ACCELERATING DIGITAL INCLUSION WITH SATELLITE

India SatCom 2020
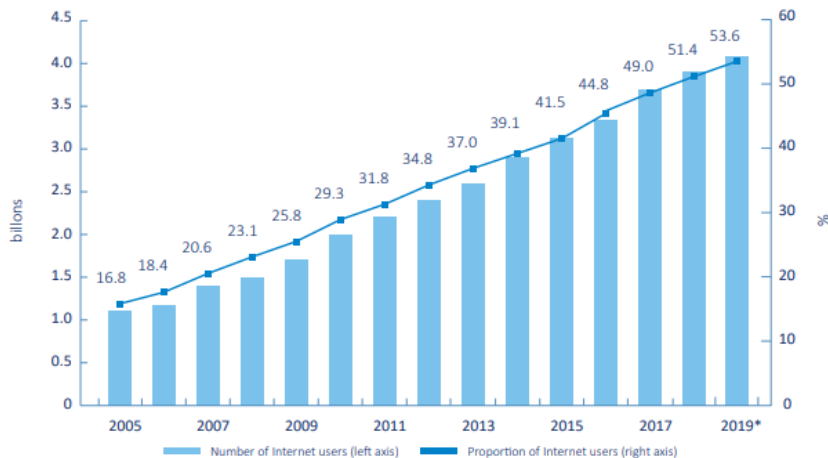
PRESENTED BY:
Harsh Verma

PRESENTED ON:
25 November 2020

GLOBAL DIGITAL DIVIDE
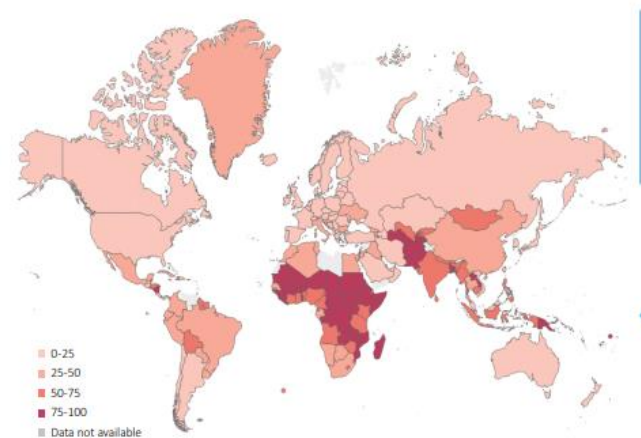## Overview

Individuals using the Internet, 2005-2019*

Percentage of the population not using the Internet, 2019*

- 0-25
- 25-50
- 50-75
- 75-100
- Data not available

Note: * ITU estimate.   Source: ITU.

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▲ An estimated 4.1billion people are using internet globally representing 53.6% penetration

▲ Most of the offline people lives in least developed and developing countries. Countries with the highest proportions of people not using the Internet are mostly in Africa and South Asia
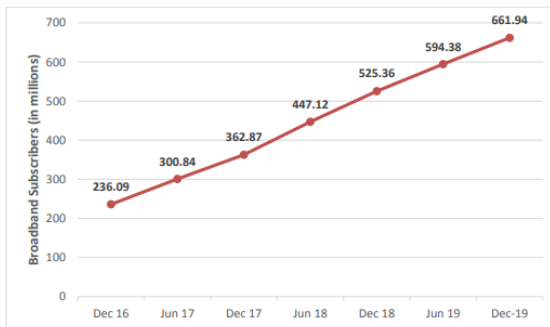
IMPACT OF RELIABLE BROADBAND

Economic effect
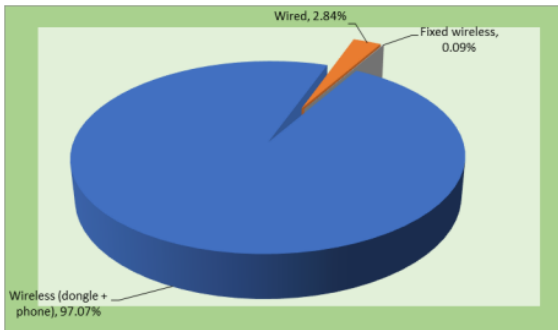
Source: impact of broadband on the economy, ITU, 2012

▲ Strong positive correlation between broadband penetration and GDP growth—a 10% increase in penetration yielding a 1.3% increase in GDP growth rate

▲ Studies in India estimate that the impact could be significantly higher for the country, given the increased productivity and efficiency gains that are likely to accrue to the economy.
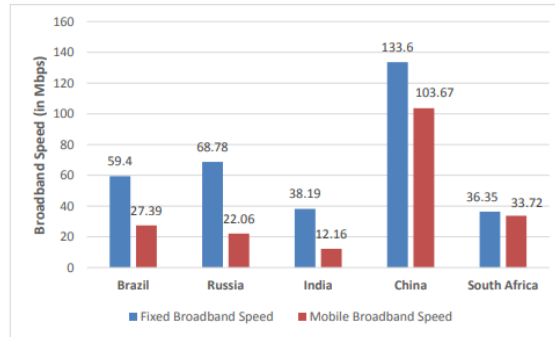
INDIA BROADBAND MARKET

SES

BROADBAND SUBSCRIBER GROWTH IN INDIA

Broadband Subscribers (in millions)

- Dec 16: 236.09
- Jun 17: 300.84
- Dec 17: 362.87
- Jun 18: 447.12
- Dec 18: 525.36
- Jun 19: 594.38
- Dec-19: 661.94

BROADBAND SUBSCRIBER BY TECHNOLOGY INDIA

- Wired, 2.84%
- Fixed wireless, 0.09%
- Wireless (dongle + phone), 97.07%

BROADBAND SPEED COMPARISON: BRICS

Broadband Speed (in Mbps)

| Country	Fixed Broadband Speed	Mobile Broadband Speed
Brazil	59.4	27.39
Russia	68.78	22.06
India	38.19	12.16
China	133.6	103.67
South Africa	36.35	33.72

■ Fixed Broadband Speed　■ Mobile Broadband Speed

▲ Broadband subscribers in India reached close to 700m as of June 2020

▲ Almost 97% of subscribers are served by Mobile broadband

▲ Broadband speed is a concern. Lowest among BRICS nations and much lower than global averages

DIGITAL INDIA INITIATIVES

9 Pillars
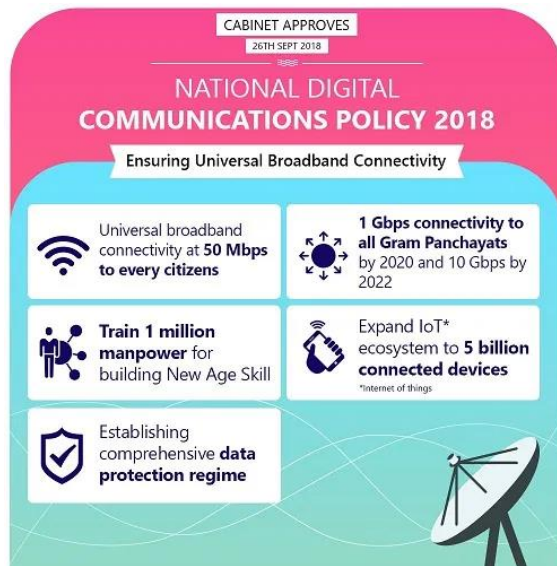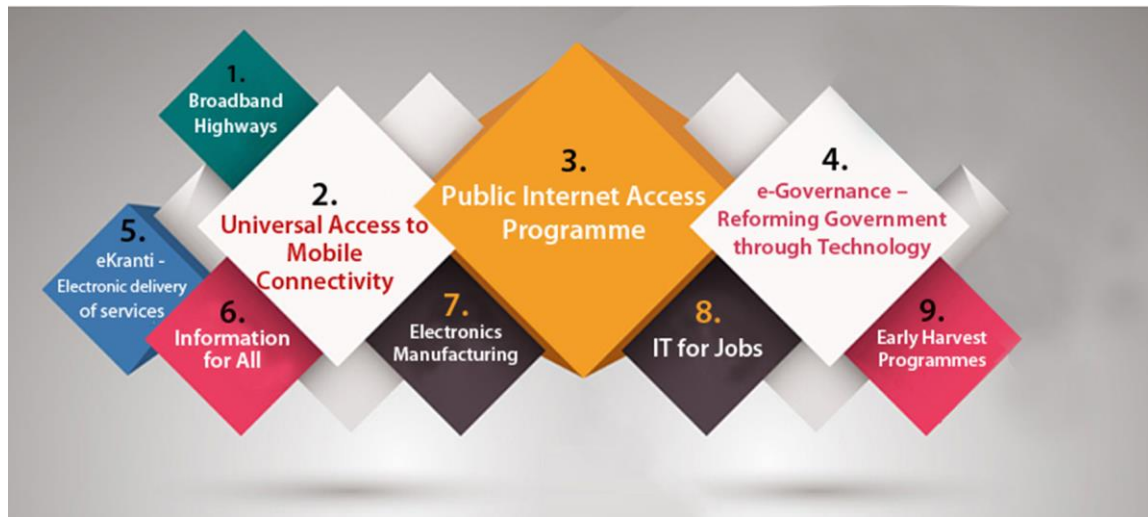
- ▲ The **National Digital Communications Policy**, 2018 (NDCP) sets targets of providing every Indian citizen with **50 Mbps of broadband** and every Gram **Panchayat with 10 Gbps of connectivity** by 2022.

- ▲ Given India's geography, massive amounts of satellite capacity will be required to ensure that even the most remote places in India can be connected affordably and in time.

WHAT WE DO

Working with the industry to help achieve digital inclusion

Only satellite operator with **GEO-MEO constellation**
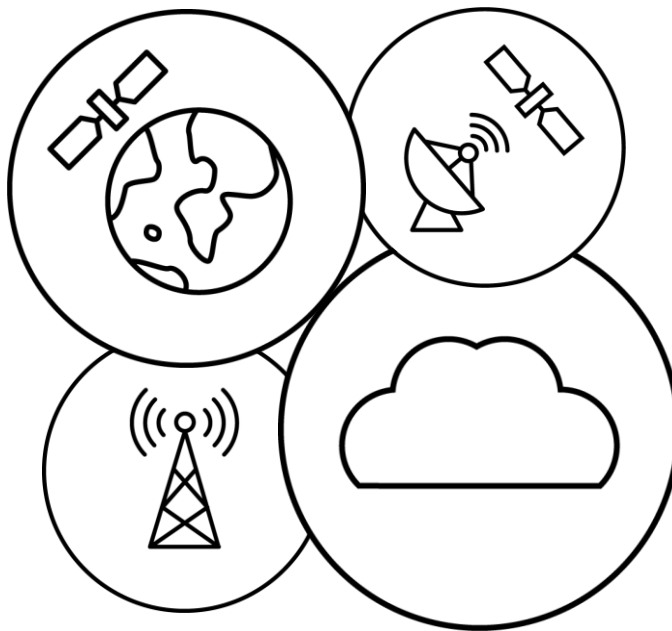
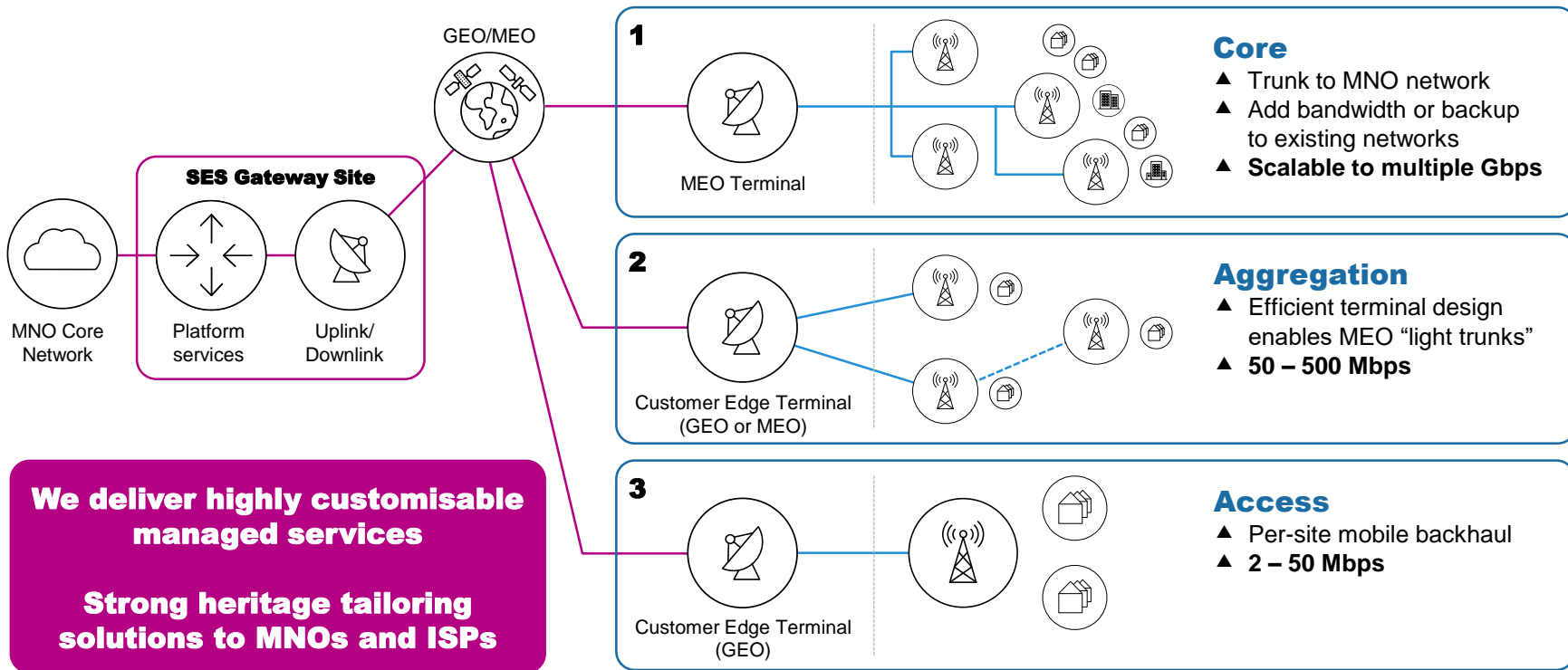Fully managed **end-to-end service** to support network rollouts

We support telcos with their 4G roll-outs and **connecting remote areas**

We partner with **cloud service providers to extend networks** anywhere

MULTI-ORBIT SATELLITE FLEET

More ways to extend network via satellite for rural broadband

SES▲

1 MEO Terminal

Core
▲ Trunk to MNO network
▲ Add bandwidth or backup to existing networks
▲ **Scalable to multiple Gbps**

2 Customer Edge Terminal (GEO or MEO)

Aggregation
▲ Efficient terminal design enables MEO "light trunks"
▲ **50 – 500 Mbps**

3 Customer Edge Terminal (GEO)

Access
▲ Per-site mobile backhaul
▲ **2 – 50 Mbps**

GEO/MEO

SES Gateway Site

Platform services

Uplink/ Downlink

MNO Core Network

We deliver highly customisable managed services

Strong heritage tailoring solutions to MNOs and ISPs

TELEGLOBAL, INDONESIA

Case study

SES

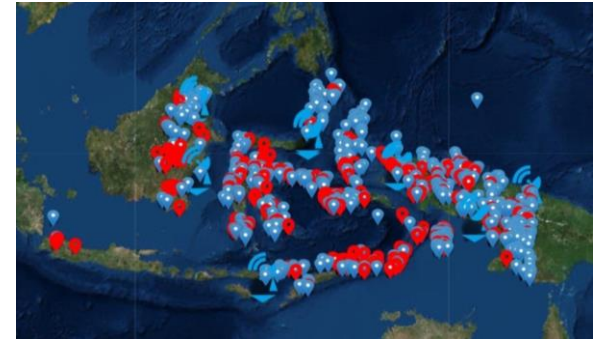| TELEGLOBAL
brings the world closer | **Delivering broadband access to rural communities** |

Situation
- ▲ Only 55% of the Indonesia's population of 261M were connected to the internet
- ▲ Support BAKTI's project to meet the connectivity requirements in rural areas

Solution
- ▲ With Teleglobal, SES is providing approx. 4Gbps capacity on SES-12
- ▲ Worked with Teleglobal to build 2 in-country gateways

Result
- ▲ Currently, there are 1,114 remote terminals connected to the network
- ▲ Provides internet access to schools, hospitals, and local government headquarters in rural parts of Indonesia via 3G and Wi-Fi

"At Teleglobal, we believe in the power of connectivity, in opening new doors of opportunity to communities in Indonesia and around the world. With the new service offering, Teleglobal is bridging the digital divide and bringing much-needed e-Government and other essential services to the underserved rural communities of Indonesia"

Candra Indianto, Teleglobal Director

INRED, COLOMBIA
Case study

SES and local partner INRED to enable 1,300 free Wi-FI hotspots to connect Colombia

SES

- ▲ Space segment
- ▲ Gateway capex
- ▲ Gateway operation
- ▲ Gateway Collocations/cross connections
- ▲ VSAT capex
- ▲ Content Filtering

MINTIC

PARTNER

- ▲ Site surveys
- ▲ Wi-Fi capex (Access Points)
- ▲ Installation and commissioning of VSAT and Wi-Fi
- ▲ IP Termination
- ▲ Lifecycle services – Helpdesk, Operation & Maintenance
- ▲ Preventive Maintenance
- ▲ Administrative and local sites staff

TELENOR, MYANMAR

Case study

Performance and reliability drive LTE penetration = revenue growth

Situation
- ▲ Eroding revenues, competition & no access to new market.
- ▲ Unreliable fibre/MW
- ▲ Quick response upgrades needed

Solution
- ▲ Cluster or 3G/4G sites aggregated using MW.
- ▲ Aggregated RAN traffic backhauled with P2P link.
- ▲ O3b E-Line for backhaul with Pool Bandwidth

Result
- ▲ Performance, KPIs, equal to Terrestrial
- ▲ Rapid increase of LTE penetration
- ▲ Data traffic up 25x in weeks/months
- ▲ Major upgrade of capacity during COVID-19

Case study

SES'S CAPABILITIES

To help connect rural India

SES

GEO HTS

- ▲ **SES-12** is a newly launched hybrid HTS satellite

MEO HTS

- ▲ **20 O3b MEO satellite** constellation available today
- ▲ High throughput and low latency
- ▲ **11 more satellites** in **O3b mPOWER**

SES'S CAPABILITIES

SES-12 HTS

▲ Delivering multiple gigabits over India via wide beams and HTS beams

▲ Support for India's growing demand for rural broadband and delivers high-performance connectivity services to the region's aero and maritime markets

▲ Twelve (12) HTS spot beams over landmass and four (4) HTS spot beams over Indian Ocean with high EIRP and G/T cover the entire India.
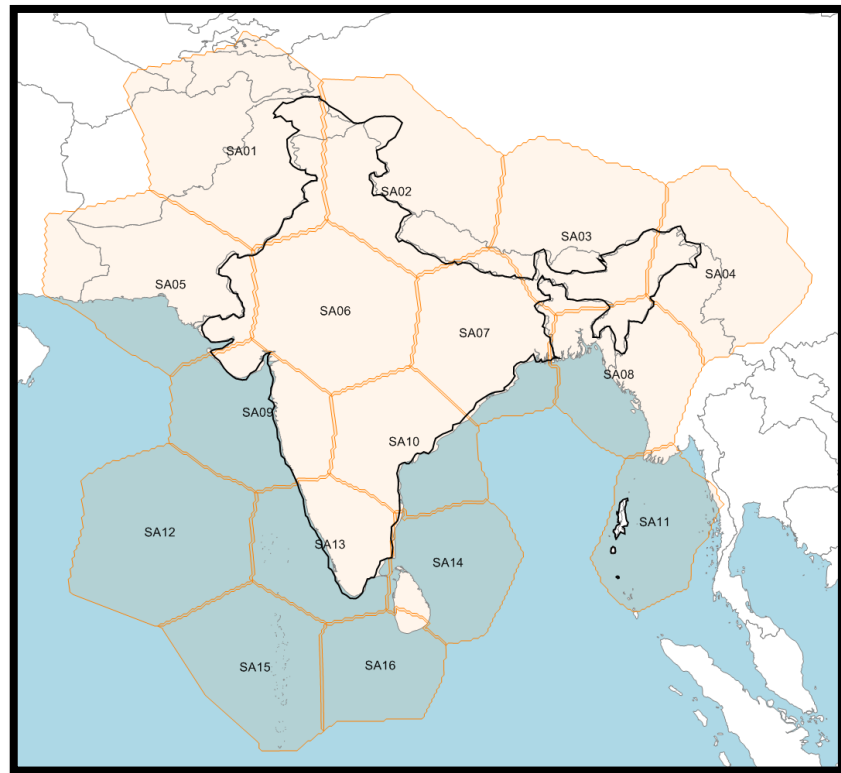
O3b mPOWER

Satellite innovation

- ▲ Fully digitised payload
- ▲ Electrically steered beam-forming (thousands per satellite)
- ▲ High throughput (to multi-Gbps) per end user
- ▲ Terabit per second scalable system
- ▲ Flexible forward-to-return throughput ratios
- ▲ Low latency MEO (<150msec)
- ▲ Inherent security & flexibility

O3b mPOWER

Ground systems and user terminals

▲ SES managed and/or private data gateways

▲ Open intelligent gateways, modems & antennas

▲ Advancing technologies (small, flat panel)

▲ High power, spectrum, bandwidth

5.5m & 2.4m Hub/Gateways

Terminals

2.4m

1.2m

FPA

WHAT IS SATELLITE'S ROLE IN CONNECTING RURAL INDIA?

Alongside terrestrial networks, **satellites play a crucial role** in extending connectivity to the unserved and underserved.

Collaboration between organisations and a good partner ecosystem are equally important to achieve digital inclusion.

Use of technology—including next-generation, multi-orbit satellite communication systems—can help accelerate digital inclusion timelines by bringing the best of technology to India.

Forward looking policies with the aim to **increase ease of doing business** are key to spur growth.

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SES