

Diversity in Mission Formulation at the JHU Applied Physics Lab

presentation to the
**Committee on Increasing Diversity and Inclusion in
the Leadership of Competed Space Missions**

April 28 2021

Michael Ryschkewitsch

Space Exploration Sector Head, Johns Hopkins University Applied Physics Laboratory

Diversity and inclusion are core values at APL.

- We believe that diverse teams are more innovative and perform better**
- We have formal strategies and multi-year strategic goals for diversity and inclusion that flow through the entire organization.**
- All leadership positions are selected through diverse panel interviews.**
- We encourage and expect diverse teams on research grant and IRAD projects.**
- New and recent hires are supported to participate in internal review teams**
- “SCALE” rotation program to allow early, mid, and even senior career staff to participate in assignments across the sector to get the experience they need to compete for future positions.**

Changing Outcomes Requires Intentional Action

- **Traditional model**

- **Person with an idea starts assembling a “coalition of the willing” via their existing network**
- **Matured Idea is brought forward after lots of ad hoc investment**
 - **Team is largely formed; may be little room for additions**
 - **Mission concept is already “beloved” – little room for new ideas**
 - **Engagement of under represented groups likely affected by unconscious bias**
 - **Re-bids carry both benefits and baggage from previous incarnations**
 - **Institutional decision options tend to be limited**

- **An alternative model**

- **Reduce barriers to entry by seeking ideas early, funding many, and phasing the down select; stimulate team additions**
- **Compensate for biases in decision processes with diverse review panels**
- **Fill the pipeline**

APL is a “Gateway Institution” for Mission Formulation

- **The Space Exploration Sector regularly issues formal calls to the community to partner on new mission opportunities**
 - “Innovation Calls” to solicit early ideas that could develop into Discovery, MidEx, and SMEX missions.
 - Planetary and Heliophysics Mission Concepts (advertised through community newsletters and to academic department heads)
 - Heliophysics Mission Concept Study call open now.
 - Diversity within mission teams is sought as a key attribute, whether found or stimulated
 - Proactively seek diversity in the review panels
 - “ACE” Lab mission formulation capability are available to the community through regular calls; <https://civspace.jhuapl.edu/engineering/apl-labs-facilities/ace-laboratory>
- **Some recent outcomes indicative of increased diversity**
 - Female PI on the Dragonfly New Frontiers Mission
 - Three female PI’s for Planetary Science Pre-Decadal Mission Concept Studies supported internally for the proposal to NASA and subsequently selected
 - Minority PI on EZIE
 - Other teams with diverse leadership in process but not yet submitted
 - Overall team rosters are more diverse than we were seeing a few years ago

Filling the pipeline

- **The Space Exploration Sector has a Strategic Mentoring Cohort Program each year to develop staff into leadership positions.**
 - Formal mentoring opportunities and group learning for 40+ staff in 2021
 - Participation can be wither self or management nominated -- “champion model”
 - Subcohorts for Principal Investigator/ Project Scientist, Program and Project Management, Organizational line and Technical Roles.
 - Space Exploration Sector leadership team conducts regular meetings and discussions with the cohort staff on leadership attributes.
 - In addition to group activities; developmental assignments pertinent to their interest area are sought
- **APL is proactively**
 - including early career scientists on missions and instrument teams.
 - Creating opportunities for periodic “shadow” engagement for early career staff
 - E.g. Parker Scholars student and early career science meetings and DART Borders for grad students and early career to sit in on DART Investigation Team meetings (inspired by similar InSight, Clipper and Dragonfly activities)
 - Including early career staff to participate and contribute to the review and selection process.



JOHNS HOPKINS

APPLIED PHYSICS LABORATORY