

## COMMENTS FROM AENEAS, EPOSS AND INSIDE ON THE DRAGHI AND HEITOR REPORTS AND RECOMMENDATIONS FOR FP10

### KEY MESSAGES

In view of the preparations for the 10<sup>th</sup> EU Framework Programme (FP10) for Research and Innovation (R&I), which will succeed Horizon Europe as of 2028, the industry associations AENEAS, EPoSS and INSIDE, constituting the private members of the Chips Joint Undertaking, would like to put forward some comments on the recent Heitor and Draghi reports, as well as an update of the recommendations we made last June, primarily from an industrial perspective. Our main inputs for FP10 can be summarised as follows:

#### **I. Strengthen industry involvement**

The innovation gap between the EU and global leaders appears to be mainly due to lagging R&D investments by the largely mid-tech EU business sector. Therefore, high-tech R&D-intensive industries such as Electronic Components and Systems (ECS) should be supported to grow. General framework conditions should be enhanced to encourage higher private R&D investments and attract more high-tech industry. FP10 and the Union's industrial policy must be mutually reinforcing, both contributing to the new European Competitiveness Deal. Therefore, FP10 should be well aligned with investment initiatives pertaining to industrial competitiveness such as the Chips Act and Important Projects of Common European Interest (IPCEIs) to ensure seamless coverage of all TRL levels up to production readiness, covering the entire value chain, from semiconductor chips to embedded software to full system integration at application level. According to our analysis, large enterprises performed half of all R&D in the EU but received only 7.5% of all Horizon Europe funding in 2021-2023; this discrepancy should be addressed in FP10. More generally, FP10 should better reflect the important role of industry in transforming science into innovations with impact on economy and society.

#### **II. Align and join forces**

For our fragmented continent, joining forces is the only viable approach. Within FP10, collaborative R&I projects should remain the main modality. Researcher exchanges between science and industry should enhance and accelerate knowledge transfer and address skill shortages. Within the Union, national and regional R&I efforts should be aligned better with the common European interests pursued by FP10. International cooperation with like-minded countries outside the Union on topics of mutual interest should be intensified to ensure economic security. Public-private partnerships should be continued with increased investments and with industry continuing to contribute mainly in-kind rather than cash, to safeguard effective collaboration. In view of its strategic importance for European competitiveness and economic security, the Chips Joint Undertaking should be prolonged, enlarged and improved, with a genuine tri-partite approach and with industry continuing to set the Strategic Research and Innovation Agenda (SRIA).

#### **III. Make FP10 ambitious, attractive, balanced, effective, efficient and strategic**

Increasing the budget for FP10 to €200 billion is necessary to fund high-quality proposals and bridge the R&D gap with Europe's international partners and main competitors. FP10 should maintain its current three-pillar structure, balancing fundamental research, applied research and innovation, while reducing red tape to attract more industry participation. As Widening

Member States relatively receive almost twice as much funding from Horizon Europe as the other Member States, FP10 should primarily promote quality, impact and European industrial competitiveness at the worldwide level, not cohesion within the Union. Furthermore, it should continue addressing societal challenges, including the green and digital transitions of energy, mobility, health and sustainability. In the end, it should lead to shared prosperity and serve the future needs of Europe's citizens.

A more detailed overview of our recommendations can be found in the table of contents on the next page, allowing to proceed directly to the sections of most interest to the reader.

December 2024

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## 1. INTRODUCTION

[AENEAS](#), [EPoSS](#) and [INSIDE](#) are the industry associations constituting the private members of the [Chips Joint Undertaking](#) (JU), the largest of the European Partnerships under Horizon Europe. Since 2008, we have contributed financially and in kind to successive EU Framework Programmes in the ARTEMIS JU and the ENIAC JU under FP7, the ECSEL JU under Horizon 2020, and the KDT JU renamed Chips JU under Horizon Europe. We count most of the beneficiaries in the 267 projects so far of these JUs among our 900+ members (large enterprises, SMEs, RTOs and universities), including all key European players along the value chain, from semiconductor chips to embedded software to system integration in application domains. Together, they form a strong European ecosystem for research and innovation (R&I) in the domain of electronic components and systems (ECS).

As major stakeholders in the EU Framework Programmes, we made our first [contributions](#) to the political debate on FP10 already in June this year, which we sent a.o. to the [Expert Group](#) on the interim evaluation of Horizon Europe, chaired by Prof. Manuel Heitor. Meanwhile, the scene for FP10 has been set by the [Political Guidelines](#) of EC President Ursula von der Leyen, the report [“The future of European competitiveness”](#) by Mario Draghi, the [report “Align, Act, Accelerate”](#) of the Expert Group led by Manuel Heitor, and most recently by the European Council’s [Budapest Declaration](#) on the New European Competitiveness Deal, setting out the huge competitiveness challenges that Europe is facing and the wide-ranging actions needed to address them. The sense of urgency is clear.

Regarding the Draghi and Heitor Reports, we broadly agree with their analyses and recommendations. Nevertheless, with our earlier recommendations in mind, we have some comments and concerns, which we address in our current contribution. Furthermore, we make some additional recommendations, in particular for the successor to the Chips JU after 2027. To facilitate referencing to our earlier recommendations and their substantiation, we frame our comments and recommendations as much as possible within the chapter structure of our June paper.

Ultimately, our purpose is to help ensure shared prosperity for Europe, boost its competitiveness, enable the green and digital transformations, tackle societal challenges and provide EU citizens with skilled jobs in attractive workplaces and with affordable access to advanced digital solutions based on ECS technologies.

## 2. STRENGTHEN INDUSTRY INVOLVEMENT

### 2.1. Support high-tech R&D-intensive industries such as Electronic Components and Systems

The Draghi and Heitor Reports both refer to the “the middle technology trap”. This notion stems from a recent report<sup>1</sup>, arguing that the innovation gap between the EU and the US is mainly due to lagging R&D investments by the EU business sector, which is concentrated in mid-tech sectors requiring lower R&D intensities than the high-tech sectors dominating the US business sector. In this respect, we would like to emphasise that our Electronic Components and Systems (ECS) industries are definitely not caught in this middle technology trap, as they are part of high-tech sectors and feature high R&D intensities<sup>2</sup>. With R&D investments in our domains typically ranging between 10% and 20% of revenue, public support for the growth of our industry sector will have a high yield in reaching the EU objective of spending 3% of GDP on R&D. Furthermore, ECS can help other industry sectors to advance in digitalisation and overcome the middle-technology trap.

### 2.2. Improve the general framework conditions for private investments in R&I

To create value, firms should invest in R&D only to the extent they can expect a return on their investments that exceeds their cost of capital. Therefore, R&D intensity is a yardstick for general framework conditions for investing in R&D. Apparently, these are less favourable in the EU than in the US. In other words, the lower R&D intensity of the EU business sector is not the cause, but the consequence of the lagging investment climate in Europe. To attract more high-tech industry to Europe and increase R&D intensity, general framework conditions need to be improved. Therefore, we very much welcome the plea in the Heitor Report for a more holistic approach to future RD&I and innovation policy.

The report [“Economic rationale of public R&I funding and its impact”](#), prepared for the Commission in 2017 by an expert group consisting of prominent economists in preparation of Horizon Europe, confirms that a number of market failures are linked to investment decisions in R&I. High risks, sunk costs, market uncertainty, lack of full appropriability of results, or unavailability of funding, all induce underinvestment in R&I below what is socially desirable. Therefore, to maximize the spillovers that the creation and diffusion of knowledge generate, public R&I funding, for both public and private investment, is needed according to this report. This basic rationale for public funding is still valid today.

However, as an alternative for public funding for private R&D, the Heitor Report suggests considering the design and assessment of a new “Knowledge Trading System” (KTS), leveraging on the experience of [ETS](#), but based on auctions of increasingly stringent needs for large and medium firms in Europe to increase their R&D expenditure.

We fear that imposing a certain level of R&D expenditure can be counterproductive, causing some sectors and firms to destroy value instead of creating it. How much a firm should spend on R&D depends on the sector involved, and within a given sector on the specificities of a firm, its strategy, its product offerings and its competitors. In some sectors, R&D may even be irrelevant, as firms can innovate even without doing any R&D. And how to set the desired level of R&D in such KTS: at a certain percentage of sales, or profit, or added value, and measured worldwide, or only within the EU? And would that percentage apply equally to all firms in all sectors in all Member States? And if not, how to differentiate?

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<sup>1</sup> Fuest, C., Gros, D., Mengel, P.-L., Presidente, G., and Tirole, J., [EU Innovation Policy: How to Escape the Middle Technology Trap](#), Report by the European Policy Analysis Group, Institute for European Policymaking at Bocconi University, 2024.

<sup>2</sup> See p. 10-11 of the report.

Rather than punishing firms doing less R&D than a pre-set level by obliging them to buy increasingly expensive KTS allowances to do more R&D than they may need or can afford, it would be better to stimulate them to do more R&D by means of tax incentives, subsidies, public procurement of innovation, innovation-friendly regulations and other framework conditions that make R&D investments more rewarding.

### 2.3. Align FP10 with the Union's future Industrial policy

In the aforementioned Budapest Declaration on the New European Competitiveness Deal, the European Council invites the Commission to present, as a priority, a comprehensive industrial strategy for competitive industries and quality jobs, to ensure the growth of tomorrow's key technologies. In our opinion, an effective and proactive industrial policy should have a holistic approach, based on integrated value chains and addressing also the general business environment, demand-side aspects, better regulation and a global level playing field to attract investments and prevent relocations.

Evidently, FP10 and the Union's future industrial policy must be mutually reinforcing and both contributing to the new European Competitiveness Deal. Therefore, we very much support the proposal in the Heitor Report to establish an Industrial Competitiveness and Technology Council for ensuring the attractiveness and relevance of FP10 to industry, while linking to relevant European policies, regulations and framework conditions.

A good example of the policy alignment that we are advocating between the FP and EU industrial policy is the [European Chips Act](#) with its three Pillars:

- In Pillar 1, R&I activities funded by Horizon Europe and capacity building activities funded by the Digital Europe programme are implemented by the Chips JU, whereas the Chips Fund is implemented by the InvestEU Fund and the European Innovation Council (EIC).
- Pillar 2 provides a framework to incentivise public and private investments in manufacturing facilities to ensure the security of supply and resilience of the Union's semiconductor sector.
- Pillar 3 provides Commission and Member States with tools for anticipating and responding to semiconductor chips shortages and crises to ensure security of supply.

The [European Semiconductor Board](#) (ESB) serves as governance mechanisms of the Chips Act and its three pillars of action. The aim of the ESB, composed of representatives of the Member States and chaired by the Commission, is to facilitate a smooth, effective and harmonised implementation of the Chips Act, cooperation and the exchange of information. Unfortunately, however, industry is not represented. Furthermore, we have not been invited to any meeting, making it difficult to align on a common R&I strategy and a long-term vision for Europe.

As a major industry sector itself and a key enabler for digitising other industry sectors, ECS should feature prominently in the Union's industrial policy. This strategic importance of ECS for European competitiveness and economic security is well reflected in the Draghi Report, with an entire chapter devoted to semiconductors and another chapter devoted to the application of ECS in the automotive industry in its Part B. We basically endorse the six main actions proposed (see Annex), including a revised Chips Act, a new EU Semiconductor Strategy, a dedicated EU Semiconductors budget and a new fast-track Important Project of Common European Interest (IPCEI). In view of the competitiveness of Europe's semiconductor industry, we would like to make some comments:

- Our ECS industry is expecting further "first-of-a-kind" investments under Pillar 2 of the European Chips Act as well as a third IPCEI on microelectronics, which should build on and deploy the R&I results of ECSEL, KDT and Chips JU projects. As recommended in the Draghi Report, the third IPCEI

should foresee co-funding by Member States and Commission to ensure the necessary investments for deploying the R&I results and strengthening the competitiveness of the European industry.

- Existing gaps in the value chain(s) in Europe like in advanced packaging, design or software need to be closed by investments and incentives for European industry. The US government has just announced [\\$300M in funding to boost semiconductor packaging](#). A better climate for investments and faster decision processes are needed in Europe. Whereas advanced packaging and design are mentioned properly, we regret that software is entirely missing in the semiconductor chapter of the Draghi Report.
- The sixth main action proposed in the semiconductor chapter of the Draghi Report addresses the severe skills shortage that the ECS sector is facing. The importance of this issue can hardly be overestimated. Since education and skills are outside the remit of the framework programme for R&I, alignment will be needed with other European and national policies. Joint actions must be taken, together with educational and industrial stakeholders and with funding from other programmes at European (e.g. Digital Europe, Erasmus+), national and regional levels. In this respect, we would like to highlight the activities of the European Chips Skills Academy ([ECSA](#)), including the [ECS Summer School](#) co-organised by AENEAS, EPoSS, INSIDE and ECSA, focussing on the three parts of ECS: semiconductor chips, embedded software and system integration.

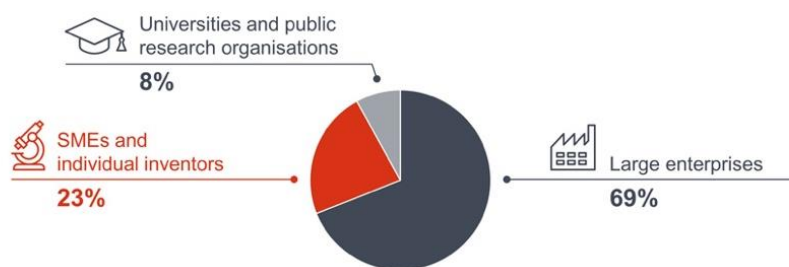
#### 2.4. Value the role in research and innovation played by industry, in particular large enterprises

The Heitor Report duly recognises that industry is the largest source of RD&I expenditure in the EU and that most of Europe's researchers are employed in the business sector. According to the report, industry investments in research, development and innovation are not only critical to the EU's scientific and technological strength: they are essential in turning knowledge into products, services and solutions, in creating value and prosperity, in achieving climate neutrality, and in providing good jobs. Therefore, we welcome the proposal in the Heitor Report to devote one of the four spheres of action proposed for FP10 to industrial competitiveness. The Expert Group wants industry to engage also in societal challenges, one of the other proposed spheres of action, to address these challenges effectively and because they provide significant business opportunities.

In innovation ecosystems, R&I partnerships and global value chains, large enterprises often hold a pivotal position, with many SMEs flourishing in their slipstream. Large enterprises are essential for exploiting the results from FP projects, as they have the critical mass and market access channels needed to ensure exploitation, standardisation and market uptake.

Large enterprises also play a major role in patenting. According to the European Patent Office, a [breakdown of patent applications](#) originating from European countries shows that in 2023 69% of them were filed by large enterprises, 23% by SMEs and individual inventors, and 8% by universities and public research organisations. Accounting for 92% of applications, the private sector is by far the main actor in patenting.





Patent applications filed with EPO in 2023 from applicants in EPO Member States (source: EPO).

An example of the crucial importance of large enterprises in R&I is generative Artificial Intelligence. Its recent rise does not stem from basic academic research but from Big Tech companies such as Google, Microsoft, Amazon, Meta (Facebook), and Apple. These large enterprises play a key role in driving R&D and innovation in AI by investing heavily in cutting-edge research, developing advanced algorithms, and providing vast amounts of computational resources and data. Their influence extends to setting industry standards, fostering AI talent through educational initiatives, and facilitating the deployment of AI technologies across various sectors, thereby accelerating the pace of innovation globally.

Another case in point is [ASML](#), the world's leading provider of the lithography equipment that is essential for mass producing semiconductor chips. This rapidly expanding company has become one of the cornerstones of the [Brainport Eindhoven](#) region, driving innovation and technological advancement. ASML collaborates closely with numerous SMEs, leveraging their expertise as suppliers and co-developers to enhance capabilities in tandem. This symbiotic relationship fosters a robust, dynamic network of innovation, enabling the continuous growth and competitiveness of the regional ecosystem.

## 2.5. Boost the FP participation of industry, in particular large enterprises

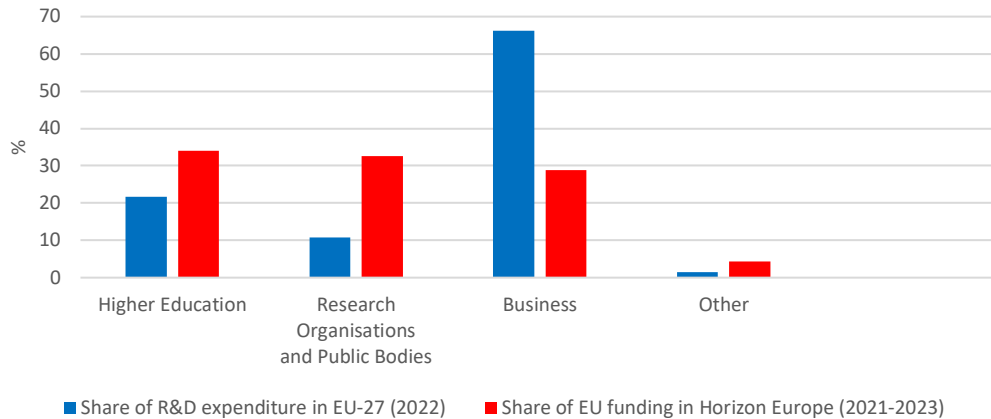
We are pleased to read in the Heitor Report that FP10 should have more and better engagement and buy-in of industry. The Expert Group appears well aware that there is a risk of "industry walking away from the framework programme" at a time when both industry and the framework programme need each other more than ever and the number of participating companies should rather be strongly expanded.

Indeed, despite its key role in research and innovation, industry is not well represented in Horizon Europe. Whereas in the first FPs, most of the EU funding went to industry, in later FPs the funding share of the business sector has fallen gradually to only 28.9% in Horizon Europe<sup>3</sup>. This is very much out of proportion with respect to the 66.2% share<sup>4</sup> of the business sector in the total R&D expenditure in the EU, as can be seen from the figure below.

<sup>3</sup> Horizon Europe implementation [Key Figures 2021-2023](#).

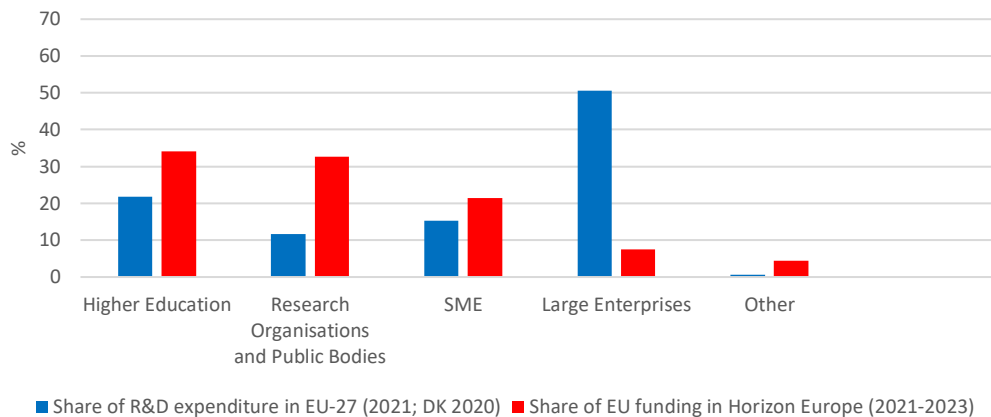
<sup>4</sup> Calculated from [Eurostat data on GERD by sector of performance](#), taking 2022 as the reference year, i.e. in the middle of the 2021-2023 implementation period of Horizon Europe; GERD: gross domestic expenditure on R&D.





Therefore, FP10 should attract more participants from industry, not only in its partnerships (see section 3.5. below), but also in its regular part.

Dividing the business sector into SMEs and large enterprises, it turns out that SMEs received €6.6 billion or 21.4% of the total Horizon Europe funding of €30.8 billion in the 2021-2023 period, which is well above their 15.3% share in Europe's R&D efforts<sup>5</sup>. That is in stark contrast to the meagre €2.3 billion or 7.5% of all Horizon Europe funding in 2021-2023 that went to large enterprises, whereas these account for half (50.6%) of all R&D expenditure in the EU. This discrepancy – very clearly visible in the next figure – has become even worse than in Horizon 2020, when large enterprises received 11.5% and SMEs 16.7% of the total EU funding<sup>6</sup>.



In her confirmation hearing in the European Parliament on November 5, Commissioner-designate Ekaterina Zaharieva argued that the funding share of 20% going to SMEs in Horizon Europe should be increased in FP10, as 99% of all businesses in Europe are SMEs. However, as we explained above, SMEs only account for about ¼ of all business R&D, whereas they already get ¾ of all Horizon Europe funding going to the business sector. In fact, it is large enterprises that are underrepresented, and not SMEs.

Given that large companies account for half of total R&D expenditure in the EU, FP10 cannot simply ignore them. Indeed, the fact that under-investment by industry is the main reason why the EU fails to meet its target of spending 3 per cent of GDP on R&D, underlines the need for FP10 to incentivise also large companies to increase their research budgets.

<sup>5</sup> Calculated from [Eurostat data on BERD by size class and source of funds](#) for the year 2021, except DK (2020).

<sup>6</sup> P. 21-23 of the [Staff Working Document H2020 Evaluation](#).

Furthermore, to avoid that large enterprises walk away from the Framework Programme without even noticing their departure in time, it would be good to monitor their participation more explicitly. At the moment, they are invisible in the Key Figures on Horizon Europe Implementation; their funding share has to be calculated by subtracting the SME share from the business sector share.

### 3. ALIGN AND JOIN FORCES

#### 3.1. Focus on collaborative public-private R&D involving industry

In 40 years of successive FPs, hundreds of thousands of transnational projects have laid a solid foundation for the European Research Area (ERA). Any researcher can safely call any public-sector or private-sector colleague in Europe to set up collaboration: as the FP rules of the game are clear, these researchers can talk science and technology right away, without having to worry too much about the conditions and modalities of collaboration. In addition, matchmaking mechanisms are in place to facilitate partnering. The resulting collaboration fabric is a unique asset for Europe. Such collaboration projects, large and small, therefore must be continued, in view of their obvious European added value.

The collaborative approach represents a strength for EU to address R&I, the only possible approach for our continent. A strong, collaborative R&I environment fosters the development of sustainable solutions, which are ultimately crucial for long-term competitiveness. Conversely, a competitive European industry can drive investment in sustainable technologies, creating a virtuous cycle that reinforces both objectives.

To emphasise the importance of collaborative R&I in Pillar 2 and the partnerships of Horizon Europe AENEAS, EPoSS and INSIDE were among the 110 (meanwhile 115) signatories of the [Joint Statement for an ambitious FP10](#) issued by EARTO and BusinessEurope on July 4, 2024. Therefore, we very much welcome the conclusion in the Heitor Report that the framework programme as an instrument is well proven to be an effective programme for strengthening research, innovation and competitiveness by funding and promoting pan-European pre-competitive collaborative research.

A better alignment across funding instruments should ensure continuous support from R&I at low TRL levels all the way up to production readiness. Europe is still facing a gap between research in universities and RTOs on the one hand and industry demands on the other hand. Only an even closer and longer-term collaboration in large consortia along entire value chains will create a steady flow of innovation from academia and RTOs to Europe's industrial leaders. Seamless funding along R&I roadmaps for key technologies is needed. The instrument of Framework Partnership Agreements (FPAs) implemented through Specific Grant Agreements (SGAs) might be useful for industry-led project consortia to allow for long-term cooperation and lasting success, while avoiding expensive redundancies in pre-competitive R&I efforts.

#### 3.2. Foster researcher exchanges between science and industry

We highly value the intersectoral mobility of researchers between universities, RTOs, large enterprises and SMEs facilitated by the Doctoral Networks, Industrial Doctorates, Staff Exchanges and Postdoctoral Fellowships under the Marie Skłodowska-Curie Actions (MSCA). Not only are such staff exchanges a very effective form of public-private R&I collaboration, but they also help addressing the huge [skills shortages](#) that the ECS industry is facing. Indeed, according to the [Letta report on the Single Market](#), "the expansion of established programs like Marie Skłodowska-Curie Actions is needed to increase the mobility of researchers and innovators. This enriches Europe's research landscape, promotes knowledge exchange, and is key to achieving a truly integrated European Research Area. Retaining

talents is critical for Europe's economic resilience, innovation capacity, strategic independence, and societal welfare and should be one of the most urgent priorities”.

While we regret that the Draghi Report completely fails to mention MSCA, we very much applaud the recommendation in the Heitor Report that the existing MSCA programmes (PhD and postdoc) with Industry (both large and small) be enhanced and expanded, as these are appreciated both by industry and public research organisations. Furthermore, the new MSCA instrument “Choose Europe” proposed in the Heitor Report may help attracting more researchers to Europe and alleviating skills shortages, e.g., in the chips or embedded software domain.

### 3.3. Align national R&I efforts within the Single Market

The Draghi Report and the Heitor Report both call for better aligning EU and national R&I funding programmes. A good example of addressing the fragmentation of public R&D spending across Member States is the Chips Joint Undertaking (see section 3.6 below). Thanks to its pan-European Strategic Research and Innovation Agenda ([ECS SRIA](#)) and its co-funding mechanism combining public finding from the Union, national and some regional authorities with private resources it has created a genuine European Research Area (ERA) in the ECS domain.

### 3.4. Intensify international cooperation with like-minded countries on mutually beneficial topics

Many societal challenges, supply chains and important markets are global, and many large EU-based companies operate and/or sell worldwide. Furthermore, ensuring supply chain resilience and tackling major technological challenges will require international cooperation with like-minded countries as part of the Union’s de-risking approach, e.g. by means of joint R&D projects and/or staff exchanges under FP10. While acknowledging the crucial role of resilient and reliable global semiconductor supply chains and welcoming the establishment of a Semiconductors G7 Point of Contact Group, [G7 Leaders](#) are committed to safeguarding the global research ecosystem and preserving open research collaboration. Therefore, while taking reciprocity and economic security duly into account, the FP10 approach to international cooperation should be “as open as possible, as closed as necessary”.

In this respect, the recommendation in the Heitor Report to adopt a nuanced, granular and purpose-driven approach to international cooperation makes sense to us. In the ECS domain, rapidly concluding international partnership agreements with like-minded countries will be crucial. However, European industry must be closely involved in defining their scope.

International collaboration projects should be driven by mutual interests in a co-creation approach led by industry. Of course, collaborating requires some giving-and-taking, but this should be balanced. Europe needs to avoid further transferring and exporting its leading R&D – for example in microelectronics or embedded software – to third countries, but on the contrary catch up with latest developments in other areas of the world. Therefore, rather than academia and RTOs, companies should be in the lead of collaborative international projects, to ensure the usability of the results for European industry and avoid unintended knowledge and technology transfer, leakage of sensitive knowledge and loss of competitive edge.

In this respect, we would like to highlight the project International Cooperation On Semiconductors ([ICOS](#)), a three-year Coordination and Support Action (CSA) under Horizon Europe launched in 2023. As part of a 19-partner consortium, AENEAS shares the ambitious aim of the project to support the growth of the European semiconductor and semiconductor-based photonics industry through focused international research cooperation.

### 3.5. Continue public-private partnerships

We are pleased to note that the Draghi Report and the Heitor Report want the European partnerships to be continued, even though both reports see room for improvement. In this respect, we have some comments:

- We are intrigued by the proposal in the Draghi Report for new Competitiveness Joint Undertakings for applied and breakthrough industrial research. These would attract national resources and private risk capital to complement FP funding. However, as it is not clear yet what this would imply in practice for the existing JUs, we cannot really judge this proposal.
- We very much welcome the proposal in the Draghi Report for new Competitiveness IPCEIs, extending the scope from breakthrough technologies to industrial projects, complementing national resources with EU funding and making the application process easier and faster. We applaud the prominent role that the Draghi Report assigns to such IPCEIs.
- In overseeing partnerships, the Industrial Competitiveness and Technology Council proposed in the Heitor Report should respect the autonomous governance of JUs.
- Regarding the reinforced openness that the Heitor Report requests for partnerships, we would like to emphasise that the calls of the Chips JU are fully open to association members and non-members alike. Furthermore, memberships of the industry associations is basically open to all R&D actors in Europe in the ECS domain.
- We are concerned about the need seen by the Heitor Expert Group for further leveraging cash and in-kind contributions. The Chips JU has the highest leverage of all JUs; a higher leverage would imply an even lower funding rate, which currently stands at only 50% (on average 25% from the EU + 25% from the participating states). This would be unacceptable.
- In the JUs under Horizon Europe, industry's contributions to the R&I activities are made largely in-kind in the form of the unfunded part of the R&I costs. In addition, industry must make financial contributions to the administrative costs of the JU. As explained in detail in our June paper on FP10, we would like industry to continue contributing mainly in-kind. Fortunately, the Heitor Report considers "in-kind" as a financial contribution, as industry is not funded at full costs.
- We highly appreciate the plea in the Heitor Report to decrease the administrative burden of accounting for "in-kind"/cash contributions.

### 3.6. Prolong, enlarge and improve the Chips Joint Undertaking

The [Chips JU](#) was launched on November 30, 2023, as a key element of the [European Chips Act](#). In view of its crucial importance for ensuring Europe's economic security, supply chain resilience and technological leadership in semiconductor chips technologies and software-rich applications, the Chips JU must continue the good, fruitful and successful collaboration of all stakeholders under FP10 as a tripartite public-private partnership of the EC (representing the EU), participating states (including the EU Member States) and industry. Its EU budget should be increased to reflect its strategic value for European competitiveness, economic security and technological sovereignty, and it should be matched by commensurate budgets of the participating states, as far as possible with a multi-annual structural perspective.

We want to keep the good, fruitful and successful collaboration of all stakeholders in the Chips JU. We welcome the investments made in research pilot lines and the design platform under the Chips for Europe initiative. Industry wants to make efficient use of this investments through collaborative Lab-to-Fab accelerator projects, that will be the basis to bring next generation ECS and quantum chip technologies into production in Europe and lay the basis for new IPCEIs with huge investments by industry. Another good example worth highlighting is the initiative to build software platforms well

aligned with European hardware platforms in the ECS part of the Chips JU, significantly minimising the effort to develop applications that maximise customer value, for example in the automotive industry.

Without adequate public funding, Europe's ECS industry won't be able to catch up with its competitors elsewhere, and its R&I activities might move to other parts of the world, where conditions are more attractive, for example<sup>7,8,9</sup>:

- The US Chips Act provides for an allocation of USD 52 billion to manufacturing and R&D until 2026.
- China is accelerating efforts to close its technological gap and by 2025 it is estimated that it will have invested around USD 150 billion over the past decade in line with a series of plans and initiatives such as the "Made in China 2025".
- In November 2024, the Japanese government pledged USD 65 billion in subsidies and other incentives until 2030 for the country's semiconductor and AI industries, on top of the previously allocated USD 13 billion for the domestic semiconductor sector.
- South Korea will bolster its semiconductor industry by supporting, through tax incentives, its domestic companies' private investments in R&D and manufacturing, which are estimated at USD 450 billion until 2030.

To make Europe's ECS industry more competitive at the global level, we have the following recommendations for the continuation of the Chips JU after 2027:

- The efficiency of the governance, administrative processes and co-funding mechanism must be improved and the funding rates of the Chips JU must be made more attractive.
- The scope in terms of research and innovation activities funded from the FP vs. capacity building activities funded from the Digital Europe programme must be reviewed.
- While the EU's focus on semiconductor strategic autonomy is commendable, the current strategy overlooks critical dimensions such as packaging of semiconductors and systems, design and software development, platforms and engineering automation. Highlighting the software international dependencies and hidden vulnerabilities across the technology stack is crucial. A holistic EU strategy encompassing both hardware, software and AI capabilities, in close cooperation to ensure alignment, fostering true strategic autonomy, security and safeguarding the full technological stack is crucial in the rapidly evolving geopolitical and economic landscapes<sup>10</sup>.
- The benefits and obligations for the members of industry associations should be rebalanced. Non-members currently get free, open access to all JU calls and benefit from its funding without having to make any financial or in-kind contributions. In the future, we would prefer the JU to be either closed with the associated mandatory private contributions, or open without any contributions, just like in regular collaborative FP projects.
- The tri-partite character and the associated voting rights should be extended to all R&I activities of the Chips JU, not only to the ECS part that continues the R&I activities of the KDT JU.
- All R&I activities should continue to be based on the Strategic Research and Innovation Agenda drawn up by the three industry associations as the private members, taking into account the input of the Public Authorities Board.
- The topics of the R&I calls in the ECS part should largely be open and bottom-up, complemented with focus topics of strategic importance, allowing for initiatives that require a sequence of aligned projects, governed by a common vision, roadmap and governance structure.

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<sup>7</sup> ["A Chips Act for Europe"](#), Communication from the Commission, COM(2022) 45 final.

<sup>8</sup> [Japan sets aside \\$65B for semiconductor stimulus.](#)

<sup>9</sup> [Japan is ramping up efforts to revive its once dominant chip industry.](#)

<sup>10</sup> ["Europe's semiconductor strategy: a software blind spot?"](#), INSIDE Industry Association Magazine, Issue 7, June 2024.

- We welcome the investments made in research pilot lines and the design platform under the Chips for Europe initiative. Industry wants to make efficient use of these investments through collaborative Lab-to-Fab accelerator projects involving RTOs and industry. These will be the basis to bring next generation ECS and quantum chip technologies into production in Europe and lay the basis for new IPCEIs with huge investments by industry.
- We particularly appreciate the statement of Commissioner-designate Henna Virkkunen in her [written answers](#) to questions from the European Parliament that her aim would be to help our companies bridge the gap from “the lab to the fab” by investing in advanced pilot production lines that bring together research and industrial players across the supply chain. Unfortunately, the pilot lines currently being set up by the Chips JU only involve Research and Technology Organisations (RTOs), without industry.
- We are pleased with the suggestion in the Draghi Report to have shared industry pilot lines in the automotive industry, industrial robotics, aerospace, telecoms equipment and medical devices, while safeguarding them from EU anti-trust enforcement.
- Links with IPCEIs in the microelectronics domain should be strengthened. The scope to the third IPCEI currently in preparation should be extended to advanced semiconductor technologies.

#### 4. MAKE FP10 AMBITIOUS, ATTRACTIVE, BALANCED, EFFECTIVE, EFFICIENT AND STRATEGIC

##### 4.1. Increase FP budget to € 200 billion

AENEAS, EPoSS and INSIDE were among the 110 (meanwhile 115) signatories of the [Joint Statement for an ambitious FP10](#) issued by EARTO and BusinessEurope on July 4, calling for significantly increasing the EU R&I budget in view of FP10.

Such increase is badly needed, not only to help close Europe’s gap vis-a-vis other regions in the world in terms of R&D investments, but also because according to the [ex-post evaluation of Horizon 2020](#), with a budget of €75.6 billion, an additional €159 billion would have been needed to fund all high-quality proposals. According to the recent [Key Figures 2021-2023 on the Horizon Europe implementation](#), only 33% of the high-quality proposals could be funded. Extrapolated to the entire Horizon Europe period, a budget of even €290 billion (instead of the available budget of €95.5 billion) would be needed to fund them all. At the same time, national budgets for research and innovation must be stepped up, not only to close the gap with other regions, but also to avoid that FP10 becomes the last resort for too many applicants.

That is why we very much welcome the recommendations in the Draghi Report and Heitor Reports to increase the EU budget for FP10 to €200 billion or even €220 billion, respectively.

##### 4.2. Keep current structure with its pillars and instruments

Europe has a unique and strong R&I ecosystem in our domain thanks to Horizon Europe and earlier FPs. We recommend keeping the three-pillar structure largely as it is in Horizon Europe, paying ample attention to enabling and industrial technologies and their applications in the second pillar. The various parts and instruments each have their purposes.

##### 4.3. Maintain balance between fundamental research, applied research and innovation

Each type of R&I is needed for ensuring Europe’s competitiveness and addressing societal challenges, short-term as well as long-term. This is well recognised in the Heitor Report, which emphasises the importance of supporting the whole research and innovation continuum. To maintain the current balance between fundamental research, applied research and innovation, the FP budget should be



doubled across the entire R&I spectrum, including the collaborative R&I currently in Pillar 2, not only the ERC and EIC, as proposed in the Political Guidelines of Commission President Ursula van der Leyen.

#### 4.4. Cut red tape and don't overburden FP10 with additional conditionalities

We know of a lot of companies who haven't participated in Horizon 2020 and Horizon Europe because it was/is perceived to be too cumbersome. Therefore, red tape in FP10 processes must be reduced. We fully agree with the recommendation in the Draghi Report that administrative requirements and tender procedures should be reformed to facilitate applicants' access and reduce the administrative burden for both beneficiaries and administrators. The Heitor Report is even more outspoken in this respect, as it recommends driving radical simplification, user orientation and efficiency, among other things through giving priority to simplification for beneficiaries and having more open, non-prescriptive calls.

In projects involving co-funding by Member States or regions, double or even triple reporting to EC, national and regional authorities should be avoided. Furthermore, over the years, more and more additional policy objectives have been imposed on FP projects, e.g. regarding open science, data management, gender equality, "do no significant harm"<sup>11</sup>, etc. Whereas we fully support these principles, we are concerned that such conditionalities make participation increasingly burdensome and less efficient.

#### 4.5. Continue allowing exceptions to the obligation of providing open access to research data

While valuing the merits of open science, it is also important to protect European competitiveness and economic security, as well as business interests. Therefore, also under FP10, it is crucial to ensure that access to research data strictly follows the principle "as open as possible, as closed as necessary". The existing possibility of exceptions should be continued, "taking into consideration the legitimate interests of the beneficiaries including commercial exploitation and any other constraints, such as data protection rules, privacy, confidentiality, trade secrets, Union competitive interests, security rules or intellectual property rights"<sup>12</sup>. The existing possibility of exceptions has become even more important in view of the current geopolitical situation.

Europe is leading in several R&I domains, for example semiconductor R&D. We should protect and use this knowhow in Europe to generate a competitive advantage and a leading position for our industry. Therefore, an even tighter and earlier collaboration between European companies, universities and RTOs is needed, as well as a better protection of IP generated by European taxpayers' money.

#### 4.6. Be cautious with roll-out of lump sum funding

As lump sum funding makes project participants more dependent on one another for getting paid, it may lead to a risk-averse approach in choosing partners and engaging in genuine collaboration. In this respect, we share the concerns expressed by a.o. [EARTO](#) and [EUA](#), as well as the [verdict of 68 research managers](#). Fortunately, the Heitor Report recommends thoroughly assessing simplified cost options such as lump sum funding.

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<sup>11</sup> See Science|Business article "[MEPs decry inclusion of 'do no significant harm' principle in Horizon Europe](#)".

<sup>12</sup> See paragraph 3 of article 39 of the [Horizon Europe Regulation](#) and section 7 of Annex 5 on p. 377 of the [Annotated Grant Agreement applicable to EU grants](#).



#### 4.7. Keep focusing on quality and impact instead of cohesion

According to the [Key Figures 2021-2023 on the Horizon Europe implementation](#), the 15 Widening Member States received only 15% of the grants allocated to EU beneficiaries. At first sight, this might seem evidence that Horizon Europe is deepening the innovation divide. However, according to [Eurostat data](#), the Widening MS accounted for only 9% of total R&D expenditure in the EU in 2022 (i.e. in the middle of the first three years of Horizon Europe). Therefore, the Widening MS fared far better in Horizon Europe than the other MS: the Widening MS received 51,134 euro from Horizon Europe per million euro spent on R&D domestically (GERD<sup>13</sup>), almost twice as much as the 28,044 euro Horizon Europe funding per million euro GERD that went to the 12 other MS<sup>14</sup>. Consequently, the innovation divide should be addressed primarily by additional national investments in R&I capacity with the help of EU cohesion policy, not by FP10. That is why we fully agree with the recommendation in the Heitor Report to make more use of European structural funds to support national R&I.

#### 4.8. Share prosperity and serve citizens' needs

The last main recommendation in the chapter on innovation in the Draghi Report is about sharing prosperity, referring to the inequality that may result from a highly innovative, and dynamic economic environment. We would like to take this further.

The US has world-leading digital companies that we don't have in Europe today. However, these huge and rich companies have not helped increasing the prosperity of US citizens nor create welfare or good jobs in the US. European investments and efforts should lead to shared prosperity and benefit many companies and European citizens in general. FP10 should therefore address not only European competitiveness, but also the societal challenges that we face in Europe today.

Europe ticks in a different way. It must not copy strategies from other areas of the world but needs to create a European R&I continuum for the benefit of our society, to fight the climate change, ensure decarbonisation and at the same time fulfil the energy needs of AI, support our elderly population and make efficient and faster use of Europe's outstanding R&I. The transition of our automotive industry and the creation of new, high quality jobs across Europe in emerging fields based on ECS have to be addressed, as well as the increased need of Europe's society for safety and security. R&I on technologies with dual use should therefore become possible.

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<sup>13</sup> Gross domestic Expenditure on R&D.

<sup>14</sup> [Key Figures 2021-2023 on the Horizon Europe implementation](#).

## Annex. Main recommendations on semiconductors in Draghi Report

SUMMARY TABLE SEMICONDUCTOR PROPOSALS: A REVISED EU CHIPS ACT		TIME HORIZON
1	<b>Enable the development of a new EU Semiconductor Strategy, by establishing an EU semiconductor budget, coordinating demand requirements, introducing EU preferences in procurement and a new 'fast-track' IPCEI</b>	ST/MT
2	<b>Launch the new EU Semiconductor Strategy, including: i) funding for innovation and the establishment of testing labs near existing centres of excellence; ii) grants or R&amp;D tax incentives for fabless companies active in chips design and foundries in selected strategic segments; iii) support for the innovation potential of mainstream chips; and iv) coordinated EU efforts in back-end 3D advanced packaging, advanced materials and finishing processes</b>	MT
3	Support consolidation and leadership in manufacturing equipment in response to competitors' export restrictions	ST/MT
4	Foster a friendly EU-wide permitting regime for chips	ST
5	Launch a long-term EU Quantum Chips plan	LT
6	Foresee a chip sub-component of the 'Tech Skills Acquisition Programme' to attract, develop and retain world-class competencies in advanced electronics and semiconductors	ST/MT

Time horizon is indicative of the required implementation time of the proposal. Short term (ST) refers to approximately 1-3 years, medium term (MT) 3-5 years, long term (LT) beyond 5 years.



## ABOUT AENEAS, EPOSS and INSIDE

[AENEAS](#) standing for Association for European NanoElectronics Activities, is an industrial Association, established in 2006, providing unparalleled networking opportunities, policy influence & supported access to funding to all types of RD&I participants in the field of micro and nanoelectronics enabled components and systems.

The object of the Association is to promote Research, Development and Innovation in order to strengthen the competitiveness of European industry across the electronics components and systems (ECS) value chain.

AENEAS is open to all European key players in the value chain, such as large industry, Small and Medium Enterprises, research institutes, academia, and associations.

[EPoSS](#) is the European Association leading the development and integration of intelligent and green Smart Systems technologies and solutions for a sustainable society.

The European Technology Platform on Smart Systems Integration is an industry-driven policy initiative, defining R&D and innovation needs as well as policy requirements related to Smart Systems Integration and integrated Micro- and Nanosystems.

A group of major industrial companies and research organisations from more than 20 European Member States intend to co-ordinate their activities in the field of Smart Systems Integration. A main objective is to develop a vision and to set up a Strategic Research Agenda.

EPoSS brings together European private and public stakeholders in order to create an enduring basis for structuring initiatives, for co-ordinating and bundling efforts, for setting up sustainable structures of a European Research Area on Smart Systems Integration. EPoSS embraces all key players, public and private, in the value chain.

[INSIDE](#) is the Industry Association that strives for a leading position of Europe in Intelligent Digital Systems and their applications. The Association is a membership organisation for the European R&I actors with more than 265 members from 28 European and associated countries, spanning the entire Electronic Components, Software and Systems value chain, from semiconductors to applications.

Our commitment lies in supporting both industry and academia to secure funding that drives the creation of innovative, competitive, reliable, and sustainable solutions for European industry and key application sectors.

Aligned with the goals of the Chips Act, INSIDE plays a pivotal role in strengthening Europe's hardware and software supply chain, fostering technological innovation, and enhancing Europe's strategic autonomy in critical technologies. Our multidisciplinary membership base creates a robust network for exchanging technological ideas, collaboratively building strategic R&I agendas, facilitating cross-domain fertilization, and spearheading large-scale innovation initiatives.

Through our concerted efforts, INSIDE significantly contributes to maintaining and enhancing Europe's competitive edge in the global market. We have a proven track record of success, exemplified by numerous high-impact projects and initiatives that have emerged from our collaborative environment.

Joining the Association, members actively participate in our mission to drive Europe's technological advancement and secure its leadership in the intelligent digital systems landscape. Together, we can achieve groundbreaking innovations and bolster Europe's position on the global stage.