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NIAC
NASA Innovative Advanced Concepts

NASA Innovative Advanced Concepts Supports ISRU

Space Resources Roundtable
June 7-10, 2022

Ron Turner, NIAC Senior Science Advisor
Analytic Services Inc (ANSER)

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NIAC

https://www.youtube.com/watch_popup?v=lc9KlJFX8Us

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NASA Innovative Advanced Concepts (NIAC)

- NIAC is unique!
- We value technical skill and imagination, inspired by curiosity and the quest for knowledge
- We encourage innovators to be creative and attempt great leaps forward in aerospace endeavors

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NIAC Overview

NIAC supports early studies of innovative, yet credible, visionary concepts that could one day "change the possible" in aerospace

- Early stage concepts for NASA missions 10 - 20+ years out
- High risk, high reward
- Open to ideas from all disciplines
- Projects are technically credible

Proposed NIAC concepts must

- **Demonstrate innovation**
- **Have a clear potential impact**
- **Be proposed in a mission context**

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NIAC

PHASE I

Establish the feasibility of your concept

Opens: **June**

- Up to **$175K**
- **9 MONTHS** for concept definition and initial analysis in a mission context
- **12-16 awards / year**

187 Total Awards

PHASE II

Address the most challenging aspects to solidify feasibility

Opens: **October**

- Up to **$600K total**
- **2 YEARS** for further development of the most promising Phase I concepts, including comparative mission analysis, pathways forward, and spin off technologies
- **5-7 awards / year**

75 Total Awards

PHASE III

Implement strategy for technology transition and utilization

Opens: **December**

- Up to **$2M total**
- **2 YEARS** with the goal to strategically transition Phase II concepts with the highest potential impact for NASA, OGAs or commercial partners
- **1 award / year**

4 Total Awards

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Representative ISRU Concepts

Funded since 2019

Oleson, Steven
A Titan Sample Return Using In-situ Propellants

Ermanoski, Ivan
Breathing Mars Air: Stationary and Portable O2 Generation

Greig, Amelia
Ablative Arc Mining for In-Situ Resource Utilization

Polidan, Ronald
FarView - An In Situ Manufactured Lunar Far Side Radio Observatory

Rothschild, Lynn
Myco-architecture off planet: growing surface structures at destination

Shevtsov, Jane
Making Soil for Space Habitats by Seeding Asteroids with Fungi

Sercel, Joel
Lunar Polar Propellant Mining Outpost (LPMO): A Breakthrough for Lunar Exploration & Industry

Metzger, Phillip
Aqua Factorem: Ultra Low-Energy Lunar Water Extraction

Sowers, George
Thermal Mining of Ices on Cold Solar System Bodies

Sercel, Joel
Optical Mining of Asteroids, Moons, and Planets to Enable Sustainable Human Exploration and Space Industrialization

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The Future Possibilities Depend on <u>You</u>

NIAC is the most open-ended and far-reaching of NASA's new technology programs

This exciting program is open to *anyone* in the US

(international researchers may team, but no exchange of funds)

NIAC

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