

ITU-APT Foundation of India (IAFI)
Space Policy Conference 2025 (ISPC-25)
24-25 July 2025, New Delhi

Leveraging Satellite Technologies and Applications towards Viksit Bharat (Developed India)

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25-07-2025

New Space Eco System

Arms of Department of Space



- 13 Major Centres/ Units
- 22000 Employees
- USD 1.6 Billion



- DoS Commercial arm
- Operational LVs & Satellites
- LV production through industry
- Technology Transfer



- Promote, handhold and authorize private space industry



Skyroot
Nov 18,'22



Agnikul
May 30, '24

Autonomous Bodies

- 3 Dedicated fundamental R&D & Application Centres
- 1 academic Institute, IIST

- Indian Space Policy 2023 released
- New FDI guide lines released

INDUSTRY

450+
MSME

50+
Large companies



START-UPS

200+
Start-ups



Space Applications

- ~250 applications
- Disaster management, Resource mapping, societal communication, location based services

Space Infrastructure

- Earth observation (24), Communication (18), Navigation (9), Space science satellites (5)

Space Transportation

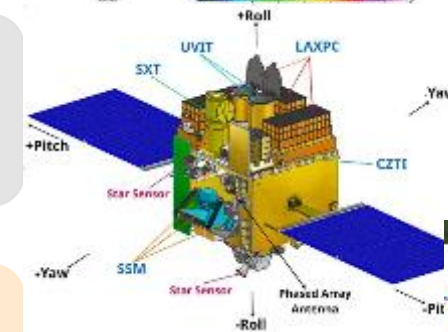
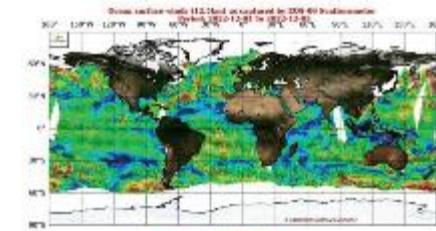
- 4 operational launch vehicles
- PSLV, GSLV, LVM3, SSLV

Human Space Flight

- Gaganyaan: Indian Human spaceflight mission
- 2 Unmanned mission and 1 Manned mission planned

Capacity Building

- Human and infrastructure capacity building
- International cooperation
- capacity building to other countries



Domains of Earth Observation Applications

Water Resources Assessment

Potential Fishing Zones

Renewable energy

Weather, Agromet & Forest

Tele-medicine and Tele-education

Natural Res. Management

NavIC services

Irrigation Infrastructure - PMKSY

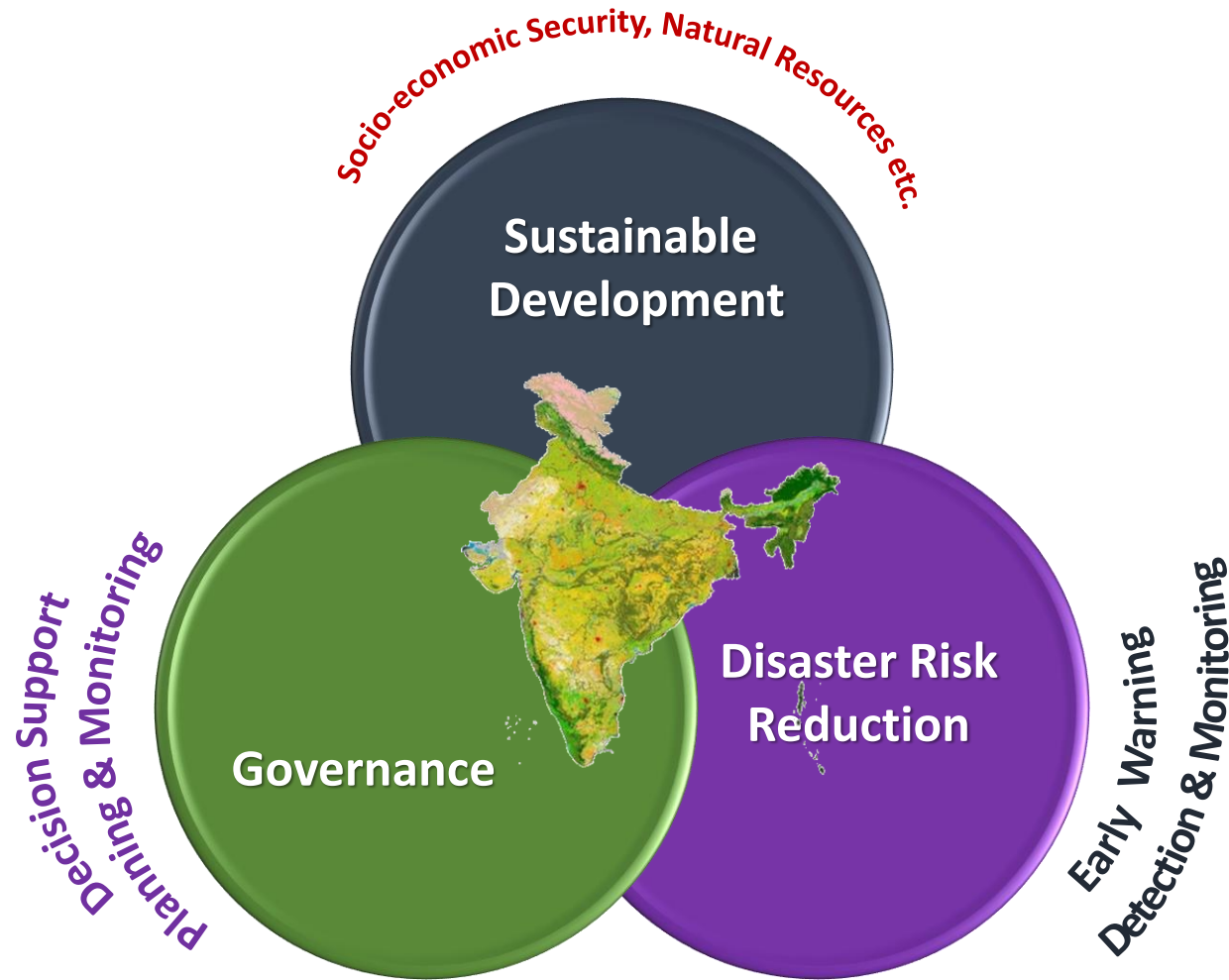
Rural Employment - MGNREGA

Housing Schemes - PMAY

Rural Roads - PMGSY

Decentralized Planning

Crop Insurance - PMFBY



Flood, Cyclone, Landslide, forest fire, Drought

Multi-Scale National Database

Early Warning System

Hazard Assessment & Zonation

NRT Monitoring & Damage Assessment

Enabling ICR-ER Creation

International Charter & Sentinel Asia

Geoportals for Visualization, Analytics & Information Dissemination

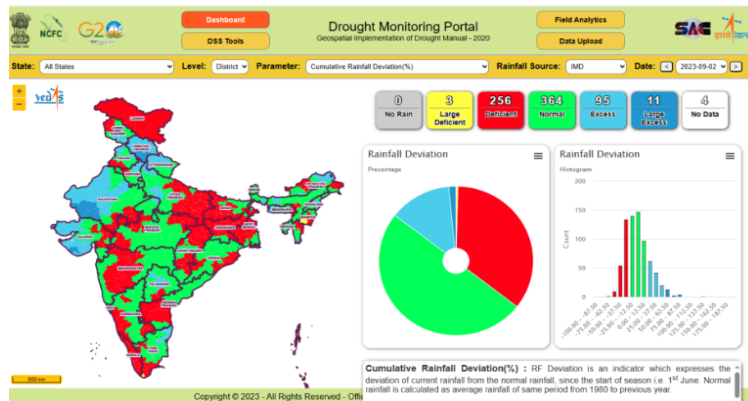
EO Applications – Enabling Sustainable Development

Agriculture

- Acreage & Production forecasting
- Surveillance & Advisories: Sowing, Yield, Irrigation, Pest-disease,..
- Digital technologies for informed decision making – KrishiDSS

Energy/ Mineral

- Renewable energy assessment- solar, offshore wind; wave
- Geospatial energy map
- Geoexploration – hydrocarbon, Mn, Fe, Rock Phosphate, ...

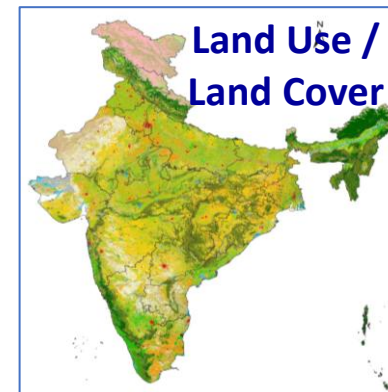
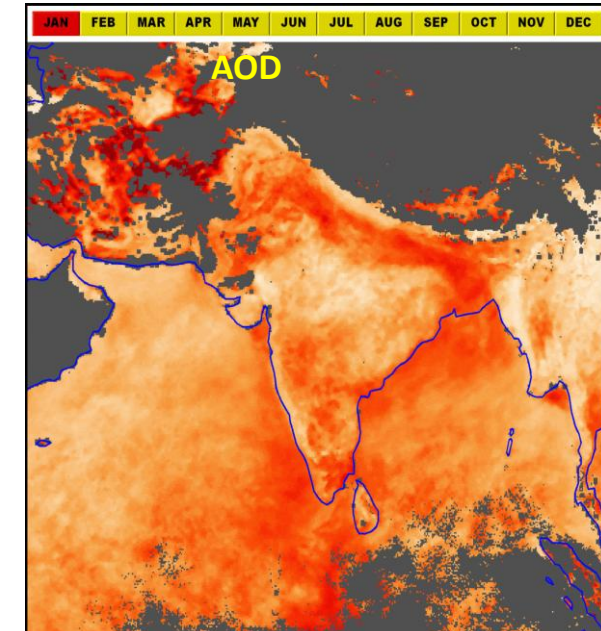
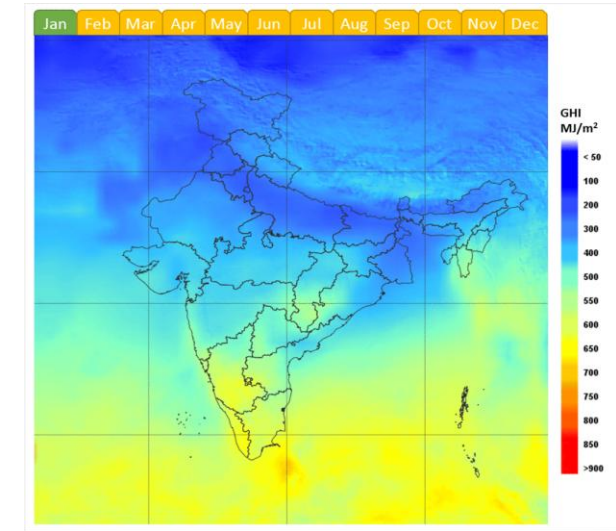


Water

- NHP – Hydroinformatic products & services
- Reassessment of basin scale water resources
- Sustainable ground water development

Natural Resources

- Census of Natural Resources- LULC, Forest, Wetland, Snow, Glaciers
- Desertification, Land Degradation
- DSS for land/ water resources development



Continuous & Demand based inputs for Planning, Monitoring & Evaluation and Decision Support

➤ Support to Government Programmes

- Improved Crop Insurance Services – Decision Support
- Watershed management (86,000 Micro-watersheds) - Assessing the impact of interventions
- Urban transformation – Inputs for Urban Master plans towards Citizen friendly cities
- Monitoring of Public Benefit Schemes (Rural Employment; Housing; etc.) – enhancing efficiency
- De-centralized Governance - Participatory planning at grass-root level
- CoVID-19 – Geoportal on vaccination centres, containment zones, resources accessibility...
- Connectivity to rural habitations – Rural development
- Water Resources development –for water stressed regions
- National Hydrology Project - Hydroinformatic products



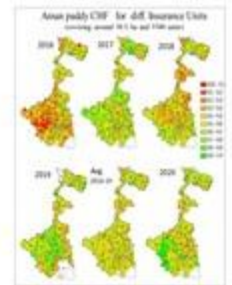
Vaccination Centres



Monitoring & Evaluation of 86,000 micro-watersheds



Urban Geospatial Database for Master Plan



Crop Health in Crop Insurance



Geospatial hydro-products & services



Monitoring Rural Employment Scheme

Disaster Risk Reduction



- Hazard & Forecasting
- Inundation
- Damage



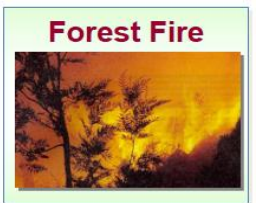
- Hazard
- Early warning
- Damage



- Pre-cursors
- Damage



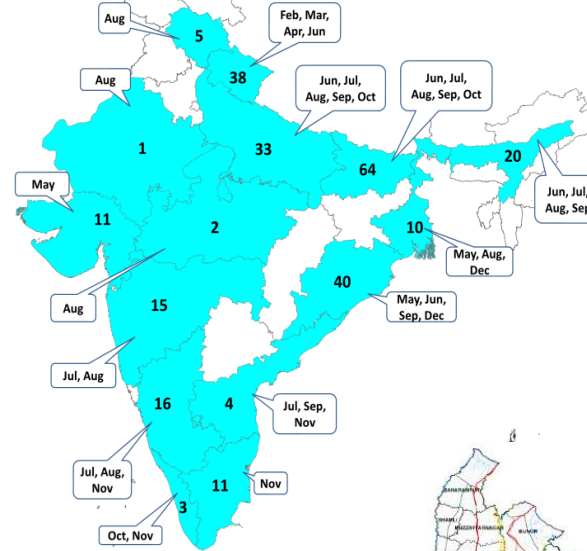
- Early Warning
- Monitoring
- Damage



- Detection
- Impact

National Database - for Emergency Management (NDEM)

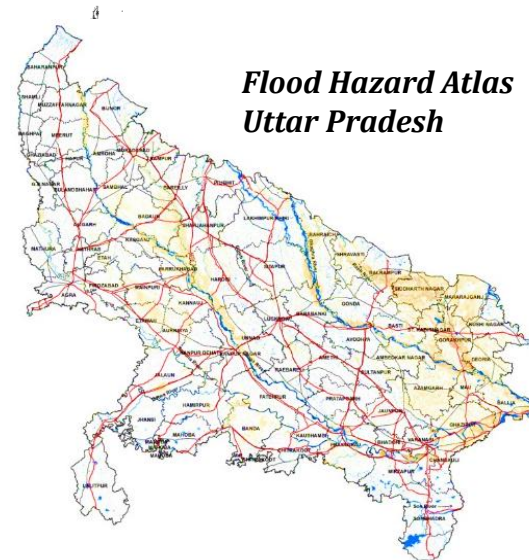
Flood Inundation maps for Major floods



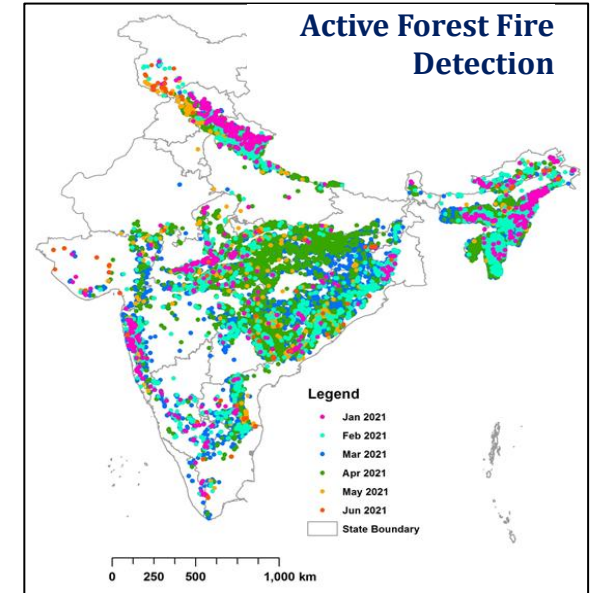
Flood Hazard Class



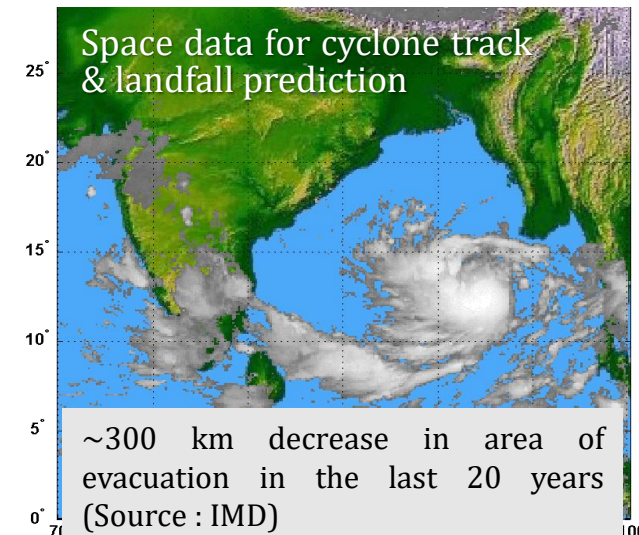
Flood Hazard Atlas Uttar Pradesh



Active Forest Fire Detection



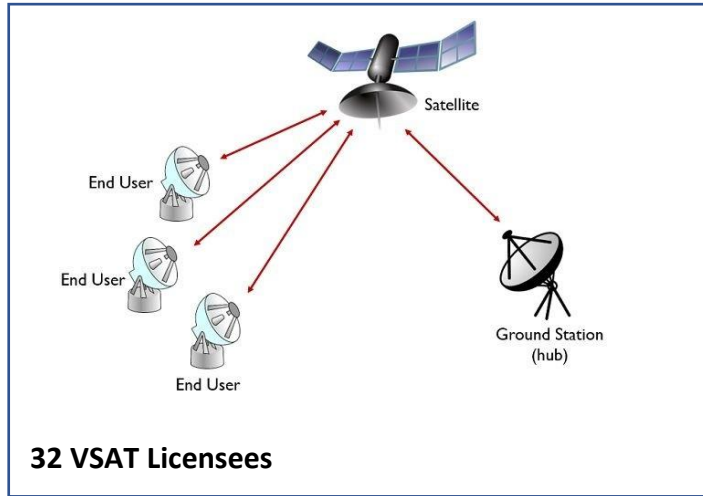
Cyclone Intensity, Track & Landfall Forecasting



International Cooperation- Charter on Space & Major Disasters, Sentinel Asia

Commercial Satcom Applications

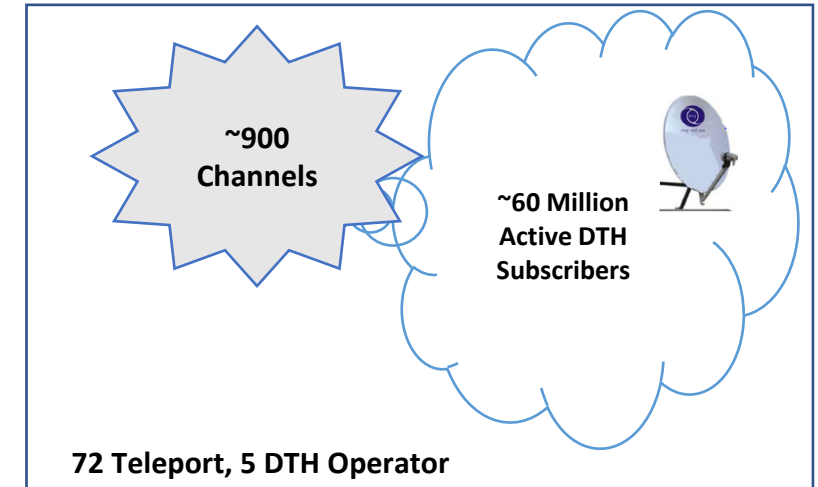
VSAT Services



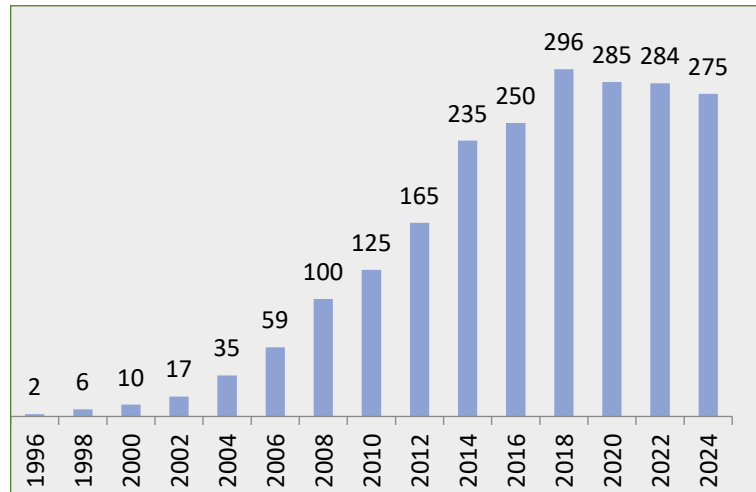
Applications

- Enterprise & Banking
- Fuel Companies
- Stock Exchanges
- Corporate CUGs
- Public Sector Units – CUGs
- Cellular Backhaul
- In flight & maritime connectivity
- Government & Strategic
- Rural Connectivity
- Telemedicine & Tele-education

TV Broadcast & DTH



No. of VSAT Users in India ('000)



2.75 Lakhs VSATs in different Bands

In-Flight & Maritime Connectivity (IFMC)



About Twenty Two Licenses

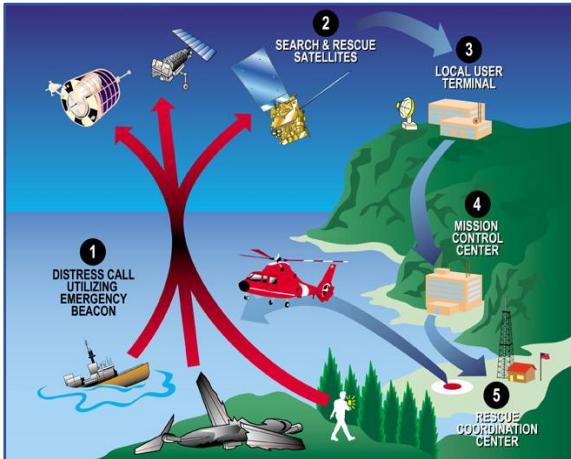
Broadband – Enterprise/Consumer/Gram Panchayat



>5000 Gram Panchayats Connected

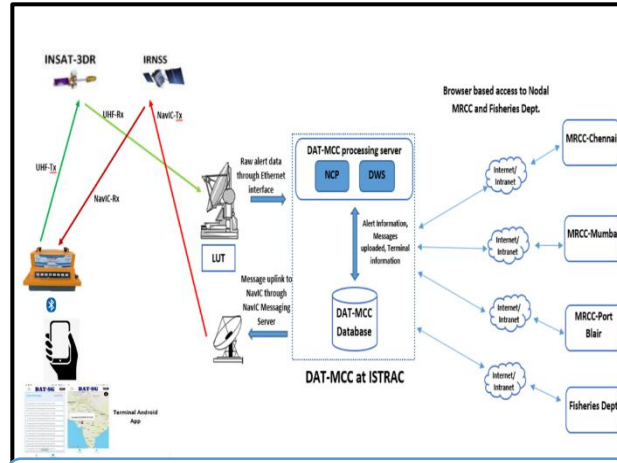
Societal Satcom Applications

Search & Rescue



~2150 lives saved in 130 incidents
- Ships, Air Planes – ICG/AAI

Distress Alert Terminal (DAT)



~2150 lives saved in 130 incidents
- States / Coast Guard

Tele-medicine Connectivity



~180 Telemedicine nodes, for
DEFENCE & CIVIL users

Tele-education Channels



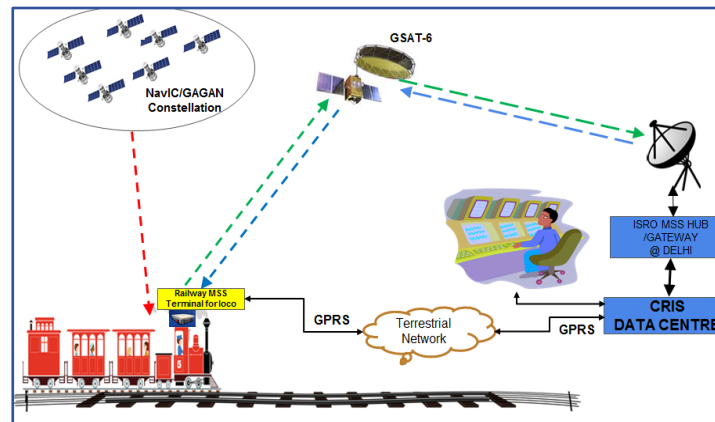
200+ Under PM e-Vidya Prog –
Min of Education

Data Relay Transponder



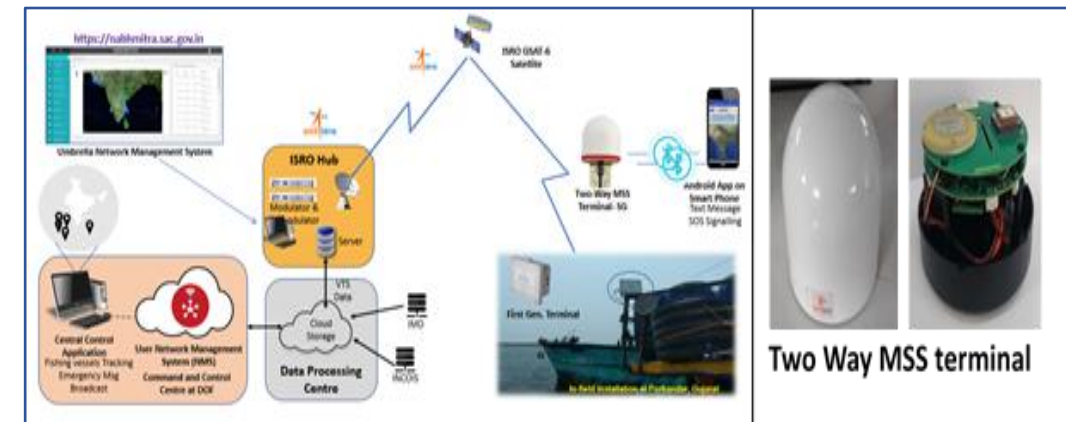
6000+ In-situ Data Collection platforms –
IMD, SASE, CWC, ISRO, BARC, NIOT/INCOIS

Real-Time Train Tracking System



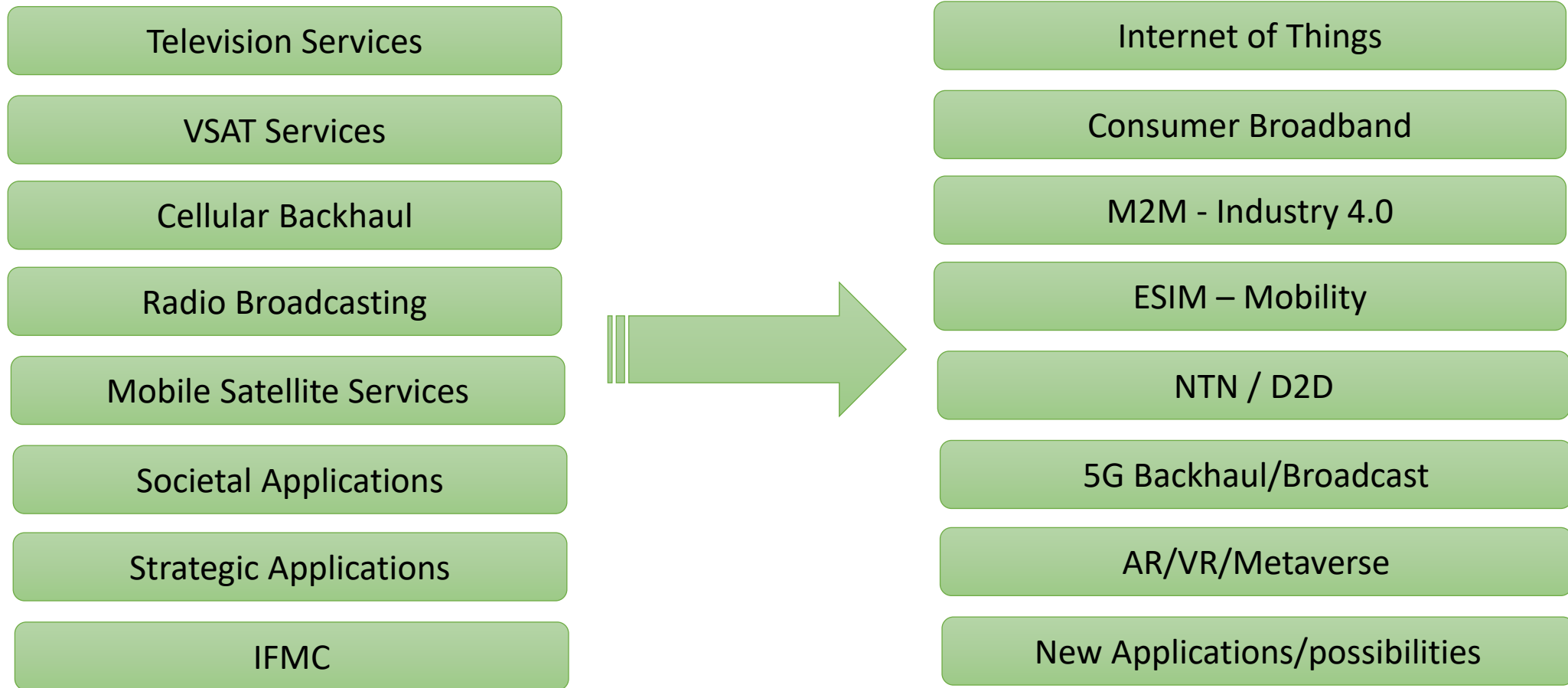
8000+ Locomotives Covered - Railways

Vessel Communication & Support System



20000+ Vessels Covered. 89000 by End 2025 – Dept of Fisheries.

Emerging Trends in Applications



Service Demands: High bandwidth, Low Latency, Thin data, Anywhere, Anytime

Go Further Beyond... Indian on Moon

Next Generation Launch Vehicles



- Human rated LVM3
- LVM3 upgradation semi-cryo engine
- **Development of new modular launch vehicle**

1

**Next Generation
Launch Vehicle**

Gaganyaan series



- Gaganyaan follow-on missions
- Humanoid to Moon orbit
- Human in Moon orbit
- **Space station build-up**

2

**Bharathiya
Antariksh Station
by 2035.**

First module by 2028

Chandrayaan series



- Chandrayaan follow-on missions
- Docking, Robotics, Sample return
- Long duration mission
- In-situ Resource Utilization

3

**Indian Moon
landing-2040**

Lunar Exploration

***Hand in Hand with Indian
Space Industry***

- ✓ NGEs can carry out all activities of space based communications – design, development & realisation of sub-systems & spacecraft; establish assembly & integration facilities; provide capacity to various services, within and outside India.
- ✓ Bring GSO/NGSO systems into service.
- ✓ Establish Satellite Control Center (SCC) and Telemetry, Tracking & Command (TT&C) stations, for controlling their own satellites or third party satellites,
- ✓ Make new ITU filings – enhancement of orbit spectrum resources.
- ✓ Operational assets to be owned, operated and managed by NSIL.

- ✓ FDI as per GOI policies.
- ✓ Level playing among multiple players.
- ✓ The service providers can hire the capacity IN-SPACe authorised satellites.
- ✓ Freedom to make commercial arrangements directly between space segment provider and service providers.
- ✓ IN-SPACe in place for promotion, permission and monitoring

Regulations of communication services under DOT & MOIB

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THANK YOU

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