RESEARCH TO REALITY

Digital Solution for European Challenges

& TAKEAWAYS CONCLUSIONS

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This document, inspired by discussions at the conference, is a standalone reflection piece aimed at shaping the future of digital technology in Europe.

EXECUTIVE SUMMARY

This document provides a comprehensive overview of what was said at the "Research to Reality – Digital Solutions for European Challenges" event, held on 5 and 6 February 5th and 6th 2024. This gathering brought together policymakers, researchers and implementers of the Digital Europe Programme and business leaders from across Europe to deliberate on the future of Europe's digital policy. A key focus of the event was the fostering of synergies between major European funding mechanisms such as Horizon Europe and the Digital Europe Programme, as well as enhancing cooperation across different levels of government.

The urgency of strengthening these synergies in digital technologies is driven by Europe's need to address critical challenges including the climate crisis, health issues, aspirations for digital sovereignty, geopolitical imbalances and the imperative to boost productivity. The discussions highlighted that government support in digital solutions is not enough; these investments must be strategically effective. There is a call for a strategic pivot towards a shared European digital infrastructure that would allow industries to thrive and compete more effectively.

The event was organised by the Belgian regions — Flanders (Department of Economy, Science & Innovation), Wallonia (SPW Economy, Employment, Research) and Brussels (Innoviris) — in collaboration with the European Commission's DG CONNECT. It showcased various activities and facilitated a deep dive into creating and optimising synergies between research and deployment.

Key issues discussed included the existing barriers to synergy and strategies for overcoming them. It is evident that significant efforts are still required to enhance the cooperation between research and deployment in the digital sector. Ensuring an effective transition of digital research results to the market and broader society remains a considerable challenge. Bridging this gap is crucial for converting research innovations into practical, market-ready solutions that can benefit society at large.

The discussions also touched on broader themes such as sustainability within the Twin Transition, the necessity of trust in digital transitions, the European regulatory landscape, the need for different types of skills in the digital transition and the effectiveness of European funding mechanisms.

In the concluding section, a series of recommendations are put forward to guide the future of Europe's digital policy. These recommendations focus on simplifying cooperation, addressing legal and regulatory challenges, enhancing trust and fostering healthy competition. Additionally, there is a strong advocacy for improving awareness among all EU government levels about the opportunities presented by European funding and the importance of aligning national and regional digital strategies with European initiatives, emphasising how Europe can enhance local actions and vice versa.

The insights presented in the text are derived from what was discussed at the event, with methodologies outlined and further details available in the reports from the breakout sessions attached for anyone interested in exploring the topics further. This comprehensive approach ensures that stakeholders have access to detailed, actionable information that can help drive Europe's digital agenda forward effectively.

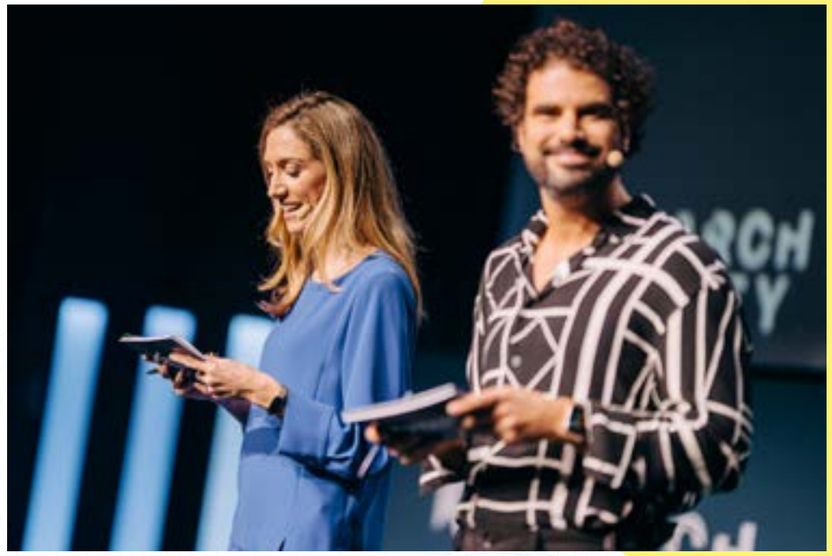
INTRODUCTION AND CONTEXT

European countries and regions have a longstanding tradition of fostering digitalisation within businesses and governments.

DIGITALISATION PROGRAMMES IN EUROPE

Digitalisation occupies a prominent place on the European agenda, encompassing various domains from research and innovation to establishing legal frameworks and, increasingly, supporting digital transformation. This emphasis is mirrored in the European Commission's designation of "**A Europe Fit for the Digital Age**" as one of its six priorities for the 2019-2024 term. This focus has materialised in numerous initiatives, including legal initiatives such as the Digital Markets Act (DMA), the Digital Services Act (DSA), the Artificial Intelligence Act and the Data Act, which aim to deepen the European Digital Single Market. Similarly, strategic initiatives such as Europe's Digital Decade outline the EU and its Member States' digitalisation targets for the current decade, emphasising cooperation through Multi-Country Projects and European Digital Infrastructure Consortia.

Previously, digital policy deployment and funding in Europe were primarily the responsibilities of regional and national governments — a practice that remains significant. European countries and regions have a longstanding tradition of fostering digitalisation within businesses and governments, developing digital infrastructure and ensuring people's access to and skills in digital technology. However, this approach, while impactful, often led to inefficiencies and indirect competition among EU governments. For instance, neighbouring countries might develop similar Data Spaces with unique standards, leading to unnecessary duplication and waste of resources. Addressing this, the European Commission introduced the Digital Europe Programme, an EU-wide investment initiative to support European digital policy and deployment.



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The Digital Europe Programme, running from 2021 to 2027, seeks to hasten the digital transformation of Europe's society, its economy and its public services. With an initial budget of approximately € 7.5 billion, the initiative focuses on enhancing Europe's digital capabilities and sovereignty. Key investment areas include High Performance Computing, Artificial Intelligence, Cybersecurity, Advanced Digital Skills and the application of digital technology in key sectors of economy and society, such as energy or health and chips. Central to the programme are the European Digital Innovation Hubs intended to propel the digital transformation of companies, in particular SMEs and public sector organisations and to bridge the gap with more specialised organisations coming from the programme, such as Testing & Experimentation Facilities, Data Spaces, semiconductor pilot lines and National Coordination Centres for Cybersecurity. Following the EU Chips Act's adoption in 2023, semiconductor technology was added as a new strategic focus, bringing the total budget of the programme to € 8.1 billion.

At its midpoint, the Digital Europe Programme is displaying initial results and undergoing a mid-term review, making it a critical moment to evaluate and plan for the future of digital policy in Europe. Yet, the Digital Europe Programme is not the EU's sole investment tool for digitalisation. Others include the Connecting Europe Facility – Digital, focusing on digital connectivity infrastructure, and Creative Europe, supporting the audio-visual sector. Horizon Europe, with a € 95 billion budget, stands as the European Commission's largest research and innovation funding mechanism, including digitalisation as a key theme within its "Global Challenges and European Industrial Competitiveness" pillar.

Horizon Europe emphasises digital technologies, supporting projects that develop new digital technologies and promote the digital transformation of European industries and society. Moreover, digitalisation is integral to initiatives under the "Innovative Europe" pillar, highlighting the European Innovation Council (EIC) and the European Institute of Innovation and Technology (EIT). While this document primarily focuses on the Digital Europe Programme and Horizon Europe, it acknowledges the broad spectrum of EU digitalisation instruments.

Ideally, these European programmes would complement each other, creating synergies between research, innovation and deployment activities and facilitating data sharing and the adoption of new digital technologies. Whether or not this ideal is already a reality, and, if not, the necessity and means to achieve it, were central questions at the "**Research to Reality – Digital Solutions for European Challenges**" event during the Belgian Presidency of the Council of the EU on 5-6 February 2024.

EUROPE FACING MANY CHALLENGES

Europe is navigating a period marked by significant external challenges, including climate change, technological dependencies, geopolitical imbalances, health crises and the need for enhanced productivity to stay competitive. These challenges, while formidable, also present unique opportunities for leveraging digital technologies to forge innovative solutions and pathways towards a resilient and sustainable future.

- **Climate Change and the Twin Transition:** the urgency of addressing climate change is mirrored in the concept of the Twin Transition, which advocates a synergy between digital transformation and the greening of our economy. Digital technologies offer promising tools for environmental stewardship, from improving energy efficiency to enabling smarter resource management. However, this comes with the recognition of the expanding ecological footprint of these technologies in and of themselves. Europe's digital policy is therefore carefully balanced in order to harness the potential of digital solutions in mitigating the effects of climate change whilst also addressing their environmental impact.

- **Sovereignty and Digital Values:** at the heart of Europe's digitalisation strategy is the desire to carve out a path that reflects European values and legal standards, distinguishing itself from the market-driven approach of the US and the state-controlled model of China. Europe aims to establish a third way, one that fosters innovation within a clear legal framework and a fair and contestable digital economy. This not only encourages innovators to align their creations with European values but also emphasises the importance of cybersecurity in safeguarding against undesirable external interferences. The development and enforcement of the Digital Services Act (DSA) and the Digital Markets Act (DMA) are pivotal in this respect, ensuring that technology serves to enhance, rather than undermine, our way of life.

- **Geopolitical Imbalances:** the increasing chaos on the global stage, highlighted by conflicts and crises in Ukraine, Gaza and parts of Africa, underscores the vulnerability of Europe's supply chains and the imperative for digital sovereignty. Initiatives such as the EU Chips Act are steps towards reducing dependency and bolstering Europe's digital and technological resilience, ensuring that Europe remains strong and free to chart its own course in an increasingly fragmented world.

- **Health and Innovation:** the COVID-19 pandemic has indelibly changed the global landscape, demonstrating both the fragility and the potential for rapid innovation in our health systems. The collaboration in innovation, notably in the development of mRNA vaccines, showcases the pivotal role of government investment in research. At the same time we see the transformative potential of technologies such as AI in healthcare, likened by some to the revolution brought about by antibiotics in the previous century.

- **Productivity and the Path Forward:** according to the JRC Technical Report 'Productivity in Europe' (2020), enhancing labour productivity is crucial for maintaining Europe's high living standards. The sluggish productivity growth seen in the wake of the 2008 financial crisis in part attributed to a reduced contribution from ICT capital, highlights missed opportunities in digital innovation. Bridging this gap requires not only the short-term implementation of digital technologies in SMEs but also long-term investments in deep tech research.

In confronting these challenges, it becomes evident that digital solutions hold the key to not just surviving but thriving. Through strategic investment in digital technologies and innovation, Europe can not only tackle its immediate challenges but also lay the groundwork for a future that is resilient, prosperous and inclusive. This vision for Europe, grounded in the principles of sustainability, sovereignty and innovation underscores the importance of a holistic and integrated approach to digitalisation — a path that acknowledges the complexities of our time while embracing the boundless opportunities of the digital age.

In navigating the myriad challenges and opportunities presented by digitalisation, Europe finds itself in a complex paradox. Despite being at the forefront of research and innovation, with substantial investments made across various levels of government, Europe remains intricately tied to external dependencies, particularly in the realm of digital technology. This juxtaposition underscores the critical need for enhanced collaboration and a more integrated approach to the research, innovation and deployment of digital technologies, transcending traditional policy silos.

To effectively address this paradox, a more strategic shift towards a union-wide digital infrastructure (including capabilities and a rule book), combined with a paradigm shift towards entrepreneurial thinking is required. It is increasingly clear that merely allocating funds towards RTO's and companies through subsidies to create new appliances is not sufficient to overcome the challenges at hand. Government investment should be focused on maximising the impact of digital deployment initiatives that actively involves industry stakeholders and ensures that research funds in Europe not only reach the market but also benefit society at large, while allowing companies to compete with the help of these deployment platforms to make new products that serve our economy and society. This entails a concerted effort to foster a culture of innovation that embraces risk-taking and entrepreneurship, encourages the translation of research into tangible products and services, and cultivates a dynamic ecosystem where government support synergises with private sector initiatives.

> **[...] digital solutions hold the key to not just surviving but thriving.**

The path forward for Europe, therefore, involves bridging the gap between innovation and practical application, breaking down barriers between policy domains and fostering a collaborative environment that leverages the strengths of all stakeholders. By adopting this multifaceted approach, Europe is able to overcome its dependencies and harness the full potential of digitalisation, ensuring a prosperous, resilient and digitally sovereign future in strategic sectors such as automotive, agriculture, energy, health, media etc. This strategic pivot towards a more entrepreneurial and collaborative framework is not merely an option but a necessity, as Europe seeks to reaffirm its position as a global leader in the digital age, capable of transforming challenges into opportunities for growth and innovation.

CONTENT

RESEARCH TO REALITY – DIGITAL SOLUTIONS FOR EUROPEAN CHALLENGES

In the context of the Belgian Presidency of 2024, the Belgian Regions of Flanders (Department of Economy, Science & Innovation), Wallonia (SPW Economy, Employment, Research) and Brussels (Innoviris), in cocreation with the European Commission's DG CONNECT, organised the "Research to Reality – Digital Solutions for European Challenges" event on 5 and 6 February.

As part of the event, people from all over Europe came together in Brussels to discuss the need to enhance the connection between research into the newest technologies and the deployment of technologies in society and how to achieve this. In a European perspective, this means a strong focus on digital activities in Horizon Europe and the Digital Europe Programme.

In total, 650 policy contributors, researchers, people involved in the deployment of the Digital Europe Programme and company employees attended the event with another 650 people following the main activities online. During the event, networking activities were set up by Ideal-ist, the network of National Contact Points for Cluster 4 of Horizon Europe and the network of National Contact Points for the Digital Europe Programme came together physically for the first time, a milestone for the programme.

Four keynote speakers (Luc Van den hove, CEO of imec; Roberto Viola, Director-General of DG CNECT; Ana Barjasic, CEO of Connectology and EIC Board Member and Patricia Besson, AI-lead at Thales) delivered a public address at the opening and closing sessions of the first day of the event. In all, over 90 speakers attended the event. On the second day, workshops were held on how to participate in the relevant programmes, with visits organised to three relevant organisations in Belgium - imec, Buildwise and FARI - representing the three regions involved.

To discuss the way forward for Europe's Digital Policy, 12 breakout sessions around 3 different topics were held on day one:

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ROADS FROM RESEARCH TO REALITY

During these sessions the focus lay on how digital technologies can impact the fields of agriculture and health, as well as on what stops research results from making their way to the economy and society in the context of cybersecurity. Lastly, the session on 'Unlocking Synergies' focused on the concrete stumbling blocks that remain for materialising the connection between research and deployment, and how these can be removed.

BUILDING TECHNOLOGICAL LEADERSHIP & STRATEGIC AUTONOMY

These breakout sessions delved into Europe's critical digital technologies, such as Virtual Worlds (AR/VR/XR), Artificial Intelligence and Semiconductors. These sessions explored the challenges and opportunities in operationalising specific technology strategies, objectives and action plans in Europe that have recently been put forward by the European Commission. In the fourth breakout session, 'the Digital Europe Programme's' achievements & implementation', the event zoomed in on the inner workings and future of the programme and what the ideal setup should look like to secure strategic autonomy for Europe.

FUNDING STRATEGIES

Here, discussions were held on the clarity and expediency of aligning overarching digital strategies with calls for appropriate funding for programmes such as Horizon Europe and the Digital Europe programme and exploring actions to be undertaken as part of these programmes. This third section of breakout sessions was also trained the spotlight on some of the latest additions to the toolbox of instruments for funding, such as the European Digital Innovation Hubs, Testing and Experimentation Facilities and European Digital Infrastructure Consortia. The discussions also looked at the connection between the funding of research and deployment in delivering solutions in the areas of the Human Twin Transition and Data.

The reports of these breakout session are available in the appendix to this document.

Below are the main takeaways, followed by recommendations and a conclusion.

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TAKEAWAYS

BARRIERS TO INNOVATION AND COOPERATION

Event participants underscored the critical importance of synergies between research, innovation and the deployment of digital capabilities and policies in Europe to effectively address the continent's challenges.

Two types of synergies were highlighted: horizontal and vertical. Horizontal synergies occur within the same level of government, involving funding programmes with complementary objectives, such as Horizon Europe and the Digital Europe Programme. These synergies may manifest through cross-participation in projects and programmes or through unified strategies that span different initiatives. These type of synergies are important to ensure that research results are taken up by industry and societal stakeholders and to make sure research is not only conducted for research's sake but that there is an actual uptake of results.

Vertical synergies, on the other hand, emerge across different government levels, such as the alignment of regional and national digital strategies with European goals, or the integration of regional and national initiatives with European projects.

Synergies are often thematic, aiming to break down silos and ensure projects related to specific topics or sectors — such as AI, cybersecurity, agriculture, or healthcare — work in concert and reflect broader policy objectives. These thematic linkages may be driven by the specific regulatory landscapes or by existing ecosystems within these areas.

Achieving these synergies, both vertical and horizontal, comes with a set of challenges. Divergent thematic or implementation strategies among funding programmes may lead to siloed ecosystems and operational disconnects. An overarching European strategy focused on stimulating synergies could mitigate these issues. Additionally, discrepancies between the objectives of stakeholders in European funding programmes and those of the EU Commission underscore the importance of involving existing ecosystems in new initiatives to foster connections.

Practical obstacles also complicate synergy efforts. Legal complexities in fund combination, such as those related to state aid regulations when merging national, regional and European funds introduce uncertainty for stakeholders. Practical complexities in fund combination linked to coordination between sources of funds and double-funding interpretations have also been seen to act as a brake on actual synergies. While some entities navigate these challenges effectively, others, particularly SMEs and civil society organisations, may find them prohibitive.

Key roles and organisations, such as National Contact Points and European Digital Innovation Hubs, are instrumental in creating trust, forging connections between stakeholders, programmes and government levels and identifying practical barriers.

Digital data sharing, a powerful means of creating synergies, faces its own hurdles. The absence of unified standards acceptable to both research and deployment sectors, partly due to trust issues, complicates efforts to foster an environment that is conducive to open data exchange.

SUSTAINABILITY OF FUNDING

For Europe to effectively compete on the global digital stage, it is crucial to maintain sustained funding for strategically important topics over extended periods. The very nature of digitalisation and the development of essential infrastructure, which significantly influences both governmental operations and business practices, often means that achieving goals can be a long-term endeavour. Typically, Multi-Country Projects are designed to run three to five years, whereas other initiatives such as Partnerships and Joint Undertakings may set objectives over much longer timelines. The risk of discontinuous funding is that projects remain incomplete, leading to substantial wastage of effort and investment.

This challenge is exacerbated when funding models require 50% co-financing from a diverse array of partners, who may change over time or decide to withdraw their support. This scenario underscores the importance of robust, reliable funding mechanisms. Instruments such as the European Digital Infrastructure Consortia (EDIC), Joint Undertakings, Important Projects of Common European Interest (IPCEI) and European Research Infrastructure Consortia (ERIC) are designed to mitigate these risks. However, for these instruments to be effective, they not only need to engage with, but also strategically align with regional and national digital strategies, as well as corporate input from relevant corporate entities.

The effectiveness of such collaborative funding mechanisms hinges on a comprehensive understanding of the digital strategies at all governmental levels across Europe. Achieving this requires a thorough and well-maintained overview of these strategies, ensuring that the planning and execution of digital projects are informed by and integrated with overarching regional and national goals.

REGULATION, COMPLIANCE AND TRUST

Europe's ambition to carve out a "third way" in digitalisation, anchored in its distinct values, aims not just to regulate but to foster trust in the digital transition. This approach underscores the importance of user comfort and protection against potential digital technology abuses. By leveraging the considerable size of its internal market, Europe has historically set international standards that reflect its values, such as data protection and privacy.

The concept of "Digital Technologies Made in Europe" highlights this ambition, envisioning technologies that are not only of high quality but also embody European values. This distinction could set European digital technologies apart on the global stage, emphasising data protection and user rights. A resolute focus on human-centric solutions and interdisciplinary approaches is key to achieve this. Given the novelty of human-centric digitalisation, these technological solutions often still remain to be researched. Existing research funds such as Horizon Europe should be, and often already are, leveraged to find ways to make technology more human-centric. But in order to do so, there should be a focus on interdisciplinary research, including a wide range of expertise that transcends digitalisation, such as social sciences and sectoral expertise.

> **“ [...] Europe has historically set international standards that reflect its values.**

The synergy between innovation and deployment activities is also crucial in this context. Regulation is viewed not merely as a constraint but as a catalyst for innovation, encouraging the development of digital technologies that adhere to Europe's regulatory framework and values. The General Data Protection Regulation (GDPR) and more recently the Data Governance Act and Data Act, for example, spurred efforts to innovate in ways that promote data sharing while safeguarding the interests of data producers. Europe should deliver the technologies that enable businesses to comply by design with the rules without additional burden.

Scaling these technologies and unlocking their enabling power across industrial and societal sectors — whether through industry efforts or government support — demands a collaborative approach involving various stakeholders, including governments, researchers, civil society and the private sector. This multi-faceted involvement is essential for technologies to achieve union-wide reach, adoption and impact.

Moreover, adapting to these changes at the European level requires support mechanisms that make legislation "digitally executable." Initiatives such as regulatory sandboxes, data spaces, interoperability frameworks and standard-setting activities are vital. They not only facilitate compliance with new digital legislation but also encourage innovation within a secure and value-driven framework. Future digital legislation should consider these aspects early on in the discussion phase, ensuring that new regulations enhance, rather than hinder, the development and deployment of digital technologies in Europe.

TWIN TRANSITION

The Twin Transition, the European strategy that intertwines digitalisation with the greening of society, is an increasingly critical focus area that merits its own section. At the core of this transition lies the concept of sustainability, which transcends environmental concerns to encompass social and economic dimensions as well.

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For technology to be truly sustainable, it must first achieve a net-zero impact on the environment. This means the technology should enable sectors to reduce their ecological footprint without causing an overall increase in resource consumption that negates these gains. For example, while digital innovations might optimise efficiency and reduce waste in one area, if they lead to a surge in energy consumption overall, the intended greening effect is compromised, rendering the approach unsustainable.

Economic sustainability is equally crucial. Technologies developed through research must be economically feasible to manufacture and implement. If the production costs are too high, making the technology unaffordable or unattractive for market uptake, it will fail to transition from a concept into a commercially viable product. This economic aspect ensures that businesses are willing to invest in and advance these technologies, recognising their potential for profitability alongside environmental benefits.

Lastly, social sustainability focuses on ensuring that technological advances are accessible and affordable for the entire population. It is essential that these technologies do not merely cater to the affluent; they must be within reach for everyone to ensure a fair and equitable transition. For instance, promoting electric vehicles as a sustainable option must consider whether people can realistically afford them, avoiding a scenario where only a subset of the population benefits from such advancements.

Balancing these three dimensions of sustainability is a delicate endeavour, often resulting in achieving only two out of the three, which calls into question the overall sustainability of the approach. Addressing this challenge requires a concerted effort in research and policy-making to devise solutions that do not sacrifice one aspect for the sake of another but instead harmonise environmental, economic and social goals. The importance of this balance cannot be overstated as it will determine the success of Europe's ambitions for a sustainable digital and green transition.

SKILLS, EDUCATION AND TALENT

Although not the primary focus of the conference, skills remain crucial in the digital transformation process. Empowering end-users with the necessary skills and knowledge is fundamental to adopting digital technology effectively. Without this empowerment, digital transformation initiatives risk being met with scepticism and distrust. It is essential for users to not only feel confident in using digital technologies but also for them to have a say in their development.

An example to illustrate this involves farmers who generate data used to train AI algorithms, which, in turn, could enable them to farm more efficiently using AI technology. However, if they lack the required skills or understanding of what to expect from such technology, they are unlikely to embrace these new tools or participate in data sharing. This reluctance hinders the development of new applications and technologies, a challenge that extends across various sectors.

Furthermore, there is a pressing need for advanced digital skills not just for using, but also for creating and applying new digital technologies. Currently, too many skilled researchers and innovators are relocating to regions where launching a business is easier or remuneration is more attractive. As a result, Europe's investment in nurturing advanced digital skills is often lost to other parts of the world.

In essence, translating digital technologies from research into practical applications requires a comprehensive approach to digital skills development at all levels. This necessitates concerted efforts from government entities across the board, also linking to the topic of synergies between government levels, in terms of education stimulation.

AWARENESS

Raising awareness of Europe's efforts to foster the digital transition is crucial for ensuring that these initiatives reach their full potential. The establishment of the National Contact Point (NCP) network for the Digital Europe Programme exemplifies a strategic move in this direction. NCPs play a pivotal role in disseminating information about European digitalisation efforts to relevant stakeholders, thereby facilitating their participation in these initiatives.

However, a significant challenge lies in extending this knowledge to the decision-makers and strategists who are responsible for defining digital policies at various government levels. There is often a disconnect between the opportunities offered by European funding for digital transition and the strategic planning at local, regional, or national levels. This gap may lead to missed opportunities for leveraging European cooperation and funding, which could otherwise significantly benefit digital strategies.

To bridge this gap, a concerted effort is required from both programme committee members and European-level authorities. It is essential to ensure that information about European funding opportunities and initiatives is communicated effectively to all stakeholders involved in digital policymaking and strategy development.

Another challenge is awareness of the overall logic of European funding mechanisms and what plays into which types of activities. The bigger picture has to be communicated, also for stakeholders to see the opportunities and to bring about the synergies needed.

Organising physical meetings to showcase the outcomes of European funding programmes such as the Digital Europe Programme, and where relevant in combination with research activities, is highly valuable. Such gatherings not only make the results of these programmes more tangible but also encourage engagement from potential beneficiaries, foster networking opportunities and promote synergies. These interactions can lead to a better understanding of the available support, encourage collaborative project development, and ultimately, contribute towards a more cohesive and inclusive approach to Europe's digital transition.

RECOMMENDATIONS

ENHANCING COLLABORATION AND SYNERGY

In the discussion on synergies necessary for Europe's digital transformation, two types, vertical and horizontal, were highlighted as critical. Horizontal synergies involve collaboration across various funding programmes, where practical issues such as different funding schemes, divergent rules and non-aligned timelines pose significant challenges. To overcome these, a concerted effort to simplify and reduce the fragmentation among programmes is essential.

For specific types of horizontal synergy, such as linking research outcomes with practical applications, tools such as the European Digital Innovation Hubs, Testing & Experimentation Facilities (for AI), Data Spaces (for data-driven technologies) and Pilot Lines (for semiconductors) are pivotal. These initiatives are able to foster collaboration across different technology readiness levels and provide direct feedback to researchers regarding industry needs. Encouraging horizontal synergies may also benefit from thematic strategies in areas such as AI or data, or through sector-specific approaches.

On the vertical synergy front, which concerns cooperation across various government levels, there is a pressing need for inclusive planning and execution. The development of European investment programmes is often led by the European Commission, with inputs from programme committees. This approach may result in a disconnect between the ambitions of stakeholders and the objectives of the Commission, potentially leading to distrust or disinterest.

The challenge of combining funds from different governance levels to create a significant impact on digitalisation remains. The European Commission should map the co-funding mechanisms of regional and national governments, identifying areas of concern and examples of best practice. This could leverage the monitoring mechanisms of Europe's Digital Decade.

These recommendations point to the necessity of predictability in work programme planning, fund accumulation and accessing support from different government levels. However, it is also worth noting that maintaining flexibility at the project level is important to capture emerging opportunities for synergies, even if they were not part of the original work plan.

The recommendations on how to enhance collaboration and synergy include:

- Establishing a comprehensive European Research, Innovation and Deployment strategy for digital technologies that aims to lower barriers or unify programmes under shared management from different responsible Directorate-Generals. This should seamlessly cover core-technology Research and Innovation, the integration of digital in other policy domains such as health, energy, mobility and education and deployment of infrastructure to support and deepen the Digital Single Market.
- Synchronise the timing and topics of different programmes, with an eye toward enabling sequential funding opportunities. Reducing fragmentation and creating synergies by design, including by streamlining rules across programmes.
- Involve the full ecosystem when setting up research, innovation and deployment activities to ensure transparency and understanding of aims and ambitions across all levels. This would include engaging National Contact Points (NCPs), European Digital Innovation Hubs (EDIHs) and other intermediaries to foster trust, a common sense of ownership and create strong ecosystems.
- Utilise Europe's Digital Decade monitoring to understand how co-funding is executed across national and regional governments in the EU.
- Aim for a unified approach to co-funding, starting from the idea that Europe can strengthen digital policies of national and regional governments, and vice versa, to provide clarity and ease of access for stakeholders across Europe. Identify and promote best practices, for example, how the Netherlands or Sweden aligns its national digital strategy with the European one and promotes a clear way towards co-financing opportunities. Also provide more links in terms of similar criteria and a shared evaluation between government levels to strengthen the connection between them.

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The challenge of combining funds from different governance levels to create a significant impact on digitalisation remains.

TRUST

Trust is a multifaceted necessity for the digital transition, which presents itself in different yet interconnected ways. For digital technologies to be broadly trusted and adopted, they first and foremost need to be robust. This robustness ensures that technologies such as AI, robotics and real-time requirements are able to perform reliably in real-world conditions, which is essential for users to put their trust in them.

In the context of European funding programmes, trust also pertains to the sustainability of funding. The hesitation of industries to commit investments stems from concerns over the potentially abrupt end of funding for projects. Addressing this form of trust involves ensuring that funding is perceived as stable and reliable.

Data sharing emerged as another critical area where trust needs to be strengthened. The hesitancy of important data producers — companies, governments, researchers and citizens — to share data is often due to uncertainty about how their data will be used and whether they will be managed responsibly. To encourage large-scale data sharing, which is fundamental for developing new applications that improve productivity and quality of life, enhancing trust in data governance is imperative.

Within this topic, the branding of European technologies that comply with human-centric values could be an important tool to let people know technology can be trusted. Finally, trust is also stimulated by strong legal frameworks that are enforceable if needed. This is discussed in the following section.

The recommendations on how to enhance trust include:

- Establishing rigorous testing and validation mechanisms for new technologies in real-world scenarios. Being open and transparent about the usability, trustworthiness, sustainability and applicability of these technologies is crucial for building trust among end-users.
- Leveraging Public and Private Investments to underpin sustainable large-scale digital infrastructure projects through mechanisms such as the European Digital Infrastructure Consortia, the Chips JU, the Horizon Europe Partnerships and the European Research Infrastructure Consortia.
- Considering sustainable funding for critical digital deployment activities as a strategic focus when renewing the digital funding programmes.
- Enhancing Data Governance Frameworks to address issues of standardisation, trust and data literacy. It is important to clarify to data producers exactly how their data will be used, the limits of said use and the benefits of sharing.
- Considering the branding of European technologies that comply with human-centric values.

ADDRESSING LEGAL AND REGULATORY ADJUSTMENTS

The conversation around regulation in the digital era underscores the need for legal and regulatory frameworks that not only protect rights but also promote innovation. The unique position of European digital technology — anchored in ethics, inclusiveness, diversity and a human-centric approach — provides a foundation through which Europe is able to distinguish itself globally.

However, as insights from the conference highlighted, establishing regulations and legislation for digital technologies is only part of the equation. It is crucial that these regulations are designed to be digitally executable and are supported by a comprehensive framework that encourages compliance and innovation. The Regulatory Sandboxes for AI serve as a prime example of this approach in action, offering companies a pathway to navigate the compliance requirements of new legislation such as the AI Act. This process, however, is complex and necessitates a wide array of expertise, from legal and technological specialists to business advisers.

During the discussions, it became evident that simplifying the process for obtaining resources, particularly for SMEs and small research groups, remains a significant challenge. These entities often lack the capacity to establish dedicated departments to manage resource acquisition, making the need for streamlined procedures critical. The goal is to design a system that minimises redundancy, avoiding the necessity for these groups to navigate complex application processes for each different programme. This simplification must be addressed at a high level to ensure consistency and efficiency across various funding programmes.

Moreover, involving stakeholders in the development of these processes is essential to ensure that the systems are user-friendly and effectively meet the needs of those they intend to serve. By engaging directly with the end-users of these programmes, SMEs, researchers and other relevant parties, the strategies can be tailored to be more accessible and practical, reducing the administrative burden and enhancing the ability to secure the relevant funding and resources. This approach not only helps to maintain the focus on this critical issue but also promotes continuous improvement in the accessibility of support for innovation and research across Europe.

Lastly, the financial regulation is seen as one of the most important hurdles for vertical and horizontal synergies in digital to be created. With the current regulation, cumulative funding is impossible in most cases, which means the current situation is detrimental to securing synergies and ensuring funding sustainability. As achieving synergies is a goal of Europe and its Member States, this should be tackled in the near future.

The recommendations on how to address legal and regulatory adjustments include:

- Embracing the concept of "Digital Executable Legislation" early on in the legislative process for new laws impacting digital technologies. This approach should aim to synchronise legislative development with innovation in digital technologies. Capitalising on Europe's robust digital research ecosystems is essential to achieve this, whereby these ecosystems should be actively involved in the creation and support of initiatives such as Regulatory Sandboxes. This strategy ensures that laws are not only protective and ethical but also practicable and supportive of technological advancement.
- Simplifying the process for putting in place rules with the involvement of stakeholders to minimise redundancy and to make it easier for smaller organisations, such as SMEs to be involved in the funding programmes where relevant.
- Removing obstacles in the financial regulations that prevent horizontal and vertical synergies to be created where synergy is a goal for Europe and its Member States.

Photo by STYN.be

"The unique position of European digital technology [...] provides a foundation through which Europe is able to distinguish itself globally.

FOSTERING INNOVATION AND COMPETITIVENESS

The emphasis of the conference on European funding programmes highlighted the critical role these initiatives play in advancing digitalisation. Yet, it was also acknowledged that these programmes alone are not sufficient for Europe to lead in digital transformation. For Europe to excel, the industry and entrepreneurial sectors need to move forward beyond reliance on subsidies. The development of sustainable, profitable business models is essential for European industries to compete on a global scale. Relying too heavily on grant funding (or 'grant addiction') undermines the long-term viability of digitalisation efforts. The focus should be on creating value propositions that meet the direct needs of end-users.

European digital investment policy has the potential to significantly impact digitalisation and enhance competitiveness by developing the necessary digital infrastructure. Such infrastructure serves as a foundational platform upon which businesses are able to innovate and compete. For SMEs and even large corporations, creating a Europe-wide standard for data usage, accessing supercomputing resources for product design or establishing a pilot line for testing new semiconductor technologies is practically impossible. Therefore, focusing on core technological infrastructures such as supercomputing, cloud services, cybersecurity and semiconductors — much like the Digital Europe Programme — remains a prudent strategy. However, it is imperative that these infrastructures are designed to foster competition and that companies are involved in discussions about their practicality and usability, leading to the following recommendation:

While government deployment of digital infrastructure is a crucial step, this alone is insufficient to ensure that these technologies are embraced and effectively utilised by businesses. Significant efforts must be made to involve end-users directly. Engaging end-users in this way not only helps in fine-tuning the technology to better meet practical needs but also encourages adoption by demonstrating the technology's effectiveness and potential benefits in real-world scenarios with the use of use-cases. Such involvement is essential to bridge the gap between government-provided digital infrastructure and its practical application by businesses across various sectors.

Finally, as underscored in the EU Chips Act, semiconductor technology plays a pivotal role in maintaining and enhancing Europe's competitiveness in the global digitalisation landscape. The strategic importance of this technology cannot be overstated. It is fundamental to a wide range of industries, from telecommunications and automotive to healthcare and consumer electronics. European investments in semiconductor technology are not just beneficial, they are essential to ensure the region remains at the forefront of technological innovation and market competitiveness. Such investments support the development of cutting-edge semiconductor manufacturing capabilities and innovation ecosystems within Europe, reducing dependency on external suppliers and bolstering the continent's technological sovereignty. This commitment reflects a clear understanding that strengthening semiconductor production is key to securing Europe's position in the global digital economy.

European investment in [...] technology are not just beneficial, they are essential to ensure the region remains at the forefront of technological innovation and market competitiveness.

In terms of fostering innovation and competitiveness, the following recommendations were put forward:

- Avoid dependence on solely government funding for the development of new products. The goal is to foster an environment with a diverse range of financing tools, both grants and financial instruments, that match the needs at different stages, where digitalisation becomes profitable through its own merit, ensuring longevity and sustainability.
- Focus on investments in the deployment of cross-country foundational digital infrastructures, such as supercomputing, data and cloud infrastructure, cybersecurity, generative AI and semiconductors, which businesses are able to leverage in order to become more competitive and develop new products and services. It is crucial to involve companies in conversations regarding the usability of these platforms to ensure they meet industry needs and encourage innovation and competition.
- Maintain the momentum in semiconductor technology investments in Europe, as this is seen as critical in many sectors to remain competitive on the global stage.

SKILLS DEVELOPMENT

The digital transition of Europe demands a wide range of skills, ranging from the most advanced for researching the newest technologies, across experts in their respective fields that need an extensive knowledge of how these technologies work to make a connection to their field of expertise, all the way up to end-users that need a basic understanding of how to use applications the right way. All of these aspects demand special attention.

A collaborative approach that involves the world of academia, industry and government was mentioned as one possibility to address the skills gap. A more unified approach could further enhance the impact of education initiatives. It was even suggested that updates of university curricula could be encouraged by industry requirements and government facilitation.

What came out of the conference was the need to have a greater focus on the skills of end-users when setting up activities. End-users need to be made aware of what digital technologies do in order for them to put their trust in the digital transformation and to be a valuable part of it. The digital transformation of society and the economy is unfolding at such a fast pace that a lot of people have a hard time following, which causes reluctance and blind spots along the way. Think of health workers whose input would be valuable in creating new technologies but which fails to be captured because they lack the necessary understanding of how these technologies work.

In terms of skills development, the following recommendations were put forward:

- Make sure there is a focus on a broad set of skills to enable digital solutions to be implemented and taken up in all sectors, not just highly advanced skills. Set up a coherent Europe-wide digital education strategy that involves all relevant government levels.
- Governments can play a facilitating role in getting the world of academia and industry together, to ensure that people acquire the right skills.
- Focus on the basic digital skills of end-users and citizens in general, who can play an important role in the digital transition and who risk distrusting the digital transition if they do not understand what is behind it.

AWARENESS AND ALIGNMENT OF STRATEGIES AND POLICIES

The acknowledgment of European initiatives such as Horizon Europe and the Digital Europe Programme as catalysts for cooperation rather than competition between governments marks a positive step towards a unified European digital strategy. However, the journey towards fully integrated digital strategies across European, national and regional levels reveals significant gaps. A notable misalignment persists between the ambitions and actions at European level and those at regional and national levels regarding digital strategy. This discrepancy often results in regional and national strategies not reflecting the broader European objectives, underscoring an urgent need for alignment. This alignment is particularly crucial in aspects of digitalisation that benefit from larger scale operations and cross-border interoperability, where European collaboration can provide the necessary scope.

At the conference, one critical challenge identified was the lack of awareness among digital strategists and decision-makers, distinct from programme committee members, about the potential benefits of aligning with European digital funding programmes. This awareness gap is pivotal; without recognition of how European initiatives can enhance local and national policies, there is a tendency to continue investing in smaller scale projects that fail to achieve significant impact. Europe's Digital Decade offers a framework for mapping digital policies across regions and Member States and highlighting areas for strategic alignment. Moreover, forums such as the Research to Reality conference are able to play a vital role in demonstrating the tangible benefits of European programmes, showcasing how such initiatives can strengthen digital policies at national and regional levels.

To bridge these gaps and foster a more cohesive digital strategy across Europe, it is recommended to:

- Enhance awareness among digital strategists and decision-makers about the benefits of European digital investment programmes. This involves clearly communicating how these programmes can complement and amplify local and national digital strategies.
- National and regional policy contributors involved in the aforementioned funding programmes should work towards ensuring that national and regional digital strategies align with the European digital programmes and highlight ways to play into these programmes.
- Organise events that showcase the outcomes of European programmes and collaborations. These events should highlight successful case studies and provide

insights into how European cooperation can achieve scales of impact which local or national efforts are unable to achieve just by themselves. This dual approach aims to foster a deeper understanding and appreciation of European initiatives, encouraging greater alignment and cooperation across all levels of government and bringing together stakeholders from different quarters.

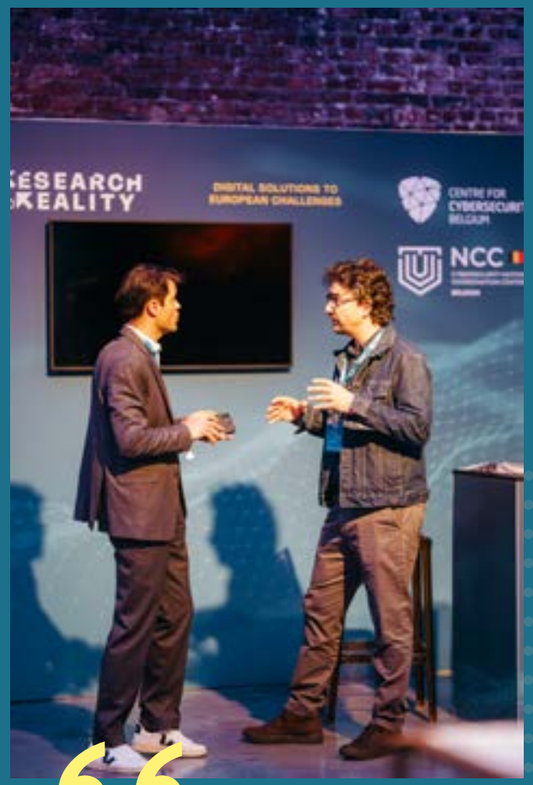


Photo by STYN.be

There is a collective responsibility to drive forward the initiatives discussed, ensuring that Europe remains at the forefront of global digital innovation [...].

CONCLUSIONS

The "Research to Reality – Digital Solutions for European Challenges" event successfully showcased the dynamic interplay between cutting-edge research and practical technological deployment. Key discussions highlighted the progress and strategic advancements under Horizon Europe and the Digital Europe Programme, emphasising significant steps towards enhancing Europe's digital capabilities and strategic autonomy.

The event underscored the importance of an integrated European digital strategy that not only fosters innovation but also ensures that technological advancements reflect and uphold European values of inclusiveness, privacy and security. The recommendations developed during the event call for a strengthened focus on creating synergies between research initiatives and deployment strategies to avoid duplication, streamline efforts and to maximise the impact of investments.

While the event brought to light various challenges such as the need for more synergies between various funding programmes and the alignment of national and EU-level strategies, it also made a clear case for government cooperation and investment in Europe's digital infrastructure in order to strengthen its competitive position vis-à-vis the outside world. The discussions pointed at the need to embrace a holistic approach to digitalisation that accommodates and accelerates the twin transitions of digital and green technologies.

To sustain the momentum generated by the event, it is crucial for all stakeholders, government bodies, industry leaders and academic institutions to reflect on the actionable insights and recommendations proposed. There is a collective responsibility to drive forward the initiatives discussed, ensuring that Europe remains at the forefront of global digital innovation and continues to set a standard for digital excellence that is both competitive and principled.

METHODOLOGY

This document primarily drew on the discussions and exchanges that occurred at the event. Initially, reports were compiled of the breakout sessions held on the first day, focusing specifically on policy-oriented topics, thereby aligning with the document's aim to influence and guide policy development.

After this initial compilation effort, key takeaways and recommendations were carefully selected and refined through consultations with the individuals who organised the discussions. This collaborative process ensured that the insights and directives included in the document are both relevant and actionable.

The drafting stage involved creating an initial text that encapsulated these insights and recommendations. This draft was then subjected to several rounds of review and refinement by the people involved in setting up the event, ensuring that the final document accurately reflects the collective viewpoints and expert opinions presented at the event. This iterative process was crucial in producing a well-rounded and authoritative document that aims to inform about and effectively shape future digital policy.

APPENDIX: SESSION REPORTS

table of contents

Review all the sessions from days 1 and 2 here:

https://www.youtube.com/watch?v=0asMIhQE0hk&list=PL8pHy8Uu92Uo03p-CeTGFUTd21kHWDvjna

UNLOCKING SYNERGIES

CONTEXT & SCOPE

Synergies between European funding programmes, such as Digital Europe and Horizon Europe, but also between European and national or regional funding are essential to exploit the programmes' full potential and to ensure that public funds are used as efficiently as possible. Research, innovation and deployment projects should not happen in silos and we need to ensure that the results of such projects are taken up and can be further exploited.

There are different kinds of potential synergies between the various funding programmes. Thematic synergies aim to ensure that projects working on related topics do not operate in silos and take into account the broader policy objectives behind certain actions. Cross-participation across projects and programmes is also an effective means of making sure ideas and results are shared, further developed or transposed to other sectors. Thematic synergies also allow the results of one project to be used in a follow-up project, building on work done previously. Synergies in implementation refer to the sequential or cumulative funding of one or several projects, making use of funds from different programmes to implement a series of activities and enabling larger ambitions to be taken on. Complementary funding between the EU level and national or regional level allows developments on all levels to be aligned and for common priorities to be reinforced. Other forms of synergies in funding are alternative funding, for instance through the Seal of Excellence, and funding transfers which in practice are hardly being used.

> **Research, innovation and deployment projects should not happen in silos [...].**

The "Unlocking synergies" session took stock of how synergies between Horizon Europe and Digital Europe currently work out. It addressed the opportunities for and the challenges of making use of synergies, both at a European and at national/regional level. It showcased what works well, what is needed and what is done to address remaining challenges.

The session was opened by a keynote speech from DG Connect, elaborating on different types of synergies using the example of EU funding programmes to support the digitalisation drive.

The session then showcased synergies that work between research, innovation and deployment actions. The Belgian public health institute Sciensano proactively identifies relevant topics within different programmes and consequently links projects funded by said programmes. The Belgian European Digital Innovation Hub (EDIH) EDIH-EBE aims to better link research with the private sector and to support companies in their innovation and digitalisation processes. The Digital Europe deployment project TRACY identifies relevant (past and ongoing) research projects and cooperates with these projects, for instance by making use of their results or by organising joint communication and dissemination activities.

The session further shed light on the role of National Contact Points (NCPs) in identifying synergies and supporting stakeholders to recognise opportunities and establishing links between projects and calls. With the example of the Netherlands, the session also showcased how national policies can be aligned with EU policies, setting priorities, pro-actively encouraging national stakeholders to take part in the Digital Europe Programme and supporting them with national co-funding.

ANALYSIS

For the time being, unlocking synergies works to some extent in certain areas, but there are still important challenges. One reason being the discrepancy between what the European Commission aims to achieve with its funding programmes (top-down) and what stakeholders seek to achieve when participating in these programmes (bottom-up). To bring together the views of both sides, it is important to connect and take into account the needs of the entire ecosystem, for the stakeholders to understand how their activities are able to contribute to the bigger picture and beyond the timeline of a single project and for the Commission to understand the needs on the ground. This would allow the focus to go out to the creation and transformation of ecosystems within which these results can 'live' and generate impact. Transparency plays an important part in order to achieve this.

To establish strong links between the entire ecosystem and the Commission, an environment of trust is crucial to balance seizing opportunities and mitigating risks. It is also important that the public trusts the developments, such as Artificial Intelligence, that are fostered with public funding.

And trust between different actors is crucial to exchange information that would give a better view of the ecosystem and the opportunities offered by the funding programmes.

To establish better links between the ecosystems and the Commission, NCPs and EDIHs are able to play a crucial role as intermediaries to help identify "hot topics", translate the goals and needs of both levels and to create mutual understanding. They are also there to support stakeholders with finding the right partners and with building networks.

Another important challenge in unlocking synergies are practical issues that need to be addressed: participants in EU funding programmes report that different funding schemes and funding rates, as well as timelines that are not aligned between the programmes, make it very difficult when they are seeking complementary funding.

An additional issue is the current regulatory framework set by e.g. the Financial Regulation, which often prohibits combining funding from different programmes. This creates legal difficulties and uncertainties for the stakeholders and is an issue that still needs to be figured out. When considering co-funding from national or regional levels, state aid rules also often create uncertain situations for authorities or stakeholders. While some stakeholders are well equipped to deal with all of this, to others (such as SMEs or civil society organisations) it risks being a reason to not participate at all.

CONCLUSIONS

Two major topics came out of the session as crucial and remain to be addressed: ecosystem involvement and trust among all players on the one hand and tackling practical issues such as different funding schemes and varying timelines and addressing the legal difficulties around co-financing on the other hand. The following recommendations emerged from the session:

- Involving the entire ecosystem to create a better understanding of and engendering transparency regarding the aims and ambitions on all levels. Involving National Contact Points (NCPs), European Digital Innovation Hubs (EDIHs) and other intermediaries to stimulate trust and create strong ecosystems.
- Reducing the complexity and fragmentation of the programmes and emphatically indicating synergies between topics within and across work programmes. Streamlining rules, processes and timelines between the programmes and provide clear information on how calls and projects will support synergies in practice.
- Establishing mechanisms to ensure that results are visible, taken up and that outputs of previous projects are taken forward. Setting up a platform for the exchange of inspiring practices and success stories.
- Establishing incentives and legally sound arrangements for obtaining co-funding, taking away uncertainties regarding both complementary funding by different EU programmes as well as state aid-related issues regarding co-funding between the EU level and the national and regional levels.

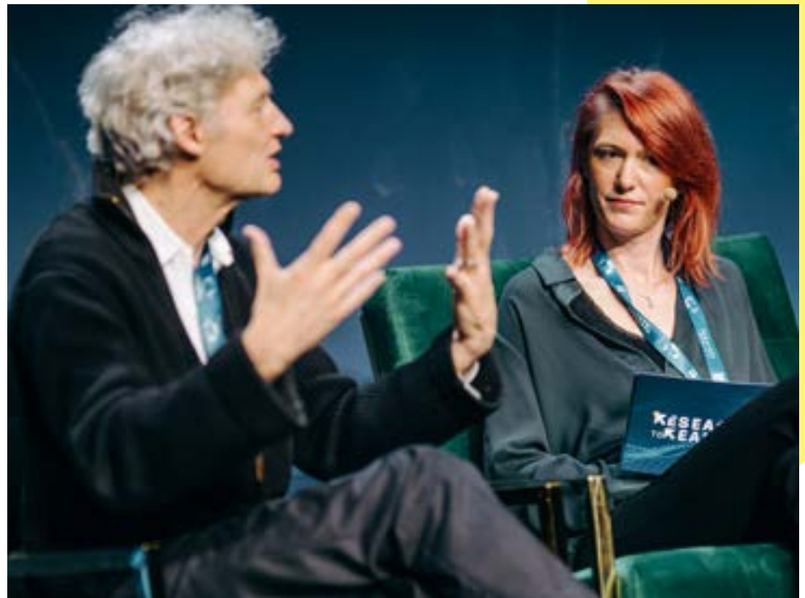
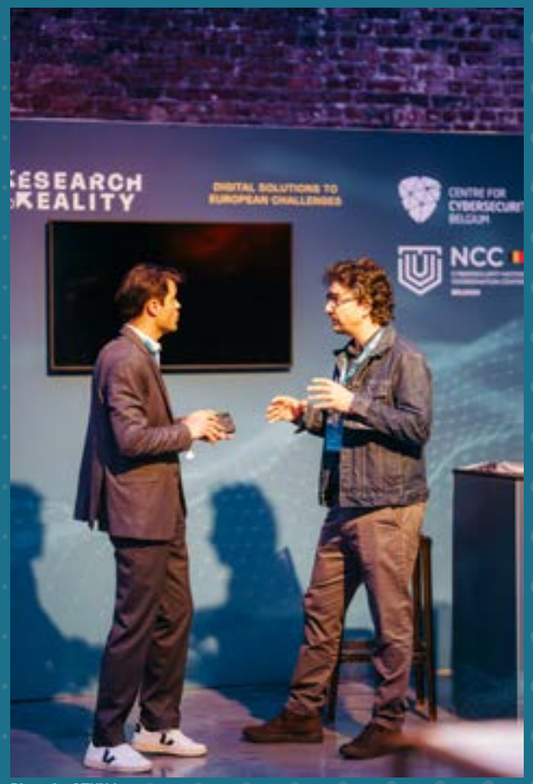


Photo by STYN.be

> **The significance of digitalisation in revolutionising traditional agricultural practices towards sustainability and efficiency was underscored [...].**



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BRIDGING GAPS IN DIGITALISATION OF AGRI-FOOD

CONTEXT & SCOPE

The session explored the fusion of agri-food innovations, farmer engagement and digital transformation strategies, focusing on aligning European research with the Digital Decade goals and the green-digital transition. The significance of digitalisation in revolutionising traditional agricultural practices towards sustainability and efficiency was underscored, emphasising the importance of EU policies and programmes as levers for concrete benefits.

Speakers Highlights

- Dr. Doris Marquardt (European Commission): emphasised the critical role of transitioning digital innovation into practice, leveraging Horizon Europe and Digital Europe programmes.
- Jürgen Vangeyte (ILVO): discussed bridging research to practical application, highlighting challenges such as data interoperability and the importance of a vibrant innovation ecosystem.
- Grigoris Chatzikostas (FoodScaleHub): addressed innovation financing, stressing the need for real business value and considering smaller ecosystem parts for significant progress.
- Sébastien Pérel (European Council of Young Farmers): focused on young farmers as digitalisation drivers, mentioning the challenges and opportunities digital solutions offer.

KEY DISCUSSIONS

The session revealed a diverse audience with interests ranging from research to practical digital solution implementation. It addressed the complexities of adopting digital technologies, the crucial role of capacity building and the varying needs across Europe's diverse agricultural landscape. The discussions emphasised the importance of peer-to-peer learning, the need for innovation that offers tangible business value and the role of trust and transparent technology validation in fostering adoption.

CONCLUSIONS

The session came to the following conclusions:

1. Synergy between programmes: the session highlighted the synergy between the Horizon Europe and Digital Europe programmes in enhancing the innovation ecosystem.
2. Capacity Building: stressed the necessity of building capacity and networks for both innovators and end-users, highlighting the role of European Digital Innovation Hubs.
3. Challenges in Data Collection: acknowledged the difficulty of collecting diverse datasets in agriculture due to biological material variability.
4. Reducing Administrative Burdens: recognised digital technology's potential to alleviate administrative challenges for farmers.
5. Smart Farming: emphasised that adopting smart farming technologies requires first cultivating smart farmers, equipped with necessary skills and knowledge.
6. Trust in Technology: underlined the need for honest communication about technology performance, advocating real-life testing and validation.

Photo by STYN.be

OPERATIONALISING CYBERSECURITY RESEARCH: A PATH TO MARKET

CONTEXT & SCOPE

The breakout session entitled "Bridging the Gap: Operationalising Cybersecurity Research for Market Impact" focused on the essential connection between cybersecurity research and its real-world application. Organised as a panel discussion, industry experts, public entities, stakeholders communities, and academics debated strategies to enhance the transition of research findings into market-ready solutions.

KEY INSIGHTS

Addressing the Disconnect: the ECCC Pascal Steichen highlighted the need to view the gap between research and implementation as a 'disconnect', suggesting a potential for connection. He underscored multidisciplinary research, industry collaboration and leveraging European funds (a.o. with the help of NCCs) to close this divide.

Industry and Research Gaps: participants identified significant gaps between academic research's thoroughness and the industry's pressing need to arrive at market-ready products. They also raised concerns about the EU funding system's limitations, such as short project durations and administrative burdens.

Fostering Collaboration: suggestions from the academics included DARPA[1]-like funding models and bottom-up approaches to stimulate long-term innovation. The discussion underscored the complexity of EU funding, advocating tax incentives and private funding to enhance cybersecurity innovation.

Regulatory Impacts: the conversation also touched on the influence of regulations, with participants agreeing on the need for proactive EU policies to avoid compliance being treated as a tick box exercise. The potential of automated tools and sandboxes for easier compliance was highlighted.

CONCLUSIONS

The session came to the following conclusions:

1. Enhanced Collaboration: there is a critical need for stronger collaboration between cybersecurity research and industry to ensure research findings are effectively translated into practical, market-ready solutions.

2. Simplification of EU Funding: the EU funding mechanism should be simplified to reduce administrative burdens and to better support innovation, particularly for SMEs and start-ups.

3. Private Investment and Incentives: encouraging private investments in cybersecurity, possibly through tax incentives or other financial benefits, could significantly boost the sector's growth.

4. Exploring different types of funding that better facilitate long-term, deep tech cybersecurity innovations, addressing the current shortfalls of project-based funding.

5. Regulatory Challenges and Solutions: proactive and anticipatory regulatory frameworks are necessary to prevent compliance from becoming a mere tick box exercise. The deployment of automated tools and sandboxes before new legislation is enacted could aid companies to efficiently meet regulatory requirements.

6. Support for SMEs: special attention should go out to assisting SMEs in navigating the cybersecurity regulatory landscape, ensuring they have the resources and knowledge to comply without undue burden.

1. DARPA = Defense Advanced Research Projects Agency (from the U.S. Department of Defense) that allow EU/US collaboration.

Photo by STYN.be

AI IN HEALTHCARE: TRANSFORMING PATIENT CARE AND RESEARCH

CONTEXT & SCOPE

This session showcased the transformative impact of Artificial Intelligence (AI) in the healthcare sector, emphasising the need for equitable access to innovative technologies. It addressed the challenges of developing and deploying trustworthy AI solutions amidst the healthcare industry's complexities.

KEY PROJECTS

- EUCAIM: a pan-European federated platform for cancer care, facilitating access to extensive cancer imaging and patient data while ensuring data protection compliance. It supports fast observational studies and regulatory compliance testing for innovators.

- TEF-Health: focuses on accelerating the validation and certification of AI and robotics in medical devices, providing testing services through world-class infrastructure.

HIGHLIGHTED TOPICS

The session highlighted the importance of bridging the gap between research-funded AI solutions and their transition to commercial applications, stressing the need for interconnected communities to prevent data and solution fragmentation. It brought attention to the role of AI as a pivotal tool in enhancing patient care by helping with decision-making, prioritising patient care and selecting the best therapy options. Furthermore, the discussions underscored the significance of addressing data quality and standardisation, with an emphasis on the need for improved practices in data collection, structuring and labelling to ensure data quality and fairness. Regarding sustainability, some critical points were highlighted especially emphasising the need to develop a business model that reduces dependency on grants. It was underscored that both the infrastructures and the AI solutions developed must address stakeholders' needs and should not increase the level of complexity for healthcare providers.

CONCLUSIONS

The session came to the following conclusions for a more holistic approach in constant dialogue with the cbersecurity community:

1. The potential of AI to revolutionise healthcare was underscored, with a focus on collaborative efforts, data quality and sustainable business models.

2. Projects must be designed to meet the comprehensive needs of national, regional and local actors, ensuring engagement across the healthcare and research spectrum to ensure the success of AI deployment in healthcare. Hospitals play a key role for deployment when they act as medical innovation centres.

3. Challenges and Strategies for Deployment - the session:

    a. Emphasised the need for deployment projects to foster collaboration, trust and a unified vision among diverse stakeholders at an early stage. An ecosystem approach is needed to ensure the success of deployment projects under the DIGITAL programme and also for ensuring the sustainability and viability of projects.

    b. Highlighted the importance of creating communities and networks to mitigate fragmentation and competition

    c. Pointed out the necessity of developing sustainable business models to reduce grant dependency and focus on stakeholder needs without adding complexity for healthcare providers.

THE PAST, PRESENT AND FUTURE OF THE DIGITAL EUROPE PROGRAMME: LESSONS LEARNED

Photo by STYN.be

CONTEXT & SCOPE

The early implementation phase of the Digital Europe Programme (DEP), initiated at the end of 2021, was scrutinised to assess its effectiveness, highlight best practices and explore challenges encountered. This session reflected on the programme's implementation, offering a platform for sharing experiences, including obstacles faced and factors driving success. The panel featured a wide array of voices, including representatives from the European Commission, members of the Digital Europe Programme Committee, National Contact Points (NCPs) and beneficiaries from various strategic areas, ensuring a rich discussion from multiple perspectives.

KEY DISCUSSIONS

Enhancing Awareness and Communication: a key issue identified was the need for improved awareness and communication about the Digital Europe Programme, particularly among SMEs, start-ups and regional decision-makers. Efforts are ongoing to bolster communication, with the Digital Europe Programme National Contact Points playing a crucial role in ensuring that knowledge reaches the right actors. The session underscored the importance of information days and direct engagement at the regional level to foster participation from these vital sectors. The discussion acknowledged that regional administrations and decision-makers play a critical role in connecting EU institutions with local stakeholders, emphasising the need for clear, accessible information about the DEP's scope and requirements. A crucial requirement is the creation of strong links between the regional, national and European dimensions in order to align national and regional digital strategies with the Digital Europe Programme.

Addressing Participation Barriers: the administrative complexities associated with applying for Digital Europe Programme funding and coordinating projects were highlighted as a significant barrier, especially for those new to European programmes. Suggestions for streamlining the application process and adopting result-based reporting were discussed to reduce the administrative load and make the programme more accessible.

Sustainability and Funding Challenges: the sustainability of projects and the challenge of providing own funds particularly concerning the 50% co-funding requirement, emerged as a concern. The session discussed the importance of developing strategies to bridge funding gaps and clarified state aid rules, emphasising the need for equal support across the EU at both the regional and national levels to ensure participation of SMEs and the sustainability of projects.

Skilled Workforce and Youth Engagement: a notable gap in the skilled ICT workforce and the need to attract young people into strategic areas were discussed. Ideas included directing specific Digital Europe Programme projects towards pupils and students to spark interest in ICT-related fields at an early age.

CONCLUSIONS

Strengthening Strategic Engagement: the discussions highlighted the importance of making decision-makers and strategists at regional and national levels more aware of the Digital Europe Programme, to ensure that regional digital strategies and the financing thereof are aligned with and act to reinforce European digital policies. This alignment is essential for maximising the programme's impact and avoiding the duplication of efforts or the creation of competing strategies.

Ensuring Programme Relevance and Collaboration: the relevance of the Digital Europe Programme to the digital transformation of the economy and society was affirmed, with successful collaboration among stakeholders, including the Commission, underlined as a key strength of the programme.

Building on Solid Foundations: the Digital Europe Programme's foundation on solid blocks such as the Chips Act, AI, HPC and a clear strategic prioritisation was praised. The programme's focus on creating synergies between different objectives and ensuring a cohesive strategy for digitalisation serving all Member States was highlighted as essential for its success.

Fostering Constructive Discourse: the session concluded with a call for continuous dialogue and collaborative efforts to shape the Digital Europe Programme, emphasising the need for sustainability of projects and a more integrated approach across regional, national and European levels to enhance the programme's visibility, relevance and accessibility.

SESSION REPORT - VIRTUAL WORLDS AND WEB 4.0

CONTEXT & SCOPE

This breakout session focused on Europe's journey towards technological leadership in Virtual Worlds and Web 4.0, emphasising the synergy between Horizon Europe, the Digital Europe Programme and other initiatives. Key discussions revolved around transitioning from research excellence to the technological deployment of innovative solutions, with a focus on creating a secure, open and inclusive digital environment for EU citizens.

PANEL INSIGHTS

The discussion underscored the importance of developing trustworthy and human-centric solutions, highlighting the ongoing challenge of persuading authorities and companies to embrace new technologies in the realm of Virtual Worlds and Extended Reality (XR). Trustworthiness and a focus on the human aspect are central to Horizon Europe's calls for projects, which aim to tackle current challenges while fostering an inclusive and secure virtual world environment.

Panellists shared several strategies for improving collaboration between researchers and the industry. This included the idea of incorporating end-users directly into the development process, for example, through transfer labs and working jointly on use cases. Additionally, there was an emphasis on adopting shorter life cycles in the development process. The forthcoming Virtual Worlds partnership was identified as a vital platform for bringing together stakeholders from various disciplines, including academics, industry professionals, end-users and experts in legal and social matters. This approach is intended to ensure that specific calls contribute towards the broader direction of virtual worlds and Web 4.0.

The conversation also touched on the vital roles that upcoming iterations of Horizon Europe and the Digital Europe Programme will play in the development of the EU's Virtual Worlds industry. Keeping ethics, inclusiveness, diversity and openness at the heart of programme design was highlighted as crucial. The need for better communication between engineers, developers, lawyers and policymakers was pointed out, especially regarding early reporting on potential misuses of technologies.

Furthermore, regulatory sandboxes were discussed as a potential framework for addressing ethical considerations in a country-specific context, given the varying interpretations of ethics across borders. The European Commission's action on regulatory sandboxes was mentioned as a complex but necessary step forward, with sandboxes seen as a promising approach for the ethical development of virtual worlds.

CONCLUSIONS

The session came to the following conclusions:

1. **Strengthening Research-Market Synergies**: for the next five years, the EC should focus on creating stronger connections between research and the market, particularly in the realm of virtual worlds. This includes establishing testbeds to bridge projects with regulatory frameworks and emphasising talent acquisition to compete globally.

2. **Innovation and Interdisciplinarity**: the significance of innovation and the interdisciplinary nature of XR and virtual worlds were stressed. These technologies have the potential to transform industries, democracy and citizen participation, which demands tailored approaches to address their multifaceted impact.

3. **Inclusive Stakeholder Engagement**: the need for short-term programmes that are able to provide immediate support for new ideas was underscored, alongside the importance of involving all relevant stakeholders to foster innovation and ensure the comprehensive development of virtual worlds.

Photo by STYN.be

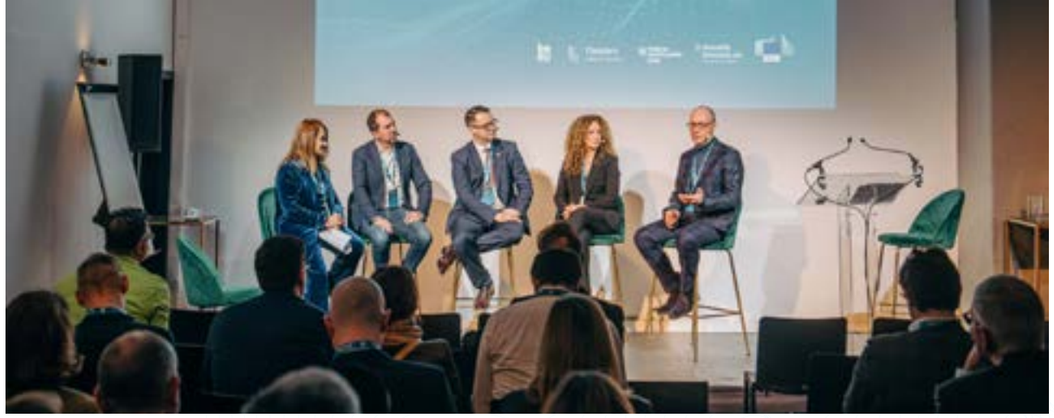

Photo by STYN.be

FROM THE LAB TO THE FAB - THE CHIPS FOR EUROPE INITIATIVE AS A BRIDGE BETWEEN RESEARCH AND INDUSTRY

CONTEXT & SCOPE

This session focused on the nexus of semiconductor innovation within the European framework, especially in light of the European Chips Act which took effect on 21 September 2023. With a significant budget of € 3.3 billion allocated, the Chips for Europe initiative under the Act aims to bolster semiconductor R&D in Europe. It proposes a multifaceted approach, including pilot lines, a virtual design platform, competence centres, quantum chip development and a dedicated Chips Fund to propel Europe to the forefront of semiconductor innovation.

Lucilla Sioli from the European Commission set the stage by outlining the initiative's scope and its implementation progress. Key actions such as the pilot lines and competence centres are already moving forward, with significant milestones expected in the near future.

INDUSTRY AND RESEARCH PERSPECTIVES

The panel brought together diverse viewpoints from industry giants such as Bosch Group's Martin Sauer and start-ups such as VOCSens' Thomas Walewyns, alongside research institutions represented by Jo De Boeck from IMEC. Silvana Muscella highlighted the critical skills shortage facing the semiconductor industry in Europe.

KEY TAKEAWAYS

Semiconductor Innovation: the discussion underscored the crucial role of semiconductors in advancing technology across various sectors. A shift from cloud-based AI to edge computing is anticipated, marking a significant trend. The European Chips Act is seen as a vital catalyst for enhancing Europe's competitiveness in the semiconductor domain, offering new investment opportunities.

Competitive Edge: Europe's strategy focuses on leveraging its strengths such as EUV lithography, while fostering innovation in key sectors such as automotive. The role of start-ups and SMEs in driving innovation was emphasised, noting the importance of support from both governmental and industrial partners to nurture these ventures.

Collaborative Efforts: a collaborative approach, involving academia, industry and government, was highlighted as essential to address the skills gap. While Europe excels in collaborative efforts, a more unified approach could further enhance the impact, suggesting that updates to university curricula could be encouraged by industry demands and government facilitation.

CONCLUSIONS

The session concluded that policies such as the European Chips Act are crucial for maintaining Europe's position in the semiconductor industry by fostering innovation and leveraging existing strengths. The panellists advocated sustained focus on semiconductors, the integration of the Triple Helix approach across competence centres and targeted efforts in sectors with high innovation potential.

GLOBAL EU AI LEADERSHIP THROUGH RESEARCH, DEPLOYMENT AND REGULATION

CONTEXT & SCOPE

Focusing on "Building Technological Leadership & Strategic Autonomy," this session explored the interplay between European AI Policy's various facets: AI research under Horizon Europe, AI technologies' deployment via the Digital Europe Programme and the regulatory landscape shaped by the upcoming AI Act. The objective was to illuminate how these areas collectively drive the EU towards a leading position in global AI development, emphasising the need for synergistic efforts to align research and deployment with regulatory standards.

PANEL CONTRIBUTIONS

Ms. Cécile Huet outlined the EU's comprehensive AI strategy and project landscape, representing the European Commission's standpoint.

Dr. Sebastian Hallensleben delved into the regulatory challenges and standardisation efforts crucial for complying with the AI Act.

Prof. Fredrik Heintz and Prof. Steven Latré provided insights from the research and deployment perspectives, highlighting Horizon Europe's contributions and the pivotal role of the Digital Europe Programme's AI Testing and Experimentation Facilities in bridging the gap from lab to market.

ANALYSIS

The EU's broad initiatives and projects reflect a strong commitment to advancing AI. Despite a robust portfolio, the panel underscored the importance of strategic autonomy, challenging the notion that regulation dampens innovation. Instead, well-crafted regulation was seen as a foundation for consumer trust and sustainable innovation. The discussion also emphasised the need to transform research prototypes into market-ready solutions, a gap the Digital Europe Programme aims to fill.

CONCLUSION AND TAKEAWAYS

Interdisciplinary Collaboration: the growing collaboration across the AI community highlights an increased awareness of the AI Act's requirements among researchers. However, there is a call for ongoing alignment of Horizon Europe's AI research with these evolving standards, focusing on quality, safety, transparency and robustness.

Global Competitiveness: to rival major global AI players, the EU must amplify its efforts and investments in AI, prioritising speed and scale to establish itself as a world leader in this crucial technology sector.

Broad Technology Spectrum: recognising AI's wide-ranging technologies beyond the current hype around large language models (LLMs) is essential. Europe possesses the foundational elements to lead in areas such as Edge AI, yet attaining such a leadership position requires a more integrated and cohesive approach across various initiatives.

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EUROPEAN DIGITAL INNOVATION HUBS (EDIHS) AND TESTING & EXPERIMENTATION FACILITIES (TEFS) IN THE DIGITAL EUROPE PROGRAMME

CONTEXT & SCOPE

European Digital Innovation Hubs (EDIHs) and Testing & Experimentation Facilities (TEFs) are pivotal in the Digital Europe Programme, enhancing the digital technology uptake by businesses and the public sector and stimulating innovation. Despite their crucial role, they encounter several challenges that need addressing to optimise their impact.

EDIHs offer a blend of regional accessibility and pan-European network benefits, providing digitalisation services in local languages and ecosystems while facilitating the exchange of best practices and specialised services across regions. With guidance from the Digital Maturity Tool (DMT) for companies and 50% funding from the Digital Europe Programme, over 150 EDIHs are currently operational.

TEFs serve as large-scale reference sites for technology providers to test and experiment with AI solutions, including software, hardware products and services in real-world environments across strategic sectors such as health, agrifood, smart cities and manufacturing.

The aim is to streamline the transition of research outcomes to companies and to broaden their deployment and adoption.

ANALYSIS AND DISCUSSION

Maurits Batter (TNO) emphasised the EDIHs' value in connecting regional activities to a Europe-wide network within a sustainable innovation infrastructure, preventing redundancy and lowering costs. The concept of Interregional Innovation Corridors facilitates cross-border innovation collaboration.

Kirke Maar from EDIH AI & Robotics Estonia (AIRE) highlighted the significance of awareness-raising and the "test before invest" approach for small companies, focusing on understanding client needs rather than technology. Universities and governments are crucial partners for knowledge transfer and aligning with national industrial policies.

The discussion among the panellists revealed that despite the potential benefits, companies, especially SMEs and mid-caps without large research departments, are not fully leveraging these new instruments. Emphasising use cases and collaboration with existing enterprise networks such as the Enterprise Europe Network (E.E.N.) could enhance company involvement by speaking their language and demonstrating the instruments' value.

CONCLUSIONS AND RECOMMENDATIONS

European Collaboration: collaboration across Europe is essential to eliminate redundancy in innovation activities. Interregional Innovation Corridors could streamline this process, provided funding is clear and sustainable for the Research and Technology Organisations (RTOs) involved.

Strengthening Government Policies: these instruments can reinforce regional and national government industrial policies, requiring active government involvement.

Engaging Companies: involving established European company networks, notably the Enterprise Europe Network (E.E.N.), is recommended to facilitate outreach to companies, using language and approaches that resonate with SMEs.

Focusing on Company Needs: it is vital to prioritise the needs of companies over the technology itself. EDIHs and TEFs should emphasise how AI use cases can address specific company challenges.

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HUMAN-CENTRIC TWIN TRANSITION ACROSS EUROPEAN INNOVATION PROGRAMMES

CONTEXT & SCOPE

The fusion of digital technologies and climate initiatives, as envisioned in the AI White Paper and the Green Deal from four years ago, has been integrated into European Innovation Programmes. The Twin Transition reflects a strategic approach in order to simultaneously foster environmental sustainability and digital innovation within these programmes, embodying a vision for a sustainable, inclusive and competitive future for Europe. This transition requires a cohesive strategy across research & innovation and deployment programmes such as Horizon Europe and the Digital Europe Programme, demanding collaboration across technology, social sciences and humanities. However, fostering effective collaboration among these diverse domains poses significant challenges.

DISCUSSION

The session offered varied perspectives on the intersection of digital technologies and the green transition. Examples included enhancing solar power capture through automation, developing self-healing robots for reduced part replacement, optimising energy grids with AI algorithms and using digital twins for sustainable building renovations. These projects not only consider the digital means to reduce climate impact across sectors but also focus on scaling up and advancing the Technology Readiness Levels (TRL) of research technologies.

Policy perspectives emphasised the European Commission's design of the Twin Transition to promote sustainable technologies. Yet, achieving sustainability transcends merely greening technologies; it encompasses economic and societal sustainability to ensure technologies are utilised sustainably and widely. Bringing these three aspects together represents a new challenge for Europe, with a current lack of empirical methods to measure the digital technology impact on the green transition. This gap underscores the need for greater attention from researchers, particularly in the field of social sciences.

Societal considerations are crucial for a human-centric and broadly adopted Twin Transition, emphasising fairness and the need for societal innovation. Without societal adaptation, innovations risk remaining underutilised. Lastly, there is a great opportunity for companies in the Twin Transition, given that they can adapt to the new way of innovation, taking into account different perspectives and embracing the iterative process that is needed, always bearing in mind how this will effect end-users.

RECOMMENDATIONS

From this session, several key recommendations emerged:

- Holistic View on Sustainability: addressing economic, social and environmental sustainability in unison is crucial. Focusing on a single aspect could lead to negative externalities or the underutilisation of technologies.
- Societal Adaptation: the impact of digital technologies on societal change must be considered in the innovation process, as these adaptations are essential for the Twin Transition's success.
- End User Involvement: incorporating end-user perspectives is vital, especially within the Twin Transition, requiring a shift towards more iterative, user-focused innovation approaches.
- Measuring Impact: developing effective methods to measure the net impact of digital technologies is imperative for accurately assessing their contributions and guiding investment decisions, especially from governments.
- The session highlighted the vast range of opportunities for companies eager to embrace green and sustainable technologies. Achieving this requires an innovation mindset shift, with a greater emphasis on the design phase and end-user considerations. Government support, informed by a clear understanding of these technologies' benefits, will be essential for realising these ambitions.

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INFRASTRUCTURES AND EUROPEAN DIGITAL INFRASTRUCTURE CONSORTIA (EDICS)

CONTEXT & SCOPE

Digital infrastructures and services play a pivotal role in deploying innovative technologies on a large scale. Achieving sustainable operations for pan-European infrastructures necessitates extensive coordination across technology standards, deployment and financing – a feat beyond the capability of individual Member States or organisations. The Digital Decade Policy Programme (DDPP) Decision has introduced Multi-Country Projects (MCPs) as significant endeavours to meet the Union's digital targets, offering various mechanisms for their implementation.

This session focused on understanding the diverse toolbox for MCP implementation, especially the differences and functionalities of mechanisms such as Joint Undertakings, Important Projects of Common European Interest (IPCEI) and European Digital Infrastructure Consortia (EDICs), with a spotlight on EDICs due to their novelty.

ANALYSIS

An initial poll revealed that the majority of attendees were government representatives, alongside entities with a research background and industry stakeholders. Funding and scalability emerged as critical factors for multi-country cooperation.

Case studies presented included the Chips Joint Undertaking, the IPCEI on Cloud and the Local Digital Twins CitiVERSE EDIC, highlighting their key features and current status. Further discussions, with contributions from the MCP ecosystem including the European Commission's MCP Accelerator, the European Investment Bank Group and the EU-funded project RITIFI delved into topics such as private funding, the collaboration between research and digital infrastructures and the distinctions between EDICs and European Research Infrastructure Consortia (ERICs).

CONCLUSIONS

The session's dynamic interaction with the audience revealed a keen interest in MCP implementation mechanisms, particularly EDICs, as practical tools to bridge research and real-world application. The complexity of these mechanisms was noted, alongside a call for the European Commission to offer guidance and support to Member States, especially crucial in times of budget constraints. The joint initiatives were recognised for their ability to:

- Pool public and private investments, extending beyond traditional grants.
- Engage essential stakeholders such as research institutions and the industry.
- Ensure the long-term sustainability of EU joint infrastructures.
- Enhance EU competitiveness and digital sovereignty.

> **Achieving sustainable operations for pan-European infrastructures necessitates extensive coordination across technology standards, deployment and financing […].**

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DATA GOVERNANCE IN DATA SCIENCE AND INNOVATION

CONTEXT & SCOPE

This session delved into the development of data-sharing ecosystems and dataspaces, which are critical for driving data innovations. The focus was on establishing a Data Governance framework that fosters public-private partnerships and engages a variety of stakeholders, a key step towards nurturing data science and innovation. Data Governance encompasses organisational processes, policies, roles, technical processes and standards, all of which are pivotal for the seamless flow of data to benefit science and innovation.

The session scrutinised Europe's endeavours to create a policy framework for data sharing through legislation such as the Data Governance Act, the Data Act, the AI Act and the Open Data Directive. Challenges hindering the free flow of data – technological costs, standardisation issues, stakeholder trust deficits and data literacy – were identified as barriers to be addressed.

THE EUROPEAN DATA ECONOMY AND STRATEGY

The session highlighted the need for a paradigm shift towards data-sharing ecosystems, necessitating new business models that separate data from value-added services. This shift demands clear benefits to be articulated and adopted by all ecosystem players, including private companies, research organisations, public bodies and individuals as data owners.

New European legislations are framing the European Data Strategy, presenting an opportunity for setting a precedent with initial implementations. However, the complexity of these legislations and the resultant administrative burden pose significant challenges, particularly for SMEs. There is a pressing need for new tools – technical building blocks, regulatory sandboxes, interoperability mechanisms and standards – to make legislation digitally executable.

DATA GOVERNANCE AND POLICY IMPLEMENTATION

As data governance becomes an integral component of research and deployment projects, it is essential to break down the broad concept into manageable components such as multi-level, legal, technical and business governance. The session advocated dataspaces to automate regulatory compliance through «compliance-by-design» approaches, ensuring data semantics, provenance and usage conditions are integral to the data itself.

CONCLUSIONS

Data must become as accessible, standardised and secure as utilities such as water, electricity and cable to support societal, citizen and economic entity innovations. Europe's investment in a robust, interconnected research data infrastructure is paramount for securing a competitive edge in data science and innovation. Such efforts will ensure the region's leadership position in establishing a coherent and comprehensive data governance model that benefits all stakeholders.

This session underscored the importance of cohesive Data Governance in unlocking the full potential of the European Data Strategy, emphasising the need for clear models, legislative understanding and stakeholder engagement in the evolving data landscape.