(intel®) Look Inside.™

From concept to deployment: the visions of the 5GCHAMPION and 5G-MiEdge projects
(Olympic Games are coming …)

Valerio Frascolla
Intel

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5GCHAMPION (www.5g-champion.eu)

➢ *Project name: 5G Communication with a Heterogeneous, Agile Mobile network in the Pyeongchang Winter Olympic Competition*

➢ *Funding scheme: FP8, Europe-Korea co-funding*

➢ *Duration: 2016.06 – 2018.05*

➢ *Key Targets:*

  ➢ The first 5G proof-of-concept in conjunction with the 2018 Korean Winter Olympics,

  ➢ Synergize satellite and terrestrial technologies,
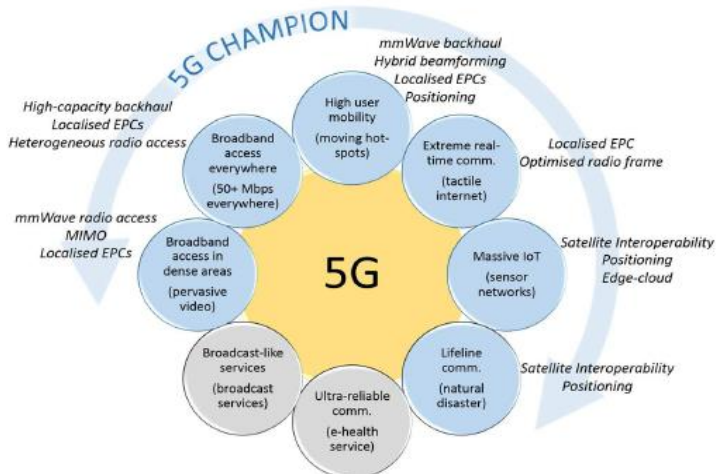
  ➢ Strong impact on Standards bodies.

Europe

1. CEA-Leti (Coordinator), France
2. Nokia, Finland
3. Intel, Germany
4. Thales Alenia Space, France
5. University of Oulu, Finland
6. Fraunhofer HHI, Germany
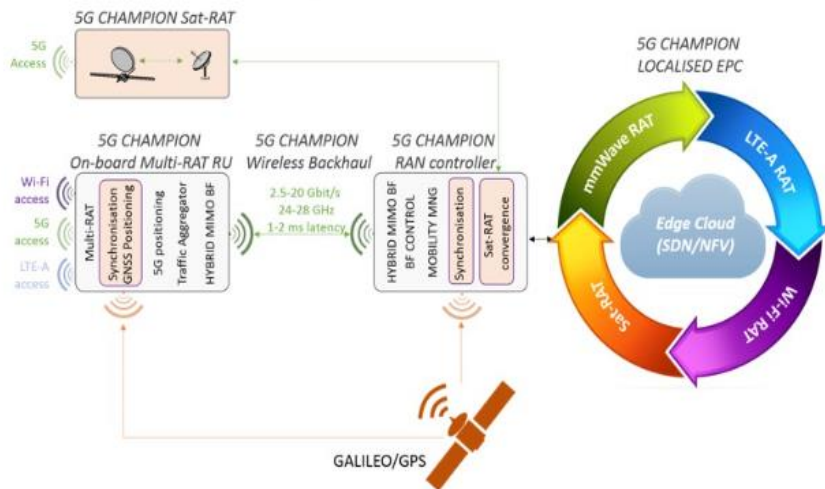7. Telespazio, France
8. iMinds, Belgium

Rep. of Korea

1. ETRI (Coordinator)
2. Seoul Metropolitant Rapid Transit
3. South Korea Telecom
4. HFR
5. Clever Logic
6. Seoul National University
7. Dankook University
8. Hanyang University
9. Korea Telecom
10. Eluon
11. InSoft
12. Mobigen
13. Gwangju Institute of Science and Technology

5GCHAMPION

5G CHAMPION

- High-capacity backhaul
- Localised EPCs
- Heterogeneous radio access

- mmWave radio access
- MIMO
- Localised EPCs

- mmWave backhaul
- Hybrid beamforming
- Localised EPCs
- Positioning

- Localised EPC
- Optimised radio frame

- Satellite Interoperability
- Positioning
- Edge-cloud

- Satellite Interoperability
- Positioning

Broadband access everywhere (50+ Mbps everywhere)

High user mobility (moving hot-spots)

Extreme real-time comm. (tactile internet)

Broadband access in dense areas (pervasive video)

5G

Massive IoT (sensor networks)

Broadcast-like services (broadcast services)

Ultra-reliable comm. (e-health service)

Lifeline comm. (natural disaster)

5G CHAMPION SYSTEM CONCEPT IMPLEMENTATION

5G CHAMPION Sat-RAT

5G Access

5G CHAMPION On-board Multi-RAT RU

Wi-Fi access
5G access
LTE-A access

Multi-RAT
Synchronisation GNSS Positioning
5G positioning
Traffic Aggregator
HYBRID MIMO BF

5G CHAMPION Wireless Backhaul

2.5-20 Gbit/s
24-28 GHz
1-2 ms latency

5G CHAMPION RAN controller

HYBRID MIMO BF
BF CONTROL
MOBILITY MNG
Synchronisation
Sat-RAT convergence

5G CHAMPION LOCALISED EPC

mmWave RAT
LTE-A RAT
Wi-Fi RAT
Sat-RAT

Edge Cloud (SDN/NFV)

GALILEO/GPS

> *Main technology enablers:*

>> mmWave Backhauling,

>> mmWave transceivers with reconfigurable antennas,

>> Localised evolved packet core supported by distributed or centralized mobile edge clouds with caching,

>> Media streaming functionalities,

>> Satellite radio access,

>> Satellite-terrestrial positioning.

5G-MiEdge (5g-miedge.eu)

➢ Name: <u>Millimeter-wave Edge</u> Cloud as an Enabler for <u>5G</u> Ecosystem

➢ Funding scheme: FP8, Europe-Japan co-funding, 2016.06 – 2019.05

➢ *Key Target:*

  ➢ 5G proof-of-concept in conjunction with the 2020 Japanese Summer Olympics.

➢ *Key technology enablers:*

  ➢ mmWave Access & Backhaul,

  ➢ User/Application Centric Orchestration,

  ➢ Liquid RAN Control-plane:

  ➢ novel ultra-lean and inter-operable control signaling over 3GPP LTE to provide liquid ubiquitous coverage in 5G networks, based on acquisition of context information and forecasting of traffic requirements.
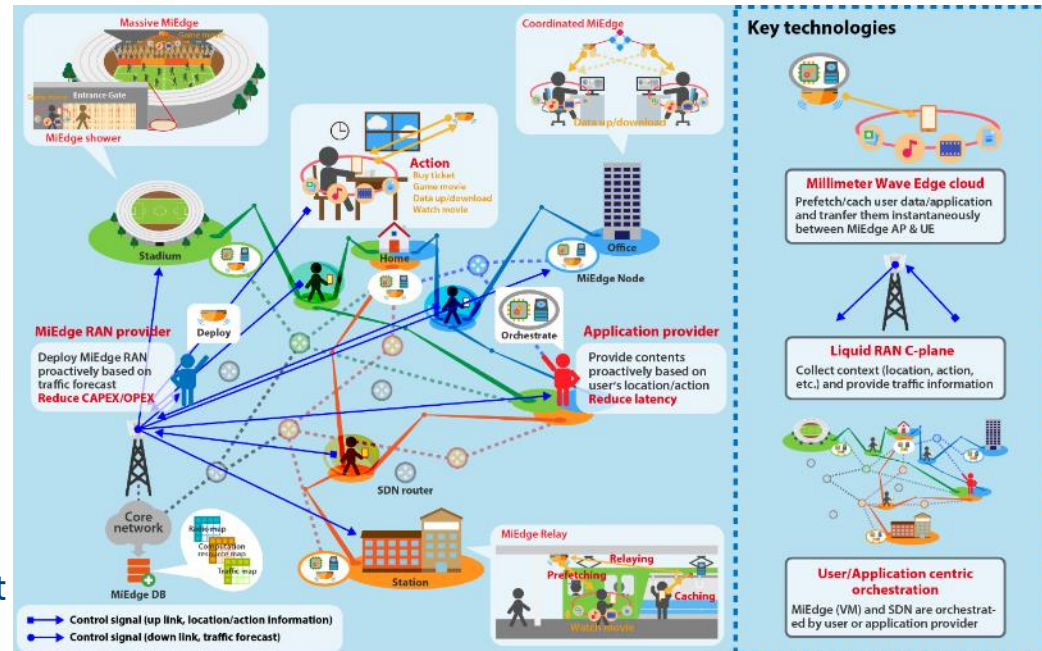
5G-MiEdge

> Main research directions:

> Focus on the ultra High-Speed and Low Latency Communications (uHSLLC) use cases and related technology enablers

> Synergize between mmWave and MEC technologies
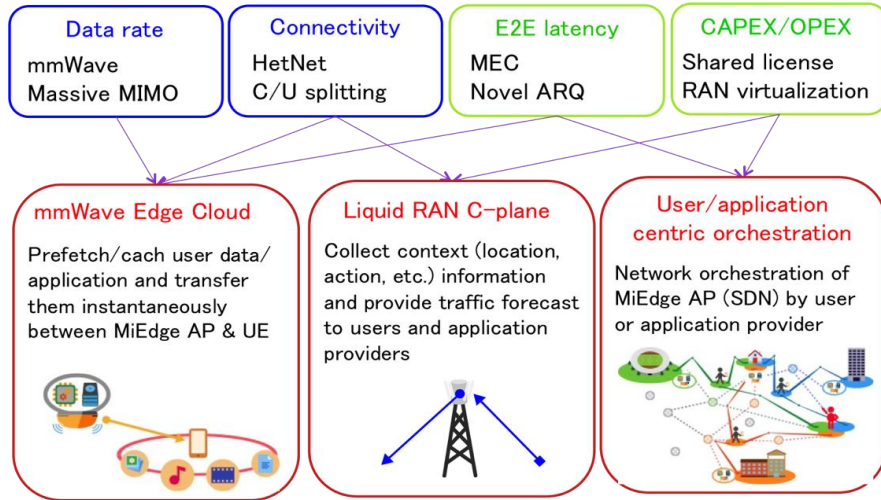
Technology enablers for uHSLLC and related KPIs
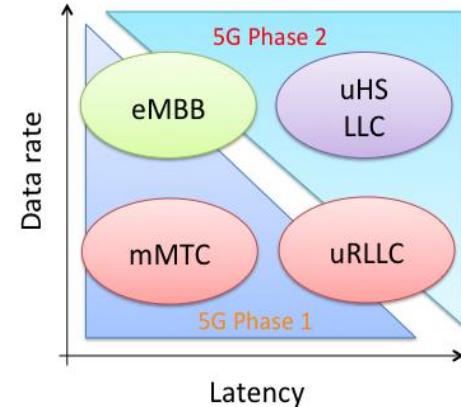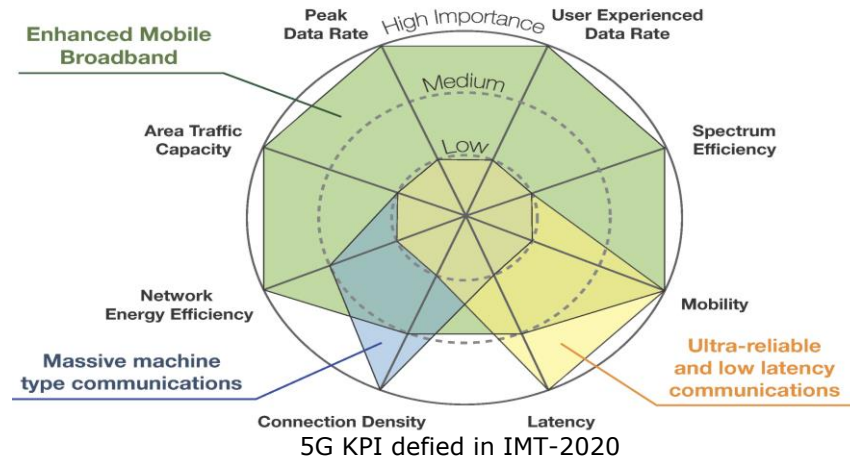
5G KPI defied in IMT-2020

Q&A

➢Questions?

Intel Communication and Devices Group