

READYING INDIAN ISP'S FOR THE GIGABIT ERA

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DE-CIX

PRESENTATION OUTLINE



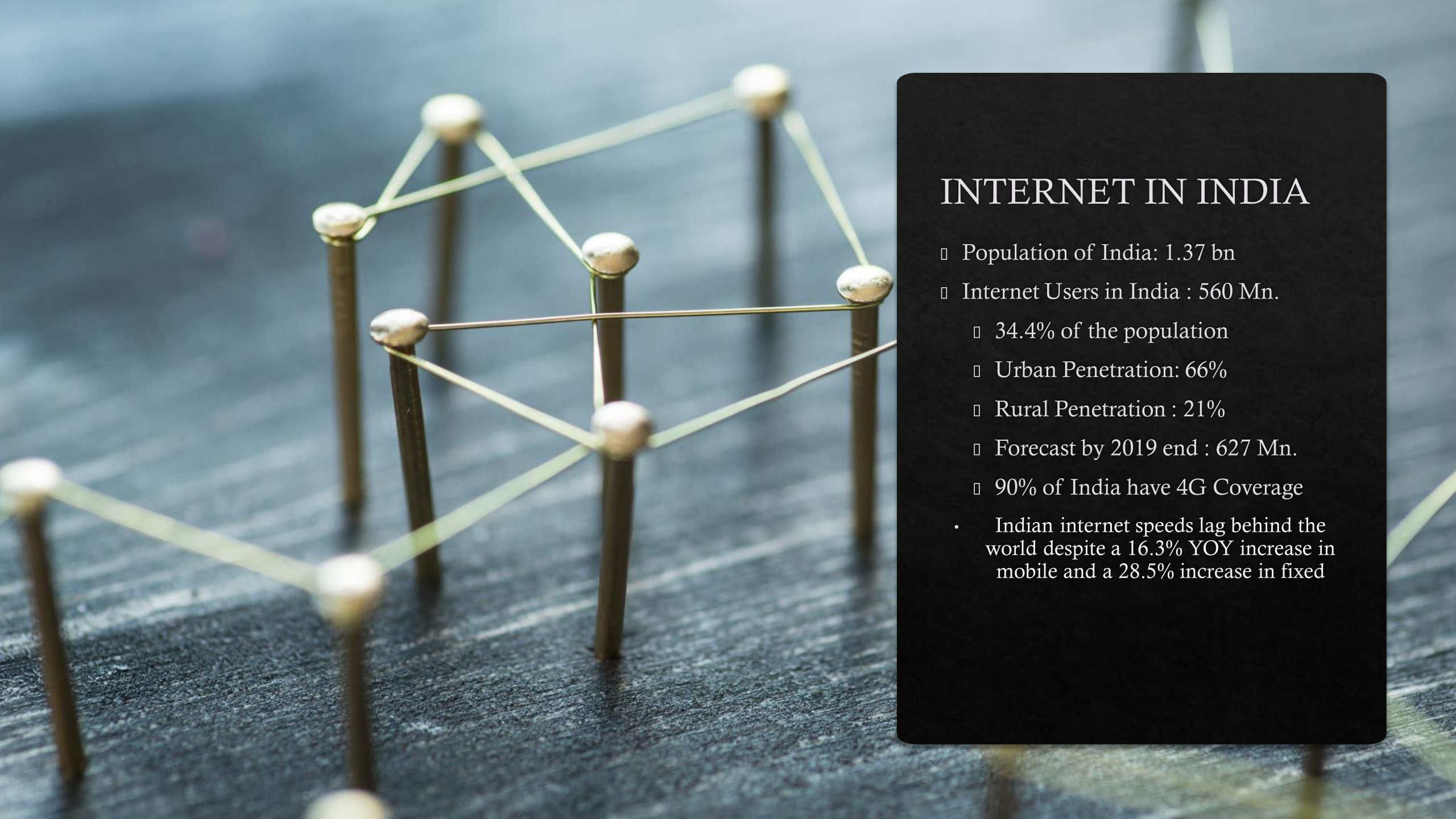
INDIAN INTERNET
LANDSCAPE



CUSTOMER DEMAND
& INNOVATION



HOW TO REACH
GIGABIT SPEEDS



INTERNET IN INDIA

- ▣ Population of India: 1.37 bn
- ▣ Internet Users in India : 560 Mn.
 - ▣ 34.4% of the population
 - ▣ Urban Penetration: 66%
 - ▣ Rural Penetration : 21%
 - ▣ Forecast by 2019 end : 627 Mn.
 - ▣ 90% of India have 4G Coverage
- Indian internet speeds lag behind the world despite a 16.3% YOY increase in mobile and a 28.5% increase in fixed



Major Telco & ISP's

- Vodafone Idea: 32.53%
- Reliance Jio : 29.08%
- Airtel : 28.12%
- BSNL & MTNL : 10.27%

- Sistema Shyam Teleservices.
- Atria Convergence Technology
- Quadrant Telement
- You Broadband India
- Hathway Cable & Datacom

Fastest Countries for Mobile Internet

Speedtest Global Index™ | Based on Mean Download Speed

Rank	July 2018	July 2019
1	Qatar	South Korea
2	Norway	Australia
3	United Arab Emirates	Qatar
4	Singapore	United Arab Emirates
5	Australia	Norway
6	Netherlands	Canada
7	Canada	Netherlands
8	Belgium	Switzerland
9	Hungary	Singapore
10	Malta	Malta

Fastest Countries for Fixed Broadband Internet

Speedtest Global Index™ | Based on Mean Download Speed

Rank	July 2018	July 2019
1	Singapore	Singapore
2	Hong Kong (SAR)	South Korea
3	Romania	Taiwan
4	South Korea	Hong Kong (SAR)
5	United States	Romania
6	Hungary	Monaco
7	Switzerland	Andorra
8	Luxembourg	United States
9	Macau (SAR)	Switzerland
10	Spain	Macau (SAR)

WORLD
INTERNET
PERFORMANCE

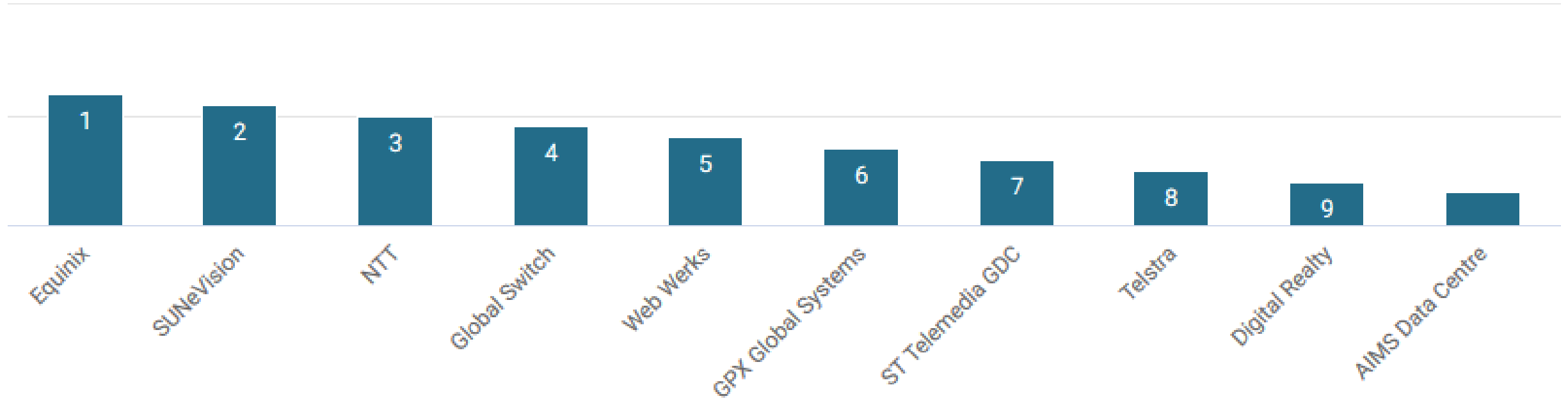
Speedtest

Name Management	CLLI NPA-NXX	City Country	State Postal Code	Networks ▲
1 Web Werks Datacenter (WW MUMBAI DC2) Web Werks DataCenter Pvt. Ltd.	- -	Mumbai IN	Maharashtra 400701	168
GPX Mumbai 1 GPX Global Systems, Inc	- -	Mumbai IN	Maharashtra 400 051	118
TATA Communications Mumbai TATA Communications Ltd	- -	Mumbai IN		
TATA Communications Chennai TATA Communications Ltd	- -	Chennai IN		
TATA Communications Delhi TATA Communications Ltd	- -	New Delhi IN		
Bharti Airtel Mumbai Bharti Airtel Limited	- -	Mumbai IN		
Bharti Airtel Santhome Bharti Airtel Ltd.	- -	Chennai IN		
Sify Greenfort - Noida Sify Technologies Limited	- -	Noida IN		
Netmagic Vikhroli Netmagic Solutions Pvt. Ltd.	- -	Mumbai IN		
TATA Communications GK1 TATA Communications Ltd	- -	New Delhi IN		
Sify Rabale - Mumbai Sify Technologies Limited	- -	Navi Mumbai IN		
CtrlS Datacenters Mumbai CtrlS Datacenters Ltd	- -	Mumbai IN	MH -	10
Sify Tidel-DC- Chennai Sify Technologies Limited	- -	Chennai IN	Tamilnadu 600113	10
Reliance IDC-1 Reliance Communications	- -	Mumbai IN	MS 400710	9

Top DC's in India as per Peering DB

Activate Windows
Go to Settings to activate Windows

ASIA LEADERBOARD (H1, 2019)




ASIAN DATA CENTER LEADERSHIP AS PER CLOUDSCENE

About DE-CIX

- ◆ DE-CIX India runs premium Internet Exchanges in Mumbai, Delhi, Kolkata and in Chennai. Already Interconnects 160+ Networks All across India & the World.
- ◆ DE-CIX is improving network quality for networks on the Indian sub-continent. Mumbai-IX, powered by DE-CIX, is the largest Internet Exchange in the most important Internet gateway for the Indian sub-continent with more than 160+ connected networks.
- ◆ From Q1, 2019, DE-CIX India has commenced the Operations for three new Internet Exchanges named DE-CIX Delhi at ST Telemedia Bangla Sahib in Delhi, DE-CIX Chennai at Bharti Airtel Santhome in Chennai and DE-CIX Kolkata at ST Telemedia Kolkata in Kolkata.





What Is an Internet Exchange?

Internet is Physical Infrastructure where Internet Providers and Content Networks exchange internet Traffic with each other.

Networks get benefitted with internet Exchanges facilitating settlement free peering.

Benefits of connecting to an IX



Reduced Cost



Improved
Latency



Better Routing



Improved
Performance

CUSTOMER DEMAND & INNOVATION

WHAT IS CHANGING ?



CUSTOMER DEMAND & INNOVATION



GIGABIT Internet
Speeds



SMARTHOME
Services

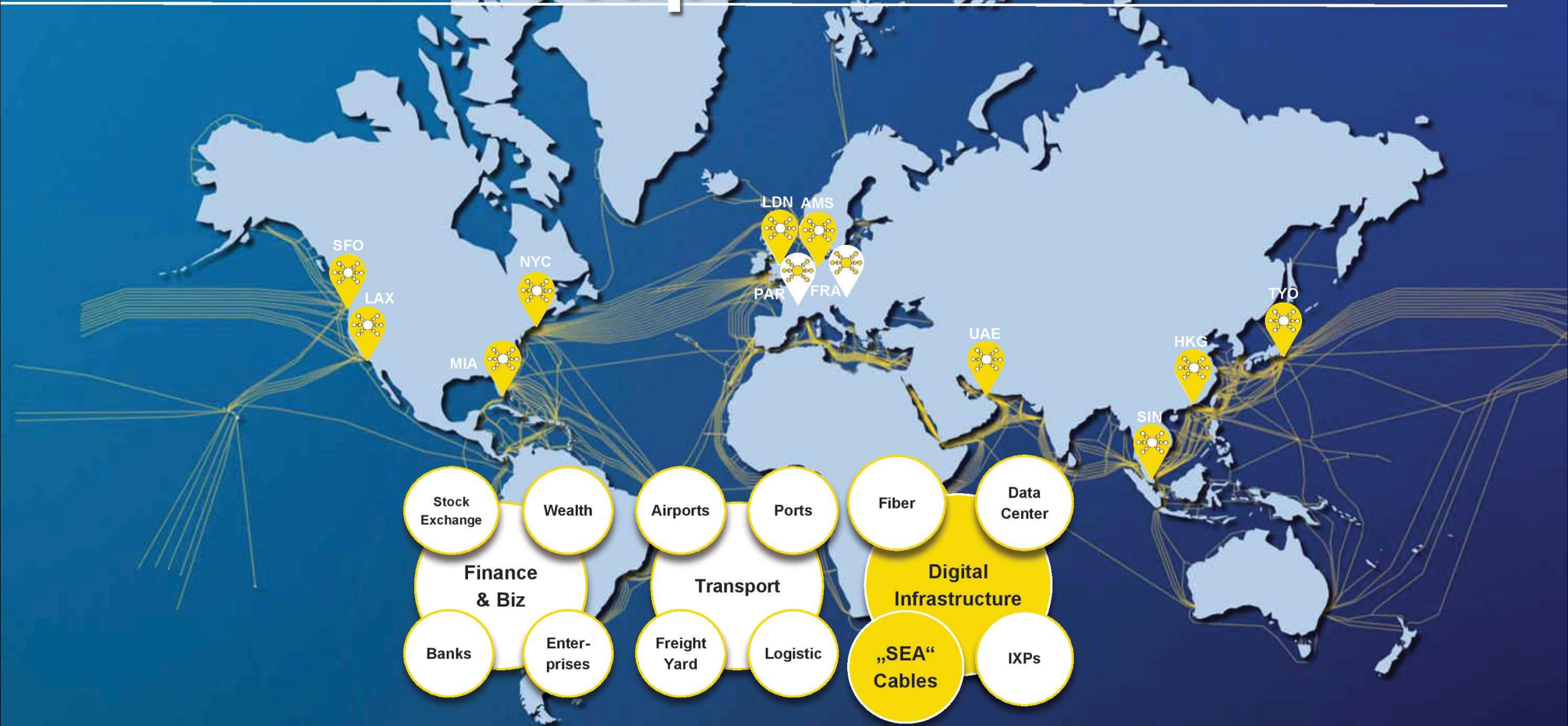


Bundled OTT
Subscriptions

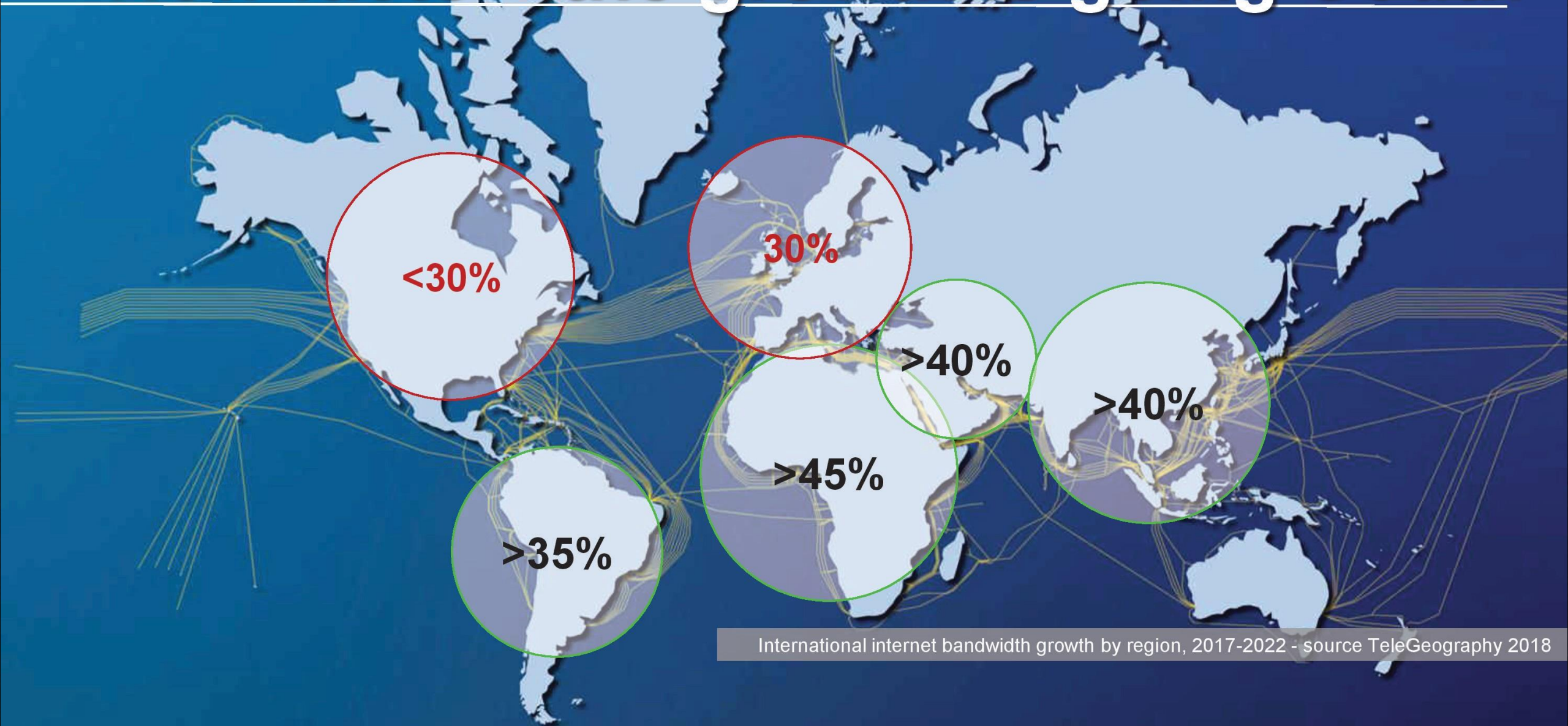


GAMING & VR

Landscape of historical Hubs



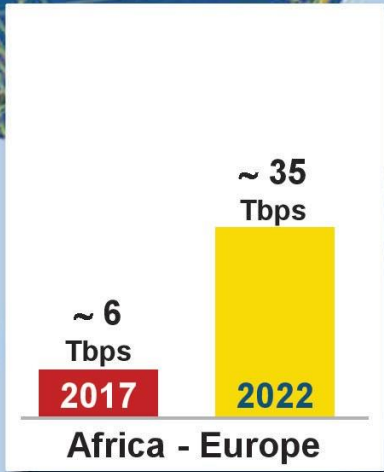
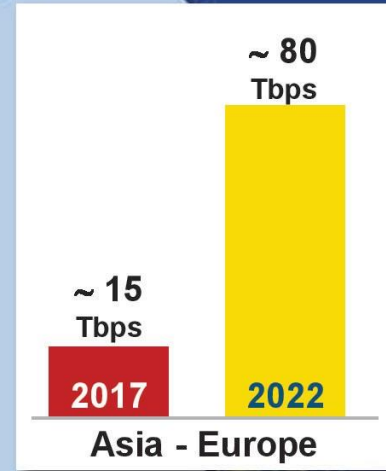
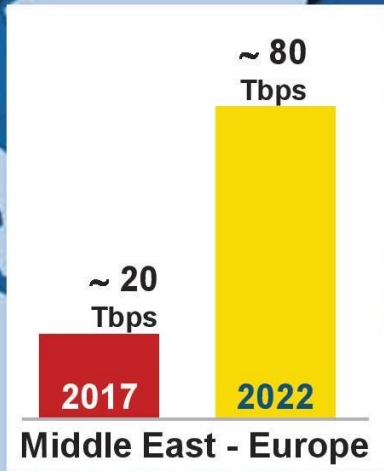
New facts – the growth is going South



International internet bandwidth growth by region, 2017-2022 - source TeleGeography 2018

New facts – the growth is going South

Examples of some major routes with Europe...



Used bandwidth for selected routes, 2017-2022 - source TeleGeography 2018

Historical Hubs will remain strategic ...

	2018 Bandwidth	CAGR, 2014-2018
U.S.		
Miami	20.0	27%
New York	19.2	25%
Los Angeles	16.7	30%
San Francisco	10.2	22%
Washington, DC	7.9	25%

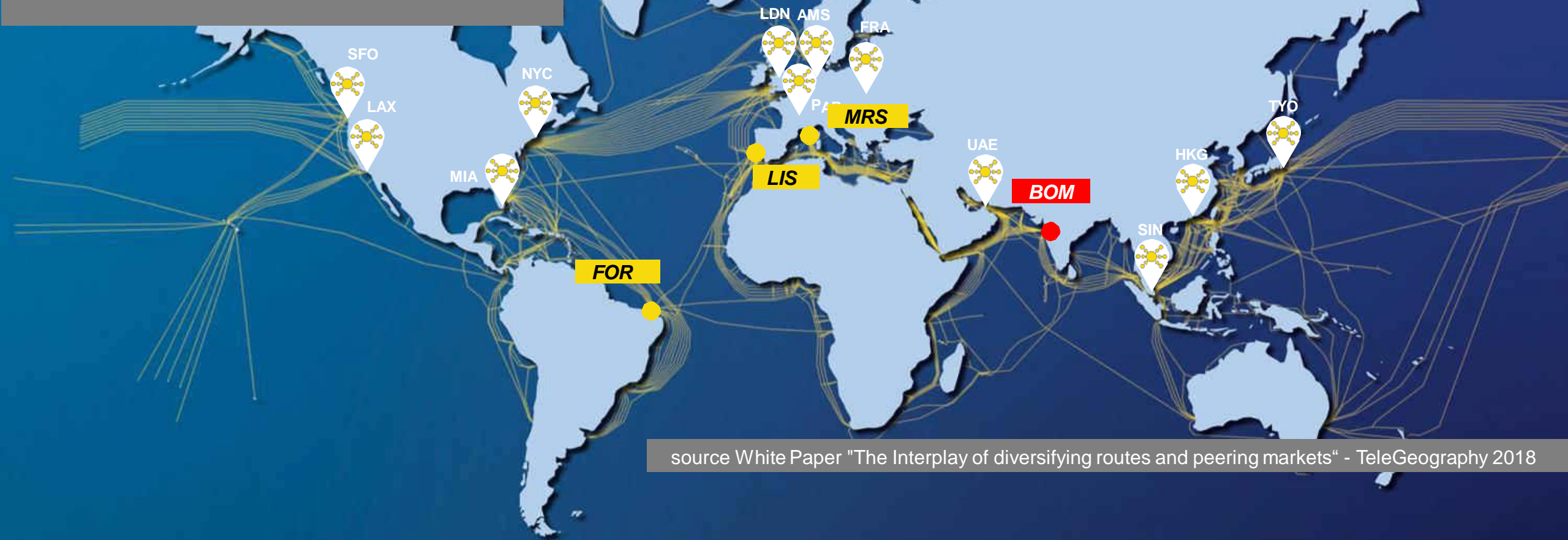
	2018 Bandwidth	CAGR, 2014-2018
Europe		
Frankfurt	73.1	30%
London	55.7	26%
Amsterdam	48.4	29%
Paris	47.8	29%
Stockholm	21.3	29%
Marseille	18.3	55%

	2018 Bandwidth	CAGR, 2014-2018
Latin America		
São Paulo	9.2	34%
Buenos Aires	6.1	32%
Mexico City	5.5	36%
Rio de Janeiro	4.8	30%
Santiago	4.1	39%

source White Paper "The Interplay of diversifying routes and peering markets" - TeleGeography 2018

...but new Hubs are likely to raise

...at new aggregation points of Sea Cable capacities.



source White Paper "The Interplay of diversifying routes and peering markets" - TeleGeography 2018



GIGABIT INTERNET

IS IT REALLY POSSIBLE FOR EVERYONE TO ACHIEVE ?

GIGABIT INTERNET



Infrastructure Requirements:

Office Space
Router with 10G Ports
Distribution Switch with 10G Ports
OLT & ONU Devices to deploy FTTH with 10G Uplink



Hardware & Software Requirements:

DNS Server
Radius Server
Nas Server
Monitoring Server
Ticketing Server

Costing



Set Up Cost : Approx. 10 Lakhs

Licensing Cost : C Class (1.5 Lakh), B Class (15 Lakh), A Class (2.5Cr), VNO(3.5 Lakhs)

H/W Cost : Approx 7 Lakhs (Router, Switch, OL/ONU devices)

S/W Cost : Approx 2 – 3 Lakhs

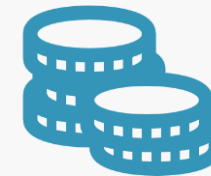


Recurring Annual Costs

Bandwidth Cost : 1G @Rs. 25 Lakhs

IP Address Space : Approx Rs. 40000 based on IP Pools

Internet Exchange Ports



Other Costs:

Manpower Costs

Rent & Electricity Cost



Questions ?

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