Digital Transformation: 5G in the Caribbean

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Who We Are

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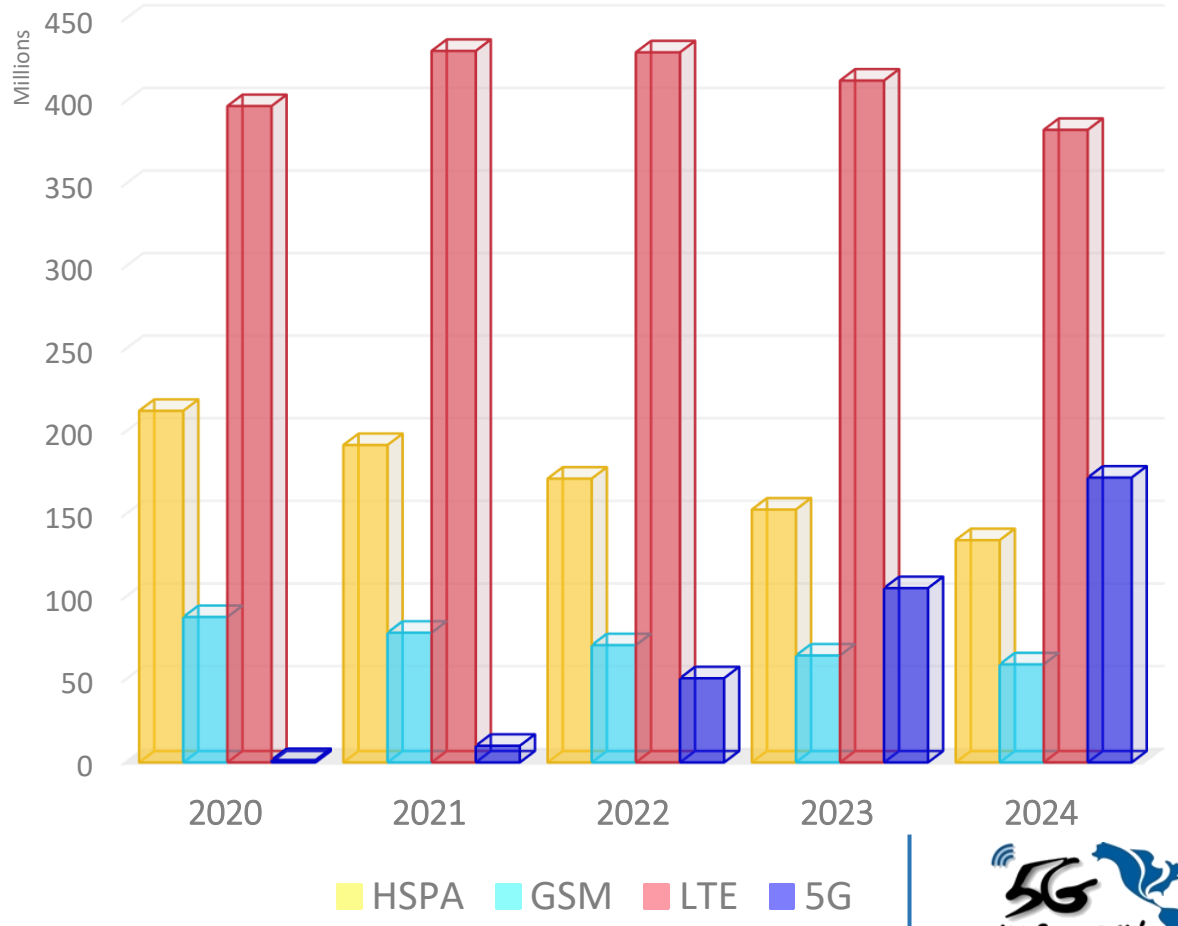
5GAmericas.Org

Latin America & Caribbean

Connections Forecasts 2020-2024



Source: OMDIA June 2020

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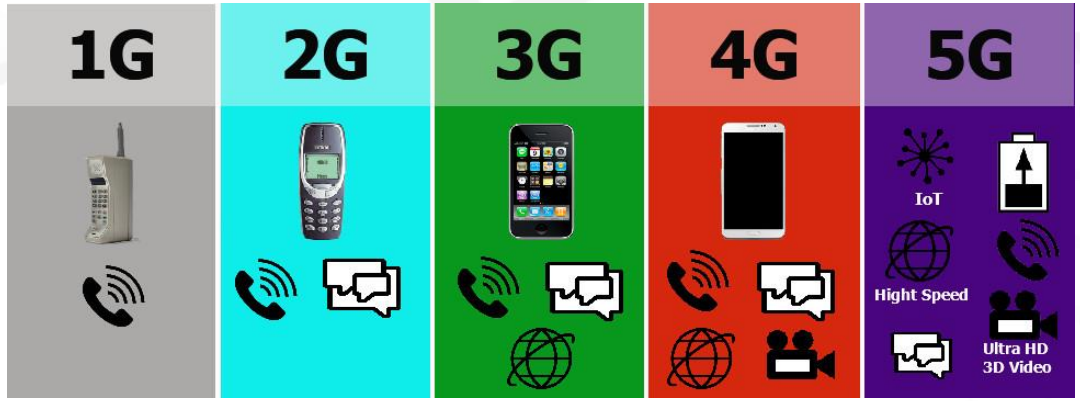
From 1G to 5G



Telecom Network Progression by Generation

	INTRODUCTION YEAR	TOP DOWN-LOAD SPEEDS	TIME TO DOWNLOAD A MOVIE (3GB)
1G	1979	2 Kbps	1 movie - Nearly 6 days
2G	1991	100 Kbps	1 movie - More than 2.5 hours
3G	1998	8 Mbps	1 movie - Nearly 2 minutes
4G	2008	150 Mbps	1 movie - 20 seconds
5G	2018	10 Gbps	3 movies - 1 second
Beyond	2030 (EXPECTED)	1 Tbps	300 movies - 1 second

Note: For 1G and 2G, these download speeds are only theoretical. 1G was an analog system and 2G was only partly connected to the internet.

Source: Ozy

GOVERNING.COM

No economies of scale for mobile devices

Price below US$ 125 to trigger mobile handsets mass adoption

No critical mass of new generation devices imbedded in subscriber base

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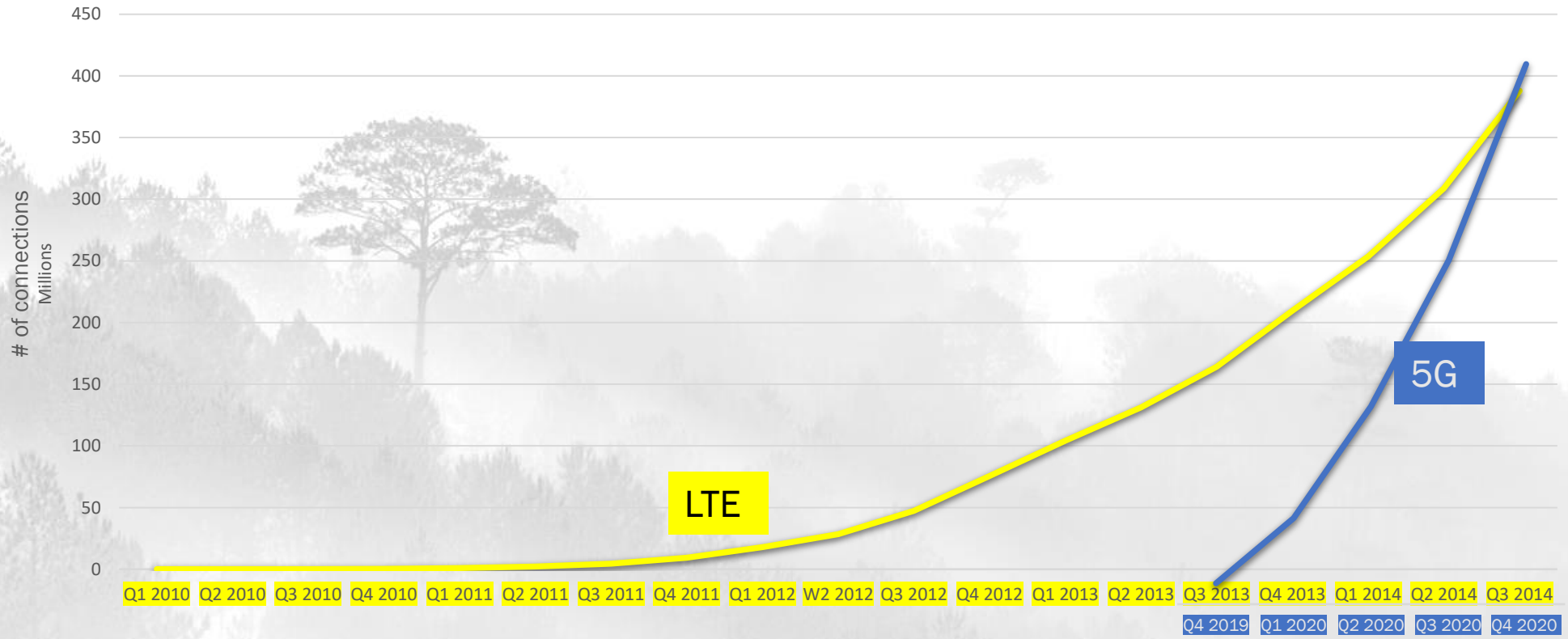
5G: The Fastest Growing Generation of Wireless Cellular

Quarters to achieve comparable growth – 5G and LTE



Source: OMDIA March 2021

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5G Deployments

Caribbean & Latin America

1

Enhanced Personal Mobile Data Communication

Augmented Reality

Enhanced Mobile

Virtual Reality

2

Massive Machine-Type Communication

Smart Infrastructure

Smart Parking

Municipal Services

3

Critical Low Latency Communication

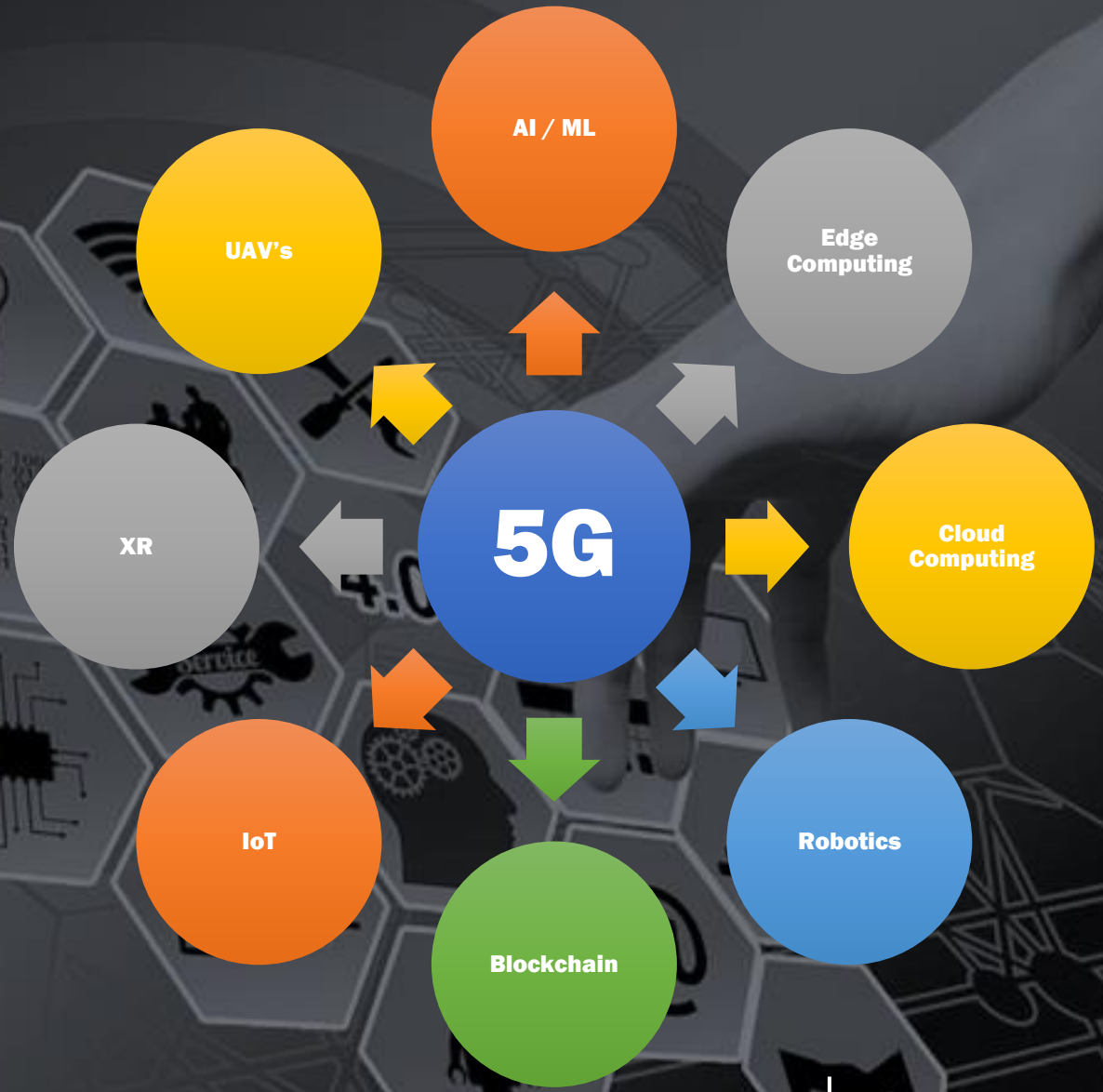
Industrial Robotics

Smart Cars

Remote Medical

5G: pillar for Industry 4.0 tech

Enabler for Industry 4.0 technologies to operate on remote and mobile devices



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5G and Financial Services

A **5 ms delay** in a broker's transaction may result in a **revenue loss of 1%**, and delay of 10 ms up to 10% of loss revenues [1]

Selected **Caribbean financial centers:** Anguilla, Belize, Barbados, Nevis, The Bahamas, The British Virgin Islands, and Dominica

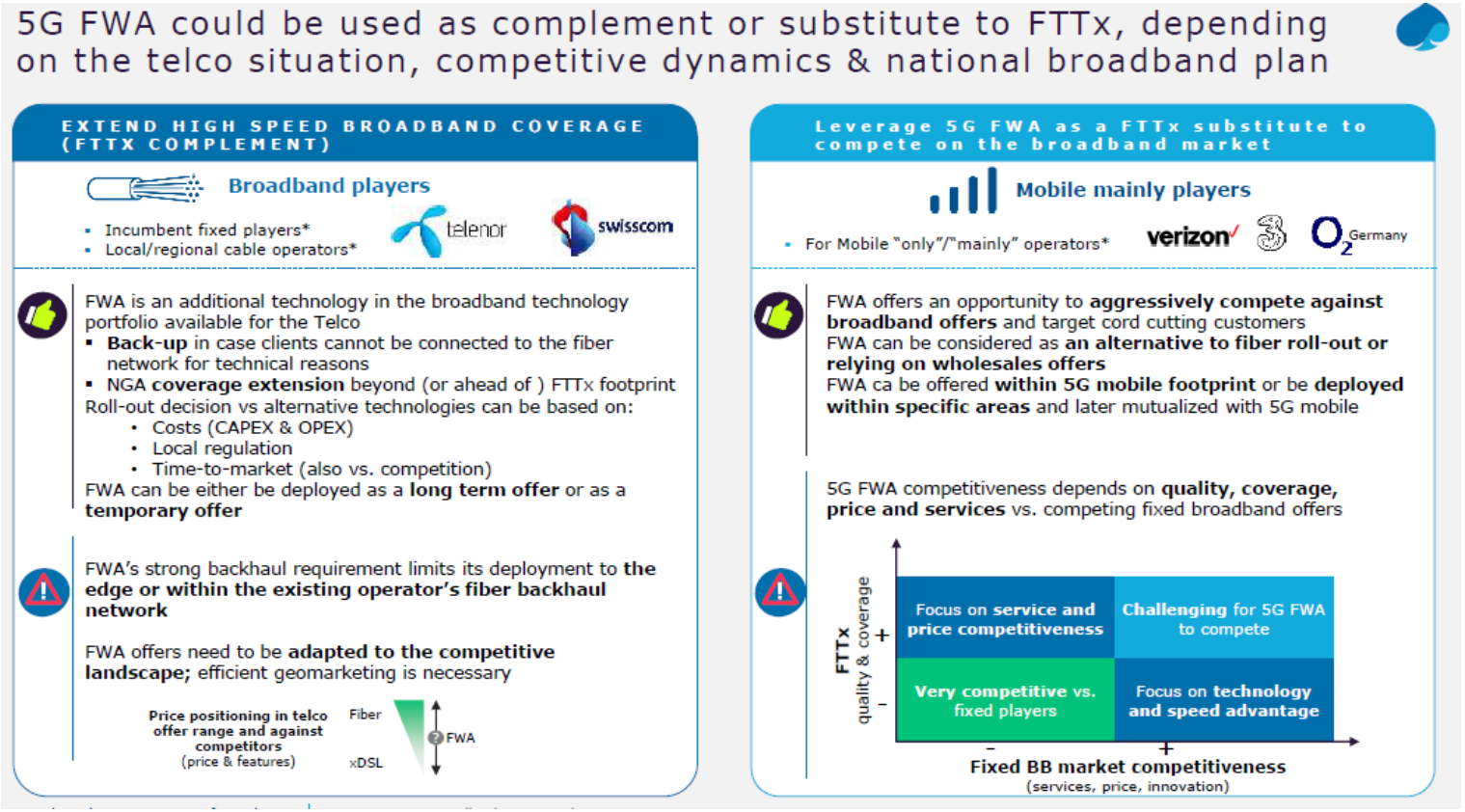
How can 5G be used in the BFS industry?[2]

- Asset visualization
- Fraud prevention
- Streamlined digital application processes
- Remote customer service
- IoT Field verification & collection
- Enhanced mobile banking apps
- Video security at bank branches
- Access for unbanked/underbanked regions – pop-up/mobile branch
- Mobile/wearable payments
- Commercial fleet telematics – impact on insurance

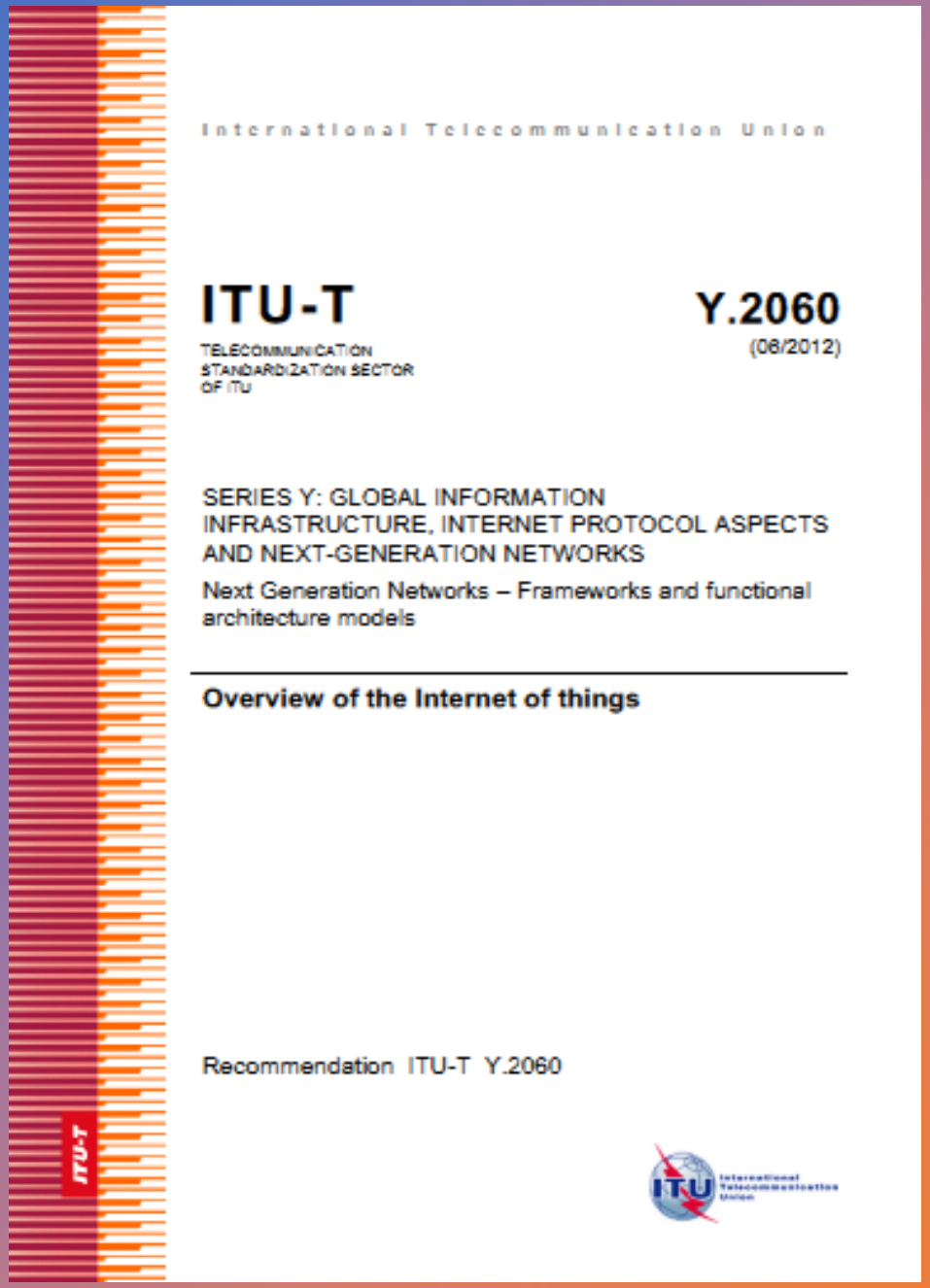
Source:

1. The Tabb group
2. . AT&T 5G Future of Financial Services E-Book

5G FWB



Source: Cap Gemini



Internet of Things

- 3.2 Terms defined in this Recommendation
- This Recommendation defines the following terms:
- 3.2.1 device: With regard to the Internet of things, this is a piece of equipment with the mandatory capabilities of communication and the optional capabilities of sensing, actuation, data capture, data storage and data processing.
- 3.2.2 Internet of things (IoT): A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.
- NOTE 1 – Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of things to offer services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled.
- NOTE 2 – From a broader perspective, the IoT can be perceived as a vision with technological and societal implications.
- 3.2.3 thing: With regard to the Internet of things, this is an object of the physical world (physical things) or the information world (virtual things), which is capable of being identified and integrated into communication networks.

Background

The Caribbean is the most diverse region in the Americas with 30 markets speaking 6 languages (Spanish, English, French, Dutch, Creole and Papiamento).

Small countries in most cases with less than 1 million inhabitants over a 2 million Km^2 area;

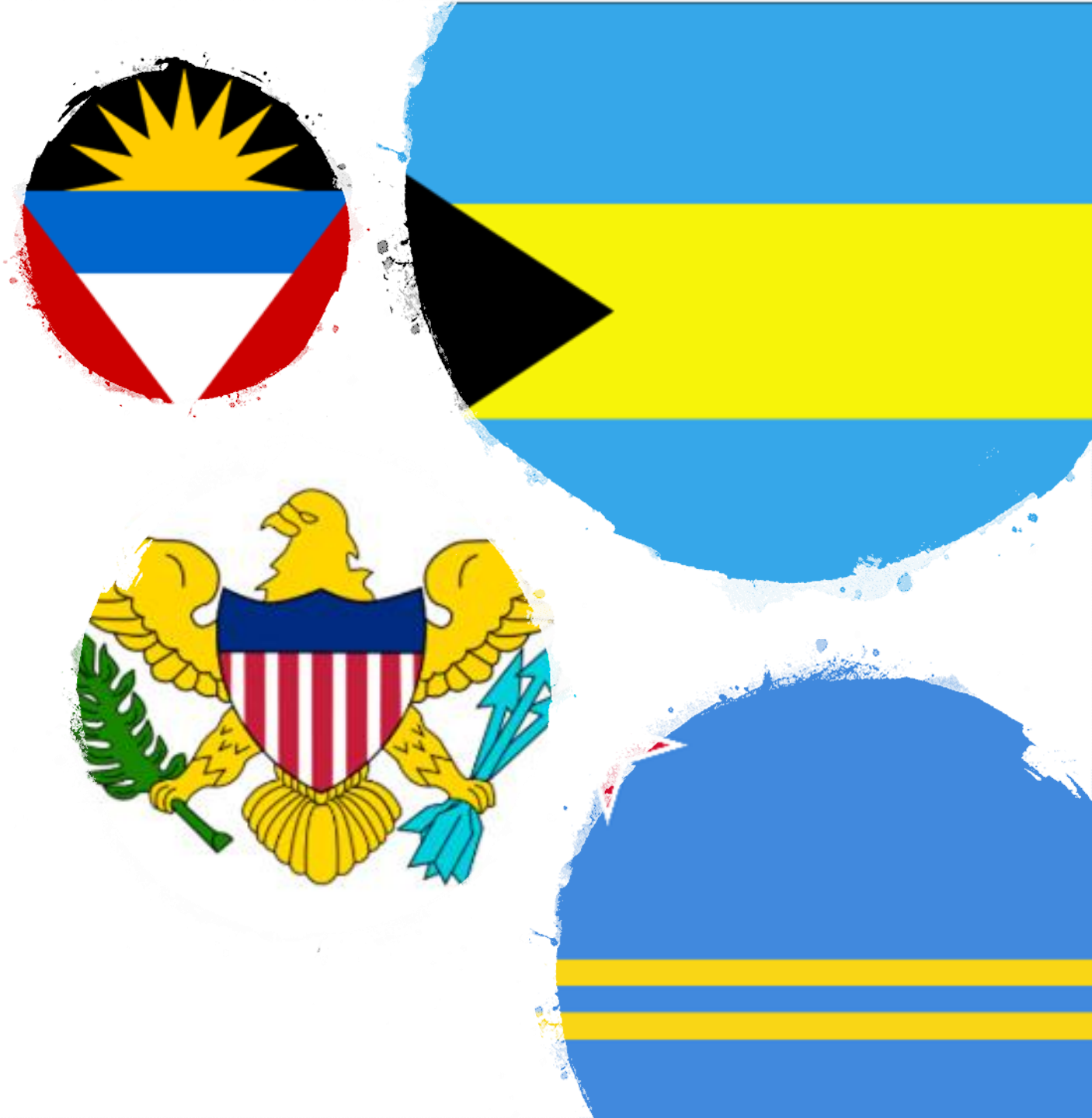
Diverse political and cultural backgrounds;

Most countries considering using ICT to improve the living standards and quality of life of their constituents.

Regional governments exploring eHealth as an alternative for improving public services and eLearning to improve education.

Caribbean 4G Deployments

- Improve competitive position vis-à-vis incumbent telecom operator
- Continue strategy of positioning itself as innovation leader in the Caribbean
- Strengthen incumbent position prior to mobile market liberalization
- Competitive dynamics respond to US operators' national strategy



Landing submarine cable systems

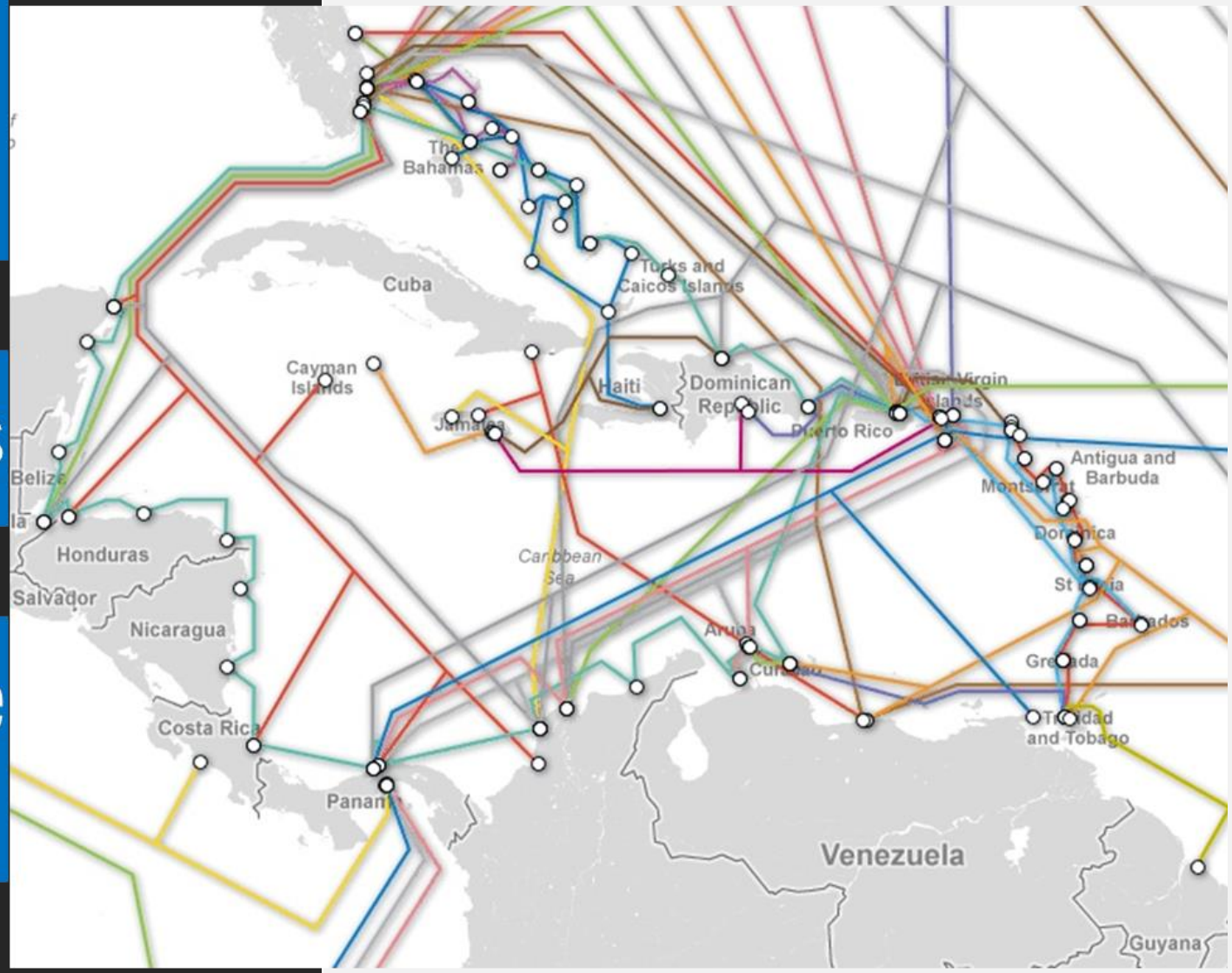
126

Internal Island Systems

40

Non-internal submarine cable systems

86



Caribbean Undersea Cables

Source: Telegeography

5G Caribbean Myths?

- Carriers are not prepared to foot the bill
- Caribbean governments don’t have the funds
- Radio spectrum challenges
- Costly Real Estate
- Potential Pricing Challenges

5G Caribbean Challenges

- Decision making not always local
  - Spectrum management policy
- Asymmetric technology development
- Technical training is needed
  - Brain drain as trained people migrate to Europe / USA
  - Academic curriculum needs to be updated to include ICTs
- Region 1 + Region 2 spectrum assignments
- Geographic proximity creates interference
  - Dominican Republic → Haiti
  - St. Kitts → Sint Eustatius, Saba, Saint Barthélemy, Saint-Martin/Sint Maarten

The Caribbean
In the 5G Era

- External factors impact deployment
  - Visitors' origin
  - Technology evolution
- Operators' national/regional/global strategy
- Digital transformation agenda
  - Internet of Things
  - Digital Divide

- Not all Caribbean markets are similar, asymmetric technology adoption
- Not all operators have the same technology strategy, target market, financial reality or face the same competitive dynamics.
- Mobile penetration growth is 2.8% annually (from 129% without Cuba) and 5% (from 112% with Cuba).

- COVID-19 impact
- Complementary infrastructure needs
- Lack of understanding of 5G market potential
- Security concerns
- ICT as a development tool
  - Economic competitiveness

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The Caribbean
In the 5G era

- Initial trials date back at least to 2017
  - Puerto Rico / Antigua & Barbuda
- 3GPP Releases 15/16 already offering commercial services in Puerto Rico, Suriname, Trinidad & Tobago, US Virgin Islands
- Need for more spectrum assignments
  - Low, medium and high bands

- French Overseas Departments Consultation process
  - 700 MHz and 3.4 to 3.8 GHz
- Dominican Republic 5G Auction
  - Scheduled for 2021, 700 MHz and 3.5 GHz
- Jamaica's Spectrum Management Authority
  - 24.25 -27.5 GHz; 37 – 43.5 GHz; 47.2-48.2 GHz and 66 – 71 GHz

- Operator from Aruba announced it will be launching 5G during 2021
- Historically, The Cayman Islands and The Bahamas adopt new technologies faster than the rest of the Caribbean.
- 5G network announced for Guyana delayed for lack of RF spectrum

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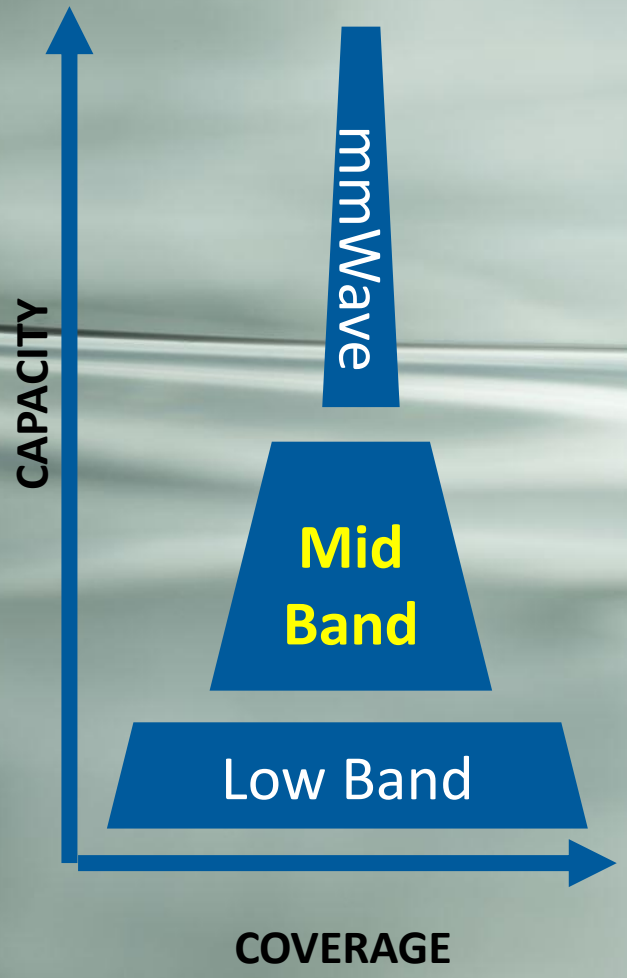
Caribbean Snapshot

- Need of more spectrum in low, medium, and high frequencies.
  - Upcoming assignment processes: Dominican Republic, French Antilles.
  - Under study: Jamaica (mmWave)
- Many still look at 5G as a consumer-centric network
- Complementary infrastructure needs must be addressed
- Lower revenues due to telephony OTTs increased usage
  - Breaking of historical On Net communities in CPP scenario
  - Main focus on MBB

Different spectrum unlocks different use cases



Reliable Low-Latency Comms

- Localized, reliable high capacity service

Enhanced Mobile Broadband

- Consistent capacity and speed experience

Massive IoT

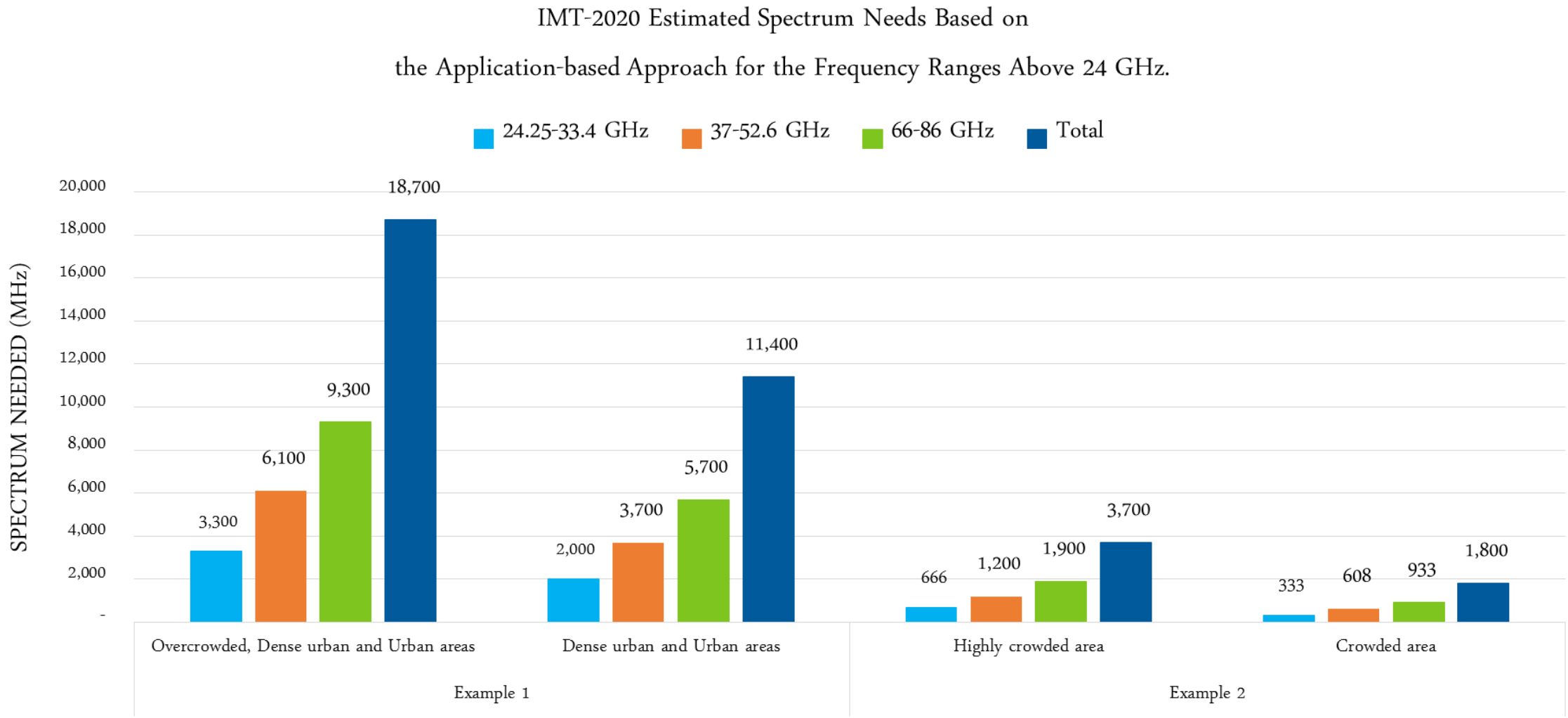
- Nationwide coverage reliability

- Autonomous cars
- Drones
- First Responders
- Automated Factories
- Robotics

- VR/AR
- Large events
- High-resolution video
- AI/ML requiring large data sets
- Science/research with large data sets and video

- Smart city sensors
- Smart home sensors
- Urban-rural digital divide
- Healthcare sensors
- Wearables

Spectrum Recommendations Above 24 GHz



Network Densification

4G **denser** than 3G and **5G** **denser** than 4G = **5G** **10X denser** than 3G

4G: **Macro cell towers** carried the bulk of 4G mobile traffic + **Small cells** deployed where specific capacity needed

5G:

Diverse Portfolio of cell sites

Macro cell towers carry a lot of traffic. + **Small cells** for local coverage

Variety of cells for capacity & coverage + **Offloading, Sharing and unlicensed** spectrum

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Outlook

- At least 4-6 years before massive adoption of 5G starts in the region
- Delays on spectrum assignment processes
- 5G will continue to have more launches than previous generations but consumer uptake will be slow
- Slow learning curve about its impact on the economy
- Postponement of 2G networks shutdowns
- Main 2G/3G networks will continue operating over the medium term
- External market conditions will impact the region.
- Government launch digital transformation initiatives


Questions?
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