



# The 5G Infrastructure Public-Private Partnership

5G vision from 5G Infrastructure  
Association

Celtic-Plus Event day, 28/04/2015

# Economic impact of ICT and 5G



- **5% of European GDP**, corresponding to an annual value of about **€ 660 billion**, is generated today by the ICT sector itself
- Impact of communication sector extends beyond the industrial domain
- Additional investment in ICT in Europe could contribute to rebirth of **GDP growth** in Europe up to (Source: World Bank)
  - about **1.2% points** in high-income economies and
  - about **1.4% points** in low and middle-income economies
- Overall employment level of ICT sector in Europe has been rather stable between 7.2 to 7.5 million employees since 2002 (Source: Digital Agenda Scoreboard)
- Strong industrial base in Europe in research, development, integration and manufacturing of complex systems like communication networks
- Wide spread well-established research community in universities and R&D centres cooperating with industry and SMEs for knowledge and IPR generation
- Novel 5G network requirements, technologies and architectures opens wide range of opportunities for both established and new actors including SMEs

# 5G new service capabilities



USER EXPERIENCE CONTINUITY

INTERNET OF THINGS

MISSION CRITICAL SERVICES



- 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

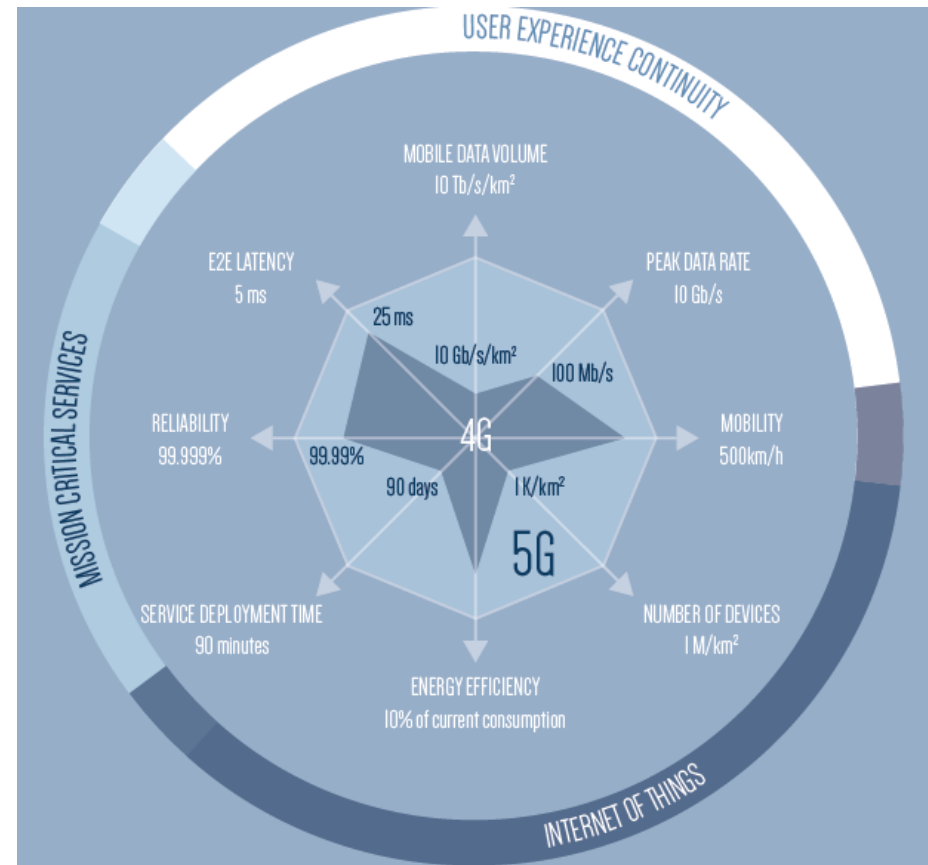


- 5G targets a **unified and programmable infrastructure**
- 5G will support **multi tenancy models**
- 5G will be designed to be a **sustainable and scalable technology**
- 5G will create an **ecosystem for technical and business innovation**
- 5G infrastructures will involve **vertical markets**

New business models will be created thanks to open interfaces (APIs for resources, connectivity and services enablers).

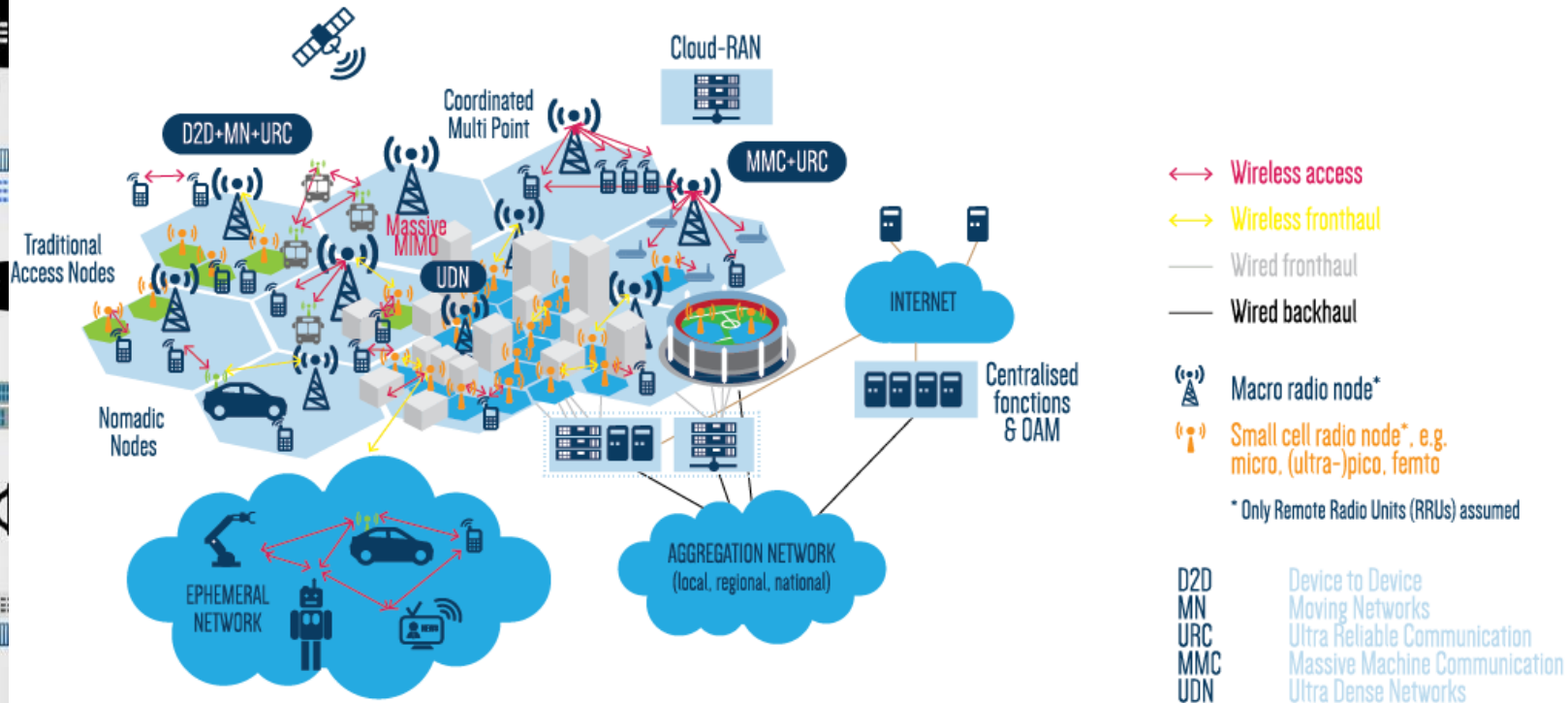
# 5G will have disruptive capabilities

- 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



# 5G networks and services vision

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



5G design need to be inspired by modern operating system architectures.

# Key technological components

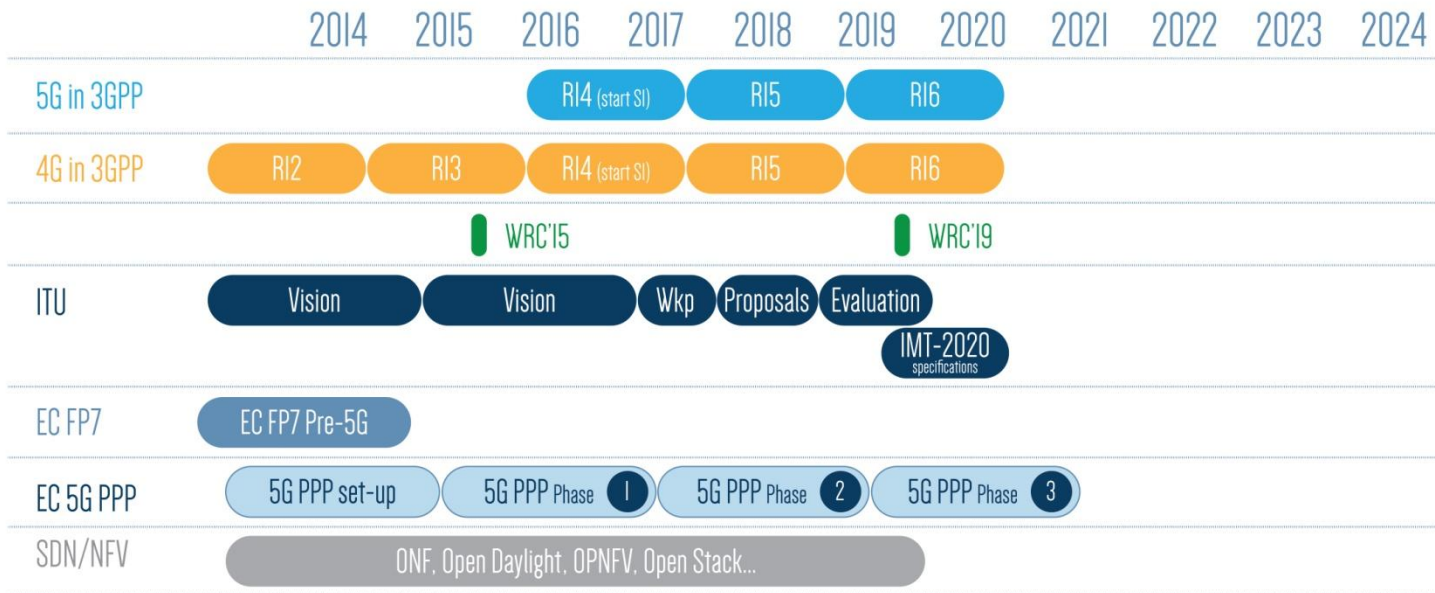


- 5G wireless will support a heterogeneous set of integrated air interfaces
  - from evolutions of current access schemes
  - to brand new technologies
- Seamless handover between heterogeneous wireless access technologies
- Simultaneous radio access technologies to increase reliability and availability
- 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 roadmap



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







<http://5g-ppp.eu>

**Thank you for your  
attention!**

