

# SPECTRUM

THE FUNDAMENTAL ELEMENT OF MOBILE

WRC-19 | 31 October

## ASMG



GSMA™



# Introduction



**Opening  
Remarks**

**Mats Granryd**  
Director General  
GSMA

**John Giusti**  
Chief Regulatory Officer  
GSMA

**GSMA**



**GSA**

**Noel Kirkaldy**  
Market Development MEA  
Nokia

**Geraldo Neto**  
Senior Technical and  
Policy Advisor  
TMG

**Analyst  
Industry**



**Closing  
Remarks**

**Mohamed Abbes**  
Public Policy Director  
GSMA

# SPECTRUM

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Opening Remarks

**Mats Granryd**



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Welcome

**John Giusti**



2G

3G

4G

5G



All about calls and texts

The start of mobile data

The arrival of mobile broadband services and applications

The network adapts to the application

Ultra high speed  
Ultra low latency  
New applications

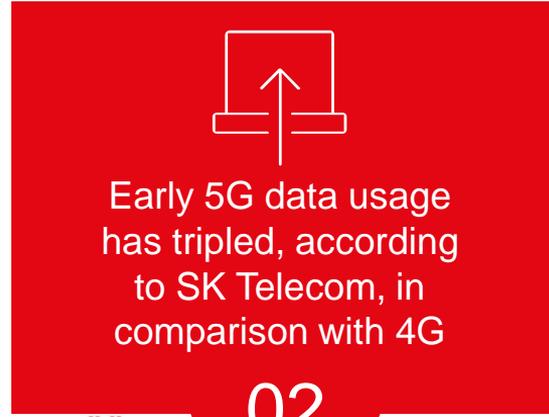


# 5G Ramps Up



## 01

LG Uplus is seeing 1.3 gigabytes of data a day per subscriber in the early days of its 5G launch



Early 5G data usage has tripled, according to SK Telecom, in comparison with 4G

## 02

**5G Mobile Infrastructure Y Co-development**

- First release of 5G mobile infrastructure vehicle to be developed with KT and SK
- Infrastructure and service for 5G service are all included

**World's First 5G Federated Network Slicing Technology Development**

- Succeeded in interoperability demonstration with Deutsche Telekom 5G core joint development with Deutsche Telekom and Ericsson
- Enabled rapid testing 5G network service domestically and internationally, through virtualized network

**Present Early Stage 5G Commercialization Blueprint to NGMN**

- Released early commercialization 'Mobile Open Innovation Mobile Network' including 'World's first 120-5G equipment and frequency commercialization'
- Released 5G research results to other carriers for early stage 5G commercialization, commercialization and ecosystem expansion

**Smart City Deployment Using LoRa**

- 5G infrastructure deployment at autonomous driving technology '5G-AD'
- Provides services such as GPS-based location tracking, 5G, sensor and gate service, and low floor monitoring

**Low Latency Technology Development**

- Successfully reduced the latency between 5G handset and base station from 20ms to 2ms, together with Korea

**Self-Driving Car Successfully Test Runs 26 kilometers**

- Traveled 26 kilometers in real traffic conditions at a speed of up to 80 kilometers
- Applied 5G based V2X (vehicle to everything) and 4G map sharing test run

**Welcome to 5G KOREA**

SK telecom



## 03

In Saudi, 1820 TB of data, a 66% increase in daily consumption, were consumed over Hajj in Mecca using networks including 37 5G sites



5G connections forecast has increased by

**12.5%**

It now stands at



**1.6 BILLION**

by 2025



5G adoption forecast has increased to



**18%**

by 2025



**37**

COMMERCIAL 5G NETWORKS

launched across

**19**

MARKETS



with

**75**

further launches



across

**50**

markets soon



ROUTERS



DRONES



**129**

5G DEVICES

TVs



ROBOTS



HOTSPOTS



2018

Mobile operators will invest

**\$480BN**

WORLDWIDE

2020

in mobile capex



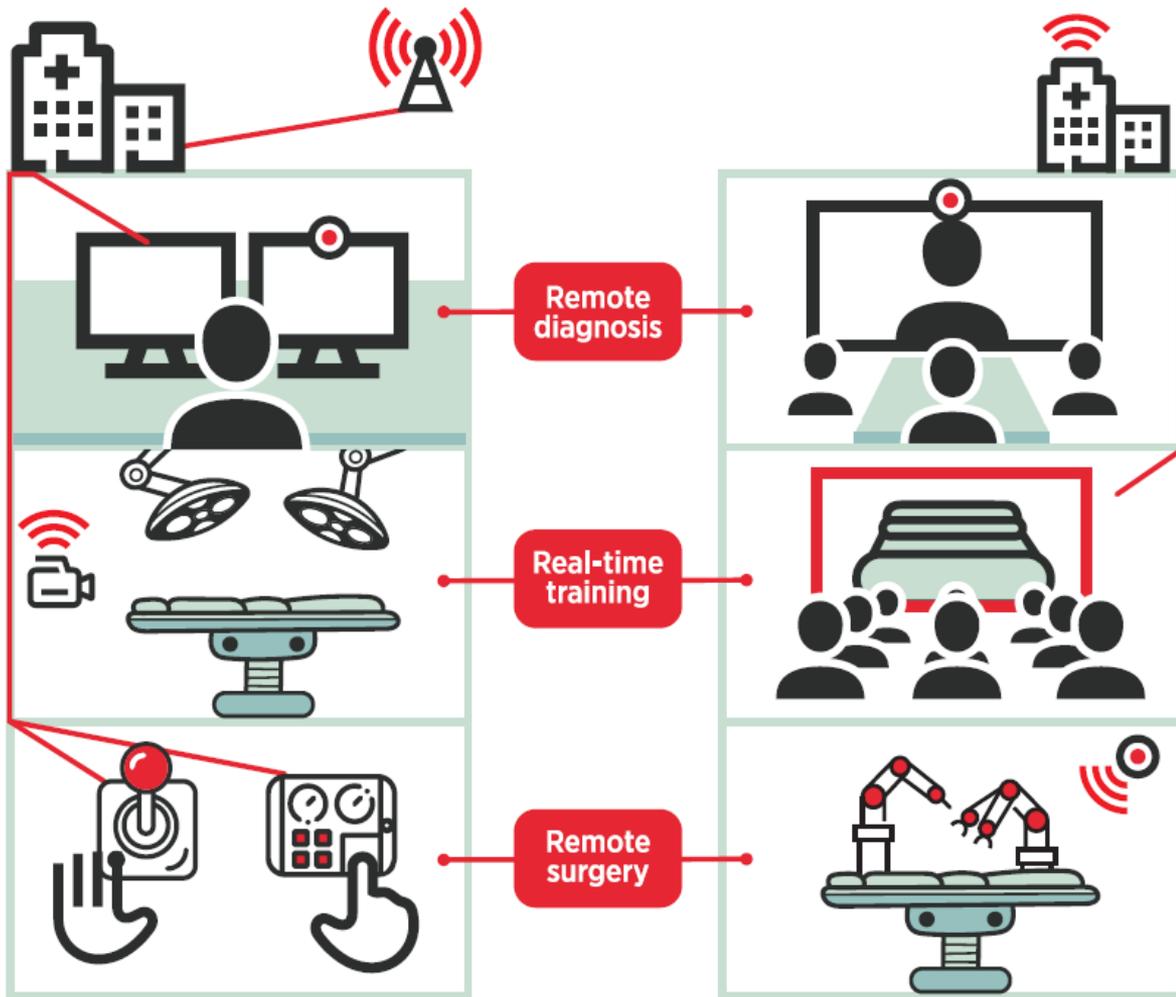


## Use Case

# 5G

CAN  
MAKE IT  
HAPPEN

# Healthcare





# The socio-economic benefits of mmWave 5G (2020-2034)

Middle East and North Africa Edition

GDP impact of mmWave spectrum by 2034



**\$15.4 billion**

TAX  
\$3.1bn

1.1%

GDP growth

15%  
2025

27%  
2034

The share of 5G services using mmWaves

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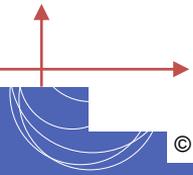
5G Ecosystem

Noel Kirkaldy



# 5G ECOSYSTEM UPDATE

Noel Kirkaldy  
GSA Arab States



Qualcomm



NOKIA



SAMSUNG

# VISION



## VISION

wirelessly connect almost all 7 billion people globally to new and exciting services through 100 billion devices and things, by 2030



## HOW

spectrum from the low-band, mid-band and high-band frequency ranges helps realise the Vision

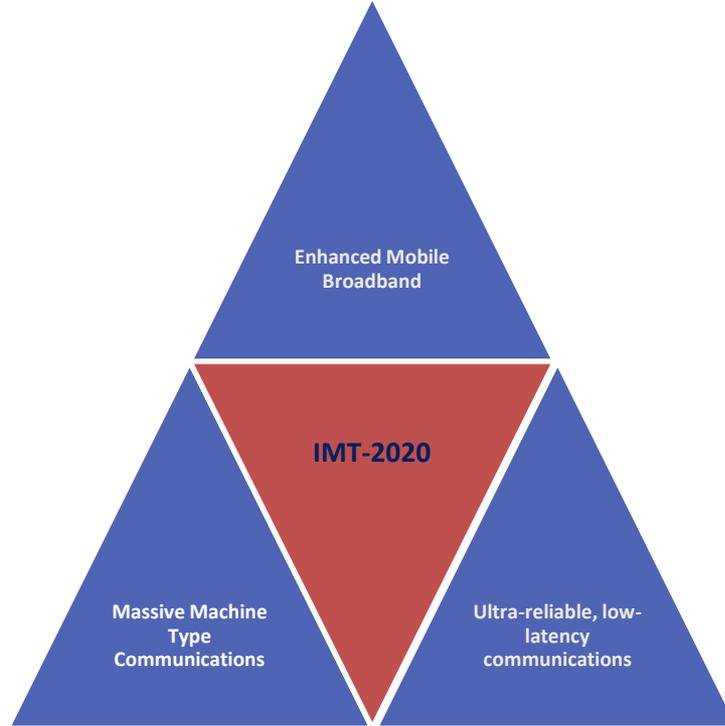
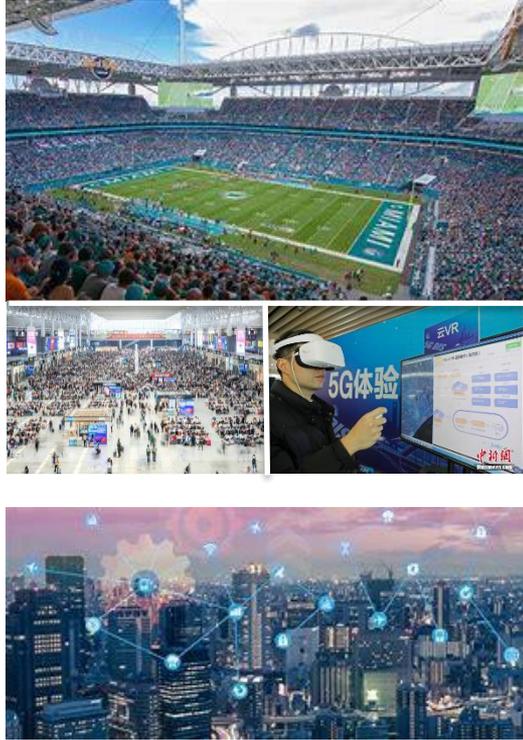


## WRC-19 GOAL

large contiguous amounts of high band (mmWave) harmonised spectrum, with suitable regulatory conditions, helps enable extreme capacity and ultra fast local area services.

planning for the future with WRC-23 mid & low band agenda item

# USE CASES





Release 15 complete (2017-2019)

Release 16 development (2018-2020)

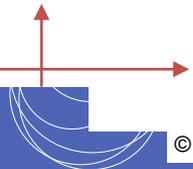
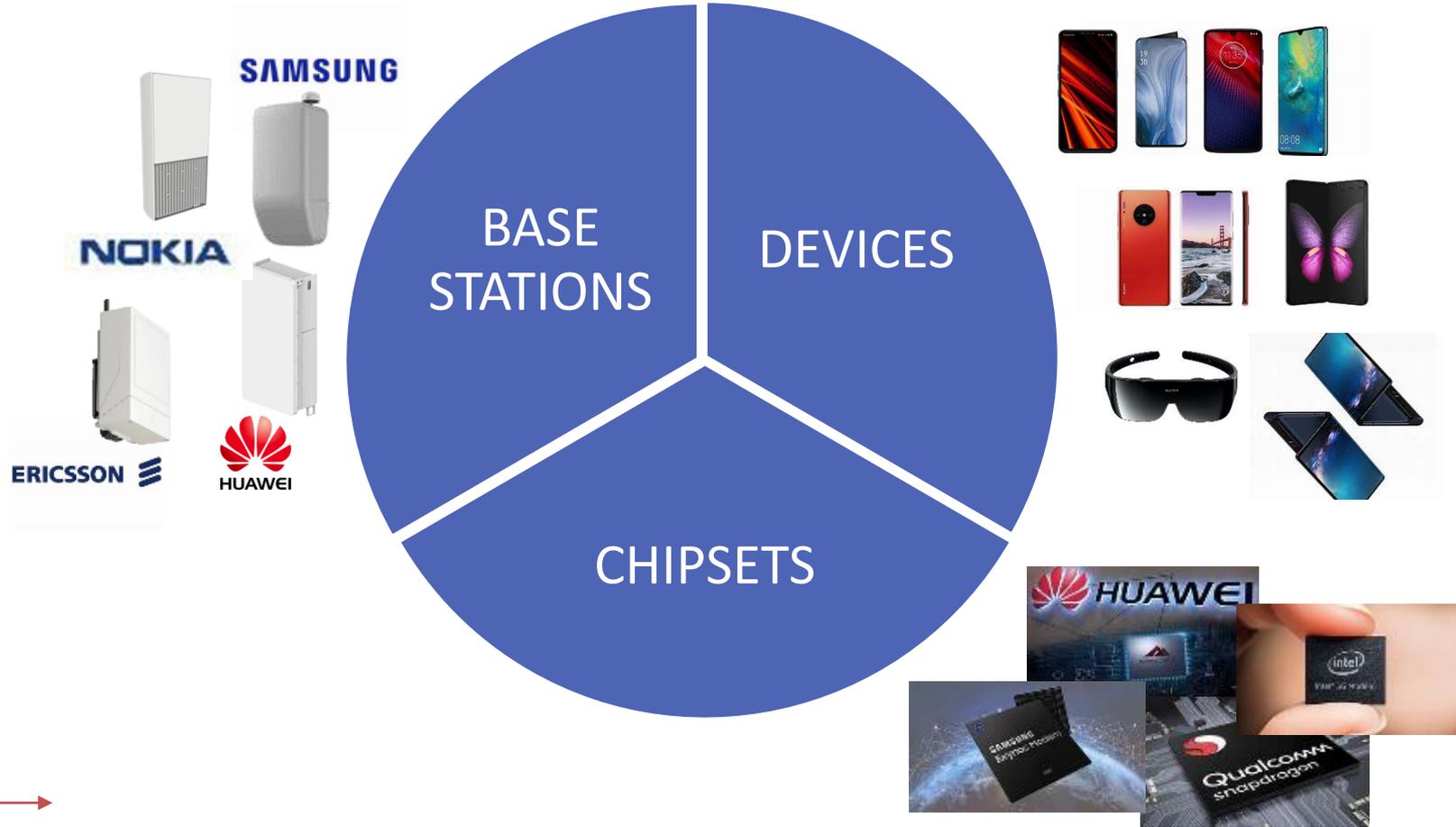
Enhancements, Unlicensed, URLLC+ & IoT+, V2X, etc

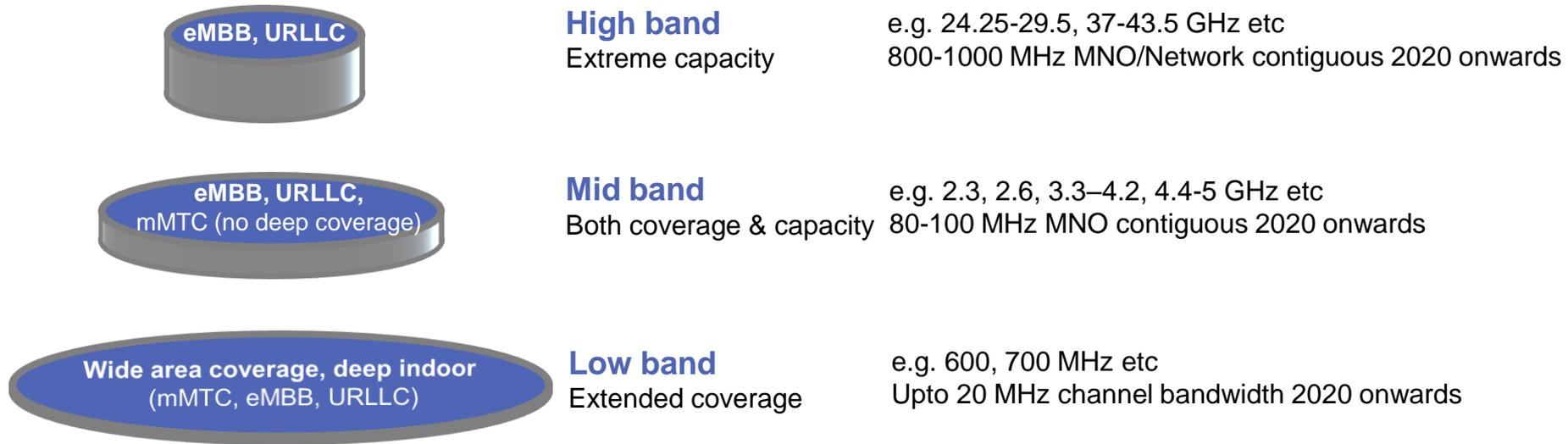
Release 17 planning (2019-2021)

Enhancements to support verticals, coverage improvements, NTN, etc

**3GPP 5G specs complete – work underway on enhancements**

# PRODUCTS





**Various applications and services require access to spectrum from low, mid and high bands**

# The Road to 5G with GSA

The Industry Voice of the Global Mobile Ecosystem

Facts - Figures - Graphs - Reports - Market Monitoring - Analysis - Advocacy - Databases... [Read More >](#)

## THANK YOU

Check out [www.gsacom.com](http://www.gsacom.com) for regular report updates

### 5G ecosystem update



### 5G licensing update



Qualcomm



NOKIA



SAMSUNG

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Industry Perspective

**Geraldo Neto**





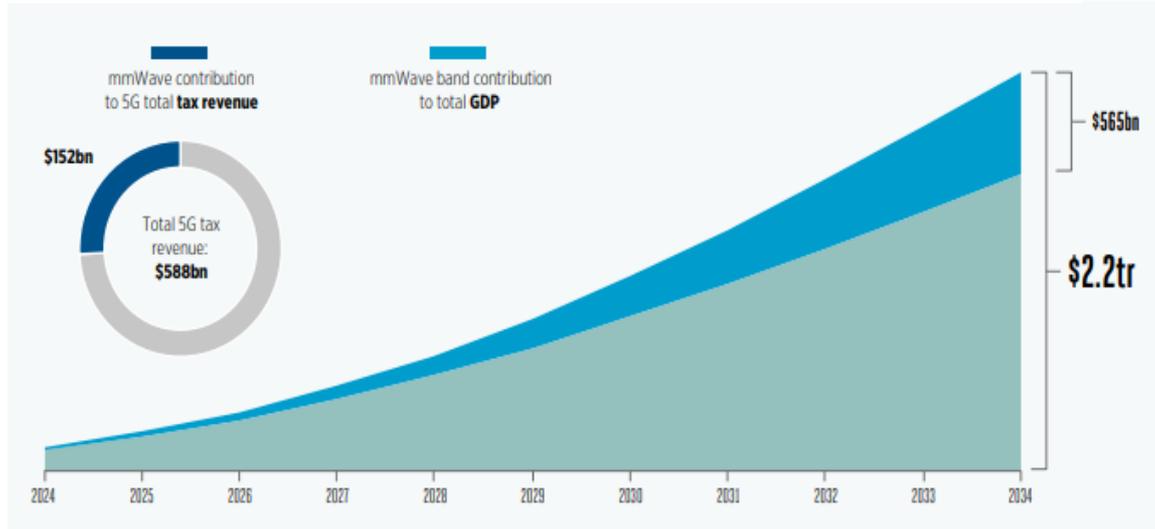
# Industry Perspective

October 2019

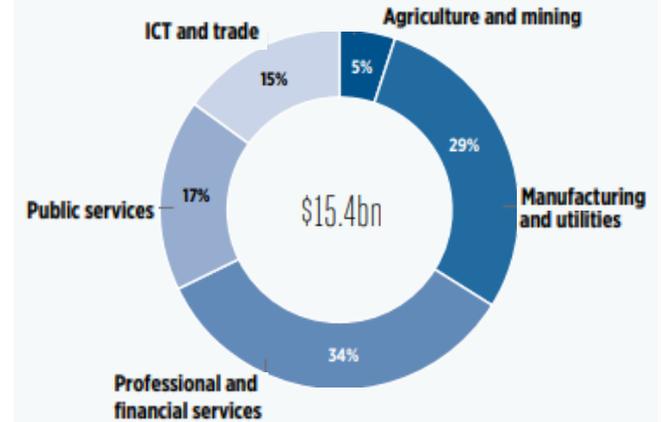
# 5G is expected to contribute \$2.2 trillion to global GDP

STRUCTURE OF GDP CONTRIBUTIONS BY VERTICAL IN MENA, 2034

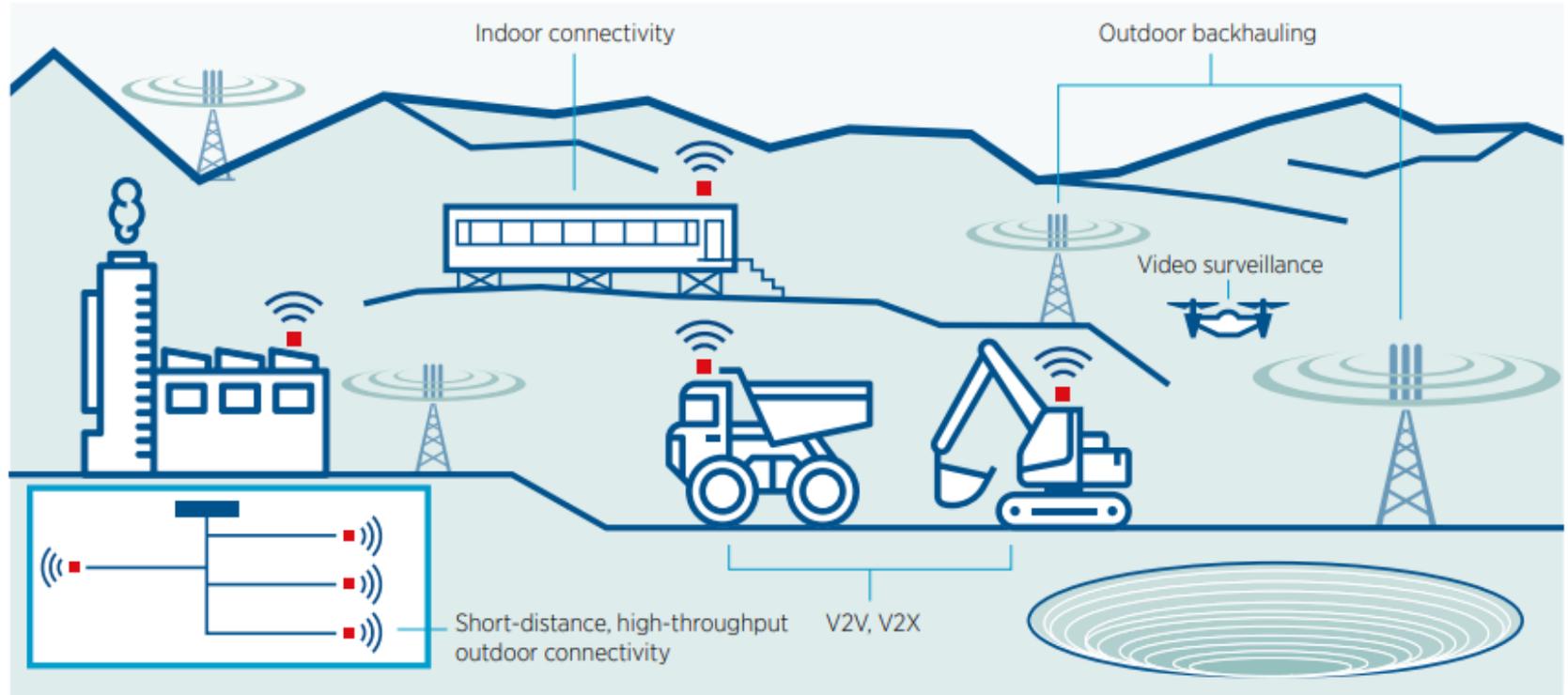
ESTIMATED IMPACT ATTRIBUTABLE TO MMWAVE SPECTRUM ON GDP AND TAX REVENUE



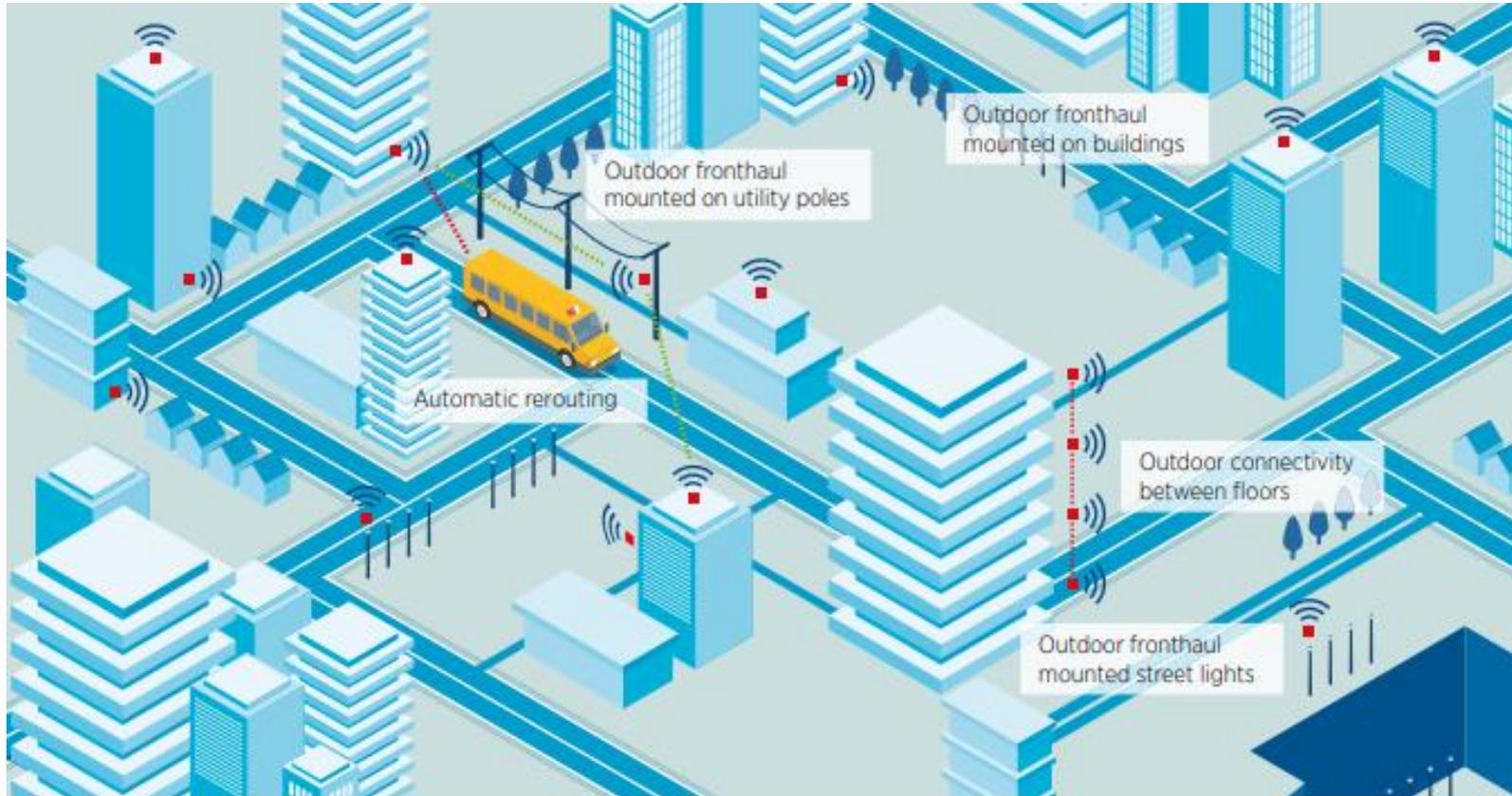
Source: TMG.



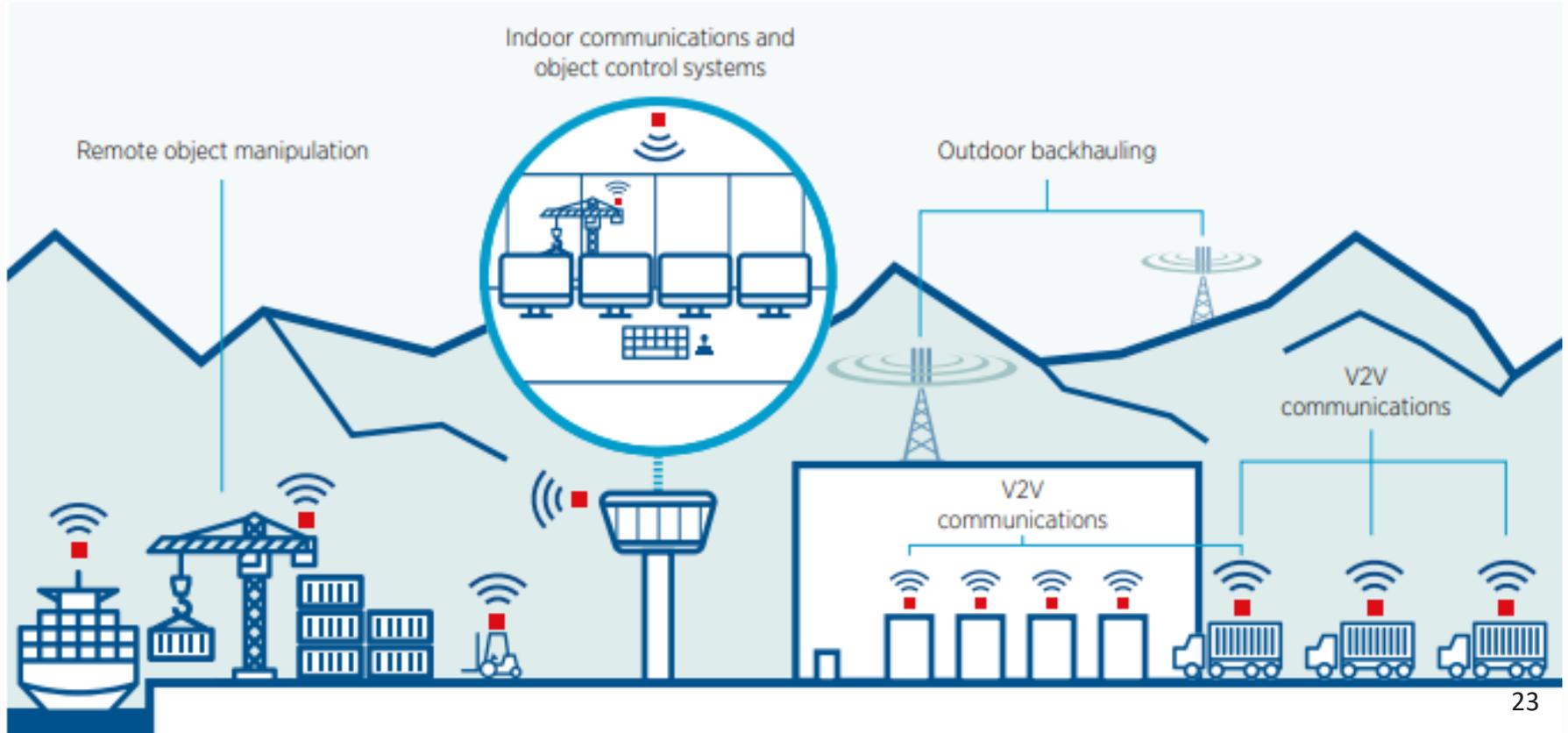
# Case Study: Extractive Industries



# Case Study: Connectivity



# Case Study: Smart transportation logistics hubs





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Conclusion

Mohamed Abbas





## Our Asks

### 26 GHz

(24.25-27.5 GHz)

- Limits to protect EESS (passive)  
-28 to -32 dB(W/200MHz)
- No conditions necessary for FSS/ISS since sharing studies show significant protection margin

### 40 GHz

(37-43.5 GHz)

- Identification of whole range provides harmonisation with other Regions
- FSS downlink: ES sharing is a national issue
- FSS uplink: sharing studies show a significant protection margin

### 50 GHz

(45.5-52.6 GHz)

- Good options to support future 5G growth
- Studies have been performed and show sharing is possible

### 66 GHz

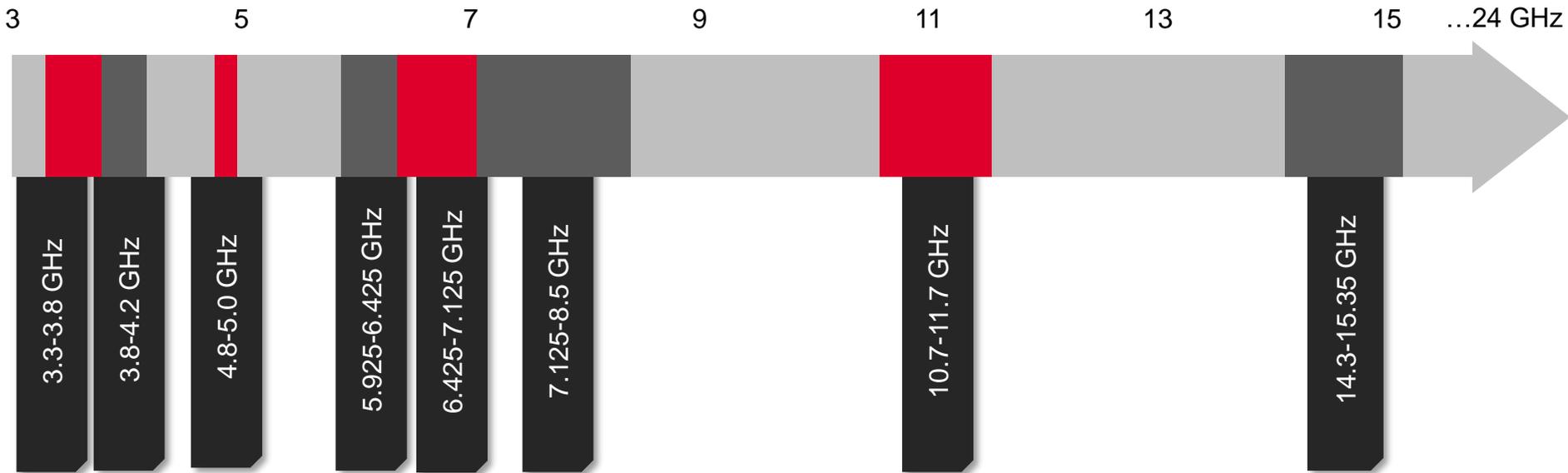
(66-71 GHz)

- Flexible use for unlicensed 5G systems - both IMT and non-IMT technologies
- Shared with WiGig
- Supported by APT, ATU, ASMG, CEPT



# WRC-23 supported bands

GSMA supports WRC-23 AIs for IMT in 470-960 MHz, and consideration of the bands below





# Experiences at the GSMA stand

Live 5G demos



City of the Future VR experience



Interactive library - all reports straight to your inbox