



Smart Networks and Services

Info Session

Joint EuCNC & 6G Summit 2021

*Peter STUCKMANN
Head of Unit - Future Connectivity Systems
DG CONNECT*

Outline

Towards a 6G European Initiative

EU actions on 5G deployment and capacity building

The Smart Networks and Services Partnership

Status of the preparation and next steps

Outline

Towards a 6G European Initiative

EU actions on 5G deployment and capacity building

The Smart Networks and Services Partnership

Status of the preparation and next steps

Beyond 5G: Global Context

B5G/6G Initiative



- “Secure 5G & Beyond Act” March 2020
- DoD Testbed programme, \$ 600 million
- Next-G initiative, industry federation
- Open RAN Drive, \$2Bn



- MIC “Roadmap towards 6G”, June 2020
- METI support
- \$380 million
- Open RAN Drive, \$2Bn



- MSIT 6G programme, September 2020
- ≈ \$200 million public support



- MIIT 6G programme, creation of IMT 2030 Promotion committee (2019)
- Multi € Billion until 2035, including industrialisation



- **6G Smart Networks and Services Joint Undertaking proposal**
- **€ 900 millions / 6 years**
- **Multiple Member States Initiatives: Finland, Germany..**

Smart Networks and Services

Strategic areas

Applications

- Seizing the “Trillion €” opportunity in network-based industrial sectors
- New types of applications

Industrial leadership

- Starting 6G race: an opportunity to consolidate EU lead

Societal, Sustainable Development Goals

- Smart connectivity underpinning key societal issues

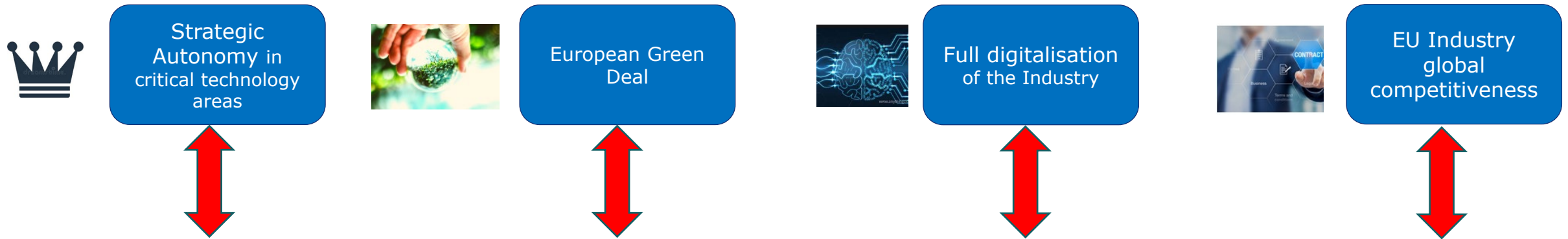
Sovereignty/ Open Strategic Autonomy

- Value chain approach for a comprehensive EU supply capacity
- Leverage to components to cloud services

Partnership: a response to the magnitude of the challenges

Towards a 6G European Initiative

5G PPP: ICT-52 implementation of 8 6G exploratory projects, 1 flagship= 60 M€



Industry 6G Partnership Proposal (Smart Networks & Services)

https://ec.europa.eu/info/files/european-partnership-smart-networks-and-services_en



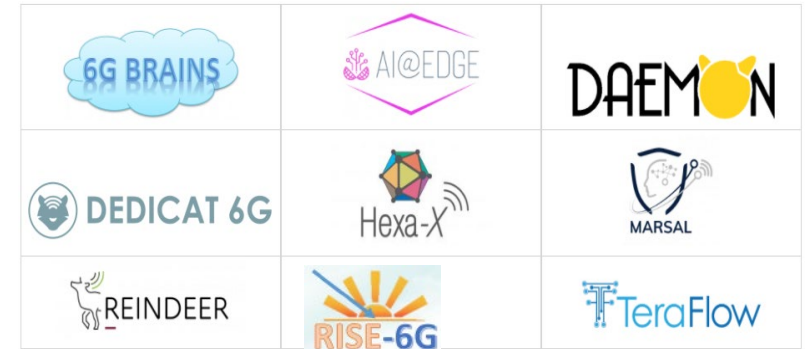
Accelerating 5G Deployment: CEF2, pan European corridors for Connected Cars

6G Vision and technologies across a comprehensive supply chain

European 6G Research

Started in January 2021, implementation of, **1 flagship** system project with **8 6G exploratory projects**= 60 M€ under 5G PPP (ICT-52 call) = Bridging phase into SNS partnership

<https://5g-ppp.eu/5g-ppp-phase-3-6-projects/>



HEXA-X: New RA Technologies, THz high-resolution localization and sensing; AI applicability; 6G architectural enablers;

RISE 6G: Reconfigurable Intelligent Surfaces (RIS) radio wave propagation control, to achieve dynamically programmable wireless environments

REINDEER: large-scale intelligent surfaces and cell-free wireless access, distributed radio, computing storage

6G BRAINS: AI based resource allocation in dense IoT environments

AI@EDGE: AI based roll out of edge and cloud compute service infrastructures

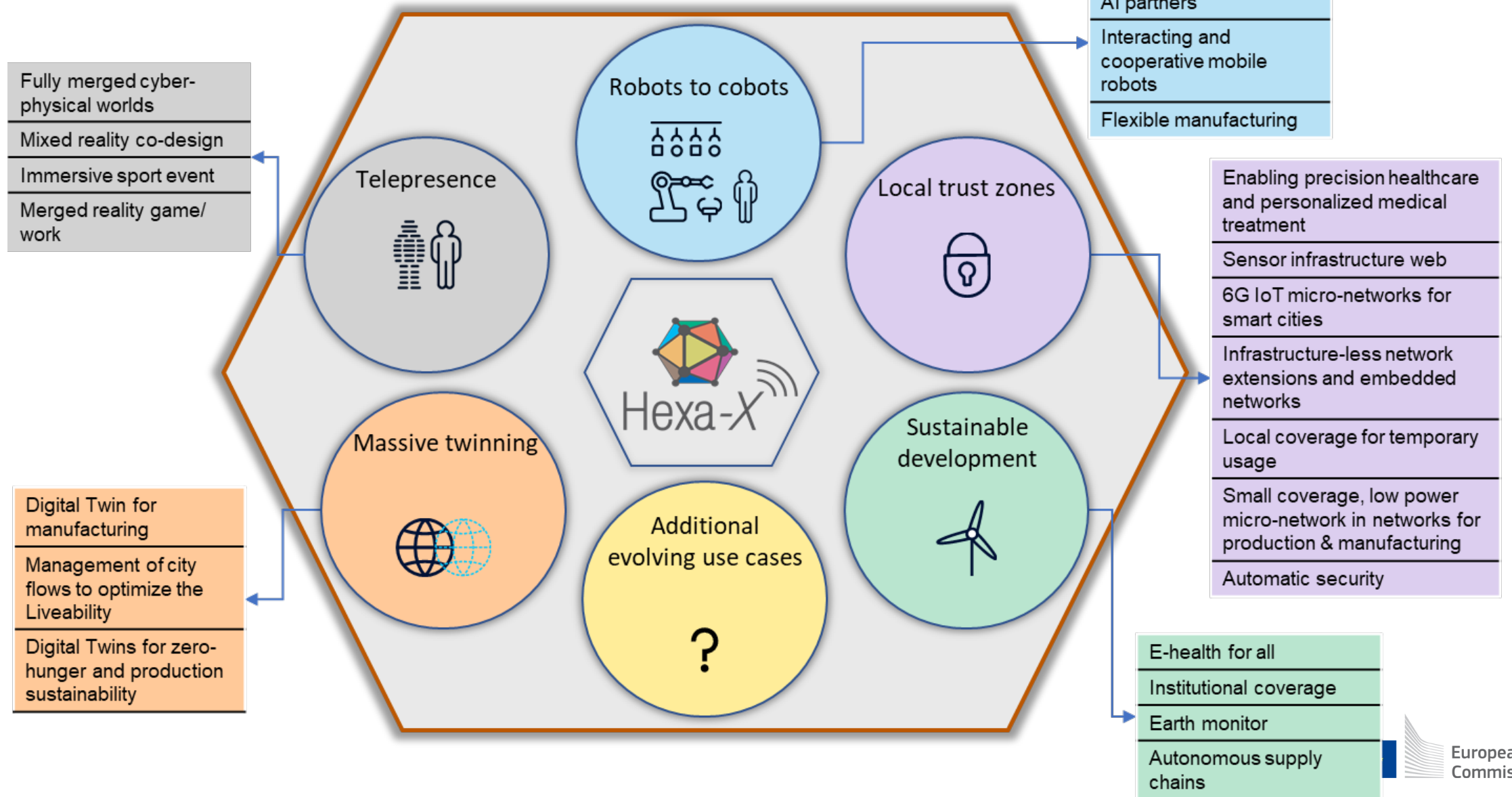
DAEMON: optimized radio/computation, energy reduction and high reliability > 5x9

MARSAL: distributed cell-free massive-MIMO networks, massive AP deployments, cell-free disaggregated RAN

DEDICAT 6G: function placement AI/blockchain based for ultra low latency and security

TERAFLOW: Autonomous Networks Beyond 5G, Automotive, and Cybersecurity through Unification of Network and Cloud Resource Management, ML-based security, Distributed Ledger Technologies.

Hexa-X use cases



Trend: Intelligence everywhere

B5G/6G-enabled services



Intelligent SMO

Intent Interpretation and Composition



Predictive Orchestration



CI/CD Lifecycle Management

E2E Seamless Integration

Interfaces & Abstractions

Data-driven Optimization

Adaptive Monitoring

Full Network Programmability

Distributed platform hosting AI-based learning and inferencing tasks

Device-Edge-Cloud Continuum Management

Integrated cloud

Federated & explainable AI models

◆◆ non-critical VxFs

Serverless

Cloud-Native

Intelligent Edge

▲▲ critical VxFs

Data-centric air interface design



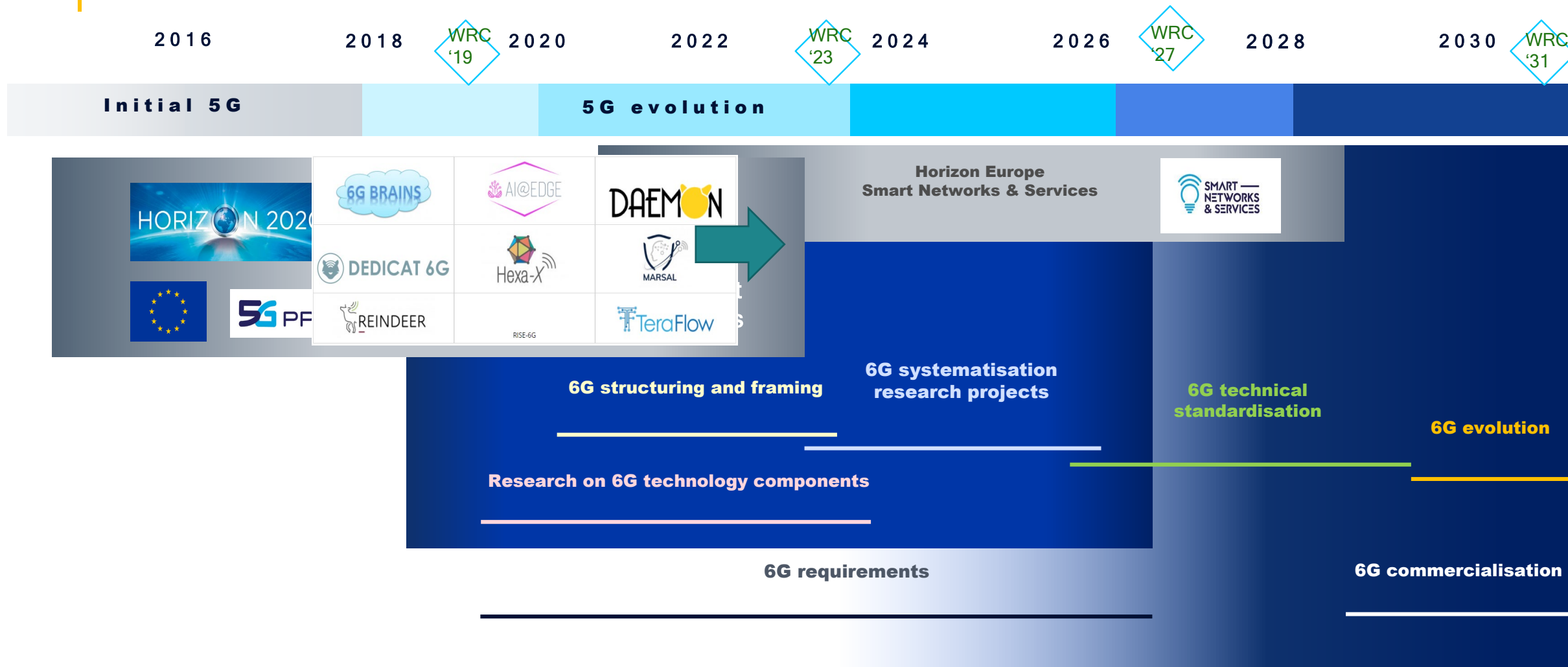
Intelligent orchestration and service management

AI/ML based enabling technologies

Source, HEXA-X ... Project

European Commission

Indicative Timeline



Outline

Towards a 6G European Initiative

EU actions on 5G deployment and capacity building

The Smart Networks and Services Partnership

Status of the preparation and next steps

5G for Connected and Automated Mobility (CAM) along cross-border corridors



- Vision: Pan-EU 5G corridors for Connected and Automated Mobility
- Private investment with public funding of cross-border and "challenge" areas
- Large-scale testing using Horizon 2020 (€80M)
- Large-scale deployment using CEF2 Digital (~€1B for 5G Corridors)
- Blending or coordination with Recovery Fund, InvestEU and national programmes



5G Strategic Deployment Agenda for CAM

- Elaborated with the participation of stakeholders, the SDA aims at maximising CEF2 Digital intervention by:
 - Defining deployment priorities and roadmaps
 - Identifying appropriate cooperation models and investment strategies
 - Advising on most suitable regulatory incentives
- Input for CEF2 pillar of the Smart Networks and Services partnership
- Latest SDA version published in October 2020

Outline

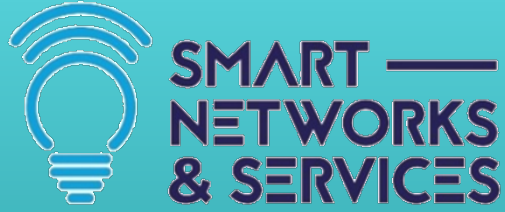
Towards a 6G European Initiative

EU actions on 5G deployment and capacity building

The Smart Networks and Services Partnership

Status of the preparation and next steps

SNS | Scope of activities



HORIZON EUROPE



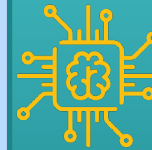
Remaining and new challenges:

- Higher capacity – Zero touch networks
- Spectrum challenges (TeraHertz, flexible use)
- Advanced Radio processing
- Ultra high security
- Ultra low energy/EMF



Opportunities and needs:

- Smart devices, (edge) Networks, Data Processing
- New classes of applications (“Internet of Senses”)
- Verticals, requirements beyond 5G
- Value Chain perspective

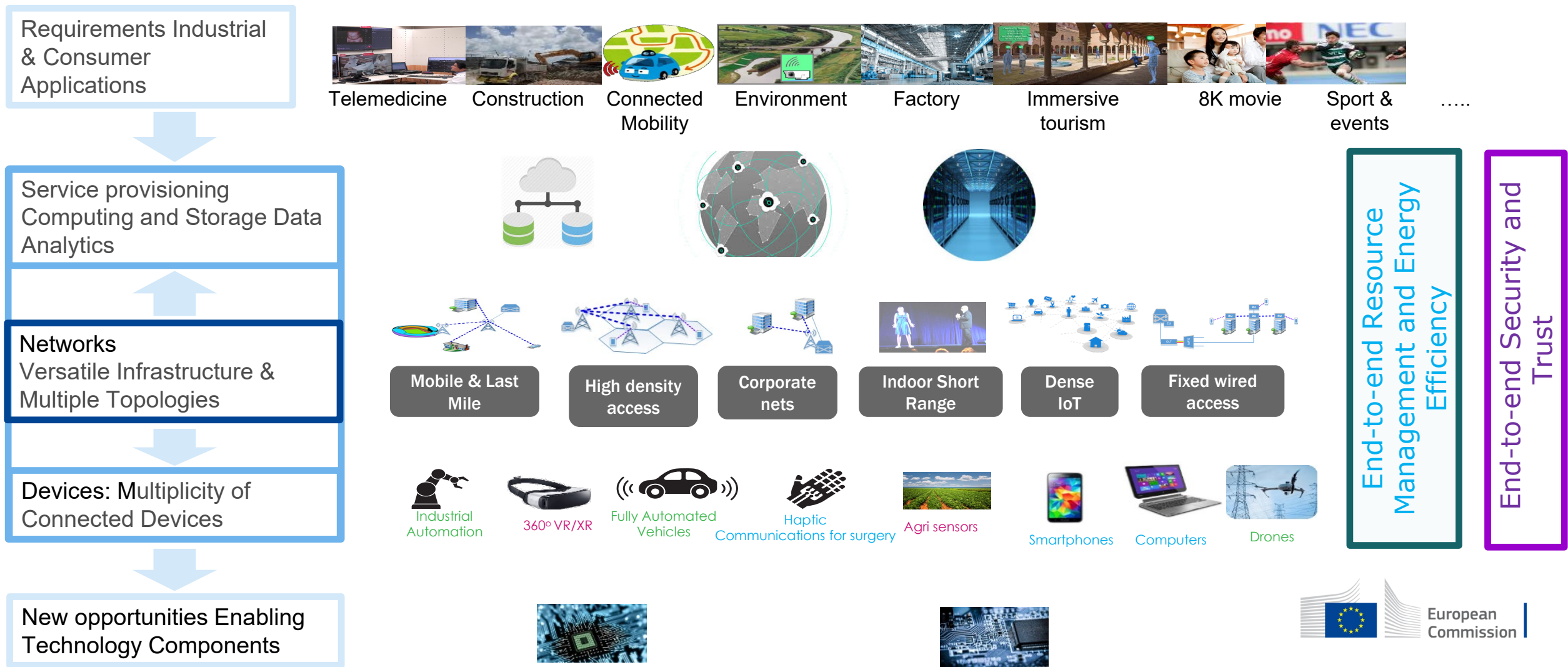


DEP & CEF2

Deployment and capacity building:

- 5G corridor deployment for CAM
- Smart communities/ socio-economic drivers
- AI/Cybersecurity /blockchain enabled by smart networks

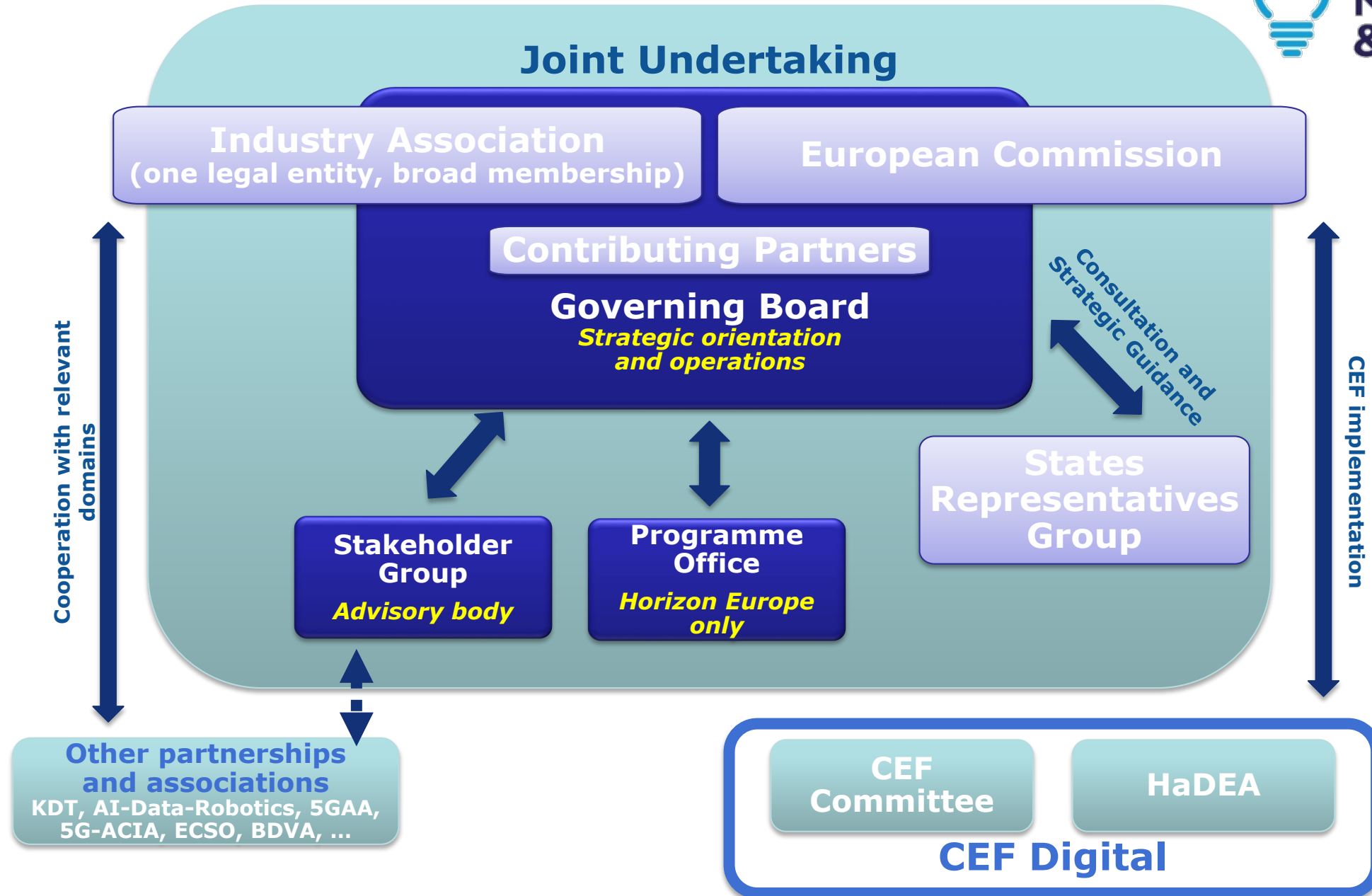
A value chain approach for better EU autonomy



Options considered and final choice

Co-programmed Partnership	Institutionalised Partnership
Mainly Co-ordinated implementation of R&I and direct spin off (standards)	Strategic planning & coordination of European R&I and deployment actions, including with Member States
Limited planning certainty for roadmap (2 years cycles)	Long term roadmap implementation and planning
Stakeholders long term commitment unclear	Stakeholders long term commitment, clear incentives
No direct influence on work programmes	Work Programme closely linked to roadmap (strong industry role, MS involved upstream)
Integration of activities: medium	High potential of integration and synergies (e.g. with MS programmes)
Ad-hoc opportunities of synergies with other PPPs	Long term collaboration cross roadmaps possible
Horizon Europe standard implementation rules	Strategic implementation (screening) possible
Downstream impact on policy frameworks less predictable (spectrum, standards, green deal)	Downstream impact on policy frameworks can be formally prepared

Governance



Specificities

- **Prior commitment to EC funding of €900 million** to be matched by private financial contribution of the same amount
- **Reduced contribution to administrative costs for private side**
- **Strategic coordination for 5G piloting and deployment initiatives**
- **Increased role of Member States**
 - State Representatives Group (SRG)
 - Possibility for chair to have permanent seat on Governing Board
 - Additional representatives for deployment activities
 - Governing Board shall consider SRG opinion
 - Possibility to become Contributing Partner through in-kind contributions
- **Potential Security Measures**
 - Composition of the Governing Board
 - 5G Cybersecurity toolbox
 - Security scrutiny and eligibility limitation

Private Member contributions and sustainability

- Industry has strong leadership role in shaping overall strategy, rules for participation, work programmes, calls, etc.
- Member States closely associated in States Representatives Group
- Private Member (industry association) of the Joint Undertaking to match EU funding through project co-funding and additional activities
- Private Member to contribute to Joint Undertaking office cost out of association membership fees:
 - **Membership fees to be kept at reasonable level** to make membership attractive, in particular for SMEs
 - Need for sufficient membership -> **beneficiaries receiving significant EU funding expected to become member of the association**

Outline

Towards a 6G European Initiative

EU actions on 5G deployment and capacity building

The Smart Networks and Services Partnership

Preparation status and next steps

Up to now...

- ✓ SRIA

<https://www.networld2020.eu/sria-and-whitepapers/>

- ✓ SDA

<https://5g-ppp.eu/europe-sets-5g-sda-for-cam/>

- ✓ Industry proposal

<https://5g-ia.eu/sns-horizon-europe/>

- ✓ Single Basic Act and Impact Assessment – Commission proposals

<https://ec.europa.eu/digital-single-market/en/news/europe-puts-forward-proposal-joint-undertaking-smart-networks-and-services-towards-6g>

Ongoing

Single Basic Act (SBA)

- Proposal for the Council Regulation establishing the Joint Undertakings under Horizon Europe
- Currently being discussed at the Council of the EU and at the European Parliament
- Parliament opinion and Council adoption - hopefully in Autumn 2021

1st SNS Work Programme – EC, Industry Association and Member States

- Text under preparation
- Targeting to be ready for publication as soon as possible after the entry into force of the SBA

1st CEF 2 Digital Work Programme - EC and Member States

Estimated timeline

- Q3 2021 Adoption of Council Regulation establishing JU
- Q3 2021 First CEF2 Digital call
- Q4 2021 First SNS call (Horizon Europe)
- Q2 2022 First SNS projects kick-off
- Q4 2022 First CEF2 Digital projects kick-off

Thank you!

<https://digital-strategy.ec.europa.eu/en/policies/5G>

