Lunar Surface Innovation Consortium

LSIC Excavation and Construction Workshop

http://lsic.jhuapl.edu/

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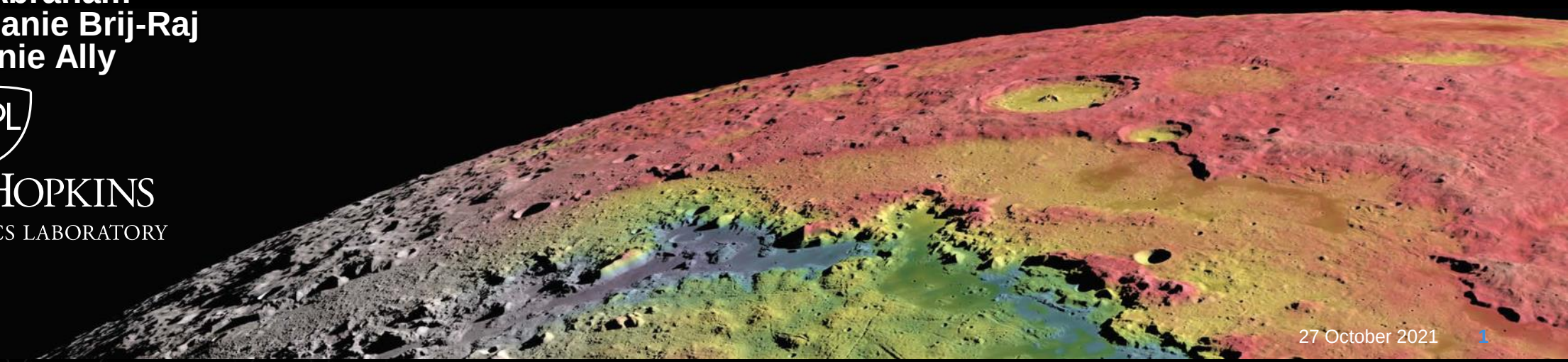


Friendly Reminders

- Recordings will be posted on our website.
  (http://lsic.jhuapl.edu/Focus-Areas/Excavation-and-Construction.php)
- Please post your questions in **‘Chat’ .**
- Mute yourself if you are not speaking.

E&C Monthly meetings moved to the 4th Wednesday of the month, 2 – 3 PM Eastern

LSIC Fall Meeting Nov. 3-4th
Autonomy and Robotics

Registration Closed

- Hybrid meeting planned – 100 people in-person limit
- Keynote address by NASA Associate Administrator Pamela Melroy.
- Talk by Jim Reuter, NASA Associate Administrator for Space Technology.
- First day focuses on networking and community building, including invited early career speakers, venture capitalist panel,small business development panel, and community-submitted talks and posters
- Second day focuses on robotics and autonomy needs for establishing, operating, and maintaining a sustained presence on the lunar surface
- NASA will share information on robotics and autonomy investments. Community will engage in breakout sessions to assess gaps and critical investments needed.

https://lsic.jhuapl.edu/News-and-Events/Agenda/index.php?id=148

Opportunity for Site Visits by APL E&C Team

- Why?
  - One of our roles is that of systems integrator for NASA.
    - We have been tasked to perform technology assessment and gap analysis.
  - NASA wants us to serve as a conduit between industry/academia and NASA.
  - Site visit will enable us to better understand your facilities and capabilities.

- Site visits could be virtual or in-person.
  - We will entertain all virtual site visit requests.
  - Can do only a few in-person visits because of budget and time constraints.

- Please contact me at athonu.chatterjee@jhuapl.edu if you are interested.

- We will send an email to the focus group after this meeting with details.

Today's Agenda

- Jibu Abraham - E&C sub-groups to enhance interaction with the community

- ~45-minute interactive workshop on '*Maintenance and Repair for Long-term Stay*'
  - 4 breakout rooms. Discussion using Miro board.
  - This topic was one of the top five topics chosen by the community for deeper discussions.
  - Your input will help us shape future plans.

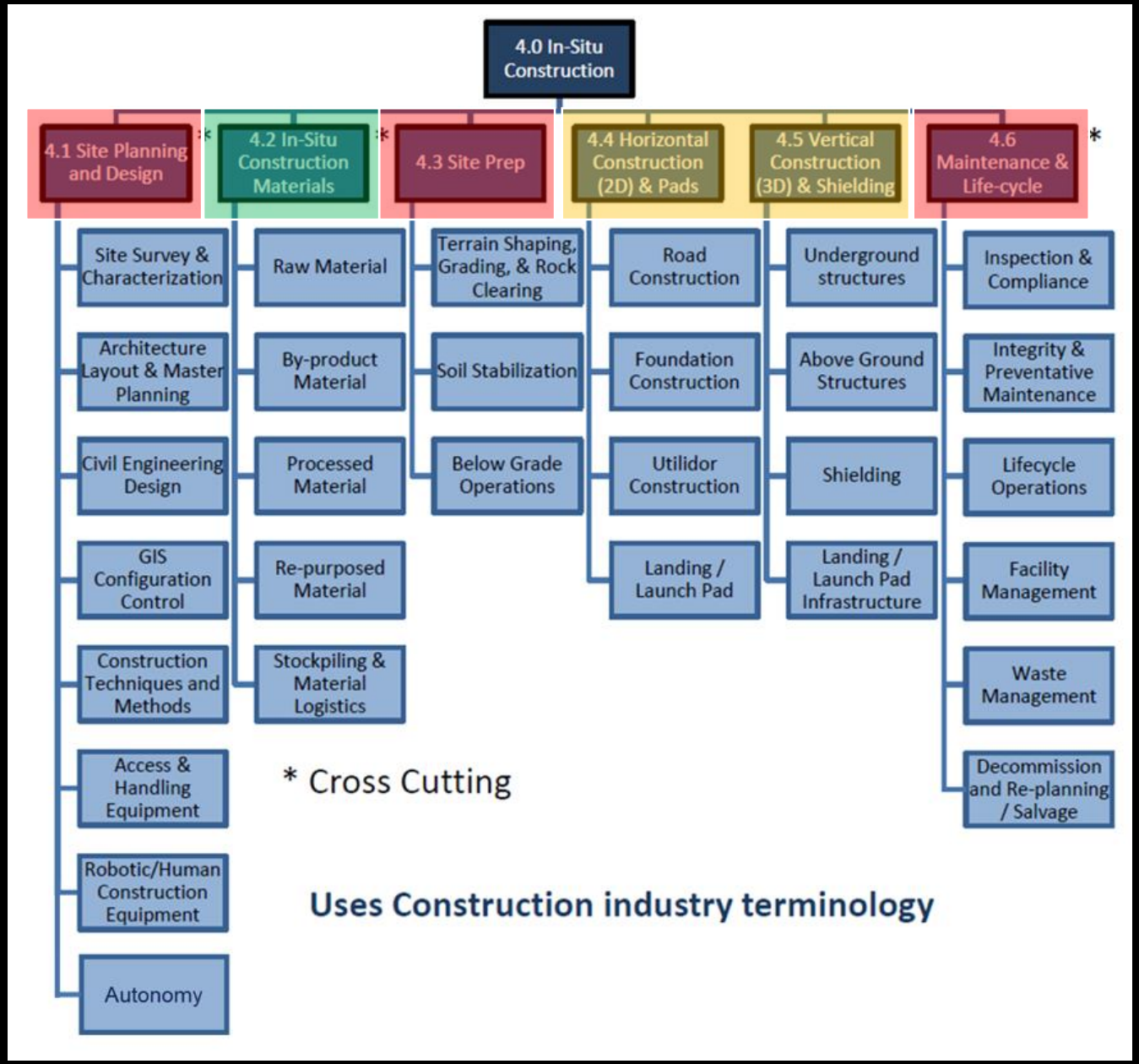
LSIC – Sub-group leads

Jibu Abraham

Sub-groups leads

- Sub-group lead goals
  - Under the guidance of the APL F&G lead, facilitate a discussion in specific topics related to Excavation and Construction
- Sub-groups
  - Autonomy, Maintenance, Site Planning & Site Prep (WBS 4.1, 4.3, 4.6)
  - Additive Manufacturing, Raw Materials (WBS 4.2)
  - Horizontal & Vertical Construction (WBS 4.3 & 4.4)
    - LLP, Berms, Roads, Habitats
  - Outfitting

- Expectations
  - Support confluence discussion between monthly meetings (1 post per month)
  - Develop the content for a breakout discussion at a monthly meeting (1 x per year)
  - Suggest speakers for monthly meetings
  - Support a Core Leads meeting 4x year (Sub-group leads + APL Leads)
- Interested?? Fill out Subgroup interest Google Survey


4.0 In-Situ Construction
4.1 Site Planning and Design
4.2 In-Situ Construction Materials
4.3 Site Prep
4.4 Horizontal Construction (2D) & Pads
4.5 Vertical Construction (3D) & Shielding
4.6 Maintenance & Life-cycle
*
Site Survey & Characterization
Architecture Layout & Master Planning
Civil Engineering Design
GIS Configuration Control
Construction Techniques and Methods
Access & Handling Equipment
Robotic/Human Construction Equipment
Autonomy
Raw Material
By-product Material
Processed Material
Re-purposed Material
Stockpiling & Material Logistics
Terrain Shaping, Grading, & Rock Clearing
Soil Stabilization
Below Grade Operations
Road Construction
Foundation Construction
Utilidor Construction
Landing / Launch Pad
Underground structures
Above Ground Structures
Shielding
Landing / Launch Pad Infrastructure
Inspection & Compliance
Integrity & Preventative Maintenance
Lifecycle Operations
Facility Management
Waste Management
Decommission and Re-planning / Salvage
* Cross Cutting
Uses Construction industry terminology

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LSII System Integrator - APL

A key tenet of LSII is to implement a multitude of novel collaborations across industry, academia, and government in order to successfully develop the transformative capabilities for lunar surface exploration.

Origin of the APL Task

- NASA was investigating using a University Affiliated Research Center (UARC) to bring efficiencies to development
- LSII initiated a tasked APL, to assess system integration role for the Lunar Surface Innovation Initiative
- APL established a Lunar Surface Consortium with academia and industry representatives, as well as NASA experts, that span a broad range of capabilities to execute timely studies, tasks, and/or acquisitions

The Consortium will assist NASA in

- Identifying lunar surface technology needs and assessing the readiness of relative systems and components
- Making recommendations for a cohesive, executable strategy for development and deployment of the technologies required for successful lunar surface exploration
- Providing a central resource for gathering information, analytical integration of lunar surface technology demonstration interfaces, and sharing of results