THE KDT JU CALLS 2023 AND THE CHIPS ACT

CHALLENGES AND OPPORTUNITIES FOR ELECTRONIC AND PHOTONIC ECOSYSTEMS RESULTING FROM THE EU CHIPS ACT

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Acting Executive Director KDT JU
CEZAMAT, Warsaw 4 April 2023

KDT JU
KEY DIGITAL TECHNOLOGIES JOINT UNDERTAKING

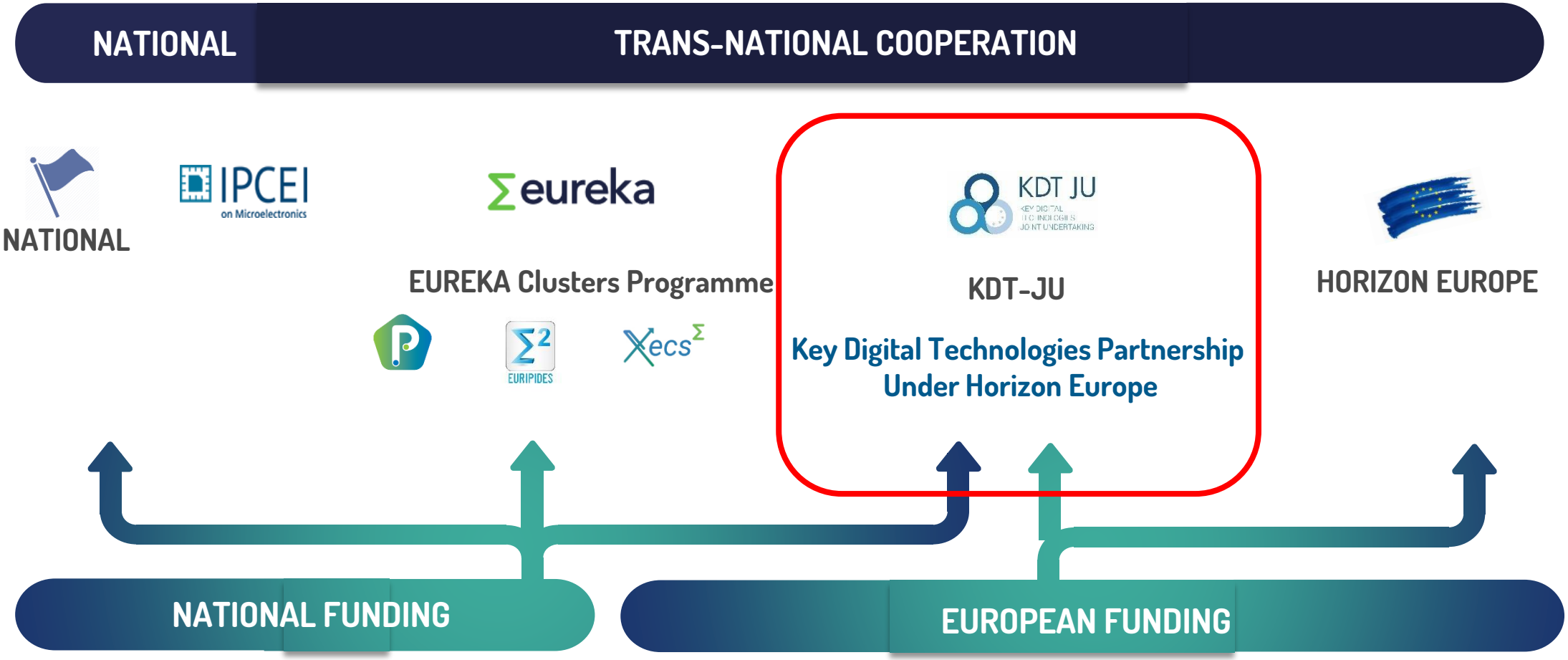
EUROPEAN PARTNERSHIP

CONTENT

- KDT JU (ECSEL JU)
  - what?
  - first calls
  - Polish participation in ECSEL and KDT
- Calls 2023
  - topics, focus topics
  - call rules
- Chip JU and the Chips act

WHAT IS THE KDT JU?

THE EU RD&I FUNDING LANDSCAPE FOR THE ECS INDUSTRY

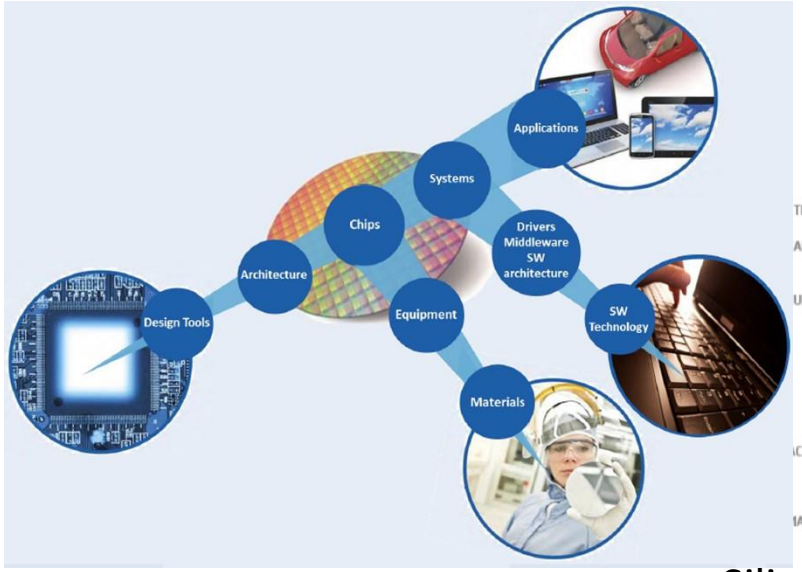


ECS2022
Create Impact by Collaborative Innovation!
For an autonomous and sustainable Europe
KDT JU ARE
PEOPLE, ORGANIZATIONS AND PROJECTS
BUT ALSO
PUBLIC AUTHORITIES
ASSOCIATIONS
EVENTS

KDT JU 2021-2027

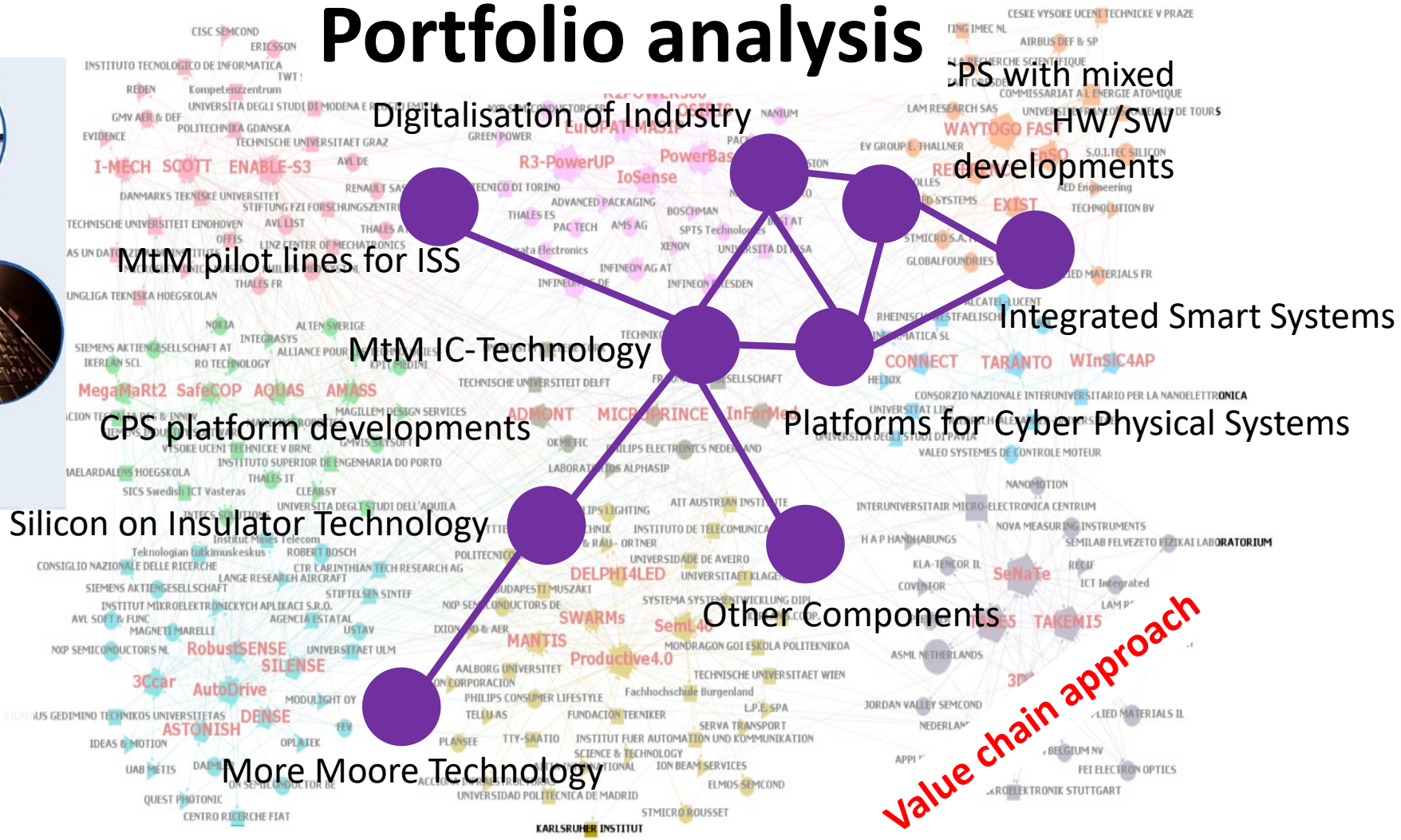
- **Third generation** JU (start 30/11/2021), predecessor was ECSEL JU
- KDT JU = **Key Digital Technology Joint Undertaking**
- **Tripartite**: Commission - Participating states – Industry associations
  - Promote synergies between commercial strategies and societal needs
  - Re-inforce/Align National strategies and European priorities
- **3 Associations**: AENEAS, INSIDE, EPoSS
- Budget ambition : 7.2B€ funded by 1,8 B€ (EU)+1,8 B€ (national)
- Based on **Horizon Europe**
- **Bottom-up** programme with **top-down** focus topics
- "**Value chain**" approach
- **Pilot lines** (higher TRLs)
- **Critical mass** approach
- focussed on **Industrial leadership**
- **Common agenda** of Europe's ECS community

NETWORKS OF PARTNERS AND PROJECTS

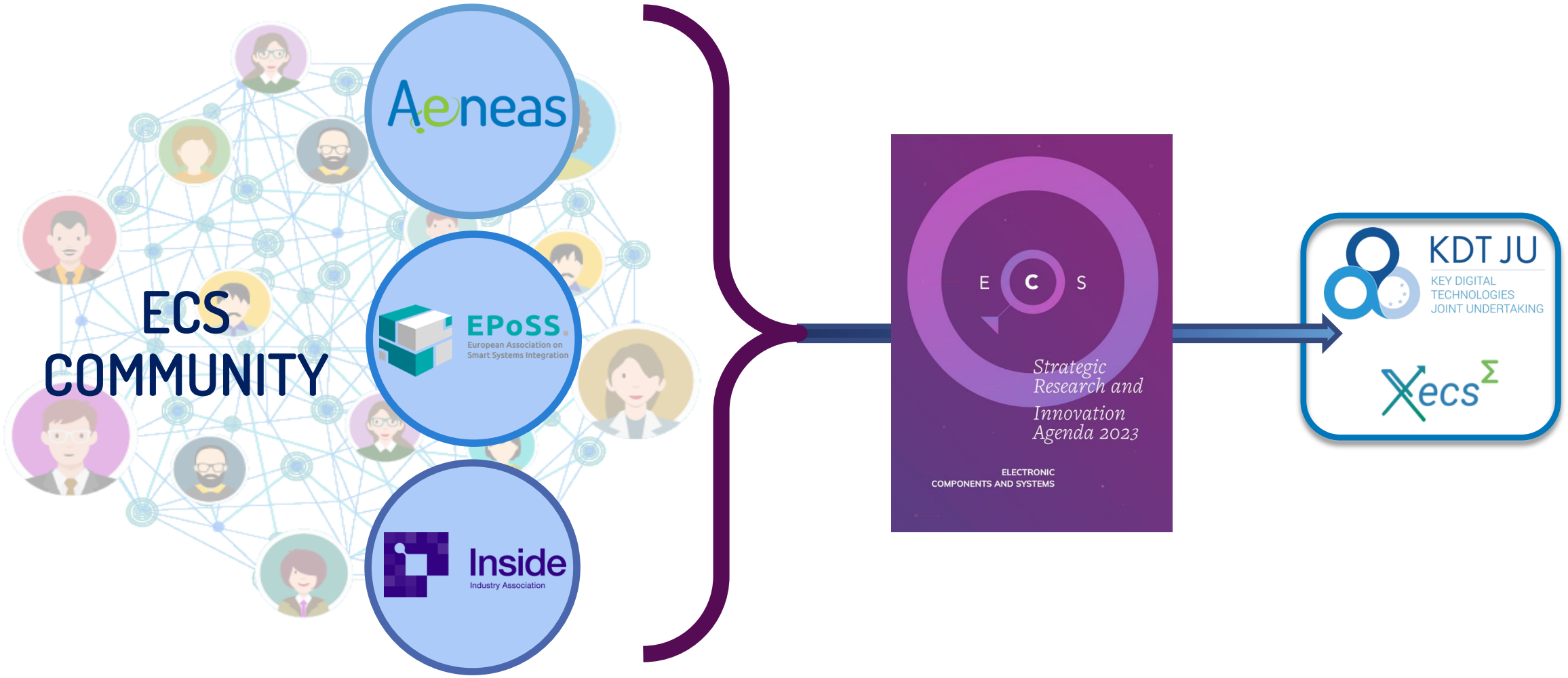


- Evolution and continuity in projects
- Evolution also visible in the interactions between clusters

Portfolio analysis

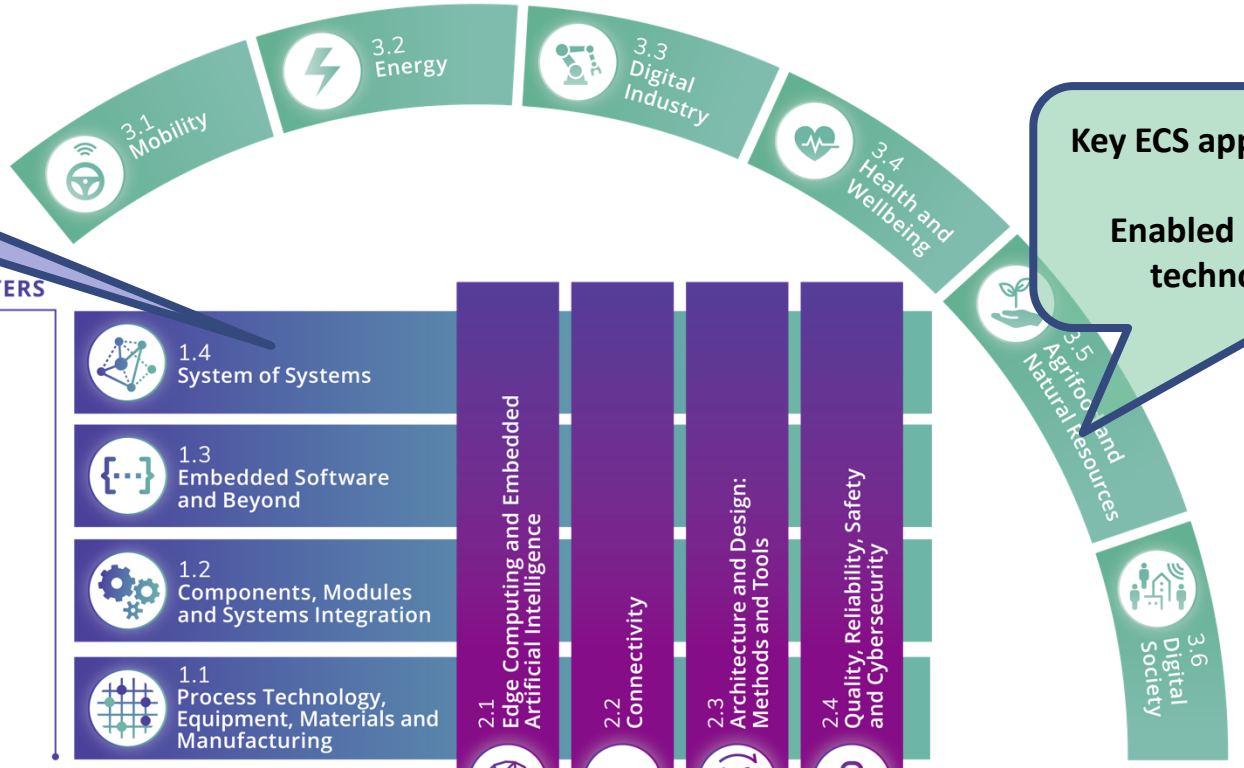


THE ECS-SRIA 2023: BASIS FOR KDT CALLS 2023



ECS-SRIA STRUCTURE

Basic technology stack of a typical digitalization solution & hierarchical dependencies



Key ECS application domains for Europe
Enabled by and driving ECS technology roadmaps

What needs to be addressed now at low TRL level to feed the innovation pipeline

Transversal areas
- Benefiting from interdisciplinary contribution of the foundational layers
- Or supporting technology stack across all layers

EU Main Objectives covered by SRIA

1

Boost industrial competitiveness through interdisciplinary technology innovations

2

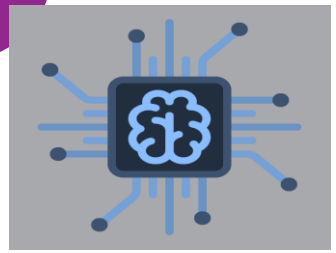
Ensure European digital autonomy through secure, safe and reliable ECS supporting key European application domains

3

Establish and strengthen sustainable and resilient ECS value chains the Green Deal

4

Unleash the full potential of intelligent and autonomous ECS-based systems for the European Digital Age



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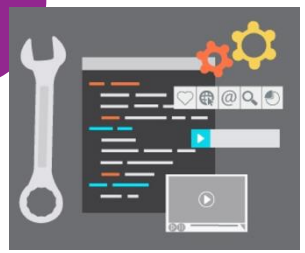
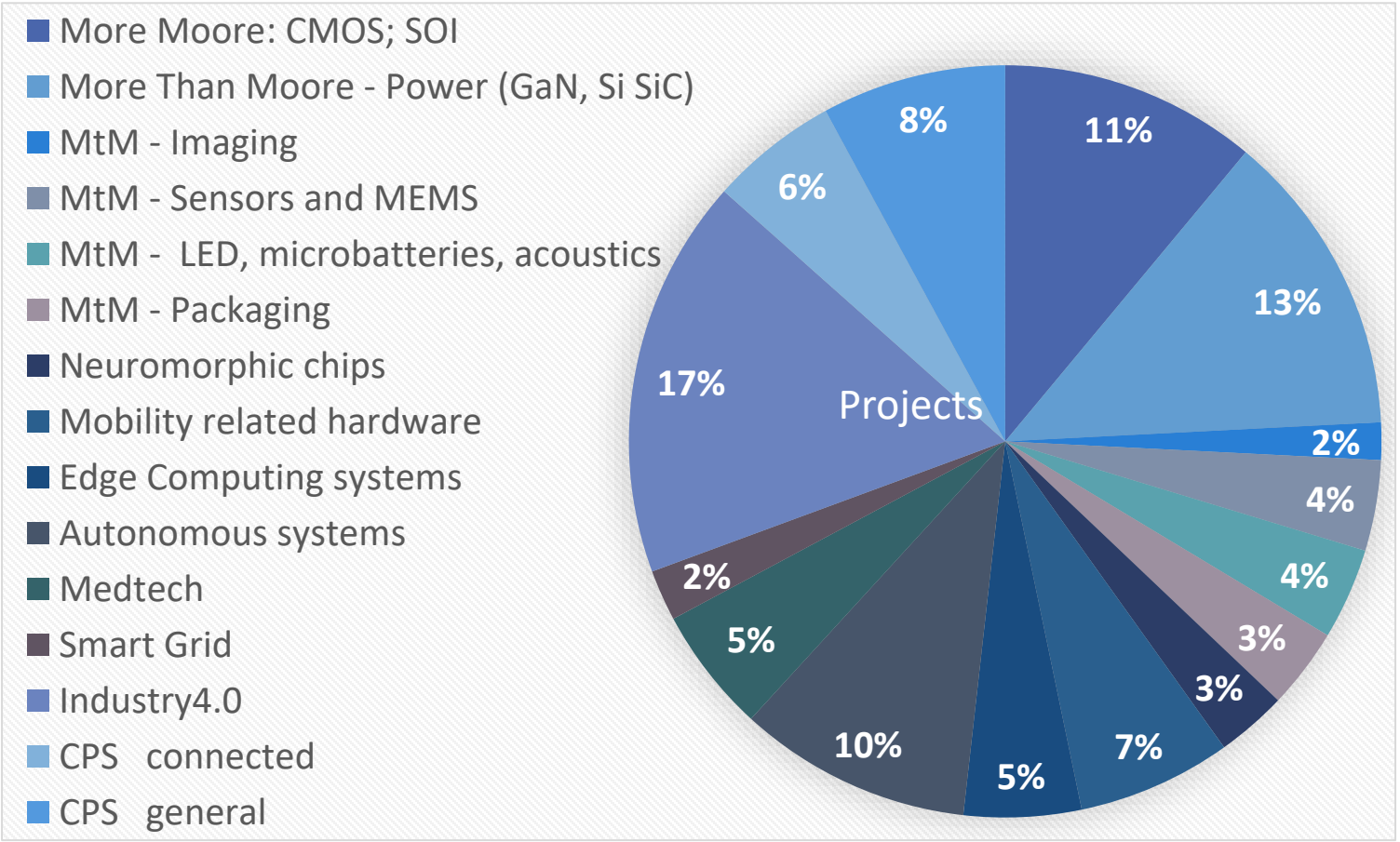


Ensure engineering support across the entire lifecycle of complex ECS-based systems

ECSEL JU 2014-2021

- 92 projects
- 3 220 beneficiaries
- 4 690 million Eur in total cost
- 2 280 million Eur in funding (EU+national)
- 408 500 persons-months
- 34 000 person-years
- 29 participating states



POLISH PARTICIPATION IN ECSEL

- 27 participations spread over 17 projects
- for a total cost of 17.7 mioEuro and 5.7 mioEuro in EU funding and 9.5 mioEuro in national funding
- 1 LE, 15 Public (nr 1 is POLITECHNIKA GDANSKA), 11 SMEs
- Projects in all sectors: digital manufacturing, secure connection, FDSOI, digital agriculture, platform for CPS development, GaN for power applications, power electronics, etc.

POLISH PARTICIPATION IN KDT

- 12 participations spread over 10 projects
- for a total cost of 13.1 mioEuro and 4.5 mioEuro in EU funding and 5.7 mioEuro in national funding
- 1 LE, 7 Public (6 of Polytechnic Gdansk), 4 SMEs
- Impressive results!

PROJECTS SELECTED KDT CALL 2021

Polish participant

Acronym	Title	Coordinator
TRISTAN	Together for RISc-V Technology and ApplicatioNs	NXP (NL)
HICONNECTS	Heterogeneous Integration for Connectivity and Sustainability	NXP (NL)
PowerizeD	Digitalization of Power Electronic Applications within Key Technology Value Chains	INFINEON (DE)
14ACMOS	14 Anstrom CMOS IC technology	ASML (NL)
SHIFT	Sustainable tecHnologies enablIng Future Telecommunication applications	STM SA (FR)
EdgeAI	Edge AI Technologies for Optimised Performance Embedded Processing	SINTEF AS (NO)
REBECCA	Reconfigurable Heterogeneous Highly Parallel Processing Platform for safe and secure AI	EREVNITIKO PANEPISTIMIAKO INSTITOUTO TILEPIKONONIAKON SYSTIMATON (FI)
BRIGHTER	Breakthrough in micro-bolometer imaging	LYNRED (FR)
Listen2Future	Acoustic sensor solutions integrated with digital technologies for emerging applications fostering society 5.0	INFINEON (DE)
A-IQ Ready	Artificial Intelligence using Quantum measured Information for realtime distributed systems at the edge	AVL LIST GMBH (AT)
OPEVA	OPEVA - OPtimization of Electric Vehicle Autonomy	PERTIMM DEVELOPPEMENT (FR)
Newlife	New remote non-invasive monitoring solutions for ensuring the health of mothers and babies before and after birth	PHILIPS (NL)
AGRARSENSE	Smart, digitalized components and systems for data-based Agriculture and Forestry	Komatsu Forest AB (SE)
CLEVER	Collaborative edge-cLoud continuum and Embedded AI for a Visionary industry of thE futuRe	UNIVERSITARI S ANNA (IT
RETICLES	Research, Entrepreneurship, Training, IP-exchange & Chip pLatform of EUROPRACTICE Services	IMEC (BE)

PROJECTS SELECTED IN KDT CALL 2022

Acronym	Title	Coordinator
14AMI	14 Angstroms Module Integration	ASML NETHERLANDS B.V. (NL)
AIMS5.0	Artificial Intelligence in Manufacturing leading to Sustainability and Industry5.0	INFINEON TECHNOLOGIES AG (DE)
ALL2GaN	Affordable smart GaN IC solutions as enabler of greener applications	INFINEON TECHNOLOGIES AUSTRIA AG (AT)
Arrowhead FPVN	Arrowhead Flexible Production Value Networks	LULEA TEKNISKA UNIVERSITET (SE)
EcoMobility	Intelligent, Safe and secure connected Electrical Mobility solutions	TTTECH AUTO GERMANY GMBH (DE)
EECONE	European ECOsystem for greeN Electronics	STMICROELECTRONICS GRENOBLE 2 SAS (FR)
ISOLDE	High Performance, Safe, Secure, Open-Source Leveraged RISC-V Domain-Specific Ecosystems	INFINEON TECHNOLOGIES AG (DE)
NerveRepack	Intelligent neural system for bidirectional connection with exoprostheses and exoskeletons	INSTITUTUL NATIONAL DE CERCETAREDEZVOLTARE PENTRU MICROTEHNOLOGIE (RO)
NEUROKIT2E	Open source deep learning platform dedicated to Embedded hardware and Europe	CEA (FR)
photonixFAB	Building a European industrial supply chain for SOI- and SiN-based silicon photonics, including heterogeneous integration to support emerging markets	X-FAB FRANCE (FR)
Resilient Trust	Resilient Trust- Trusted SMEs for Sustainable Growth of Europeans Economical Backbone to Strengthen the Digital Sovereignty	CONSIDER IT GMBH (DE)
SUSTRONICS	Sustainable and green electronics for circular economy	PHILIPS ELECTRONICS NEDERLAND BV (NL)
ARCHIMEDES	Trusted lifetime in operation for a circular economy	AVL LIST GMBH (AT)
LoLiPoP IoT	Long Life Power Platforms for Internet of Things	COGNITECHNA SRO (CZ)

Polish participant

Impressive results!

8 GOOD REASONS TO PARTICIPATE IN KDT PROJECTS

1. **Innovative projects** for **Industrial leadership**
2. **Critical mass**
3. **Value chain projects:** including value chain partners is the motorway to accelerate co-innovation and market adoption
4. Building **trust**
5. Creating project pipelines for **long-term continuity**
6. Pushing new products/technologies in **new markets**, starting new companies
7. Exploitation of **synergies** across application and technology domains
8. Support working across competition, benchmarking technologies and **sharing innovation risk**
9. Allow the **education** of engineers/scientists in new technologies.
10. Participate to projects that **make a difference** to the planet and humanity
11. Leverage your participation through **cooperation across programmes**

CALL 2023

READ THE SECTIONS ON THE CALLS IN THE WORK PLAN 2023

Check regularly our call website under the KDT website:

www.kdt-ju.europa.eu

Changes in National conditions are to be expected!

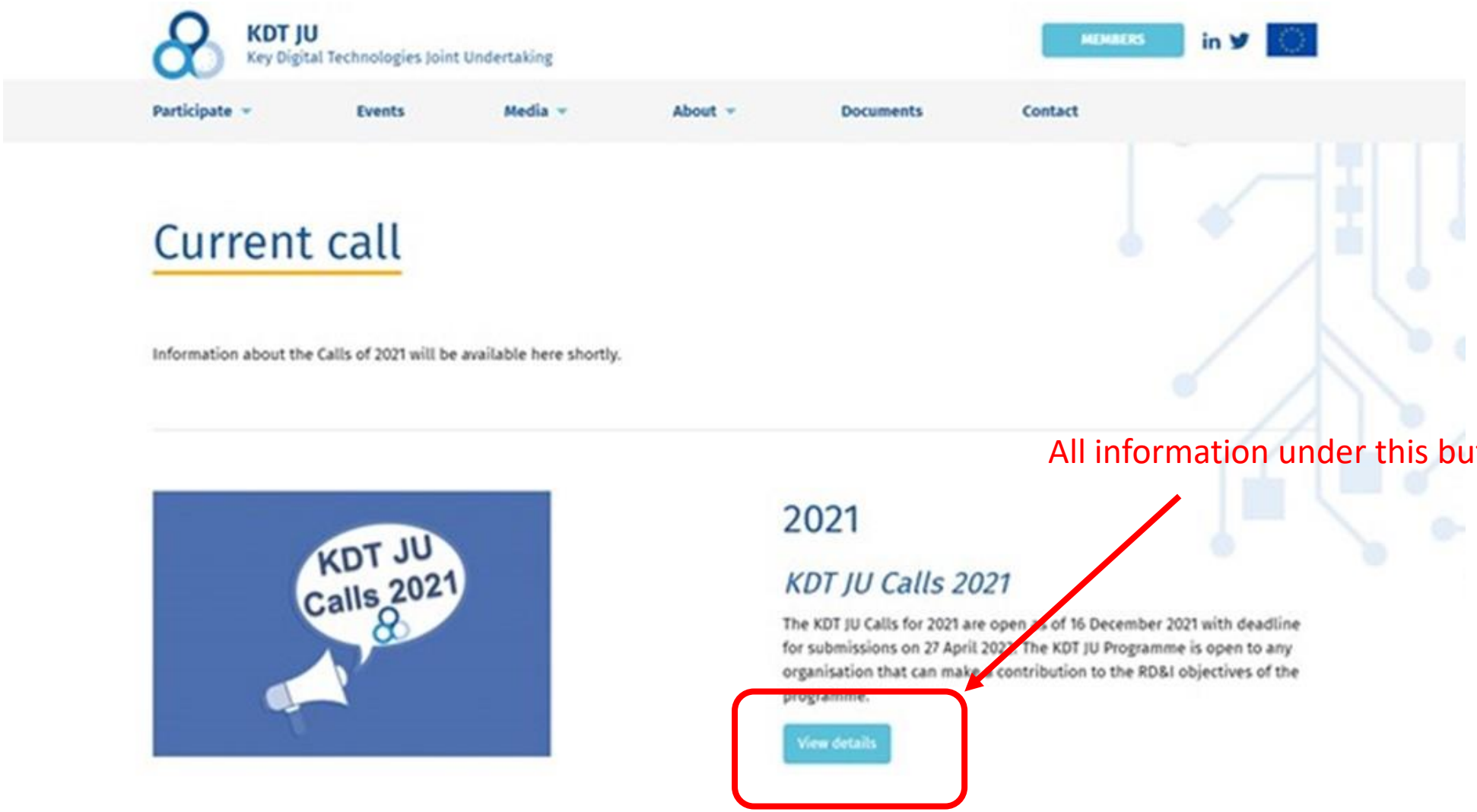
Contact email for your questions (please use ONLY this email):

calls@kdt-ju.europa.eu

Read the sections on the calls in the Work Plan 2023!

But for every IT issue contact the IT helpdesk (link in participant portal). We cannot help you on IT issues!

How to start? Go to KDT Call webpage!



STRUCTURE, TOPICS, EU BUDGET

Action	Topic	Estimated EU Expenditure (M€)
Call 2023-1-IA T1	Global call according to SRIA 2023	153.0
Call 2023-1-IA T2	Focus topic 6G Integrated Radio Front-End for TeraHertz Communications	20.0
Call 2023-1-IA T3	Focus topic on Integration of trustworthy Edge AI technologies in complex heterogeneous components and systems	20.0
Call 2023-1-IA T4	Focus Topic on Electronic Control Systems (ECS) for management & control of decentralized energy supply & storage	20.0
Call 2023-2-RIA T1	Global call according to SRIA 2023	76.7
Call 2023-2-RIA T2	Focus Topic on Hardware abstraction layer for a European Vehicle Operating System	20.0
Call 2023-3-IA T1	Improving the global demand supply forecast of the semiconductor supply chain	5.0
Call 2023-3-CSA T2	Pan-European network for Advanced Packaging made in Europe	1.0
Call 2023-3-CSA T3	Coordination of the European software-defined vehicle platform	2.0
	Total	**317.7 M€**

NATIONAL BUDGETS

National funding shall be commensurate to the EU funding rates

Participating states	2023-1 T1	2023-1 T2	2023-1 T3	2023-1 T4	2023-2 T1	2023-2 T2	Total
AT	3.7	0	0.5	0	1.6	1.2	7.0
BE-FL							12.0
BE-BR							1.0
BE-WL							0.4
CY							3.0
CZ	1.1	0.2	0.2	0.2	1.1	0.2	3.0
DE		0.0					32.0
EE							0.75
EL							0
ES AEI							3.0
ES MAETD							5.0
FI							10.0
FR							30.0

Participating states	2023-1 T1	2023-1 T2	2023-1 T3	2023-1 T4	2023-2 T1	2023-2 T2	Total
HU							2.0
IE							2.0
IL							3.5
IT MIMIT							20.0
IT MUR							14.0
NL							30.0
NO							0.0
PL							**1.5**
PT							1.5
SE	1.9	0.4	0.2	0.0	1.9	0.0	4.4
SK							0.8
TR							6.0
Total							192.85

For DE: Total 16.0 for IA Calls T1, T3 and T4 plus total 16.0 for RIA Calls

2023-1-IA T1 Global Call According to SRIA 2023 (153MEuro)
2023-2-RIA T1 Global Call according to SRIA 2023 (76MEuro)

- Detailed descriptions can be found in the ECS SRIA2023.
- Aspects of ECS **value chain integration** are important for the KDT programme and the whole European ECS sector, across applications and across capabilities. Consortia are encouraged to submit proposals that take this aspect into account.
- Proposals that **cut across disciplines, support platform building, interoperability, establishment of open standards** are particularly encouraged; even outside the regular ECS sector.
- Proposals **shall encourage SMEs to participate in the developments**, in particular paying attention to the needs of SMEs, involve SMEs in project execution, and develop solutions that can be taken up and/or exploited by SMEs
- Proposals shall attempt to establish **links with other projects and consortia** from the Horizon Europe family (within cluster 4 or in other clusters) working on topics related to the proposal.
- Note that **National priorities may be applicable to specific topics** (refer to Annex 4 "COUNTRY SPECIFIC ELIGIBILITY RULES").

2023-1-IA T2 Focus topic 6G Integrated Radio Front-End for TeraHertz Communications (20MEuro)

	KDT Call 2023-1	SNS-2023-STREAM-B-01-05
Expected TRL at end of project	5 to 6 (ready to be further integrated in a system-level prototype)	2 to 4
Frequency ranges	Sub-THz and THz range (100 GHz and above)	From sub-6GHz up to THz
Transmission chain coverage	Radio front-end (from baseband interface to antenna)	From baseband and mixed-signal processing to RF and antenna

Scope

- Investigate differentiated semiconductor technologies targeting THz connectivity (III-V on Si, FD SOI, RF SOI, advanced BiCMOS) and viable for a wide, cost-effective deployment, with **target for Ft and Fmax of 500 GHz and beyond**, and their optimal combination with CMOS.
- High power, high efficiency **heterogeneous integration of III-V and silicon MMICs** aiming for THz scalable large phased-arrays and communication systems
- Ultra-wideband and/or ultra-high-capacity **RF front-end**
- **Ultra-wideband baseband interfaces and processors**
- **Antennas and beamforming for sub-THz and THz** to overcome the high path loss of THz bands that can be integrated by 6G networks to meet the new demanding KPIs,
- **Architecture and design tools and methodologies for radio front-end modules for THz communications** and joint communications and sensing, including chip-package-antenna co-design, test, validation, and verification solutions.

2023-1-IA T3 Focus topic on Integration of trustworthy Edge AI technologies in complex heterogeneous components and systems (20MEuro)

Scope

1.Interoperable and replicable edge AI hardware and software (HW/SW) solutions that facilitate the integration, rapid deployment and low maintenance in resource-constrained systems and collaborative edge AI architectures.

2.Efficient and standard engineering methods and tools for (HW/SW co-) design, validation, optimization (exploration/mapping), implementation, deployment, qualification/certif. of trustworthy edge AI solutions in complex/heterog. ECS.

3.Open & integrated platforms and ecosystems hosting edge AI solution toolkits and design frameworks that provide the necessary trust and transparency to facilitate seamless interoperability by using standards & open interfaces.

This call focuses on **large-scale integrated/integrable edge AI technologies** at **greater levels of energy efficiency, connectivity, collaboration, complexity and diversity**.

2023-1-IA T4 Focus topic on Electronic Control Systems (ECS) for management & control of decentralized energy supply & storage (20MEuro)

Challenges:

- Balance the fluctuations between the energy generation and consumption
- The distributed renewable energy systems require coordination and management improvement
- Energy storage must be integral part of distributed renewable energy systems DRES to mitigate imbalances in generation and demand
- Retrofittable and reconfigurable and interoperable with operational and maintenance systems.

Outcome: novel solutions in the form of electronic control systems, sensor technology and smart systems integration for the deployment and efficient and resilient operation of DRES.

Priorities:

- Study of use cases on building energy systems, HVAC, battery storage and hydrogen generation and storage.
- Evaluation of customer needs and requirements for these use cases
- Definition of solution concepts for the use cases: sensors and measurement devices, interoperability solutions, autonomous monitoring systems, predictive control, etc.

Collaboration for Hydrogen applications:

- Hydrogen can play an important role in the energy storage, which is an integral part of DRES to mitigate imbalances.
- Advances, in collaboration with Clean Hydrogen JU, on the operation conditions of electrolysers and fuel cells, as well as new generation of power electronics, sensors and monitoring devices for hydrogen applications.

2023-2-RIA T2 Focus topic on Common open European software-defined vehicle platform (20MEuro)

Scope:

- A reference architecture for a HW abstraction layer for software-defined vehicles meeting the safety, security and real-time requirements for motorised vehicles
- Engineering support for SW development and integration effort and costs, building on and linking major software initiatives in the area
- Demonstration of applicability through a proof-of-concept and open source reference implementation

It prepares the ground for the second level of decoupling (from the OS) and for the creation of the SOA, the Vehicle Service Framework.

One project

SCHEDULE

Call 2023-1-IA and Call 2023-2-RIA

- Mode: **2 stage call** with submission of Full Project Proposal (FPP)
- Publication date: **7 February 2023, TODAY**
- Deadline (Project Outline (PO) phase): at 17:00:00 Brussels time on **03 May 2023**
- Deadline (Full Project Proposal (FPP) phase): at 17:00:00 Brussels time on **19 September 2023**

Call 2023-3

- Mode: **1 stage call** with submission of Full Project Proposal (FPP)
- Publication date: **7 February 2023, TODAY**
- Deadline (Full Project Proposal (FPP) phase): at 17:00:00 Brussels time on **03 May 2023**
- **Please note: Call 2023-3 T1 is an IA BUT still in one phase!!!**

EU Funding Rates

Type of beneficiary	2023-1-IA	2023-1-IA Focus Topic	2023-2-RIA	2023-2-RIA Focus Topic	2023-3-IA	2023-3-CSA
Large Enterprise	20 %	25 %	25 %	25 %	70%	100%
SME	30 %	35 %	35 %	35 %	70%	100%
University/Other (not for profit)	35 %	35 %	35 %	35 %	100%	100%
National Funding	YES	YES	YES	YES	NO	NO

PAGE LIMITS

The number of pages below are maxima.
A good proposal will achieve concise and clear explanations in less pages!

Type of beneficiary	2023-1-IA	2023-2-RIA	2023-3-IA	2023-3-CSA
PO phase	60/60/60	60/60/60	na	na
FPP Phase	60/100/100	60/100/100	60/100/100	30/30/30

SPECIFIC ELIGIBILITY CONDITIONS

Important for the FPP phase!

2023-1-IA

- For the partners of a Participating State that coordinates grants, specific rules may apply regarding the eligibility to national funding.
- Size limit: the maximum size of the project is **70 participants**.
- Capping: The **EU contribution per project is capped at 25M€** and the maximum contribution per partner in a project is limited to 30% of the total EU funding for the project.

2023-2-RIA

- For the partners of a Participating State that coordinates grants, specific rules may apply regarding the eligibility to national funding.
- Size limit: the maximum size of the project is **50 participants**.
- Capping: The **EU contribution per project is capped at 12M€** and the maximum contribution per partner in a project is limited to 40% of the total EU funding for the project. (not applicable to focus topic!)

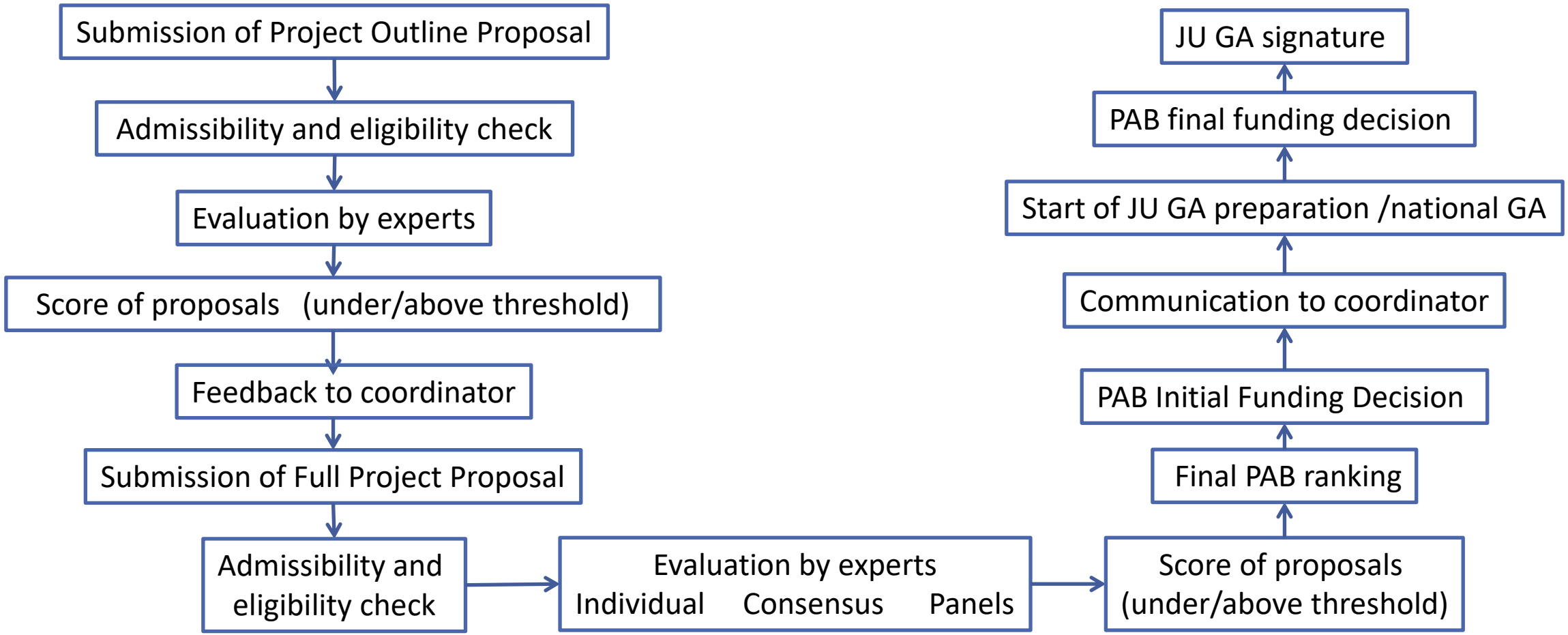
- **Those limits do not apply to the focus topic call 2023-2-FT2 Common open European software-defined vehicle platform as one project is envisaged with a budget of up to 20M€ in EU funding**

Introduction of National information

- EU Funding Rates in the Budget table (EU Budget/EU Funding) in the Part A, correct manually the requested amounts in the Part A table!
- Upload National Budgets Table
- National Part (previous Part C)

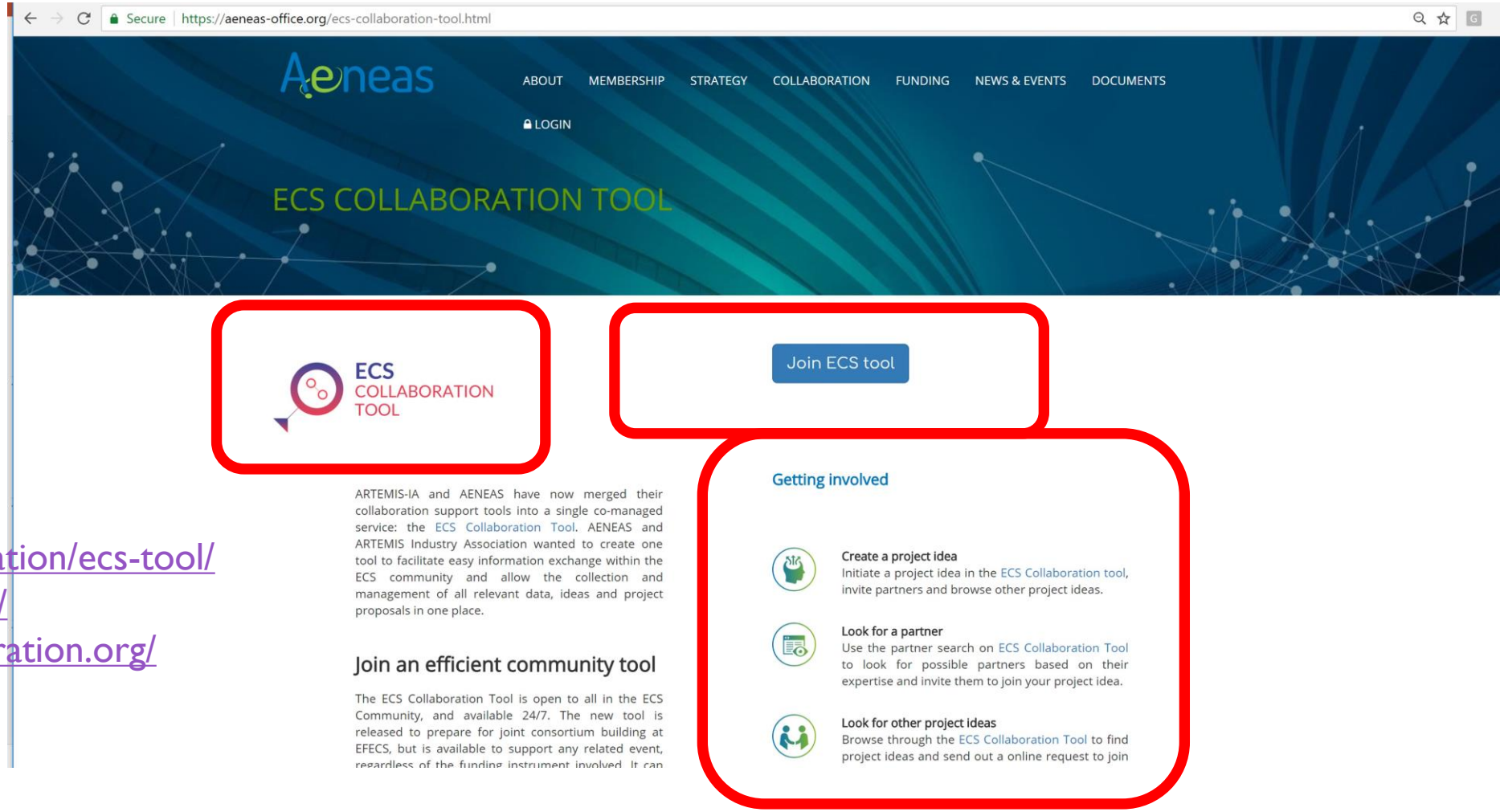
(detailed instructions in the Guide for Applicants)

EVALUATION, SELECTION, GRANT AGREEMENT PREPARATION



ECS COLLABORATION TOOL

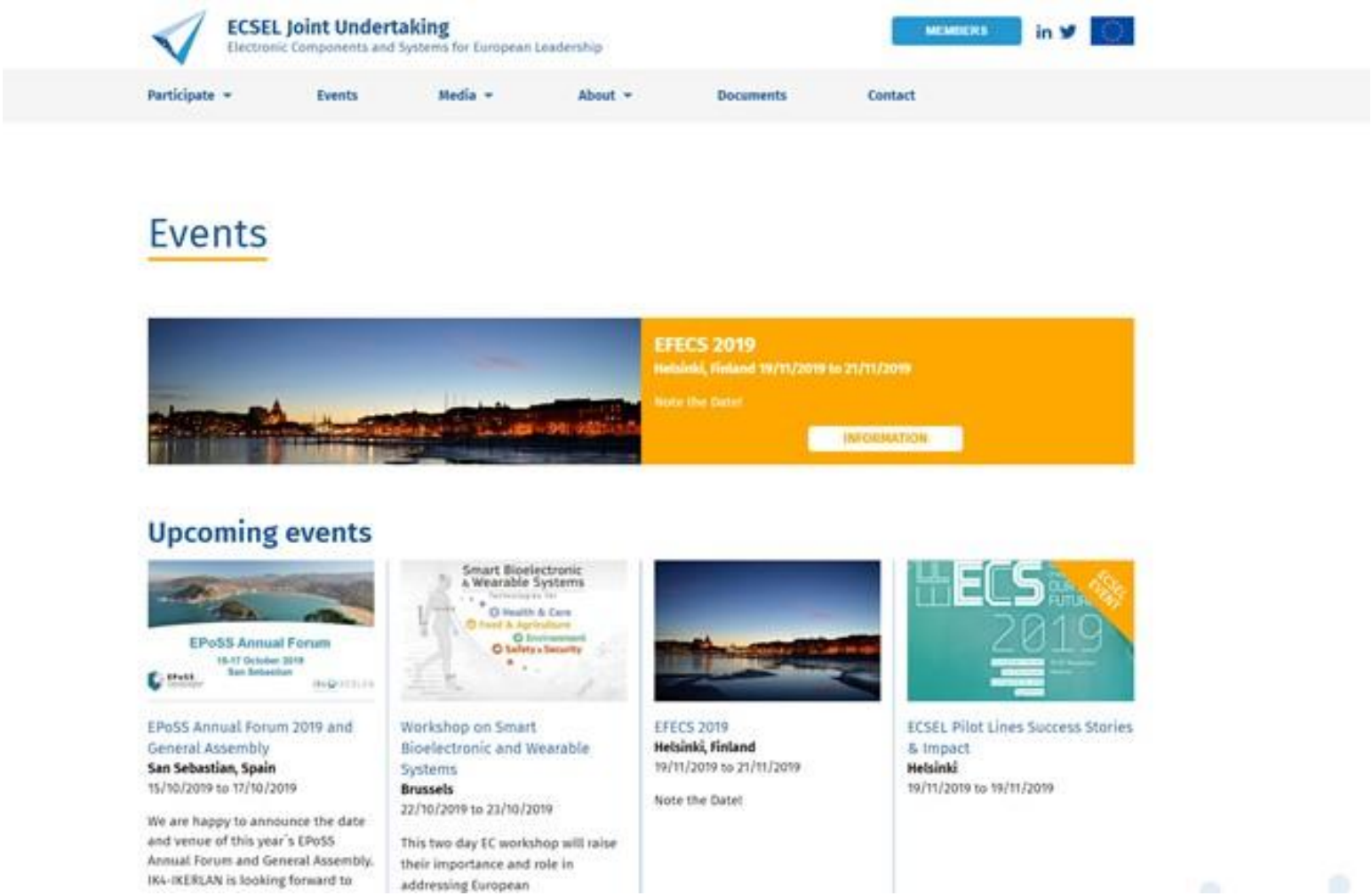
Three industry organisations:
AENEAS
INSIDE Industry Association
EpoSS



https://aeneas-office.org/collaboration/ecs-tool/
https://www.inside-association.eu/
https://www.smart-systems-integration.org/

ATTEND THE EVENTS

- Conferences: EFECS
- Brokerage events
- Workshops
- Symposiums
- etc.



GOOD LUCK!

BUT WHAT IS NEXT?

EUROPE NEEDS A CHIPS ACT!

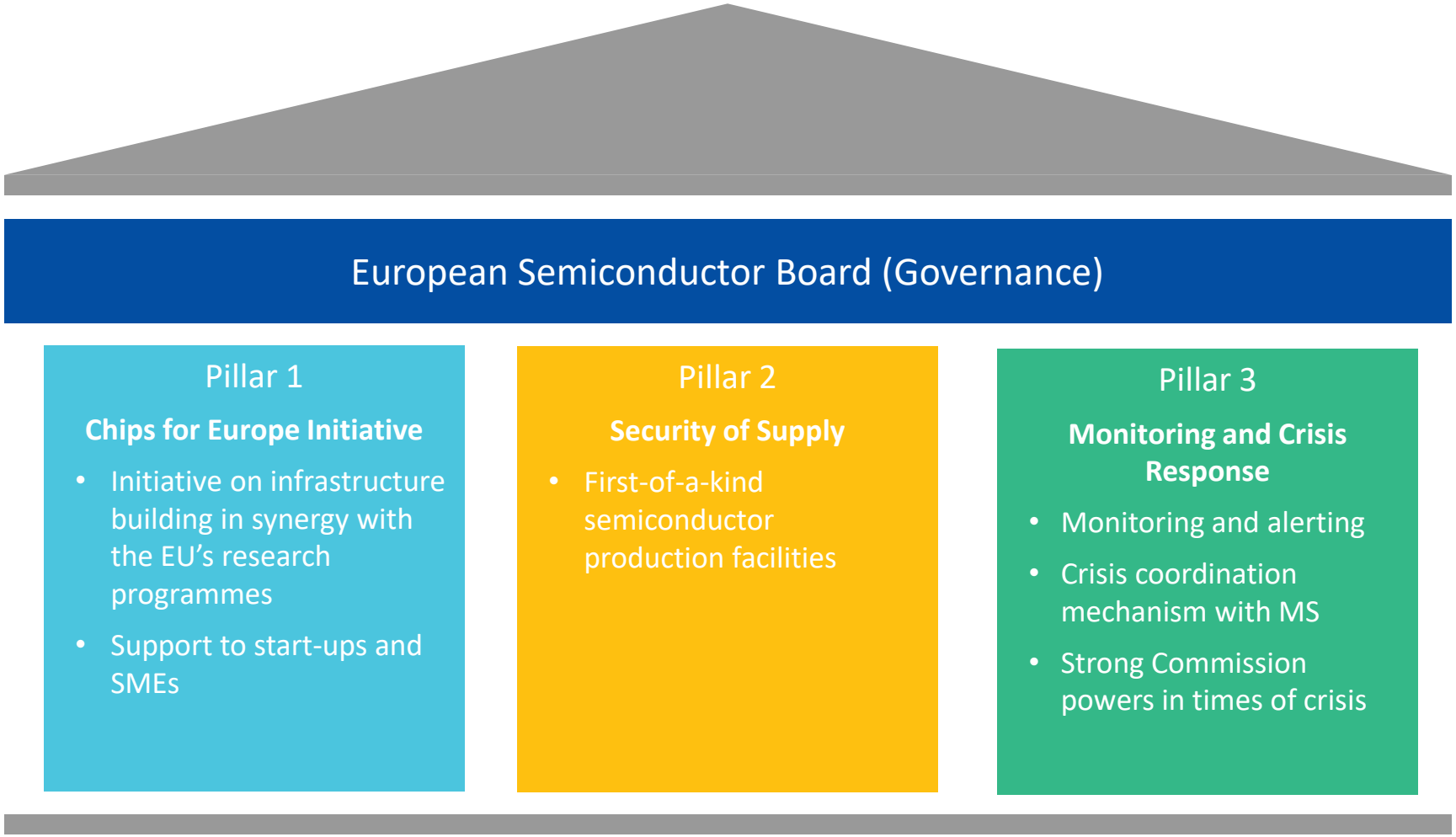
> *Our aim is to jointly create a state-of-the-art European chip ecosystem, including production. We need to link together our world-class research, design and testing capacities. We need to coordinate EU and national investment along the value chain. This is not just a matter of our competitiveness. This is also a matter of tech sovereignty.*

Commission President Ursula von der Leyen set the vision for Europe's chip strategy for the digital decade in her state of the Union speech of 15 September 2021:

Europe's objectives are:

- **To strengthen its research and technology leadership**
- **To build and reinforce its own capacity to innovate in the design, manufacturing and packaging of advanced chips**
- **To put in place an adequate framework to increase substantially its production capacity by 2030**
- **To address the acute skills shortage**
- **To develop an in-depth understanding of the global semiconductor supply chains**

THREE PILLARS OF THE CHIPS ACT

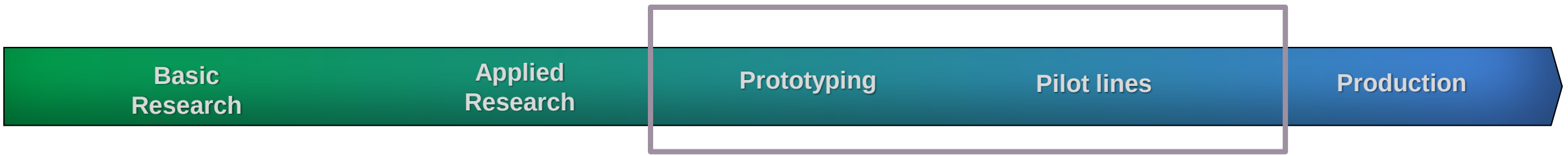


CHIPS FOR EUROPE INITIATIVE: WHAT ARE THE OBJECTIVES?

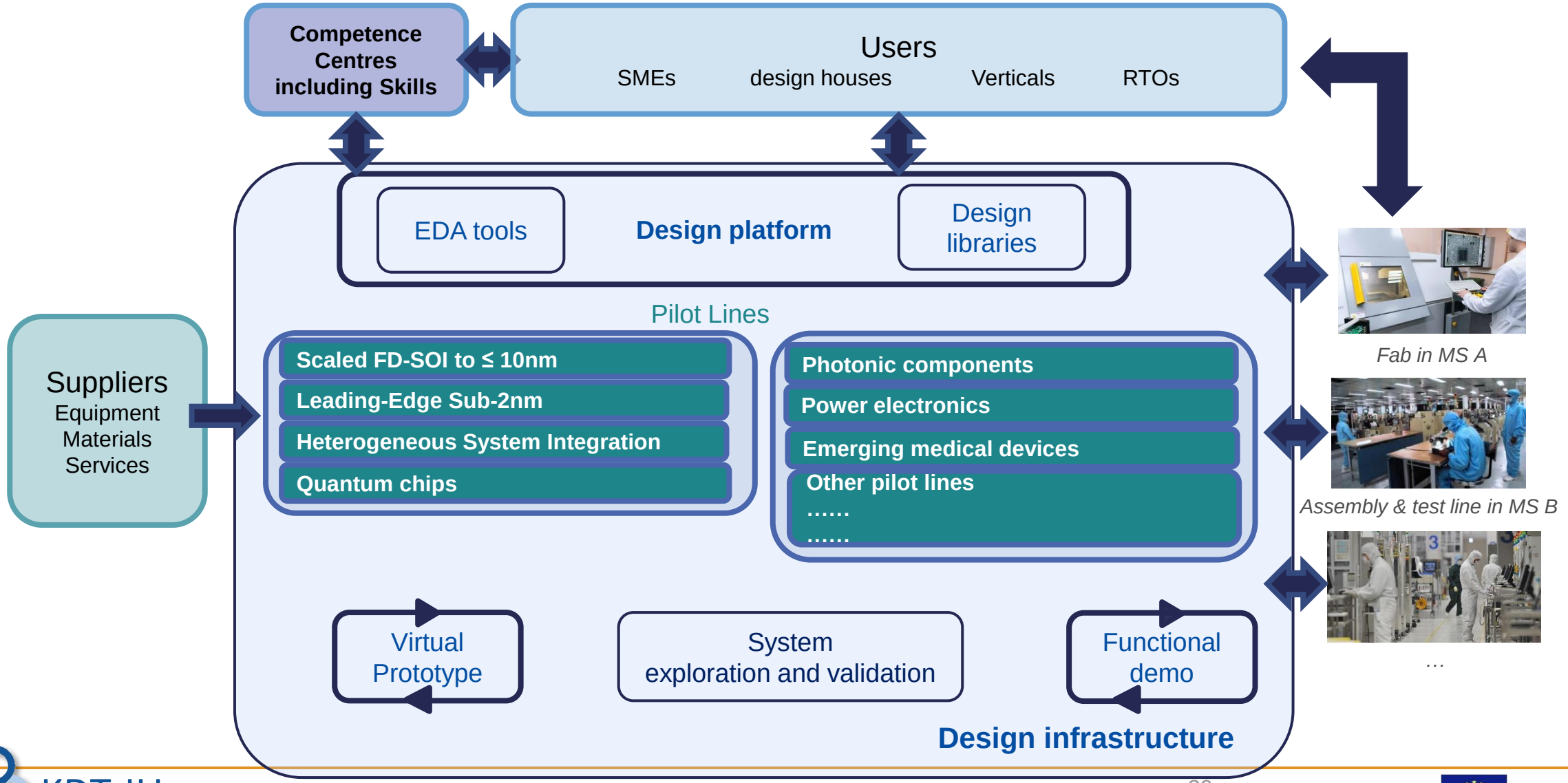
Bridge the gap **from lab to fab**

Create **large innovation capacity** and **a resilient and dynamic** semiconductor **ecosystem**

- Build up **large-scale design innovative capacities** for integrated semiconductor technologies
- Enhance existing and developing new **pilot lines**
- Build advanced technology and engineering capacities for accelerating the development of **quantum chips**
- Create a network of **competence centres** across Europe
- Establish a **Chips Fund** to facilitate access to loans and equity by start-ups, scale-ups and SMEs and other companies in the semiconductor value chains



RECAP: FROM THE LAB TO THE FAB



Network of competence centres
Activities (Art 8 Chips Act)

Support SMEs/universities/users with their specialized competence

- providing access to design services and design tools, and pilot lines
- raising awareness and providing necessary knowhow, expertise and skills to stakeholders for helping them accelerate development and integration of new semiconductor technologies, design options and system concepts
- raising awareness and providing or ensuring access to expertise, knowhow and services, including system design readiness, new and existing pilot lines and supporting actions necessary to build skills and competences
- facilitating transfer of expertise and knowhow between Member States and regions encouraging exchanges of skills, knowledge and good practices and encouraging joint programmes
- developing and managing specific training actions on semiconductor technologies and on their applications to support development of talent pool in the Union

European Commission