Toward a sustainable IPN

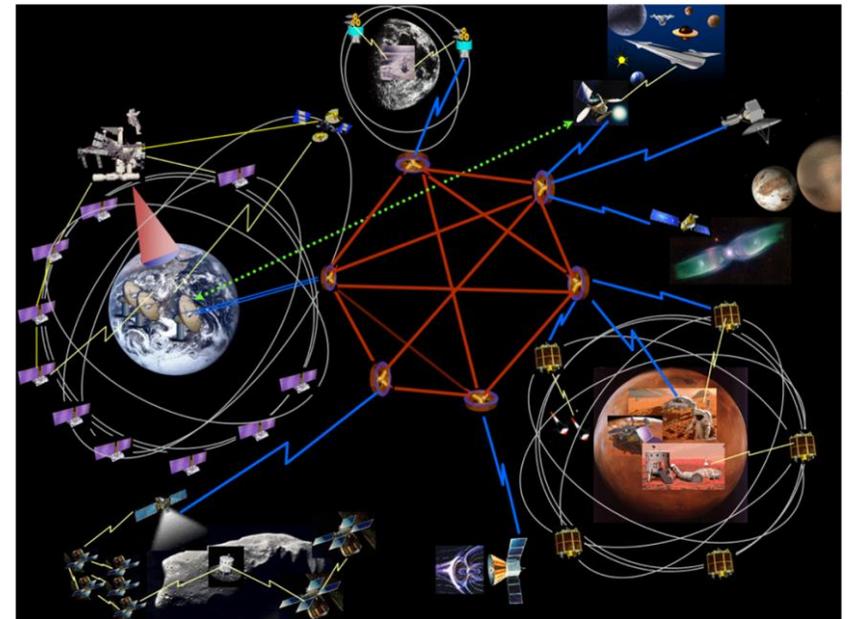IPNSIG Chair

Yosuke Kaneko

2020, September

Goal of IPN (I hope we all share..)

Create an Interplanetary Networking Architecture, implementation, operation model that could one day become a part of our social activities in the 100+ years, supporting exploration, science, commercial activities and connecting everything together for the benefit of humanity.

What are the:
- **Issues today ?**
- **Desired End State ?**
- **Strategy to tackle?**
- **Rough plan?**

Issues

- **[Architecture Oriented mindsets need to be employed by space agencies](#)**
  - Conventional "Mission by Mission" design thinking approaches employed in space missions today needs to shift to an <u>Architecture-oriented way of thinking</u>.
    - Today, most missions tend to focus solely on fulfilling their own mission requirements.
    - <u>They tend to be one-off missions</u> that are not broad enough to support a sustainable IPN architecture.

- **[Limited IPN interest from private sector](#)**
  - IPN is still primarily of interest to governments and space agencies today. Need more private sector engagement to refine and test the IPN architecture, implementation and operation.

Most initiatives work "stove-piped" today. By providing a single venue for discussion and cross-fertilization from both the civil and nation-state perspective, we may help resolve the issues above.

Desired End State

Combine Initiatives to work together in one venue:

Invite initiative representatives from Government, Space Agencies, CCSDS, IETF/IRTF, Commercial Space Sector and Private companies to participate in a single venue, to discuss needs, requirements, and the driving technologies to be developed that will constitute the IPN Architecture.

- All stakeholders discuss from each of their respective point of views, what they need to attain a truly sustainable, affordable and transparent IPN architecture.
- This venue could be the technical foundation to refine the IPN model that we currently have, by having the private sector have a voice -- influence the architecture, implementation and its operation.

➡ Creating an "IPN Consortium" (next page)

IPN Consortium Concept

Space Agency Driven Standards

Policy and Mission oriented

CCSDS

IOP/IOAG

Government

Space Agencies
(NASA(JPL), ESA, JAXA…)

Technology Drivers

Innovators

IPNSIG could tentatively host?

IETF/IRTF

IEEE

Academia

IPN Consortium
Integrated body where many orgs work holistically towards a 100+ years vision

Commercial Space
(SpaceX/Blue Origin)

Foundation

Service Providers

Enablers

ISOC

Potential Service Providers
(AT&T/Google/Toyota..)

Network Companies
(Cisco/Hp)

5

Strategy

- **Road to an IPN Consortium:**

- Advertise the IPN Consortium Concept at various forums. Conduct a hearing from various users of IPN to understand their thoughts, needs, expectations (initial data)

- Have the stakeholders talk in a multilateral forum (ideally IPN consortium but if not use IPNSIG as a working body) and gradually expand the community.

- Appeal to the public of what we are discussing through IPNSIG webpages, webinars and use ISOC/IGF as a communicating body to bring IPN a "Global subject" for humanity.

- Gradually increase interest from non-IPNSIG initiatives, eventually leading up to investment from private sector…Repeat the above procedure over and over…

- **Boosting private sector interests :**

- Launch a Business POC (Proof of Concept) mission that would demonstrate many of the business cases/model envisioned by the private sectors on/around the Moon. Space Agencies will support technically.
  - ➔For example, if GOOGLE could provide leadership on this mission, many users across the Globe should follow, creating a boost expanding more interest from the private sector.
  - ➔Space Agencies to provide use of onboard assets(Gateway/DSN), support formulating mission concepts, configure ION and/or DTN Network for the private sectors.