



BACKING
VISIONARY
ENTREPRENEURS
AND RESEARCHERS

Dr Isabel Obieta
EIC Programme Manager for Sustainable
Semiconductors & Electronics
18 November 2025

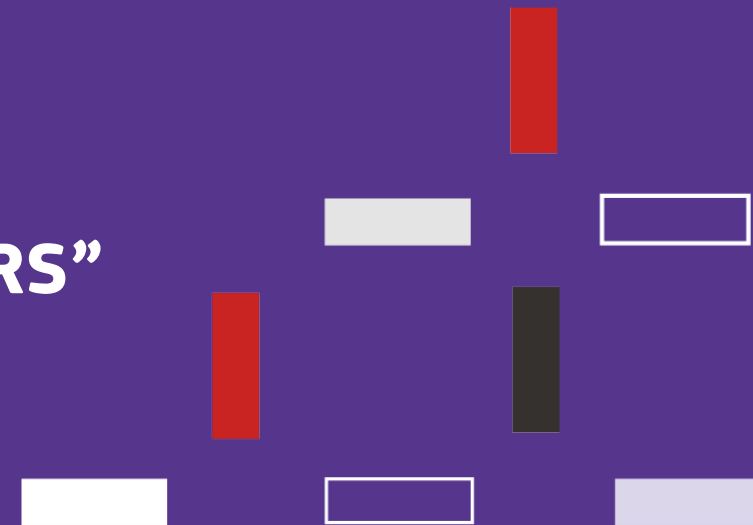
EIC ENGAGEMENT WITH THE EUROPEAN SUSTAINABLE SEMICONDUCTORS ECOSYSTEMS

European
Innovation
Council



OVERVIEW:

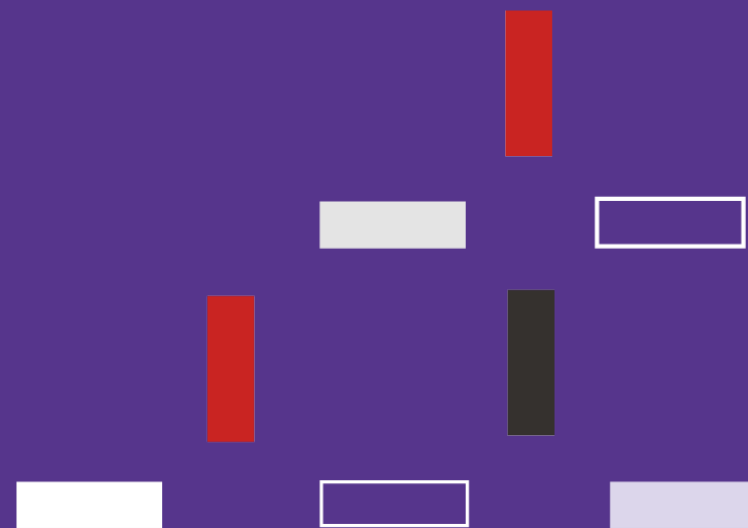
- EIC INTRODUCTION
- EIC PORTFOLIO “SUSTAINABLE SEMICONDUCTORS”
- FUTURE OUTLOOK AND CONCLUSIONS





OVERVIEW:

- EIC INTRODUCTION
- EIC PORTFOLIO “SUSTAINABLE SEMICONDUCTORS”
- FUTURE OUTLOOK



What's holding back EUROPEAN INNOVATION?



PERFORMANCE

- Strong research performance *not translated into innovation*
- *Lack of breakthrough / disruptive innovations* that create new markets



FUNDING & INVESTMENT

- Financing gaps
- 2 “valleys of death”
 - In Transition from lab to enterprise
 - Scaling up for high-risk innovative start-ups



ECOSYSTEM

- Many national & local ecosystems, but fragmented at European level
- Need to include all regions and all talent (especially female)



The Innovation Pillar of HORIZON EUROPE

01. European Innovation Council
Support to innovations with breakthrough and market creating potential.

€10.1
BILLION

02. European Institute
of Innovation & Technology

Bringing key actors (research, education and business) together around a common goal for nurturing innovation

€2.9
BILLION

03. European Innovation Ecosystems

Connecting with regional and national innovation actors

€520
MILLION

What makes *EIC UNIQUE*?

01. A European DARPA

- Focus on disruptive high risk breakthrough technologies
- Innovator friendly: flexibility to apply at any time with a short pitch (video pitch, slide deck, 5-page form)
- EIC “Programme Managers” to develop visions, proactively manage projects, steer portfolios (based on experience of DARPA, ARPA-E, BARDA, etc.)

02. EU Unicorn Factory

- Focus on high risk, disruptive startups & SMEs with scale up potential.
- EIC Fund set to become largest early stage VC investor in Europe, crowding in other investors.
- Flexible follow up funding (“Transition”) to create business opportunities out of research results.



03. An upgraded Innovation Community

- EIC Community a box full of exciting business acceleration services and an extensive innovation ecosystem is waiting for EIC beneficiary
- EIC Forum bringing together innovation ecosystem actors from across Europe
- Horizon Europe “innovation ecosystems” program to support networking and joint initiatives between ecosystem actors
- Partnerships with European Institute of Innovation & Technology (EIT), European Research Council (ERC) and others.

KEY IMPACTS IN SUPPORT OF DEEPTECH INNOVATION

2021-2025



completed
investment
rounds

in start-ups
and SMEs

€6b

of support to

700⁺ startups and
~600 research and
tech transfer
projects



INVESTING IN STRATEGIC TECHNOLOGIES



€850 m
quantum and
semiconductors [
supporting the
Chips Act]



€725 m
AI
development
and
applications



€500 m
advanced
materials



€700 m
energy
generation
and storage
solutions



€625 m
biotechnology and
biomanufacturing



EIC PRIZES

- Women innovators
- Capital of innovation



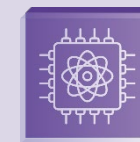
SEAL OF EXCELLENCE

Fast track to other funding



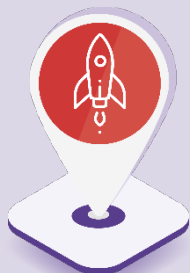
EIC BUSINESS ACCELERATION SERVICES

- Mentors, coaches
- Global partners
- Innovation ecosystems
- EIC Community Platform



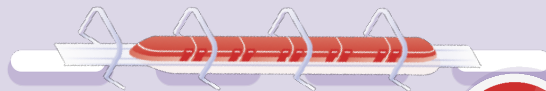
EIC STEP *Strategic Technologies for Europe Platform*

- Co-investments up to **€30 million**
- Digital, deep tech, biotech, clean tech



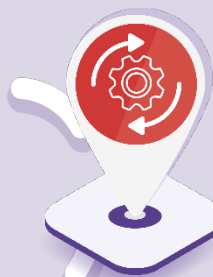
EIC ACCELERATOR

- For single companies
- Grants up to **€2.5 million**
- Equity up to **€10 million**
- To enter the market & scale-up (TRL 6-9)



EIC PRE-ACCELERATOR

- For companies from widening countries
- Grants between **€300k - €500k**
- To boost deep-tech startup readiness



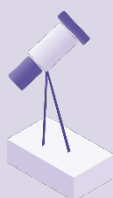
EIC TRANSITION

- For consortia & single companies
- Grants up to **€2.5 million**
- To develop business cases (TRL 4-6)



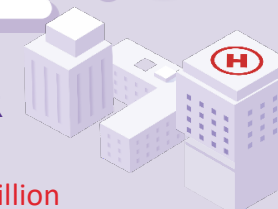
EIC PROGRAMME MANAGERS

- In-house leading experts
- Identifying potential challenges in **emerging deep tech areas**
- Pro-actively managing EIC Pathfinder, Transition and Accelerator portfolios

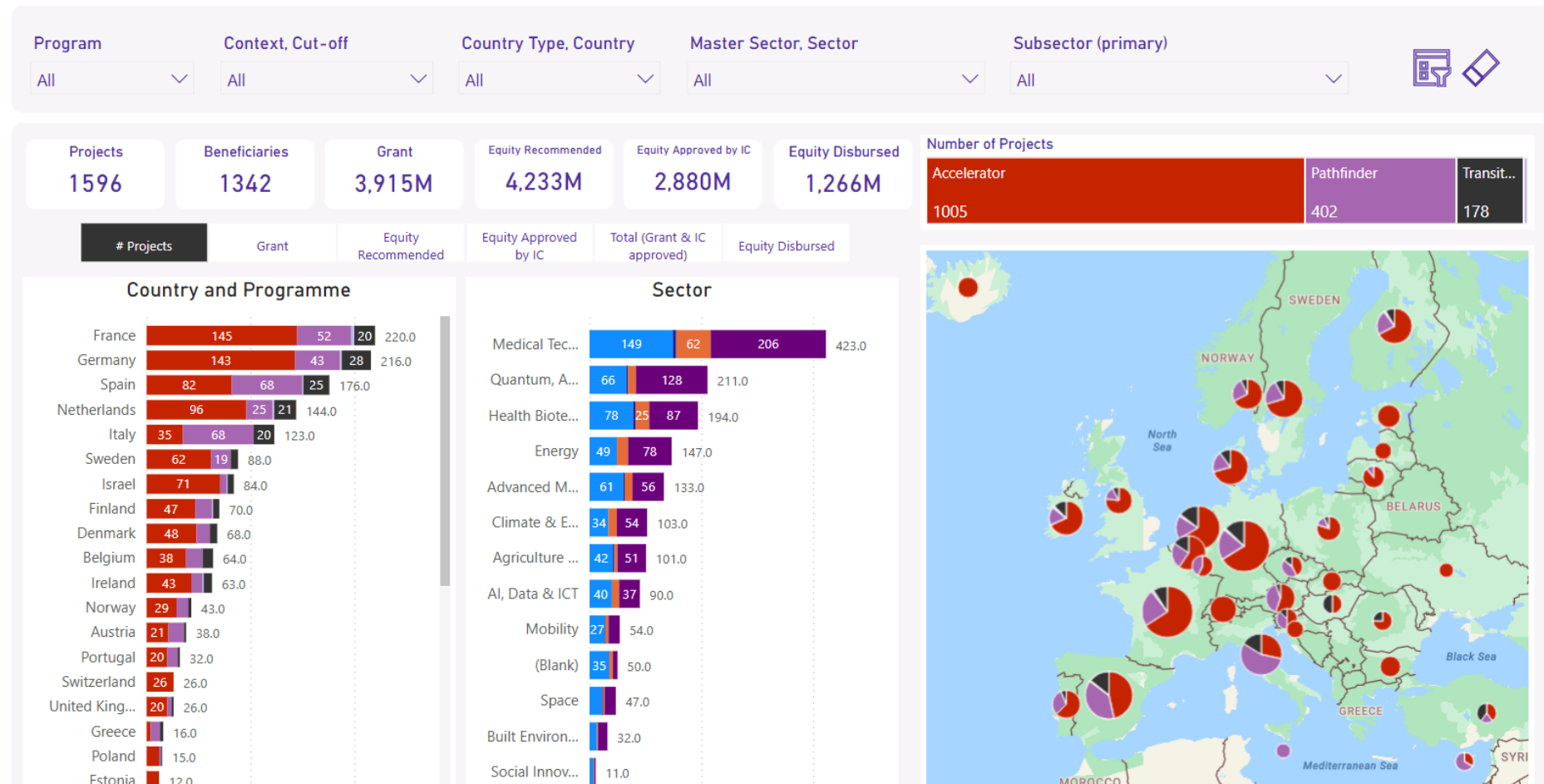


EIC PATHFINDER

- For consortia
- Grants up to **€4 million**
- To research technology breakthroughs (TRL 1-4)

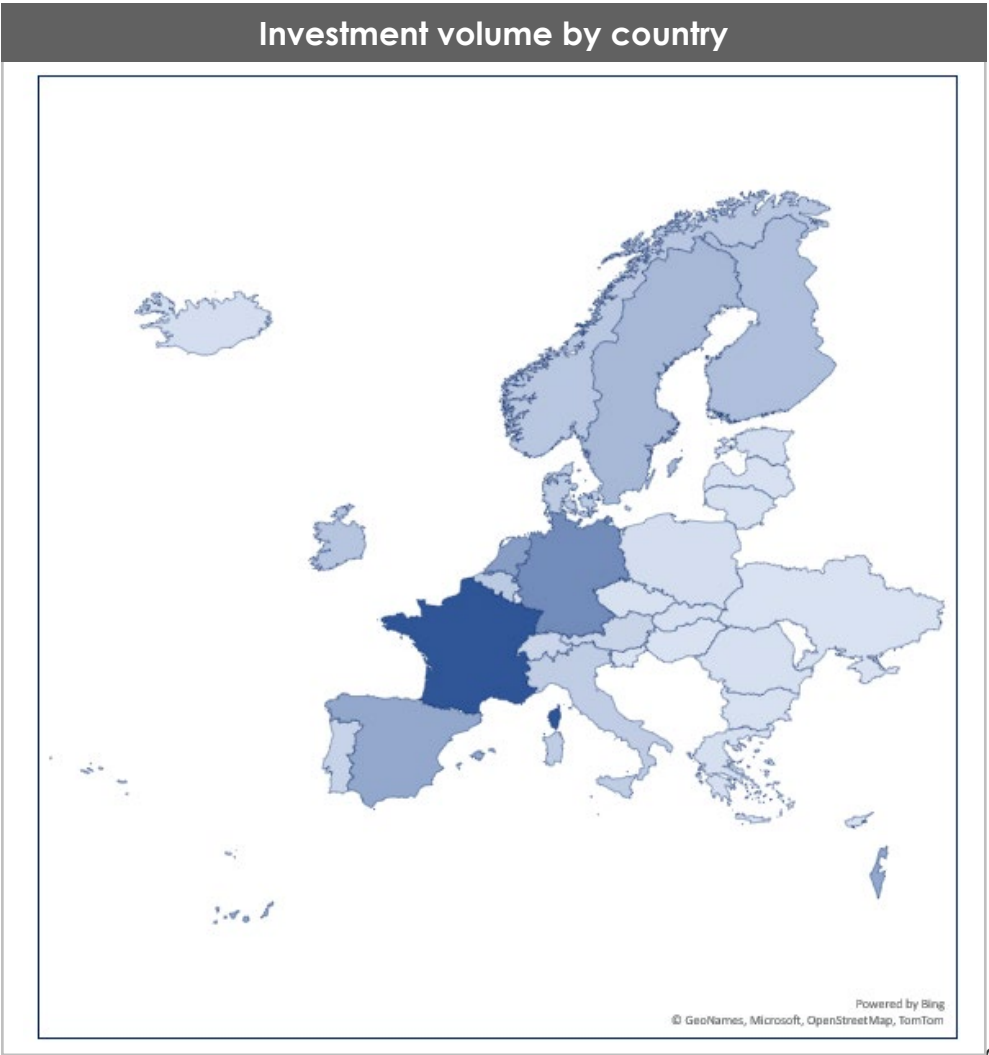
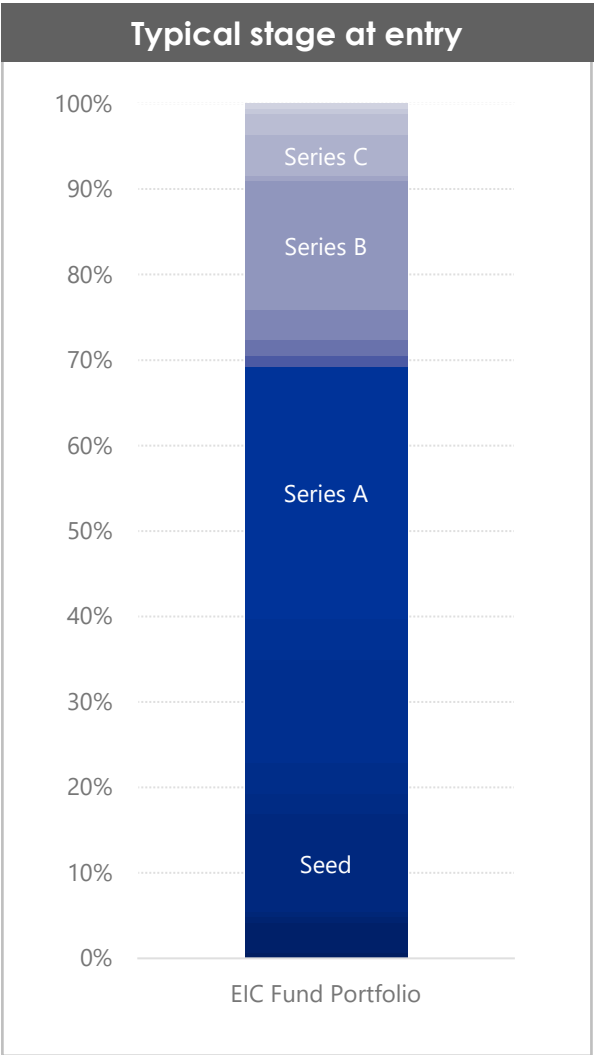
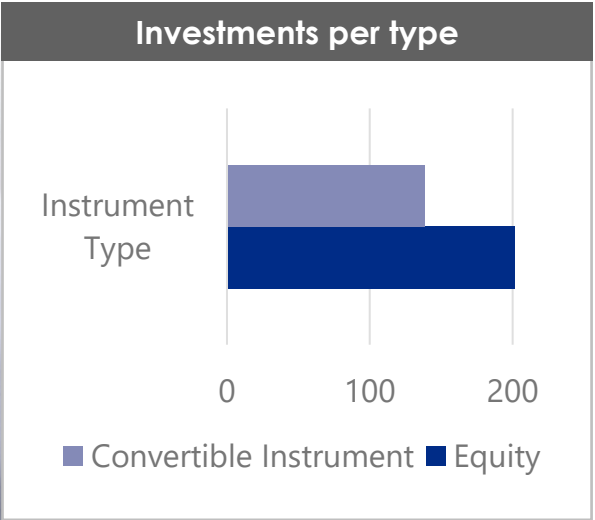
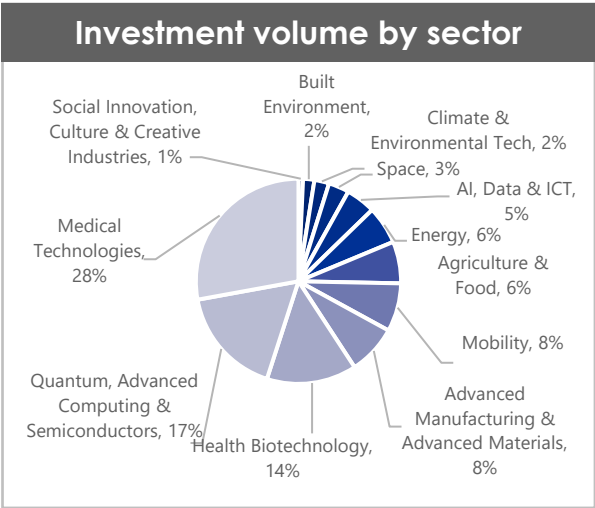


EIC Project Portfolio



Highly diversified portfolio

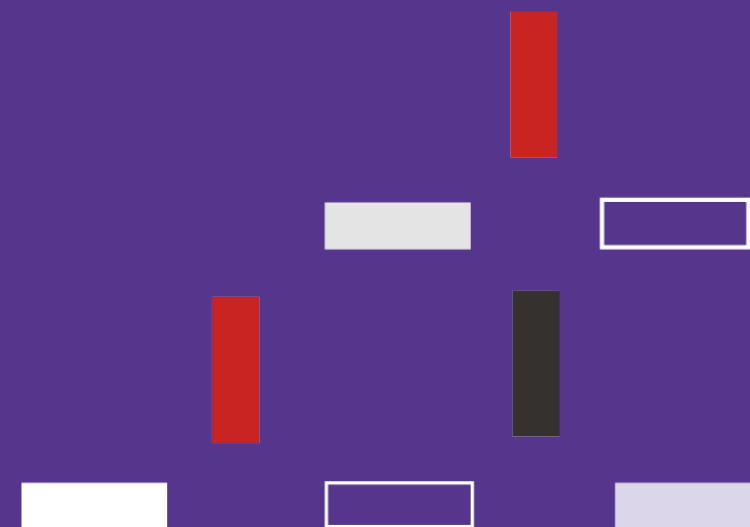
EIC FUND Portfolio breakdown





OVERVIEW:

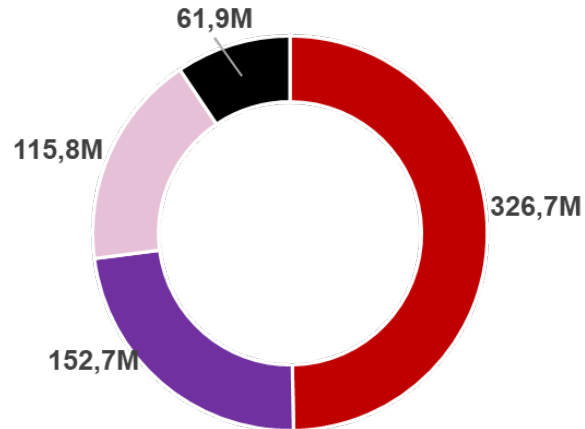
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EIC Projects in Semiconductors/Electronics

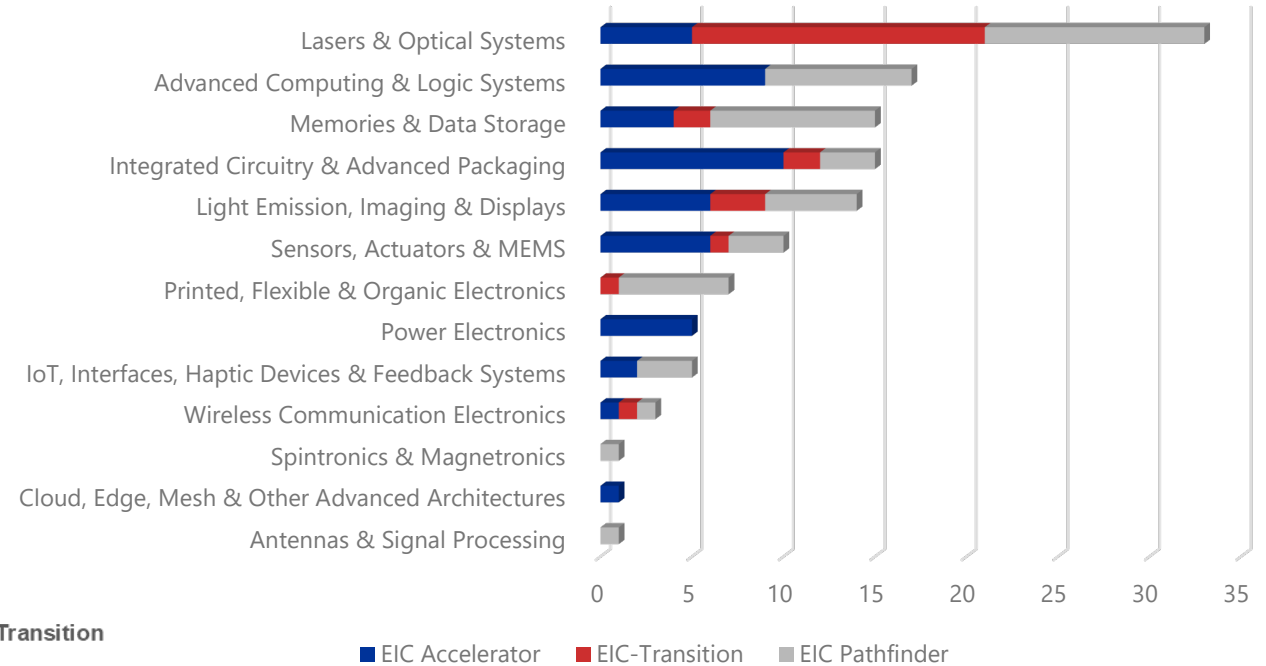
TOTAL: 657M€

EIC Funding for Hardware and Sustainable Semiconductors



■ EIC Accelerator Recommended Investment ■ EIC Pathfinder ■ EIC Accelerator Grant ■ EIC-Transition

EIC Projects Tech&Appl (Tertiary)



Sustainable Semiconductors

Sustainable Electronics looks at the entire lifecycle of the electronic device, focusing on design, usage, and disposal

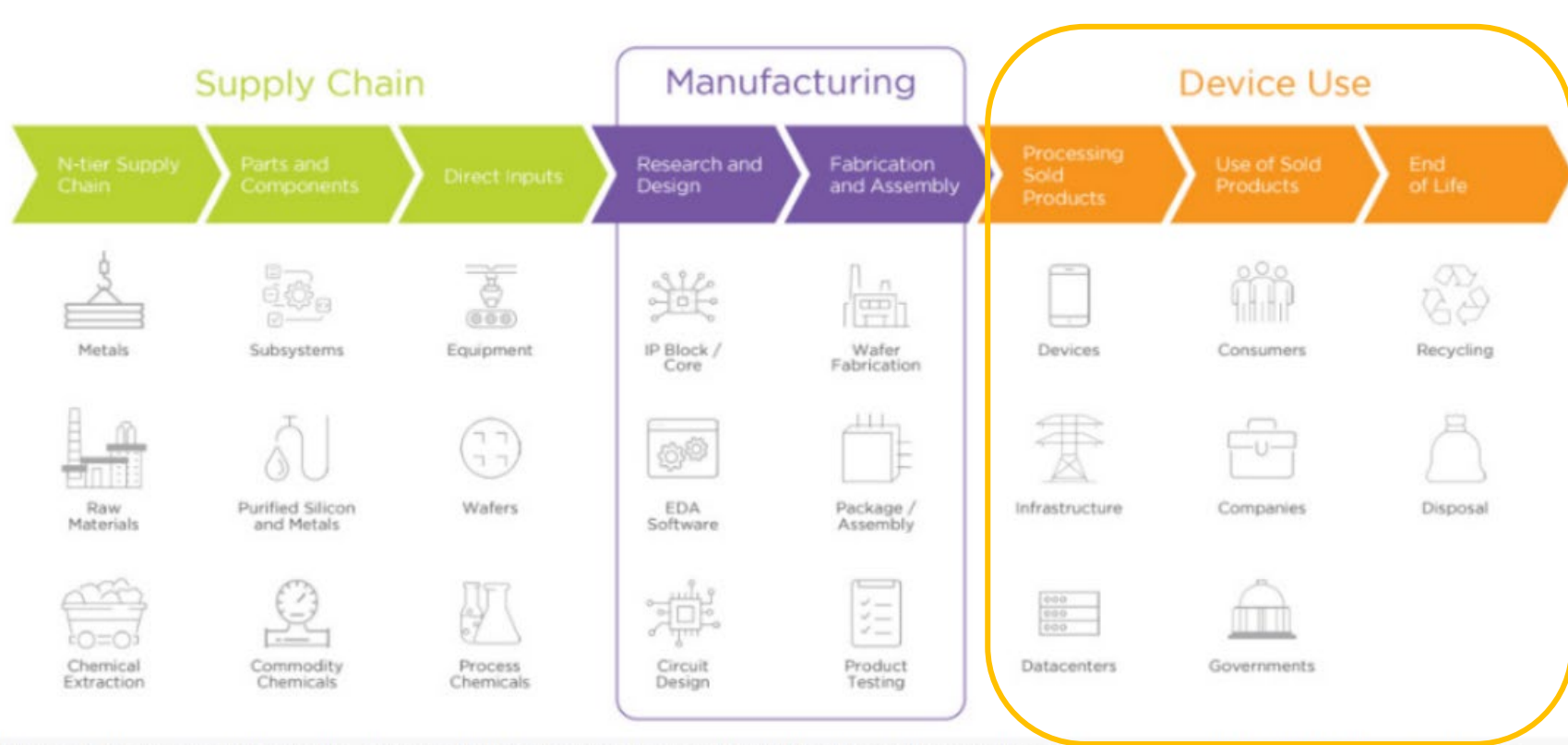


Figure 3. Semiconductor value chain activities. Source: SEMI Semiconductor Climate Consortium's BAR Working Group and BCG. (2023). "A White Paper on Transparency, Ambition, and Collaboration."

PATHFINDER PORTFOLIO on MATERIALS for SUSTAINABLE ELECTRONICS

Interactions on
Computer
Modelling



Optoelectronics
and Displays



Computing and
Memories



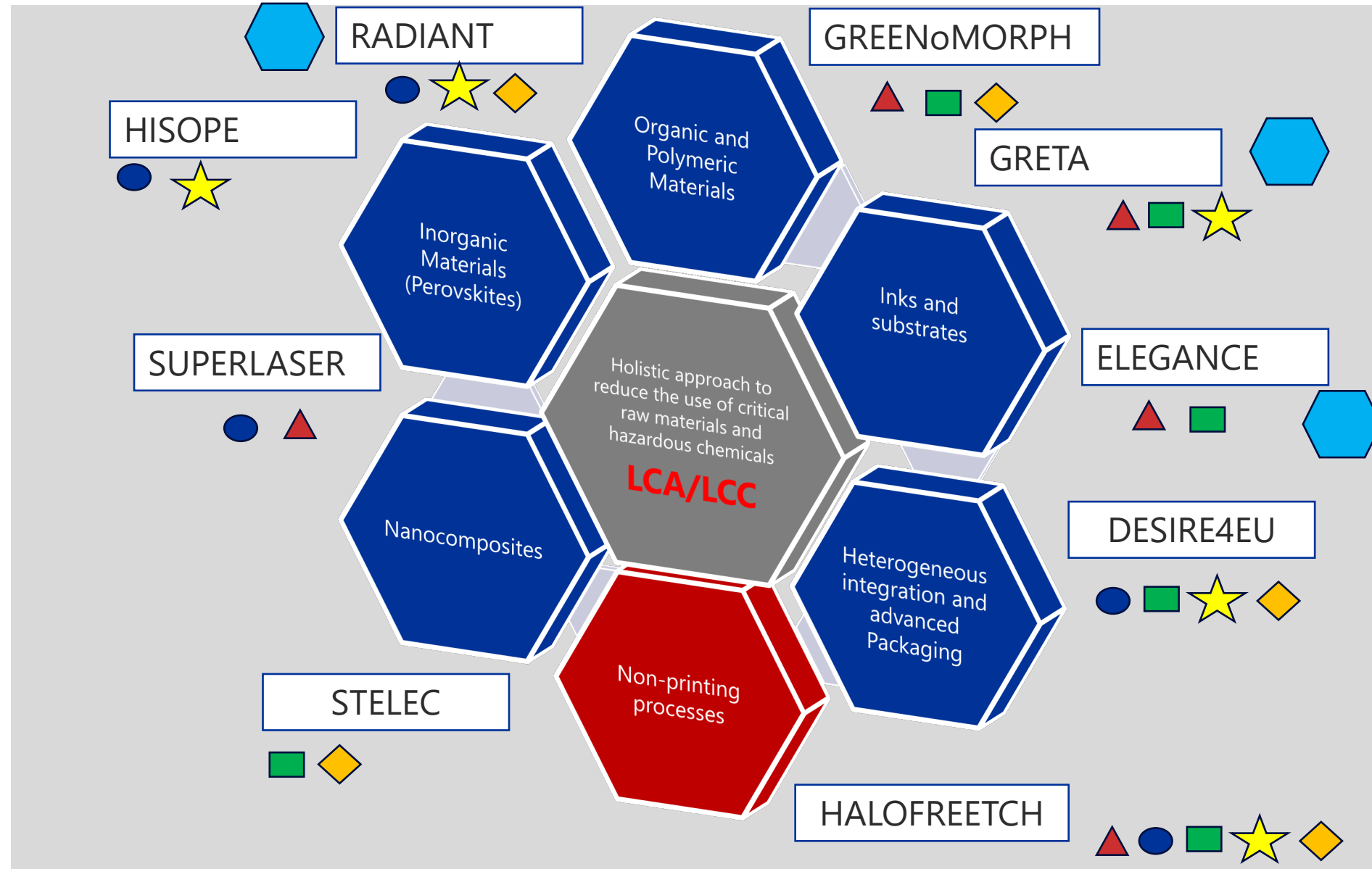
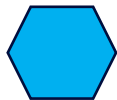
Communications



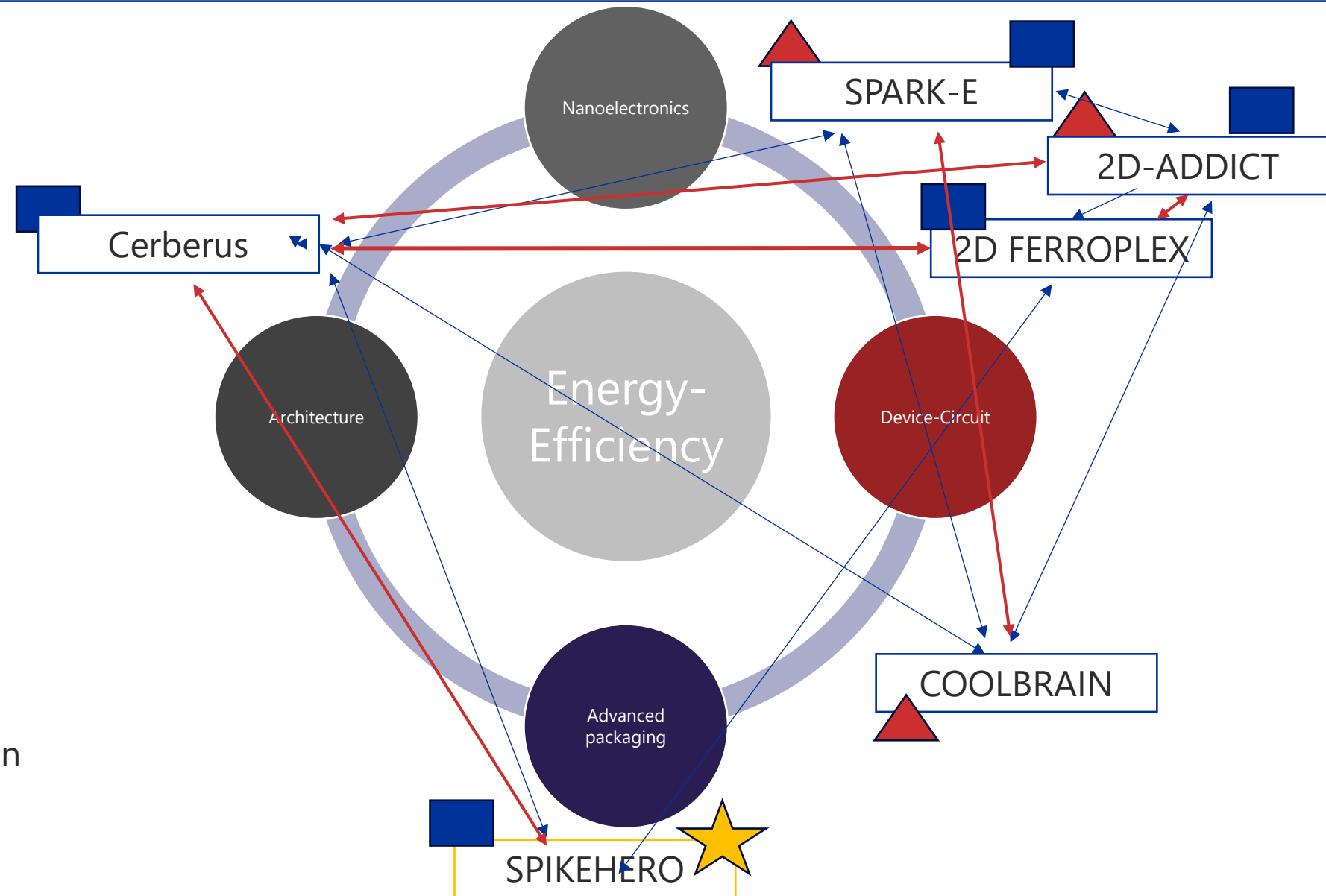
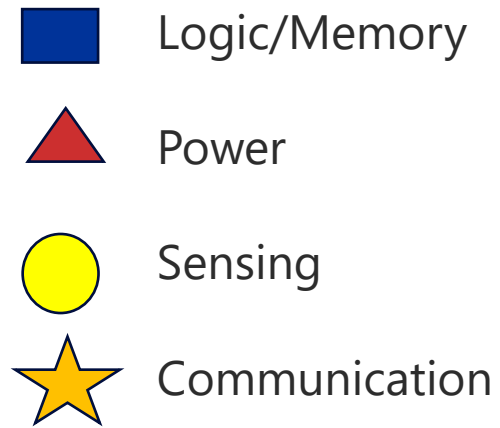
Sensors and
Actuators



Printing processes



PATHFINDER PORTFOLIO on Nanoelectronics for ENERGY-EFFICIENT SMART EDGE DEVICES



STARTUPS in Novel Materials/Processes/Metrology

European
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Introducing the Industry's First Power Silicon Interposer

We deliver the best-in-class power density and highest thermal performance

FononTech

IMPULSE PRINTING™

A revolutionary new printing technology

PiBond

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Materials for the future

We manufacture unique electronic materials

PiBond develops and produces unique materials that are activated by photon

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solutions

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Boosting the efficiency of compound semiconductor devices

A novel passivation technology to unleash the maximum efficiency potential of III-V devices

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QUANTUM DIAMONDS
SENSOR TECHNOLOGY

3D Defect Imaging.

Extract electrical activity images from microelectronics for failure analysis, process optimisation and yield improvement.

Unmatched depth reach.

See through packages and stacks of devices to identify metal defects that are buried and unreachable optically.

Nano-scale resolution.

Achieve down to 200 nm lateral and 1 µm depth resolution, pinpointing defect localization in 3D.

WOOPTIX

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How Wootpix can help? Through WFPI (Wavefront Phase Imaging)



Wootpix has developed a system called Phemet®, that uses WFPI, a proprietary wavefront sensing technique.

Phemet® introduces a new semiconductor wafer geometry technique that measures: shape, uniformity, nanotopography, and roughness of the entire silicon wafer in a single image. By collecting more than 10 million data points with subnanometer height resolution, Phemet® is the industry leader in speed and resolution.

STARTUPS in Photonics/Optoelectronics

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Accelerating Integrated Photonics Adoption



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Highly efficient, market first, 'All-Optic' processing chip

We are a fabless chip startup solving the main challenge of data centers -
Energy consumption and efficient capacity growth.

Our market first, highly efficient, 'All-Optic' silicon chip **seamlessly replaces**
millions of power-hungry and costly CMOS electronic chips in use in every
datacenter.

50%

40%

50%

x8



HOME PRODUCTS TECHNOLOGY NEWS HIRING ABOUT

AUGMENTED SILICON PHOTONICS FOR DATACENTER, AI/ML & 5G NETWORKS

AUGMENTED SILICON PHO

Our Photonic Integrated Circuits (PICs) rely on standard silicon photonics and
lasers and/or optical amplifiers (SOA), for improved performance, energy-effi



The Photonic Chip Company

iPRONICS
Programmable Photonics

/ Software-defined . photonics /

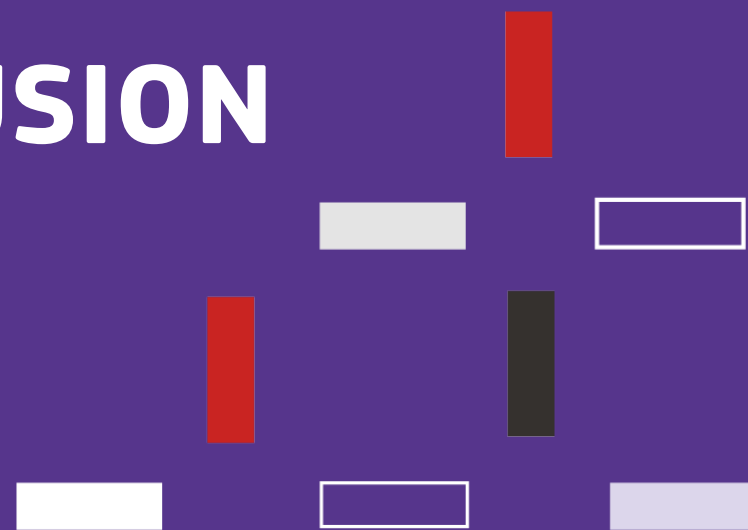
PROGRAMMABLE PHOTONICS
FOR PROCESSING & NETWORKING

Transition  Accelerator



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SUSTAINABLE ELECTRONICS and EU STRATEGIES

The European Chips Act

The Chips Act entered into force on 21 September 2023.

It aims to ensure that the EU strengthens its semiconductors ecosystem, increases its resilience, as well as guarantees supply and reduces external dependencies.

To achieve these aims the Chips Act consists of **three pillars**:



Chips for Europe initiative

- Enhancing and developing design tools and pilot lines for the prototyping, testing and experimentation of cutting-edge chips – including quantum chips
- Support for innovative start-ups, scale-ups and SMEs in accessing equity finance through the **Chips Fund**
- Fostering skills, talent and innovation in microelectronics

European Critical Raw Materials Act

Ensuring a secure and sustainable supply of critical raw materials for the Union



Strengthen all stages of the European CRM value chain



Diversify EU CRM imports to reduce strategic dependencies



Improve EU capacity to monitor and mitigate risks of disruption to CRM supply



Improve CRM circularity and sustainability



Innovative Advanced Materials for Europe (IAM4EU)

European Co-programmed Partnership
Strategic Research and Innovation Agenda (SRIA)

Expected impacts

EU Sovereignty

The European Chips Act has the ambition to double the current market share to 20% by 2030, with accompanying measures to build innovation and manufacturing capacity for next generation electronic, photonic and quantum chips enabled by advanced technology nodes, fully depleted Si on insulator, new semiconductor materials, integration, heterogeneous integration and advanced packaging. IAMs are an essential part of the semiconductor value chain. IAM4EU will leverage existing European materials competences in research, innovation and process integration to support a competitive and resilient European semiconductor industrial ecosystem.

Environmental footprint

IAM4EU will deliver novel IAMs specifically designed to enable the electronics industry transition to 'net-zero' through elimination of environmentally harmful substances, increased resource efficiency and waste reduction. These are applicable to both mature and emerging chip technologies. IAMs which can be substituted for existing CRM can offset supply chain issues in the industry, as outlined in the CRM Action. IAMs developed for the next generation of chips will deliver products with improved energy efficiency, durability, recyclability and circularity in accordance with the SAM approach and the Circular Electronics Initiative, proposed under the Circular Economy Action Plan (CEAP).

Sustainable value chain

The net impact will be to support the transition to circularity and reduce the environmental impact of the value chain, in particular the energy and material consumption, greenhouse gas emissions, substitution of environmentally harmful chemicals/materials, extraction, utilisation and waste while increasing resilience and decreasing dependencies on CRMs and other resources from third countries.

STEP

Strategic Technologies
for Europe Platform

Digital technologies and deep tech
innovation

Examples (indicative and non-exhaustive):

Advanced semiconductors technologies

Artificial intelligence technologies

Quantum technologies

Advanced connectivity, navigation, and digital technologies

Advanced sensing technologies

Robotics and autonomous systems

Clean and resource efficient technologies

Advanced materials, manufacturing and recycling technologies

Technologies for nanomaterials; smart materials; advanced ceramic materials; stealth materials; safe and sustainable by design materials; additive manufacturing; digital controlled micro-precision manufacturing and small-scale laser machining/welding; technologies for extraction; processing and recycling of critical raw materials and other components (e.g. catalyst, batteries), including hydrometallurgical extraction, bioleaching, nanotechnology-based filtration, electrochemical processing and black mass

Startups on SUSTAINABLE ELECTRONICS



Do Startups Have a Place in the Semiconductor Supply Chain? (eetimes.eu) 2023

Still, the innovations that drive transistor scaling are the domain of major industry players who can justify the massive R&D investments needed to develop the next process step. For example, Dutch company ASML, which specializes in the production of advanced lithography systems, invested a total of €3.1 billion in R&D in 2020. That figure represented approximately 14% of the company's net sales for the year—clearly not an appropriate place for startups to play.

I believe this perception is what keeps investors cautious when they hear “semiconductor” (or even “hardware” or “deep tech”) in a startup pitch. Nevertheless, there are several subdomains in the semiconductor industry where startups can still thrive, play a pivotal role and provide outsized returns.

Generative AI. The bar is lowest for this one, as investors are already predisposed to appreciate the category. In the semiconductor space, AI tools have the potential to design more efficient chips as well as chips that are purpose-built for specific functions. AI can also assist in placing and routing transistors and interconnects to optimize for size, cost and power. Finally, AI tools have a role to play in fault prediction, isolation and diagnosis, which should improve yields and lower costs.

Test and measurement. New categories of semiconductors will increasingly combine devices and components in ways that have never been tried before. An IoT device may have analog sensors, digital processors, RF transmitters, thin-film batteries and a mix of passives. Optical interconnects are being incorporated into new products, along with components based on new materials like silicon carbide or gallium arsenide. To reach commercial scale, new methods of collecting and analyzing test and yield data will need to be developed.

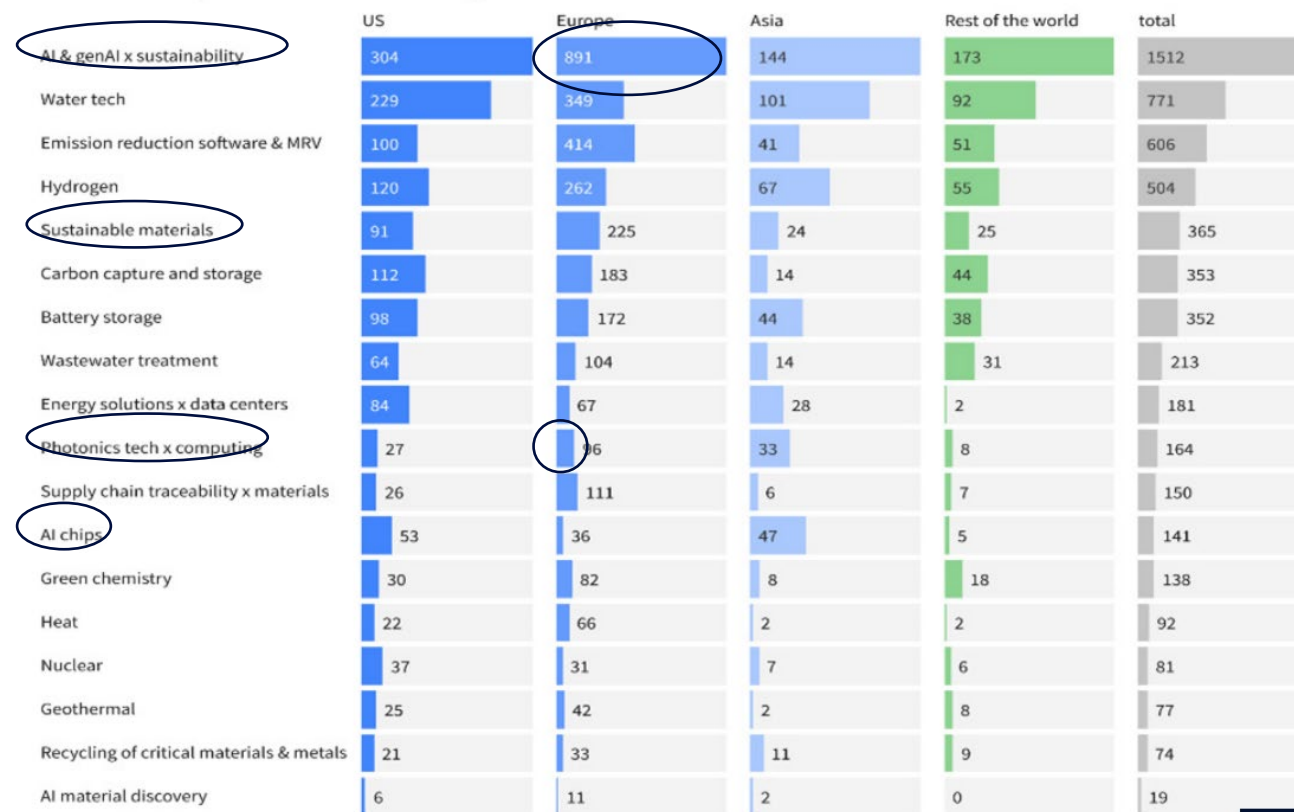
New materials and processes. Some of the materials and processes used in semiconductor manufacturing have remained relatively unchanged for more than 50 years. But today's increasingly complex chip designs—which may incorporate 3D stacking of thinned semiconductors, components that are vanishingly small, heterogeneous integration, chiplets and fragile materials like SiC—create difficulties in material handling, packaging and assembly. Combined with rising demand for manufacturing precision and cleanliness, these complexities bring opportunities for innovative materials and processes to disrupt manufacturing.

Sustainability. The semiconductor industry uses many chemicals and materials that are hazardous to the environment and generate tons of non-recyclable waste annually. The industry is also a major consumer of electricity, accounting for an estimated 1% to 2% of global electricity consumption. Innovations that replace existing solvents, acids and non-recyclable by-products of the manufacturing process with more environmentally friendly equivalents will be in demand by the industry, particularly given society's growing sensitivity around sustainability and environmental, social and governance initiatives. New factory growth will create opportunities for startups to innovate ways to reduce the energy used directly in the manufacturing of semiconductor chips, as well as the energy used in the production of the equipment and materials used in the manufacturing process.

For startups ready to innovate and participate in this exciting growth market, raising funds will continue to be difficult. Early investors must understand that deep tech means patient money, with longer times to return.

If you're a startup in this space, you will need to attract the interest of major industry players, as there is only a limited number of buyers. Take confidence in the fact that any traction in the supply chain is a sign that you have something of value. Furthermore, once your innovation is vetted and supported by the industry leaders, the barriers to entry for competitors become significant.

Number of startups in selected climate tech segments



Data as of Jan 30th 2025
Source: dealroom.co



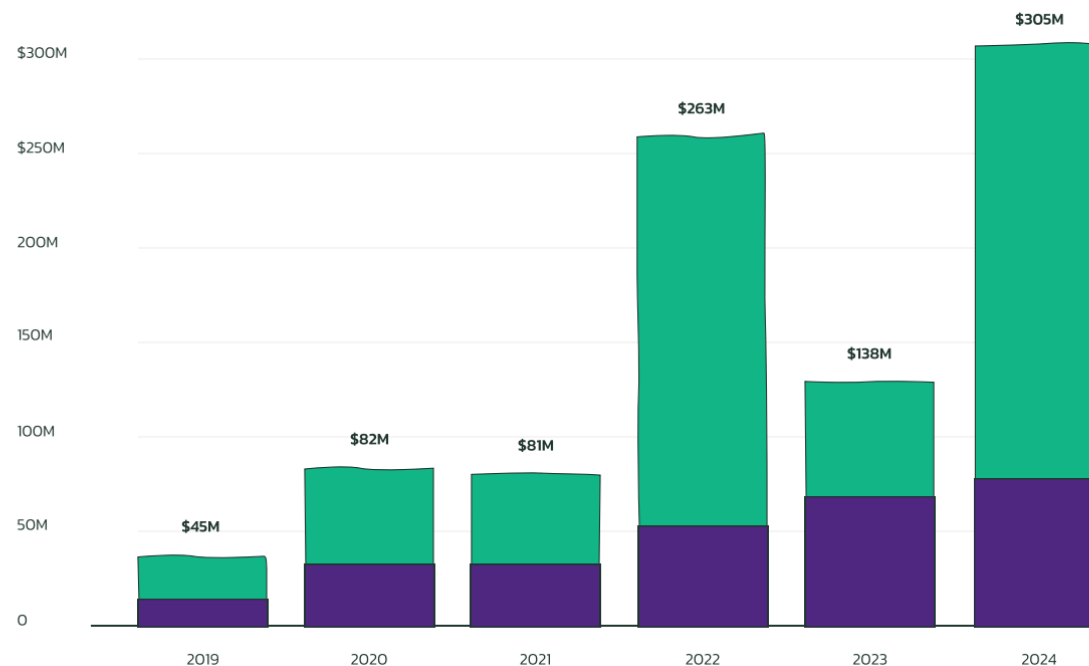
The greenfield opportunity in Semiconductors/Electronics

The VC investment in Europe in this sector is growing steadily, meaning that very novel solutions could find ways to commercialization in Europe through VC.

Green Computing in the AI era, Dealroom, Ignite, WorldFund 2025

VC FUNDING IN SELECTED EUROPEAN GREEN COMPUTING STARTUPS

EARLY-STAGE (\$0-15M) BREAKOUT-STAGE (\$15M-100M)



Conclusions

- **Huge pipeline of innovations** in Semiconductors/Electronics in EU. **Sustainability** might be the topic where we are more advanced than others in terms of Exploitation.
- We are **contributing to relevant policies** like Green Deal, Chips Act, Critical Raw Materials, Advanced Materials, Industry5.0 or VirtualWorlds Initiative
- The greenfield opportunity. Semiconductors/Electronics sector is characterized by **long development timelines and huge investments** needed but VC investment in Europe is growing in this field.