INDUSTRIAL ALLIANCE FOR PROCESSORS AND SEMICONDUCTOR TECHNOLOGIES

TERMS OF REFERENCE

1. BACKGROUND

Microchips, including processors, are key technologies that power all electronic devices and machines we use today. Chips underpin a large variety of economic activities, and determine their energy efficiency and security levels. Their ubiquity has led to the growth of a global industry, with a complex supply chain. Capabilities in the development of processors and chips are crucial to the future of today's most advanced economies. The Alliance on processors and semiconductor technologies is a key instrument to further industrial progress in the EU in this area.

Europe's position on the semiconductor market has been gradually declining since 1990 to around 10% today. As highlighted in the update to EU's 2020 Industrial Strategy[1], this loss has been translated into a sharp increase of Europe's dependency on chips, in particular processors, produced in other regions of the world in a very concentrated industry - notably those enabling communications, data processing and compute tasks that are key for many current and future applications - including cloud services, autonomous driving, industrial automation and edge AI. Technology development around next-generation processors – a key enabler of digitalisation across sectors - will substantially transform the economy and pose new challenges in terms of competitiveness, security, energy efficiency and data protection.

Europe has to ensure its technological sovereignty and competitiveness in new emerging mass markets and its capacity to address key environmental and societal challenges, including security and sustainability. For doing so, Europe needs to develop the next-generation of processors and semiconductors, including chips and embedded systems that offer the best performance for specific applications across a wide range of sectors.

In the 2020 State of the Union speech, the President of the European Commission stated: *"We want the European industry to develop our own next-generation microprocessor that will allow us to use the increasing data volumes energy-efficient and securely."* This will require a collective effort to pool investment and to coordinate actions, by both public and private stakeholders.

[1] Commission Staff Working Document (SWD(2021) 352 final) "*Strategic dependencies and capacities Accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery*", 5 May 2021, https://ec.europa.eu/info/files/staff-working-document-strategic-dependencies-and-capacities_en

The EU semiconductor industry has currently very limited market presence. The Digital Decade Communication highlights the need for doubling Europe's market share by 2030 and sets a dedicated target.

In terms of design of general-purpose processors, Europe relies almost entirely on design tools and design IP developed by non-EU companies. Europe is rather strong in dedicated processors (micro-controllers) for embedded systems applications in automotive and machinery. However, these processors are currently largely based on the architecture developed by one single company.

In terms of manufacturing, high-end microprocessors such as CPUs and GPUs require leading-edge fabrication facilities. Scaling down towards leading-edge nodes such as 2nm, as being planned in other parts of the world, will be one important objective in boosting Europe's capabilities.

Processors and semiconductor technologies are key enablers. All major semiconductor-producing regions have put in place substantial industrial policies in these areas. EU plans for investment have to be considered in a global context of strong State support to the sector in other regions to minimise dependencies and strengthen their global presence in specific segments of the value chain. Given the geopolitical context, sometimes aggravated by export restrictions, it is essential for European industry and for all actors of the electronics value chain to reinforce its ecosystem and address important gaps that would otherwise be detrimental to Europe's capabilities to deliver on key policy objectives including digital transition, cybersecurity, energy-efficiency, contestable markets and economic competitiveness, whilst strengthening strategic cooperation with likeminded partners to build resilient value chains.

In this context, a large number of Member States, supported by the European Commission, have joined forces through 'A European Initiative on Processors and Semiconductor Technologies' presented at the EU Competitiveness Council of 7 December 2020, to cooperate in order to bolster Europe's electronics and embedded systems value chain. This includes a particular effort to reinforce the processor and semiconductor ecosystem aiming to establish advanced European chip design capabilities and production facilities progressing towards leading-edge nodes for data processing and connectivity. In the Joint Declaration, the signatory Member States refer to a possible industrial alliance on processors and semiconductor technologies to mobilise industrial partners.

2. SUBJECT MATTER

The Alliance is entitled **Industrial Alliance for Processors and Semiconductor Technologies.**

The Alliance will call on actors of the electronics value chain in the EU, including academia, research and technology organisations, but also users, to join forces to maintain and boost the competitiveness in the sector in the EU.

The **overall objective** is to identify the existing gaps and the technology developments necessary for companies and research and technology organisations active in the sector in the EU, including smaller European actors, to be competitive. This cooperation is needed for them to overcome entry barriers, achieve critical mass and reduce dependencies in a concentrated industry.

This cooperation will enhance and foster synergies across existing and future EU initiatives. It will also help to provide the EU with the necessary capabilities in semiconductor technologies to power its critical digital infrastructure and communication networks, as well as verticals such as automotive, industrial automation, healthcare and AI-enabled systems. This translates in two main lines of actions, addressing the main gaps Europe is facing:

- First, the reinforcement of the European electronics design ecosystem, in particular including design at leading-edge nodes and open-source hardware solutions, to develop the most powerful and resource efficient processors.
- Second, the establishment of the necessary manufacturing capacity, which may include assembly testing and advanced packaging, by a diversified mix of local and global players, to produce the next generation of trusted processors and other electronic components and technologies needed to meet this objective. This will translate into a twin track to be developed in parallel: moving Europe towards a production capacity of 16 nm to 10 nm, as well as below 5 nm to 2 nm (and beyond).

3. TASKS

The main task of the Industrial Alliance will be to bring together a wide range of stakeholders that are prepared to work together and advance towards achieving the key EU policy objectives in microelectronics.

The Alliance will complement other forms of research, commercial and policy cooperation, consultation and exchange in the field, among different constellations of actors. The EU market is among the most open in the world, and the tasks of the Alliance shall in no way affect access to the EU market, whether through sales or establishment, or to EU or national funding - these remain governed by EU law (including programme conditions, State aid rules, international trade commitments, etc.) and national law where applicable.

The tasks of the Alliance shall be:

A. Planning and Analysis:

- identify critical gaps, bottlenecks, needs and dependencies across the value chain, up to the end-user applications of the European semiconductor ecosystem and related components,
- develop operational objectives and targets to address the main gaps Europe is facing and develop strategic roadmaps with milestones, research and investment plans for processor design, first industrial deployment and fabrication, that takes into account the full semiconductor ecosystem and related components.

B- Increasing design capacities and manufacturing production, which may include advanced packaging, in Europe:

- defining a roadmap to reach advanced nodes,
- building a model of cooperation to reach these milestones with two specific but parallel targets: 16-10nm and below 5nm to 2nm (and beyond).

C. Leverage investment and innovation synergies:

- act as a non-exclusive sounding board and a platform to promote, create and enhance synergies and to ensure the efficient cross-coordination between various public[2] and private initiatives of R&D, innovation and deployment in electronic components and systems.
- foster additional paths for technology transfer, in particular to early-stage companies.
- promote the pooling of commitments to identify and address existing and future skills shortages
- foster new collaboration and partnership across its participants, including SMEs, reinforcing the ecosystem and bringing about new investment opportunities,
- act as a Member States' platform to enhance coherence and synergies across activities in the IPCEI, the KDT JU, DEP and the Pact for Skills,
- inform future EU initiatives across the value chain.

Related instruments in this context include a possible new *Important Project of Common European Interest* (IPCEI) on Microelectronics[3], which may foresee R&D and first industrial deployment. Other notable instruments are *Horizon Europe* - including the *Key Digital Technologies Joint Undertaking,* and the *Digital Europe Programme*, with its Testing and Experimentation facilities.

Contributions from Member States may come from the allocation of funds from the Recovery and Resilience Facility (RRF) in this area.

Without prejudice to necessary precautions in relation to Union security interests (including security of information, of supply and of IP and knowhow), conflict of interest and reciprocity, the Alliance shall maintain as open as possible relations and lines of communication with other industry collaboration fora and associations, both in Europe and at international level, as well as with interested non-member undertakings with relevant actual or potential activities in Europe in the area of processor and semiconductor technologies.

Members of the Alliance shall subscribe to the **competition compliance programme**, as referenced in Annex to the Alliance Declaration.

4. TECHNOLOGY FOCUS

As demand for semiconductors accelerates and capabilities are globally very concentrated, it becomes essential for Europe to ensure technological sovereignty in this area, so as to reduce dependencies by certain important economic sectors, in key technological applications and in certain segments of the global value chain.

The Alliance will strengthen cooperation amongst actors in the EU to deliver more secure and competitive solutions in processor and semiconductor technologies. It will focus on the development of advanced secure energy-efficient powerful components critical to ensure security, data protection and competitiveness of EU business and citizens' services. This takes into account that processors and semiconductors are key enabling technologies for the

[2] Subject to compliance with applicable State aid rules.
[3] State aid to IPCEIs is subject to the notification requirement and stand-still obligation in Art. 108(3) TFEU. The eligibility and compatibility criteria for IPCEIs are set in the relevant Commission Communication.

emerging critical applications of data-processing, communications, data-infrastructure, including cloud, advanced computing and AI. Semiconductors are subject to dual use, and are critical to the security, the privacy and the energy efficiency of activities taking place in the EU. They are key to critical infrastructure - such as energy and communications and the EU's internal and external security (e.g. defence and space).

5. MEMBERSHIP ELIGIBILITY CRITERIA

The investment planning synergies being leveraged in the framework of the Alliance shall be completely without prejudice to the legal framework of EU's funding instruments.

In order to achieve the objective of the Alliance in a manner that is not detrimental to EU interests and ensures technological sovereignty and competitiveness, the following membership eligibility criteria shall apply:

1. Membership of the Alliance is designed for legal entities ("Member Organisations"). Membership will not be open to individuals appointed in a personal capacity.
2. The Alliance is open to all public and private entities with relevant activities in the area of processor and semiconductor technologies, including end-user companies, associations (whose members are meeting the criteria of the Alliance set out in paragraph 5), and research and technology organisations. Legal entities which do not have such activities themselves, but through their members (for example, industry associations) will be eligible to participate in the General Assembly only.
3. An organisation's membership of the Alliance will be conditional on the signature of the Alliance's Declaration.
4. Member Organisations (and where relevant their constituting parties or members) shall have a legal representative established in the Union
5. A legal entity may become a Member Organisation only if it does not contravene the security and/or public policy interests of the Union (including cybersecurity) and can participate in a way that is of practical utility to the Alliance. For that purpose, it shall provide assurances that it complies with the following criteria (in the form a detailed report attached to the binding Declaration):
    a) Security of sensitive information: access by a third country, acting either directly or by way of measures addressed to a third-country entity, to sensitive information is prevented, in particular by ensuring that the employees or other persons representing the entity have national security clearance issued by a Member State, where required by law,
    b) Security of supply: control over the legal entity by a third country, acting either directly or by way of measures addressed to a third country entity, does not undermine the legal entity's freedom to use its infrastructure, software, services, facilities, assets, resources, intellectual property or knowhow needed for the purposes of the Alliance, or that undermines its capabilities and standards necessary for the Alliance.
    c) Protection of IP: ownership of the intellectual property arising from, and the results of, its involvement in the Alliance, such as that attributable to investment activities deriving from synergies identified under the Alliance, will remain within the member during and after terminating its participation to the Alliance, is not subject to control

or restriction by a third country, acting either directly or by way of measures addressed to a third-country entity, and

d) Compliance with EU data protection, trade secrets and IP protection legislation.

e) Practical utility to the Alliance: the entity shall describe its relevant existing or planned activities in the European Economic Area[4] of practical utility to the Alliance[5], in the fields set out in section 4 (Technology focus) and section 3 (Tasks). In view of achieving the objectives of Task B ("Increasing design capacities and manufacturing production"), the Commission will attach particular weight to demonstrated capability to contribute experience and know-how to deliver on the objective of building advanced-node manufacturing facilities in Europe.

These criteria will be assessed on a case-by case basis by the Commission, on the basis of information provided by the applicant. Such assessment may result in a refusal of the application of a given eligible organisation or its participation rights restricted.

The entities which are not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity, are normally presumed to respect criteria (b), (c) and (d) and in light of the gaps identified in the background to the Alliance's creation, may normally be considered to meet criterion (e) where they show their capability to contribute to tasks A (Planning & analysis) and C (Leverage investment and innovation synergies) and/or their commitment to participate in task B.

6. Paragraphs 4 and 5 shall also apply to subcontractors, constituting parties, shareholders of or members of Member Organisations, where these entities would be in a position to access information related to the Alliance.

7. Prior to the signature of the Alliance Declaration, Applicants shall provide all relevant information necessary for the assessment of fulfilment of the eligibility criteria to the European Commission. In the event of a change during the membership which might put into question the fulfilment of the eligibility criteria, the relevant legal entity shall inform the European Commission sufficiently in advance, which shall assess whether these eligibility criteria and conditions continue to be met and shall address the potential impact on the organisation's membership of the Alliance.

8. Before joining the Alliance, each candidate Member Organisation shall provide a written commitment that it has and will ensure in the future[6] to have, no conflict of interest[7] whatsoever with the Alliance's objectives or with specific objectives of the working groups.

9. Member Organisations who no longer act in accordance with the principles set forth in the Alliance Declaration, or are no longer capable of doing so, upon request of the Commission, shall no longer be invited to participate in any meetings of the Alliance and may be replaced for the remainder of their term of office.

[4] EEA countries are understood to be part of the Union for the purpose of this alliance.

[5] This can include, for instance, a demonstrable commitment to contribute to voluntarily sharing and developing know-how and IP, or establishing a partnership with European player(s) to pilot advanced semiconductors technology, or collaborating in research, development and innovation, in the area of processors and semiconductors technology.

[6] For the period of membership and two years after membership is finished.

[7] This involves any actual, potential and perceived conflict of interest.

10. Without prejudice to membership, the Commission, for instance upon proposal of the Steering Committee, may restrict discussions related to certain essential strategic tasks affecting security interests of the Union, be it in working groups or General Assembly's agenda points, to Member Organisations not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity.

6. GENERAL ASSEMBLY

1. The **European Commission** will act as a facilitator of the Alliance and organise once per year a **General Assembly**.
2. The **General Assembly** of the Alliance will be made up of high-level representatives (e.g. CEOs/Executive board members) of every Member Organisation.
3. The **General Assembly** elects (a) **chairperson(s)** from among its members not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity.
4. The **European Commission** will be an observer to the **General Assembly**, monitoring progress with a view to its policy and investment agenda and act as a facilitator towards cooperation and engagement of all stakeholders, e.g. by providing secretarial services for the on-boarding of new members.
5. The **General Assembly** shall adopt opinions, recommendations or reports.
6. When adopting opinions, recommendations or reports, the **General Assembly** shall do so **by consensus**. In the event of **a vote**, the outcome of the vote shall be decided by simple majority of the members. Members who have voted against shall have the right to have a document summarising the reasons for their position annexed to the opinions, recommendations or reports.
7. Member Organisations should designate a high-level representative to the General Assembly and relevant experts to represent them in the working groups of the Alliance.
8. The European Commission or the Steering Committee may invite Member States representatives to participate in the General Assembly of the Alliance.

7. ALLIANCE FORUM

1. The European Commission will organise an **Alliance Forum**.
2. The Alliance Forum will be an inclusive, transparent and open platform to ensure communication and exchanges between the European Commission, Alliance members and all other stakeholders with an interest in the fields of work of the Alliance.
3. It is aimed at broadening the perspective, making the links with all relevant actors, including globally, and including the views of a wide range of stakeholders.

8. INTERNATIONAL PARTNERSHIP

1. The Alliance will organise the conditions to discuss and agree on international partnerships with private organisations to develop in order to increase the resilience of the

global supply chains of semiconductors, and on open structured dialogues with relevant international partners (industry players, associations or fora).

2. The Alliance can support the Commission, upon the Commission's request, in its relevant dialogues with any partner country and in international partnerships with public organisations.

3. To this end, a dedicated working group on international partnerships is set-up

9. STEERING COMMITTEE

1. The **Steering Committee** is composed of a balanced group of representatives of Member Organisations not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity, including SMEs.

2. Members of the Steering Committee are appointed by the European Commission on the basis of Member Organisations' proposals.

3. The Steering Committee prepares the General Assemblies and supports the European Commission in facilitating and monitoring the work of the Alliance.

10. WORKING GROUPS

1. The **General Assembly or the European Commission** may establish working groups of the Alliance, working on specific topics. During its first meeting, it shall consider the establishment of working groups working around a list of common topics such as, for example:

   - Design
   - Manufacturing/equipment/packaging
   - Specific vertical applications.
   - Skills
   - Identification of investment synergies (e.g. RRF, EU programmes, state-aid support, private investments)
   - International partnerships
   - Ad-hoc topic-related working groups (i.e. supply shortage)

2. Member Organisations wishing to participate in such working groups will designate specific representatives for cooperation in the working groups.

3. Each working group shall elect a Chair and Vice Chair(s) from among representatives of the Members Organisations not subject to control by a third country, acting either directly or by way of measures addressed to a third country entity.

4. Observers and their representatives may be permitted by the Chair, with the agreement of the Commission, to take part in the discussions of the group and provide expertise. However, they shall not have voting rights and shall not participate in the formulation of recommendations or advice of the group.

5. The Commission reserves the right to act as an observer to all working groups of the Alliance.

6. Member States representatives are invited to participate in the work of the Alliance in relevant working groups.

11. RULES OF PROCEDURE

The General Assembly of the Alliance shall adopt its rules of procedure by simple majority of its members.

12. PROTECTION OF PERSONAL DATA

1. The European Commission DG CONNECT will publish on the Register a privacy statement providing information about the processing and the protection of personal data.

2. The European Commission is committed to protect personal data and to respect privacy. The European Commission collects and further processes personal data pursuant to Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data.

Done in Brussels, on 19 July 2021.