



5G Public Private Partnership Info Day

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Views and initiatives from A-CING and TCD

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Worldwide Spectrum allocation



What tools are needed for 2019 and beyond?

What research and technology should help?

- Statistical approach for sharing in multi-service environment
- Dynamic resource allocation in a variety of frequency ranges and capacity performances
- Network control management for resource allocation and interconnection with third parties data providers (for example, consultation of data bases for spectrum directory)
- Network reconfiguration with multiple sets of requirements, intra and inter network data



Spectrum as a Critical Horizontal

Aspect in 5G PPP Phase 2 Targeted Actions

- **TA1: 5G Wireless System Design** (utilisation of different spectrum ranges and paradigms, innovative spectrum usage concepts (e.g. LAA and LSA), advanced aspects of spectrum sharing, sharing of spectrum between mobile access)
- **TA2: Air Interface and Multi-Antenna, Multi-Service Air Interface** (efficiency in terms of spectrum, flexible spectrum utilisation, shared spectrum use)
- **TA3: New Spectrum and mm-Wave Air Interface for Access, Backhaul and Fronthaul** (below 6 GHz and above 6 GHz), adapt Phase 1 to the WRC 15 decisions , Help consensus building on frequency bands to be identified globally (in preparation for WRC19)
- **TA4 : Subsystems for 5G Platforms: Integration of Hardware and Software Aspects** (subsystems for 5G supporting relevant scenarios and use cases including multiple frequency bands)
- **TA6: Seamless Integration of Satellites Networks and Air Platforms into 5G** (technology recommendations on the usage of spectrum across satellite and terrestrial 5G)
- **TA7: 5G for Future MTC Solutions** (spectrum demands)
- **TA23: Cooperation in Access Convergence 2** (licensed and unlicensed, resources and spectrum management)

1. One step forward compared to DSA / LSA / Sharing

➤ OBJECTIVE

□ Resilience to interference

- ❖ Implement mitigation techniques to avoid harmful interference, with nodes/network intelligence able to adapt to the interference situation

➤ HOW TO ACHIEVE IT

□ Move from DB approaches to approaches providing intelligence to terminals

- ❖ Collaboration between network intelligence & nodes intelligence
- ❖ Terminals of interferer & interfered systems manage interference without the need to rely on DB (minimum exchange of info between competitors)

2. The proposal idea is advanced

- Developed for a few months already
- We match a number of Targeted Actions, as spectrum related research touches different TAs (as seen in former slide)
- We will focus on both lower frequency bands (where it's easier to implement techniques) and higher bands too
 - ❑ Analytical/simulative studies + testbed based trials (e.g. coexistence terrestrial-satellite)
- We covered several **verticals** already such as media & vehicles, but new ones are welcome

3. **A-CING experts are regular participants at ITU specialized groups dealing with 5G spectrum management (Working Parties 5 A, 5C of the ITU R)**
- Dynamic access, new spectrum management techniques, new spectrum for 5G and beyond, etc., are under discussion
 - A-CING's experts are therefore in a unique position since they are present in the core of the spectrum management decisions
 - Important to bring to regulation our ideas and results, otherwise our efforts could be frustrated

4. Consortium is being established

- We already have quite a few partners interested, but there is still room to complement the consortium expertise



Thank you!

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