FMD Recommendations for the European Chips Act 2.0

Executive Summary

The Research Fab Microelectronics Germany (FMD) welcomes the European Commission's ambition to further strengthen Europe's semiconductor ecosystem through the European Chips Act 2.0 (EUCA2). Building on the foundation established under the first Chips Act, the next phase should pursue two central objectives: increase European competitiveness in chip-technologies and enhance Europe's technological sovereignty. To achieve these goals, the second Chips Act needs to reinforce and expand Europe's existing technological capabilities and pilot line infrastructures in microelectronics over the long term while making the journey from research to industrial application significantly shorter and faster.

Achieving these objectives requires a coherent and accessible lab-to-industry pathway that connects collaborative R&D, pilot line infrastructure, technology validation and qualification with fast industrial deployment. Applied research organizations and pilot lines are pivotal enablers of this pathway. Whereas the first European Chips Act concentrated on establishing and upgrading pilot-line infrastructure through substantial capital investment, the European Chips Act 2.0 must now ensure that these capacities are used sustainably and effectively for Europe's semiconductor industry.

Europe needs optimized instruments that incentivize cooperation between industry, applied research and technology organizations and pilot lines, and remove barriers that impede technology transfer. By strengthening existing European capabilities and linking them more directly to industrial demand, Europe can translate its investments in research and pilot line capacity into scalable industrial impact, greater competitiveness and lasting technological sovereignty.

With Chips Act 2.0 the European Union should create a framework that enables non-profit applied research and technology organizations to offer small-volume manufacturing capabilities to SMEs and start-ups, accelerating their path to market.

The European Commission should make Physical AI a strategic priority by establishing a dedicated European pilot line.

EUCA2 should provide the funding and support mechanisms necessary to maintain a dedicated, long-term European Investment programme for the existing chips pilot lines to continue to excel and accelerate industrial scale-up in Europe.

The European Commission should adopt FP10 funding rules to accommodate for the actual operational costs of modern technology infrastructures, such as clean rooms, and enable Europe to maintain its world-class research and innovation capabilities.

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The following priorities should be reflected in the Chips Act 2.0:

Making the lab-to-industry transfer a core objective of the Chips Act 2.0:

- Chips Act 2.0 should address the time lag between technological development and industrial uptake more systematically. Funding and policy instruments should support the full innovation chain, allowing technologies to expedite from collaborative R&D through prototyping, testing, validation and qualification towards industrial application.

Strengthening pilot lines as Europe's strategic technology-transfer infrastructures

- The Chips Act (1) pilot lines provide an essential environment to accelerate the development, test and validation of novel semiconductor technologies to higher technology readiness levels and industrial deployment.
- Technological development does not end when a pilot line project is completed. Companies need to further develop, prototype, validate and qualify technologies before transferring them into production. Chips Act 2.0 should therefore connect Pillar I research infrastructures with industrial deployment instruments and provide easy open access mechanisms specifically supporting this transition (e.g. Lab-to-Fab Accelerators).
- The European Union should establish a dedicated European pilot line for Physical AI applications, complementing existing and planned technology pilot line, to accelerate the transition from research to industrial deployment in this new, strategically utmost important, emerging technology.

Making small-volume manufacturing a core element of Europe’s lab-to-industry strategy

- Small-volume manufacturing enables the repeatable production of components in a manufacturing environment representative of industrial production, while processes are still being validated, qualified and stabilized. It allows companies to qualify products, validate market demand and prepare industrial ramp-up without having to invest prematurely in dedicated production capacity or transfer immature processes to a volume manufacturer.
- Without access to small-volume manufacturing, promising technologies risk remaining between prototype development and industrial production, preventing SMEs, start-ups and other innovative companies from bringing new semiconductor solutions to market.
- The European Chips Act 2.0 should therefore recognize small-volume manufacturing as a strategic function of European pilot lines and applied research and technology organizations. Appropriate funding and State aid frameworks should enable these organizations to provide pilot and small-series manufacturing where the market does not yet offer adequate capacity. Strengthening this capability is essential for shortening time to market, securing European value chains and translating Europe’s research excellence into competitive products and industrial growth.

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Adapting the EU State aid framework to enable small-volume manufacturing

- To fully leverage small-volume manufacturing as a bridge between technology development and industrial production, EU State aid rules should better accommodate small-volume manufacturing and industrial technology transfer. This should enable legally sound support, beyond prototyping, for pilot and small-series manufacturing as well as the scaling of innovative microelectronics solutions, particularly where low production volumes mean that the market does not yet provide adequate manufacturing capacity.
- This would help close the gap between prototype development and industrial manufacturing and enable applied research organizations to accelerate the transfer of new technologies to market deployment.

Connecting Europe's technological strengths with industrial demand

- European priorities need to be based on a balanced assessment of existing strengths, scalability, market potential and strategic policy objectives. Particular attention should be given to fields in which Europe already holds strong positions or has a realistic opportunity to achieve technological leadership, for instance, in edge and physical AI, power semiconductors, sensors, specialized industrial chips, semiconductor equipment and metrology, security-critical solutions, chip design and advanced packaging.
- Europe’s strength in equipment, power devices, and sensors is a strong foundation for the development of Physical AI. Physical AI brings sensing, real-time computing and actuation together, creating opportunities for European suppliers of sensors, power electronics and energy-efficient embedded chips to deliver differentiated, high-value solutions. Chips Act 2.0 should therefore support joint development and validation by applied research organizations, semiconductor suppliers and industrial users, enabling European microelectronics solutions to meet this growing demand and capture the resulting market opportunities.
- At the same time, Europe needs a balanced technology portfolio. Access to leading-edge logic remains crucial for AI, high-performance computing and future systems, while sustained investment is equally necessary in power devices, sensors, microcontrollers and application-specific technologies where Europe already has significant industrial capabilities. New capacities should be developed where strategic dependencies could constrain innovation, competitiveness or security of supply.
- Grand Challenges, Demand Accelerators and related instruments should enable industry, applied research organizations and pilot lines to jointly develop strategic European technology roadmaps. These roadmaps should translate the requirements of Europe’s strong end-user industries into shared research and development priorities, coordinated co-development activities and collaborative projects. Applied research provides the crucial interface between technological development, pilot line capabilities and industrial needs.
- A closer alignment between industrial demand and technological development will enable more sustainable, long-term relationships between RTOs and end-user industries,

strengthening Europe's entire value chain, from knowledge creation and technology development to industrial application and new products.

Providing clear definitions for new strategic instruments

- Measures introduced under Chips Act 2.0, such as "Grand Challenges" and "Strategic Projects," need to be precisely defined in terms of their objectives, scope and role within the European semiconductor ecosystem. The same applies to the "Demand Forum" and "Demand Accelerators" listed in the EUCA2.0 proposal of the European Commission. Clear frameworks are needed to provide reliable guidance and governance mechanisms for developing joint strategic initiatives and aligning technology development with European priorities (see bullet point above).

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