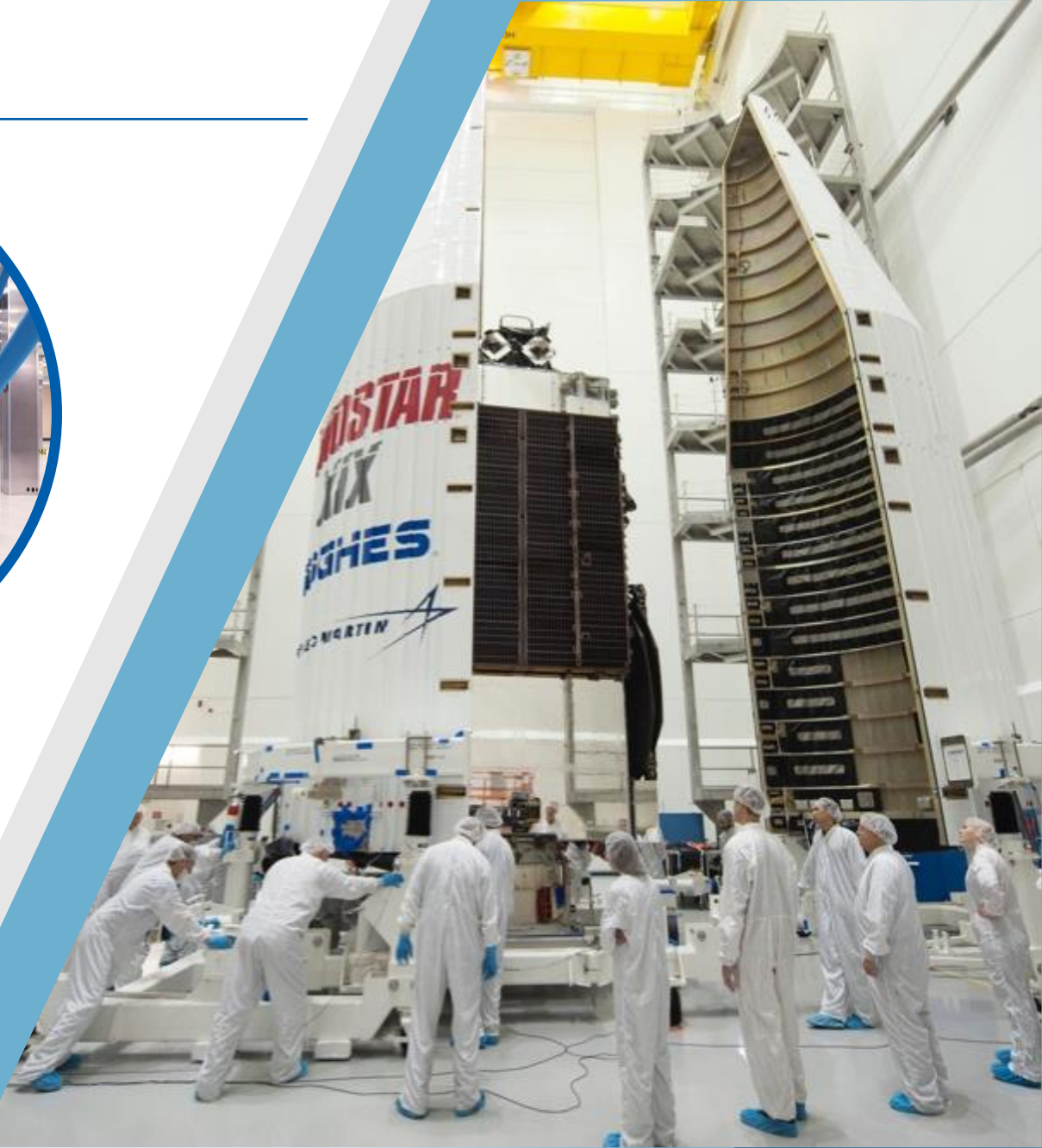**October 2023**
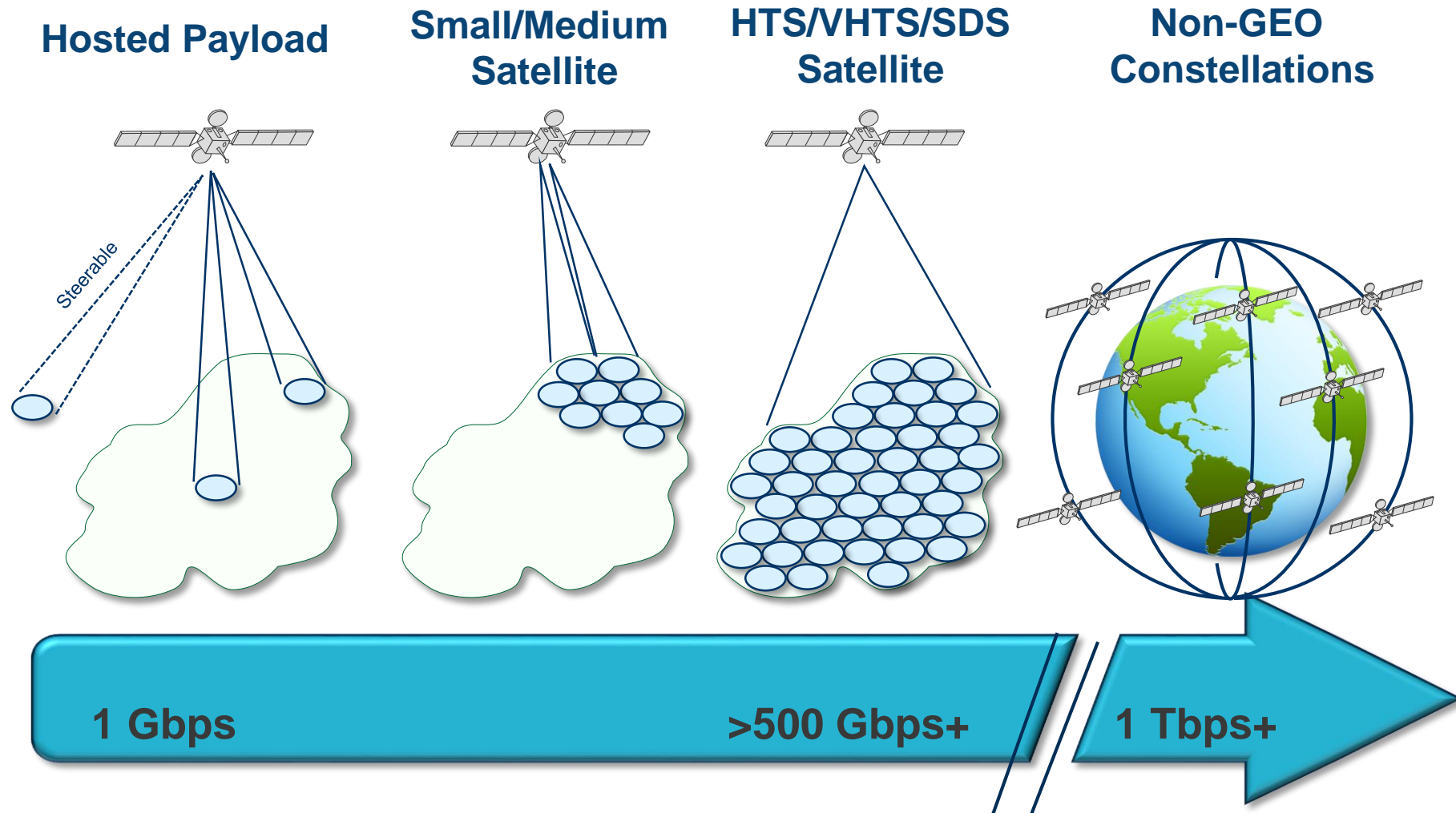
The Evolution of Connectivity
Satellite

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An EchoStar Company

An Evolving & Dynamic Industry
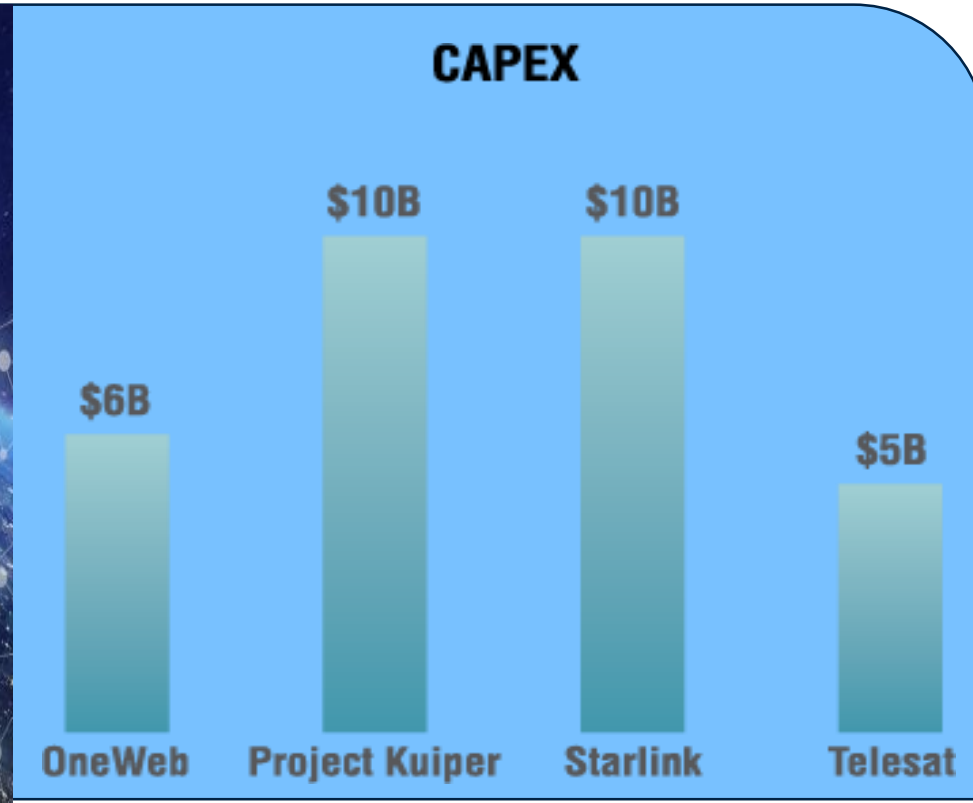
Space Segment Evolution

HTS Satellite Technology (GEO & nGSO)

Hosted Payload

Small/Medium Satellite

HTS/VHTS/SDS Satellite

Non-GEO Constellations

Steerable

1 Gbps

>500 Gbps+

1 Tbps+

The Commitment & Promise of Satellite Constellations

CAPEX

OneWeb	Project Kuiper	Starlink	Telesat
$6B	$10B	$10B	$5B

Low Latency

Homogeneous service everywhere

Land, Water & Air

100% Global Coverage

Scalable Model and Terabits of Capacity

Fiber in the SKY

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India HTS – Big stride for an-inclusive *Digital India*
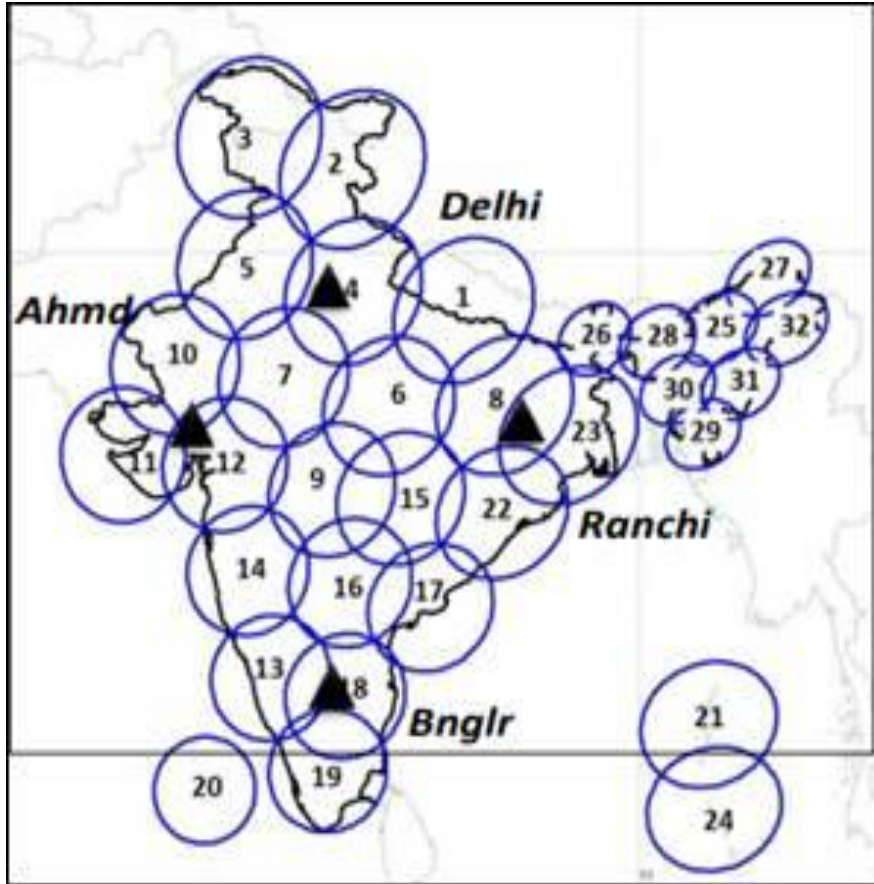
High Performance Multi-Mbps Service - Powering new solutions across diverse segments

The Direct Satellite-to-Device Promise…

| 5G NTN | Chipsets Integration of Satcom | 3GPP R17 (Inclusion of Satcom) | Satcom – MNO Alliances | MSS Specific Constellations | Spectrum Sharing |

Ground Segment Evolution

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High Throughput Ground Systems – Completing ecosystem

Diverse form factor, higher performance, higher throughputs

Gateways

GEO Terminals

NGSOTerminals

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Demand - Driving Evolution

The Digital Divide Projects – Generating Demand

Global Initiatives

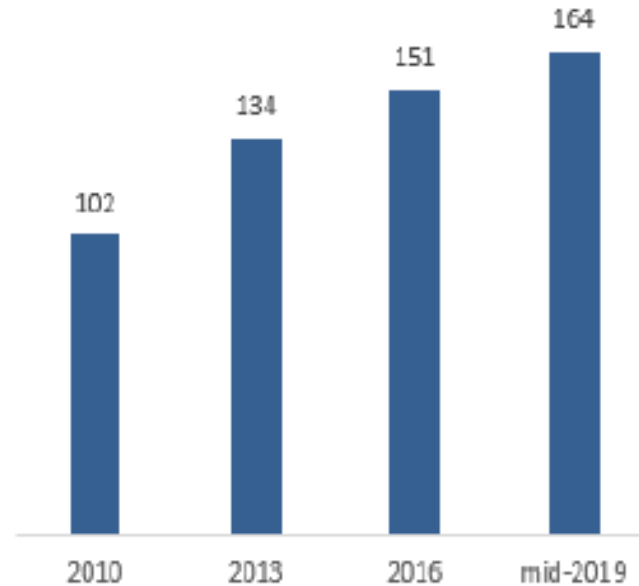**Connect 2030**

GROWTH

INCLUSIVENESS

SUSTAINABILITY

INNOVATION & PARTNERSHIP

ITU

National Broadband Plans

Number of countries with Broadband Plans, 2010-2019

2010	2013	2016	mid-2019
102	134	151	164

Creating Opportunities for Satellite

❖ **Village Broadband**

❖ **Internet To Schools**

❖ **Telemedicine**

❖ **E- Governance**

❖ **Cellular Services**

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GOI Commitment to Rural Broadband – Generating Demand

- ❖ Great emphasis and commitment from GOI to connect remaining unconnected villages

- ❖ $16Bn fund for connecting 640K unconnected villages – announced on August 23

- ❖ Plan to connect the unconnected villages in the next 2.5 years

- ❖ The plan is to take Fibre / Broadband to home with the help of local village entrepreneurs (Udhyamis)

- ❖ Have provisioned 10% for alternate wireless technologies other than Fibre - **$1.6Bn**

- ❖ **GEO, MEO, LEO all included in the list of alternate technologies**

Cabinet approves Rs 1.39 lakh cr for last mile BharatNet connectivity

By Subhrojit Mallick, ET Bureau • Last Updated: Aug 05, 2023, 05:17 PM IST

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Synopsis
The cabinet has approved a last-mile broadband connectivity plan under the BharatNet project for 6.4 lakh villages across the country with a financial outlay of Rs 1.39 lakh crore, a top government official said. The broadband connectivity project has already connected 1.94 lakh villages, with the rest likely to be completed in two and a half years.

Representative image

The **cabinet** has approved a last-mile broadband **connectivity** plan under the **BharatNet** project for 6.4 lakh villages across the country with a financial outlay of Rs 1.39 lakh crore, a top government official said.

The **broadband** connectivity project has already connected 1.94 lakh villages, with the rest likely to be completed in two and a half years.

Satellite Fitment – Rural Connectivity

Satellite Fitment - Rural Communities Use Cases

○ Lack of ● Plenty of

| Segment	Ultra Rural Village (~50 users)	Rural Village (~100 users)	Large Community (250+)
Details	 • Unserved village – 10 ~ 50 users • Solar Powered • Simplest & low cost of deployment. • Using WiFi enabled handheld devices	 • Mid size villages - (50 ~ 100 users • Solar as Backup • Typically, on Gram Panchayat rooftop • Using WiFi enabled handheld devices • PSTN expansion an option	 • Larger area covering (500+ people using mobile / broadband) • Bigger mast with Captive LTE/5G • Broadband access using WiFi enabled handheld devices • PSTN expansion an option
Coverage	~100 m	~ 1 Km	~ 7 Km

Landscape

QOS	ARPU	Area Density	Equipment Cost	Paying Capacity

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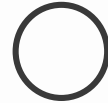
Societal Impact of Satellite:
Hughes' Contribution

- BBNL & BSNL's Partner in delivering High Speed Satellite Broadband to 6,000+ remotest of remote Gram Panchayats

- First Commercial VSAT Service Provider to launch nation wide High Throughput Satellite (HTS) services in India, under the aegis of ISRO

- Partner to Telcos delivering 4G to 100s of unserved villages under USOF Program

- Accelerating Financial Inclusion through remote bank branch and ATM connectivity

- Quick Deploy Solutions for FAST response in the event of Emergencies / Natural Disasters – NDRF, Odisha Police, Odisha Fire, Ladakh Disaster Management

- High Speed and Cost-Effective Satellite Broadband for businesses

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Hughes extends Bollywood' reach !

- **6000 Theatres**
- **Piracy reduced by 30%**
- **Pan-India same day release**
- **Enabling rural cinema initiatives**

POWERING A
CONNECTED FUTURE

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