

Traficom's actions towards 6G

*5G Momentum webinaari: 5G tulevat
ominaisuudet ja käyttötapaukset*

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5G



Agenda

- ▶ Actions by Traficom towards 6G
 - ▶ spectrum & regulation
 - ▶ cross-sectoral co-operation
- ▶ Regulatory aspects on spectrum
 - ▶ Mobile broadband
 - ▶ WLAN in 5 GHz and 6 GHz
 - ▶ Licensed shared access
- ▶ 5G/6G and diverse vertical requirements
- ▶ It's not so much about technology.
It's a new way of thinking and acting



Actions by Traficom towards 6G

► Spectrum & regulation

- International activities on new spectrum and terms & conditions, licencing regimes and dynamic spectrum use
 - better support for **shared use** and **resilience to in-band and adjacent band radio interference** (read: better receivers)
- Assign spectrum for national and local use, support technology neutrality and reuse of current mobile bands
- Grant radio licenses for trials and to dedicated spectrum for research, development and educational purposes
- Enabling regulation for local networks, infrastructure sharing, spectrum sharing and leasing
- Support building of fibre and passive infrastructure
- Regulation on critical parts of communications networks (security and reliability), 5G cyber security regulations and reference architecture

► Cross-sectoral co-operation

- Supporting and participating in RDI-projects related to wireless communication for verticals
- Supporting development of transport automation and its digital infrastructure
- Climate and Environmental Strategy for the ICT Sector
- 5G webinars and newsletters by 5G Momentum
- Participation in 6G program work of European Space Agency
- Arranging and supporting hackathons
 - 5g Cyber Security Hacks 2019 & 2021, Galileo Innovation Challenge 2019, Drone Tournament 2021
- **Active dialogue with companies, research organisations and the public sector**

"Make it available"

Spectrum for mobile broadband in Finland

- ▶ Three operators with nationwide coverage
 - ▶ > 99% of population with 2G, 3G & 4G
 - ▶ ~70% of households with 5G
 - ▶ New spectrum quickly into use without fiscal goals: cheaper to build, easier to plan, less congestion, more capacity
 - ▶ Unlimited data, inexpensive prices, developed networks, good coverage
- ▶ Dedicated spectrum for local networks
 - ▶ 2300 – 2320 MHz (20 MHz)
 - ▶ 24.25 – 25.1 GHz (850 MHz)

Current spectrum



Future spectrum



ITU-R: Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz

WLAN in 5 GHz and 6 GHz band

► 5 GHz band

- 5600-5650 MHz: use in UAV prohibited to protect weather radars. Implementation ongoing in Finland.
- Limitations for use in trains in parts of band proposed.
- Finland proposes national flexibility of implementation of limitations if small or no interference risk is seen.

► 6 GHz band

- 5945-6425 MHz (200 mW indoor, 25 mW outdoor) implementation ongoing in Finland based on EC decision.
 - Protection of radio links is a national concern that lies on spectrum supervision.
- Finland: Upper 6 GHz band should be investigated for IMT in WRC 2023.



Traficom's views on licensed shared access (LSA)

► Current regulation

- Traficom grants licenses for local 4G/5G use in 2300–2320 MHz and 24.25–25.1 GHz. No LSA schemes used.
- Traficom provides a search tool for license-exempt radio microphone users in bands used for terrestrial TV.
- Regulation enables dynamic shared use of 1427–1518 MHz for electronic communication services and military applications.
- Legislation enables register notification in addition to licenced and licence-exempt use.

► Future outlooks

- Traficom supports development of shared access schemes.
- There is currently no clear demand for LSA from spectrum users.
- 66–71 GHz band was of interest for licensed/registered shared access but is an SRD-band (licence-exempt) in Europe.

5G/6G verticals – heterogeneous needs

- ▶ Smart factories
- ▶ Drones & aviation
- ▶ Cooperative, Connected and Automated Mobility
- ▶ Intelligent Transport Systems
- ▶ Port operations
- ▶ Maritime and smart fairways
- ▶ Logistics & cargo handling
- ▶ Smart cities and buildings
- ▶ Construction and maintenance
- ▶ Health and wellbeing
- ▶ Remote medical consultation
- ▶ Smart electrical grid
- ▶ Public safety
- ▶ Critical communications
- ▶ Agriculture
- ▶ Remote businesses
- ▶ Education
- ▶ Events and arenas
- ▶ Media and entertainment
- ▶ and many more...



Coverage:
local vs. wide area vs. national

To solve...

► Chicken / egg problem

- All needs of verticals are not yet known
- Use cases need to be translated to requirements of communication systems and digital infrastructure (coverage, QoS, other KPIs)



► We need imagination and cross-sectoral creativity

- Building **new** vertical services on **new** communication technologies (versus **new** services on **current** communication technologies)
- 5G/6G enable **new** ways of doing **new** things (versus **new** ways of doing **current** things)

► Who will invest in the new digital infrastructure?

- Business models & operational models (sharing, neutral host)
- Are the resources available?



*We all share the drive to
move and communicate.
Your connections are close
to our heart.*



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