POSICIONAMIENTO

Joint proposal from the Spanish semiconductor ecosystem for the public participation process of the European Chips Act 2.0

About AESEMI

AESEMI is the Spanish Semiconductor Industry Association, an organization that represents Spanish entities engaged in microelectronic design and semiconductor manufacturing.

The Association was founded at the end of 2021, motivated by the great need to provide the sector with its own entity that would channel the voice of the industry in a context in which semiconductors have become a strategic asset on which industries that are fundamental to the European Union depend. Today, AESEMI has more than 110 members, including those entities that have begun the membership process, among which are companies of many different types, universities from all over the country, and R&D centers.

The aim of our association is to raise the profile of all entities that form part of the technological ecosystem of semiconductors, microelectronics, and related technologies in Spain.

About the Chips Act proposals

1. Introduction and context

This document is the result of collaboration between organizations representing different parts of the Spanish semiconductor and associated technologies ecosystem, such as VaSiC, AESEMI, AMETIC, ADIGITAL, and COIT, together with universities, research centers, and companies in the Spanish semiconductor ecosystem. During 2025, these entities have worked in a coordinated manner to define a common strategic position in response to the public consultation on the European Chips Act 2.0, with the aim of contributing to the revision of the European regulatory and financial framework that will guide microelectronics policy in the coming years.

The text harmonizes the complementary views of business associations and technology institutions. This proposal reflects a pluralistic, structured, and realistic

vision that is representative of the capabilities and ambitions of the Spanish ecosystem within the European context.

The European Chips Act 2.0 is not a mere continuation of the previous framework: it represents a strategic redefinition that seeks to balance technological leadership, industrial sovereignty, and the sustainability of the European semiconductor ecosystem. Thanks to public-private collaboration and the coordination of key players, Spain can play a significant role in the development of design, R&D, production, packaging, and talent training capabilities.

2. Objectives of the proposal

The overall objective of this proposal is to provide a comprehensive overview of the Spanish ecosystem that complements the European industrial perspective and helps to consolidate a coherent, efficient operational framework adapted to the sector's actual capabilities. To this end, the following strategic objectives are proposed:

1. Strengthen Europe's global competitiveness by balancing design, manufacturing, and advanced materials capabilities, prioritizing excellence in R&D and support for technology-based companies.
2. Recognize the strategic value of the European fabless model, placing design and intellectual property (IP) as central pillars of the ecosystem's growth. This model, which predominates in Spain with more than 80% of companies in the sector, represents a structural advantage that must be enhanced through specific financial and regulatory instruments.
3. Promote training, mobility, and specialization of talent through a European micro-credential framework, the expansion of dual training programs, and the creation of continuous learning pathways between vocational training, universities, and industry.
4. Align financing mechanisms and public aid with the actual timescales of technological development, promoting flexible, predictable, and coordinated structures among Member States, reviewing state aid regulations where necessary.
5. Boost private investment by creating a European guarantee mechanism that reduces the risk of advanced innovation projects and encourages cross-border cooperation.
6. Balance supply and demand policies by introducing incentives that favor the adoption of European chips in key sectors such as automotive, energy,

defense, health, and telecommunications, and by introducing mechanisms to ensure optimal levels of service provision in these sectors.

7. Strengthen the participatory governance of the Chips Act 2.0 by integrating industry associations and clusters into decision-making bodies, ensuring balanced and transparent representation.
8. Consolidate Spain's position as a hub for European innovation and cooperation, leveraging the coordination capacity between technology centers, companies, and public administrations.
9. Convert strategic priorities into operational instruments: define measures and criteria that can be regulated at the European level (legal definition of Open EU Foundry, mandate for Chips JU on EDA/OpenTapeout, rules for a European Guarantee Facility, etc.) with deadlines, tangible objectives, and public responsibilities.
10. Ensure the security, sustainability, and resilience of the supply of strategic raw materials through coordinated policies that provide secure sources, processing capacities, and recycling processes that reduce external dependence and support European industrialization.

3. Main recommendations

3.1. Start-up & Scale-up – From innovation to market

The European semiconductor ecosystem faces the challenge of transforming research into sustainable commercial results. In this context, the fabless model has become a driver of competitiveness that must be supported by specific business scaling policies. This section addresses how the Chips Act 2.0 can serve as a catalyst for technological entrepreneurship, driving the transition from innovation to the market.

Europe has a growing network of technology design and service companies that can compete globally if they have access to design tools, patient capital, and support during growth stages. Strengthening this segment is essential to reducing external dependence and ensuring technological sovereignty.

The ability of companies to scale up depends not only on their technological capabilities, but also on the existence of a balanced support framework. To date, the distribution of support instruments has not been uniform, limiting the ability of many SMEs and start-ups to access crucial financing in the early stages. It is essential to correct these inequalities so that all companies with growth potential have the necessary resources to compete and expand.

Likewise, aid for fabless companies must be designed with sufficient flexibility to adapt to the real needs of each project. Not all companies require the same tools or investments, so it is necessary to promote aid that allows companies to invest in operating and capital expenditures with the greatest possible cross-cutting approach.

Recommendations:

- Introduce specific incentives for the fabless model, facilitating access to open EDA tools and shared tape-out services.
- Create a European Go-to-Market budget to cover marketing, certification, and pilot testing costs.
- Establish a framework of growth incentives that prevents the loss of aid or tax advantages when companies scale up.
- Strengthen access to private financing through a European Guarantee Facility for Semiconductors, which mitigates investment risk and complements public support.
- Simplify guarantees and promote mutual guarantee companies.
- Coordinate the granting processes between the Commission and the Member States.

3.2. Talent, training, and microcredentials

European competitiveness in semiconductors does not depend solely on infrastructure or funding, but fundamentally on talent. The shortage of professionals specializing in microelectronics, chip design, advanced optics, materials, and photonics represents one of the main bottlenecks in the European ecosystem. In Spain, the growth of research centers, startups, and industrial plants has increased the demand for engineers, technicians, and technology management profiles, creating the need for a coordinated strategy at the European level.

Training and mobility are essential elements, but they must be accompanied by effective talent retention policies. The reality is that, both in Spain and in Europe as a whole, a significant proportion of highly qualified engineers and professional s trained in fields such as microelectronics end up pursuing their careers in third countries. To prevent this brain drain, it is essential to generate professional opportunities within the ecosystem itself, strengthening the capacity of companies to offer attractive projects and competitive career paths.

Recommendations:

- Strengthen existing programs such as Chip Chairs (a national call for proposals launched in 2023 in Spain as part of the PERTE Chip program) and expand them at the European level.
- Develop a European micro-credential framework that recognizes skills in microelectronics and design, promoting labor mobility and transnational cooperation.
- Create modular training pathways that integrate vocational training, university education, and continuing education at the European level.
- Facilitate the attraction of global talent through flexible visas and mutual recognition of qualifications.
- Encourage internal mobility in Europe through scholarships and long-term cross-sector internship programs.
- Expand collaboration with geographical regions in Latin America that have public commitments similar to those of the European Union.

3.3. State aid and regulatory framework

The revision of the Chips Act must resolve the lack of consistency between European financing instruments and national frameworks. The experience of the first Chips Act revealed bureaucratic limitations, a lack of flexibility, and slowness in the execution of funds. A flexible regulatory framework, adapted to the nature of the sector, is essential for Europe to compete with the large state support programs in the US and Asia.

The new regulatory design should ensure balanced competitiveness between Member States, allow for state aid tailored to the size and maturity of companies, facilitate reviews of the scope and objectives of authorized aid, establish maximum deadlines for resolving aid granting processes, and encourage private investment without distorting the market. In addition, better coordination between the Commission, national governments, and innovation agencies is crucial.

State aid must be designed in such a way that it does not distort competition or concentrate resources in a small number of players. It is advisable to establish control mechanisms to monitor the total volume of public aid received by each beneficiary, thus ensuring more balanced access to support instruments.

Similarly, given the complexity of projects in this field, it would be beneficial to enable open-ended calls for research and development activities, allowing entities to submit individual projects without the obligation to form consortia when this is not necessary. Furthermore, consideration should be given to establishing continuous submission systems or increasing the number of annual calls for

proposals, in order to avoid funding opportunities being limited to very narrow time frames.

Recommendations:

- Create a specific regulatory framework for the semiconductor sector, with rules that differ from those of other industrial sectors and favor investment and R&D.
- Facilitate adaptation to market dynamics with maximum deadlines for the authorization of aid by the European Commission and agile mechanisms for reviewing the scope and objectives of authorizations granted.
- Introduce calls for proposals with open time frames for the submission of particularly complex projects.
- Allow direct aid to design centers, equipment suppliers, and laboratories.
- Introduce a "sovereignty seal" to facilitate rapid access to national and European funding.
- Avoid administrative duplication and extend the deadlines for the execution of funds.
- Improve interministerial coordination in the implementation of national programs derived from the Chips Act.
- Establish a requirement, at the national level and coordinated by the Commission, to map the availability and supply chains of strategic raw materials for semiconductors, including mining, chemical processes, and gas and resin suppliers.
- Explicitly integrate the priorities of the Chips Act 2.0 with the framework of the *Critical Raw Materials Act* to align investment priorities.
- Recognize suppliers of equipment, gases, chemicals, and metrology as priority beneficiaries in calls for proposals and support programs, allowing their direct participation in consortia and funding lines.

3.4. European Competitiveness Fund (ECF), Partnership Plans, and Private Capital

Access to financing is one of the biggest challenges for European technology companies. Although public funds are necessary, they are not sufficient: a financial structure is needed to mobilize private capital and enable the financing of high-risk technology projects. The European Competitiveness Fund (ECF) should act as a lever for mixed investment, promoting pan-European projects and strengthening local value chains. However, the ECF should not be the only source of EU budget support

for the microelectronics sector; National and Regional Partnership Plans should include a digital sovereignty objective similar to the digital investment objective included in the MRR.

Europe also needs guarantee instruments comparable to those of other international programs, which facilitate the entry of institutional investors and reduce barriers to access for startups and SMEs.

The European Competitiveness Fund must explicitly guarantee access for innovative SMEs, which are the most vulnerable and, at the same time, the most strategic link in the ecosystem. These companies often lack the financial resources necessary to undertake critical investments in design, prototyping, or scaling, while public organizations already have specific financing mechanisms in place. Ensuring non-discriminatory access tailored to the needs of SMEs will be essential to diversifying the European industrial base.

Recommendations:

- Establish a European guarantee mechanism to reduce the risk of private investment in semiconductors.
- Replace one-off funds with structured financing based on milestones and results.
- Include a target of 20% investment in digital sovereignty in National and Regional Partnership Plans financed by the EU budget.
- Promote a European Single Capital Market that allows cross-border investments in semiconductors.
- Maintain subsidies as the main tool for SMEs and technology centers.
- Include monitoring mechanisms to assess the social and technological impact of funded projects.
- Create instruments within the ECF to finance projects for the transformation and processing of strategic raw materials with conditions adapted to CAPEX-intensive and long-term horizons.
- Promote mechanisms to encourage the flow of capital towards investment vehicles in strategic technologies in different formats (corporate venturing, venture capital, etc.).

3.5. Industrial associations, governance, and coordination

The success of the Chips Act 2.0 will depend on the ability to coordinate between different levels of governance. The active inclusion of associations, clusters, and regional networks will ensure the consistency and representativeness of the

implementation process. The role of these entities should not be limited to consultation, but should be incorporated as a structural part of decision-making.

Furthermore, European industrial diversity requires flexible governance that combines a common strategic vision with adaptation to national and regional realities. In Spain, the collaboration between all the actors that make up this document demonstrates the value of cooperative models.

Recommendations:

- Integrate sector associations into the Chips Joint Undertaking (Chips JU) and the European Semiconductor Regions Alliance (ESRA), also including national industry associations that bring together demand sectors.
- Create a European Committee of Semiconductor Industry Associations to channel joint positions to the Commission.
- Replicate inclusive governance models in Member States and enable stable operational funding for associations and clusters.
- Strengthen interregional cooperation through national platforms and European innovation networks.
- Implement specific funding mechanisms and incentives for sectoral associations in the different Member States.

3.6. Incentives for demand and driving sectors

The Chips Act 2.0 must go beyond supporting supply to become a driver of transformation for the entire European economy. The adoption of European chips in key industrial sectors will consolidate technological sovereignty, reduce external dependencies, and create sustainable economies of scale.

Sectors such as automotive, energy, defense, telecommunications, and healthcare can act as technological drivers, boosting demand and strengthening the internal market. Incentives should stimulate both innovative public procurement and strategic alliances between manufacturers and users.

Recommendations:

- Create incentive programs for the adoption of European chips in automotive, energy, defense, healthcare, and Industry 4.0.
- Promote co-development programs between chip suppliers and industrial users, with the ambition of meeting self-sufficiency targets in the supply chain.
- Strengthen the competitiveness of European ancillary industries (chemicals, materials, metrology).

- Promote innovative public procurement and "first customer" strategies that accelerate the adoption of European solutions.

3.7. Strategic challenges and opportunities

The current geopolitical context and global competition in frontier technologies call for a more ambitious and cohesive European strategy. The Chips Act 2.0 should focus on areas where Europe can differentiate itself, maximizing its industrial and technological impact.

Integrated photonics, AI hardware, advanced materials, and energy efficiency are fields where Spain already excels and can contribute significantly to European leadership. This section identifies priority opportunities to turn public investment into a driver of strategic autonomy.

Priorities:

- Promote integrated photonics and edge AI as areas of strategic specialization.
- Strengthen the role of RISC-V, open design, and sustainable AI hardware.
- Support the development of critical materials and processing equipment to reduce dependencies.
- Consolidate international cooperation with partners such as Japan, South Korea, Latin America, and the US in advanced R&D.
- Prioritize investments in More-than-Moore / mature nodes (RF, analog, power, FD-SOI).
- Ensure a sustainable supply chain, develop capabilities in gases/resins/equipment, promote circularity, and establish forecasting/strategic reserve systems, substitution research, and international supply agreements.

4. Conclusions

This proposal consolidates the position of the Spanish semiconductor ecosystem as a strategic ally in building a more competitive and technologically sovereign Europe. In Spain, coordination between all participating organizations, representing the Spanish semiconductor ecosystem as broadly as possible, reflects the maturity of the sector and its willingness to collaborate in defining and implementing an operational Chips Act 2.0.

In particular, we emphasize the need for the new framework not to be limited to generic objectives, but to include definitions and operational mechanisms that

enable the rapid and secure deployment of industrial capabilities. Immediate priorities include: measures to ensure access to design and prototyping, the consolidation of industrial capabilities accessible to the design community, financial instruments to mobilize private capital, and explicit measures to guarantee security of supply and strengthen the auxiliary and raw materials chain.

We reinforce the call for inclusive governance that incorporates industrial associations and technical centers in the design and monitoring of instruments, as well as the creation of impact indicators and the execution of operational pilots that validate the proposed models before their deployment at scale.

The participating entities reiterate their commitment to actively participate in the technical and legal drafting processes, working groups, and pilot initiatives necessary for the Chips Act 2.0 to translate into real industrial capabilities, skilled employment, and strategic resilience for Europe.

5. Participants

5.1 Coordination

- Carlos G. Triviño — VaSiC (General coordination)
- Alfonso Gabarrón — AESEMI
- Raquel Jorge — ADIGITAL
- Albert Anglarill — Secretary of the Electronic Industry Commission

5.2 Sector group leaders and technical managers

- Ignacio Astilleros — OPENCHIP (Start Up & Scale Up)
- Luis Fonseca — IMB-CNM/CSIC (Talent)
- José Capmany — iPRONICS (Integrated Photonics)
- Marisa López-Vallejo — Polytechnic University of Madrid (Telecommunications)
- Javier Martí — DAS Photonics (Defense/Space)
- Nuria Arenas — Broseta Abogados (Regulation and State Aid)
- Teresa Cerveró — BSC (AI and Semiconductors)
- Vanessa Iglesias — BSC (AI and Semiconductors)
- Ramón Torres — ICMol-UV (Advanced Materials)

- Raquel Jorge — ADIGITAL (European Competitiveness Fund)
- Miguel Chanca — BOSCH GmbH (Automotive)
- Empar Martínez — FEMEVAL (Energy and Semiconductors)
- Marcos Martínez — Coordinator of the Microelectronics Working Group
- Josep Bosch — Policy Manager for the Electronics Industry

5.3 Technical participation and collaborating experts

(Participants who have contributed to technical working groups, sectoral round tables, and proposal drafting)

- Researchers and technicians from: ICFO, CNM-CSIC, BSC, ICMol-UV, IMB-CNM, UPM, UPV, UC3M, UVigo.
- Business and technology representatives from: OPENCHIP, DAS Photonics, iPRONICS, Wiyo (Yocto Technologies), Imasenic, KDPof, ICMálaga, BOSCH GmbH, Ricardo Valle Institute of Innovation, Broseta Abogados.
- Representatives from clusters and associations: Valencia Silicon Cluster (VaSiC), Madrid Semiconductor Cluster, Catalan Semiconductor Alliance, CanaryChip, COIT
- Specialists in materials, equipment, and manufacturing: Functional printing platforms, IMAPS, gas and resin suppliers.

5.4 Collaborating entities and participating organizations

- Associations and clusters: Spanish Semiconductor Industry Association, AMETIC, ADIGITAL, Fotonica21, SECPHO, SERNAUTO, GAIA, CanaryChip, Madrid Semiconductor Cluster, Catalan Semiconductor Alliance.
- Centers and universities: ICFO, CNM-CSIC, BSC, ICMol-UV, IMB-CNM, UPM, UPV, UC3M, UVigo, University of Malaga, University of Las Palmas de Gran Canaria.
- Companies and industry: OPENCHIP, DAS Photonics, iPRONICS, BOSCH, fabless companies, equipment suppliers, and test/packaging services.
- Administration and support organizations: ICEX, regional innovation organizations and provincial clusters, COIT.
- Scientific and technical organizations: IMAPS, IEEE, Confederation of Scientific Societies of Spain, CEET.

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ANNEX I. SECTORAL TECHNOLOGY AREAS – Expanded proposal

Spanish ecosystem position paper on the reform of the Chips Act

General introduction

The technical annex to the joint proposal details the priority technology areas identified by the sectoral working groups of the Spanish semiconductor ecosystem. This document complements the main institutional proposal, providing technical depth and a concrete vision of national capabilities, value chain challenges, and opportunities for European cooperation.

Each section reflects the contribution of experts from the subgroups that worked during 2025 within the framework of the Working Group for the preparation of the national proposal, together with the support of sectoral associations, research centers, and technology companies. The proposals are aligned with the objectives of the European Chips Act 2.0 and seek to strengthen European leadership in areas where Spain has distinctive strengths.

A. Telecommunications and semiconductors

Telecommunications are the backbone of Europe's digitalization and strategic autonomy. Future 5G and 6G networks require advanced chips that combine high frequency, low power consumption, and massive integration capabilities. Spain has centers of excellence in microelectronics, photonics, and radio frequency that can contribute to the development of a competitive European ecosystem.

Priority lines of action:

- Promote research into System-on-Chip (SoC) and Application-Specific Integrated Circuits (ASIC) for 5G/6G telecommunications infrastructures, such as AI RAN ecosystems.
- Promote the design and manufacture of state-of-the-art RF amplifiers and transceivers based on GaN, GaAs, and SiC technologies.
- Promote the heterointegration of chiplets and modular architectures under open standards such as UCIe.

- Create a European hub for RF validation and advanced packaging, coordinated by Spain, to accelerate technology transfer.
- Include hardware cybersecurity as an essential element of critical infrastructures.

B. Defense, security, and microchips

Defense and national security depend on advanced microelectronic technologies. The ability to design and manufacture chips in Europe is essential for strategic sovereignty. This area combines industrial expertise with the needs of defense ministries and space agencies.

Main proposals:

- Develop a European line of secure and resilient microchips for defense, space, and critical applications.
- Create low-scale, highly flexible Lab-to-Fab facilities for rapid prototyping in defense and space.
- Invest in radiation-resistant materials and secure design technologies (hardware-based trust, anti-tamper, secure IP).
- Promote cooperation between the European Space Agency (ESA) and Spanish universities for the development of new ASICs for satellites.
- Establish a European chip security strategy with audit and certification mechanisms.

C. Artificial Intelligence, computing, and European hardware

The artificial intelligence revolution requires an efficient and accessible hardware base. Europe has the opportunity to position itself by developing open architectures, specialized accelerators, and collaborative design ecosystems.

Strategic objectives:

- Promote the development of European hardware for AI, prioritizing RISC-V architectures, neuromorphic systems, and low-power inference chips.
- Create a European collaborative design program (OpenTapeout) that facilitates access to open source EDA tools and shared manufacturing resources.
- Establish a European AI Hardware Network, led by centers such as the BSC and the UPM, connecting universities, startups, and design centers.

- Develop green chips for AI, with high energy efficiency and life cycle traceability.
- Promote the use of edge computing with European semiconductors in industrial and telecommunications networks.
- Promote the expansion of the manufacturing machinery ecosystem to advanced packaging segments and beyond Moore's Law.

D. Integrated photonics and advanced optoelectronics

Integrated photonics represents one of the most promising fields for the next decade. Its combination with traditional semiconductors opens up opportunities in sensors, optical communications, high-performance computing, and clean energy.

Priority areas:

- Recognize photonics as an enabling technology within the Chips Act 2.0 and align it with the Horizon Europe and Key Digital Technologies JU programs.
- Boost the integrated photonics ecosystem through shared infrastructure and the development of new pilot test lines.
- Promote photonic chips for AI and optical communications, integrating sources, detectors, and optical guides in silicon.

E. Advanced materials, sustainability, and equipment

The development of advanced materials is essential for European technological independence. The value chain must incorporate everything from critical raw materials to sustainable manufacturing processes.

Lines of action:

- Encourage research into 2D materials, perovskites, polymers, and functional ceramics for semiconductor applications.
- Encourage European production of gases, resins, and chemicals essential for chip manufacturing.
- Develop European-made lithography, deposition, and metrology equipment to reduce external dependencies.
- Promote circularity and material recovery in the microelectronics industry.

- Support the use of renewable energies and manufacturing processes with low environmental impact.

F. Automotive, mobility, and semiconductors

The European automotive sector is undergoing a profound technological transformation towards electrification, connectivity, and autonomous driving. Semiconductors are at the heart of this evolution.

Proposals:

- Encourage the production of power and control chips for electric vehicles and ADAS systems.
- Develop a European approval program to validate automotive chips manufactured in the EU.
- Include criteria for the use of European technology in incentives for vehicle manufacturers.
- Promote the integration of European-designed sensors, cameras, and microcontrollers.
- Coordinate cooperation between the automotive industry and national technology centers.

G. Energy, sustainability, and semiconductors

The energy sector is one of the biggest beneficiaries of the semiconductor revolution. Energy conversion, storage, and smart management technologies require advanced and efficient microelectronic solutions.

Priorities:

- Promote the development of energy-efficient chips for power conversion and smart grid control.
- Integrate energy sensors and embedded control systems to optimize electricity distribution.
- Promote the manufacture of broadband semiconductors (SiC, GaN) in Europe for energy applications.
- Encourage energy recovery and material recycling projects in chip production.
- Establish a European green microelectronics program, with incentives for low-consumption and low-emission technologies.