

HUGHES

India 2020 Economic Potential And Ease of Doing Business in Satcom



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About EchoStar/Hughes

Committed and Experienced	<i>30+ years experience</i>
Global	<i>Americas, Europe, India and offices throughout world</i>
Financially Strong	<i>~\$1.8 billion revenue</i>
Leadership in VSATs	<i>50% VSAT market share</i>
Significant Satellite Fleet	<i>25 satellites</i>
Combined Technology and Services	<i>Excellence in communication systems and applications</i>

Hughes Global Service Businesses



NORTH AMERICA (Germantown, MD)



EUROPE



INDIA (New Delhi)



SOUTH AMERICA (São Paulo, Brazil)

Hughes Americas Ka-band Network



EchoStar XVII



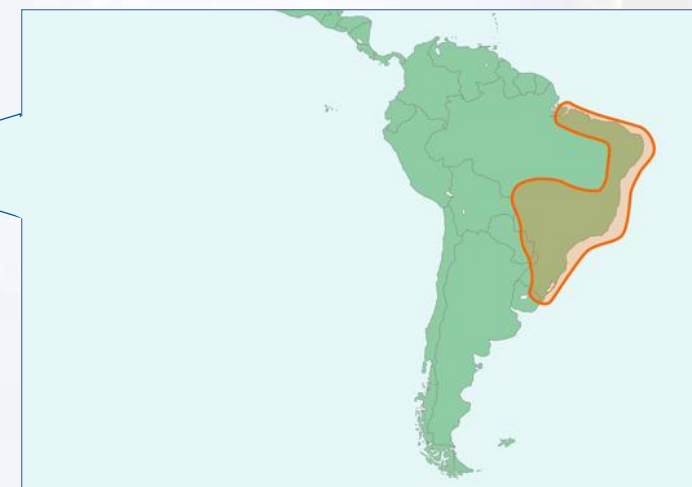
Hughes 63W Ka-band



*Combined system
delivers over 400
Gbps to key
markets across
the Americas*



EchoStar XIX



Hughes 65W Ka-band

Broad International Customer Base

Satellite Operators



Космическая с
Федеральное государственное унитарное



yahsat لياحه سات



Carriers



ethio telecom
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VSAT Operators



DATA GROUP
ОПЕРАТОР РИШЕНЫ



End Users



Hughes is a Trusted Industry Partner

Broadband LEO Satellite Operators



Hughes chosen to develop gateways and user terminal modems for next-generation LEO system global deployment

Mobile Satellite Operators



Major JUPITER System Customers



The Indian Economy *Powered by Hughes VSATs*

INDUSTRY

70,000+ VSATs in
Bank ATMs;
4 Billion ATM transactions
annually

Networking the
\$1.5 Trillion
Equity Market

Passing out 10% of
all Ivy League MBA
students

HUGHES

> 1000 Movies
distributed annually;
20% piracy reduction

100,000 Villages
empowered by
e-Governance

RURAL

GOVT.



Customer and Service portfolio in India

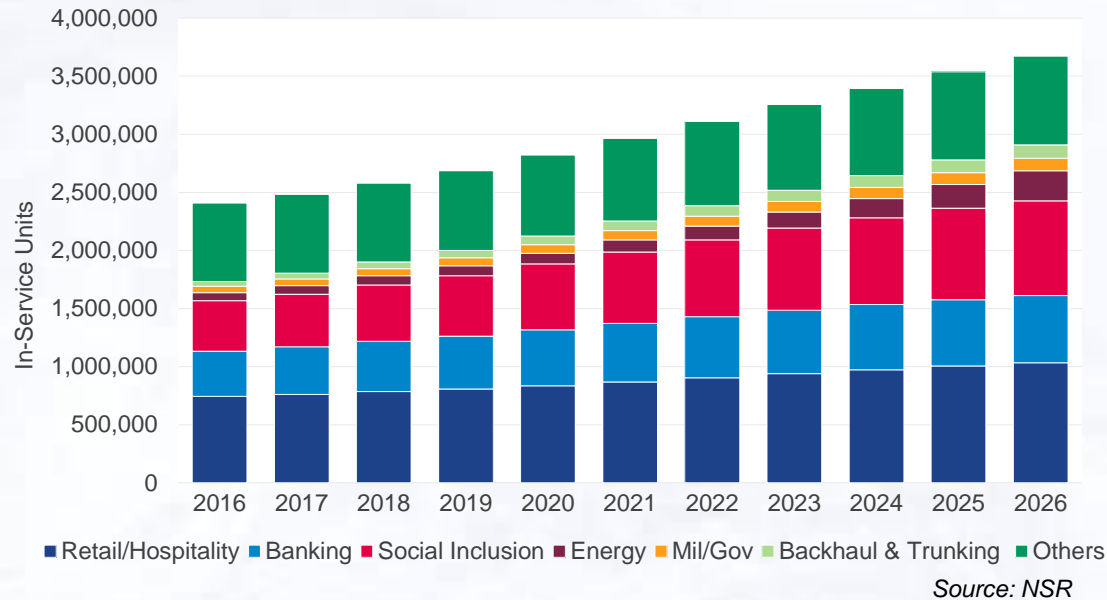
Top Indian Companies and Government use Hughes !



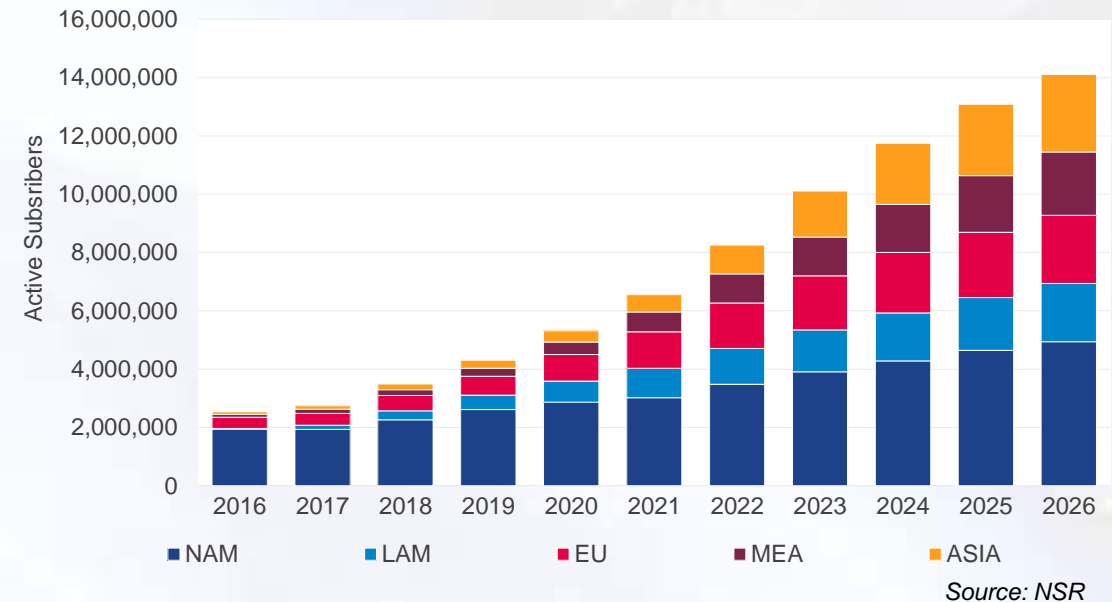
- ❖ Managed Network Services
 - ❖ Satellite Broadband and VPN
 - ❖ HughesON – MPLS/3G/DSL
 - ❖ Trunking
- ❖ System Integration
 - ❖ Cellular networks
 - ❖ Mobility
 - ❖ Defense and Govt.
- ❖ Digital Media Services
 - ❖ Digital cinema and signage
 - ❖ Content distribution

Global Trends in Satcom

Enterprise VSAT Active Sites by Application

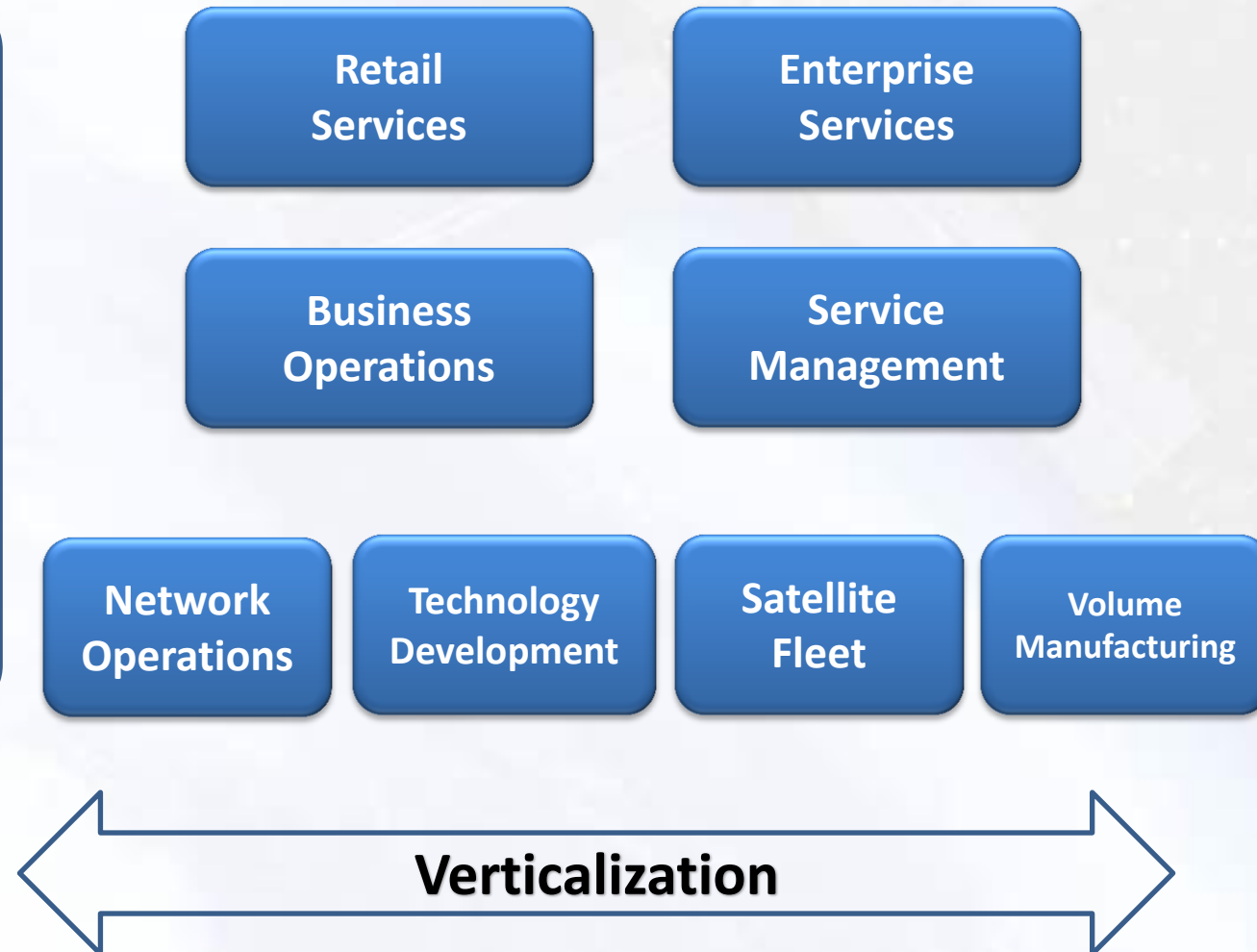
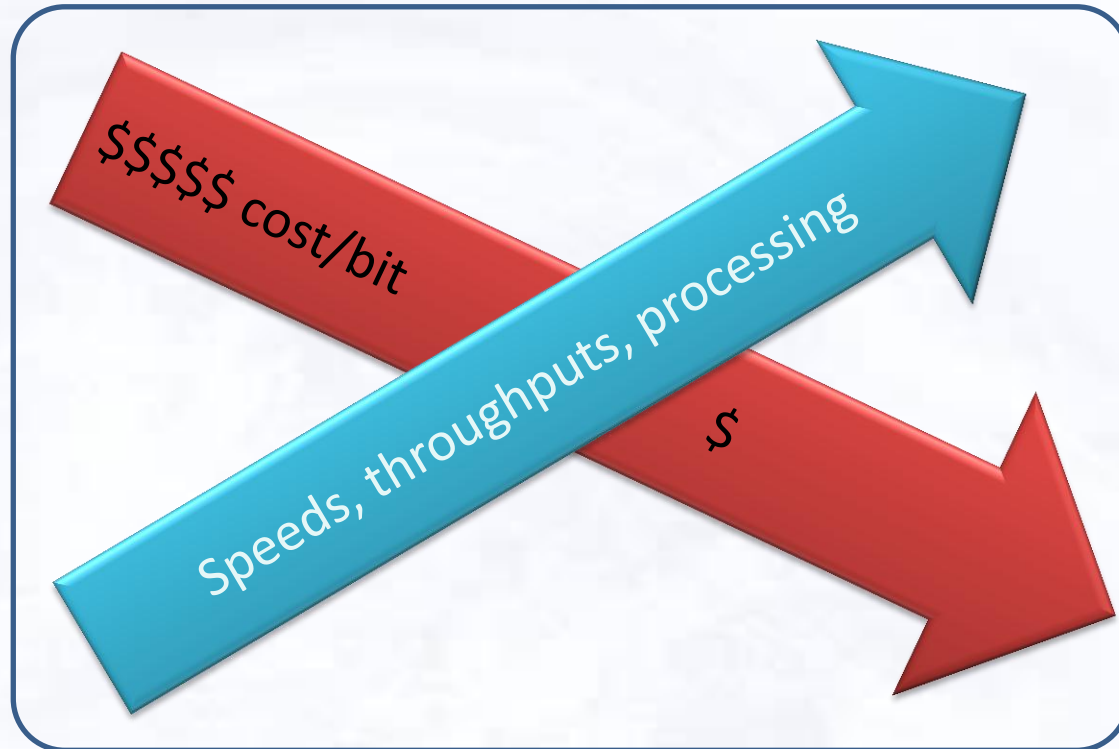


Consumer Broadband Subscribers by Region



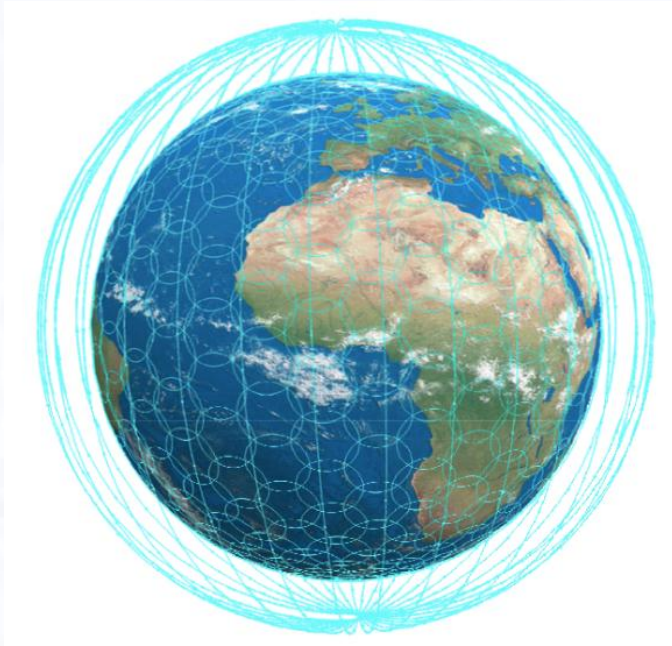
- Enterprise applications has hit a plateau in many regions
- Consumer, backuals – Cellular & Wifi hotspots are the growth areas
- Mobility is another promising area, which can be best addressed by Satellite

Satellite Industry/Hughes Path



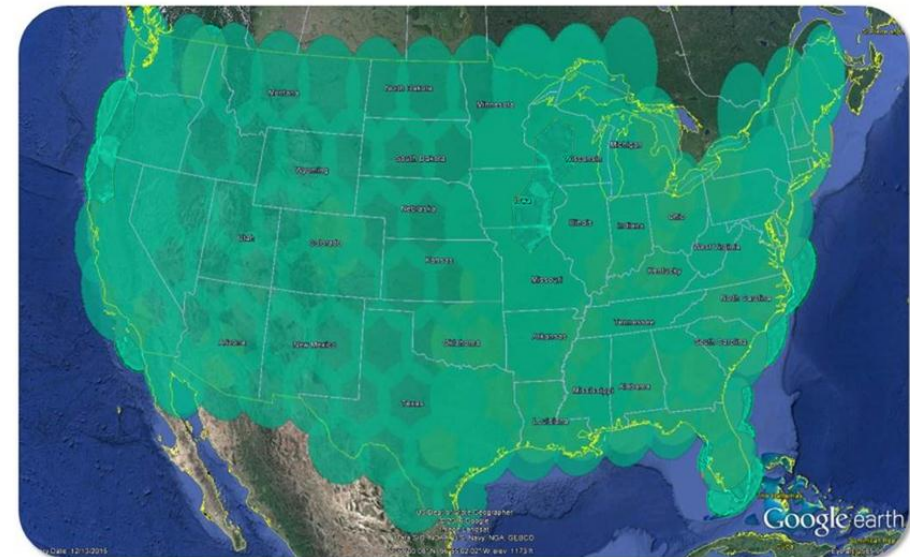
Innovation: LEO + GEO HTS

LEO



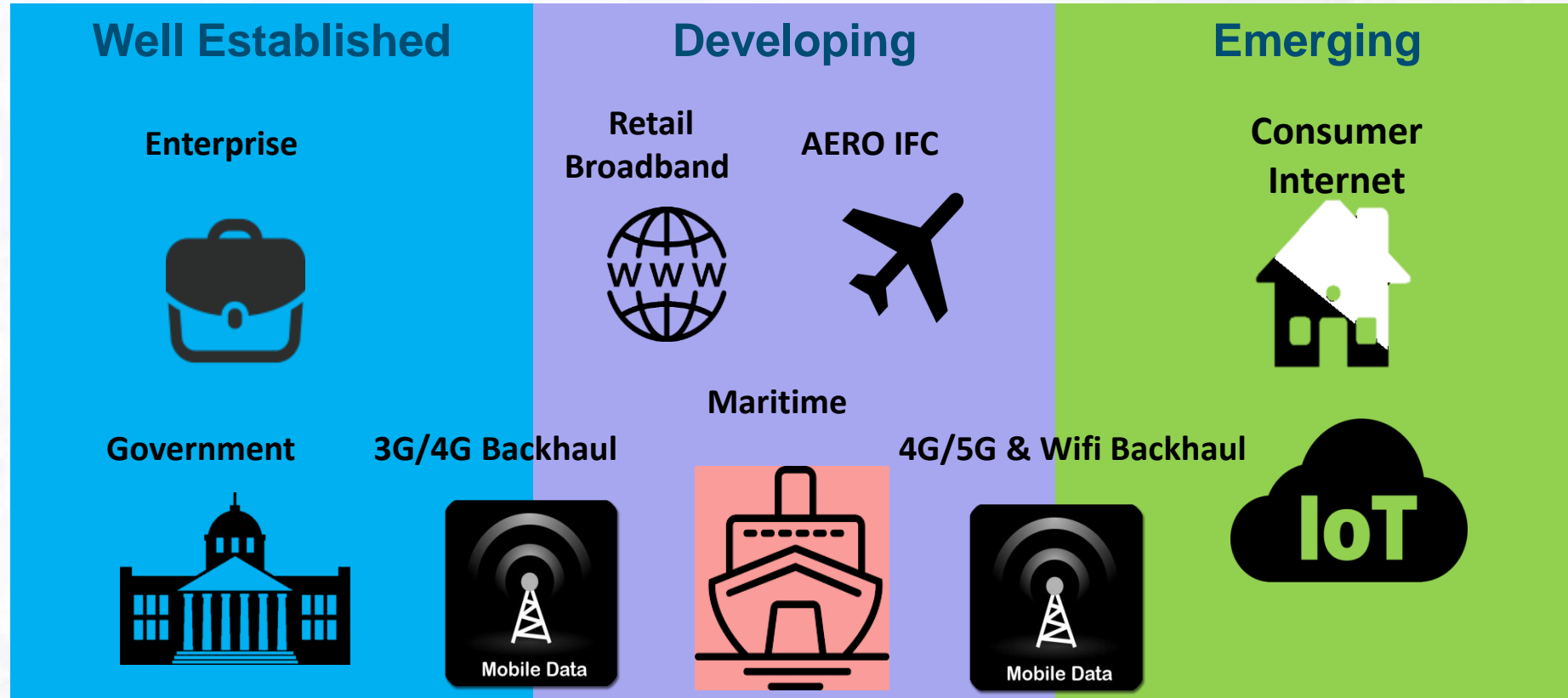
- Global coverage
- Low latency
- Uniformly distributed capacity

GEO



- High density capacity
- Regional capacity optimization
- More Gbps in a given area

Future Growth Drivers



Big Market Opportunity for Satcom in India

VSATs & ENTERPRISE SERVICES

(275,000 units, growing by 5% annually on average)*

CELLULAR BACKHAUL

(Revenues expected to cross \$1bn by 2018)

MOBILITY

(~950mn mobile users with 300mn internet subscriptions)*



HIGH SPEED RURAL BROADBAND

(~ 50% still unconnected)

WI-FI SERVICES

(~500mn wireless devices currently. India's population in the age group 10-25yrs is 350 mn)

ULTRA HDTV

(DTH Operators announced 4K platforms)

**Source: TRAI press releases and documents*

Ease of Doing Business in India

What needs to change

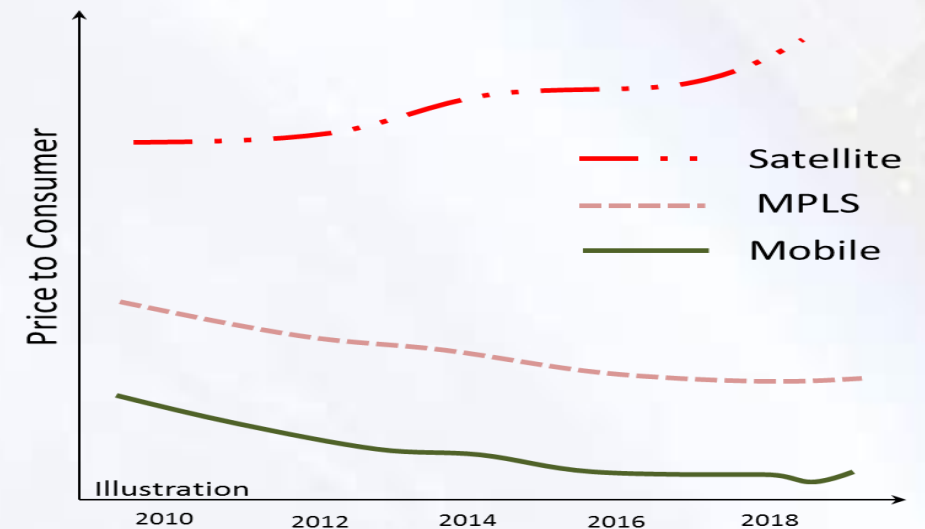
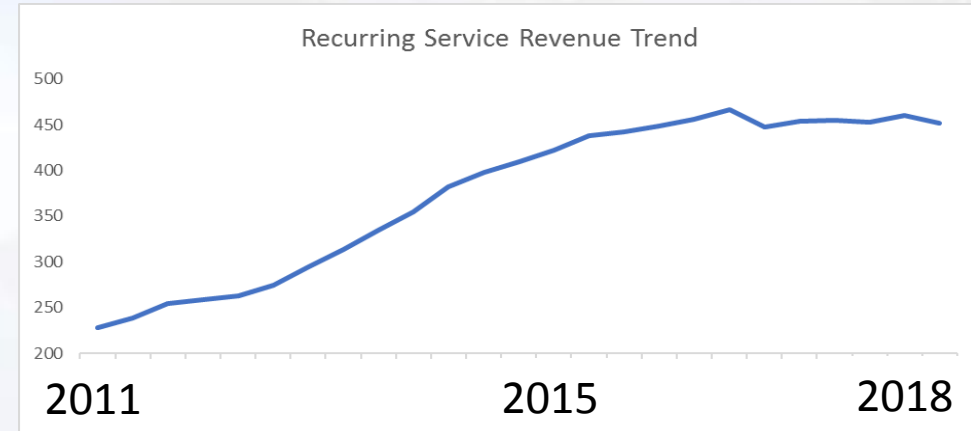
Satellite Broadband in India

- Satellite Broadband grew steadily till 2008
- **Entry of 3G / 4G and MPLS changed the market dynamics**
- Satellite market share declined due to pricing issues.

Broad comparison of similar data volume usage :-

– Mobile 3G/ 4G	-	INR	399
– MPLS (2 Mbps)	-	INR	32,000
– Satellite (512 Kbps)	-	INR	1,25,000

- **Drivers for Satellite Broadband price increase**
 - Foreign satellite rate increase due to lack of assurance and visibility
 - Increase of Antrix mark-up for foreign operators (4 -7.5 %)
 - 15% increase due to Operators passing on Withholding Tax
 - Domestic satellite rate increase



Satellite competitive only in thin route applications like ATMs / Oil retail

Growth in Satellite Broadband

- Indian Satellite industry is re-calibrating to address new frontiers for survival and growth
 - Broadband for Retail, Rural & Skill Development
 - Backhaul for 3G/4G & WiFi hotspots
 - Mobility
- Access to lower cost bandwidth is essential using
 - Spot beam Satellites
 - High Throughput Satellites in Ka Band



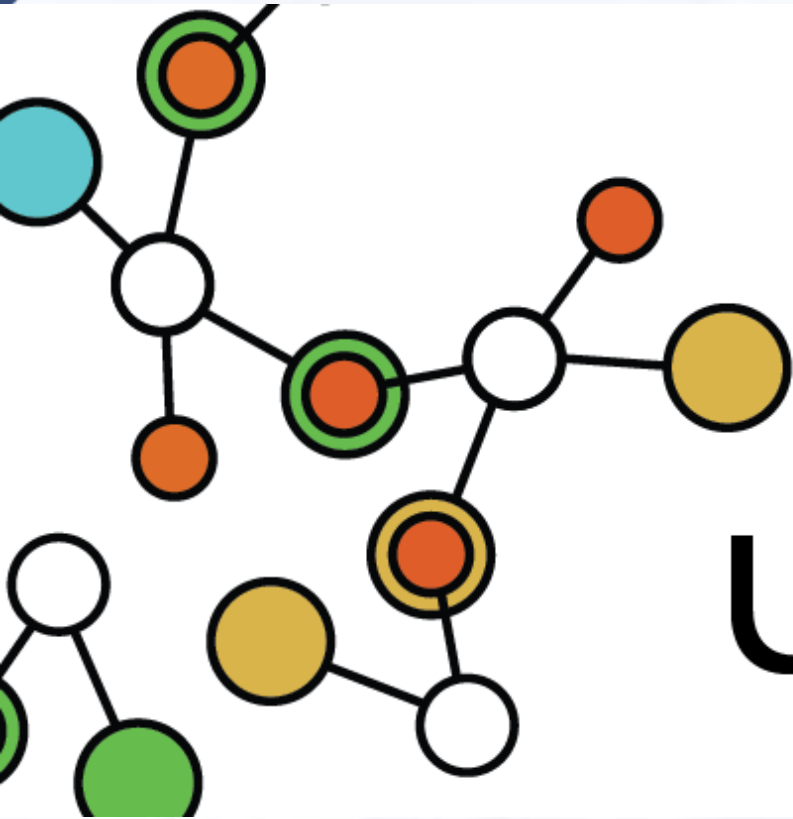
Satellite Capacity Availability at Lowest Cost must for Growth

What needs to Change?

- Indian service providers need to be able to procure capacity at globally competitive rates
 - Approvals under the Indian Satellite System
 - Ability to put out global RFPs for capacity
 - Access to MEO & LEO capacity
- Removal of artificial barriers
 - Limit of 2 Mbps on a 1 M antenna for VSAT whereas 8 Mbps for a DSNG on 1 M
 - Pattern testing of each antenna for backhauls
 - Spectrum for satellite backhauls is 95 times more than for VSAT services to enterprises
- Time is of essence
 - IFMC license
 - Implementation of various suggestions provided by BIF to DoT for NDCP 2018



Our Mission



connecting
the
unconnected

using Satellites