

# Extreme Access Focus Group Telecon

**December 10, 2020** 

Dr. Angela Stickle Senior Research Scientist JHU Applied Physics Laboratory

Facilitator\_ExtremeAccess@jhuapl.edu





## Today's Agenda

- Communications
- Upcoming Opportunities
- Technology Spotlight Dr. Patrick McGarey, JPL
  - A Tethered Architecture for Long-Distance Power and Communication Transmission to Support Lunar Operations
- Open floor and Discussion

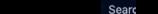




#### Communications

- Confluence is our record of discussions and a good repository
  - Confluence is free to you and available to all registered LSIC members
  - To request an account, please email Andrea Harman: <a href="mailto:ams573@alumni.psu.edu">ams573@alumni.psu.edu</a>
- Technology Spotlights/Lightning Talks at monthly telecons
  - Anyone can volunteer to give a lightning talk (10-20 mins)
  - Email Angela to sign up!
- Monthly LSIC newsletter –edition came out last week
  - http://lsic.jhuapl.edu/Resources/
- Mailing list
  - The listserv goes to all participants. Use with caution. But feel free to use!
  - Follow the Code of Conduct, found on the Resources webpage
- Updates to the webpage <a href="http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php">http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php</a>
  - Notes, slides, recordings from telecons posted here

Follow the Code of Conduct for all Focus Group communications





**Extreme Access** 

L LSIC Spaces >

Create

0

Pages

99 Blog

PAGE TREE

> EA Conversations PAGE T EA Monthly Meeting

> EA ( 10 December 2020

~ EAN Discussion of Lunar Architec

· Discussion of Presentation by

> 12 November 2020

10 September 2020

13 August 2020

· 09 July 2020

18 June 2020

• 13

v 11

. 0

• 18

Dashboard /... / 10 December 2020

#### ☆ Save f

#### Discussion of Lunar Architecture

Created by Angela Stickle, last modified by Terry Fong on Dec 09, 2020

Let's discuss ideas and feedback for lunar architecture - infrastructure that would enable and facilitate future missions.

Examples of "architecture":

- Commercial Lunar Payload Services (CLPS) provides "routine" transportation of payloads to the lunar service.
- · NASA Deep Space Network provides data communication between spacecraft and Earth
- . Mars orbiters (MRO, Mars Express, Mars Odyssey, etc) provides comm relay between Mars surface and Earth

Infrastructure needed for the Moon (emphasis on surface/subsurface missions)

- Data communications
  - far side
  - relay (surface to Earth)
  - on-demand
  - · subsurface relay
- · Positioning, navigation, and timing (PNT)
- · Remote monitoring imaging for and of missions (similar to what MRO provides for Mars)
- · Surface power generation and distribution / provisioning
- · High-performance distributed computing equivalent of "cloud computing"

Where can we go on the surface that would:

- 1. Drive innovation?
- 2. Utilize technology currently being developed?
- 3. Answer high-priority science goals?

y when s je) in min

Be the first to like this



Write a comment...

Content posted to LSIC must be approved for public release. Remember to safeguard your intellectual property when sharing informatic lassian Ne of LSIC. Please keep LSIC's code of conduct (available on homepage) in mind when posting.

## **Upcoming Meetings**

- Focus Group Telecons (2<sup>nd</sup> Thursday each month, 3-4 pm EDT)
  - December 10, 2020
  - January 14, 2021
- Lunar Surface Science Workshop
  - Space Biology, January 20-21, 2021
  - Structuring Real-Time Science Support of Artemis Crewed Operations, February 24-25, 2021
  - Free, but registration is required
  - https://www.hou.usra.edu/meetings/lunarsurface2020/
- American Geophysical Union Annual Meeting, December 1-17 2020



### Other Notes of Interest

- Current Funding Opportunities:
  - 2021 BIG IDEA CHALLENGE: Dust Mitigation Technologies for Lunar Applications (due 12/13)
    - http://bigidea.nianet.org/2021-challenge/
  - Lunar Vertical Solar Array Technology (due 12/14)
    - https://nspires.nasaprs.com/external/solicitations/summary!init.do?solId={68A7EFE3-1B4F-5AA1-A169-119D97C8DB8F}&path=open
  - Watts on the MoonCentennial Challenge
    - https://www.herox.com/WattsOnTheMoon
    - Phase 1 Registration and Submission Deadline: 25 March 2021
  - Break the Ice Lunar Challenge
    - https://breaktheicechallenge.com/
    - Registration and System Architecture Submission Deadline: 18 June 2021



### Discussion of Lunar Infrastructure

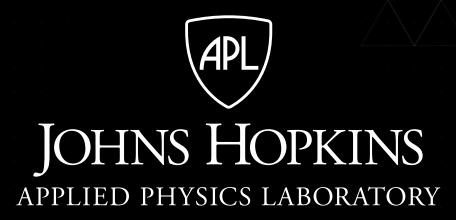
Please join the discussion on the Confluence page for LSIC Extreme Access

https://lsic-wiki.jhuapl.edu/display/EA/Discussion+of+Lunar+Architecture

- We are looking for feedback from the group about potential future lunar architecture infrastructure that would enable and facilitate future missions
- Where can we go on the surface that would:
  - Drive innovation?
  - Utilize technology currently being developed?
  - Answer high-priority science goals?
- What infrastructure is required? Why? Does it exist yet?



# Technology Spotlight Dr. Patrick McGarey (JPL)





# Contact information

LSIC Director: Rachel Klima, SES-LSIC-Director@jhuapl.edu http://lsic.jhuapl.edu

Focus Group Area	Listserv address	Facilitator
In-Situ Resource Utilization	LSIC_ISRU@listserv.jhuapl.edu	Karl Hibbitts
Surface Power	LSIC_Power@listserv.jhuapl.edu	Wes Fuhrman
Extreme Environments	LSIC_ExtremeEnvironment@listserv.jhuapl.edu	Ben Greenhagen
Extreme Access	LSIC_ExtremeAccess@listserv.jhuapl.edu	Angela Stickle
Excavation and Construction	LSIC_ExcavationConstruction@listserv.jhuapl.edu	Athonu Chatterjee
Dust Mitigation	LSIC_DustMitigation@listserv.jhuapl.edu	Jorge Núñez

#### **STMD Opportunities for Academia and Industry**

\$250M STMD Tipping Point Multiple Awards: Jan – Mar 2020 Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Phases I, II, II-E, Civilian \$212M Commercialization Readiness Pilot Program (CCRPP), Sequential: Phase I Solicitation Jan – Apr 2020 **Announcement of Collaborative Opportunity (ACO):** \$10M Jan - Mar 2020 STMD Note: Funding awards are approximate and subject to change Flight Opportunities Tech Flights: Feb – May 2020 \$10M anticipates Open Solicitations as of Early Career Faculty (ECF): Feb – Apr 2020 \$6M awarding June 5, 2020 Early Stage Innovations (ESI): Apr – Jun 2020 \$9M Solicitations were/will be open in the ~\$600M timeframe specified in italics **NASA Innovative Advanced Concepts** to academia and (NIAC) Phases I, II, III: \$4M Phase I Solicitation Jun - Jul 2020 industry \$30M Space Technology Research Institutes (STRI): Jun – Aug 2020 supporting 2020 NASA Space Technology Graduate Research Opportunities solicitations & \$19M (NSTGRO): Sep - Nov 2020 awards **SmallSat Technology Partnerships** \$3M (STP): Sep - Nov 2021 **Centennial Challenges:** *Varied release dates* \$8M NextSTEP Broad Agency Announcements (BAAs): Varied release dates **Varies** \$30M Lunar Surface Technology Research (LuSTR) Opportunities: Coming soon!!!