



5G standardisation and security: supporting the DSM Objectives

***1st 5G-ENSURE International
Workshop on 5G Security
Standardisation,
Sophia Antipolis 16 June 2016***



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HORIZON 2020

DSM Update



EC DSM technologies and public services modernisation package (19.04.2016) - set of coherent policy measures aiming at the digital transformations of our industries and at maximising their impact on economic growth

Chapeau Communication on Digitising European Industry - Reaping the full benefits of a Digital Single Market

Communication on the Priority ICT Standards Plan

>ICT Standardisation Priorities for the Digital Single Market

Communication on European Cloud initiative

>Vision document and framework for future actions

Communication on the e-Government Action Plan

>Digital transformation of public services

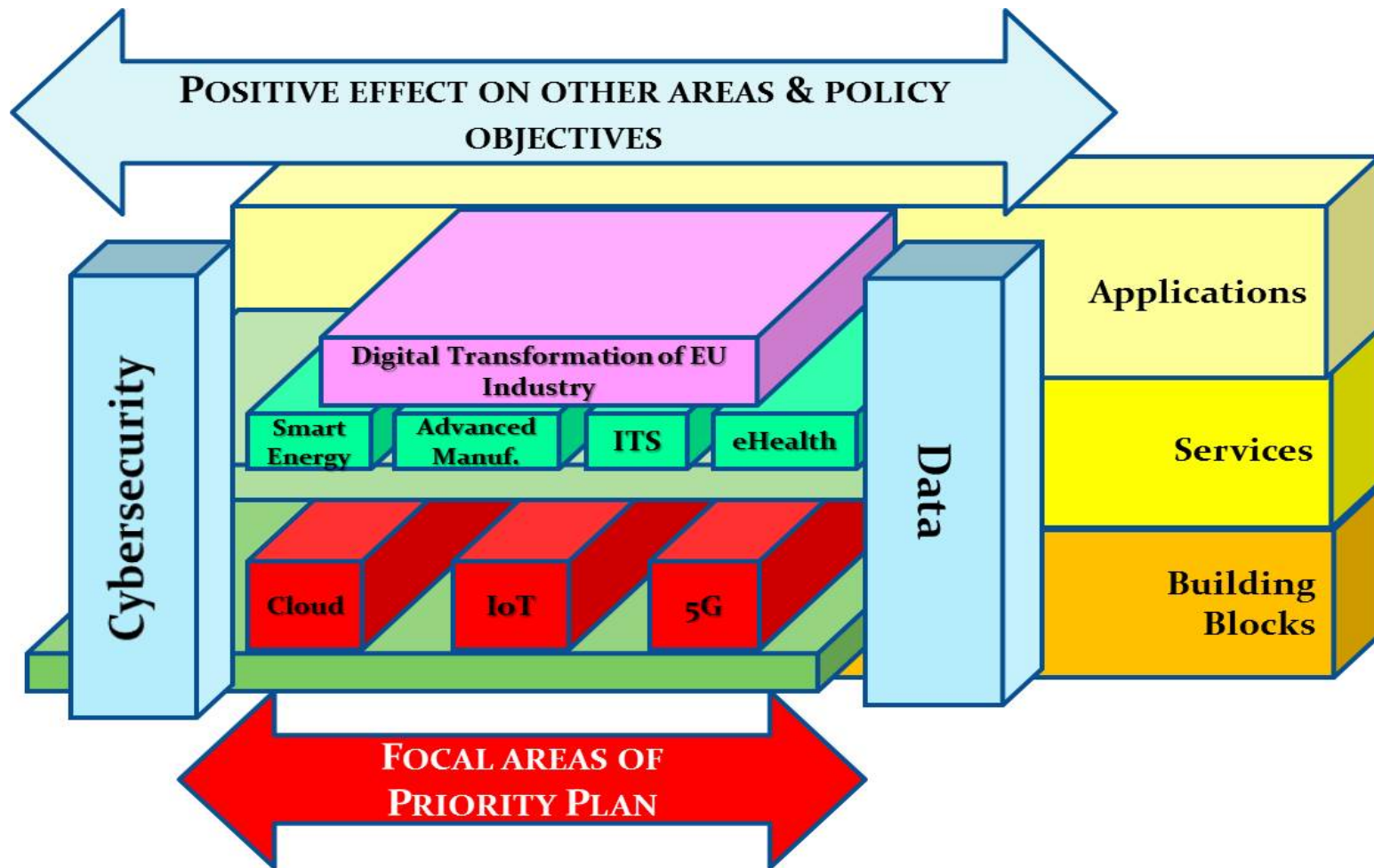
Staff Working Document on the Internet of Things

>Advancing the Internet of Things in Europe



- Importance of standards
- 5 Key technologies earmarked in the package: 5G, Cloud computing, IoT, Cybersecurity, (Big) Data
- Series of measures to ensure R&D results are better linked to new standards and improve collaboration between key players
- 5G: an Enabler of the Digitisation of the economy at large;
- Support: 5G Public Private Partnership
 - ✓ www.5G-PPP.eu
 - ✓ 700 M€ under Horizon 2020, 3 Phases until 2020

Building Blocks



5G standards



- Standardisation of the core 5G communications functions has started in the context of **3GPP**
- **Two-step standardisation roadmap**: priority standards in 2018 and complementary standards in 2020.
- 5G PPP will contribute to a wide range of other standardization bodies: **IETF, ETSI, ONF, Open Daylight, OPNFV, Open Stack, ...**
- 5G standards must be compatible with innovative use cases of **vertical industries**



- Seamless and interoperable secure **authentication** across objects, devices, individuals and entities
- **Security-by-design** principles is essential
- Coordinated approach to cybersecurity **labels and certification**
- EC will invite ESOs, SDOs and relevant stakeholders to draw up **practical guidelines, best practices and gaps covering IoT, 5G, Cloud, Big Data and smart factories**, by the end of 2016
➡ Recommendation by end 2017
- Invite and support ESOs, SDOs and relevant stakeholders to **develop standards and risk management guidelines**

5G Action Plan



**5G "Master"
Calendar for
the EU**

Spectrum

**Strategy to
involve Vertical
Industries**

**Key
functions/
Standards**

**Infrastructure/
Fibre**

Regulations

Work in Progress

5G Vision

What 5G is about





MOBILE IS
EVERYTHING

Moving on:
5G for verticals

GSMA™ **MOBILE**
WORLD CONGRESS

Case Studies



Factories of the Future

- 1 Time-critical process control
- 2 Non time-critical factory automation
- 3 Remote control
- 4 Intra/Inter-enterprise communication
- 5 Connected goods

Energy

- 1 Grid access
- 2 Grid backhaul
- 3 Grid backbone

e-HEALTH

- 1 Assets and interventions management in Hospital
- 2 Robotics
- 3 Remote monitoring
- 4 Smarter medication

MEDIA & ENTERTAINMENT

- 1 Ultra High Fidelity Media
- 2 On-site Live Event Experience
- 3 User/Machine Generated Content
- 4 Immersive and Integrated Media
- 5 Cooperative Media Production
- 6 Collaborative Gaming

AUTOMOTIVE

- 1 Automated driving
- 2 Share My View

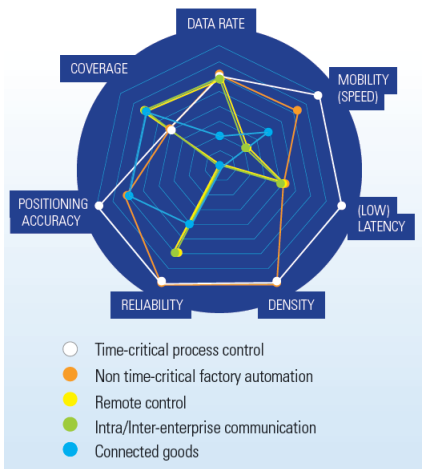
- 3 Bird's Eye View
- 4 Digitalization of Transport and Logistics
- 5 Information Society on the road

Vertical Requirements

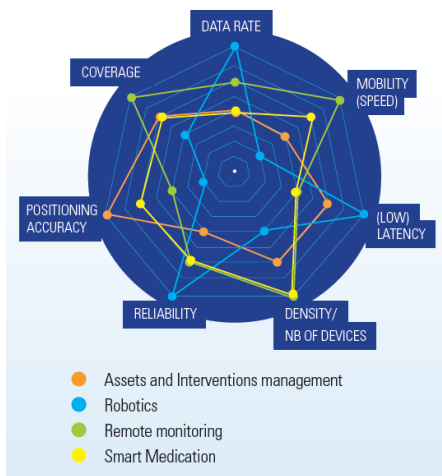


Driving 5G

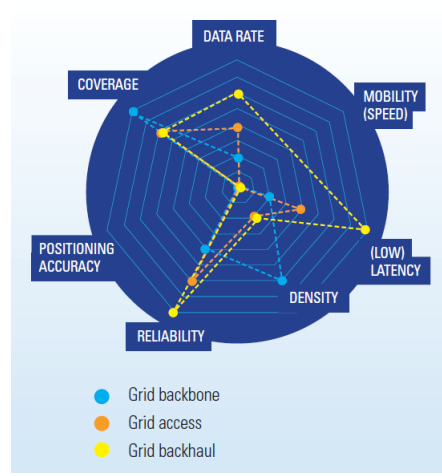
Factories



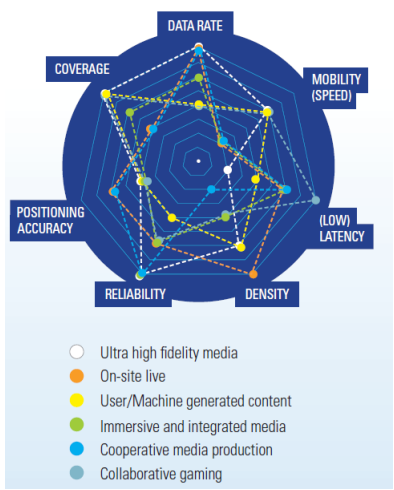
eHealth



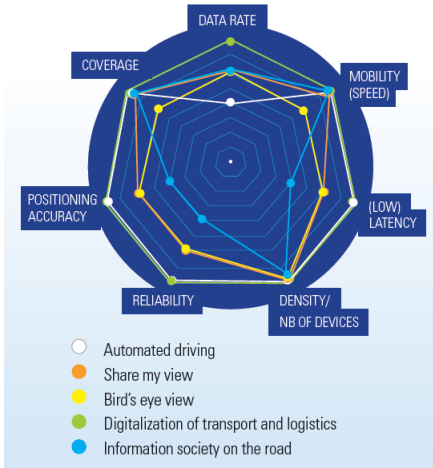
Energy



Media & Entertainment



Automotive



Focus Interest



1. Enhanced Mobile Broadband

Gigabytes in a second



3D video, UHD screens



Work and play in the cloud



Augmented reality



Industry automation

Mission critical application,
e.g. e-health



Self Driving Car



Future IMT

Smart Home/Building



Voice



Smart City



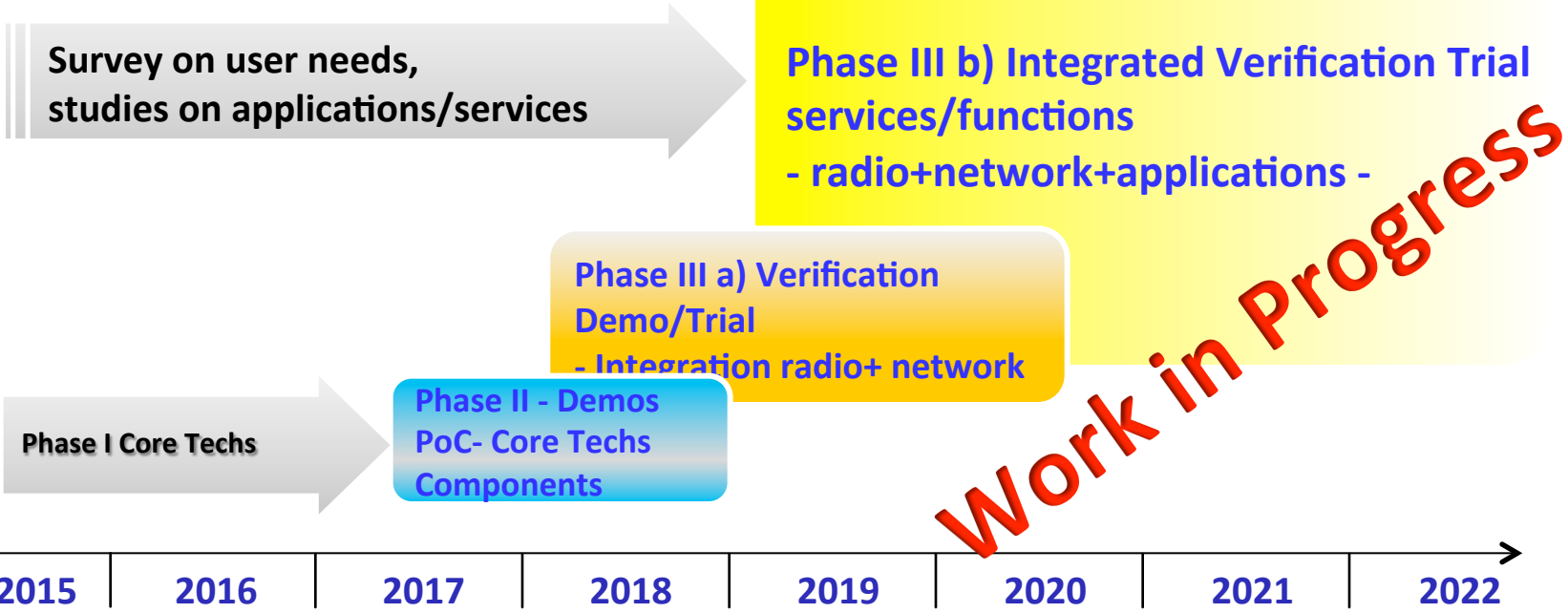
2. Massive-Machine Type
Communication

3. Ultra-reliable and Low
Latency Communication

Towards Deployment



From 5G PPP Phase 1 to 5G PPP Phase 3 (2018-2020)





Focus on ***Proofs of Concept, Experiments, Verticals***

Critical technologies and Systems (101 M€)

- Radio network architecture & technologies
- Optical core
- SDN/NFV, architecture, net mgmt;

Convergent technologies (45 M€)

- Optical support to ubiquitous 5G access
- Flexible network applications
- Research cooperation in access convergence (w/ Taiwan)

+ International cooperation (6 M€ for 5G with SK and JP)

Coordination & Support Action (3 M€)



ICT-07-2017:

5G PPP Research and Validation of critical technologies and systems

- Radio Network functional architectures and interfaces leading to a stable vision / reference architecture for 5G (covers solutions that unify **security...**). Support of numerous devices with different capabilities, with unified connectivity management capabilities, in terms of **security**, mobility and routing.
- Software network with a unified management of connectivity, with **end to end security....** Management and **security for virtualised networks and services** including **security (privacy where appropriate)** across multiple virtualised domains.
- CSAs: Programme level integration through management and orchestration of 5G PPP project cooperation for horizontal issues of common interests (e.g. **security, standardisation...**)
- Proactive contribution to the **3G PP standardisation activity on 5G**, and to other standardisation activities, e.g. **ONF, ETSI-NFV, IEEE;**

Ahead of us



Challenges :

- Standards should not be rushed to develop quickly a 5G version that only caters for only a limited subset of the requirements
- Verticals requirements need to be there from the onset : focus of the 5G PPP call that will close in November 2016
- Slow uptake of vertical involvement in the standardisation bodies
- We should be careful not to develop a fragmented 5G
- Security-by-design principles essential to mainstreaming cybersecurity considerations into all emerging ICT standards
- 5G architecture must accommodate a wide range of use cases from verticals with different requirements in terms of security
- ➔ **Full EU Political Commitment to make Europe a 5G lead region. 5G Action Plan a tool to push standards and cooperation with verticals in the right direction**



Many Thanks for your attention !

many thanks to



See you at:



European Conference on Networks and Communications | Athens, Greece

The Dawn of 5G

#EUCNC2016