

# Advancing Europe's third way for digital technology

## (including recommendations for FP10)

Inria being one of the largest public research institutes in Europe focused exclusively on digital sciences and technology seizes the opportunity to lay out its vision for a future European framework programme on research and innovation. As the French digital program agency (established in early 2024), Inria is also committed to reinforce the coordination of the national digital strategy and the EU programs. Creating the conditions for Europe to thrive in a context of stiff international competition, notably in the digital field, and leveraging the resulting advances for addressing some of the urgent socio-economic challenges Europe and the world is facing, is of primary concern.

This position statement looks at FP10 through the prism of advancing European digital technology.

### Towards shared Digital sovereignty

Recent developments in AI illustrate and reinforce the importance of mastering and leveraging the socio-economic potential of digital technologies on European scale while harnessing their misuse according to European values and regulation. The transversal nature of digital technology affecting nearly all facets of modern society is difficult to underestimate. To sustain Europe's societal model and prosperity, and for setting the stage for responsible use of digital technology on a global scale, it is paramount Europe masters the decisions that impacts its future.

### Recommendations for FP10:

- Pursue digital sovereignty as a European strategic objective in collaboration with like-minded countries. This means arguing a strategy for the development and diffusion of digital technologies, including oversight and standardization that is transversal to the operational structure of the programme (in pillars).
- Promote and support as much as possible the use of results and solutions from European research. This includes mechanisms for detecting, supporting and leveraging European technology and expertise both in a bottom-up way, as well as promoting objective-driven research and innovation.
- Promote entrepreneurship and disruptive innovation in academia **in an integrated vision of the digital ecosystem** (from academia to entrepreneurs, from research grants to blended finance for startup companies and public procurement).

- Recognize the **key role of software**.

## Science is the next frontier

It is important to stress that the digital transition also profoundly impacts science itself (the scientific advances made, but also the way research is conducted), and consequently the fabric for future innovations and ultimately European products and services via Deeptech entrepreneurship and Tech transfer. The use of AI, in particular generative AI, allows new research strategies and accelerates scientific discoveries. It changes the way scientific discoveries are made, effectively improving the scientific process to those scientists that have access to massive datasets and the computational resources to analyse them. At the same time, the knowledge acquired over decades by other disciplines should not be eclipsed by AI, and the risk of deskilling induced by AI has to be taken seriously. The profound changes underway require foresight exercises, particularly within scientific communities. To maintain fair competition and ensure a level playfield for European innovators, protecting access to scientific data and facilitating access to computational resources is a strategic and economic concern to uphold Europe sovereignty.

### Recommendation for FP10:

- Within the framework programme raise awareness on science sovereignty as a key strategic priority for nearly all of the sciences, and the European industrial innovation eco-system. This includes establishing mechanisms to detect (and remedy) where science sovereignty is threatened;
- Further integrate initiatives such as the EOSC and AI for Science initiatives in EC digital strategy with clear and ambitious objectives and the aim to facilitate access to data, storage and computing capacities to scientists (including non-digital) with appropriate access to (as much as possible European) software infrastructures and services.
- **Propose funding tools which do not split in an artificial way science, technology and innovation, which are deeply connected in the digital field** (for instance: do not use the TRL scale for assessing software intensive projects).

## Pursue the twin transition

Europe set out an ambitious strategy for itself to reach the climate objectives and reaping the benefits of the digital transition in parallel (known as the twin-transition). The Horizon Europe programme is among the principal instruments for the European Commission to operationalize this strategy by bootstrapping a durable European R&I dynamic impacting European society at large going beyond the framework programme and the time-frame it operates in. The urgency of reaching these objectives have only been confirmed, or increased. Going forward it is important the dynamic is further amplified beyond the R&I framework and put in resonance with other European programmes and global initiatives, as well as national strategies for it to be effective. For digital technology this implies improving trust (including cybersecurity, privacy, and providing means to detect and reduce disinformation and threats on democracy) and significantly reducing its ecological footprint.

## Recommendations for FP10 :

- Pursue and enlarge the twin transition by increasing coordination efforts between programmes and strategic initiatives of the EC in the digital field. This includes strengthening the complementarity with Digital Europe as a programme to deploy the digital transition, whereas research and innovation in digital technologies in FP10 are forward looking.

## Embrace taking risks

As a relatively young discipline, and due to its immaterial nature, digital science and technology is evolving relatively fast, leading to disruptive innovations that are not always foreseeable in the long-term, or can be anticipated in a roadmap. Nevertheless, they have a profound transformative impact on modern society (the development of internet, the web, deep-learning and generative AI are few examples). Whereas the Europe research programmes are traditionally strong in supporting incremental research and innovation, it has difficulty capitalizing on, or igniting disruptive innovations. It is important to note this is a concern to be addressed on European level (as opposed to national or regional) as scale is often the primary factor for disruptive innovations to be successful.

## Recommendations for FP10:

- Ensure a level of continuous support across all digital disciplines (in particular core disciplines, software engineering, data science, high performance computing, cybersecurity, networks, human computer interface, quantum technologies, operating systems, etc.) as disruptive innovation can emerge anywhere;
- Level-up significantly the support for high-risk research and innovation. Highly experienced programmes and instruments such as ERC, EIC pathfinders have proven their effectiveness and impact, but their full potential remains constrained by uncalibrated investments.
- **[Supra] Propose funding tools which do not split in an artificial way science, technology and innovation, which are deeply connected in the digital field** (for instance: do not use the TRL scale for assessing software intensive projects).

## Shaping Europe's third way

To sustain the European way of life in a global competitive context it needs to find an appropriate socio-economic model that finds a balance between public and private interest (as opposed to models that are impulsed by either one). Like the report from Enrico Letta, the report on European competitiveness by Mario Draghi is expected to promote public-private investments to strengthen the European single market. For digital technology, recent regulations (AI act, DSA, DMA) and their global impact demonstrate partial success, but also show the necessity for broadly supported strategy on developing critical digital technology in Europe. This includes public-private partnerships (EuroHPC JU, and Chips JU being two successful incarnations of the capability for Europe to mobilize forces and resources to implement a joint roadmap), but also connecting these to national initiatives, and creating the conditions for European technology, research and innovation ecosystems to thrive, while keeping up with rapid development at international level.

### **Recommendations for FP10:**

- Additional efforts are necessary to engage the stakeholders that can make a difference. This includes ensuring sufficient funding resources for topics with a high number of quality proposals. It also includes a more qualitative evaluation of proposals (e.g. value expert opinions above generic criteria) ;
- Find an appropriate balance and coherence between large projects that may have a more apparent impact, but are often time more complicated to run efficiently, and smaller focussed projects that can be agile and disruptive. This includes collaborative projects in the context of a partnership that follow a roadmap according to a pre-defined impact objective, which should be complemented (50%/50%) with high-risk, potentially disruptive projects that are disconnected from the roadmap, but nevertheless impact the course of the partnership when successful;
- Reinforce synergies and complementarity between national and European programmes and strategies. Multi-country programmes such as JUs, EDIC, ... respond to real challenges and show the added value of working amongst European partners, yet they require a strong dialogue for alignment, and subsequent commitment (including budgetary) to be effective.
- Further efforts are necessary to improve coherence and synergies between EU programmes and the infrastructure initiatives they establish. Shared infrastructures have the potential to align and coordinate heterogeneous communities when done right. While infrastructures may serve different objectives justifying distinct initiatives (e.g EOSC, GAIA-X, common European dataspace, ... in the context of the European data strategy), they should be coordinated and aligned as much as possible to stimulate cross-fertilization as opposed to strengthening differences.

### **Strengthen support for outstanding science**

Europe's strong and independent research environment is internationally praised for producing world-class scientist and creative and critical thinkers. As such, it is the back-bone for European (and international) deeptech innovation, which is based on entrepreneurs, and arguably an important pre-requisite to uphold European values. Collaboration with European and international peers in optimal conditions is a corner-stone for scientific advancement and, as such, future European products and services, its prosperity, and its ability to master and influence its destiny. For precisely this reason the European Union set out the objective to invest 3% of the GDP in research. In a world that questions democratic values and scientific truths it is paramount to uphold and further support the scientific tradition grounded in European culture and values.

### **Recommendations for FP10:**

- The successive framework programmes have drawn their originality from their ability to support advanced research, combining complementary expertise, mostly through collaborative research (particularly in pillar 2) and the creation of ecosystems for research, wherever they are in Europe. This characteristic must be pursued and strengthened and target originality, ambition, etc. and can lead to technological disruptions and innovation;

- Starting from the principle that research at the highest level is a prerequisite for future innovations, products and services, additional efforts are necessary to leverage the success in research when it emerges to benefit European society and economy. Developing capacity within the European industrial innovation ecosystem to detect, embrace, and scale-up successful results is necessary for Europe to become a leader in disruptive innovation (as opposed to the continuous catch-up approach) ;
- The urgent need to significantly scale-up experts is rightly identified as key priority in 2030 Digital Compass. While expertise profiles on nearly all levels are to be strengthened, capacity in academia to teach the future generation of ICT-experts (including teach the teacher) is limited. Additional efforts are necessary to reach the set out objectives.

### **Advocating better synergies in the security and defence fields**

The current geopolitical tensions led Europe to formalize its Economic Security Strategy (2023), in order to reduce risks and promote technological progress in critical sectors. In this context, the question of support for R&I (including digital technologies and software), which could potentially be used for both civil or military purposes, arises again. While increased European investment for the defense sector will probably continue in the next multiannual financial framework, it is important that this effort also covers basic research. Basic research is important to anticipate future types of conflicts, as defense is very transverse with regards to the use of digital technologies. In that sense, basic research can foster anticipation, European competitiveness, sovereignty and allow Europe to stay ahead in this domain. This implies greater fluidity/coherence between programs supporting digital research on one side and those supporting the production of defense technologies.

There is a need to strengthen collaboration between programs so that basic research can be more easily transferred to specific defense programs (eg EDF). In other words make this research outputs accessible so that Defense can easily and timely access them and adapt them to their specific needs. Conversely, research carried out for specific defense applications could possibly be used to feed on a case-by-case basis into research programmes for the civil sector, as the Defense field has specificities, which requires to use and combine different research approaches.

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*Inria is the French national research institute for digital science and technology and has been responsible since January 2024 for the Digital Program Agency to strengthen the collective dynamics of higher education and research. World-class research, technological innovation and entrepreneurial risk are its DNA. In 215 project teams, most of which are shared with major research universities, more than 3,900 researchers and engineers explore new paths, often in an interdisciplinary manner and in collaboration with industrial partners to meet ambitious challenges. As a technological institute, Inria supports the diversity of innovation pathways: from open source software publishing to the creation of technological startups (Deeptech).*

*Contact: European Partnerships Department (dir-dpe@inria.fr)*