MNO network sharing as a service for research community

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At IS-Wireless responsible for defining the long-term technical vision. Expert in wireless technologies and passionate entrepreneur. PhD in wireless from Delft University of Technology, pioneer work on OFDMA.
Network sharing - Motivation

Researchers and SMEs require field testing on controlled mobile networks

- Realistic field coverage
- Real users on real spectrum
- Commercial devices & spectrum
- APIs to control, monitor, deploy ...
- Controlled real or virtual resources
- .......
- only for a limited time for trials (days/weeks)
EuWireless objectives (H2020-INFRADEV-2017-1-777517)

Design of the first pan-European infrastructure to support research in mobile communication networks using licensed spectrum

This is a Design Study → Further projects will address the implementation
Some enabling technologies to support the sharing architecture

- Virtualization technologies (vEPC, 5G Core, ..)
- Network slicing
- Spectrum sharing (LSA, CBRS..)
- Network sharing (MOCN, MORAN, DECOR, ..)
- Orchestration technologies (MANO, ..)
- Technologies for security and authentication (Eduroam+SIM)
- Software Defined RAN
EuWireless – slicing based on RAN-controller (IS-Wireless UC)

- Slice based approach (network is divided in logical subsets)
- O-RAN compliant
- RAN-controller enables programmability
- Machine learning can easily be introduced into RRM
Solution: EuW Slice based on SD-RAN

- RAN / Core / MANO running on off-the-shelf Edge server
- Hardware provider independent from functionality
- High level of portability
- Aggressive frequency reuse - very high spectra efficiency
- Interference solved by RAN controller
- High capacity, high number of users served
- Low power Radio Heads
Summary

EuWireless paves the way but SD-RAN already takes a walk.
Conclusions

– The ambition of EuWireless is a long-term infrastructure
– Planning, building, and operation for the next 10-15 years require the support from GEANT and NRENs, already involved in the project
– Relevant technical contributions
  • Multi-domain with distributed peer-to-peer orchestration
  • Recursive definition and implementation of slices to create the EuWireless slice on demand
  • Uniform approach to expose resources from MNOs (spectrum, ..)
  • Uniform approach to double authentication of users with SIM+Eduroam credentials
  • SD-RAN allows great flexibility of sharing infrastructure
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