# NAI, ICAR and RCNs: Presentation to Decadal R&A Writing Group.

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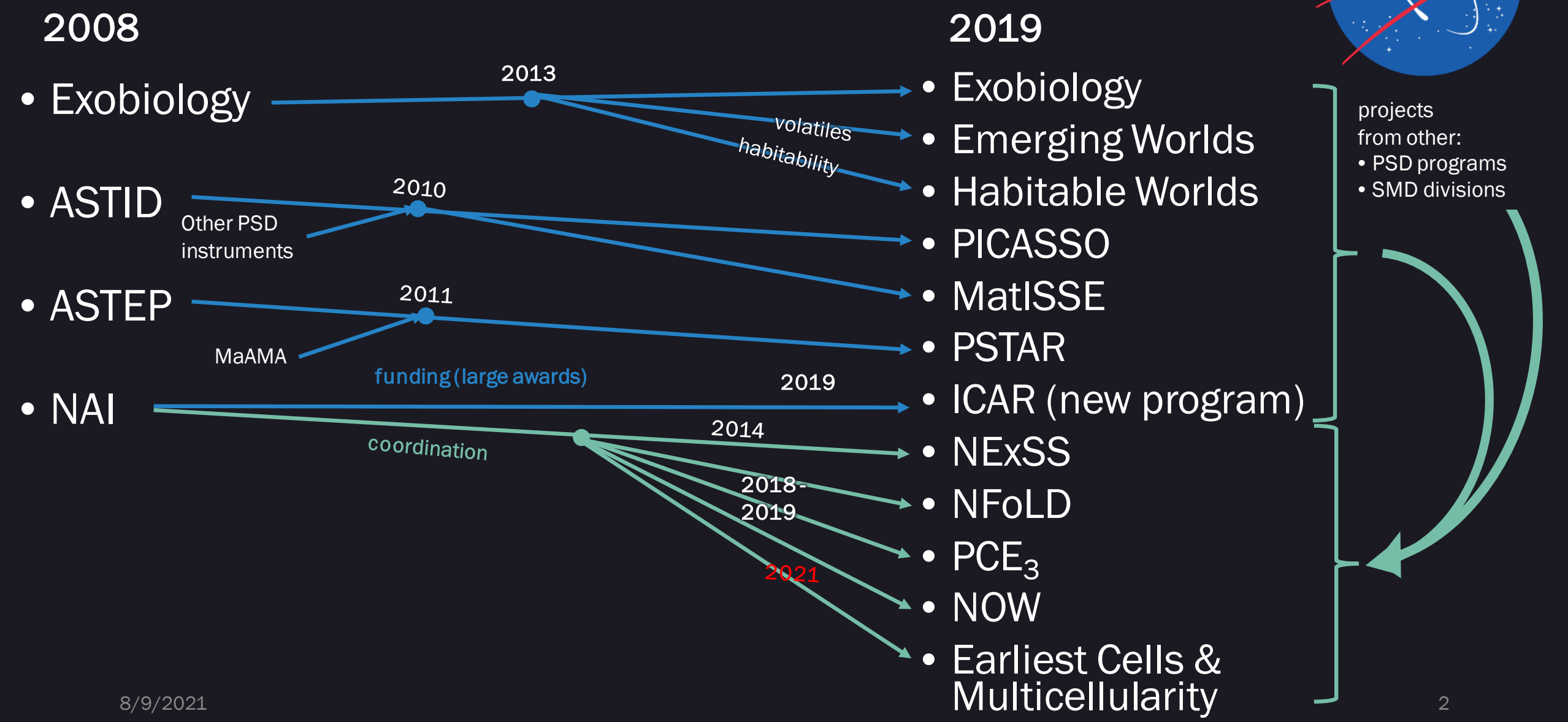
# Astrobiology Program Evolution

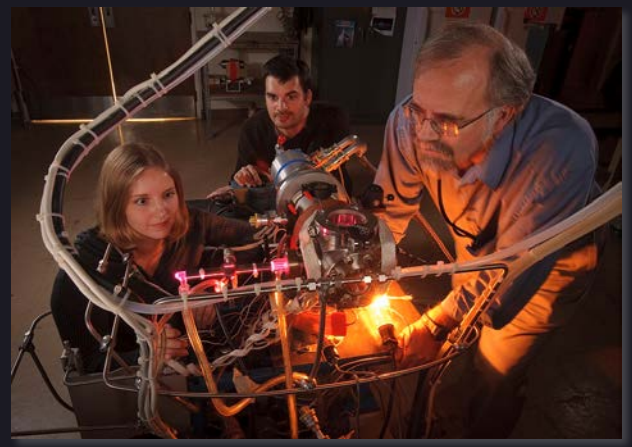


# NAI Mission Statement

## Five Elements

Train the Next Generation of Astrobiologists

Collaborative, Interdisciplinary Research



Provide Leadership for NASA Space Missions

Education and Outreach

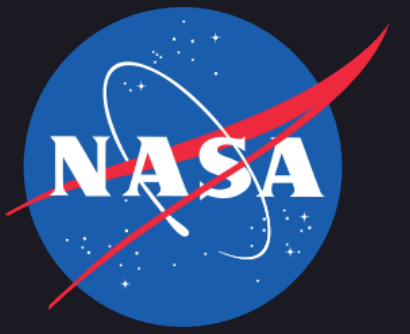
Information Technology for Research

# The RCNs employ a Model based on the successes of the NAI and NExSS

The NAI has been successful at growing the astrobiology community.

- The astrobiology program and discipline would not be where it is today if not for the NAI
- The NAI has led the international astrobiology community for much of its 20 years of existence
- This is in large part due to the cutting-edge nature of the NAI and the collaborations it fostered
- However, as with many cutting-edge ideas the world moves on. What used to be cutting-edge no longer is.

# Now that the community is grown-up it needs new ways to collaborate.




- Astrobiology is now incorporated into:
  - NASA's charter
  - The fundamental science of multiple SMD divisions
  - Missions to multiple targets
- Due to this success, the field requires new collaborations:
  - With other divisions
  - With project managers and engineers
  - With international partners
  - With other science agencies
  - Across targets (Mars/Icy Worlds/Exoplanets)

# Building the RCN from Past Successes and New Requirements

Part of what has made NAI successful is the 5-year grants

Part of what has made NAI successful is the larger size of the award and the ability to include multiple Co-Is, both through networking of multiple competed awards

A major advantage of the RCN model is its agility in opening up new opportunities to the broader community through smaller awards made through many programs that are offered annually

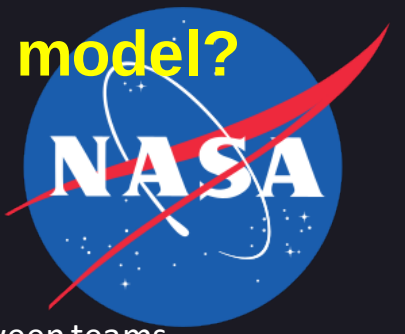
Research Networks would, by definition have a 5-year life to make progress, or could even *answer* the specific questions and then could *end*

Either each Research Network makes alterations to the composition as the teams change (some change at 3-year point as smaller teams roll-off)

OR a new Research Network could then be reformulated based on progress made

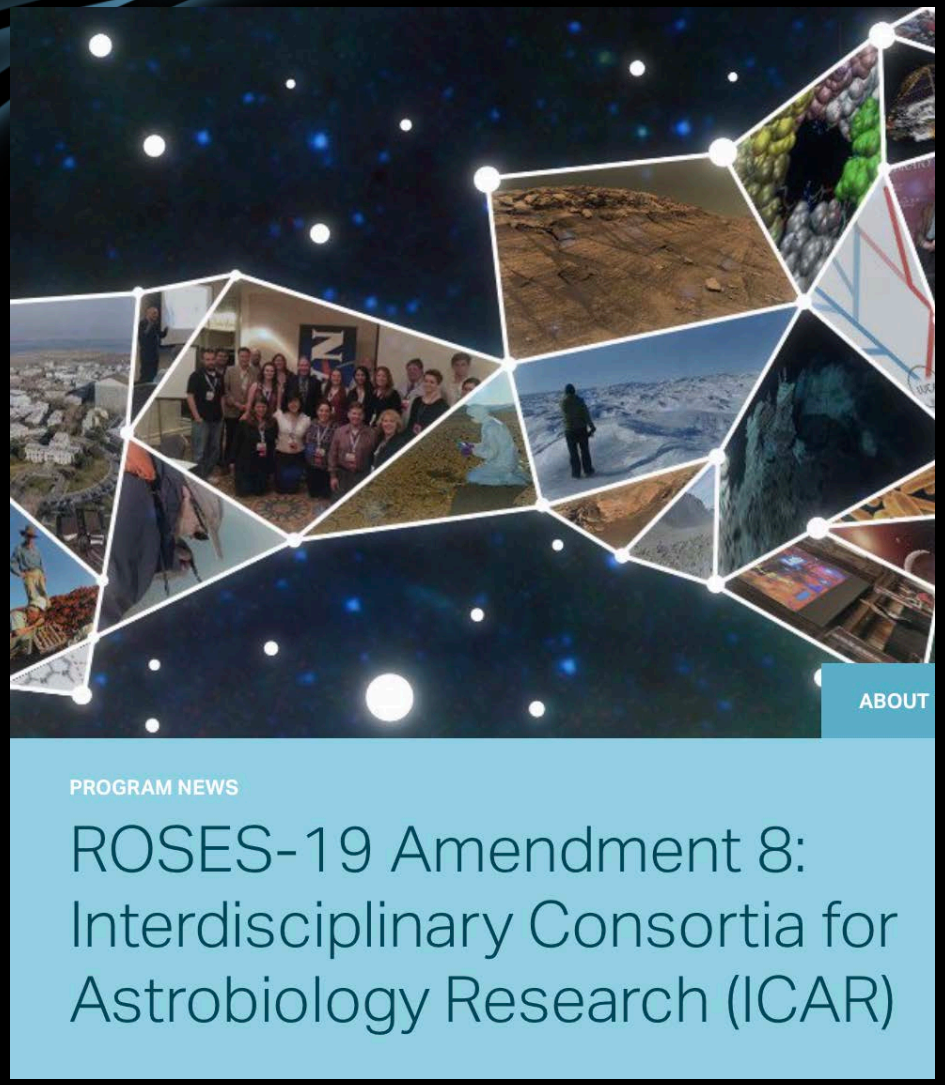
# FAQ: How does the RCN model differ from the Virtual Institute (VI) model?

While the purpose of an RCN is similar to that of a VI, RCNs differ from the VI model in several ways.




| Research Coordination Network | Virtual Institute |
| --- | --- |
| Membership is not linked to a specific line of funding and teams do not compete directly. Successful research funding selected through competitions across cooperating SMD Divisions. | Membership and funding determined by competition between teams that propose to a single program. |
| Since members come from many different annually competed solicitations with varying periods of performance (1-5 years), the RCN membership is continually refreshed. | Members come from a periodic solicitation (2-3 years) with a fixed period of performance (~5 years), leading to periods of constant membership that is intermittently refreshed. |
| Member teams vary in size ($-$$$, 1-10+ funded researchers). | All member teams are roughly the same size ($$$, ~15+ funded researchers). |
| Membership is elective. While researchers are eligible to be a member of an RCN if their research grant is selected, they are not required to be a member. Membership is not a criterion for selection of the research grant. | Membership and research funding are linked. If research teams are selected, they must become members. Researchers propose to address additional Institute objectives, which is a criterion for selection. |
| Coordinated through a small team of scientists. | Coordinated through a “central node” of NASA administrators. |
| Very light management (3-4 PIs, part time) with fewer services at the RCN level. Extra services are provided on an as-needed basis by the Astrobiology Program for all members of the broader community. | The central node has a larger staff (6-10 FTEs) and overhead, that provides managerial oversight and additional support for its members as well as some of the broader community. |
| RCNs are effective in situations where the community is already established but benefits from a framework to self-organize topics/research foci. | VIs are effective at building an interdisciplinary community from the ground up, building bridges between disparate communities. |

# Interdisciplinary Consortia for Astrobiology Research (ICAR)



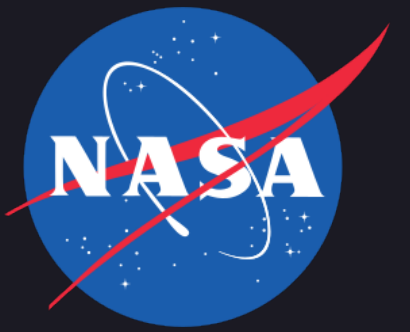

. . . an opportunity for the submission of proposals that describe an interdisciplinary approach to a single, compelling question in astrobiology, and may address a single Science Strategy goal or several Science Strategy goals.

Team size and resources requested should be appropriate to the scale of the proposed research. There is no ideal size of an ICAR Team, but the scope of the research and the resources requested should exceed those typically considered in a ROSES program element (e.g., Exobiology, Habitable Worlds or XRP).

5 year awards

Avg award size $4-5M

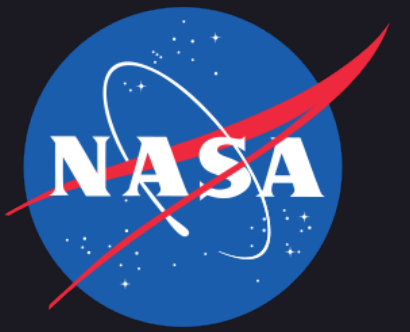
# FAQ: What is a Research Coordination Network (RCN)?




A Research Coordination Network (RCN) is a virtual collaboration structure that helps support groups of investigators to communicate and coordinate their research across disciplinary, organizational, divisional, and geographic boundaries. NASA has modified a mechanism utilized by NSF to achieve the research goals for the Astrobiology Program.

The NASA Astrobiology RCNs are a mechanism for community collaboration. Each RCN will have a steering committee comprised of the PIs of all teams who have elected to join to join, both from large teams selected from the ICAR solicitation as well as smaller teams from relevant ROSES R&A programs. Additionally, the NASA Astrobiology Program, along with representatives of relevant research elements and SMD Divisions, will identify co-leads and potential members of the RCN and provide funding to support the logistical requirements of the RCN. The Astrobiology RCNs will be regularly reviewed (~5 years) by a Senior Review-like independent panel of experts to provide input to any decision to continue, modify, or sunset the RCN. Because RCNs are only a method for coordination, the sunsetting of an RCN will have no effect on the primary research award, which will continue through the original duration. New RCNs may also be established as the science in astrobiology evolves, new missions come on line, or the priorities of NASA shift.

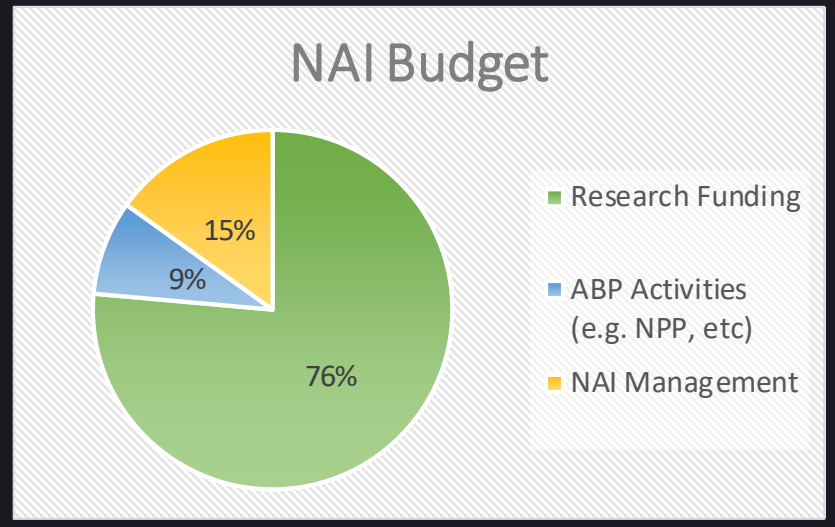
# Expected outcomes for the Astrobiology Program RCNs:

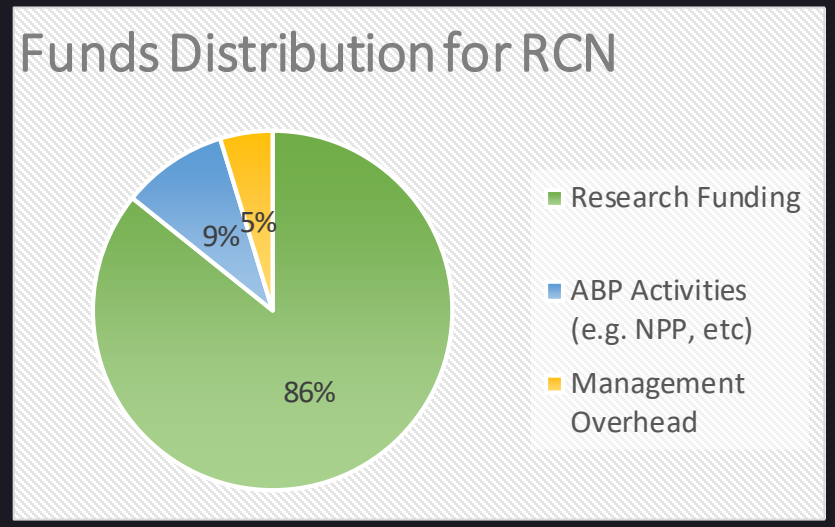



- Investigators carry out and propose interdisciplinary research that addresses new topics through new collaborations.
- Produces a plan for utilization of current mission data (if applicable).
- Spawns ideas for new and exciting missions, and encourages participation in and contributions to missions from planning through operations (if applicable).
- Identifies new targeted technologies or instrumentation needed, but not yet reported elsewhere.
- Influences Decadal Surveys for all NASA Science Mission Directorate (SMD) Divisions
- Enhances international engagement.
- Supports continued development of the astrobiology community.

# Budget for Big Awards

- NAI budget had been at $25M with additional $1.5M from Astrophysics
- Distribution of funds is a small amount for management (~$250K) per Network to include management by team and funding for in person meetings and workshops = ~$1.25M (in place of NAI central budget)
- 10% of remainder of budget goes to augment program activities such as NPP, AbSciCon, AbGradCon, personnel, etc. (same as current)
- Remainder to research



# Astrobiology Research Coordination Networks

**NExSS(2014)**
Nexus for Exoplanet System Science (https://nexss.info/)

**N-foLD (2018)**
Network for Life Detection (https://www.nfold.org/)

**PCMC(2021)**
From Early (primitive) Cells to Multicellularity

**$PCE_3$ (2019)**
Prebiotic Chemistry and Early Earth Environments (http://prebioticchem.info/)

**NOW (2019)**
Network for Ocean Worlds (https://oceanworlds.space/)

# Questions?