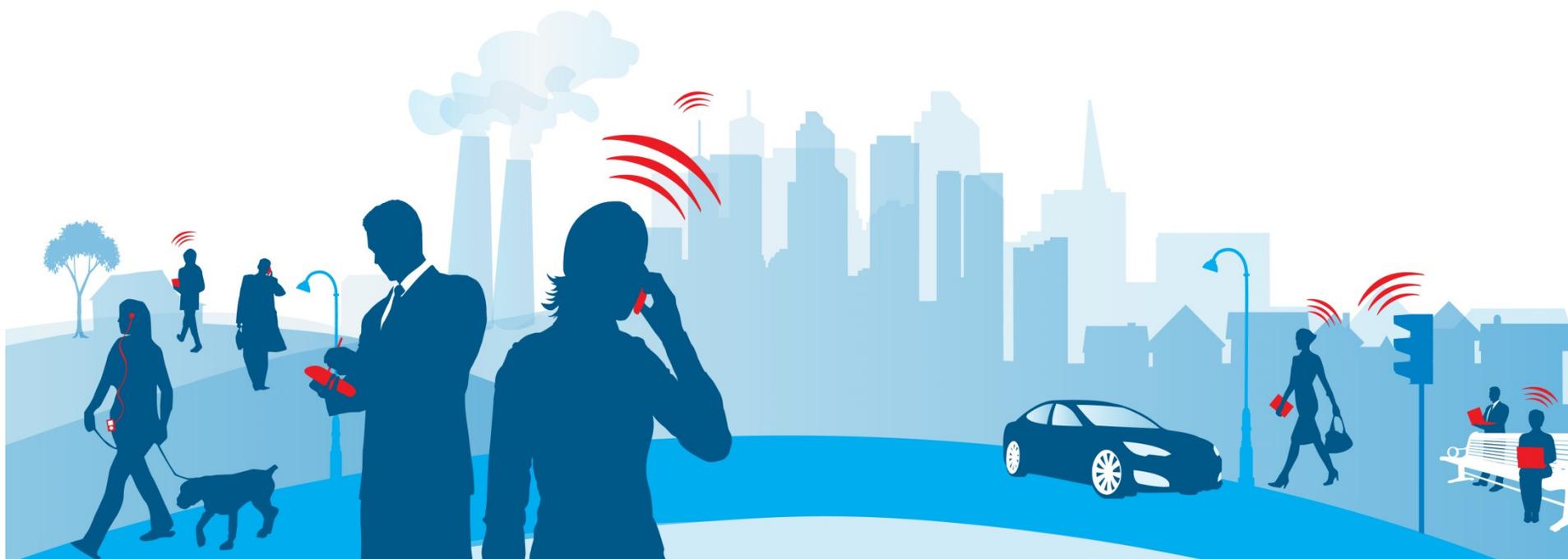




ETSI Future Mobile Summit

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Summit Key Messages

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Some Certainties

- » There *will* be a 5th Generation (it's just not clear what, when or how!)
- » Traffic *will* continue to increase dramatically over time (est. 1000x by 2020)
- » Connected devices *will* increase dramatically over time (10-100x by 2020)
- » New device types *will* significantly contribute to that increase (e.g., probes, sensors, meters, machines etc)
- » New sectors *will* bring new priorities (e.g, critical infrastructures)
- » Broadband communications *will* stimulate the economy (e.g., by contributing significantly to GDP, creating employment, etc)



User Requirements

- » 5G networks should enable the perception of infinite capacity, tactile internet and augmented reality
- » Compared to existing networks, 5G networks will need to be:
 - More available
 - More dependable
 - More reliable
- » And offer:
 - Increased Speed
 - Increased Throughput
 - Decreased Latency
 - Improved Device Autonomy
- » Oh, and of course, all of the above must be offered at low cost!



Technology and Spectrum choices

- » There is a generic technology choice to be made:
 - Embark on a linear evolution of today's networks , or
 - Adopt a new approach, or
 - A combination of the above
- » Traditionally, the 3GPP approach is evolutionary (including backwards compatibility). A pure evolutionary approach may not be sufficient for 5G
- » Obtaining new Spectrum for mobile services is essential, but not the whole solution
- » More efficient use of spectrum must be ensured (incl. licensed, unlicensed and shared access regimes)
- » Opportunities to deliver broadcast content to mobile users (and vice versa) by exploiting synergies



Leveraging research results

- » Significant investment being made in European 5G collaborative research
- » Significant research investment being made in other regions and within technology companies too
- » Timing is key: careful alignment is needed between research and standardisation timelines
- » Measures need to be put in place to ensure that research results lead to high quality standards
- » Better links may need to be established to ensure a closer coupling between universities, research projects/fora and standardisation bodies
- » Close link between research projects and the most influential players in standardisation has proven to be the best way



Observable trends and tendencies

- » Network topology is changing over time, for example
 - Cell sizes becoming smaller
 - Cells becoming more dense (ultra-dense over time)
 - Traditional “Cell” concept becoming less relevant in favour of wireless cloud approach
 - Interworking with other networks more prevalent (e.g., wifi offload)
 - Introduction of Device to Device working
- » Network architecture is changing over time, for example
 - Virtualisation of network functions, management and orchestration
 - Move from hardware to software
- » Constant demand to reduce CAPEX and OPEX (incl. energy consumption)



Standardization Challenges

- » 3GPP standards evolution characterized by moderate / incremental development rather than radical system re-design
- » ETSI/3GPP methodologies may need to be revisited to keep up with external developments (e.g., validity of the 3 stage model brought into question)
- » Emphasis on physical meeting based results and formal consensus is challenged
- » 3GPP/ETSI not heralded as the model of efficiency, at least from the outside.....
- » Innovator's reward for contribution to standards to be secured (FRAND IPR policies)



And finally.....

Thanks.....

- » To the organisers and programme committee
- » To the presenters and panellists
- » To the delegates

