



# From 5G PPP to Smart Networks and Services Partnership

## Stakeholder's Workshop

**Dresden, 2 October 2019**

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## Opportunities for the next decade

	« Digital Industries »	« Physical Industries »
Share of GDP	30%	70%
Digital Investment	70%	30%
Annual Productivity Growth (15 Years avg)	3%	0,7 %

Source, Nokia quote from: The coming productivity boom, Michael Mandel, Brett Swanson

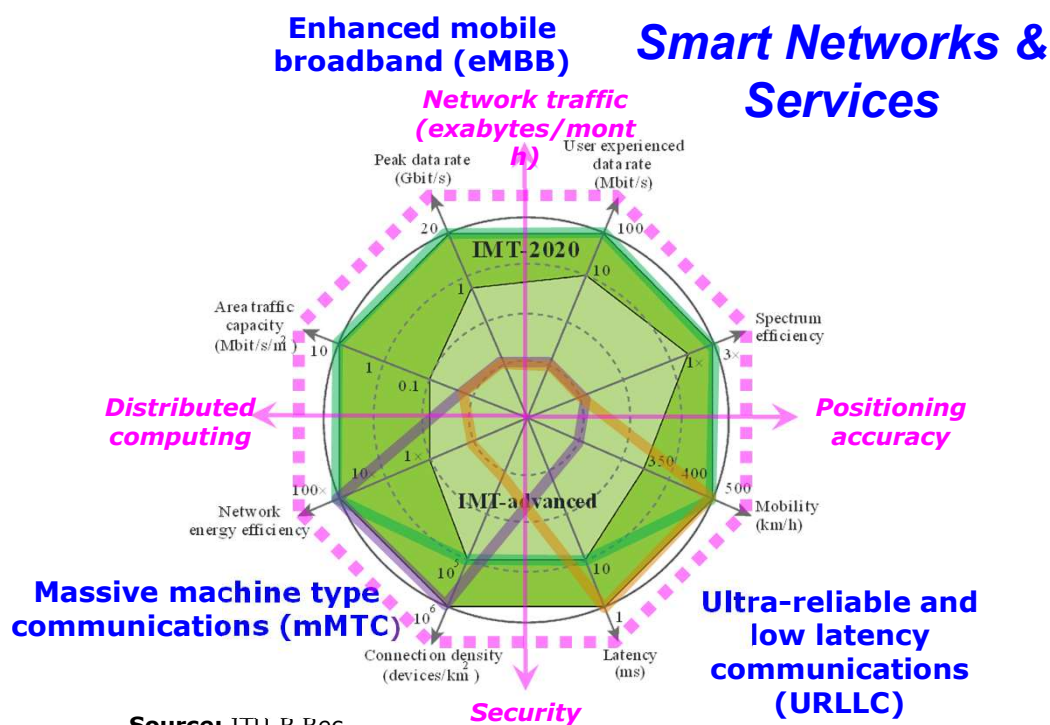
Automation and Industry: by 2025, 11% of economy (Mc Kinsey)

Network share prospects, 10%? Doubling current broadband revenues?

➔ Assumption 1: Industrial/Vertical applications will remain a strong innovation driver over next decade



# 5G Vision and focus Parameters: will they remain valid?



Source: ITU-R Rec. M.2083 (modified)

## Use cases and drivers

- Capacity, still 50% traffic increase/ year
- Gbps availability, e.g XR applications
- local applications, sub-ms latency
- Extreme reliability beyond 5x9;
- mMTC “everywhere “
- Extreme energy efficiency
- Further enhanced high security/trust
- Very high mobility
- cm-level localization



**Assumption 2:** 5G design parameters pushed towards new frontiers will remain valid towards wider industrial applicability

**Disruptions** may be expected, for example:

- Innovative spectrum use towards sensing and environment augmentation → Thz coms + sensing
- Generalised use of AI and Machine Learning in multiple aspects, Intelligence and semantic
- Multiple network architectural issues (extreme agility, energy, blurring device/network/cloud, security)
- Untested technologies at scale, e.g. blockchain





## What we observe today:

- Social issues, coverage
  - 3,5 Billion people without wireless Internet
- Energy, sustainability in hyperconnected society
  - « Energy skyrocketing at the edge ».
- EMF raising concerns
  - What impact of untested spectrum usages? How to decrease exposure?
- Human centricity and trust, data control and governance
- Security and Autonomy
  - Coping with embedded critical infrastructures

→ **Assumption 3: Societal issues to gain accrued importance**





**Assumption 4:** Significant advances compared to foreseeable 5G will come from the combinatorial effect of a multiplicity of technologies, use cases, societal requirements, and business models.

→ A modified approach may be required from the start.





## **Proposal: Partnership on Smart Networks and Services**





# Beyond 5G, 6G: Is it too early to start R&I?

## China initiates 6G research, technology to be made available for commercial use by 2030

CKN November 12, 2018 2,547



## LG sets up 6G research centre at KAIST

LG Electronics and Korea Advanced Institute of Science and Technology (KAIST) have opened a 6G research centre to cooperate in the development of the next-generation wireless network.

## University of Oulu to begin groundbreaking 6G research as part of Academy of Finland's flagship programme

“It is the right time to be researching on 6G but not the right time to be productizing anything related to 6G,” Nokia’s Suri said.

## Taiwan moving to develop B5G, 6G tech

Bryan Chuan, Taipei; Willis Ke, DIGITIMES Monday 29 April 2019

Despite 5G applications still at a budding stage, Taiwan’s Ministry of Science and Technology (MOST) is actively seeking B5G (beyond 5G) and 6G academic research projects aiming to meet tech demand by 2030, according to ministry sources.



# Smart Networks and Services - Value Chain Approach

## Requirements

Industrial & Consumer Applications



Telemedicine   Construction   Connected Mobility   Environment   Factory   Immersive tourism   8K movie   Sport & events   ....

### Service provisioning

Computing and Storage  
Data Analytics



### Networks

Versatile Infrastructure  
Multiple Topologies



Mobile & Last Mile

High density access

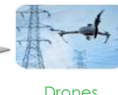
Corporate nets

Indoor Short Range

Dense IoT

Fixed wired access

**Devices:** Multiplicity of Connected Devices



Industrial Automation

360° VR/XR

Fully Automated Vehicles

Haptic Communications for surgery

Agri sensors

Smartphones

Computers

Drones

## New opportunities

Enabling Technology Components



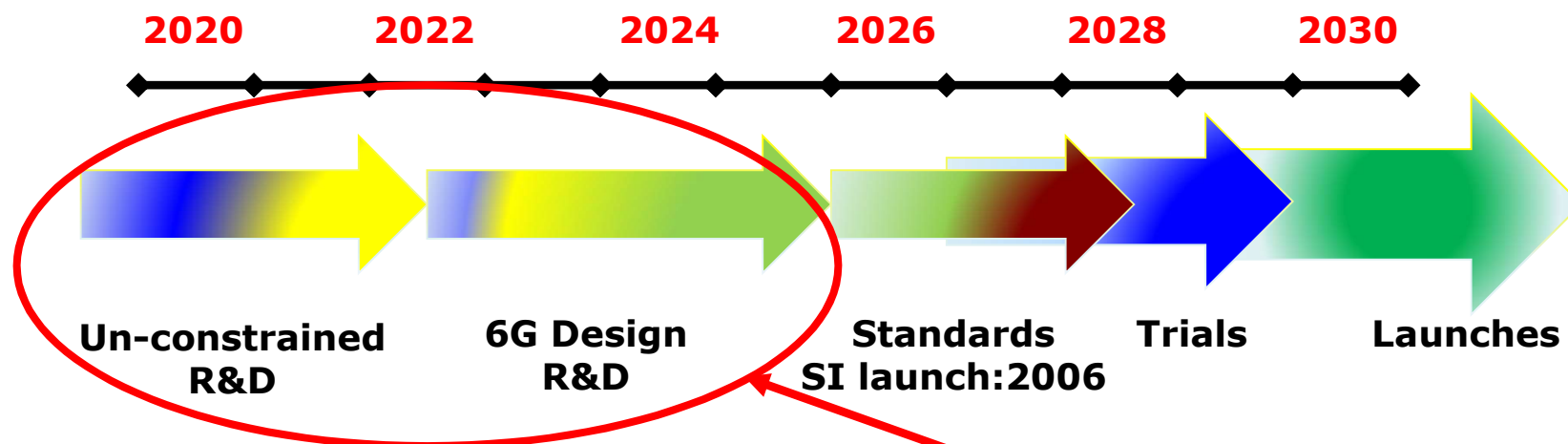
End-to-end Resource Management and Energy Efficiency

End-to-end Security and Trust





## Beyond 5G: A Possible Roadmap



**R&I International cooperation window?**

~ Based on modified 5G Model

Need agility in case of accelerated commercial pressure

*Derived from Orange*



## Timeline and process

<b>May/ June</b>	Structured consultation of Member States (as part of strategic coordinating process)
<b>May</b>	Publication of draft Inception Impact Assessments and start of the Impact Assessment work
<b>4 July</b>	Stakeholder Workshop (extended scope for Smart Networks)
<b>11 Sept</b>	<b><u>Information session to Member States and Associated Countries</u></b>
<b>Mid-Sept</b>	Open Public Consultation on future European Partnerships based on Article 185/187
<b>19 Sept</b>	Digital Partnerships – Panel session at ICT Proposers’ Day Helsinki
<b>24-26 Sept</b>	European R&I Days (policy discussion and validation with stakeholders, covers all European Partnerships)
<b>Mid October?</b>	Digital Partnerships thematic meeting with Shadow Program Committee
<b>2, 22, 23 Oct</b>	Stakeholder Workshops (SRIA for Smart Networks)
<b>End of 2019</b>	Submission of Impact Assessment drafts to Regulatory Scrutiny Board
<b>Early 2020</b>	Adoption of Commission proposals for Article 185/187 initiatives
<b>Early 2020</b>	Finalisation of SRIA and Roadmap for Smart Networks
<b>Early 2021</b>	Launch of first European Partnerships under Horizon Europe





Thank you for your  
attention!



# ICT-42-2020: 5G core technologies innovation

*Opening: 9/07/2019*

*Closing: 16/01/2020*

*Innovation Actions (IAs): €4 million to €6 million per project (indicative)*

***Coordination and Support Actions (CSAs): < €1 million per project (indicative)***

*A complementary grant agreement will be implemented across all projects in*

*5G-PPP*

*Budget:*

**IAs: up to €48  
million**

**CSAs: up to €1  
million**



# expected impact from Innovation Actions

*Support to the emergence of a European offer for new 5G core technologies at TRL 7 or beyond*

*Support to the emergence of new actors in the related markets*

*Creation of high tech start-ups or of new business opportunities for established SME's.*

*Strong SME participation is targeted*



# scope of CSA

*Definition of the expected core hardware components of future connectivity systems where Europe should seize opportunities and strengthen its capabilities*

*Definition of the required R&I and investment requirements related to the identified domains*

*Definition of related industry roadmap in partnership among relevant EU actors, both from industry and academia*



# Expected impact from CSA

*Cross industry availability of a European roadmap for hardware enabling technologies supporting European strategic autonomy objectives for connectivity platforms*