

5G Forum: Status Quo

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On behalf of

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5G R&D Plan in Korea

'Creative 5G Mobile Strategy' (Jan. 22, 2014)
by Korean Government (MSIP) to roll out 5G network

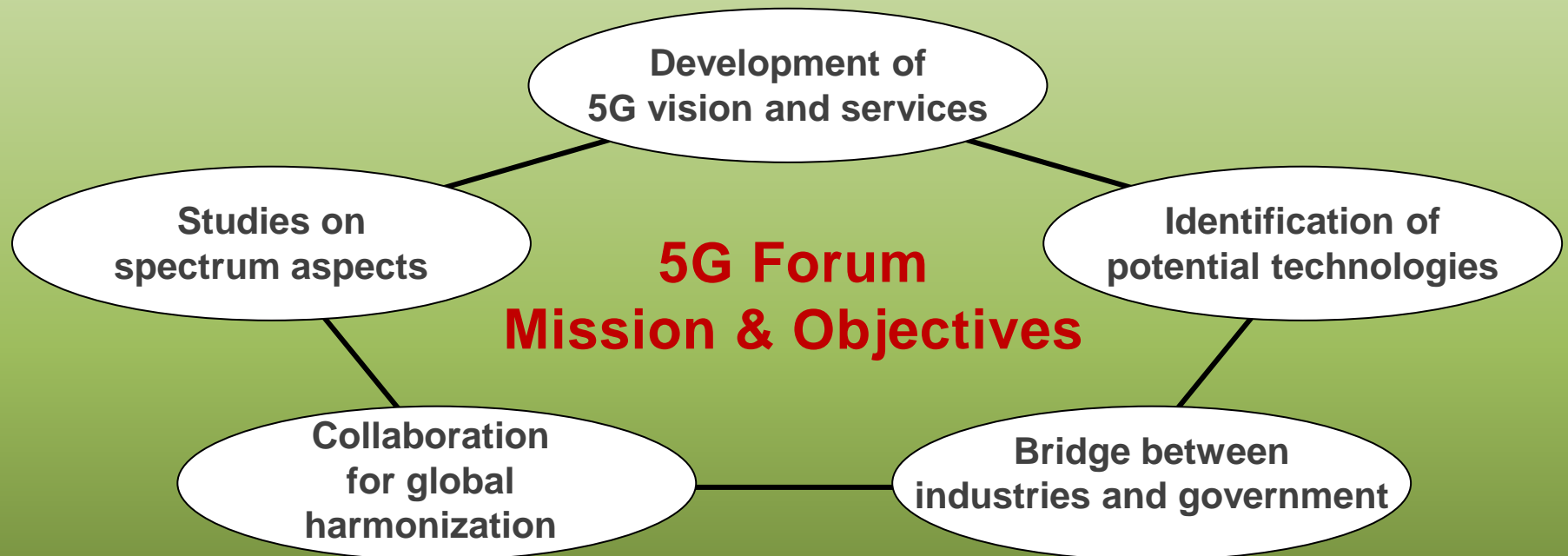


- Period: 2014~2020 (7 years)
- Budget: 1.6 Trillion Won (US 1.5 Billion \$) joint investment by the government and private sector



5G Forum: Vision & Mission

Global Leadership and Promotion in 5G Mobile Communication toward 2020

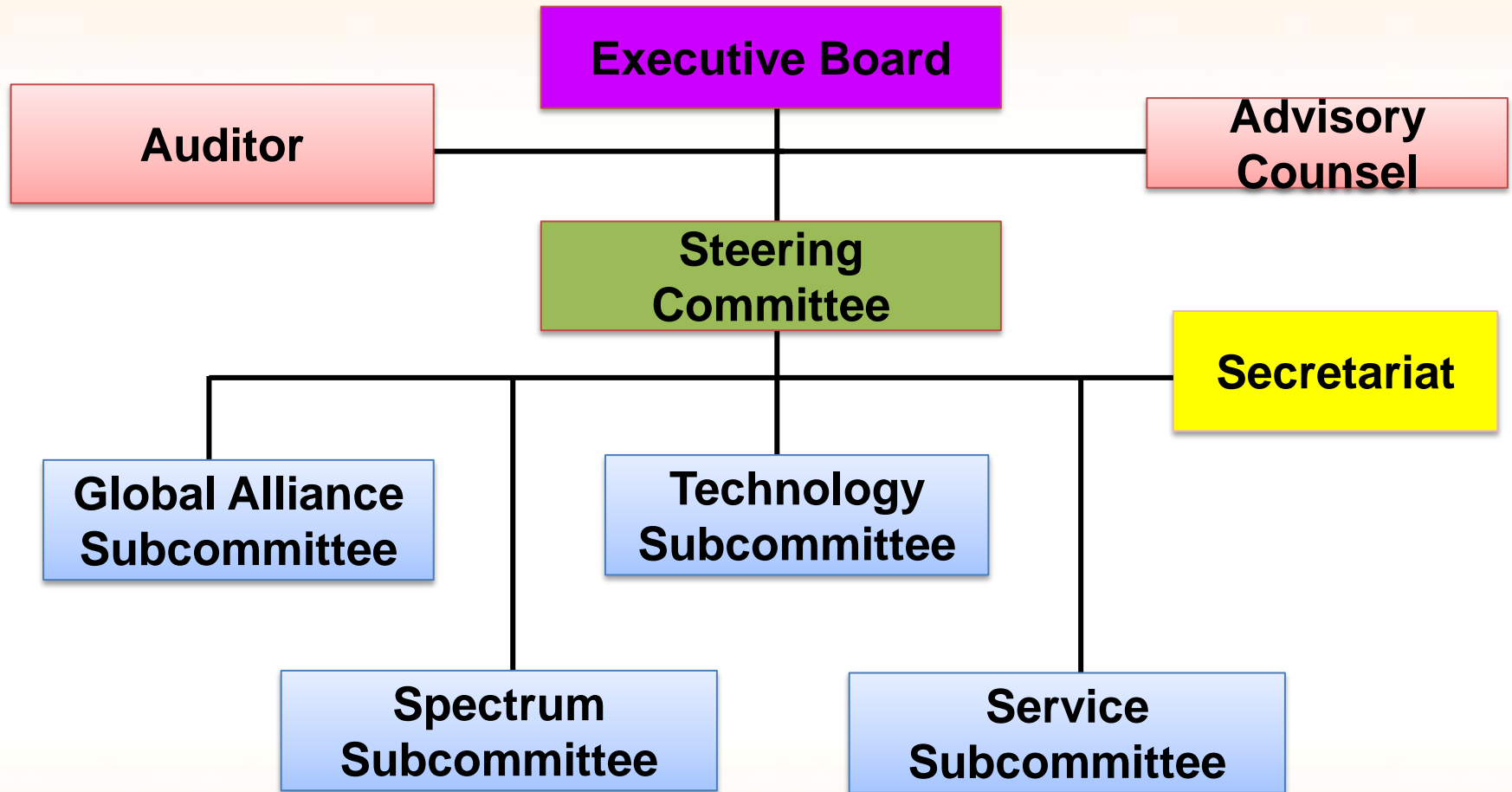


5G Forum

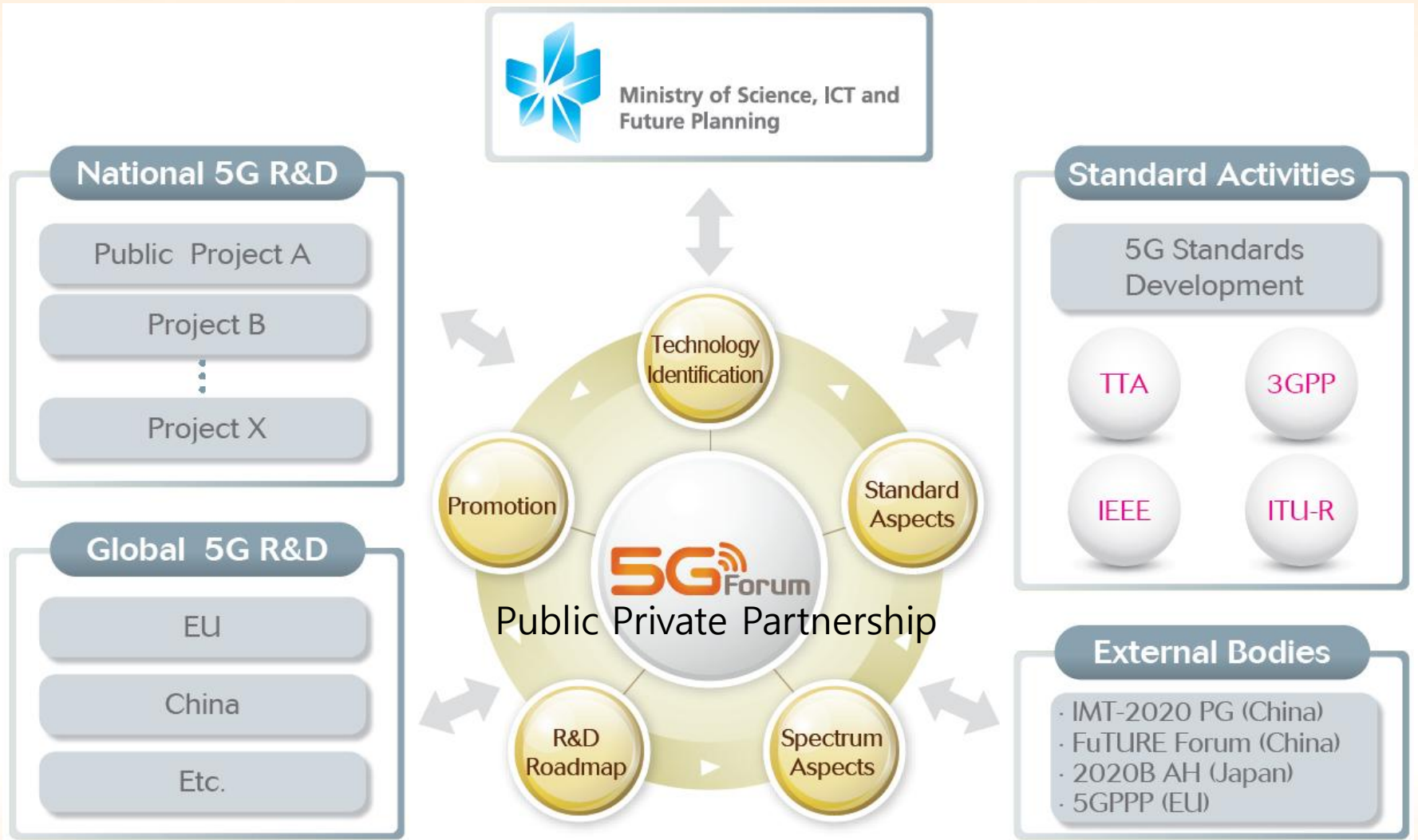
- Public private partnership for the promotion of 5G Mobile communication
 - Established on May 30, 2013, Seoul
- Members
 - Private sector: Operators, Equipment (Handset, network) vendors,
 - Research institutes: ETRI, IITP, GiGa Korea
 - Universities: KAIST, Yonsei, Korea, etc..
 - Open to global company/organization



5G Forum: Organization



5G Forum: Operational Aspects



5G Forum: Global Collaboration

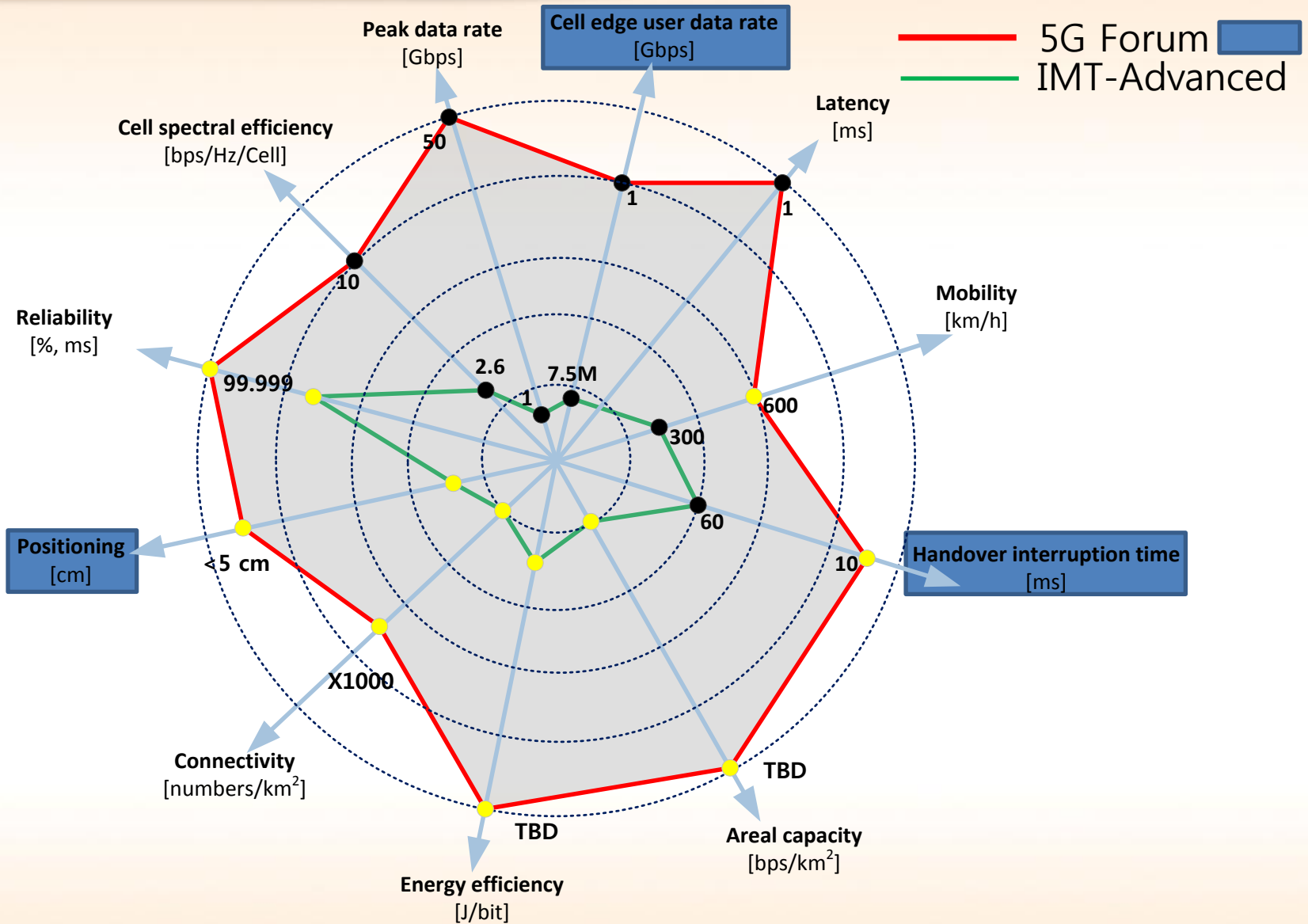
Global Collaboration



5G Vision

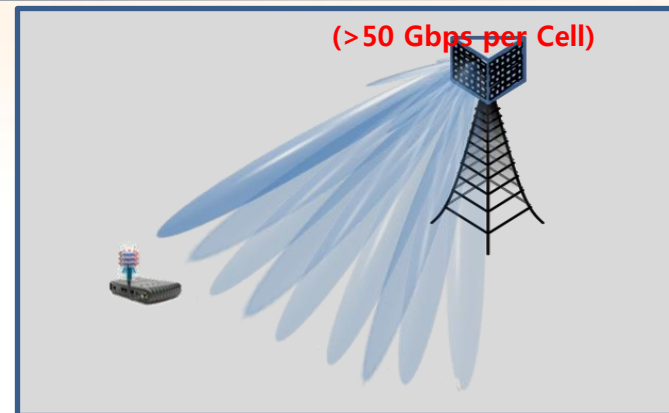
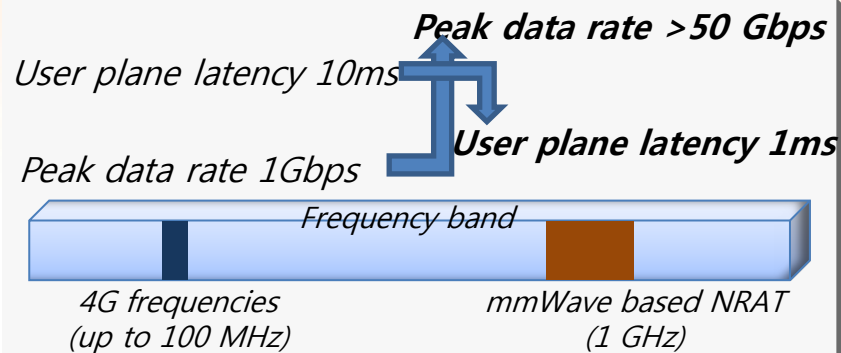


5G Requirements



5G Enabling Wireless Technologies (1)

mmWave Higher Bandwidth & 3D Beamforming



FQAM for Cell Edge Performance

Interference Design

□ Statistics of ICI can be designed via change of interfering signal modulations.

Inter-cell Interfering Signal S_2

Inter-cell User

Interference

Desired Signal S_1

Desired User

Interference

Inter-cell Interfering Signal S_3

Inter-cell User

Interference

$r_1 = S_1 + n$

FQAM

□ A hybrid modulation scheme combining QAM and FSK

FSK

QAM

FQAM

Distribution of ICI

□ Using FQAM, statistical distribution of ICI becomes non-Gaussian.

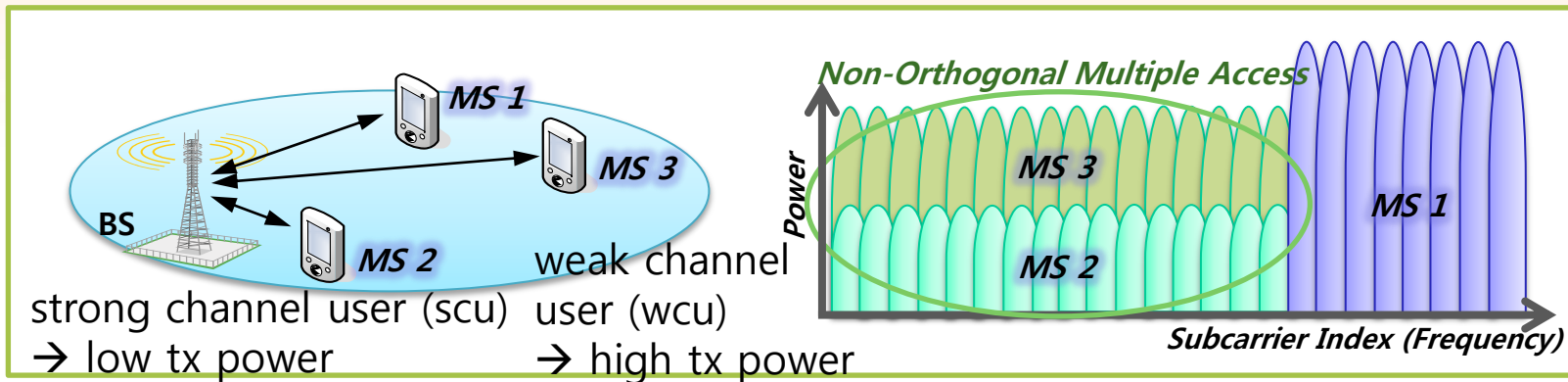
Normalized Histogram

Real Value of ICI

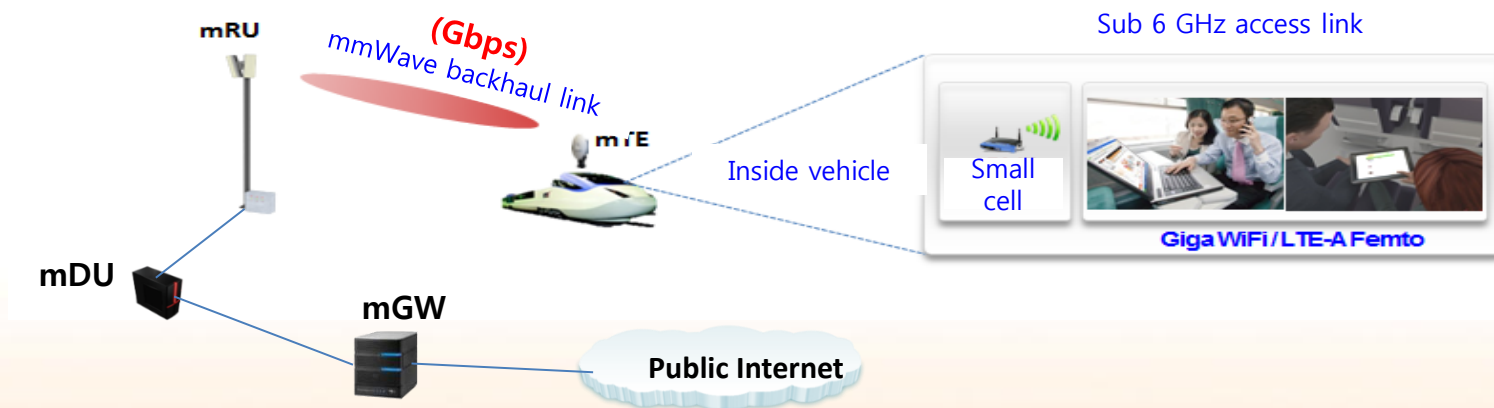
- QAM (Blue) : Gaussian
- FQAM (Red) : Non-Gaussian

5G Enabling Wireless Technologies (2)

NOMA – Capacity for Diverse Channel Conditions

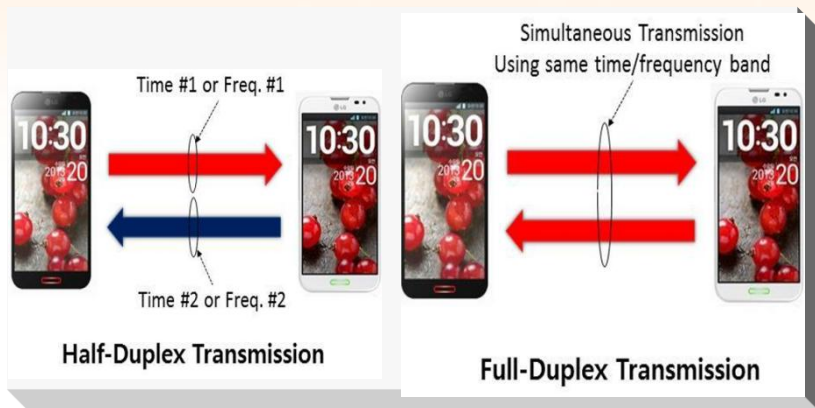


Mobile Wireless Backhaul: Capacity for High Mobility

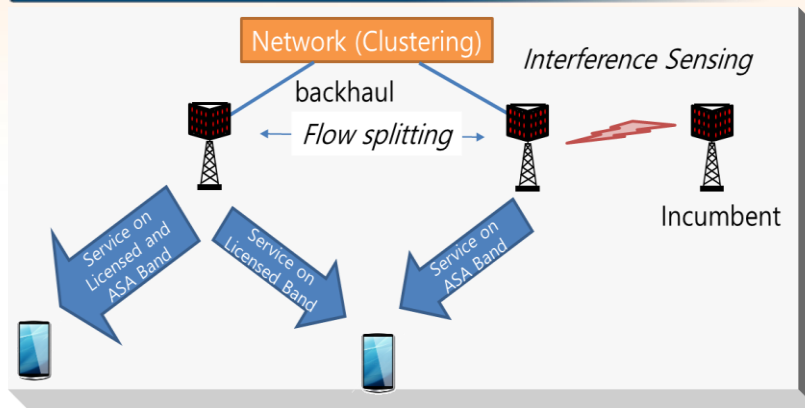


5G Enabling Wireless Technologies (3)

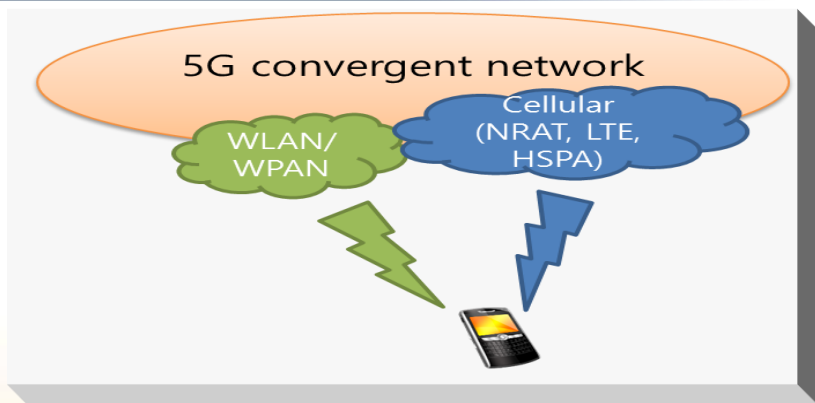
In-band Full Duplexing Radio



Advanced Spectrum Sharing



HetNet with WLAN/WPAN

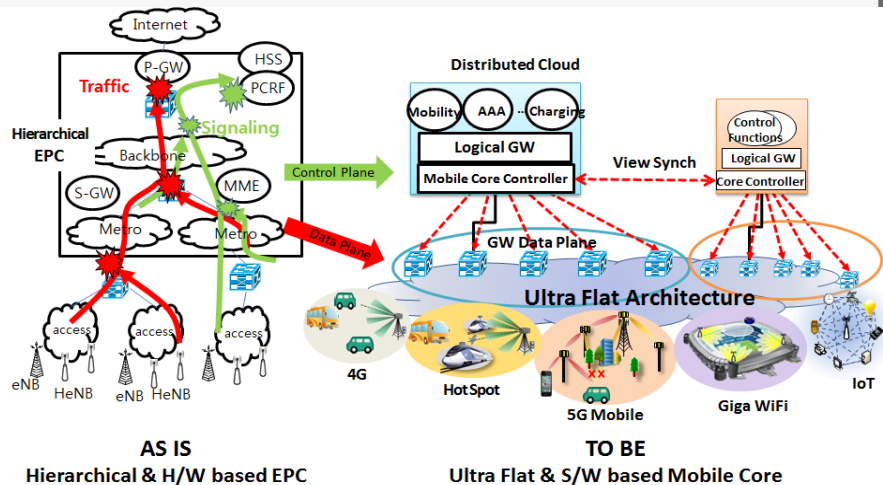


Fully Distributed Network

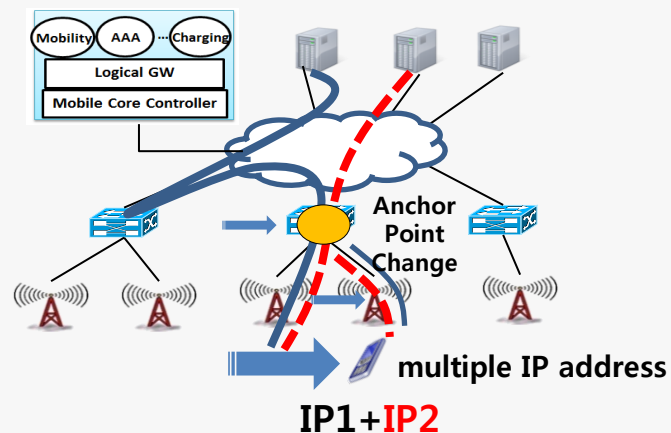


5G Enabling Network Technologies

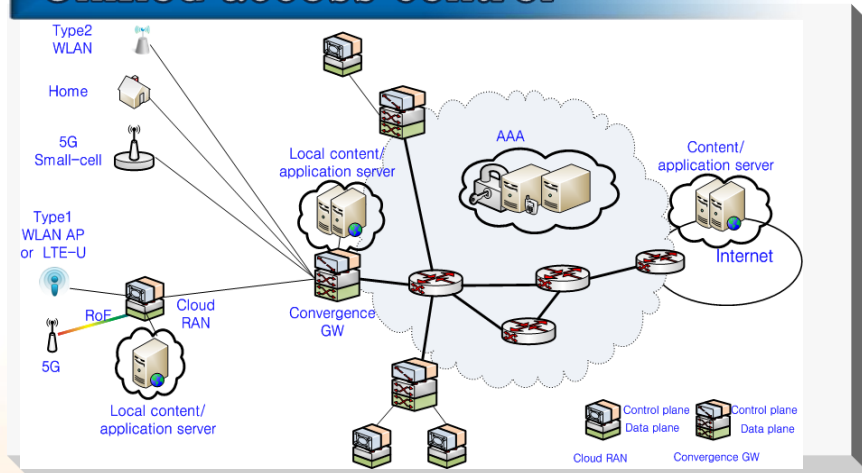
Flat Architecture



Dynamic Mobility Anchoring

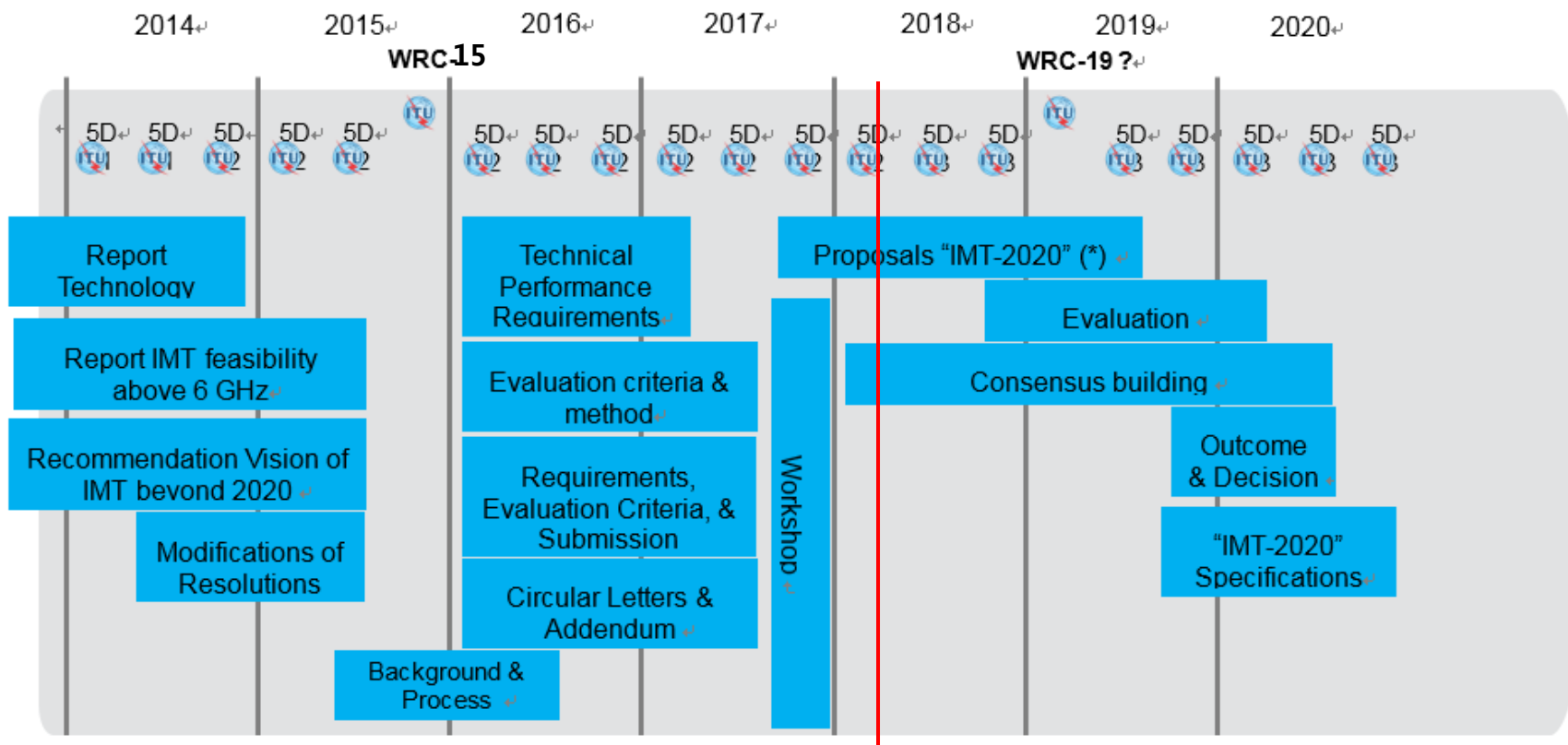


Unified access control



Schedule: ITU-R WP5D (Nov., 2014)

View 1 + Extended submissions of proposals



Winter Olympic at PyungChang

Thank
You !!

