PROMOTING SPACE SUSTAINABILITY

VISHAL Latha Balakumar, Mission Specialist

09-February-2021

DHRUVA
S P A C E

FULL STACK SPACE ENGINEERING

DHRUVA SPACE

SPACE SEGMENT

SMALL SATELLITES

- Design to specification
- Assembly & Integration
- Testing & Qualification
- Constellation Design
- Inter Satellite Links

LAUNCH SEGMENT

SATELLITE LAUNCH

- CubeSat Deployer
- SmallSat Deployer
- Launch Liaising
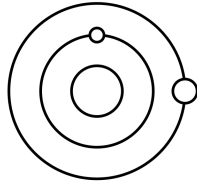- Frequency Coordination

GROUND SEGMENT

EARTH STATIONS

- VHF / UHF / S / X / Ka / Ku Band
- Miniaturized Terminals
- Remotely Operable Terminals
- Mission Control & Operations
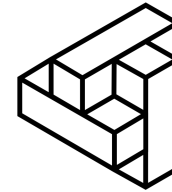
SPACE & RESOURCES

Orbital Resource | Equitable Use

Open Source | Clean Space

Modularity | Reusability

1000s **OF SATELLITES | <10** YEARS

EXPANDING CONSTELLATIONS
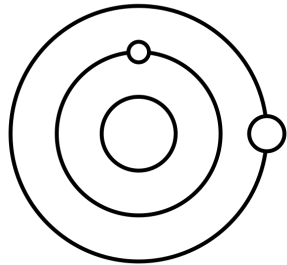*Sputnik to 2018: 8,400 objects*
Est. 2018 - 2028: 10x

>80 COUNTRIES WITH ACTIVE SPACE PROGRAMS

<10 COUNTRIES WITH SIGNIFICANT PRESENCE

ORBITAL RESOURCE | EQUITABLE USE

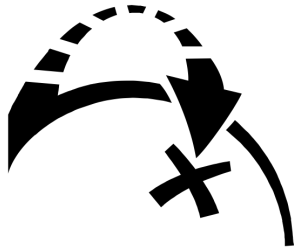**IMMEDIATE**

LONG TERM

Limited allocation

Sustain practices

- Work closely with

ISRO (Indian Space Research Organization) &

IN-SPACe (Indian National Space Promotion

and Authorisation Centre)

Enable developing countries

Enable equitably

Studies beyond economical impact

Proactive technology and policy development

Created by Juan Pablo Bravo
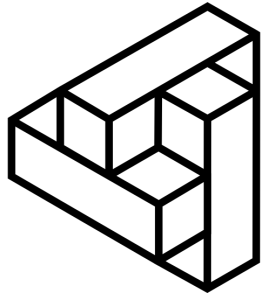from Noun Project

Guidelines: A.4, B.1-5,8

OPEN SOURCE | CLEAN SPACE

- Commercialization is important | Sustainability more so

- Critical technologies | Bottlenecks in development

    o De-orbiting, Orbit maneuvers

    o Space Situational Awareness

- Faster & easier access for greater good

    o Open Source

    o Collaboration

    o Technology Transfer

Created by Dan Hetteix
from Noun Project

Guidelines: C, D

MODULARITY | REUSABILITY

Created by emilegraphics
from Noun Project

- Increased use of resources on ground

- Lessons from Electronic Devices Industry

- Incessant use → Increased waste of resources

- Modular platforms | Shared resources

- Make local | Go Global

Test beds on rocket upper stages

Guidelines: C.2, D