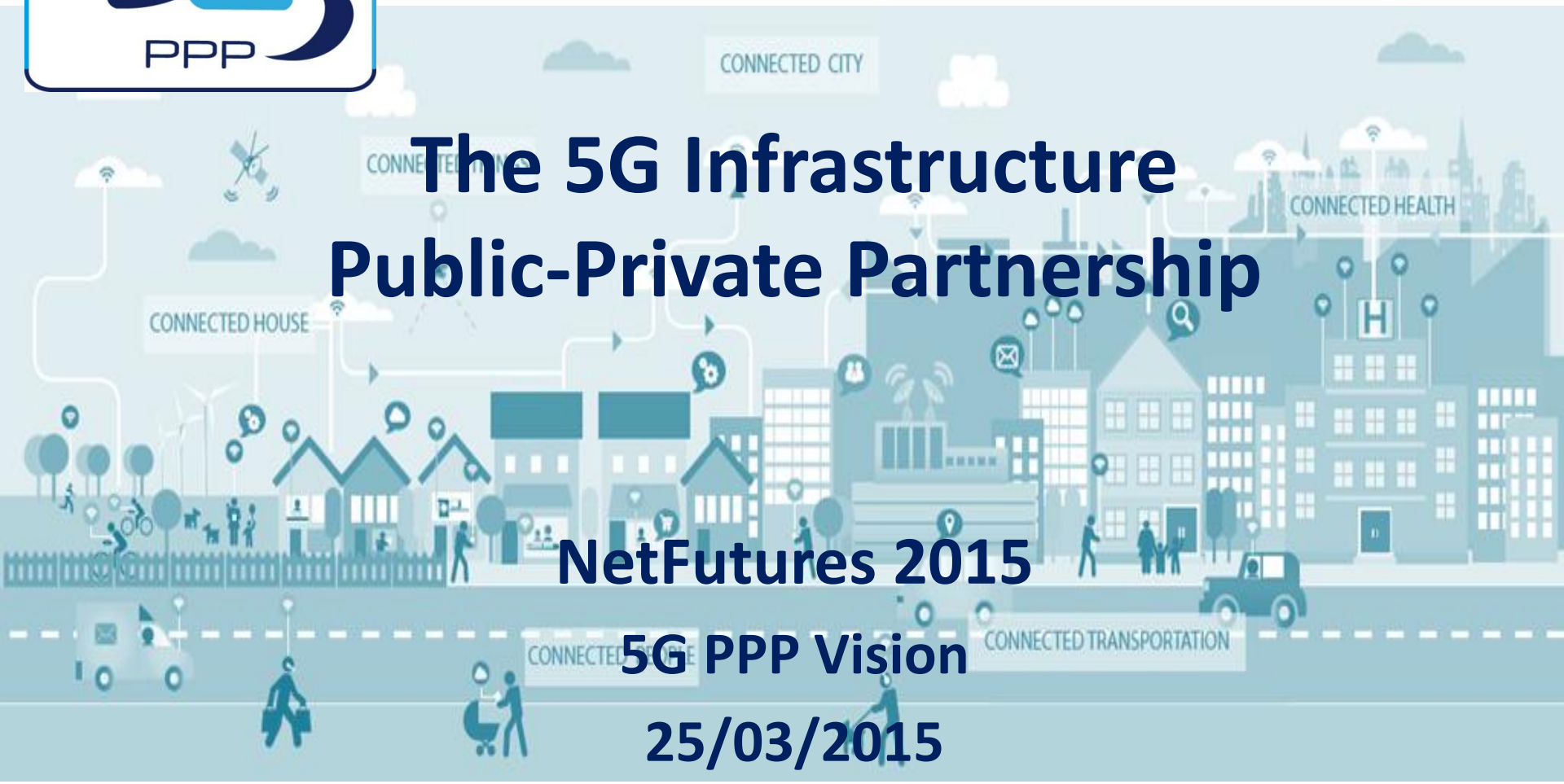


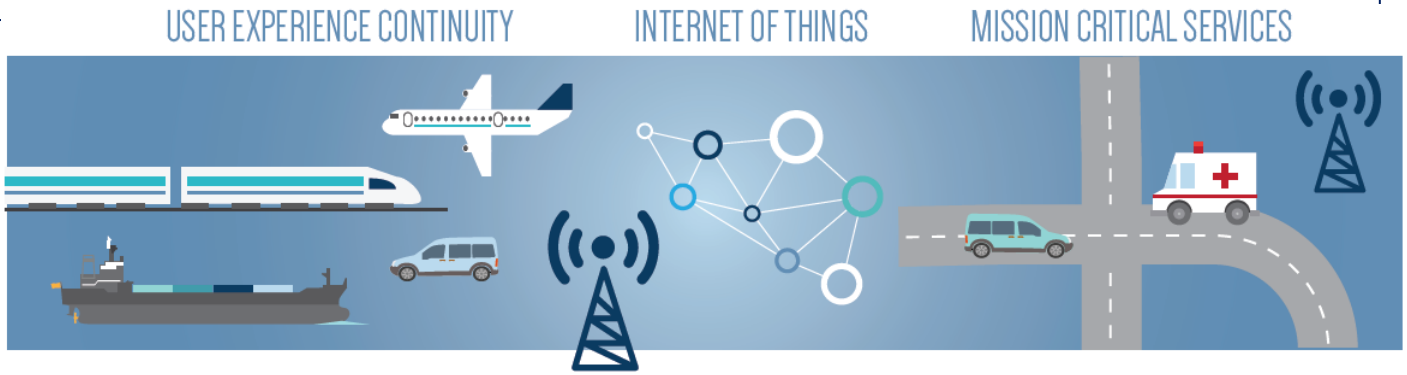
The 5G Infrastructure Public-Private Partnership

NetFutures 2015

5G PPP Vision

25/03/2015

5G new service capabilities



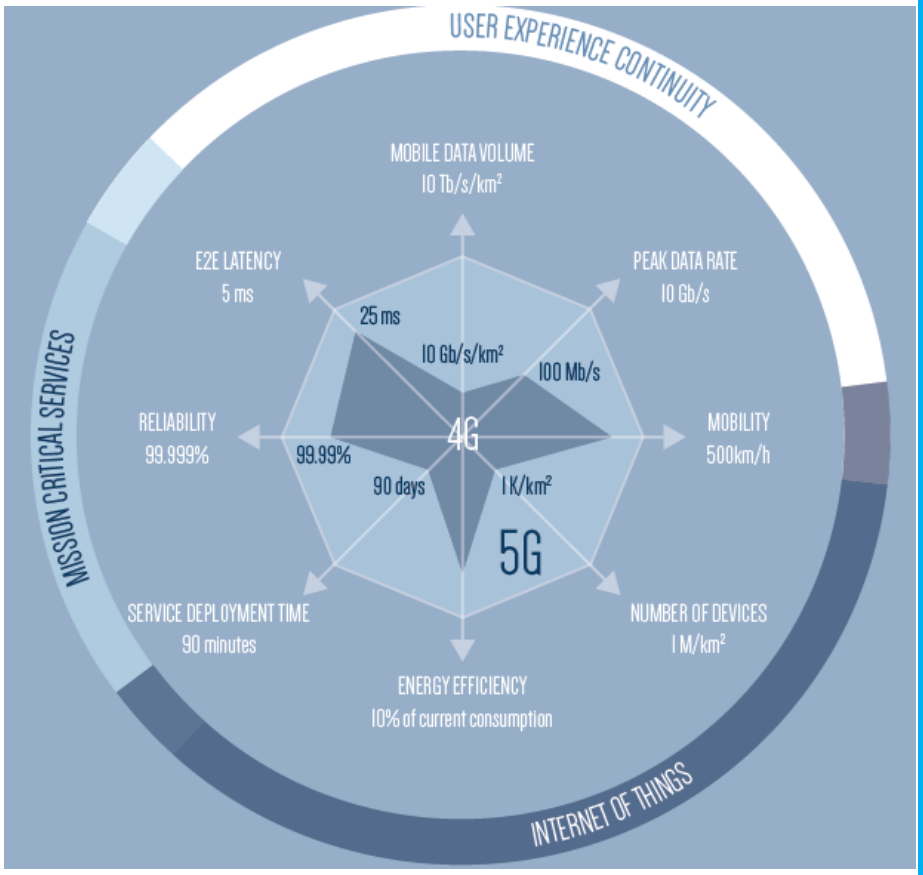
- User experience continuity in challenging situations such as
  - high mobility (e.g. in trains)
  - very dense or sparsely populated areas and
  - journeys covered by heterogeneous technologies
- Key enabler for Internet of Things by
  - providing a platform to connect a massive number of sensors,
  - rendering devices and actuators with stringent energy and transmission constraints
- Mission critical services thanks to very high reliability, global coverage and/or very low latency
- 5G needs to support efficiently three different types of traffic profiles
  - high throughput for e.g. video services
  - low energy for e.g. long–living sensors
  - low latency for mission critical services

5G key business drivers

- 5G targets a **unified and programmable infrastructure**
- 5G will support **multi tenancy models**
- 5G will be designed to be a **sustainable and scalable technology**
- 5G will create an **ecosystem for technical and business innovation**
- 5G infrastructures will involve **vertical markets**

5G will have disruptive capabilities

- **5G will provide an order of magnitude improvement in performance** in the areas of more capacity, lower latency, more mobility, increased reliability and availability.
- **5G infrastructures will be also much more efficient** in terms of
  - energy consumption
  - service creation time
  - hardware flexibility



Key design principles

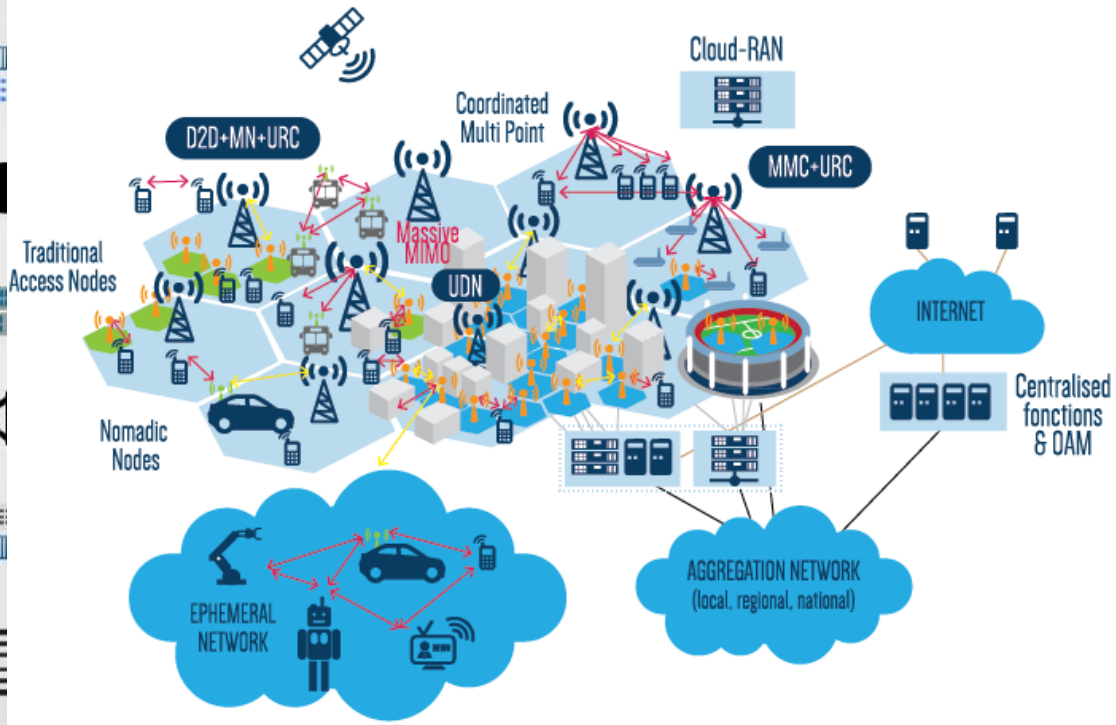
- Small cells will be pushed further leading to Ultra Dense Networks.
- New Radio Area Network paradigms such as Device to Device (D2D) and Moving Networks (MN) will emerge.
- Operators of ICT infrastructures need more network and services flexibility, scalability and business sustainability.
- 5G design need to be inspired by modern operating system architectures
- New business models will be created thanks to open interfaces (APIs for resources, connectivity and services enablers)

Key technological components

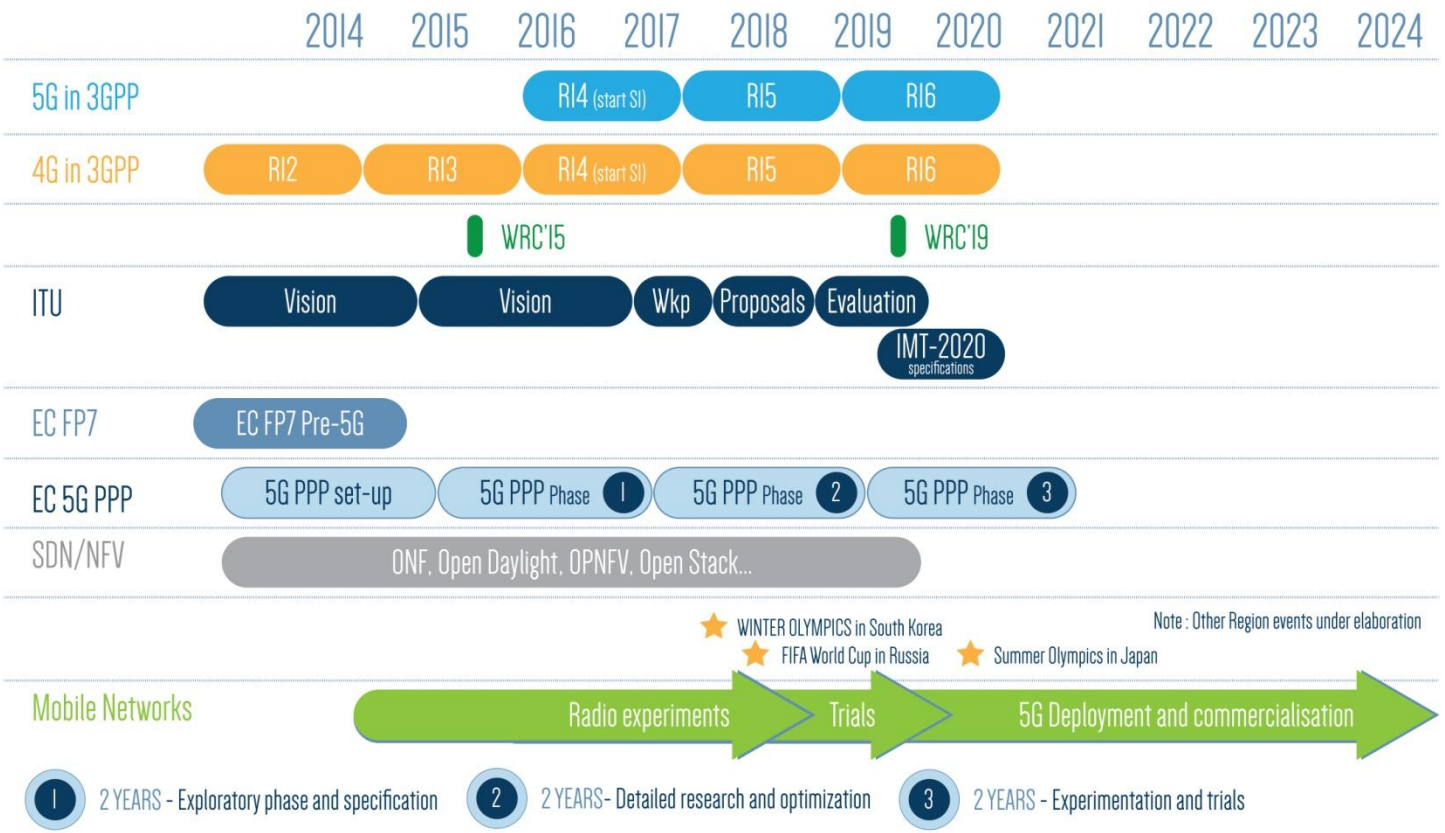
- 5G wireless will support a heterogeneous set of integrated air interfaces
  - from evolutions of current access schemes
  - to brand new technologies
- Seamless handover between heterogeneous wireless access technologies
- Simultaneous radio access technologies to increase reliability and availability
- Deployment of ultra-dense networks with numerous small cells requires new interference mitigation, backhauling and installation techniques
- 5G networks will encompass cellular, satellite and optical solutions
- 5G will be driven by software and will heavily rely on emerging technologies
  - Software Defined Networking (SDN)
  - Network Functions Virtualization (NFV)
  - Mobile Edge Computing (MEC)
  - Fog Computing (FC)

  to achieve required performance, scalability and agility
- Easier and optimised network management by means of exploitation of Data Analytics and Big Data techniques
  - to monitor users Quality of Experience
  - while guaranteeing privacy

5G networks and services vision



5G roadmap



5G Infrastructure PPP
The European path towards global next generation communication networks

Potential topics for 2016-2017

5G Infrastructure PPP
The European path towards global next generation communication networks

Wireless Networks

- Advanced Multi Antenna Transceiver techniques
- mmWave RATs
- Channel Model for 5G
- Novel RAN Architectures
- Machine type Communications
- Intelligent Radio Resource Management
- Integrating satellite networks

The Software Network

- Novel Views on Network Architecture
- The Software Network: Interface Abstractions and Layering
- "On the fly" Virtualization and Adaptability
- Efficient RAN Sharing for Multi-Tenancy
- Cloud Orchestration

Optical Networks

- Programmable, elastic and high capacity optical networking
- Optical networking for converged and ubiquitous 5G access

Network Management and Automation

- Smart Orchestration and Use of Network Analytics and Big Data for network management
- Agile Management Frameworks

Effective Systems and Networks

- Energy Efficient Devices and Networks
- Highly Flexible Communication Systems
- Security, privacy and trust

http://5g-ppp.eu

Thank you for your attention!