliminary proposals due January 28, 2022
- NASA SBIR/STTR Phase I Solicitation
  - Proposals due March 9, 2022
  - <https://sbir.nasa.gov/solicitations>
- NSF SBIR/STTR Phase I Solicitation
  - Proposals due March 23 2022
  - <https://www.nsf.gov/pubs/2022/nsf22551/nsf22551.htm>
- Please visit LSIC website for full list
  - <http://lsic.jhuapl.edu/Resources/Funding-Opportunities.php>

# LSIC Spring Meeting Planning



- Spring meeting is more for general updates and discussions and doesn't have a "technical theme" like the fall meeting
- Are there specific high-priority topics you would like to see included in the LSIC Spring Meeting?
- Please add ideas to: <https://app.sli.do/event/9WJnFKk98qzPZ1zL1sX8Sw/live/polls>

# Regolith to Rebar: Joint ISRU – E&C Metal Workshop on Feb. 23, 2022

- One-day virtual workshop that looks into the supply and demand sides of in-situ derived metals derived from O<sub>2</sub>-extraction and other technologies.
- Speakers from NASA leadership and industry on supply and demand sides. Panel discussion.
- Some issues to be addressed :
  - Discuss infrastructural needs for the use of metals.
  - Discuss feasibility of metal-specific manufacturing processes on lunar surface.
  - Develop concepts for how to integrate the two sides, including identifying possible roles for NASA.
  - Identify gaps and challenges in metal construction on lunar surface.
  - Discuss economic feasibility of metallic yields and any desired associated additional processing, including areas ripe for improvement.
- Registration required. For more information and registration go to <https://lsic.jhuapl.edu/Events/Agenda/index.php?id=177>

***Over-arching goal is to develop a common and realistic mutual understanding of what is possible for metal ISRU in the near-term (next 5-10 years).***



# Upcoming Meetings

- Focus Group Telecons (2<sup>nd</sup> Thursday each month, 3-4 pm EST)
  - January 13, 2022
  - February 10, 2022
- Lunar Surface Science Workshop
  - Inclusive Lunar Exploration, January 26-27, 2022
  - <https://www.hou.usra.edu/meetings/lunarsurface2020/>
  - Free, but registration is required
- Institute of Navigation: Precise Time and Time Interval Systems and Applications (PTTI)
  - January 25-27, 2022
  - In person: Long-beach CA, but virtual options available too
- Lunar Surface Science Workshop
  - Heliospheric Applications Enabling and Enabled by Human Exploration of the Lunar Surface
  - <https://www.hou.usra.edu/meetings/lunarsurface2020/>
  - Free, but registration is required
  - Abstracts due: January 18, 2022

## *Subgroup Meetings*

- PNT Subgroup meeting: January 20, 2022
- Comms: January 19, 2022
  - Will be providing a status update in February
- Mobility: January 27, 2022
- TRN: Early February
  - Discussion of hardware trades between MSL and Ingenuity TRN systems



# Moonlight call for use cases

What would you do when Lunar Communications and Navigation Services (LCNS) will be available around the Moon?

- The Moonlight initiative (ESA is encouraging European space companies to put a constellation of telecommunications and navigation satellites around the Moon) put out a RFI
- Seeking ideas and use cases for the proposed Lunar Communications and Navigation Service

## TIMELINE OF THE CALL FOR IDEAS CAMPAIGN



- 28 October 2021: Call announced at the IAC 2021
- 10 January 2022: Call for Ideas opens
- 30 April 2022: Idea submission deadline, start of the review
- 2 May 2022: Authors notified of initial idea evaluation
- 31 May 2022: First review outcomes, ideas selected for advancement
- June 2022: Dedicated 1-to-1 meetings at ESA establishments
- Q2/Q3 2022: 2nd LCNS User Engagement Workshop

Submit your ideas before the 30th of April 2022

<https://ideas.esa.int/servlet/hype/IMT?documentTableId=45087661362955447&userAction=Browse&templateName=&documentId=335dbe1a8f262b8e3fbd02bcfb89de12>

- NASA + Blue Origin are collaborating on the Space Robot Operating System (SpaceROS)
- The SpaceROS team has posted an RFI to gauge interest
- Want feedback from diverse academic, commercial, and government entities to help steer the development of Space ROS capabilities and requirements.
- The information provided will help focus development of the Space ROS community and technology roadmap.
- <https://sam.gov/opp/eec121cac3bb483e93f04ce38714ed64/view>
- Feedback due: **31 January 2022**
- Template provided in RFI to guide response

# Technology Spotlight

Stephen Hart (Traclabs)

Integrating ROS2 with the Core Flight System

# Technology Spotlight

## Amalaye Oyake (Blue Origin)

SpaceROS Development



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- Confluence is our record of discussions and a good repository
  - Confluence is free to you and available to all registered LSIC members
  - We will be using Confluence to document discussions and provide resources to LSIC members. All focus groups have a separate page so it's a good collaboration space.
  - To request an account, please email Andrea Harman: [ams573@alumni.psu.edu](mailto:ams573@alumni.psu.edu)
- Technology Spotlights/Lightning Talks at monthly telecons
  - Anyone can volunteer to give a lightning talk (10-20 mins)
  - Email Angela or Sarah, or comment on Confluence, to sign up!
- Updates to the webpage - <http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php>
  - Notes, slides, recordings from telecons posted here

Follow the Code of Conduct for all Focus Group communications

# Contact information

LSIC Director: Rachel Klima, [SES-LSIC-Director@jhuapl.edu](mailto:SES-LSIC-Director@jhuapl.edu)  
<http://lsic.jhuapl.edu>

Focus Group Area	Listserv address	Facilitator
In-Situ Resource Utilization	<a href="mailto:LSIC_ISRU@listserv.jhuapl.edu">LSIC_ISRU@listserv.jhuapl.edu</a>	Karl Hibbitts
Surface Power	<a href="mailto:LSIC_Power@listserv.jhuapl.edu">LSIC_Power@listserv.jhuapl.edu</a>	Wes Fuhrman
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Dust Mitigation	<a href="mailto:LSIC_DustMitigation@listserv.jhuapl.edu">LSIC_DustMitigation@listserv.jhuapl.edu</a>	Jorge Núñez



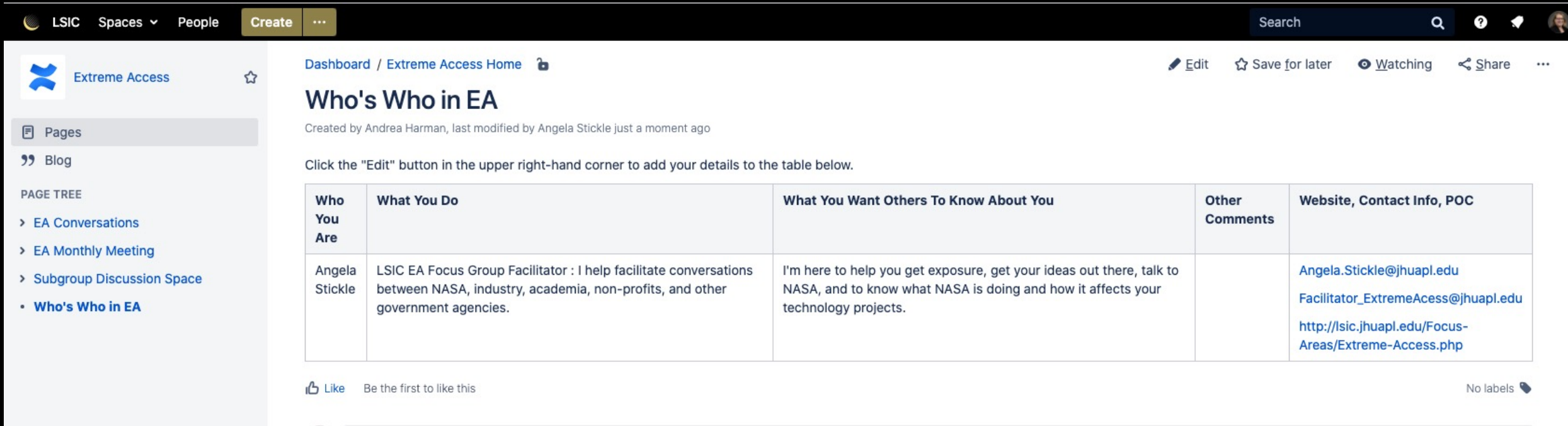
# LSIC Meeting Cadence

- **Bi-Annual Meetings (Spring and Fall)**
- **Monthly Focus Group Meetings**
  - 2<sup>nd</sup> Tuesday of the Month 3:00-4:00 pm – Extreme Environment
  - 2<sup>nd</sup> Thursday of the Month 3:00-4:00 pm – Extreme Access
  - 3<sup>rd</sup> Wednesday of the Month 3:00-4:00 pm – ISRU
  - 3<sup>rd</sup> Thursday of the Month 12:00-1:00 pm – Dust Mitigation
  - 4<sup>th</sup> Thursday of the Month 11:00 am-12:00 pm – Surface Power
  - 4<sup>th</sup> Wednesday of the Month 2:00-3:00 – Excavation and Construction
- **Thematic Workshops (as identified by FGs and NASA POCs)**
  - Workshops In development Funding, CLPS Provider



# Get to know the community

<https://lsic-wiki.jhuapl.edu/x/0IVf>



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## Who's Who in EA

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Click the "Edit" button in the upper right-hand corner to add your details to the table below.

Who You Are	What You Do	What You Want Others To Know About You	Other Comments	Website, Contact Info, POC
Angela Stickle	LSIC EA Focus Group Facilitator : I help facilitate conversations between NASA, industry, academia, non-profits, and other government agencies.	I'm here to help you get exposure, get your ideas out there, talk to NASA, and to know what NASA is doing and how it affects your technology projects.		<a href="mailto:Angela.Stickle@jhuapl.edu">Angela.Stickle@jhuapl.edu</a> <a href="mailto:Facilitator_ExtremeAccess@jhuapl.edu">Facilitator_ExtremeAccess@jhuapl.edu</a> <a href="http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php">http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php</a>

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Who's Who in ISRU: <https://lsic-wiki.jhuapl.edu/display/ISRU/Who%27s+Who+in+ISRU>

Who's Who in Surface Power: <https://lsic-wiki.jhuapl.edu/display/SP/Who%27s+Who+in+LSIC-Surface+Power>

Who's Who in E&C: <https://lsic-wiki.jhuapl.edu/pages/viewpage.action?pageId=6260179>

Who's Who in EE: <https://lsic-wiki.jhuapl.edu/display/EE/Who%27s+Who+in+LSIC-EE>