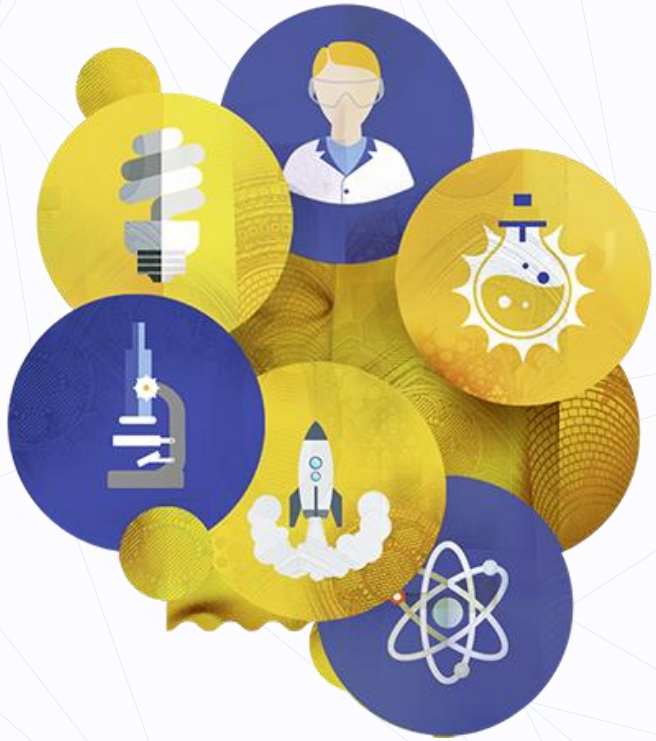
Horizon Europe
Smart Networks & Services Partnership

Németh Edina
Nemzeti Kutatási, Fejlesztési és Innovációs Hivatal



DIGITAL IN THE NEXT MFF: OVERVIEW

Digital Europe

1. High Performance Computing (HPC)
2. Artificial Intelligence (AI)
3. Cybersecurity
4. Advanced digital skills
5. Digital transformation and interoperability

Digital in Horizon Europe

1. Digital under "global challenges"
   - Digital and industry cluster
   - Digital in other clusters - health, mobility, energy, environment,..
2. FET Open under Open Innovation
3. Research Infra under Open Scienc

CEF - Digital

Connectivity

- Synergies with Transport /Energy
- WIFI/BB 4EU
- 5G roll out

MEDIA under Creative Europe within Cohesion and Values

- Distribution of works
- Creation

EUs IKT források – több csatornán

- **Digitális technológiák az EU következő többéves költségvetési keretében**

  Digital Europe | Horizon Europe | Connecting Europe Facility | Creative Europe / Media

- **Horizon Europe**
  - **2. Pillér: Digitális gazdaság, ipar és űrkutatás klaszter**
    (e.g. Kutatási és innovációs projektek, innovációs projektek, koordináció)
  - **2. Pillér: Globális kihívásokat célzó klaszterek**
    Globális társadalmi kihívások (egészségügy, kultúra, biztonság, közlekedés, környezet, energia, mezőgazdaság, élelmiszeripar, biogazdaság stb.)
  - **3. Pillér: Innovatív Európa** (Pathfinder (multidiszciplináris kutatás), Transition, Accelerator (KKV))
  - **1. Pillér: Kiváló tudomány** (ERC, MSCA nyitott felhívások + kutatási infrastruktúra)

- **Partnerségi konstrukciók** – KDT, HPC, SNS, ….
- **Harmadik feleknek szóló finanszírozások: kaszkád pályázatok**
  (pl. nagy pilotok, I4MS, IoT EU platformok, AI4EU platform,
  FET zászlóshajó programok, digitalis innovációs központok stb.) + kifutó ERA-NET felhívások

HORIZONT EURÓPA

1. pillér
Kiváló tudomány

- Európai Kutatási Tanács
- Marie Skłodowska-Curie-cselekvések
- Kutatási infrastruktúrák

2. pillér
Globális kihívások és az európai ipar versenyképessége

Klaszterek
- Egészségügy
- Kultúra, kreativitás és befogadó társadalom
- A társadalmat szolgáló polgári biztonság
- Digitális gazdaság, ipar és világűr
- Éghajlat, energia és mobilitás
- Élelmiszerek, biogazdaság, természeti erőforrások és környezet

- Közös Kutatóközpont

3. pillér
Innovatív Európa

- Európai Innovációs Tanács
- Európai innovációs ökoszisztémák
- Európai Innovációs és Technológiai Intézet

A részvétel bővítése és az Európai Kutatási Térség megerősítése

- A részvétel bővítése és a kiválóság terjesztése
- Az európai K+I-rendszer megreformálása és megerősítése

Partnerség

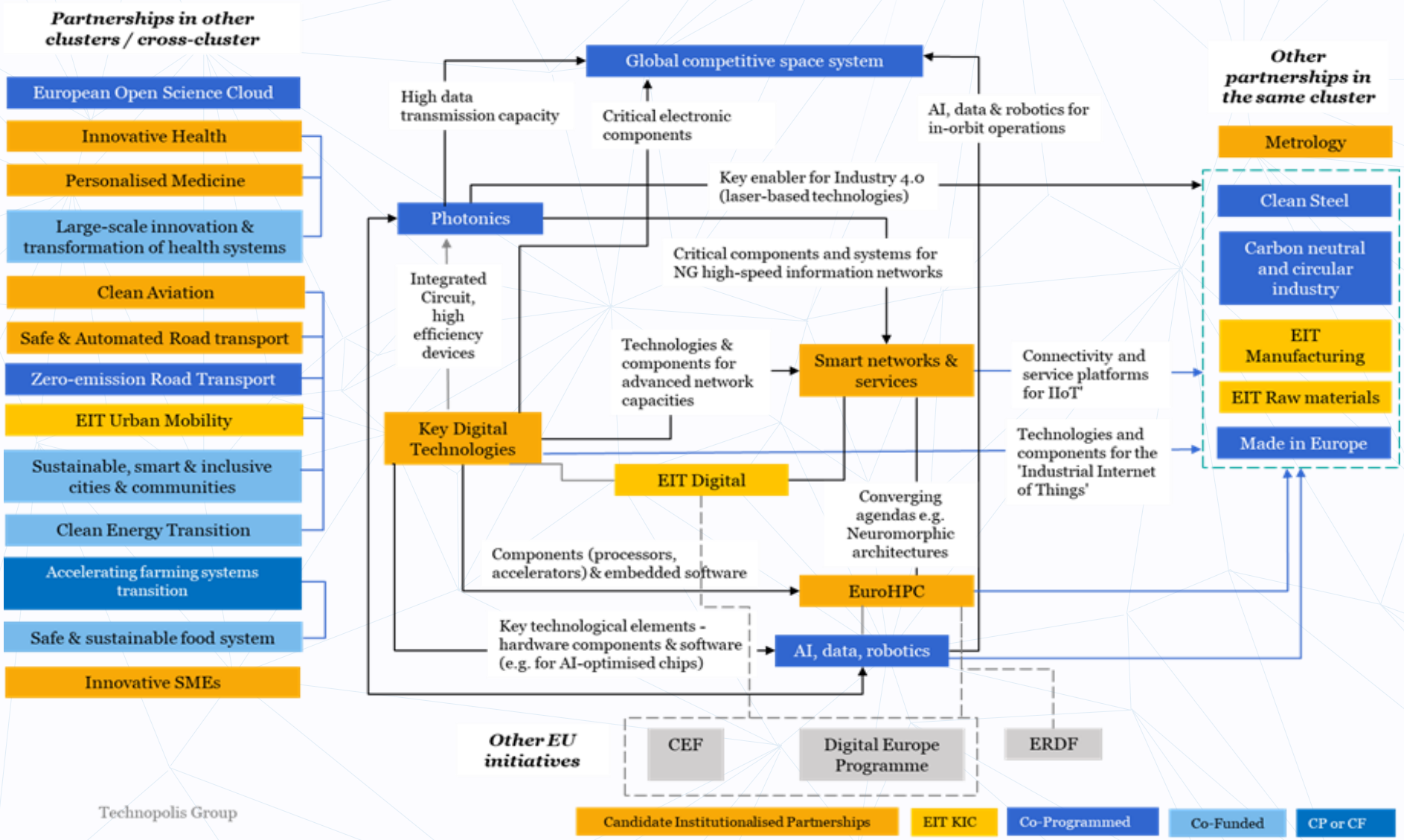
vezérelt program

https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/european-partnerships-horizon-europe_en

4. klaszter

Digitális technológiák

Horizon Europe



Partnerships in Horizon Europe

- **Co-programmed European Partnerships**
  These are partnerships between the Commission and private and/or public partners. They are based on memoranda of understanding and/or contractual arrangements.

- **Co-funded European Partnerships using a programme co-fund action**
  Partnerships involving EU countries, with research funders and other public authorities at the core of the consortium.

- **Institutionalised European Partnerships**
  These are partnerships where the EU participates in research and innovation funding programmes that are undertaken by EU countries.

Digital Centric Partnerships

- **Key Digital Technologies** (proposed as institutionalised) addressing the technological challenges and emerging opportunities for Europe on key digital technologies. This include microelectronics, embedded software and smart microsystems enlarged with elements of photonics, higher-layers of software and complex system integration

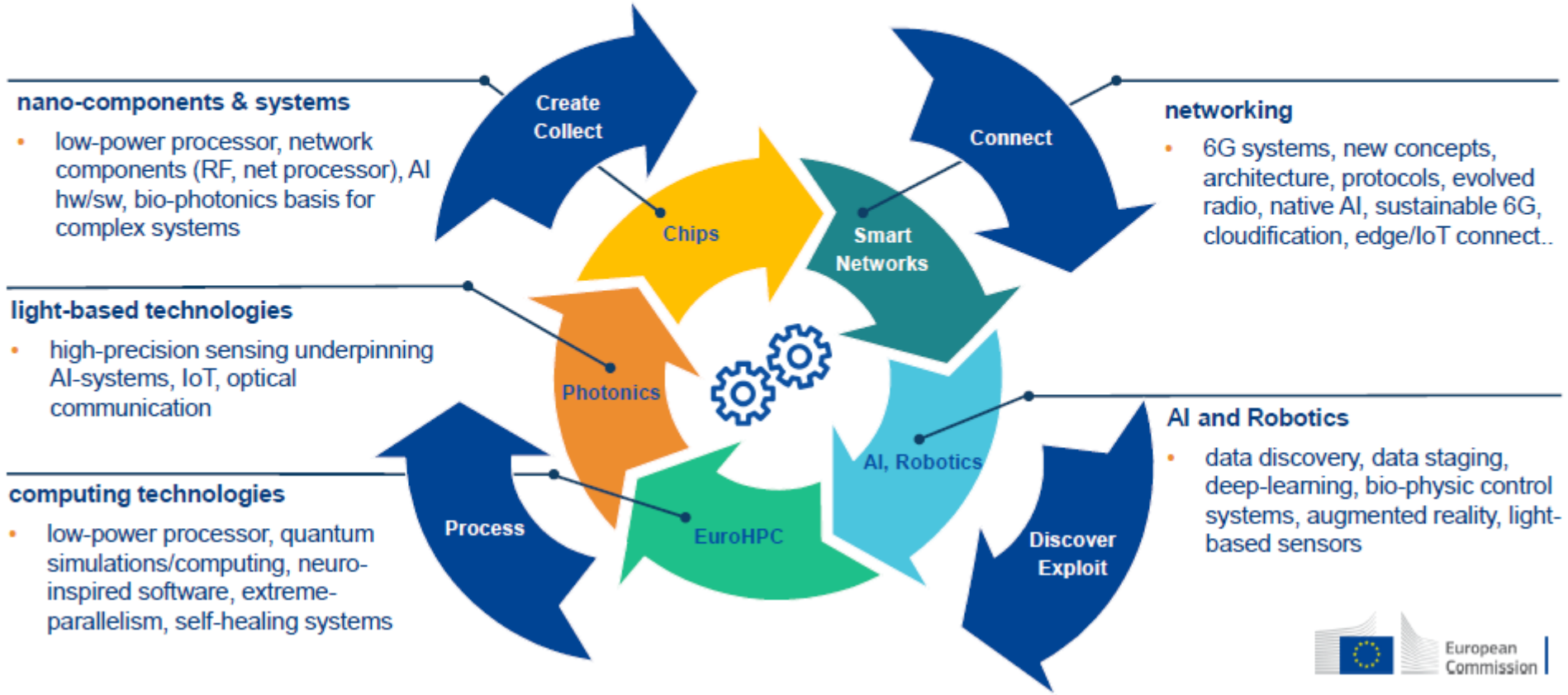
- **High Performance Computing** (proposed as institutionalised) to develop and deploy highly competitive and innovative HPC ecosystems in Europe. It will build on the experience gained in EuroHPC for achieving world-class exascal eand post-exascale (HPC) technologies in Europe, including their integration with Quantum computing

- **Smart Networks and Services** (proposed as institutionalised) to strengthen the position of the European industry in the global race on digital connectivity infrastructures including “5G and beyond” and later "6G" network systems and associated services

- **Artificial Intelligence, data and robotics** (proposed as co-programmed) with a strong socio-economic transformational potential with impact in sectors like health, manufacturing, ship-building, construction, service industries and farming, etc.

- **Photonics** (proposed as co-programmed) with a strong and growing impact on a broad variety of end user industries, developing next-generation photonics components and systems fostering synergies and coordination amongst research and industrial actors.

Digital Partnerships Serving Policy agenda



nano-components & systems

- low-power processor, network components (RF, net processor), AI hw/sw, bio-photonics basis for complex systems

light-based technologies

- high-precision sensing underpinning AI-systems, IoT, optical communication

computing technologies

- low-power processor, quantum simulations/computing, neuro-inspired software, extreme-parallelism, self-healing systems

networking

- 6G systems, new concepts, architecture, protocols, evolved radio, native AI, sustainable 6G, cloudification, edge/IoT connect..

AI and Robotics

- data discovery, data staging, deep-learning, bio-physic control systems, augmented reality, light-based sensors

European Commission

Smart Networks & Services

Joint Undertaking

https://smart-networks.europa.eu/

SNS JU is fully aligned with Europe's Strategic Priorities

Strategic Priorities

EU-wide collective effort

Creating a human-centric digital world reflecting European values

New Applications

Seizing a fair share of the "Trillion €" opportunity in future network-based industrial sectors

Industrial leadership

Starting the 6G race with an **aspiration to leverage EU technological leadership**

Sustainable Development

Support EU Green Deal targets Building on a **clear promise of Sustainability**

Societal Impact

Smart connectivity underpinning key societal issues such as **Inclusion and Trustworthiness**

Technological Sovereignty & Security

Value chain approach for a comprehensive EU supply capacity, from components to cloud services, in line with the 5G cybersecurity toolbox

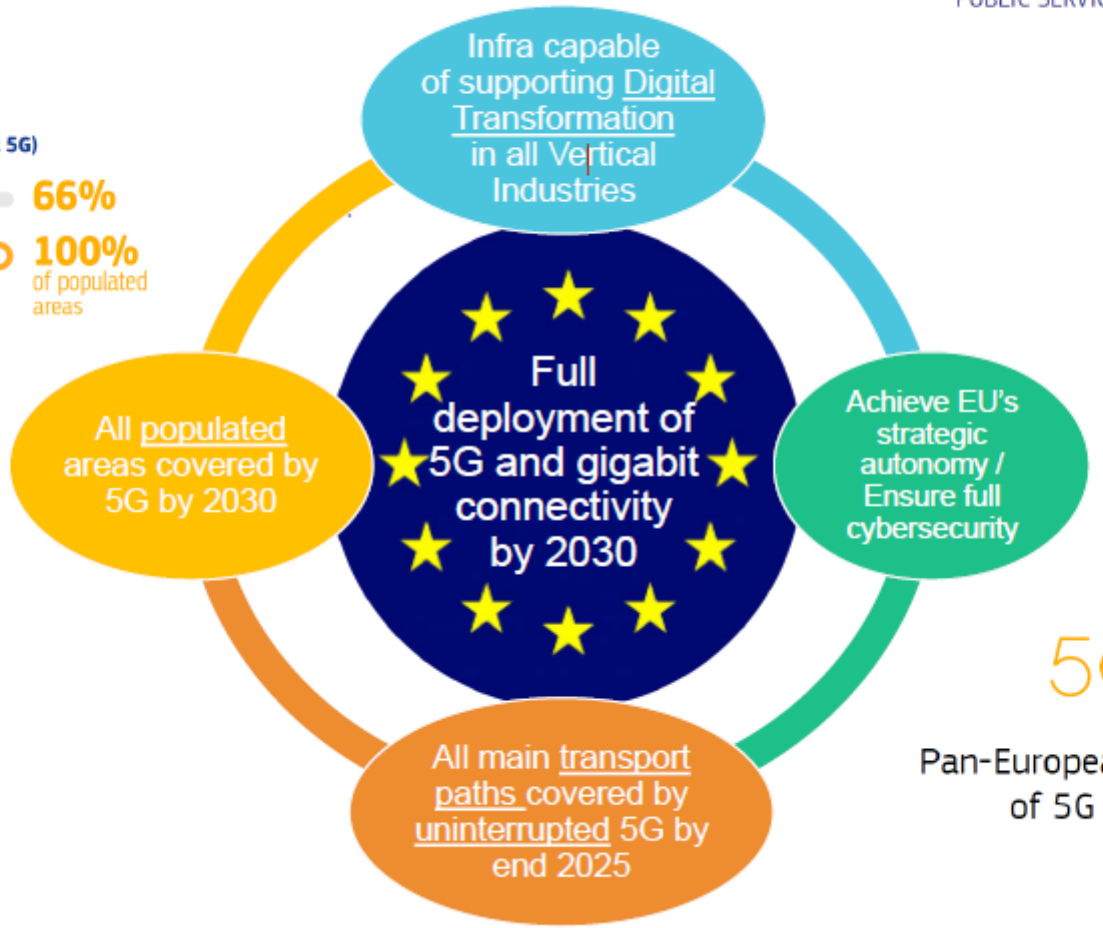
Collaboration and Partnerships : Our response to the magnitude of the challenges

Connectivity in the Digital Decade

High-speed mobile coverage (at least 5G)

NOW — **66%**

TARGET — **100%** of populated areas



5G

Pan-European deployment of 5G corridors

Cybersecurity and Economic Security

EU toolbox for 5G security (Jan '20)

Criteria and security measures to

- maintain a diverse and sustainable 5G supply chain
- further strengthen EU capacities in 5G and post-5G technologies by using relevant EU programmes
- identify high-risk suppliers

Commission Communication on the implementation of the toolbox (June '23)

- assessment of the criteria of the toolbox
- clear risk of persisting dependency on high-risk suppliers with potentially serious impacts across the EU and the EU's critical infrastructure
- the Commission is strongly concerned by the risks posed by certain suppliers of mobile network equipment to the security of the Union

European Economic Security Strategy (June '23)

Joint Communication from the European Commission and the High Representative

- risks to the resilience of supply chains
- risks to physical and cyber security of critical infrastructure
- risks related to technology security and technology leakage
- risks of weaponisation of economic dependencies or economic coercion

6G SNS


6G SNS IA
www.6G-IA.eu
The VOICE of EUROPEAN INDUSTRY for the DEVELOPMENT and EVOLUTION of 5G&6G
5G PPP
PUBLIC-PRIVATE PARTNERSHIP
6GSNS
The 5G PPP is co-funded by the Horizon 2020 programme of the European Union

Smart Networks & Services Proposal

6G networks, new applications and end devices

5G IA INFRASTRUCTURE ASSOCIATION

Alliance for Internet of Things Innovation

CISPE.cloud

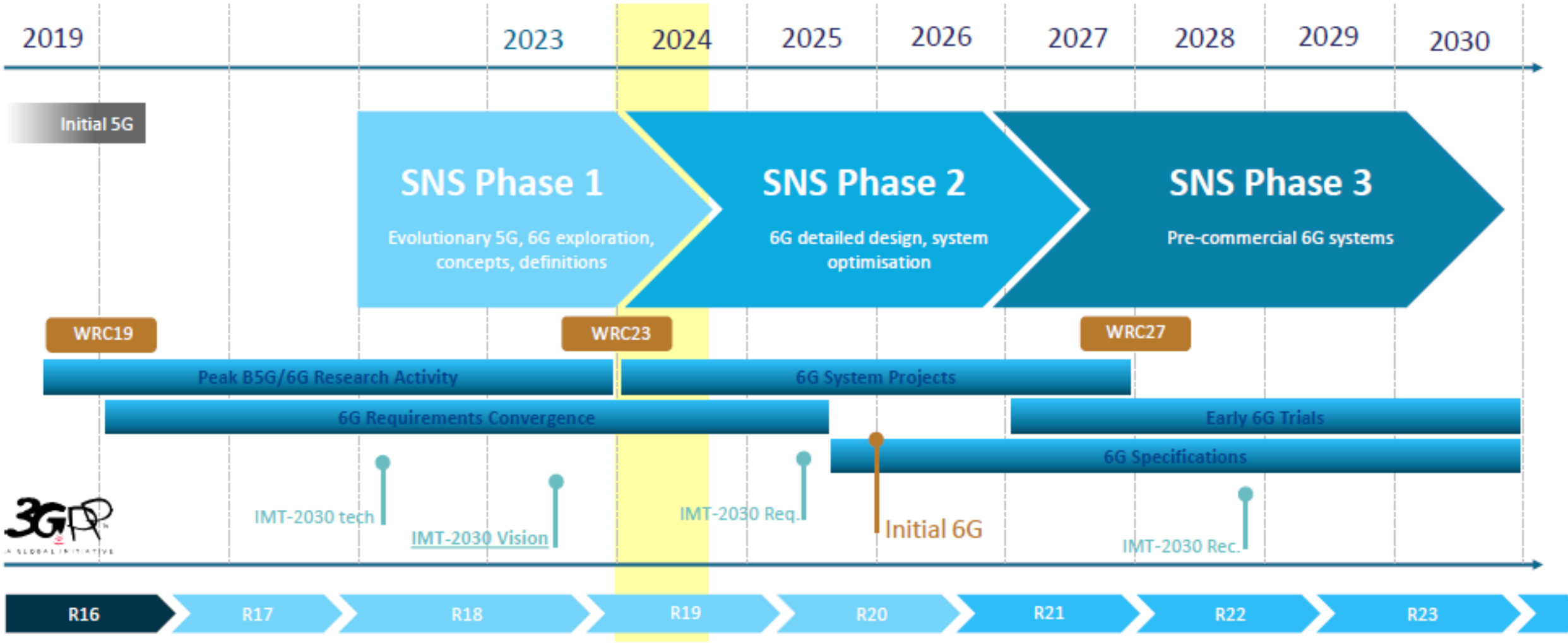
2020 NETWORLD

NESSI

Proposal supported by more than 1.000 organisations: Industry, SMEs, R&D centers and Universities)

900 M€ public funding
+
900 M€ private funding

SNS phased approach: where we are



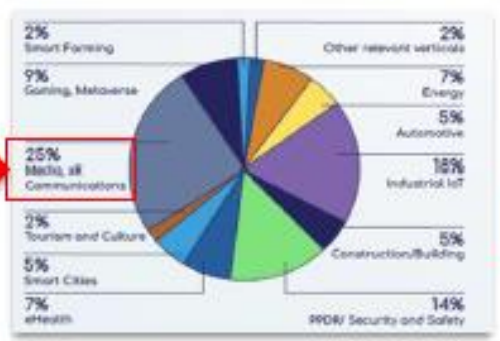
SNS Portfolio

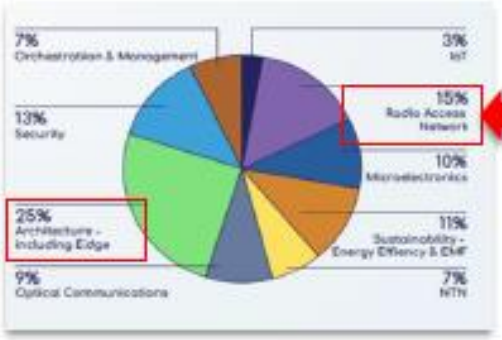
1st Call of projects (Q1-2023)

35 projects
288 beneficiaries
SMEs 18%

250 Million €

Project portfolio

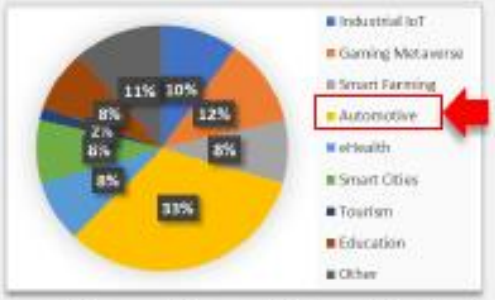




2nd Call of projects (Q1-2024)

28 projects
222 beneficiaries
SMEs 26%

132 Million €



3rd Call of projects (Q1-2025)

16 projects
TBC

129 Million €

Working for the Work Programme

- SRG
- SNS Stakeholder group
- Related Partnerships
- National Initiatives
- Vertical Stakeholders
- International Activity
- Standardization bodies

Multiple Levels of Collaboration, Coordination and Consultation

- Networld Europe SRIA
- Consultation with members and supporting associations

SNS Work Programme

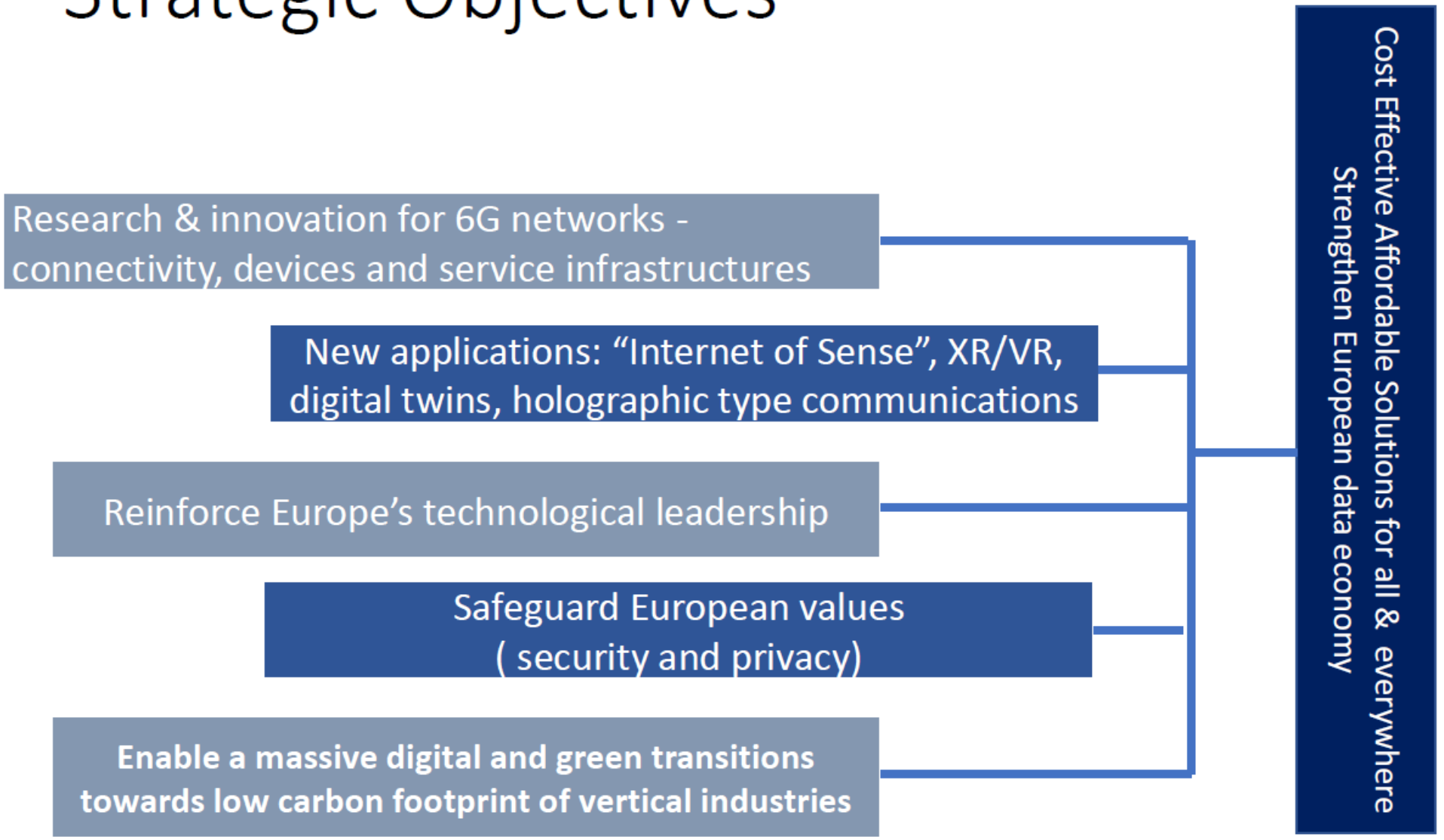
6GSNS

Work Programme 2024

- Prioritized list of Networld Europe SRIA topics
- Results from consultations, feedback
- Analysis of past calls
- Cross check against policy and industry priorities

SNS Work Groups

SNS – Strategic Objectives



NetWorld 2020

Sep 2020

Strategic Research and Innovation Agenda 2021-27

European Technology Platform NetWorld2020

"Smart Networks in the context of NGI"

2020

5G IA

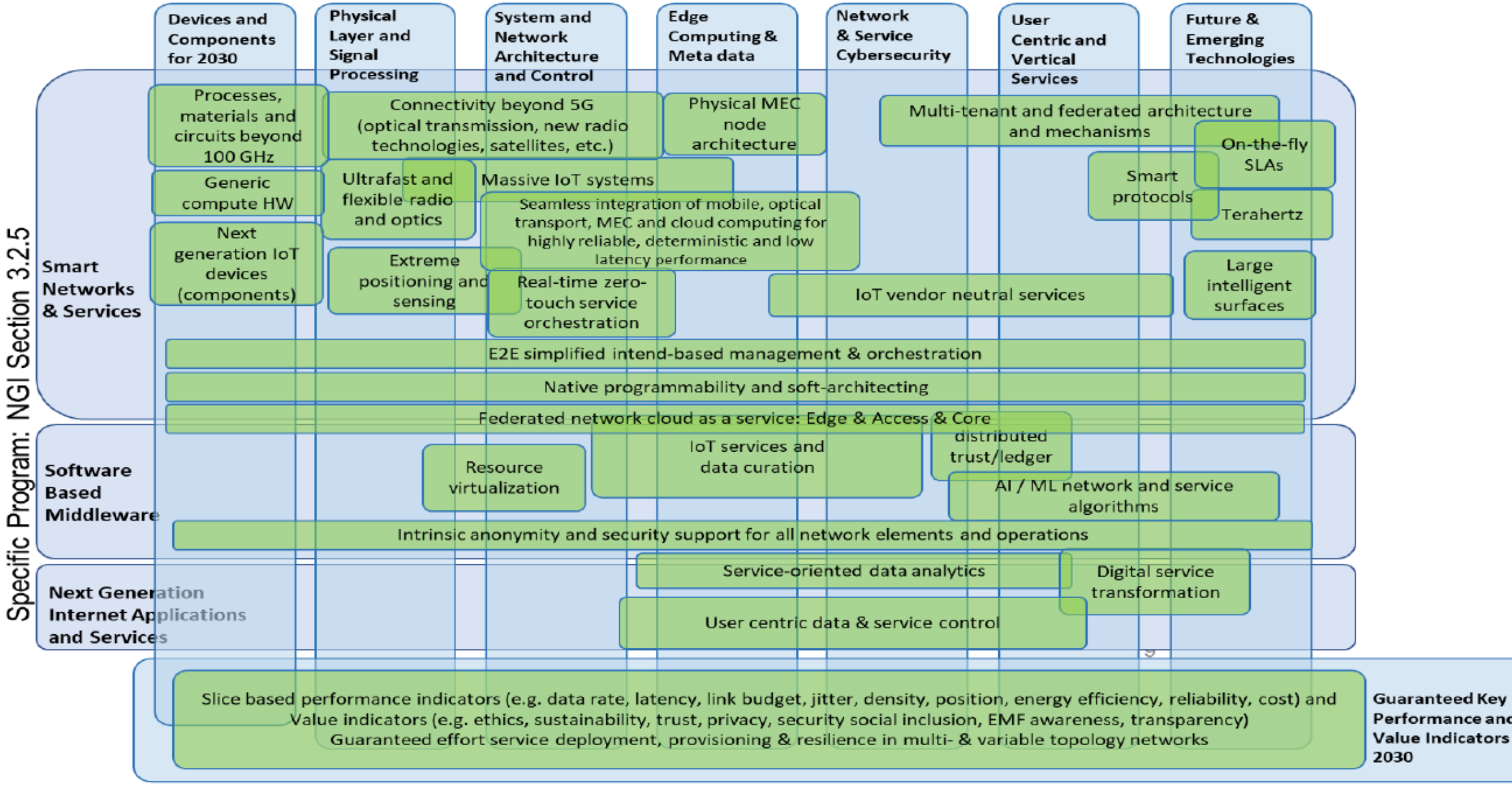
The 5G Infrastructure Association

European Vision for the 6G Network Ecosystem

Date:	2021-06-07		Version:	1.0

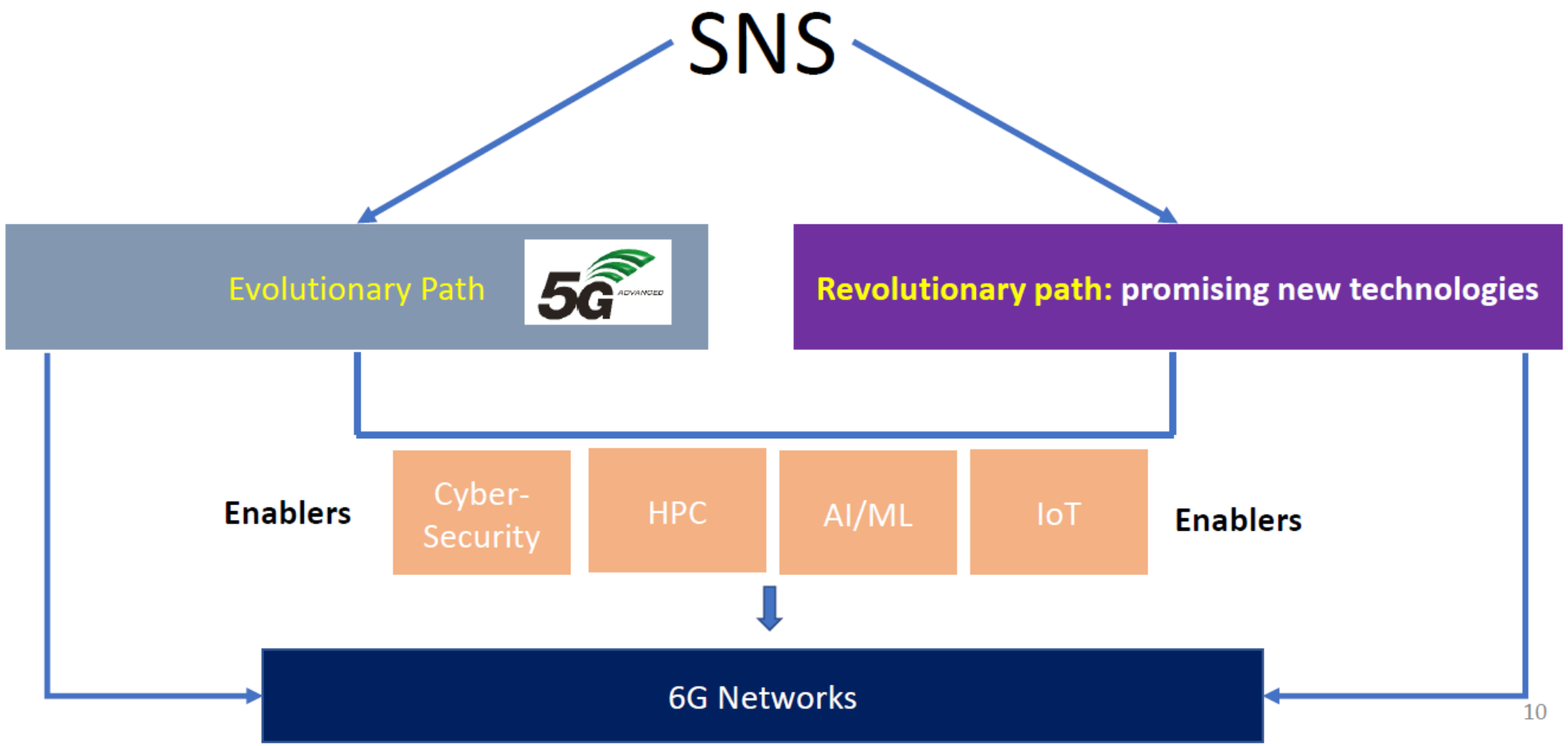
DOI: 10.5281/zenodo.5007671

Research Areas



The SNS framework

SNS Goals: Increased Network Performance, Energy Efficiency, Serve EU policies, address KVIs, strengthen EU's position, stimulate new business ecosystems, …



Public & Private contributions

- EU upfront commitment of €900M between 2021-2017
- 6G-IA commitment to match the amount from
  - In-kind contributions to Operational Activities (IKOP)
  - In-kind contributions to Additional Activities (IKAA)
- 6G-IA 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, Research Centers and Universities
  - Need for sufficient membership -> **beneficiaries receiving significant EU funding expected to become member of the association**

Key information

- Objectives
  - **HEU Key Strategic Objective A:** *"Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations."*
  - **HEU Key Strategic Objective C:** *"Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems."*
  - **Foster Europe's technological leadership** in digital technologies and in future emerging enabling technologies

Key information

- Broader scope than simply improving the network performance
- Bring new service capabilities with wider economic implications (e.g., Internet of senses, digital twins, immersive environments, holographic communications)
- Target several EU policies (e.g., Green deal, cyber security, etc.)
- Consider a full value chain approach from end-devices to cloud solutions and services
- Consider requirements and advancements in various related technological fields (e.g., AI/ML, HPC, micro-electronics, photonics, IoT, blockchain technologies)

Structure

5G Evolution (40%) → **evolutionary path**

Stream A (17,5% - RIA): Smart communication components, systems and networks for 5G mid-term Evolution systems

Stream D (~20% - IA): Large Scale SNS Trials and Pilots with Verticals

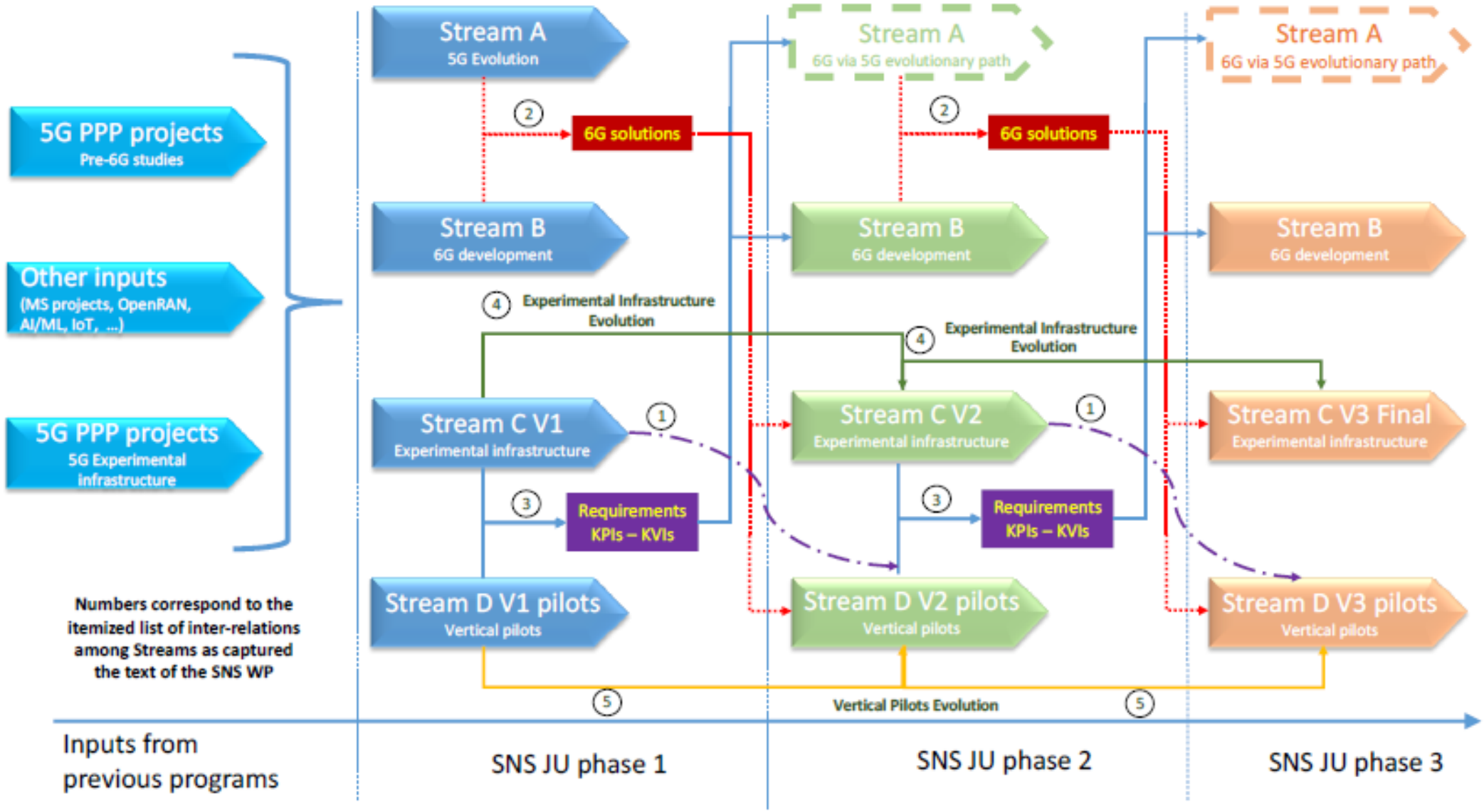
6G (60%) → **revolutionary path**

Stream B (~50% - RIA): Research for revolutionary technology advancement towards 6G

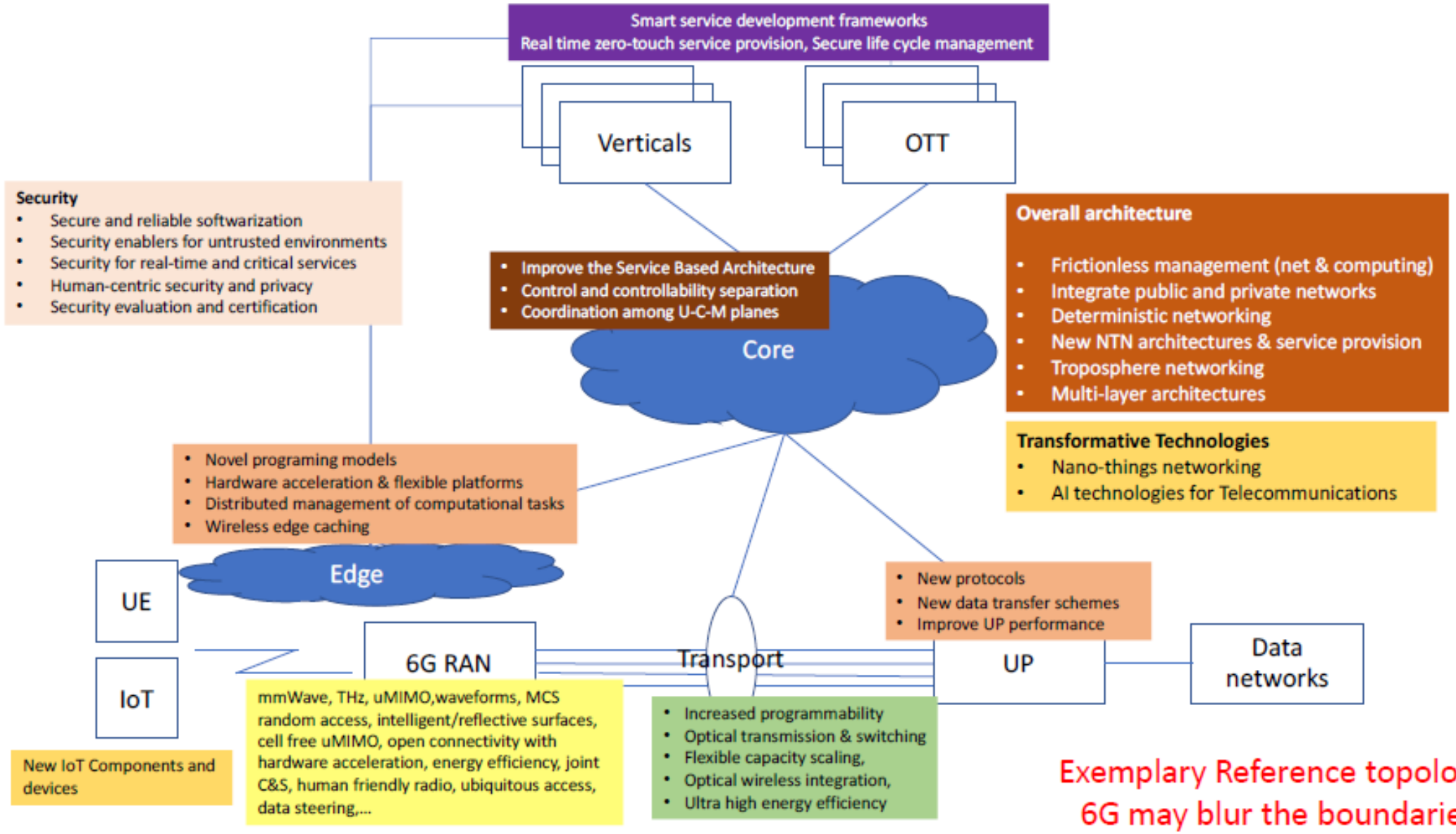
Stream C (~10% - RIA): SNS experimental infrastructures

CSAs – 2%

SNS R&I WP: Linking between Streams and Phases



A high-level view



Exemplary Reference topology domain – 6G may blur the boundaries between network domains

6GSNS | 2024 R&I Work Program – What is new?

129 MM €

- **Higher TRL**
  More focus on 6G standardization
  Proof of Concepts
- **International Collaboration**
- **Lighthouse projects**
  (Sustainability, Microelectronics)
- **Artificial Intelligence (AI)**
- **Synergy with EU-Rail JU**
- **Trials with Verticals**
  sustainability focus

SNS R&I Work Programme 2024
Top level priorities

1. Stream B: Continuity from 2022 and 2023
2. Stream B: Target higher TRL, PoC, Impact in Standardization
3. Sustainability Lighthouse in Stream B and main expected outcome in Stream D
4. Microelectronics Lighthouse
5. Reliable AI for 6G
6. International Collaboration (Japan, ROK)
7. Synergy with EU Rail

6GSNS | Topics at a glance

Streams / Topics	Call 2024 Topic Budget (in M€)
HORIZON-JU-SNS-2024-STREAM-B (RIA)	
01-01: System Architecture	16.0
01-02: Wireless Communication Technologies and Signal Processing	16.0
01-03: Communication Infrastructure Technologies and Devices	16.0
01-04: Reliable Services and Smart Security	16.0
01-05: International Collaboration – EU-JP	3.0
01-06: International Collaboration – EU-ROK	3.0
01-07: Sustainability Lighthouse	13.0
01-08: Reliable AI for Reliable Communications Systems and Services	6.0
HORIZON-JU-SNS-2024-STREAM-C (RIA)	
01-01: SNS Microelectronics Lighthouse	10.0
HORIZON-JU-SNS-2024-STREAM-D (IA)	
01-01: SNS Large Scale Trials and Pilots (LST&Ps) with Verticals (IA)	25.0
HORIZON-JU-SNS-2024-STREAM-CSA (CSA)	
01-01: SNS Operations and Output optimisation	4.0
HORIZON-ER-JU-2024-FA2-SNS	
EU-RAIL – SNS SYNERGY: Digital & Automated testing and operational validation of the next EU rail communication system	1.0
Total (M€)	129

Funding rate:

RIA & CSA:

- 100% for non-for-profit organisations,
- 90% for profit organisations,

IA:

- 100% for non-for-profit organisations,
- 70% for profit organisations

To be implemented by EU-Rail JU, Call opening on 25th January

For RIAs/CSAs the maximum funding rate in the budget table is set to 100%. We kindly ask all for-profit organizations to make a manual calculation and request only 90% of the budget.

SNS R&I WP2024

Stream B (6G Technological advancements)

System Architecture
(2 projects)

select one or more of these issues

- **New design approaches for 6G system architecture systems**
- **Native and trustworthy integration of AI for telecommunications**
- **Network exposure to vertical application developers**
- **New Data Transfer Paradigms**
- **Digital network twinning for 6G**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

Wireless Communication and Signal Processing
(2 projects)

select one or more of these issues

- **Novel techniques for integrated sensing and communication**
- **Machine learning empowered physical layer evolutions**
- **Cell-free and extreme exploitation of MIMO technologies potentially including reconfigurable surfaces**
- **Key functionalities and technologies for 6G RAN system design**
- **Seamless integration of multiple frequency bands**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

Communication Infrastructure Technologies and Devices (2 projects)

select one or more of these issues

- **Ultra-high energy efficiency especially in optical networks**
- **3D networking for 6G networks**
- **Development of low-energy communication solutions**
- **New IoT components and devices**
- **Unified NTN service provision**
- **Integration of Optical and Wireless Technologies**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

select one or more of these issues

Reliable Services and Smart Security
(2 projects)

- **Exploitation of (distributed) trusted AI/ML for 6G infrastructures**
- **Cooperative holistic E2E security and privacy for 6G architectures**
- **Smart and trustworthy service frameworks**
- **Efficient security and privacy enablers**
- **Zero-touch integrated security deployment**
- **Integration of secured 6G communications via Quantum key distribution and post-quantum cryptography support**
- **Timing sensitive & responsive SW/HW techs for distributed, multi-stakeholder multi-system service provision.**

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

International Collaboration EU-JP
(1 project)

- AI-enabled radio access network (RAN) solutions including physical layer and signal processing technologies for 6G RAN such as distributed MIMO and user centric network, RIS implementations and AI-enabled integrated RAN/Core network functions
- Streamlined views on a) the use of AI and b) potential extensions on the radio interface
- Impactful contributions to standardization bodies are also in scope of this project

Applicants are invited to explain how EU-JP cooperation will be implemented

Activities are expected to achieve TRL 2-4 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

International Collaboration EU-ROK
(1 project)

- Algorithms for 6G RAN that improve transmission performance and reduce complexity in wireless transmission
- Procedures and protocols empowered by AI that improve efficiencies of the wireless communications through mobility management, wireless resource management, automated maintenance, and self-optimization of network parameters
- Streamlining of the use of AI, interfaces and mechanisms that are expected to be developed by mirror R&I activities in ROK where the focus could be on the devices' side

Applicants are invited to explain how EU-ROK cooperation will be implemented

Activities are expected to achieve TRL 2-4 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

Sustainability Lighthouse
(1 project)

- "Sustainable 6G" and "6G for Sustainability"
- Environmental Sustainability
- Societal Sustainability
- Economic Sustainability
- Reference sustainability scenarios and benchmarks
- Characterisation of sustainability KPI and KVI's, in view of their potential use at standardization level
- Validation of critical technologies for the sustainability solutions in experimental platforms and use case pilot

Activities are expected to achieve TRL 2-5 by the end of the project

SNS R&I WP2024

Stream B (6G Technological advancements)

Reliable AI for 6G Communication Systems and Services (1 project)

- Development of a reference framework for end-to-end AI usage
- Development of appropriate data infrastructure and functionalities (AI as a Service to vertical industries)
- Training, assessment, conflict resolution, vulnerability assessment, reliable and trustable AI lifecycle
- Production of data sets and validation methodologies
- Potential future links to future Stream C and Stream D projects
- Harmonization/coordination with other SNS projects and national initiatives

Start at TRL 2-3 and to reach TRL 4 by the end of the project, and if/where relevant up to maximum TRL 5 (mature 6G technologies and solutions for verticals). Parts of the project may only target TRL 3 by the end of the project

SNS R&I WP2024

Stream C (Experimental Infrastructures)

Microelectronics Lighthouse
(1 project)

select one or more of these issues

- Advanced baseband capabilities (open approaches, technologies for JCAS, HW platforms supporting virtualization, HW accelerators)
- Integration of the THz communications technology into a complete THz communication chain and demonstrator
- Address an E2E x-hauling demonstrator prototype with extended transmission reach at Sub-THz frequencies (>140GHz)
- Inclusion of microelectronics solutions in the transport domain or unified solutions with NTNs and support of the IoT-connectivity-service provision value chain

- Mainly focus on Radio Access Network computing and communication capabilities (potentially covering a wide spectrum e.g., from cmWave up to THz)
- Opportunity to create a bridge between the SNS JU and the Chips JU

Activities are expected to achieve TRL 6 by the end of the project

SNS R&I WP2024

Stream D (Large Scale Trials)

2 Projects – expecting results on sustainability

- Demonstration of clear benefits for stakeholders using advanced technologies
- Tangible results for environmental, societal and economic aspects
- Involvement of SMEs/scaleups/ startups is targeted in the projects
- Stream D projects should aim to take advantage from developed platforms and/or elements from the SNS Phase 1 Stream C projects, platforms developed in the context of national initiatives or any other solutions that integrate and offer preliminary 6G network solutions

Open to applicants to select from any already advanced 6G use cases that are in line with the 6G vision

Activities are expected to achieve TRL 5-7 by the end of the project

SNS R&I WP2024

Synergy between SNS JU and EU-RAIL

- The EU-Rail and Smart Networks and Services (SNS) Joint Undertakings, based on an identified synergy area, agreed to launch a call “HORIZON-ER-JU-2024-FA2-SNS: EU-RAIL – SNS SYNERGY: Digital & Automated testing and operational validation of the next EU rail communication system”, with a contribution of up to EUR 1 000 000 from the SNS JU budget.

- The selection criteria and the call conditions can be found in the EU-Rail JU Work Programme “Europe’s Rail Work Programme 2023-2024”.

https://rail-research.europa.eu/calendar/europes-rail-info-day-2024/

SNS R&I WP2024

Coordination and Support Action

CSA- 1 project

- Support the SNS promotion and communication, international cooperation & collaboration with Member State initiatives
- Stakeholder management towards R&I orientation and SNS cross-project coordination and cooperation
- Europe wide cartography of relevant initiatives
- SNS web site and program infrastructure (web sites, mail systems, repositories, etc.).
- Working group management
- Monitoring and communication with peer JU Partnerships and Vertical Associations
- Organisation, management and support of IAFAs
- EuCNC and 6G Summit organization and support

6GSNS | Introduction

IMPORTANT DATES

Call 3 Opening date: 16 January 2024

Proposal submission deadline: 18 April 2024 17:00:00 (Brussels local time)

MUST READ

R&I Work Programme 2024 approved on 23 November 2023, see:
SNS R&I WP 2024 - SNS JU (europa.eu)
Funding & tenders (europa.eu)
See in particular Appendix 1: Additional Conditions of the SNS 2024 Call, detailing all **SNS Call 3 specific conditions**

IMPORTANT BACKGROUND READING

FAQ's: regularly updated list of "Frequently Asked Questions", https://smart-networks.europa.eu/faq-3/

IKOP - In-Kind contributions to Operational Activities

Streams / Topics	Indicative IKOP level as % of project budget to reach the objective.
HORIZON-JU-SNS-2024-STREAM-B (RIA)	
01-01: System Architecture	2,6%
01-02: Wireless Communication Technologies and Signal Processing	
01-03: Communication Infrastructure Technologies and Devices	
01-04: Reliable Services and Smart Security	
01-05: International Collaboration – EU-JP	
01-06: International Collaboration – EU-ROK	
01-07: Sustainability Lighthouse	3,6%
01-08: Reliable AI for 6G Communications Systems and Services	
HORIZON-JU-SNS-2024-STREAM-C (RIA)	
01-01: SNS Microelectronics Lighthouse	3,6%
HORIZON-JU-SNS-2024-STREAM-D (IA)	
01-01: SNS Large Scale Trials and Pilots (LST&Ps) with Verticals (IA)	19,50%
HORIZON-JU-SNS-2024-STREAM-CSA (CSA)	
01-01: SNS Operations and Output optimisation	2,6%

IKOP target at Programme level: Minimum EUR 8 million (6%)

- **Not an eligibility criterion but an award criterion:** specific impact sub-criterion in Streams B, C and D
- IKOP level, **tool to break the ties** between equally marked proposals
- Applicants have to fill a **mandatory IKOP declaration table** in the Application Form Technical Description (Part B)
- Table considers past average participation per type of beneficiary (profit & not-for-profit members -or non-members- of 6G-IA)

Eligibility

Actions	Restriction
HORIZON-JU-SNS-2024-STREAM-B-01-07 & HORIZON-JU-SNS-2024-STREAM-B-01-08	At least **half of the budget** should be implemented by the SNS JU member (other than the Union) and their constituent or affiliated entities.
HORIZON-JU-SNS-2024-STREAM-C-01-01	At least **half of the budget** should be implemented by the SNS JU member (other than the Union) and their constituent or affiliated entities.
HORIZON-JU-SNS-2024-STREAM-D-01-01	At least **70% of the budget** should be implemented by the SNS JU member (other than the Union) and their constituent or affiliated entities.

- intended to support **IKOP generation and partners' long-term commitment** and collaboration with new players, communities & verticals
- Applicants have to fill the **mandatory table of compliance at proposal stage** in the Application Form Technical Description (Part B), **otherwise will be considered ineligible**
- **All other Topics are fully open (IKOP incentive applies)**

6GSNS | Support & Brokerage platform

- JU SNS FAQ - find the answers to most frequently asked questions on the JU SNS call.
- Funding & Tenders Portal FAQ – find the answers to most frequently asked questions on submission of proposals, evaluation and grant management.
- Research Enquiry Service – ask questions about any aspect of European research in general and the EU Research Framework Programmes in particular.
- National Contact Points (NCPs) – get guidance, practical information and assistance on participation in Horizon Europe. There are also NCPs in many non-EU and non-associated countries ('third-countries').
- CEN-CENELEC Research Helpdesk and ETSI Research Helpdesk – the European Standards Organisations advise you how to tackle standardisation in your project proposal.
- SNS Brokerage Platform - To assist everyone to find projects and participants, we are offering an online Brokerage service where you can present you profile and interests and/or present your project Ideas for potential participants to see. https://smart-networks.europa.eu/event/sns-ju-brokerage-event-jan-25-2024/
- For Newcomers in EU grants: For information about the "Registration of participants", refer to this presentation from the Central Validation Service or check this video.

Chips

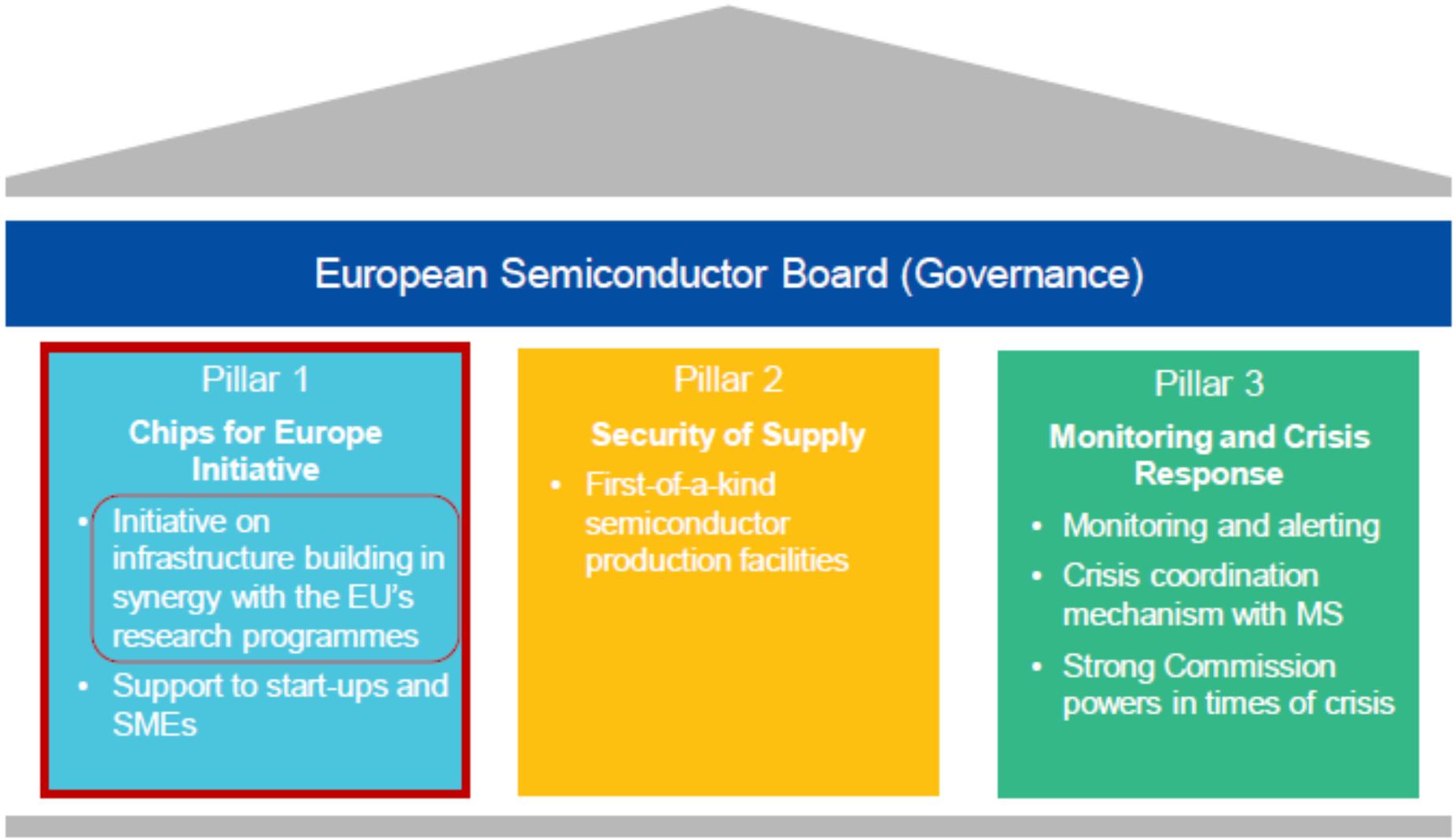
Joint Undertaking

https://www.chips-ju.europa.eu/

Welcome to the Chips JU

- The Chips JU is a **partnership under Horizon Europe** (2021-2027), implemented as a Joint Undertaking, which enlarges the preceding KDT JU with an extended scope and budget.
- **It is a tri-partite** public-private partnership between European Commission and Participating States as public members and the three Industry Associations AENEAS, EPoSS and INSIDE as private members.
- **It is made of 2 parts,** each operating with **yearly Calls:**
  1. **The Chips for Europe initiative,** as pillar 1 of the EU Chips Act (since 21 Sept 2023), deals with Pilot Lines, Design Platforms, Quantum chips, Competence Centers which will also be established through Calls.
  2. **The regular R&I** programme, industry-driven, is called **"non-initiative"** based on the ECS Strategic Research and Innovation Agenda, and may include Focus Topics, **in continuation of KDT**
- Selected projects receive funding from EC and Participating States.

THE 3 PILLARS OF THE CHIPS ACT



CHIPS JU AND ITS PREDECESSOR KEY DIGITAL TECHNOLOGIES JU (KDT JU)

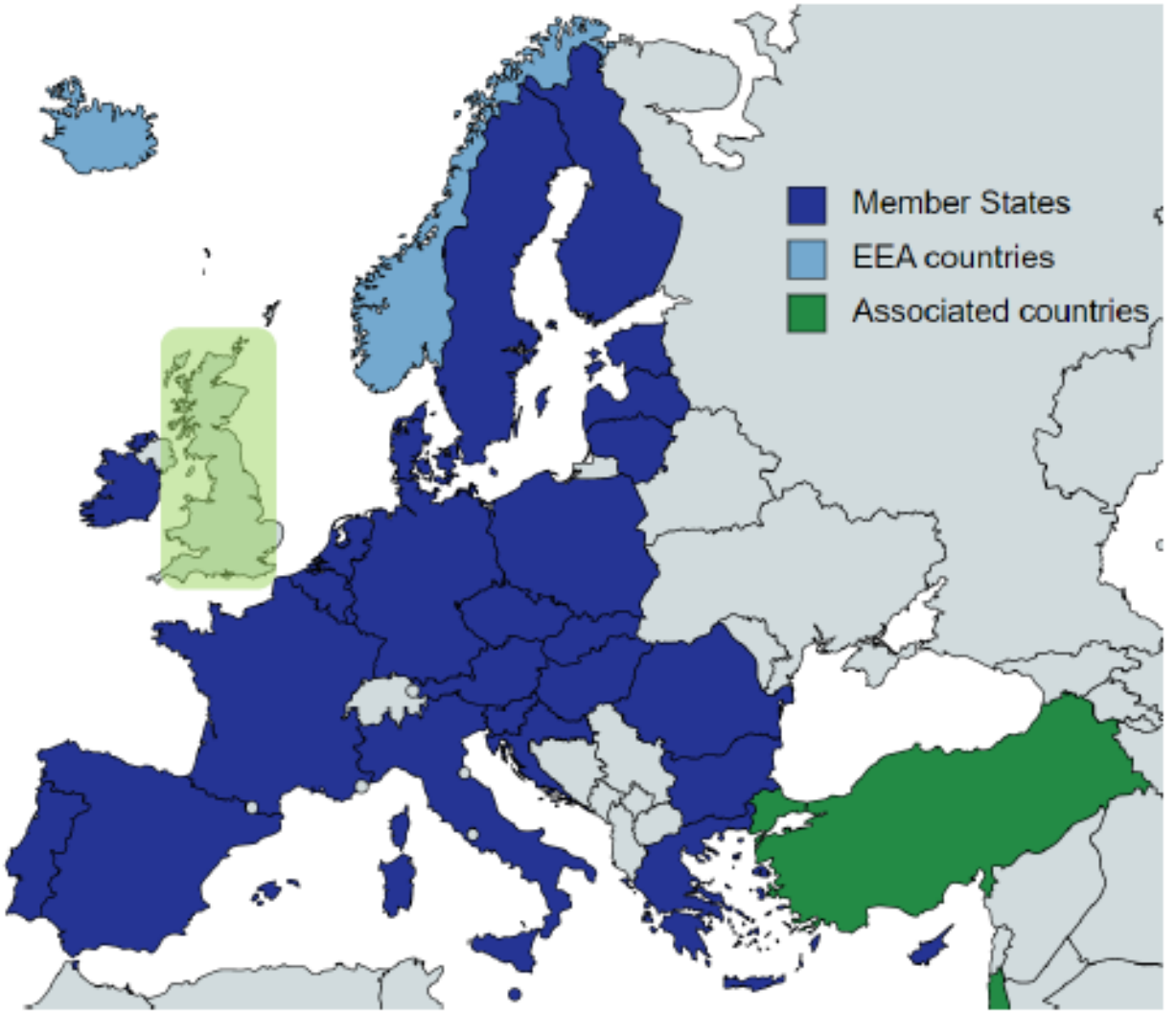
Non-initiative

- **KDT General Objectives**
  - a) Reinforce EU strategic autonomy in electronic components and systems
  - b) Establish EU scientific excellence and innovation leadership
  - c) Ensure that components and systems technologies address Europe's societal and environmental challenges
- **From KDT to Chips JU**
  - d) Pilot lines
  - e) Design platform
  - f) Competence centers
  - g) Quantum chips technology

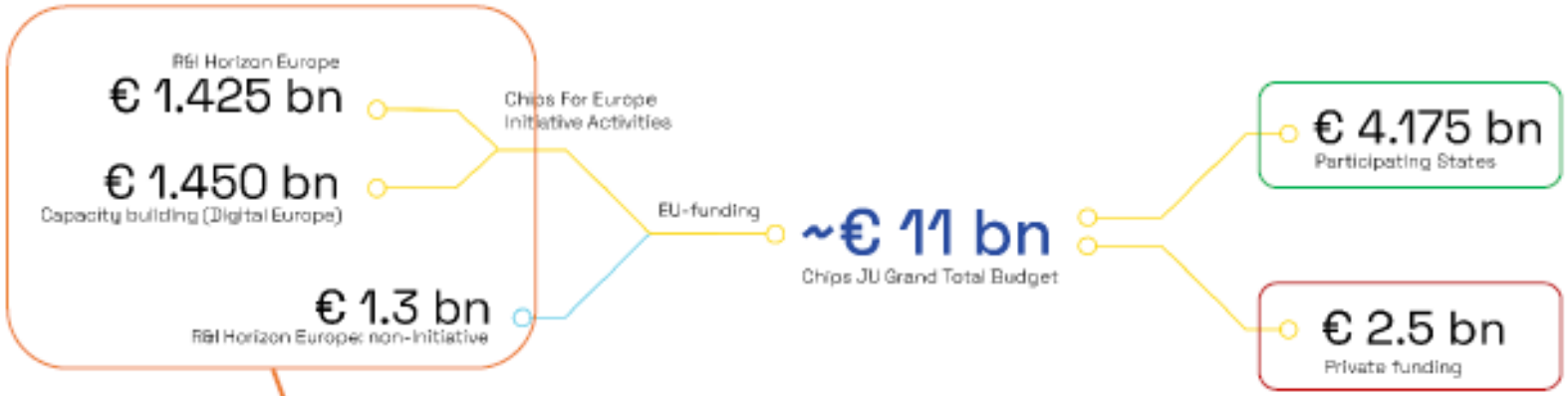
  Digital Europe Programme in addition to Horizon Europe

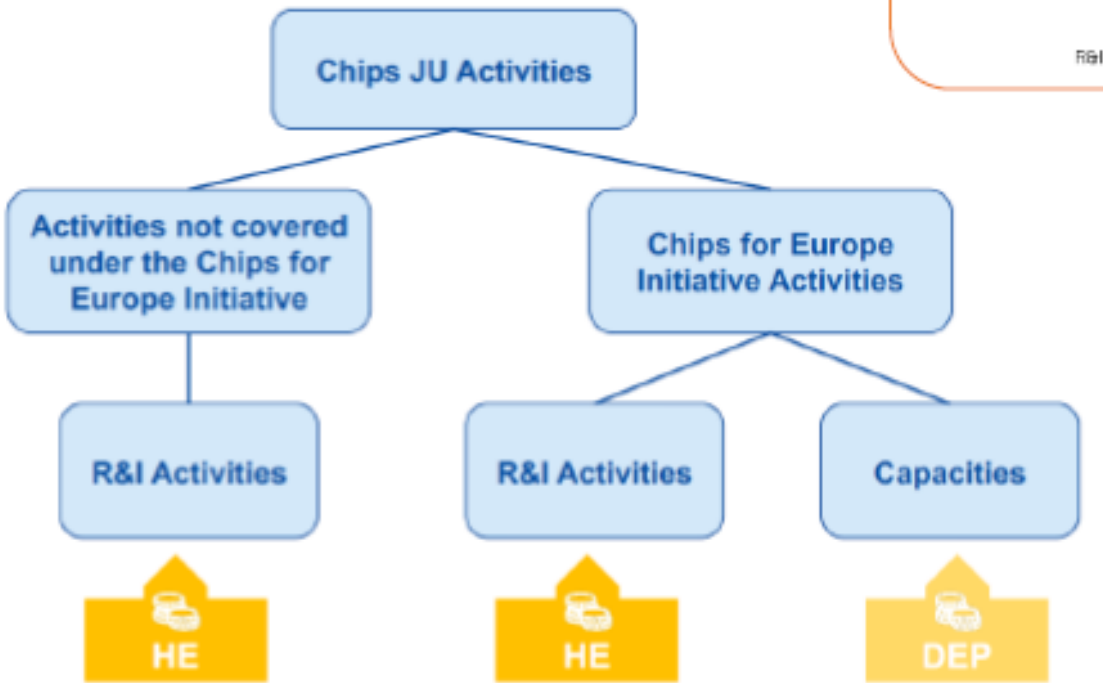
Initiative

- **Disclaimed:** ***we know that the WP2023-2027 will need to be updated/amended in the spring and some details on the following pages may change:***
  https://www.chips-ju.europa.eu/Library/
- How to participate:
  https://www.chips-ju.europa.eu/Participate/



CHIPS JU

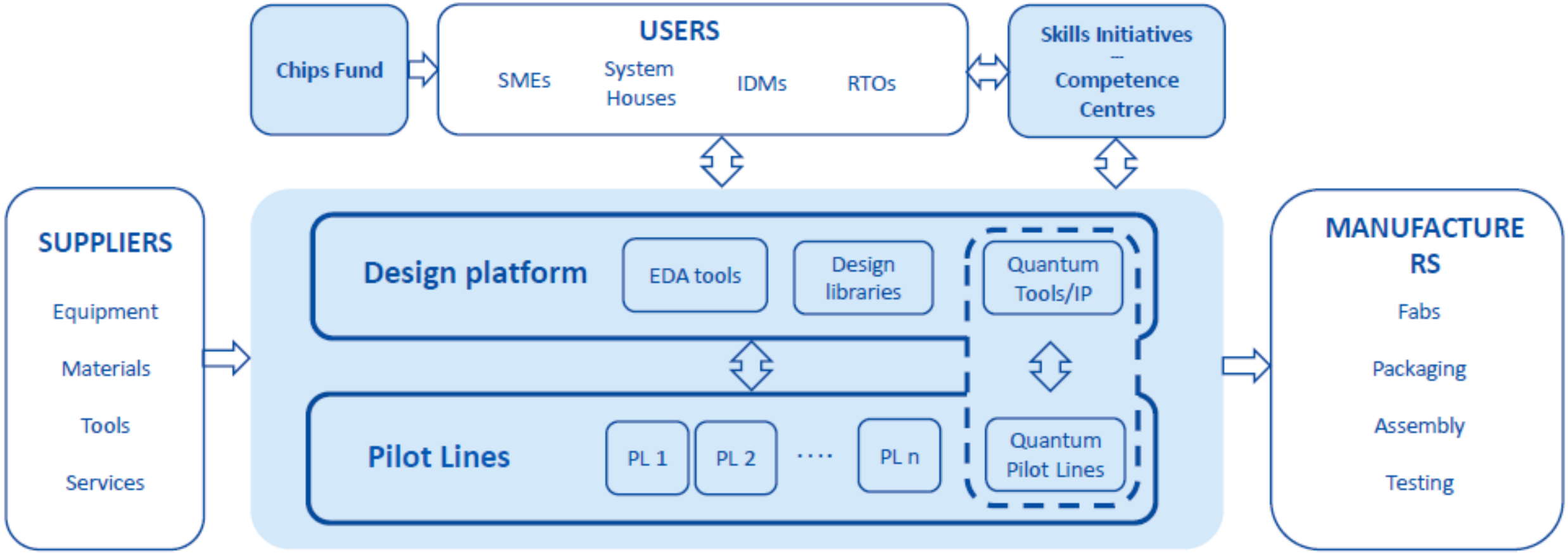




EU Contribution to Chips JU (excl	Chips for Europe Initiative	Non-Initiative	Total
R&I (Horizon Europe)	1.425	1.300	2.725
Cap building (DEP)	1.450	n.a.	1.450
Total	**2.875**	**1.300**	**4.175**

Chips for Europe Initiative

Bridging the gap from lab to fab



European Commission

State of Play

Chips JU

Implementing vehicle of the Chips for Europe Initiative

First calls on **pilot lines** launched on 1st December. For ~ EUR 3.3 billion

EUR 5.75 billion [EU + MSs] investment in infrastructures expected by 2027

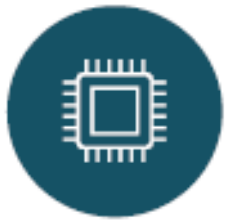
European Commission

Chips for Europe Initiative – current status (I)

Pilot lines

FD-SOI scaling towards 7nm

Leading-edge nodes below 2nm



Heterogeneous systems integration and assembly

Wide-bandgap semiconductors

Calls launched **1st December 2023.**

European Commission

Chips for Europe Initiative – current status (II)

Design platform

Main objectives

- **Reduce entry barriers** and admin burden for EU companies in design
- **Facilitate access** to pilot lines and foundries
- Foster **collaboration** among EU stakeholders on new developments

Instrument

ning and support to boost design skills

Develop a **virtual design platform,** offering **cloud-based** access to tools, libraries and support services to accelerate development and reduce time-to-market

European Commission

Chips for Europe Initiative – current status (III)
Competence centres

EU support for at least one centre per Member State

Co-investment with Member States and Regions

Supporting industry and public services

Access to design platform and pilot lines

Focus on Semiconductors Skills

A strong European network of Competence Centres

Chips for Europe Initiative – current status (IV)
Chips Fund

- **European Innovation Council** of Horizon Europe - promotes breakthrough innovation
- **EIC Accelerator** : support startups and SMEs to bridge the financing gap between R&D and market take-up
- Funding in the form of grants, equity and blended financing
- Thematic funding for semiconductor start-ups: **EU EUR 300 million** → ~EUR 900 million with partners

- **InvestEU** - Debt and equity programme to mobilise private and public investments in key areas through EU guarantees
- Implemented in partnership with EIB, EIF, financial institutions and promotional banks
- Funding available in the form of equity and debt products for R&I and production
- Thematic funding for semiconductor SMEs and scale-ups: **EU EUR 125 million** → ~EUR 1.25 billion with partners

A European economic security strategy (I)

Risk categories:

- **Technology security and technology leakage**
- Resilience of supply chains
- Critical infrastructure
- Weaponization of economic dependencies / economic coercion

COM recommendation on list of critical technology areas

Joint risk assessments with MS (by the end of 2023):

1. **Advanced semiconductor technologies**
2. Artificial intelligence technologies
3. Quantum technologies
4. Biotechnologies

CNECT & RTD

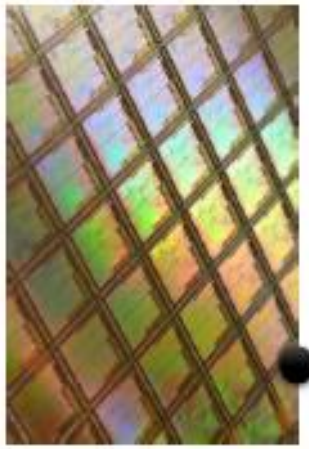
European Commission

A European economic security strategy (II)

- On 24 January, the Commission proposed **five concrete initiatives** to strengthen the EU's economic security
- The initiatives cover the following areas:
  - Improved **screening of foreign investment**
  - Enhanced European coordination in the area of **export controls**
  - Identification of potential risks stemming from **outbound investments** in a narrow set of technologies
  - How to better support **research and development involving technologies with dual-use potential**
  - Measures aimed at **enhancing research security at national and sector level**

The ECS SRIA - What and Why ?

- Collective work of experts across industry, RTO and academia
- Presenting research topics to be investigated over next 15 years
- To foster and accelerate our European digital transformation reflecting European values
- A tool to align and coordinate research policies across Europe
- Covering the whole ECS value chain



Materials, processes, semiconductors, micro & nano electronic components, …

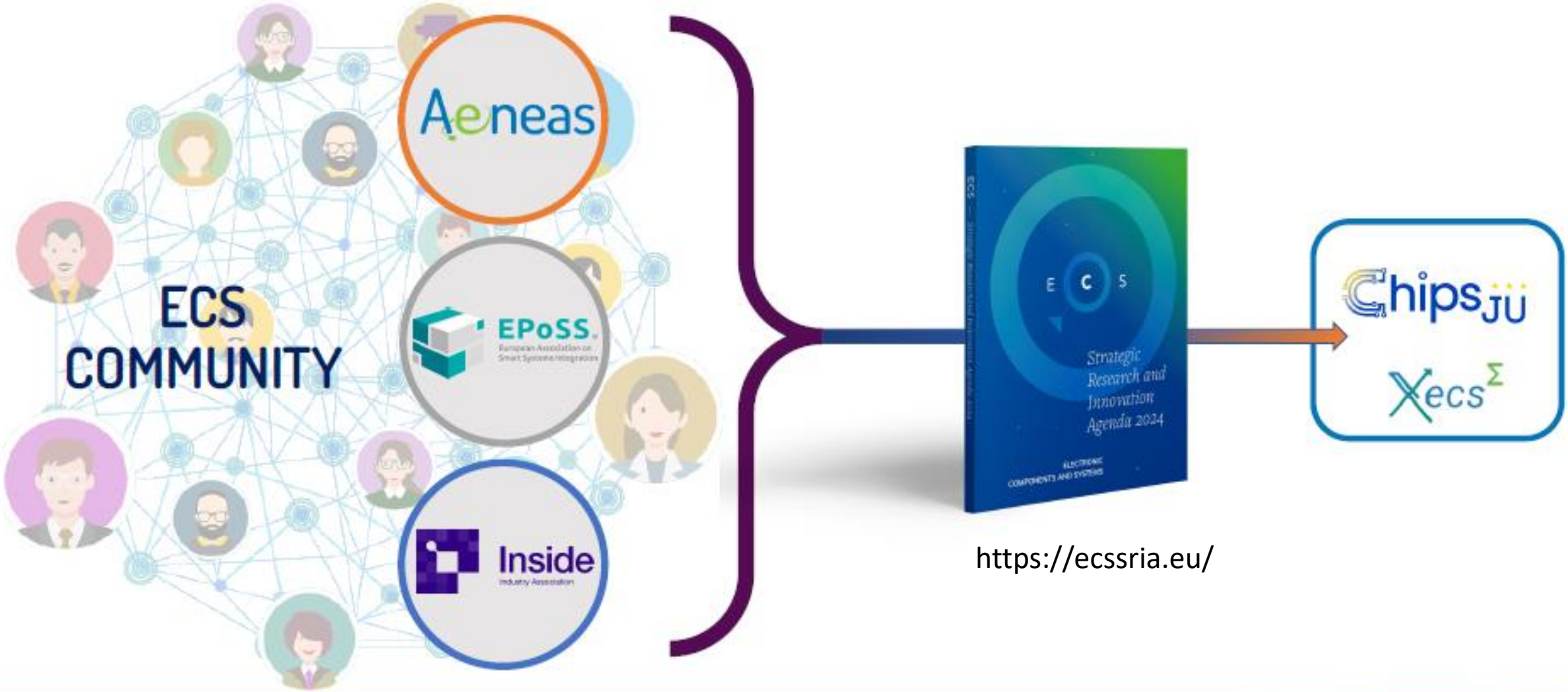
Smart sensors, integrated devices, edge AI, embedded SW, …

Systems and applications, value creation, societal goals, …

ECS engineering tools

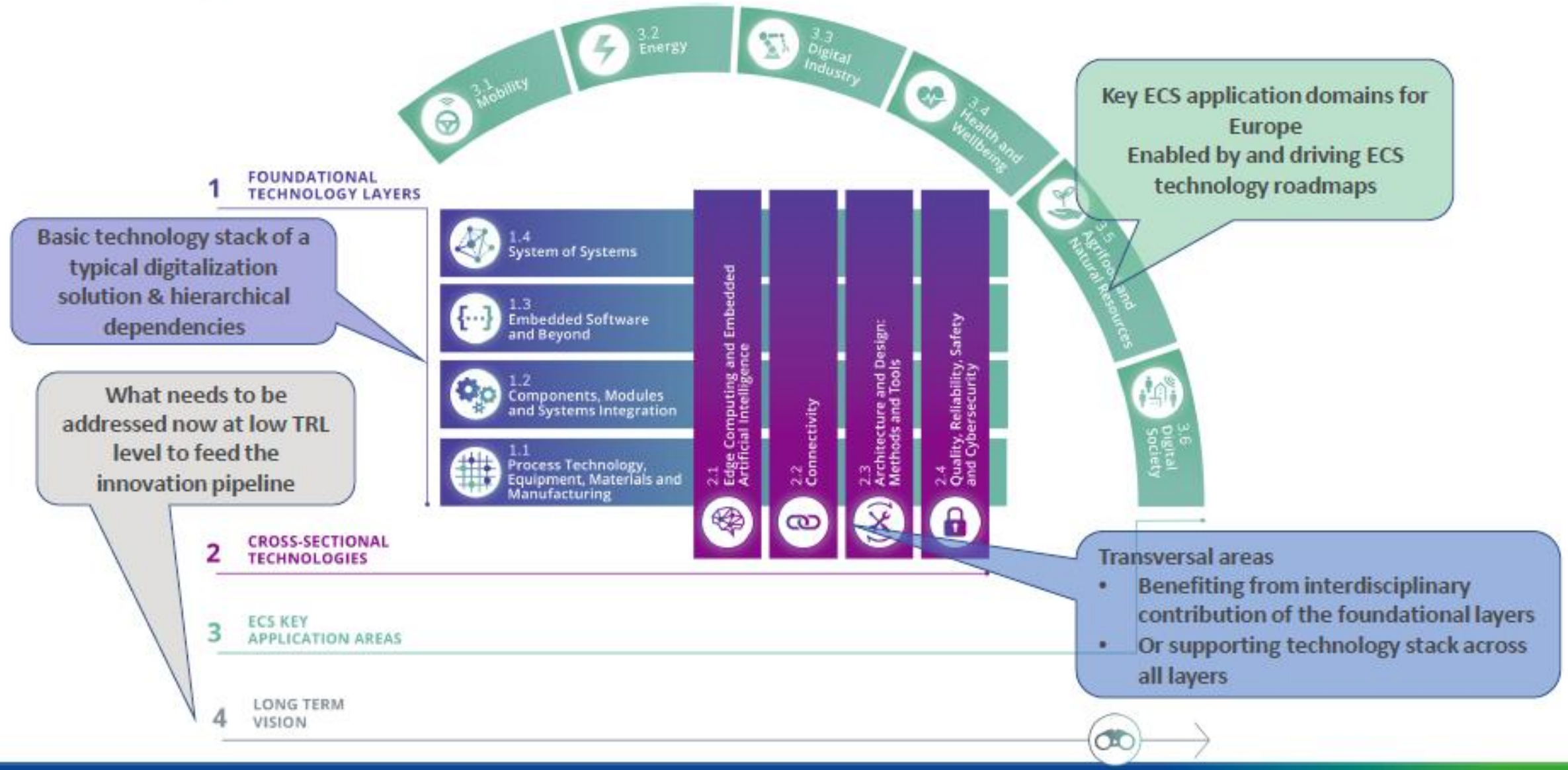
The ECS-SRIA 2024

Basis for the CHIPS JU 2024 Calls for R&I Activities



https://ecssria.eu/

ECS-SRIA structure



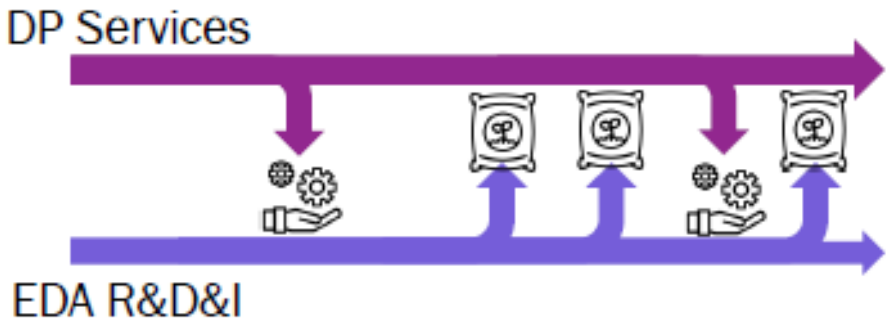
Link with Pilot Lines and the Design Platform

- Principles
  - SRIA is the industry expression of its R&I plans, and is funding instrument agnostic
  - The SRIA will not address how Pilot Lines and the Design Platform must be run
  - It can however identify research topics of interest for the industry where Pilot Lines and the Design Platforms can help
  - This will feed the research roadmaps of these mechanisms
- Main SRIA updates
  - New chapter 0 (Introduction) section
  - Updated Chapter 2.3 (Architecture and Design – Methods and Tools)

Updated Chapter 2.3
Adds-on regarding Design Platform

New

- Strategic advantage for the EU
  - DP expected to support technical enhancements and facilitate the development of ecosystems
- For each Major Challenge, addition of two aspects
  - R&I focus areas which could be supported by the design platform
  - Research feeding design platform evolution



Artificial Intelligence

- ECS as an enabler of AI
  - Meeting performance needs
  - New concepts and architectures mitigating AI-related energy consumption
    - Moving towards AI at the edge
    - In-memory computing
- AI as an enabler of ECS
  - AI-based methods for ECS architecture exploration and optimization
  - AI-based guidance in the V&V process
  - Automatic generation of test cases
- AI support to manage AI-induced complexity
- Trustable, responsible AI-based ECS

Quantum Technologies

- Joint workshops organized in 2023 between ECS SRIA chapter leaders and QuIC Working Group leaders
  - QuIC: European Quantum Industry Consortium
- Developments in several chapters on
  - Quantum sensing
  - Quantum computing
  - Quantum cryptography
  - Enabling ECS technologies

Sustainability

Enriched

- Can be found under many SRIA Chapters
  - Specific additions this year in chapters 1.2 and Long Term Vision
- Eco-Design of ECS to promote circularity
  - Set up repair process
- Sustainable manufacturing of ECS
  - Zero waste
  - Natural resource consumption reduction & reuse (power, water)
  - Reduce CO_2 and Green House Gas emissions
  - Handling the PFAS challenge
  - Critical raw materials use
- Sustainable products and business models
  - Repair index
  - Product categories
  - Repair as business

… and many other updates

- Tighter integration with RISC-V and Open Source HW
- Lidar, radar and camera integration
- Photonics integration
- Hardware virtualisation for efficient software engineering
- New frequency bands for 6G
- EDA research topics
- SoC for mobility
- Software-defined vehicle
- Revisiting the European health ecosystem
- Agriculture decarbonisation

Call Chips 2023: First calls opened in Dec. 2023

Call	Topic	Max EU Contribution	Participating States' contribution	Total
Chips-CPL-1	Pilot line on advanced sub 2nm leading-edge system on chip technology	700 MEUR	700 MEUR	1,400 MEUR
Chips-CPL-2	Pilot line on advanced Fully Depleted Silicon On Insulator technologies targeting 7nm	420 MEUR	420 MEUR	840 MEUR
Chips-CPL-3	Pilot line on advanced Packaging and Heterogenous Integration	370 MEUR	370 MEUR	740 MEUR
Chips-CPL-4	Pilot line on advanced semiconductor devices based on Wide Bandgap materials	180 MEUR	180 MEUR	360 MEUR

- Closing date February 29, 2024. Complex call starting with a Call for Expression of Interest leading to a Hosting Agreement and a Joint Procurement Agreement, and calls for related HE and DEP grants.
- Expected project start in 2Q 2024.

Call Chips 2024: Initiative part

Call	Topic	Max EU Contribution
Chips-2024-CDP-1	Design platform. A cloud-based virtual platform that will enable users, particularly academia, start-ups and SMEs, to design and develop their chips	330 MEUR
Chips-2024-CPL-5	Additional pilot line(s);	180 MEUR
Chips-2024-CQC-1	Quantum chips technology (preparatory action for a pilot line)	30 MEUR
Chips-2024-CCC-1	Competence centres. The centres are tol provide access to technical expertise and experimentation in the area of semiconductors, helping companies, SMEs in particular, to approach and improve design capabilities and developing skills. Max 1 per Participating State, funding up to 1 MEUR/yr from the EU for 4 years, to be matched nationally. Restricted call after national processes.	116 MEUR
Chips-2024-CCC-2	European Network of Chips Competence Centres (CSA)	4 MEUR

CHIPS JU NONE INITIATIVE CALLS 2024

Action	Title	Maximum JU Funding (M€)
HORIZON-Chips 2024-1-IA-T1	Global IA call according to SRIA 2024	103.00
HORIZON-Chips 2024-1-IA-T2	Focus topic on "High Performance RISC-V Automotive Processors supporting SDV"	20.00
HORIZON-Chips 2024-1-IA-T3	Focus topic on "Service Oriented Framework for the Software Defined Vehicle of the future"	20.00
HORIZON- Chips 2024-2-RIA-T1	Global RIA call according to SRIA 2023	52.00
HORIZON- Chips 2024-2-RIA-T2	Focus topic on "Sustainable and greener manufacturing"	15.00
HORIZON- Chips 2024-3-RIA	Joint call with Korea on Heterogeneous integration and neuromorphic computing technologies for future semiconductor components and systems	6.00
		216.00

Chips JU IA proposals

An IA proposal is characterized by:

- The activities have their centre of gravity at the **TRL 5-8.**
- Execution by **an industrial consortium** that may consist of large enterprises and SMEs but also including universities, institutes, public organizations
- Using **innovative technology**
- Establishment of a new and realistic innovation environment **connected with an industrial environment,** such as:
  - a pilot line facility capable of manufacturing
  - a zone of full-scale testing
  - a development of new processes or tools and their introduction in several domains
  - the development of frameworks or platforms together with the usage of these frameworks or platforms in innovative products.
- **Having a deployment plan** leading to short to **midterm economic value creation** in Europe.

Focus topic on High Performance RISC-V Automotive Processors Supporting SDV

- RISC-V still requires important extensions and add-ons in order to support *high-performance automotive quality processing* needs. To close this gap and facilitate the development of top-level automotive RISC-V processor cores, efforts should be focussed on the development of an **automotive RISC-V reference hardware platform, subject of this focus topic**.
- This **focus topic** concerns an **open-source RISC-V based hardware** system implementation of the **SDV Hardware Layer** compatible with one or multiple widely-agreed-upon **Hardware Abstraction Layers** of the vehicle of the future, **addressing the hardware development** part of an **overall system approach** for HW-SW co-design, more in particular **RISC-V based processor solutions** which are **optimized for SDV** implementations.
- The expected RISC-V reference platform shall be targeted for **commercial use** and should comply with **industry standards** with respect to quality and safety. It should contain all assets and collaterals needed to enable and accelerate the development and adoption of RISC-V cores throughout the European automotive ecosystem.

Focus topic on Software-define vehicle middleware and API framework for the vehicle of the future

- Europe needs to join forces in the automotive industrial domain by cooperating in an ecosystem-based technology initiative in order to lead on the Software Defined Vehicle technology and to capitalize on the expected gains on efficiency and development cost, complexity- reduction, and fulfilment of changing customer expectations.
- The SDV software stack (often also called Car OS) is extended by a **Middleware and Application Programming Interface (API) Framework** which supports different technologies. This framework abstracts the low-level technical details of the entire SDV SW stack towards the *SDV application layer*. It exposes the hardware functionalities directly as APIs or services also using a datacentric design in an OS independent, standardized & interoperable, safe, secure, efficient and easily accessible way.
- This call has a focus on the third layer, the *SDV Middleware and API Layer*.
  - ***Modular (open-source) building blocks and open architectures*** of the ***SDV middleware and API framework*** for the ***vehicle of the future***.
  - ***Holistic engineering framework***

Chips JU RIA proposals

A RIA proposal is characterized by:

- The activities have their centre of gravity at **TRL 3-4**.
- Execution by a consortium that may consist of SMEs, large enterprises, universities, institutes, public organizations;
- Developing **innovative technologies and/or using them in innovative ways**;
- Targeting **demonstration of the innovative approach** in a relevant product, service or capability, clearly addressing the applications relevant for societal challenges;
- Demonstrating **value and potential in a realistic lab environment** reproducing the targeted application;
- Having a **deployment plan showing the valorisation for the KDT ecosystem** and the contribution to the KDT goals and objectives.

Focus Topic Sustainable and Greener Manufacturing

- This focus topic concerns the development of a sustainable and greener semiconductor manufacturing through the reduction of its environmental footprint with a focus on materials. The results of the project are expected to contribute to the following outcomes:
  - Increase the use of environmentally friendly materials, chemicals and solvents.
  - Minimization of waste and emissions during production and processing
  - Prevention of a future scarcity of some critical materialsetals for SC processing through a more efficient and cost-effective products and electronic waste recycling in process., including chips and PCBs.

Joint call with Korea

- This joint call for proposals between the Republic of Korea and the EU dresses the topics related to Heterogeneous integration and neuromorphic computing technologies for future semiconductor components and systems and intends to set a framework
  - To strengthen the relation between R&I players in both jurisdictions
  - To undertake joint R&I for EU and Korean R&I teams by cooperating in pre-competitive projects on areas which are in the interest of both jurisdictions.
  - To build trust for further cooperation.
- This joint call topic will be co-funded by South Korea (KR) and the European Union (EU)
- This call has some very specific conditions. Please conslut the call text in the work programme

EU Funding Rates

Type of beneficiary	2024-1-IA	2024-1-IA Focus Topics	2024-2-RIA	2024-2-RIA Focus Topic	2024-3-IA
Large Enterprise	20 %	25 %	25 %	25 %	100%
SME	30 %	30 %	35 %	35 %	100%
University/Other (not for profit)	35 %	35 %	35 %	35 %	100%
National Funding	YES	YES	YES	YES	NO

Schedule

Calls 2024-1 and 2024-2	Two stage Call with submission of Project Outline (PO) and Full Proposal (FPP)
Publication date	06 February 2024
Deadline PO Phase	14 May 2024 at 17:00 Brussels Time
Deadline FPP Phase	17 September 2024 at 17:00 Brussels Time
PAB selection	November 2024
Grant preparation	December 2024 to April 2025
Start of the projects	around May 2025

For the Call2024-3, there is no PO phase only an FPP phase with e deadline on 14 May 2024

Kihirdették az NKFI Alap 2024-es Programstratégiáját

A Nemzeti Tudománypolitikai Tanács véleményének kikérését követően a Kulturális és Innovációs Minisztérium kihirdette a Nemzeti Kutatási, Fejlesztési és Innovációs Alap (NKFI Alap) 2024. évi Programstratégiáját.

TUDJON MEG TÖBBET

Horizon Europe finanszírozás Harmadik felek felhívásai (más néven Kaszkád támogatások)

Munkaprogram / felhívás → **Projekt** → **3. fél felhívása** → **Kaszkád támogatás**

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/competitive-calls

SNS cascading calls

- TARGET-X addresses use cases in 4 vertical areas (Manufacturing, Energy, Automotive, Construction), development of new devices/solutions, and other topics (funding up to: 60.000 €, deadline: 6 March).
- 6GBRICKS validate the capabilities, functionalities and performance of the 6G-BRICKS experimental facility in extended domains complementing internal Use Cases (funding up to: 60.000 € per partner/ 120.000 € per project, deadline: 29 February for feasibility, 22 March for submission).
- 6G XR for Stream B project to complement the 6G-XR experimental platforms and research infrastructures (funding up to: 60.000 € per project, deadline: 8 April for feasibility, 8 May for submission).
- 6G-Sandbox new infrastructures and functionalities (O1), innovative experiments (O2) (funding up to: O1: 60.000 € per partner/ 180.000 € per project, O2: 20,000€ + 10,000€, deadline: 15 February for feasibility, 29 February for submission).
- Imagine B5G (i) novel vertical applications and (ii) platform extensions (funding up to: 100.000/140.000 € per project, opening in March 2024).

Cloud-Edge-IoT cascading grants

- NebulOuS supports testing components of the NebulOuS architecture, by providing additional use cases where an IoT to Edge to Cloud infrastructure is needed (funding up to: 150.000 €, deadline: 17 April).
  Fluidos offers technology extension grants (TEG) for the integration of open source functionalities to the FLUIDOS platform and use case grants (USG) to test the FLUIDOS architecture and explore new sectors (funding up to: 75.000 € (TEG) /120.000 € (USG), deadline: 29 Feb).
- NEMO supports IoT developers to extend the NEMO use cases (https://meta-os.eu/index.php/pilots/) and implement innovative IoT apps and services that use heterogeneous IoT and NEMO components to offer new services (up to 90.000 €, submission start in June 2024)

ERA-NETs

- CHIST-ERA offers funding for collaborative research projects in 2 topics: Multidimensional Geographic Information Systems (MultiGIS) and Smart Contracts for Digital Transformation Ecosystems (SmartC). (funding: conditions differ per participating country/funding organisation, deadline: 12 April)

Other cascading calls

- DS4SSCC-DE the European Data Space for Smart Communities will open a call on 11 March for pilots for local public administrations other entities working with them (companies, academia, NGOs) addressing green deal sectors and New European Bauhaus domains (funding up to: 1.5 M€, deadline: 10 May)
- S+T+ARTS opened its 2024 grand prize honoring Innovation in Technology, Industry and Society stimulated by the Arts (prize: 20.000 €, deadline: 1 March).
- VOXReality will support the development of XR applications 200. 000 € anyagi és szakmai támogatást (funding up to: 200.000 €, publication & deadline: coming soon).
- Enfield project open call supports an exchange scheme for researchers to develop fundamental research in the areas of Adaptive, Green, Human-Centric, and Trustworthy AI systems (funding: 2.400 €/month mobility allowance, deadline: 31 March).
- HIGHFIVE supports sensors, data management and analysis in companies in the food value chain Cases (funding up to: 60.000 € per partner/ 120.000 € per project, deadline: 28 March).
- AI REDGIO 5.0 supports 3 topics: AI at the Edge applications and edge-to-cloud continuum, Industry 5.0 and human-centric, resilient and sustainable manufacturing, and Technology Regulatory Sandboxes experiments (funding up to: 60.000 €, deadline: 1 March).
- X2 open call for Data & A.I supports the growth of deeptech startups in cutting-edge areas including, but not limited to Generative Models, Quantum Computing in AI, Explainable AI (XAI), Machine Learning, Distributed and Federated Learning, Reinforcement Learning, Edge Computing, Natural Language Processing (NLP) and Language technologies, Computer Vision and IoT Integration (funding up to: 20.000 € + additional support, deadline: 4 March).

Other cascading calls

- StandICT.eu supports contributions to standardization activities (funding up to: 10.000 € + additional support, deadline: 4 March).
- INDUSAC supports short-term research collaborations between academia (students, researchers) and industry in solving company challenges (funding up to: 1.000 € per student/ 3.000 € per team, deadline: see cut-off dates in call)
- SPADE projects in the agriculture, forestry and livestock that will enhance the capabilities of drone technology and innovation use (funding up to: 60.000 €, deadline: 10 April).
- ICAEROS supports projects aiming to deliver and exploit drone related data sets for assessing technological and non-technical hypotheses (funding up to: 60.000 €, deadline: 7 May).
- ICOS supports technology providers (SME/midcap) working as service providers in the sectors of the ICOS pilot use cases (https://www.icos-project.eu/use-cases) and the projects from the 1st Open Call (up to 60.000 €, submission starts in June 2024)
- COMMUNICITY supports tech companies and providers, organisations, cities and their residents to develop innovative technical solutions to overcome digital, urban and social challenges (upcoming third call will open on the 10th of September 2024 and close on the 31st of October 2024)
- THCS supports the implementation of personalised prevention strategies in health and care services, also to make them person-centred and better adjusted to people's needs while supporting effective and appropriate use of existing IT and digital-based technologies supporting prevention strategies in health and care services (deadline for “Intent to apply” on the 16th of April 2024)

ERA-NETs

- CHIST-ERA offers funding for collaborative research projects in 2 topics: Multidimensional Geographic Information Systems (MultiGIS) and Smart Contracts for Digital Transformation Ecosystems (SmartC). (funding: conditions differ per participating country/funding organisation, deadline: 12 April)

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