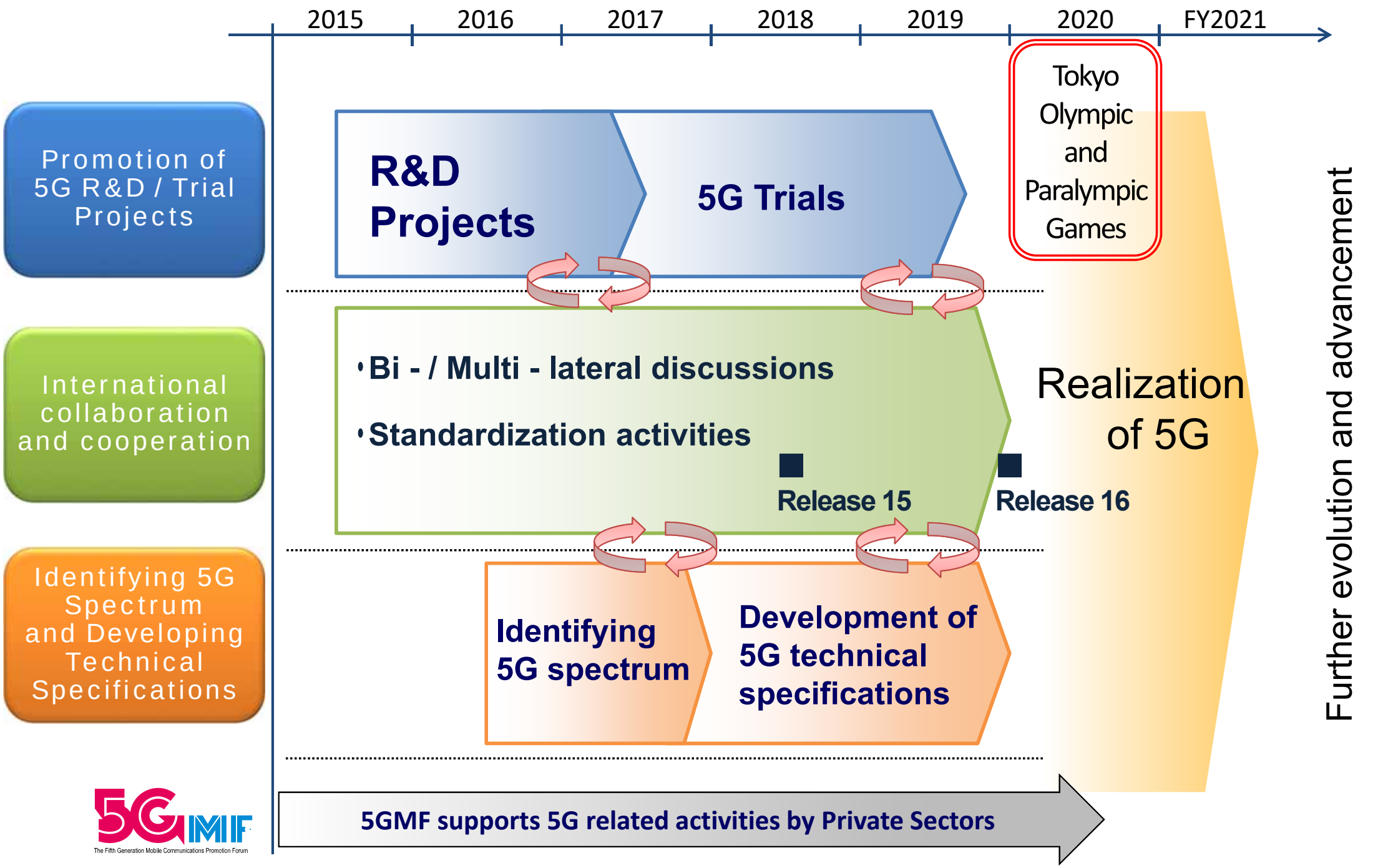
Roadmap, Field Trials and Spectrum issues for 5G in Japan

28 June 2018

Ministry of Internal Affairs and Communications
(MIC)

5G Spectrum & Policy Workshop
Himalaya Ballroom, Jumeirah Hotel

5G Development Roadmap toward 2020 in Japan



5G Field Trials in Japan

[Period]

FY 2017 – FY 2019 (3 years)

[Radio Spectrum]

below 6 GHz, 28 GHz

[Places]

Tokyo + Local areas

[Test Environments]

- Urban micro-cell or Urban macro-cell
- Suburban macro-cell or Rural macro-cell
- Indoor hotspot

[Key Capabilities]

- eMBB (10Gbps peak data rate)
- mMTC (1 million connected devices/km^2)
- URLLC (1ms over-the-air latency)

5G Field Trials in Japan (2)

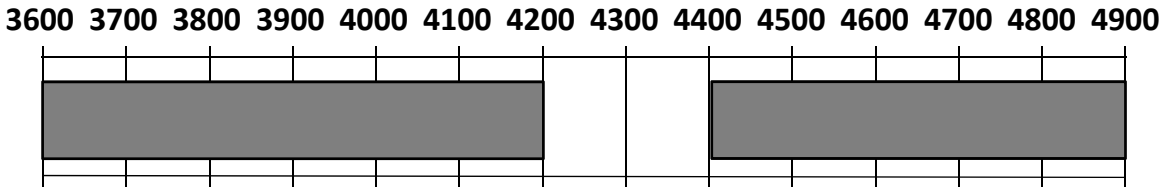
	Responsible Organization	Main Partners	Trial Overview	Main Trial Locations	Technology
I	NTT DOCOMO	• TOBU TOWER SKYTREE • ALSOK (Security Company) • Wakayama Pref.	• Sightseeing • Smart Cities • Medical Services	• Tokyo • Wakayama	eMBB (4.5, 28GHz)
II	NTT Communications	• Tobu Railways • Infocity (Contents Company)	• Transport	• Tochigi • Shizuoka	eMBB (28GHz)
III	KDDI	• Obayashi Corp. (Construction Company) • NEC (Appliance manufacturer)	• Construction	• Saitama	URLLC (4.5, 28GHz)
IV	ATR (Research Corporation)	• Naha City • Keikyu Railways	• Stadium	• Okinawa • Tokyo	eMBB (28GHz)
V	Softbank	• Advanced Smart Mobility Co., Ltd. • SB Drive Corp.	• Transport	• Yamaguchi • Ibaraki • Shizuoka	URLLC (4.5, 28GHz)
VI	NICT (National Institute of Communication)	• Telecom company • Local Government • Office Appliance Company	• Logistics • Smart office	• Miyagi • Ishikawa • Osaka	mMTC (3.7, 4.5, 28GHz)

Candidate Frequency Bands for 5G in Japan

- **Below 6 GHz** (**3.6 - 4.2 GHz & 4.4 - 4.9 GHz**)

  Bandwidth： 500MHz (Maximum allocation)

  Allocation : By the end of FY2018



- **Above 6 GHz**

  27.5 - 29.5GHz [& 27.0 – 27.5GHz]

  Bandwidth : 2GHz (Maximum allocation)

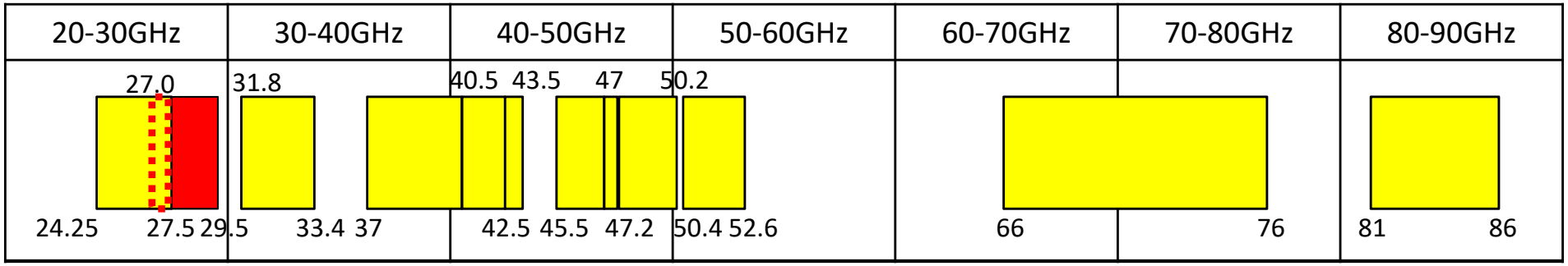
  Allocation : By the end of FY2018

  24.25 GHz - 86GHz

  Priority : Below 43.5 GHz

  Allocation : In the first half of 2020's

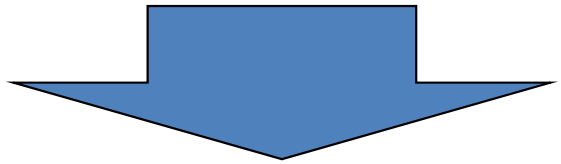
  (Candidate 11 Bands to be considered at the WRC-19)



How to license millimeter-waves for 5G?

Millimeter-wave band can be utilized for high speed and large capacity data communications; however, due to its high straight advancing property, it will be difficult to extend area coverage.

Currently, MIC puts on mobile operators obligations to implement certain coverage ratio (% of population in a certain period) when licensing.



Considering the millimeter-wave band's property, it might be difficult to maintain the above obligation and will be necessary to adopt a new license system or some other solutions...

Thank you for your kind attention!