

# Smart Networks and Services - Stepping up 6G R&I in Europe

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**6G SNS**



# 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 initiative



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



- 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**
- **€ 900 millions / 7 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

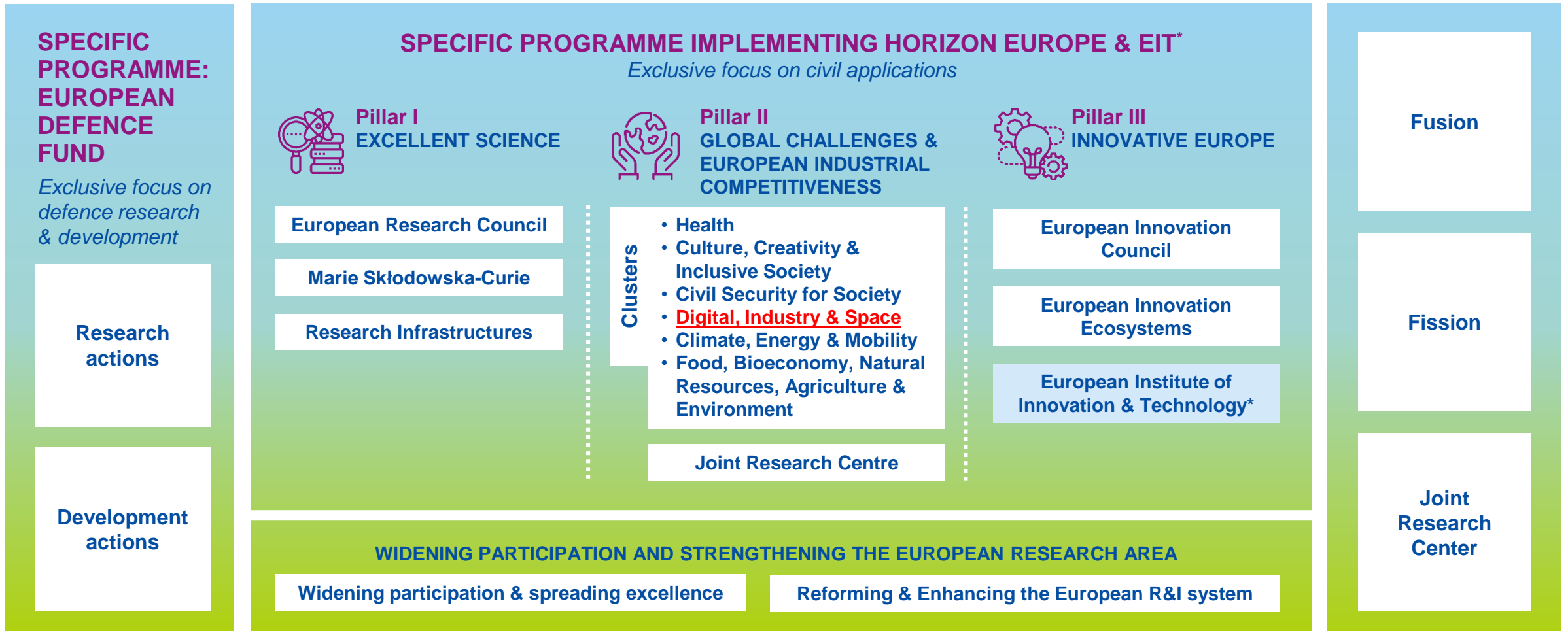
### Sovereignty/ Open Strategic Autonomy

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

**Partnership:** a response to the magnitude of the challenges

# HORIZON EUROPE

# EURATOM

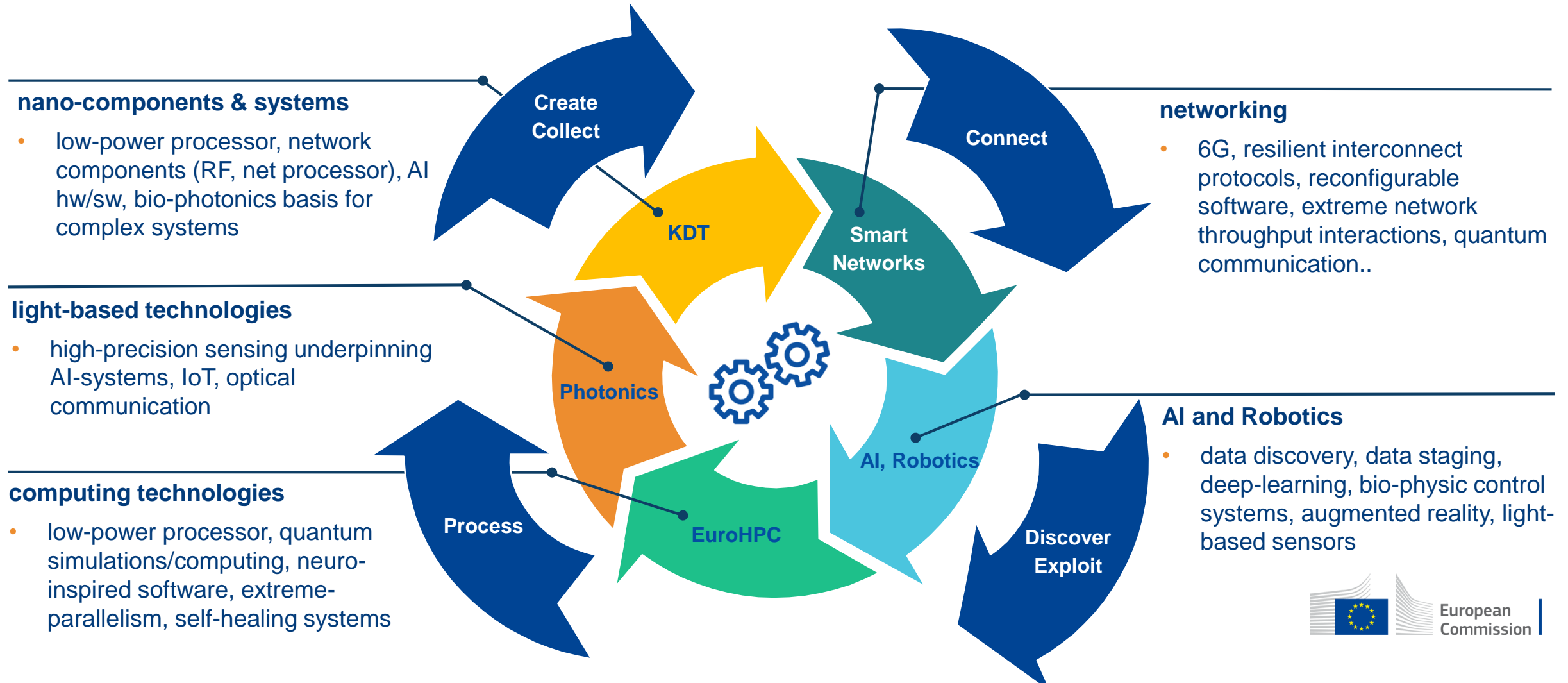


\* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

# Serving new Policy agenda with Digital Partnerships

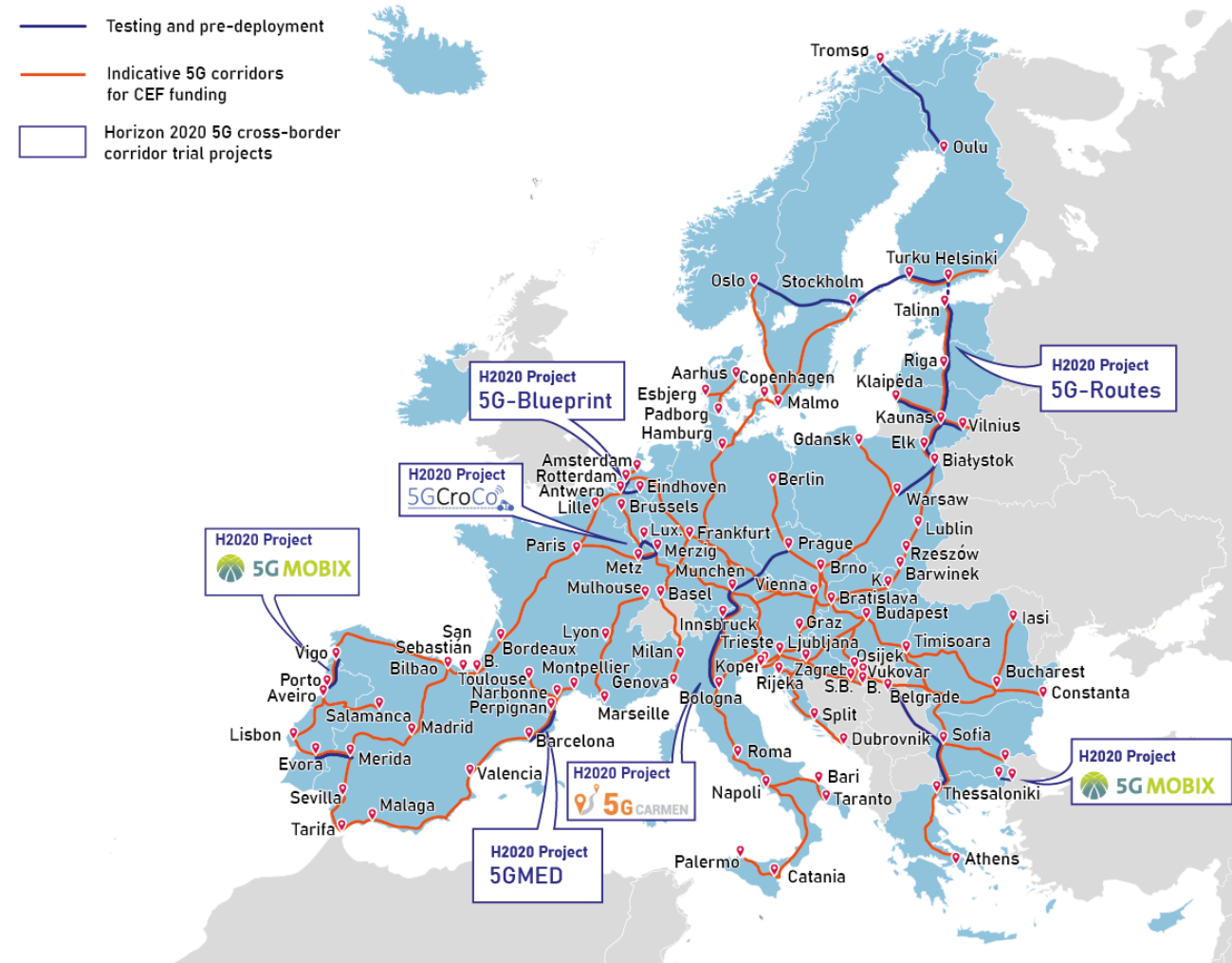
(cluster 4)

1. *A European Green Deal*
2. *An economy that works for people*
3. *A Europe fit for the digital age*
4. *Protecting our European way of life*
5. *A stronger Europe in the world*
6. *A new push for European democracy*



# Deployment of 5G Cross-Border Corridors

- Vision: Pan-EU 5G corridors for Connected and Automated Mobility
- Private investment with public funding of cross-border and "challenge" areas
- CEF Digital
  - Objective: 26.000km transport paths along TEN-T
  - 49 intra-EU borders: Investment required: ~EUR 5,4 bn
  - Planned EC funding ~€1B for 5G Corridors
  - [First Call closed](#), selection ongoing
- Blending or coordination with RRF, InvestEU and national programmes, Multi-Country Projects
- [Smart Networks and Services Joint Undertaking](#) formally tasked to coordinate Strategic Deployment Agendas



# 6G R&I in Europe has started

## 5G PPP bridging phase



- The Hexa-X flagship + 9 6G exploratory projects = 65 M€



**Accelerating 5G Deployment  
Connecting Europe Facility (CEF2)**

**6GSNS**

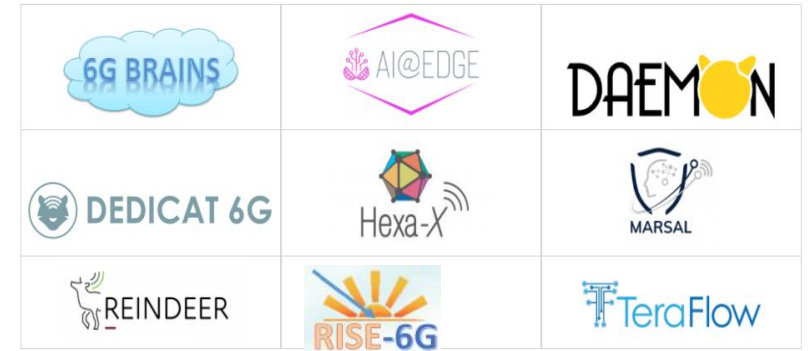
**6G Vision and R&I across the  
broader supply chain**

- Tasks set by Council Regulation (2021/2085)
- EU upfront commitment of **€900M** between 2021-2027 (to be at least matched by industry)
- Close involvement of Member States for strategic guidance
- Dedicated Programme Office

# 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.

# European 6G Initiative | Indicative Timeline

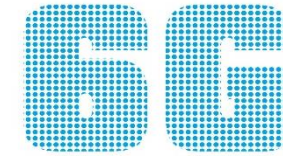


# Structure of the Work Programme 2021-2022

Funding: €240 million



Evolution



**Stream A (RIA):** Smart communication components, systems and networks for 5G mid-term Evolution systems

**Radio:**

Building Blocks and Systems

**System and Security:**

Secure Softwarisation  
Real-time/ Zero touch  
Services

**Architecture:**

Evolved Design  
Advanced Cloud/Edge  
Converged Optical Transport

**Stream D (IA):** Large Scale SNS Trials and Pilots with Verticals

**Stream B (RIA):** Research for radical technology advancement towards 6G

System Architecture

Wireless Communication  
Technology and Signal Processing

**Cross Strand –Project(s)**

Trustworthy and Secure  
Service Development and  
Provision

Communication  
Infrastructure  
Technologies

**Stream C (RIA):** SNS experimental infrastructures

**Horizontal Issues: Sustainability,  
Access, Affordability...**

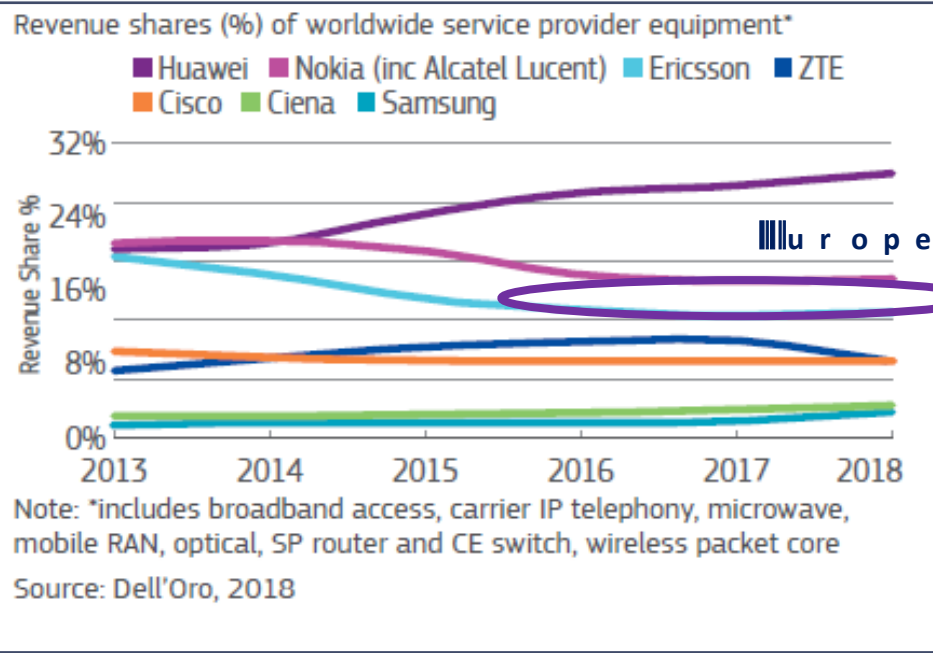
# Chips Act



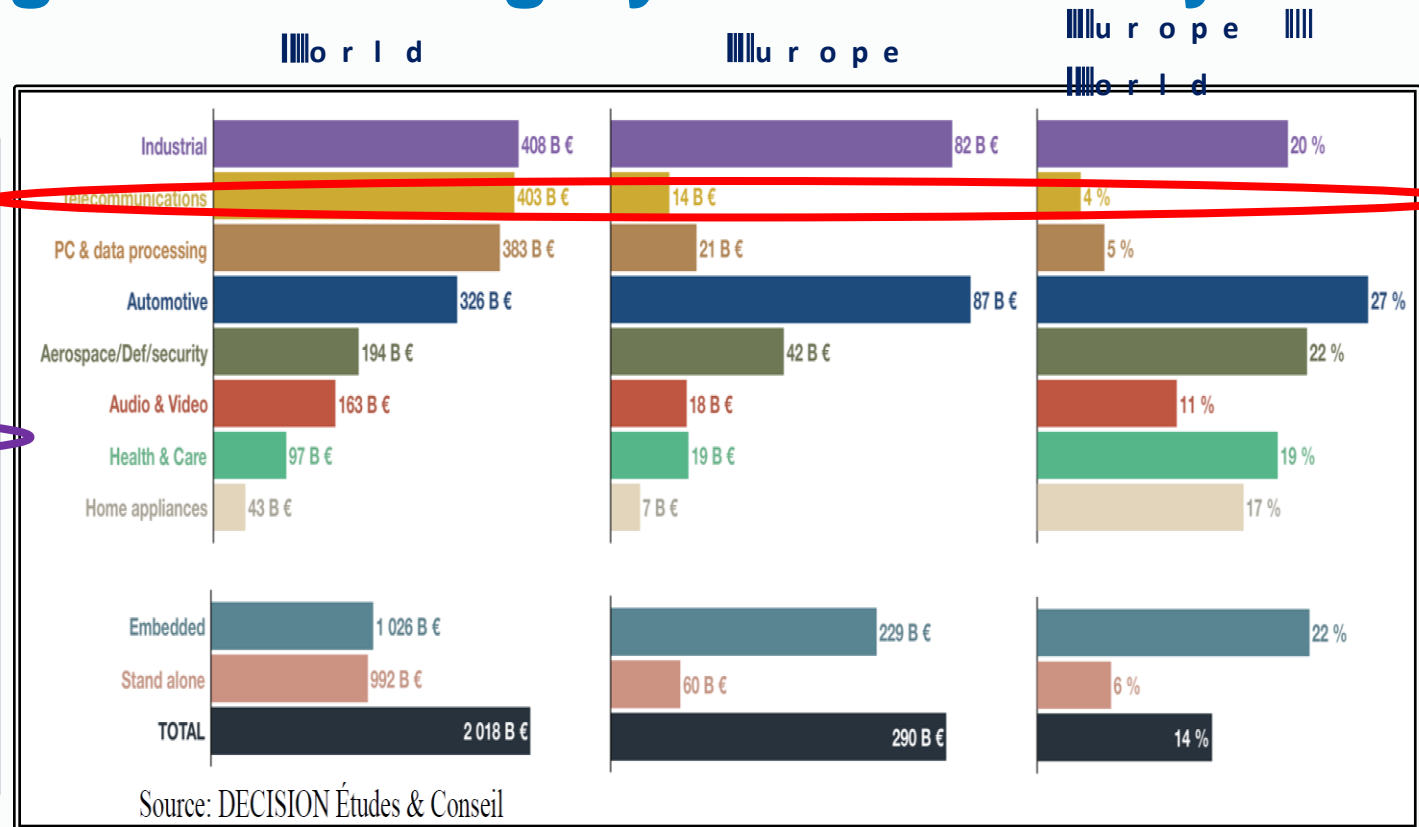
Will include initiatives in the following areas:

1. Strengthened **research and innovation capacity** in Europe
2. Ensure European technology leadership in **design** and **manufacturing**
3. Adaption of state aid rules to allow public support - for the first time - for European first-of-a-kind **production** facilities
4. Improved ability to anticipate and respond to **shortages** and **supply issues** in the area
5. **Support** for **smaller** innovative companies

# A Problem of Technological Sovereignty in 5G and Beyond



Network Equipment Vendor World [1]



Electronic System Production – Position of Europe in 2018 (in euros) [2]

**Limited and even no European alternatives for supplying 5G electronic subsystems and components!!**

[1] [https://ec.eforuropa.eu/epsc/sites/epsc/files/epsc\\_strategic\\_note\\_issue30\\_strategic\\_autonomy.pdf](https://ec.eforuropa.eu/epsc/sites/epsc/files/epsc_strategic_note_issue30_strategic_autonomy.pdf)

[2] <https://ec.europa.eu/digital-single-market/en/news/emerging-technologies-electronic-components-and-systems-ecs-opportunities-ahead-0>

# Towards a Micro Electronics-Telecom Roadmap



## Project Objectives

- To **decrease European dependence** on supplying electronic subsystems and components, paving the way for European Technological Sovereignty in 5G and Beyond;
- To bring European major players in microelectronics and telecommunications together to **develop a strategic roadmap of core technologies for B5G/6G**, laying a solid foundation for the long-term success of both industries;
- To **establish a connection and collaboration** between the Smart Networks and Services (SNS) community and the Key Digital Technologies (KDT) community at the strategic research & innovation agenda level;
- To promote COREnect results to stakeholders in both private and public sectors, including **creating the condition for one or more European champion(s)** in the domain of core technology for attaining technology sovereignty in 6G.



European Core Technologies  
for future connectivity systems  
and components



Final COREnect  
Industry Roadmap

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