



**DYNAMIC Preproposal Conference**

**Space Communications and Navigation  
(SCaN) Overview**

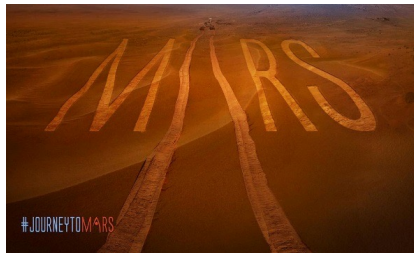
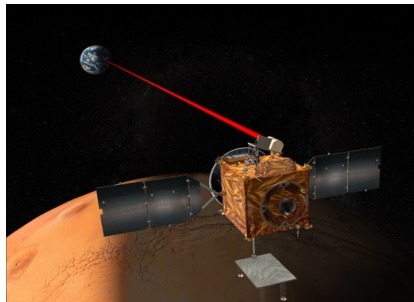
**June 6, 2023**



# Agenda

- Space Communications and Navigation (SCaN) overview
- AO Considerations and Pointers
- Spectrum Considerations
- Points of contact

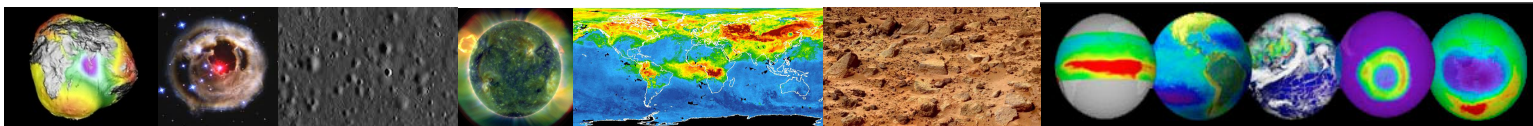
# SCaN is Responsible for all NASA Space Communications



- Responsible for Agency-wide operations, management, and development of all NASA space communications capabilities and enabling technology (NPD 8074.1).
- Expand SCaN capabilities to enable and enhance robotic and human exploration.
- Manage spectrum and represent NASA on national and international spectrum management programs (NPD 2570.5E).
- Develop space communication standards as well as Positioning, Navigation, and Timing (PNT) policy.
- Represent and negotiate on behalf of NASA on all matters related to space telecommunications in coordination with the appropriate offices and flight mission directorates.

# Supporting Over 100 Missions

- SCaN supports over 100 space missions with the two (NSN and DSN) networks.
  - Which includes every US government launch and early orbit flight
- Earth Science
  - Earth observation missions – Global observation of climate, Land, Sea state and Atmospheric conditions.
  - Aura, Aqua, Landsat, Ice Cloud and Land Elevation Satellite (ICESAT-2), Orbiting Carbon Observatory (OCO-2)
- Heliophysics
  - Solar observation-Understanding the Sun and its effect on Space and Earth.
  - Parker Solar Probe, Solar Terrestrial Relations Observatory (STEREO)
  - Voyager 1 & 2 (deep space heliospheric physics).
- Astrophysics
  - Studying the Universe and its origins.
  - Hubble Space Telescope, Chandra X-ray Observatory, James E. Webb Space Telescope (JWST), Roman
- Planetary
  - Exploring our solar system's content and composition
  - Mars Atmosphere and Volatile Evolution (MAVEN), InSight, Lunar Reconnaissance Orbiter (LRO)
- Human Space Flight
  - Human tended Exploration missions, Commercial Space transportation and Space Communications.
  - Exploration missions, Soyuz, Commercial crew, International Space Station (ISS) and Visiting vehicles (Soyuz, SpaceX, Boeing, Sierra Nevada)



# NASA Networks Span the Globe



# Evolving Commercial Market

- In the 1980s the commercial space communications market was in its early stages...
- Today, private and public space sector activities are flourishing; existing commercial services exist to serve customers located on or close to Earth
- Creates an opportunity for NASA to develop a near-Earth service portfolio with multiple vendors
  - Robust and flexible architecture for the user community; not reliant on a single vendor
  - Contribute to market stimulation and growth
  - Savings in infrastructure, ongoing operations, and maintenance costs to NASA
- Pursue commercial services in accordance with the market:
  - Direct-to-Earth service is an established commercial market with multiple vendors
  - Space-Based Relay service for space users is an emerging market
- Obtaining services through commercial providers allows NASA to focus on the domains and technologies where commercial services do not yet exist
  - Expect NASA continued investment in infrastructure to support missions to the Moon, Mars and other destinations



Vibrant Commercial Ground  
Station Market Already Exists

# SCaN's Support to NASA's Proposal Process

- SCaN supports NASA's proposal process by
  - providing documentation outlining SCaN's services, and the cost of using those services, intended to assist in the preparation of proposals, to be released with the request for proposal (e.g. Space Communications and Navigation (SCaN) Mission Operations and Communications Services (MOCS) Document)
  - interacting with proposers as early in their development process as possible to begin pre-mission planning and analysis activities
  - assisting user missions with procuring services from other non-SCaN network entities and partners, including but not limited to other NASA organizations, other government agencies and international and commercial partners
- It is the responsibility of SCaN's Mission Commitment Office (MCO), along with the Commercialization, Innovation, and Synergies (CIS) Office and the Customer Interface Management Office (CIMO) to facilitate this process on behalf of the SCaN Networks

# Essential Documents

- SCaN Produces a *Mission Operations and Communications Services Document (MOCS)* to:
  - Assist in responses to AO/BAA/RFPs issued by NASA
  - Describe NASA's communications and navigations services to potential users
  - Provide instructions on how to interface with SCaN to determine service integration
  - Recent Updates:
    - Added Spectrum Management to MCO Service Summary
    - Detailed Launch Vehicle support services
- Issued new NSN Users' Guide (Feb 2023). *All other NEN users' guides are obsolete.*



# Spectrum Access & Authorization

- All NASA missions that require the use of the electromagnetic spectrum shall follow the U.S. spectrum regulatory rules/processes as referenced in NASA spectrum policy
  - NPD 2570.5: Sets forth NASA policy and responsibilities for obtaining approval for the use of the spectrum for any NASA mission, project, or other activity
  - NPR 2570.1: NASA Spectrum Management Manual provides guidance on the use of radio frequency (RF) spectrum
  - Spectrum Guidance for NASA Small Satellite Missions, although targeted for smallsats, provides useful information applicable to all space missions
  - See: [www.nasa.gov/directorates/heo/scan/spectrum/policy\\_and\\_guidance.html](http://www.nasa.gov/directorates/heo/scan/spectrum/policy_and_guidance.html)
- All missions/projects using RF spectrum must be certified/authorized by the appropriate regulatory authority
  - For missions under effective control of NASA, NASA/Spectrum is responsible for securing spectrum certification/authorization from the federal regulator (NTIA)
  - Missions must provide the necessary information for preparing the certification and authorization submissions
- **All missions should contact their associated Center Spectrum Manager (NASA/Center-led missions) as early as possible**
  - **Any project with no clear NASA Center lead may contact NASA National Spectrum Manager: Bryan Rhodes (NASA/GRC): [bryan.a.rhodes@nasa.gov](mailto:bryan.a.rhodes@nasa.gov).**

# SCaN Points of Contact

- Missions desiring use of SCaN services should make contact with the SCaN Mission Commitment Office as early in the concept and design phase process as possible.
- In order to begin the mission commitment process, missions should send their questions, concerns or services requests to the following e-mail address: **exploration-enabled@lists.hq.nasa.gov**
  - Missions may also contact the SCaN Program Office Mission Commitment Office for more general questions:
    - Jeffrey Hayes ([jeffrey.hayes-1@nasa.gov](mailto:jeffrey.hayes-1@nasa.gov)): (202) 358-0353

A large satellite dish antenna is the central focus, set against a dramatic sunset sky with orange and blue hues. The dish is mounted on a white base and is angled towards the left. In the background, there are some buildings and a fence, suggesting a ground station or observatory site.

NASA

[www.nasa.gov](http://www.nasa.gov)

Space Communications and Navigation

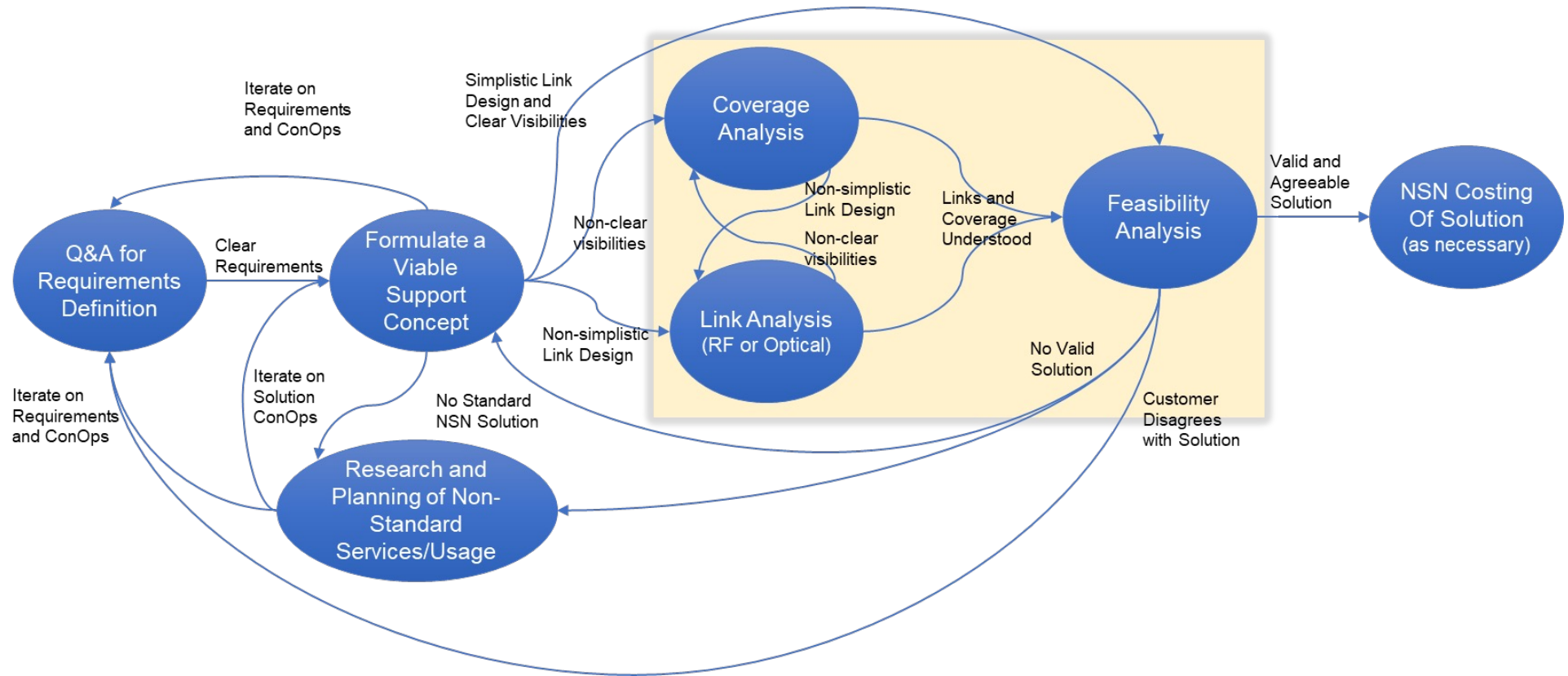
[www.nasa.gov/scan](http://www.nasa.gov/scan)

[www.facebook.com/NASASCaN](https://www.facebook.com/NASASCaN)

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*Keeping the Universe Connected*

# Advanced Planning for New Missions



# From Planning to Mission Integration

