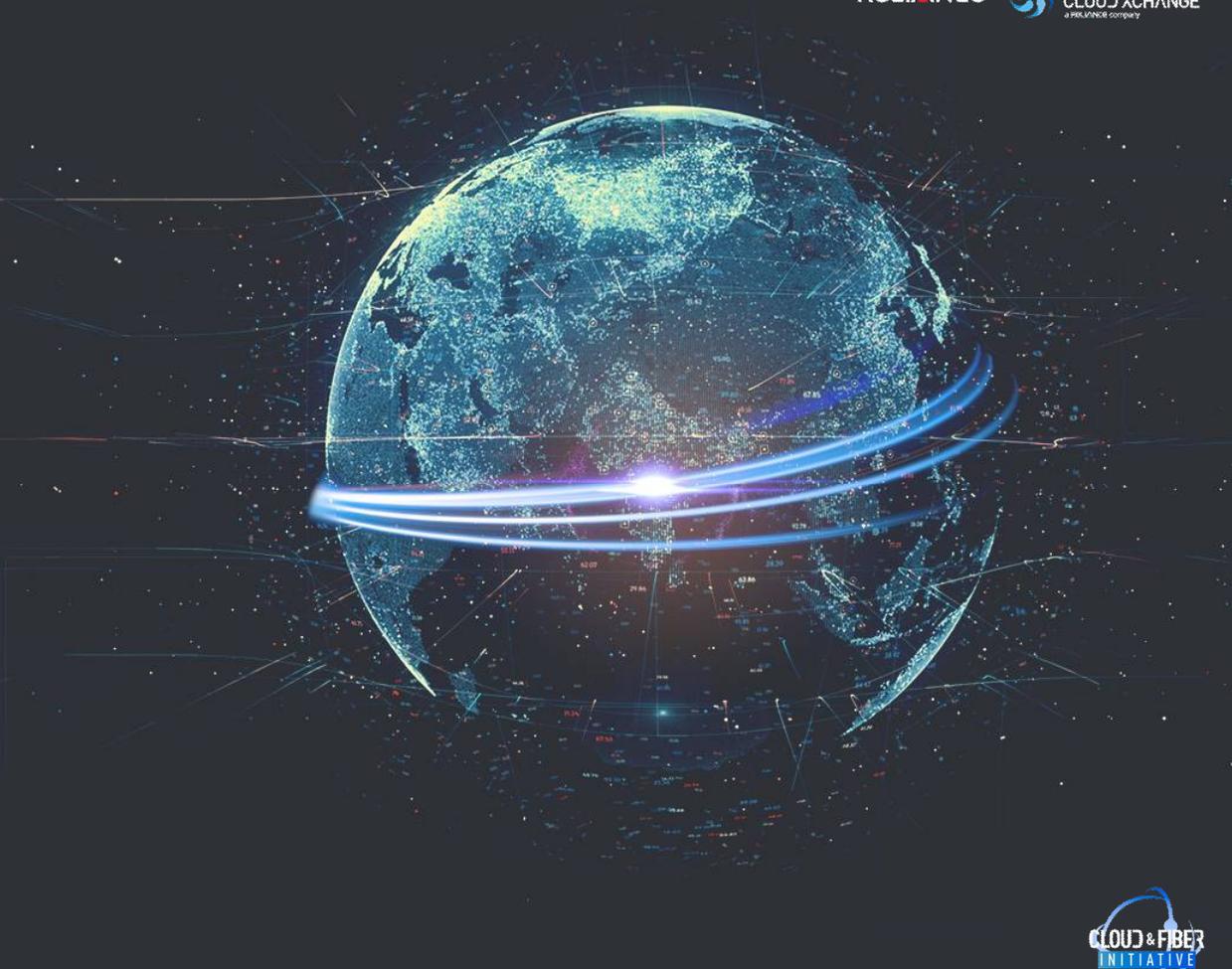# 'Cloud and Fiber Initiative'

Bill Barney
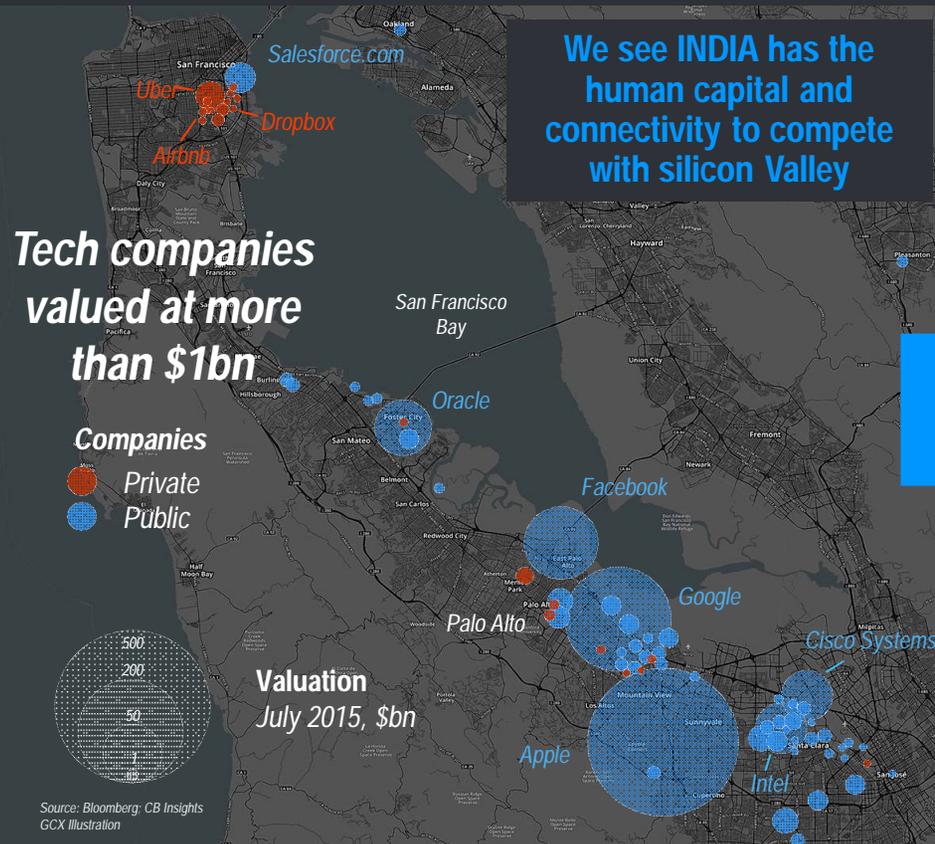CEO, RCOM & Global Cloud Xchange

Media Briefing, Mumbai

16 January 2018

"We're going to use our cables to shift the digital universe from Silicon Valley to Central India over the next decade"
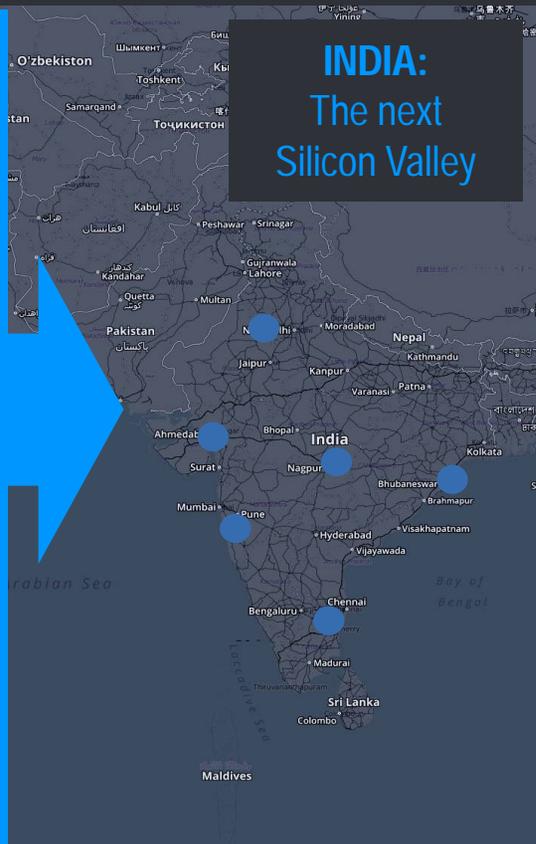
Wilfred Kwan
Chief Operating Officer
RCOM & GCX

The outsourcing and driving of Clouds will nestle itself in India over the next decade in a similar way as software development, call centers and BPOs did in the last decade…

RELIANCE GLOBAL CLOUD XCHANGE a Reliance company

We see INDIA has the human capital and connectivity to compete with silicon Valley

INDIA: The next Silicon Valley

Tech companies valued at more than $1bn

Companies
- Private
- Public

Salesforce.com
Uber
Dropbox
Airbnb
Oracle
Facebook
Google
Cisco Systems
Apple
Intel

San Francisco Bay
Palo Alto

500
200
50
10

Valuation
July 2015, $bn

Source: Bloomberg; CB Insights
GCX Illustration

- **PCs in the 1990s:** 90% of the PC/microcomputer manufacturing was moved to Asia
- **Software Development:** Moved to India in the late 1990s
- **Customer Support** was almost 80% moved to India for Fortune 500 companies between 2002 and 2010
- **Cloud Application Development** has started to move to low cost production centers

CLOUD & FIBER INITIATIVE

As in 2000 when infrastructure was at the center of the ecosystem, Data Centers and fiber are again emerging as the key building blocks

Cloud Space
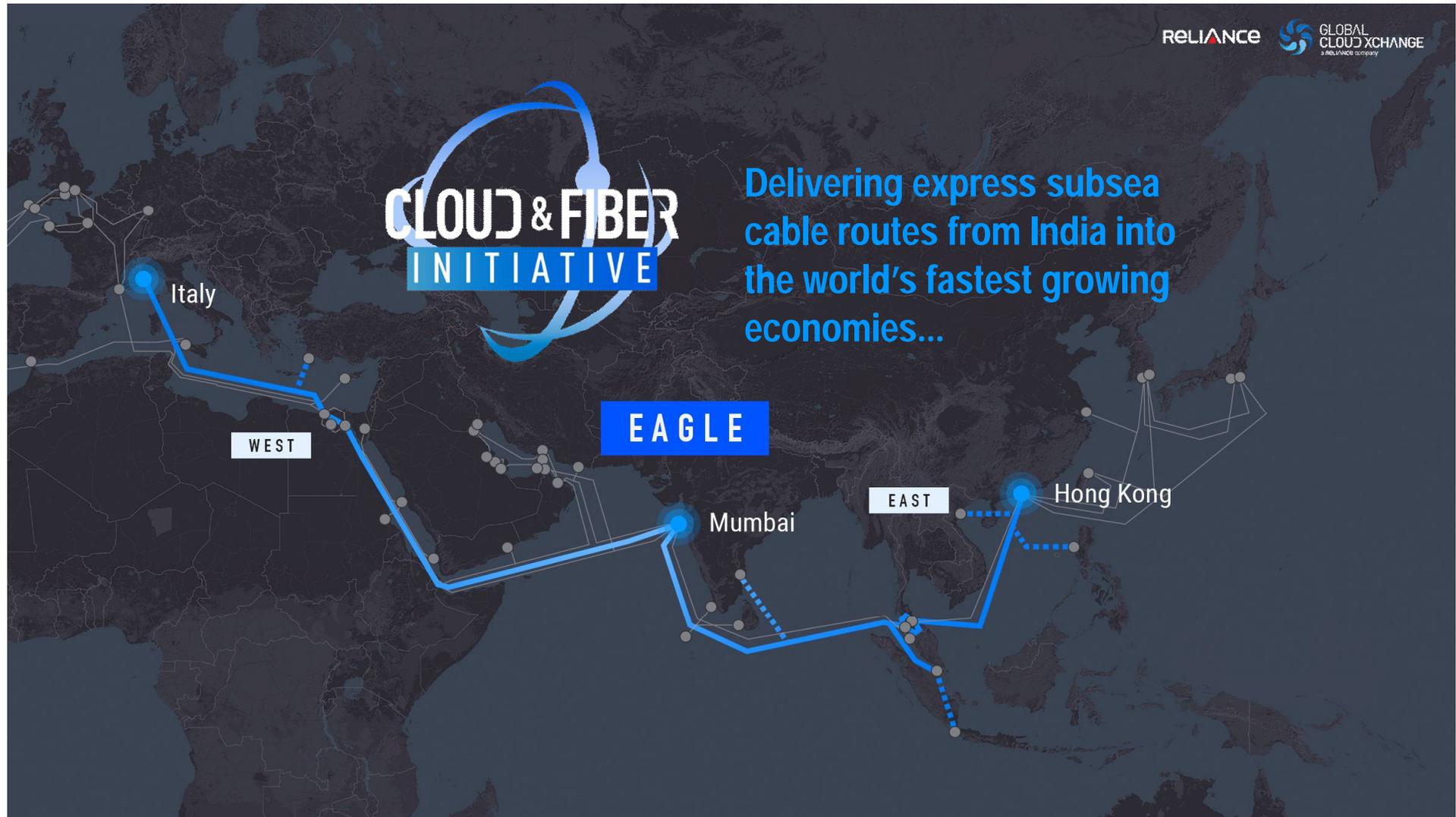
- 4 billion people will use it by 2020
- 15 to 20 trillion devices will connect to it
- It will consume more power than Western Europe in a year by 2020
- All video media will ride through at speeds over 1 gig
- The Telecom/Computer industry will be once again fused as we are seeing with high valuations of Zayo, Level-3 and Cogent
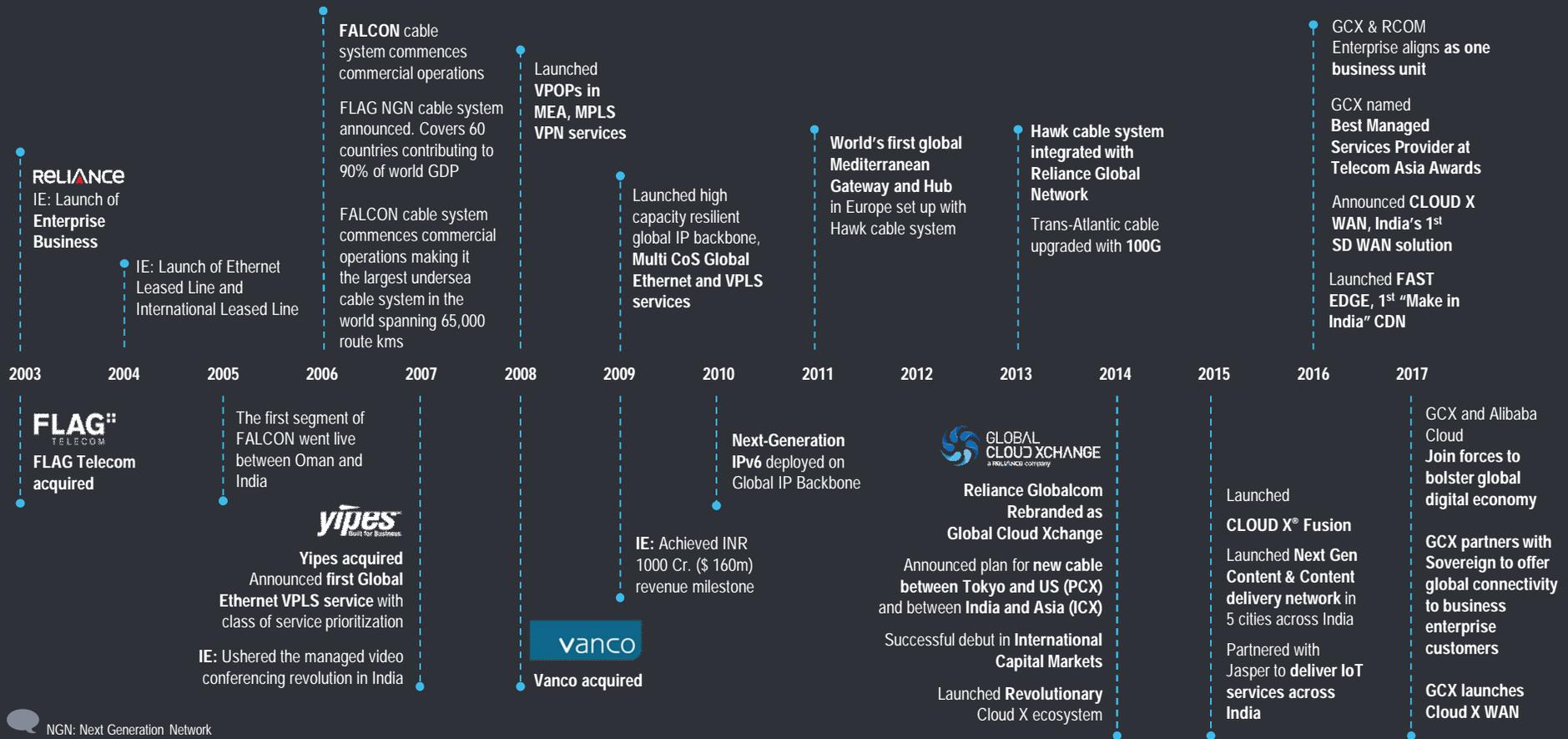
* Source: RCOM/GCX Research

4

AGENDA

- Market Overview
- Our History and Our Strategy
- Key Market Drivers
- Introducing Eagle
- Cable Specs
- Timeline
- **Q&As**

Our History
and Our Strategy…

We have a solid heritage to build upon going forward

RELIANCE **GLOBAL CLOUD XCHANGE** a Reliance company

FALCON cable system commences commercial operations

FLAG NGN cable system announced. Covers 60 countries contributing to 90% of world GDP

FALCON cable system commences commercial operations making it the largest undersea cable system in the world spanning 65,000 route kms

Launched **VPOPs in MEA, MPLS VPN services**

Launched high capacity resilient global IP backbone, **Multi CoS Global Ethernet and VPLS services**

World's first global Mediterranean Gateway and Hub in Europe set up with Hawk cable system

Hawk cable system integrated with Reliance Global Network

Trans-Atlantic cable upgraded with **100G**

GCX & RCOM Enterprise aligns **as one business unit**

GCX named **Best Managed Services Provider at Telecom Asia Awards**

Announced **CLOUD X WAN, India's 1st SD WAN solution**

Launched **FAST EDGE, 1st "Make in India" CDN**

RELIANCE
IE: Launch of **Enterprise Business**

IE: Launch of Ethernet Leased Line and International Leased Line

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017

FLAG TELECOM
FLAG Telecom acquired

The first segment of FALCON went live between Oman and India

Next-Generation IPv6 deployed on Global IP Backbone

GLOBAL CLOUD XCHANGE a Reliance company

Reliance Globalcom Rebranded as Global Cloud Xchange

Announced plan for **new cable between Tokyo and US (PCX)** and between **India and Asia (ICX)**

Successful debut in **International Capital Markets**

Launched **Revolutionary Cloud X ecosystem**

Launched **CLOUD X® Fusion**

Launched **Next Gen Content & Content delivery network** in 5 cities across India

Partnered with Jasper to **deliver IoT services across India**

GCX and Alibaba Cloud **Join forces to bolster global digital economy**

GCX partners with Sovereign to offer global connectivity to business enterprise customers

GCX launches Cloud X WAN

yipes Built for Business
Yipes acquired Announced **first Global Ethernet VPLS service** with class of service prioritization

IE: Ushered the managed video conferencing revolution in India

vanco
Vanco acquired

IE: Achieved INR 1000 Cr. ($ 160m) revenue milestone

NGN: Next Generation Network
IPLC: International Private Leased Circuit
VPLS: Virtual Private LAN Services

8

We are the largest owner of submarine cables on the planet and dominate the "Emerging Markets Corridor"

Vast Network Of Submarine Cable Assets
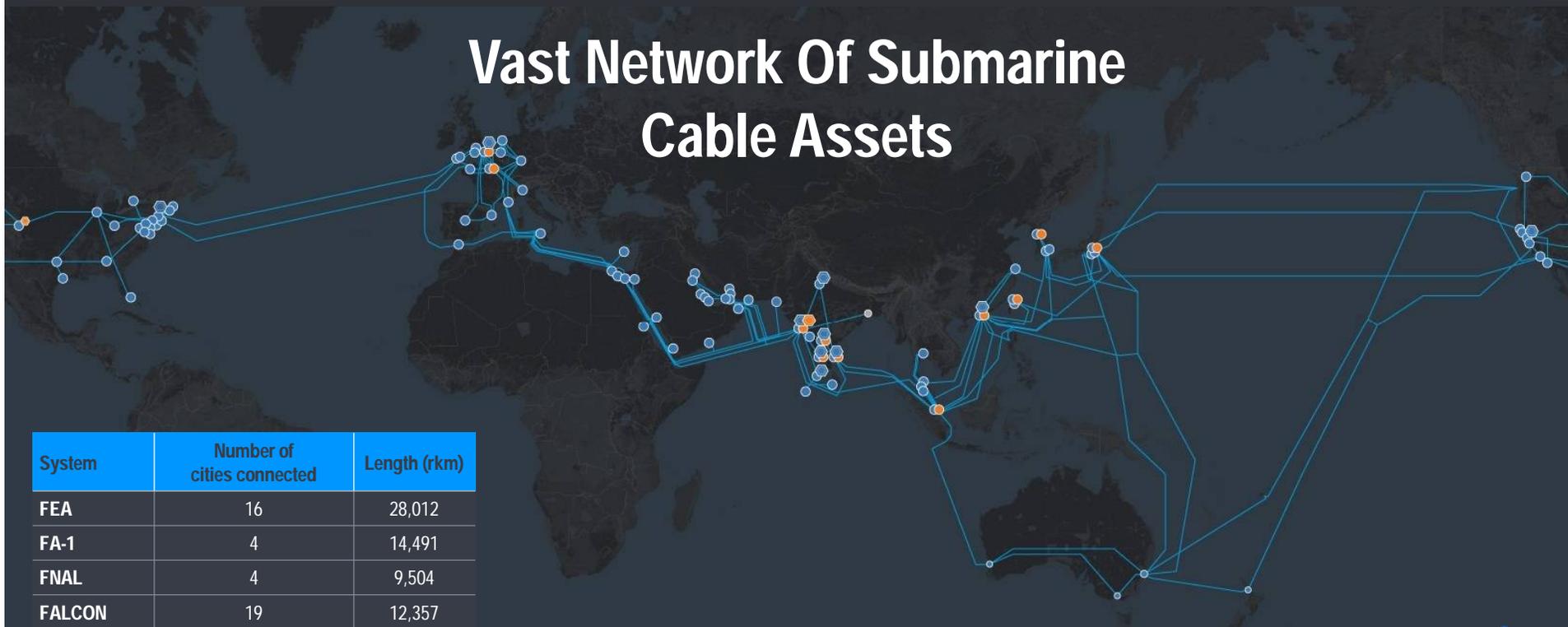
System	Number of cities connected	Length (rkm)
FEA	16	28,012
FA-1	4	14,491
FNAL	4	9,504
FALCON	19	12,357
HAWK	3	4,334
Total	**46**	**68,698**

——— Cable & Terrestrial Coverage   ⬤ Pops   ⬤ Data Center   ⬡ GNOC   ⬡ Cloud Nodes

CLOUD & FIBER INITIATIVE

We are also one of the largest owners of domestic fiber across the "Emerging Markets Corridor"

RELIANCE — GLOBAL CLOUD XCHANGE a RELIANCE company

Integrated terrestrial networks
connecting large global economies

INDIA COVERAGE

CLOUD & FIBER INITIATIVE

...and have a significant footprint in the building blocks of the Cloud in India

Highly resilient, scalable, and self-healing global network with built-in transport and equipment level diversity for improved performance and extended reach

Legend:
- N x 10 Gbps Links
- N x 40 Gbps / M x 10 Gbps links
- N x 100 Gbps / M x 40 Gbps Links
- Data Center

- **66,928** route kms of intercity fiber backbone, connecting over 50 cities
  - **23,344** kms of fiber network in the access or last mile in top 44 cities
- Large spread in India serving c.900 of top 1000 enterprises
- Nationwide IP backbone
- Large MPLS enabled **Core Data Network**
- 9 major data centers with **650,000** square feet of floor space in India
  - Hosting and Cloud-based services
- Backbone, metro and building access ring architecture
  - Highly resilient ring & mesh design
- Direct access implemented to business premises
  - 1.1+ million buildings
  - 70%+ coverage of Indian subscriber base

We are building a technology company sitting at the crossroads of where the future "CLOUDS" will migrate

RELIANCE GLOBAL CLOUD XCHANGE a reliance company

Global Fiber Network

- The Emerging Market's largest and highest capacity subsea cable system and domestic fiber systems. Capacity: FNAL, FAE, Falcon, Hawk have over 55TB of usable capacity.
- 49,000 Kilometers of domestic Indian fiber and 43,000 towers
- Significant barriers to entry with replacement value of ~$7.9B;
- Total cable ownership of 155,420km;
- Customers to include Carriers, Enterprise and New Media

Emerging Markets Corridor Presence

- 9 World Class Data centers and 79 smaller micro centers and over 1500 points of presence. Well established data center footprint in 45 countries with 70% of assets in the emerging markets;
- Key markets will include Mumbai, Hong Kong, Shanghai, Bangalore, Tianjin, Kuala Lumpur, Bangkok, San Jose, Dubai, Oman and others;
- Customers from New Media, Carriers and Enterprise Space

New Product Delivery Networks

- Full suite of world-class Cloud services with rollout of 30 nodes in 16 countries in progress;
- Target markets include Enterprises and New Media companies;
- Voice and data interconnections give the company one of the fastest paths to enablement.
- Portal based infrastructure will be first Enterprise-class cloud switching structure that requires zero human intervention.

CLOUD & FIBER INITIATIVE

Key Market Drivers…

Market Driver #1: The Rise of the Clouds
Global Cloud Services Spending growing significantly

This year, we will have 4.9 billion connected things....some predict that by 2020, the number of Internet-connected things will reach or even exceed 50 billion.

In 2015, over 1.4 billion smart phones will be shipped and by 2020 we will have a staggering 6.1 billion smartphone users.

By 2020, a quarter of a billion vehicles will be connected to the Internet, giving us completely new possibilities for in-vehicle services and automated driving.

Today, the market for Radio Frequency Identification (RFID) tags, used for transmitting data to identify and track objects, is worth $11.1 billion. This is predicted to rise to $21.9 billion in 2020.

Machine-to-machine (M2M) connections will grow from 5 billion at the beginning of this year to 27 billion by 2024, with China taking a 21% share and the U.S. 20%.

CISCO believes the IoT could generate $4.6 trillion over the next ten years for the public sector, and $14.4 trillion for the private sector.

Market Driver #2: There will be "new" New Media Companies
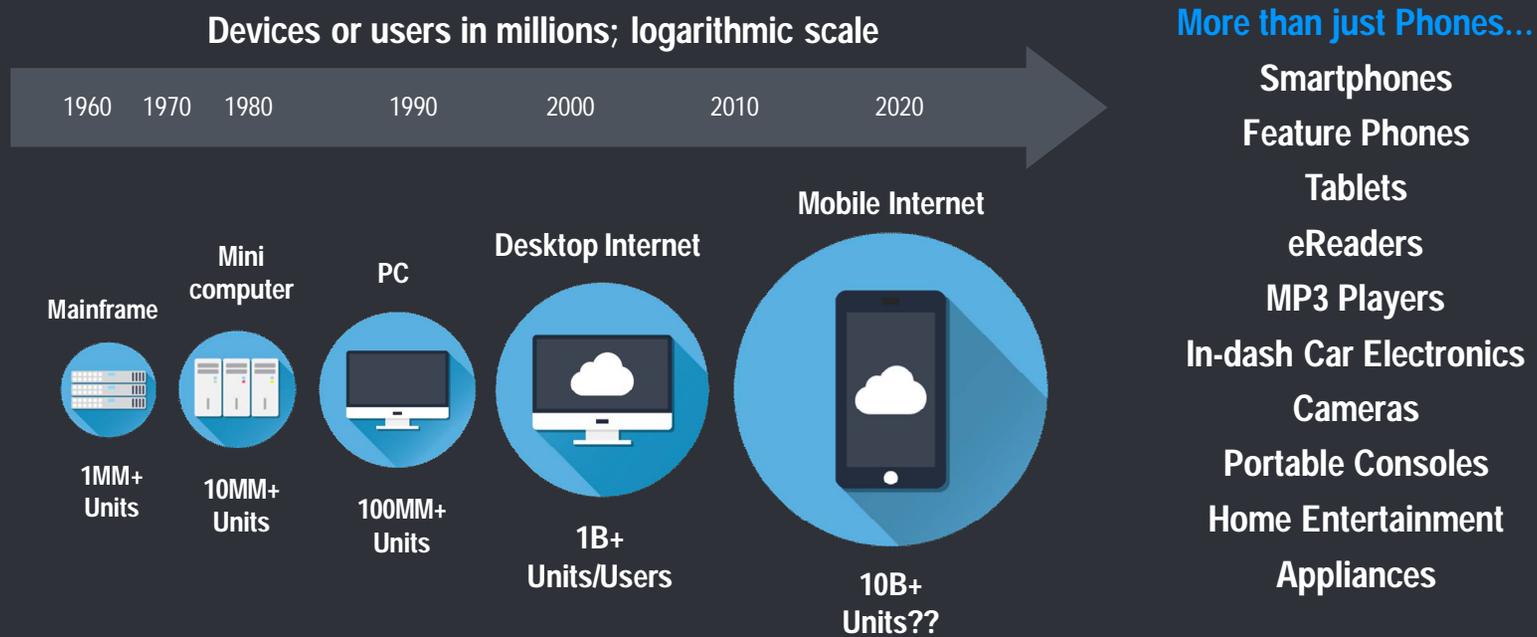
The rising tide of next generation tech companies will continue to drive growth in foreseeable future

Each New Computing Cycle = 10x > Installed Base than Previous Cycle

Devices or users in millions; logarithmic scale

More than just Phones...

1960	1970	1980	1990	2000	2010	2020

Smartphones
Feature Phones
Tablets
eReaders
MP3 Players
In-dash Car Electronics
Cameras
Portable Consoles
Home Entertainment
Appliances

Mainframe
1MM+ Units

Mini computer
10MM+ Units

PC
100MM+ Units

Desktop Internet
1B+ Units/Users

Mobile Internet
10B+ Units??

Source: Morgan Stanley Mobile Internet Report (12/09)

CLOUD & FIBER INITIATIVE

Market Driver #3: The Emerging Markets Corridor
At the Heart of where Enterprises and OTTs will focus in the next decade

Italy

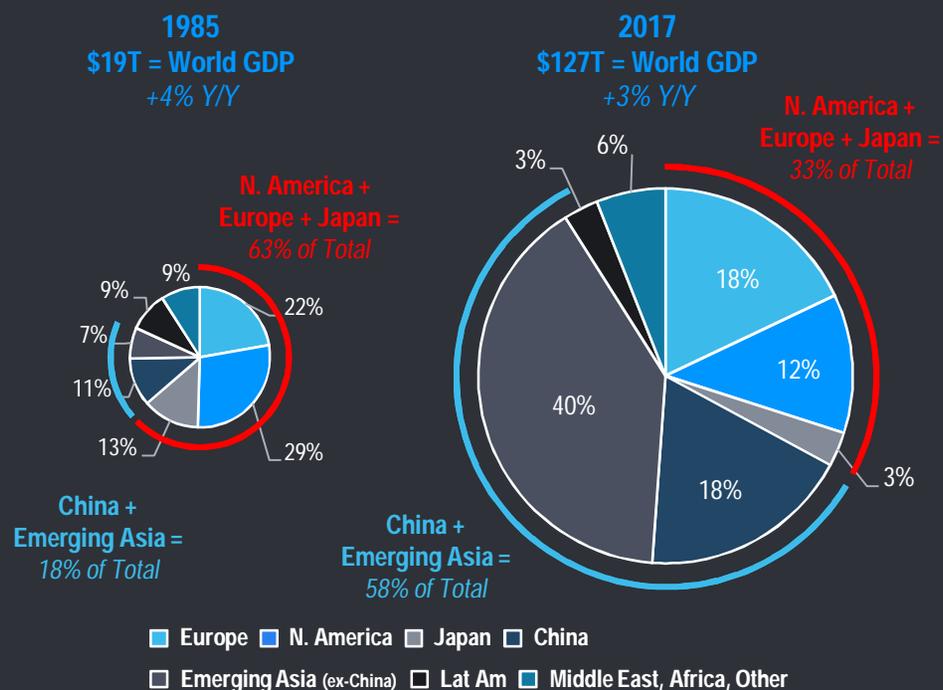THE EMERGING MARKETS CORRIDOR

EAGLE

WEST

EAST

Hong Kong

Mumbai

The Emerging Market corridor connects over 2.0bn internet subscribers currently and is expected to account for over 70% of the world's smart phone growth and over 80% of the world's GDP growth over the next 5 years
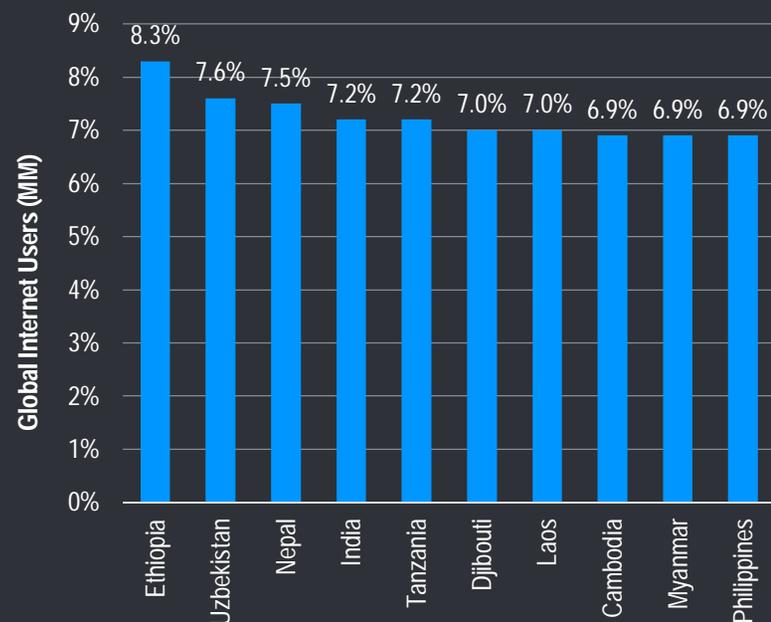
Market Driver #3: The Emerging Market Corridor

The Emerging Markets will dominate GDP and Internet growth in the next decade...

Real GDP Growth Contribution by Region, 1985 / 2017

1985
$19T = World GDP
+4% Y/Y

**N. America +
Europe + Japan =
*63% of Total***

9%
9%
7%
11%
13%
22%
29%

**China +
Emerging Asia =
*18% of Total***

2017
$127T = World GDP
+3% Y/Y

3%
6%

**N. America +
Europe + Japan =
*33% of Total***

18%
12%
40%
18%
3%

**China +
Emerging Asia =
*58% of Total***

■ Europe ■ N. America ■ Japan □ China
□ Emerging Asia (ex-China) □ Lat Am ■ Middle East, Africa, Other

Source: IMF WEO,4/16. GDP growth based on constant prices (real GDP growth). PPP = Purchasing Power Parity exchange rate, national currency per international dollar. GDP PPP = GDP adjusted by PPP rate. Emerging Asia includes Bangladesh, Cambodia, India, Indonesia, Lao, Malaysia, Mongolia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam and others and excludes China. GDP growth contribution based on annual snapshots stated above and not necessarily reflective of secular trends.

The world's fastest growing economies

Forecast GDP growth, 2017

Country	Growth
Ethiopia	8.3%
Uzbekistan	7.6%
Nepal	7.5%
India	7.2%
Tanzania	7.2%
Djibouti	7.0%
Laos	7.0%
Cambodia	6.9%
Myanmar	6.9%
Philippines	6.9%

Global Internet Users (MM)

Source: World Bank

RELIANCE GLOBAL CLOUD XCHANGE *a RELIANCE company*

CLOUD & FIBER INITIATIVE

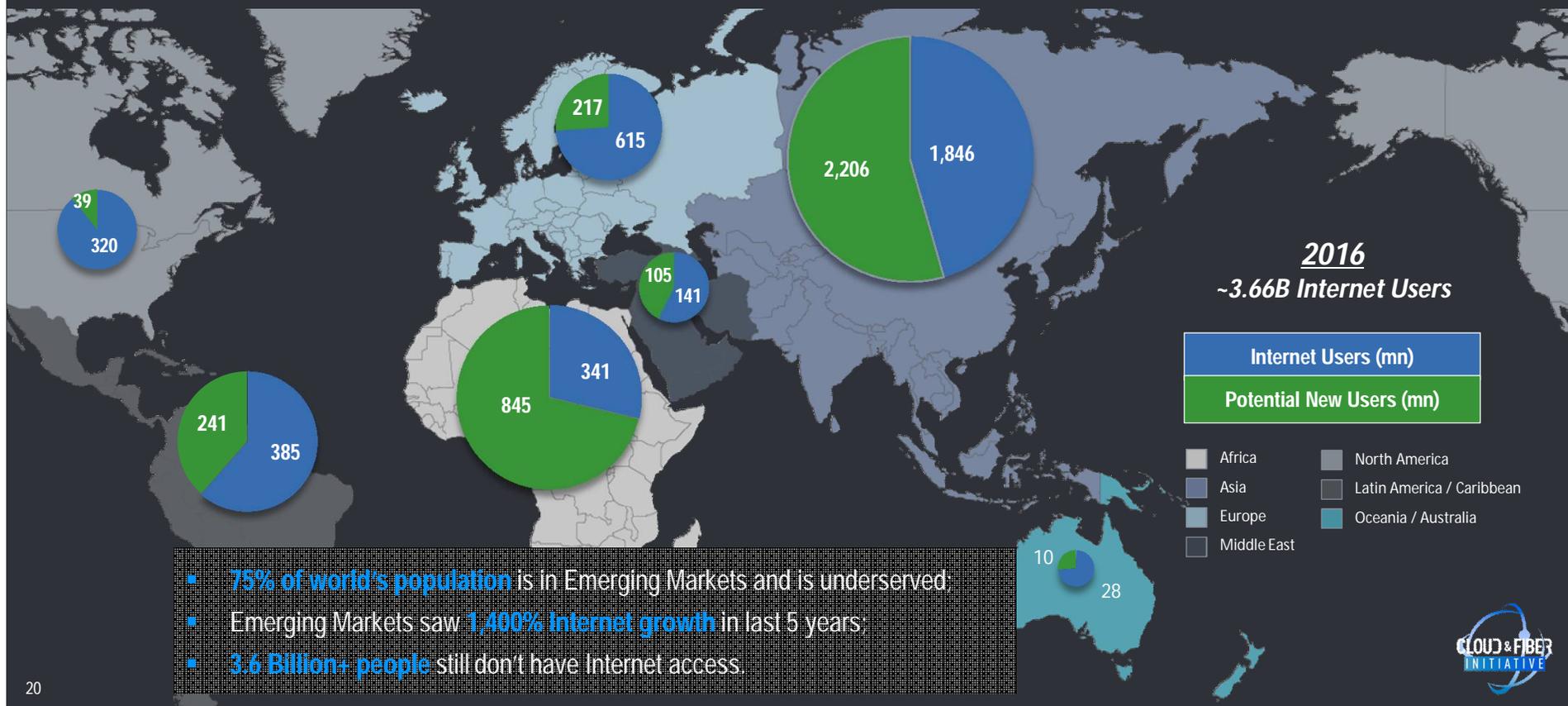# Market Driver #4: Infrastructure and Bandwidth Demands

Challenges are compounded by the fact that that new technologies are needed in Emerging Markets where infrastructure is limited…
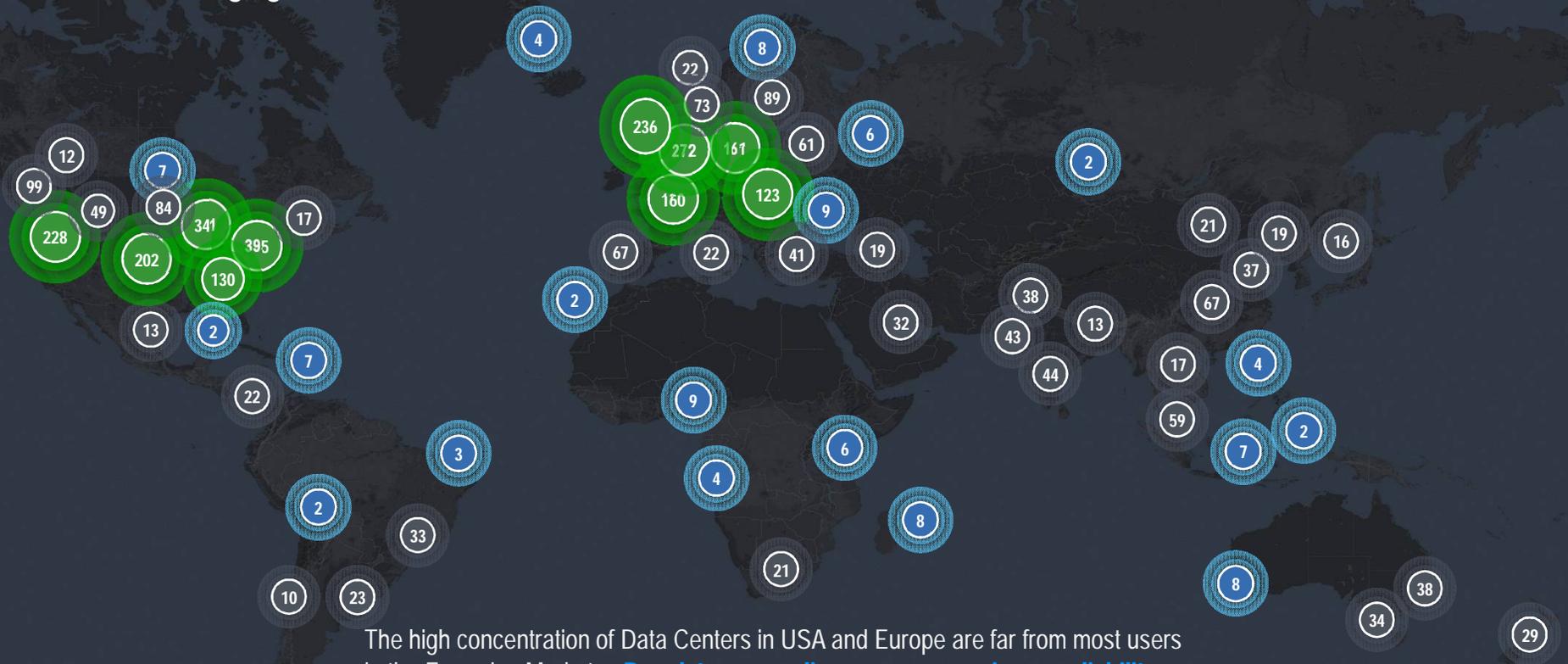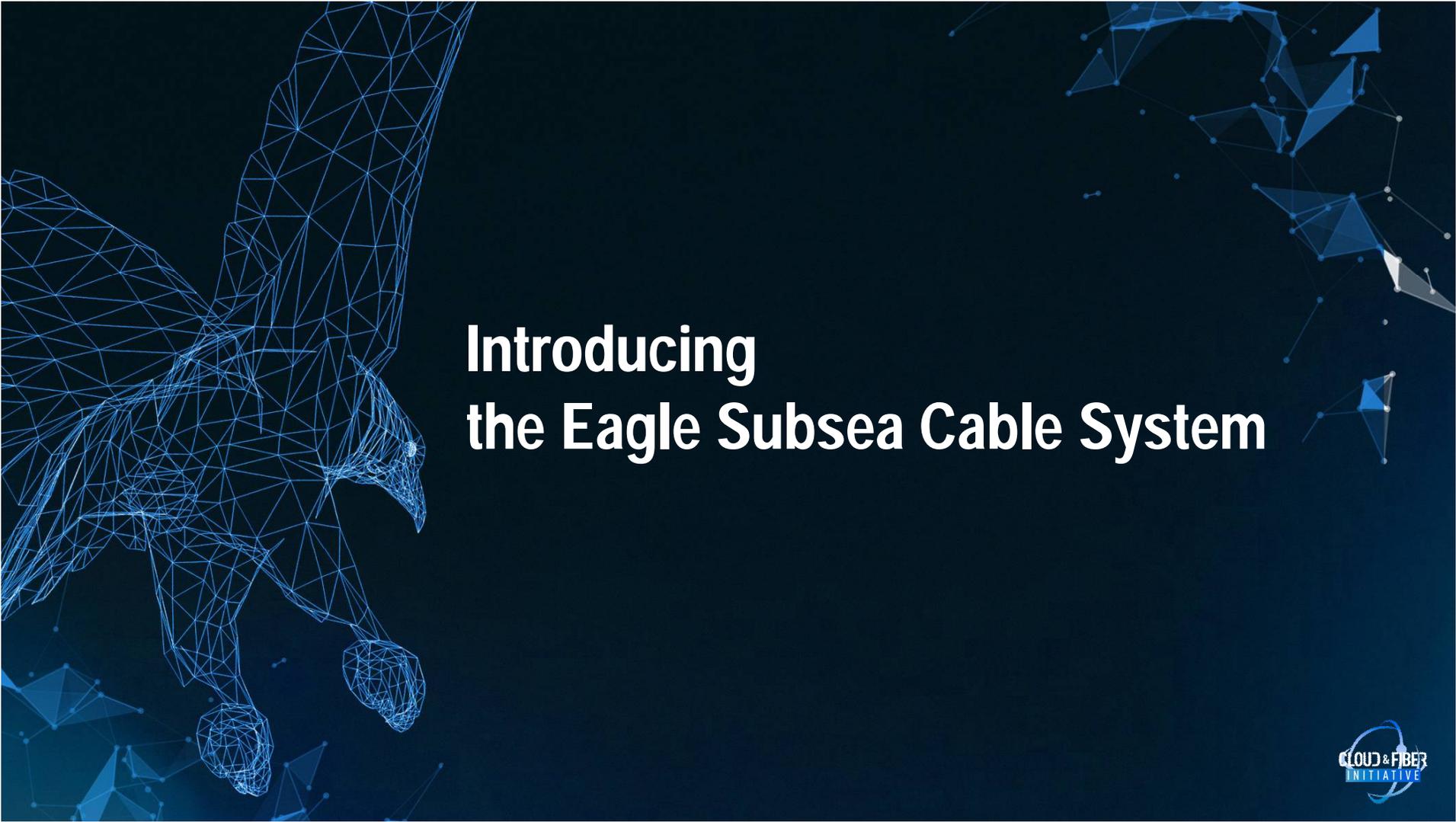
The high concentration of Data Centers in USA and Europe are far from most users in the Emerging Markets. **Regulatory compliance, user experience, reliability and cost factors will mandate significant movement of data closer to users.**

Source: datacentermap.com

Market Driver #4: Infrastructure and Bandwidth Demands

Demand should continue as most new Internet users will be in India or its neighboring countries in the next five years...

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217
615

39
320

2,206
1,846

105
141

341
845

241
385

10
28

2016
~3.66B Internet Users

Internet Users (mn)
Potential New Users (mn)

Africa	North America
Asia	Latin America / Caribbean
Europe	Oceania / Australia
Middle East	

- **75% of world's population** is in Emerging Markets and is underserved;
- Emerging Markets saw **1,400% Internet growth** in last 5 years;
- **3.6 Billion+ people** still don't have Internet access.

20

CLOUD & FIBER INITIATIVE

We Launched Our "Cloud and Fiber Initiative"

EAGLE WEST SUBSEA SYSTEM OVERVIEW

- **FIRST EXPRESS INDIA-EUROPE (Italy) Subsea Cable system**
  - The new infrastructure will go from India to Italy – with Potential BUs for cable landings in Med Europe, Red Sea and Middle East
  - Potential future BUs in Djibouti (to connect to the African cables)
 - Target RFS: **Early 2020**

EAGLE
IN THE CLOUDS

WEST
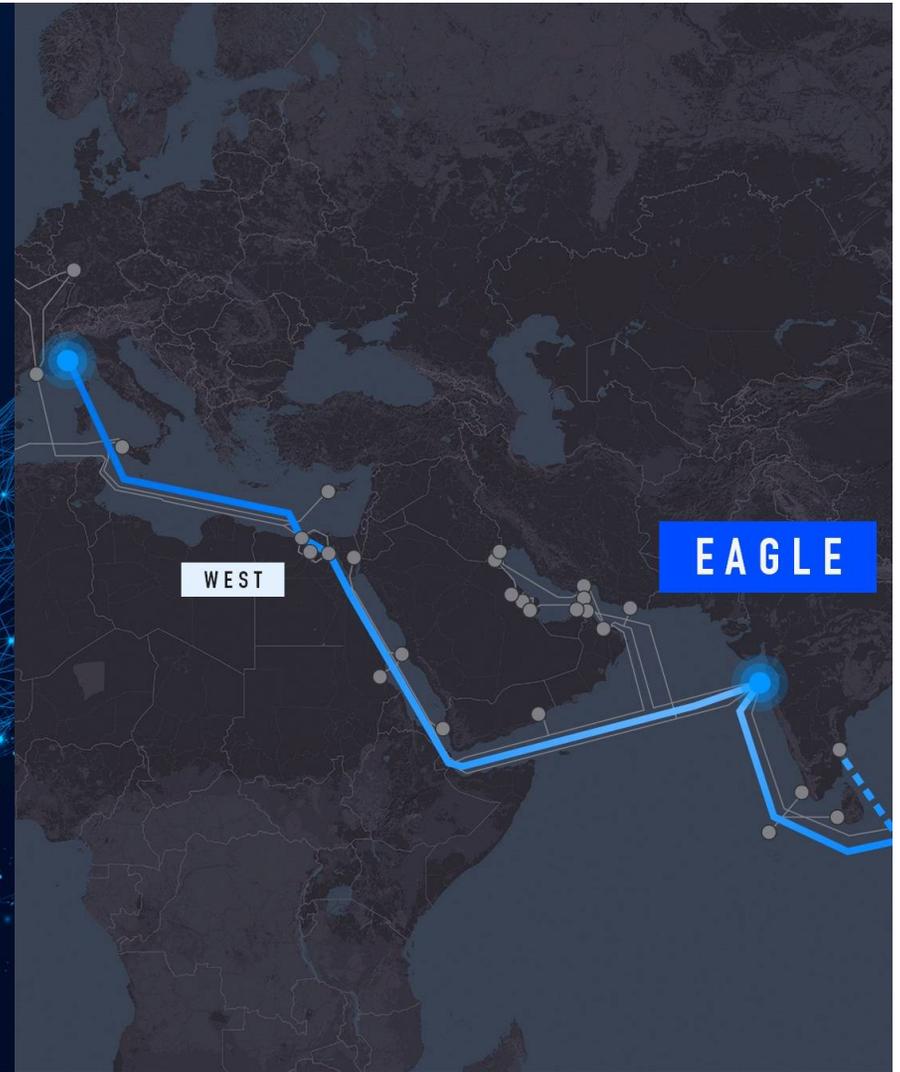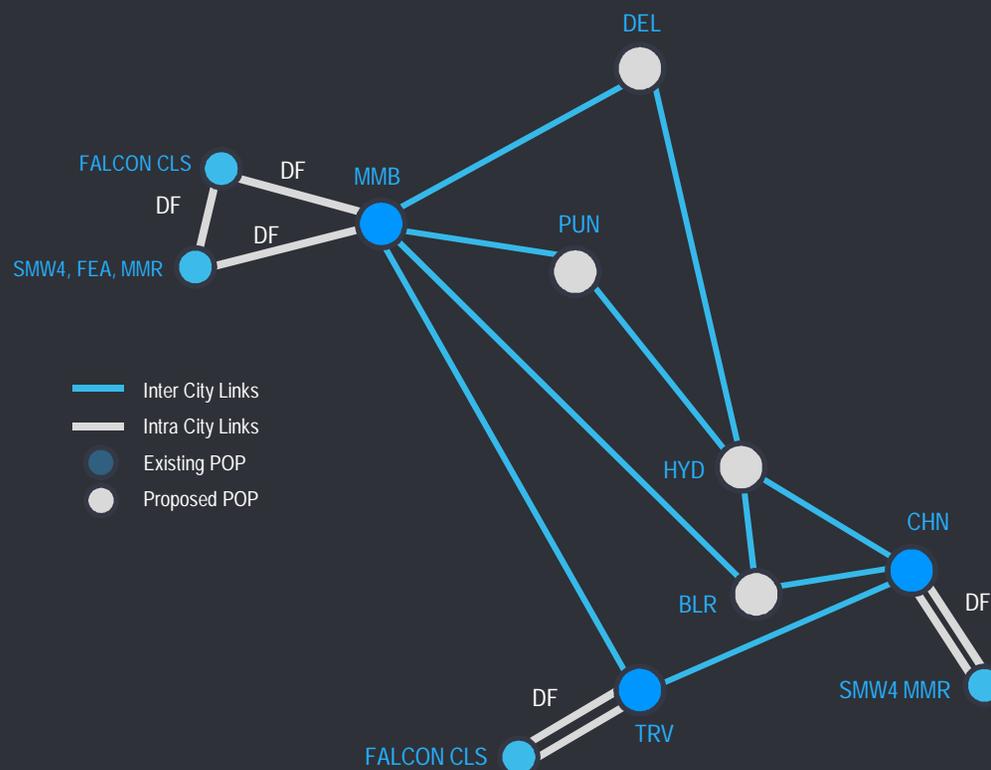
EAGLE

We Launched Our "Cloud and Fiber Initiative"

EAGLE EAST SUBSEA SYSTEM OVERVIEW

- **EXPRESS ROUTE MUMBAI- HONG KONG transiting Thailand**
  - Optional BUs to Chennai, Myanmar, Indonesia, Philippines
  - Singapore branch landing – neutral Pop landing
  - Potential future BUs in Maldives (to connect to the Australia-Djibouti cable), Sri Lanka, Bangladesh, Vietnam, Cambodia
  - Target RFS: **Q3 -2020**

EAGLE
IN THE CLOUDS

EAGLE

EAST
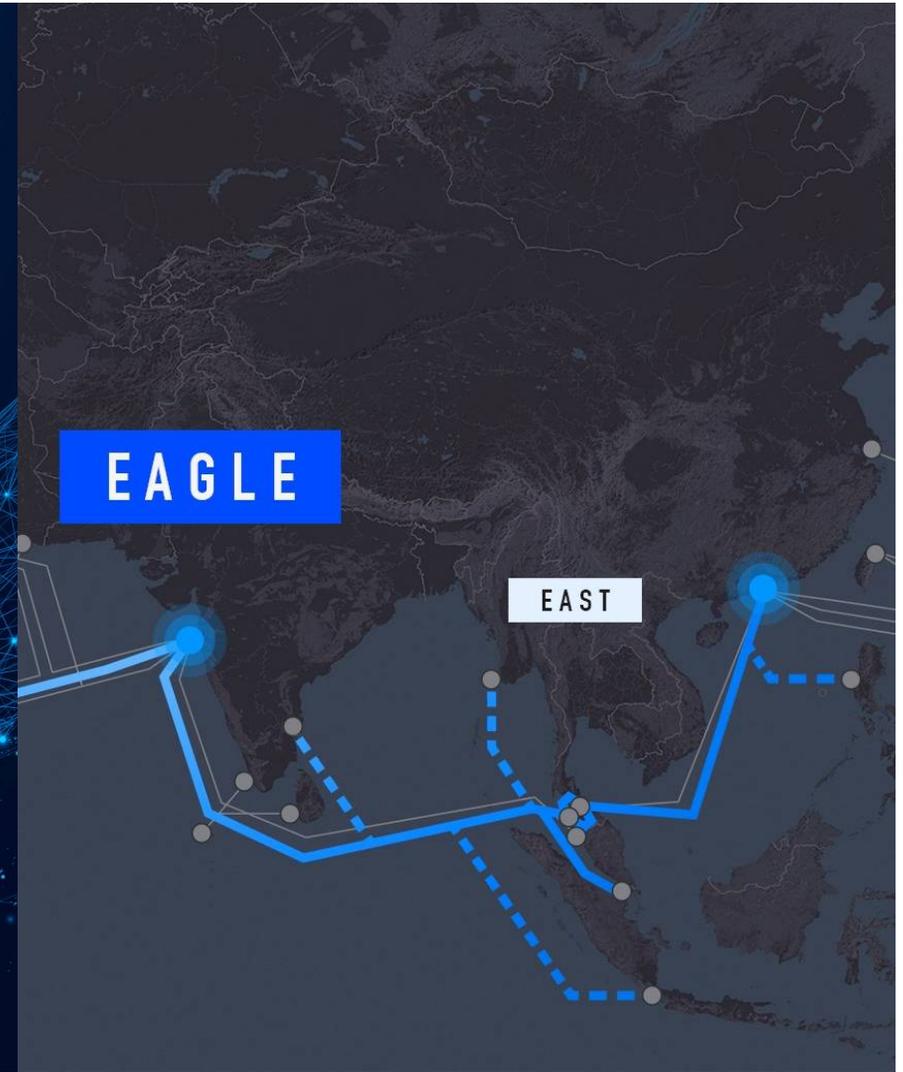
Eagle will connect into our Domestic India Network to deliver diverse connectivity to all major hubs and GCX Submarine CLS and PoPs

Legend:
- Inter City Links
- Intra City Links
- Existing POP
- Proposed POP

Network nodes: DEL, FALCON CLS, MMB, SMW4, FEA, MMR, PUN, HYD, CHN, BLR, SMW4 MMR, TRV, FALCON CLS

Route	Segment
Route -1	Mumbai-Bangaluru
	Bangaluru - Chennai
Route-2	Mumbai-Pune
	Pune-Hyderabad
	Hyderabad- Chennai
Route-3	Hyderabad-Bangalore
Route-4	Mumbai-Trivandrum
Route-5	Chennai-Trivandrum
Route-6	Mumbai- Delhi
Route-7	Delhi - Hyderabad

Questions?