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ACCELERATE THE GREEN AND SOVEREIGN DIGITAL TRANSITION IN EUROPE

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EDITORIAL

ACCELERATE THE GREEN AND SOVEREIGN DIGITAL TRANSITION IN EUROPE

The European Commission recalls that "the EU must work towards a safe, secure, sustainable and citizen-centric digital transformation, in line with the EU's fundamental values and rights".

We must recognize that the EU has lagged behind in digital technology for several years due to lack of investment and research, especially when compared to China and the United States. To stem this tendency, Europe has defined digital ambitions for the next decade in the form of clear and concrete objectives.

Digital Decade Policy Programme (DDPP), NextGenerationEU and Recovery and Resilience Facility the work on sustainable digital infrastructure, are programs which will help in the deployment of digital innovations in Europe.

The main areas of action for these programs are cloud computing, artificial intelligence, digital identities, data, and connectivity. At the same time we need to consider exploiting opportunities that the green transition offers to the digital sector.

Our companies have reached a tipping point to shape Europe's digital future. We can reap the benefits of the dual transition provided that we have the right digital infrastructure and governance in place.

Another important point is the Digital Services Act (DSA), the Digital Markets Act (DMA) the two major pieces of legislation to regulate the online environment, will ensure better democratic and economic regulation of online platforms.

Ensuring a level playing field will also help the companies in sectors key to EU sovereignty to not suffer from unfair competition. European standards play a key role in this regard. As recognized in the new European standardization strategy, these are tools which improve security, ensure interoperability, support climate neutrality and build confidence in emerging technologies. This is why developing the standards of the future for the European data economy is essential to achieve a sustainable, digital and resilient Europe!

It is no secret that data is now a key pillar of Europe's digital economy and will be the key to future innovation and economic growth. Facilitating data sharing within the EU and across sectors by strengthening data mechanisms with the use of artificial intelligence will foster the confidence of an agile data ecosystem. This is what the data act will enable and will drive competitiveness and economic growth in the EU.

The importance of data cooperation is to overcome barriers to data sharing between different actors and sectors. To do this we need to strengthen the European resilience of these infrastructures to cyber attacks. The European Union must develop "cybersecurity standards" to secure supply chains and consumer data privacy.

AI can help us optimize energy consumption, make transportation systems more efficient, improve manufacturing processes, and will help oversee the resilience of chains while developing legality, ethics, and robustness in the face of cybersecurity and other risks

We must digitize the end-to-end energy ecosystem, making it greener, smarter and more efficient. In this respect, public procurement rules are a major lever for innovation and autonomy.

Digital innovation is one of the keys to tackling Europe's energy and climate crisis. By combining our assets and our strengths in ambitious programs, in the service of innovation ecosystems and in an ecological planning approach, we are giving Europe the means to fully play its role as a sovereign digital superpower in order to set up a fully operational digital single market by 2030.

Editor-in-Chief
LAURENT ULMANN

Management: The European Files / Les Dossiers Européens - 19 rue Lincoln, 1180 Brussels
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It is necessary for **Europe** to **ensure** the **conditions** of its **sovereignty** and its **strategic autonomy**

JEAN-NOËL BARROT

French Minister for Digital transition and Telecommunications

The digital world is entering a time of profound change. Begun by the evolution of information channels in the public digital space, these upheavals have been reinforced in the last 24 months by both the health crisis and the war in Ukraine. Thus, our relationship with technology has been profoundly modified.

This is why all countries in the world, and particularly outside Europe, are accelerating their technological development. Indeed, the United States is relocating its value chains, with a major investment plan that mobilizes €369 billion to accelerate innovation. On the other side of the globe, in Asia, China, but also Japan and Korea, are also accelerating very strongly.

The risk of the European Union falling behind technologically and economically should not be underestimated, nor should the loss of sovereignty that this would create.

Moreover, France has also signed the Paris Agreement to achieving carbon neutrality by 2050. These objectives therefore require the implementation of ecological planning that is compatible with maintaining the competitiveness of our innovative companies.

Because technological domination often precedes economic domination and ultimately cultural domination, the European Union must maintain its place in this global game. This is how its companies and citizens will be protected from these major movements, but will also benefit from the opportunities that technology can represent, from an economic point of view as much as from a societal one.

In this context, it is necessary for Europe, and more particularly for France, to ensure the conditions of its sovereignty and its strategic autonomy.

The French government's strategy has diverse goals: to support the French and European offer, to help champions emerge and to encourage industrial cooperation that guarantees both quality of service and data protection.

Over the past decade, new monopolies have developed in the digital space that escape the commercial and fiscal rules set by European Union's member states.

Under the impetus of President Emmanuel Macron, during the French presidency of the European Union, the Digital Markets Act (DMA) was adopted. This is undoubtedly one of the most important economic regulation since the beginning of the 20th century, which will reopen the game and allow our companies to operate fairly on the European markets.

We are going to continue with the same determination, and I am convinced that other countries in the world will continue to be inspired by our work.

Equally, it is unacceptable to see hate, violence, scams, crime and fakenews spread anonymously. Parliamentarians have taken up these issues and have made it possible to move the lines. Still under the French presidency, Europe has taken a major step forward with the Digital Services Act (DSA), which will shift responsibility to platforms and force them to regulate the content they distribute.

Our ambition is not to dismantle GAFAM. But we want them to respect a set of rules in the European Union. There is no contradiction here. Protecting our European citizens implies for the European Union to ensure that the rules concerning personal data, on which Europe has been a pioneer for years, are respected and that our values are preserved.

In this aim, we are setting healthier and fairer competition rules so that the hegemony of the hyperscalers ends and our European technology companies can emerge (notably through the principles of portability and interoperability).

In addition, €54 billion France 2030 program, launched a year ago, is part of an economic policy in favor of innovation and industry to accelerate innovation and industrial reconstruction.

Within this framework, France 2030 aims to accelerate the transformation of key sectors of our economy through innovation and to position France as a leader in the world of tomorrow.

France 2030 also aims to help new players and new sectors emerge by devoting 50% of its resources towards emerging players. The program supports France's 27 unicorns and aims to bring out 100 of them by 2030 (including 25 green ones). All these actors have a part to play in the European sovereignty.

Finally, France 2030 is a major lever for decarbonizing our economy, with 50% of resources devoted to decarbonization, with ambitious objectives for the automotive industry, but also for rail, with the hydrogen train, for materials, with recycling and critical materials, and for electricity production and the decarbonization of industrial sites. €5 billion have already been allocated to support large-scale projects in this area.

By combining our assets and strengths in ambitious programs, at the service of innovation ecosystems and in a genuine ecological planning approach, we are giving Europe the means to fully play its role as a sovereign digital superpower.

A **strong digital Europe**, that leads **global markets** by the power of example

Ph. **D. SEBASTIAN IOAN BURDUJA**

Romanian Minister of Research, Innovation and Digitalisation

Europe is a leader in many technology sectors such as aerospace, environment and automotive. However, in certain critical technologies such as semiconductors and AI, the EU must enhance its competitivity, and do so fast. In the context of rapid breakthroughs around the world, especially in the digital field, the EU should further promote the digital transition as a top policy priority and act accordingly, by allocating generous resources and deploying incentive measures in an integrated, EU-wide approach.

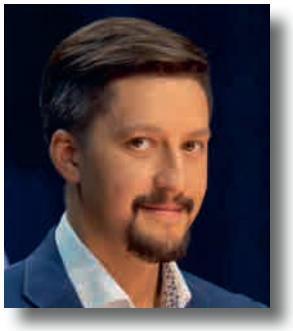
Diversity is one of EU's strongest resources. However, diversity should never affect the cohesion of the EU Digital Single Market, across its varied implications. Besides the unified legislation, the EU Digital Single Market requires the common development of frontier scientific projects and funding for R&D in the digital sector. While EU funding for innovation is, in certain sectors, smaller than its global peers, fragmentation among MS can further decrease its effectiveness. Therefore, I advocate for larger and better coordinated R&D and innovation funding in Europe, especially in the digital sector. Only by pooling resources together, significant resources, in large and ambitious projects that follow EU's strategic priorities, we will be able to achieve breakthrough innovation on European soil. This includes empowering the venture capital and start-up scene, including with wide state support, as long as the downstream investment decisions continue to follow market principles.

At the same time, larger and closer coordinated R&D and innovation funding, should preserve diversity in allocation. Currently, EU R&D funding is highly concentrated in certain traditional sectors, such as automobiles, but not in digital and high-tech technologies, such as AI, semiconductors and other ICT-related industries. In contrast, other major global actors concentrate R&D spending exactly in these sectors. Therefore, the EU should make sure that while it increases and better coordinates R&D spending, at the same time it priorities those technologies that are strategic for the future. In order to do so, besides additional funding, the EU should further act to provide fiscal and other sort of incentives to high-technology companies in strategic digital domains, thus preventing the departure of domestic companies from Europe and even attracting investments from new foreign companies into the EU. Not the least, the EU could further expand its business internationalisation schemes, assisting to a larger extend European tech companies to enter overseas markets. Expanding market scale overseas is crucial for data-driven companies, as it improves efficiency, brings creativity and reduces margin costs.

Another priority for the EU should be to attract and retain more talent. Building a company and serving the society with new technologies requires human talent. The EU and increasingly more countries from the Central-Eastern Europe are an outstanding source of talented programmers and scientists, that lead the way in revolutionising technology. However, Europe cannot always retain them. Romania has recently joined the ranks of countries that invest significantly in bringing talent back. In this field as well, allow me to envision a Europe-wide talent attraction programme, that is just and equitable, making Europe again a major talent destination in high technologies.

In addition to funding and human resources, innovation in the digital realm also requires modern, slim and efficient regulation. Gladly, the EU is setting the global standards in terms of consumers' rights, privacy and data safety. At the same time, we must make sure that sufficient ground remains for companies to experiment in a safe environment, so that they can achieve technological progress. While the EU is doing its utmost to ensure the safe use of data and the highest ethical standards, it should not forget that in the absence of autonomous domestic technology, our values, freedom and security will be impossible to protect against external threats. In this sense, we must regulate smartly and listen to both consumers and tech companies. Technology development and consumer safety are not in opposite concepts, but two sides of the same valuable coin. Digital technology requires however access to large batches of data and to critical infrastructure. Through smart regulation and sound policy instruments, we can find more ways to grant our tech companies access to data and infrastructure, without affecting the safety and security of our citizens. This will allow EU companies to grow on the market, instead of non-EU competitors that pose greater security risks.

To conclude, I envision a digitally strong European Union, that allocates growing resources for research and innovation, targets strategic sectors and is driven by smart, innovation-friendly policies. A Europe that acts as a free, creative environment for technology development, while maintaining the highest standards of safety and security for its citizens. The Europe I believe in is THE leader in digital technologies, the most prolific craddle of human talent, corporate unicorns and technology champions, that lead global markets. It is the Europe that we will make, together.



LUUKAS ILVES

Undersecretary for Digital Transformation | Government CIO
Ministry of Economic Affairs, Estonia

The next round of **European integration** hinges on our ability to do **GovTech together**. It will not be easy.

Twenty years ago, Lawrence Lessig coined the term "Code is Law." His thesis – that the rules and regulations that govern the digital era will largely be determined by the software and code that run it – has become reality.

Today, we see how the ability to master software is a critical determinant of whether governments succeed at their core task of providing public goods. Two decades ago, Estonia was one of the first countries in the world to digitize its public services. Online tax declarations, school lessons, medical prescriptions and even elections contributed to Estonia becoming a transparent, accountable, well-governed Nordic democracy.

Similarly, Ukraine's digital transformation over the last few years has helped build resilience in war. Ukraine's Diia app, used by over half the adult population, has enabled citizens to receive refugee support, even when abroad or behind enemy lines, to collect evidence of war crimes and to share real-time intelligence of Russian troop movements with military forces.

Conversely, the inability to master software leads to policy failure. High-profile policies, such as US President Barack Obama's Affordable Care Act and UK Prime Minister David Cameron's Universal Credit scheme, have been threatened by botched website and software rollouts.

A successful software product is more than just code. It is a design system, a user base

that accepts and understands the product, and a business model for funding the whole operation. Software is not something you build once and forget. Software evolves through a process of gathering feedback, scoping new requirements, testing and deploying updates, fixing errors. The challenge is to make these products work in practice. If software is hard for individual governments, it is even more difficult as a multinational product.

Nevertheless, Estonia has been doing this for over a decade. Together with Finland and Iceland, we collaborate through NIIS (the Nordic Institute for Interoperability Solutions) to jointly develop software solutions for Government. Over 20 countries now run an open-source deployment of X-road, the government data platform originally developed in Estonia. And NIIS' Harmony e-delivery tool is winning plaudits for being the most practical and easy-to-implement solution for deploying cross-border data exchange through the EU's Single Digital Gateway,

Our experience points to the benefits of such collaborations. Most obvious is cost-sharing – we keep our government interoperability platform up-to-date and secure for a fraction of the cost of doing it ourselves. But we have also grown a multinational base of users and developers. There are, for example, more individual contributors to the X-road community in Colombia than in Estonia, giving us access to a far wider pool of talent and ideas.

We are not alone in offering our government tech as free and open-source products. Yet the truly difficult challenge for any government is to adopt a product developed by another government, overcoming the "not-invented-here" syndrome. Last year, Estonia and Ukraine agreed to collaborate on the development of government mobile apps. Together, we are developing an Estonian mobile government app based on Ukraine's Diia, and Estonia is looking to learn from Ukraine's design experience in success in achieving rapid user uptake and satisfaction. The lessons from deploying Diia in Estonia will contribute to developing a platform for user-centric mobile government that can be deployed by any government.

The EU's Digital Decade Programme has a legal framework (and funding) to support countries in building software together (European Digital Infrastructure Consortia – EDICs). This year, the first EDICs should start their work. From our experience, we can offer three simple lessons to ensure that these EDICs are smashing govtech successes, not government software failures:

First, start small. Build successful products first, then scale. Getting 2-3 governments to align on requirements is challenging, 27 countries leads to design by committee.

Align on more than code – this is a product design challenge that cannot be delegated to software engineers. Building a multinational software product requires getting users and service owners from many countries together to test and design.

The private sector will be part of this. Building software together does not necessarily mean governments have to design, build or operate technology themselves. Far more crucial is working together on requirements and demand.

In the 20th century, governments aligned on regulation and laws. This was the success of the 20th century. In the 21st century, they will need to align on algorithms and code. Europe's ability to build software together will be a crucial determinant of the future of the Single Market for decades to come.

Twin transition as a **driving force** for a fair and **prosperous future**

ROBERTO VIOLA

Director General, DG CONNECT, European Commission

Leading the twin transition in this changing world is the driving force of this Commission. This is our generational task and opportunity. And it is why, since day one, we have been determined to move fast to build a fair and prosperous, green and digital Europe that will last for our children, Ursula von der Leyen, March 7, 2020.

As our President underlined on numerous occasions, the goal of the twin transition is to deliver benefits on all three dimensions of sustainability: economic, social, and environmental. This goal also guides our work on Shaping Europe's digital future such as the the Declaration on Digital Rights and Principles and the Digital Decade Policy Programme (DDPP) targets and the work on sustainable digital infrastructures.

Digitally enabled innovation and applications will soon deliver large-scale sustainability benefits provided we have the appropriate digital infrastructure and governance. Let us take inspiration from the recent pandemic. Supercomputers contributed to the vaccine development, secure digital systems enabled the EU Digital COVID certificate, and telecommunication and web technologies allowed kept people working and schooling. A proper governance is needed to minimise undesirable effects such as stimulating unsustainable business or consumer behaviors. We have learnt these lessons with the online platforms and that is why the principles behind the Digital Services Act and Digital Market Act, the AI Act and Data Governance Act and Data Act will also be useful for the efforts in ensuring the goals of the twin transition.

DG CONNECT, in cooperation with many other Commission services, is actively contributing to the twin transition. A prime example on ongoing efforts in the field of the twin transition is the Destination Earth Initiative which aims to develop a digital model of the Earth to help monitor, model, and predict natural and human activities, and, to develop and test scenarios for a more sustainable future. Another example is the Digital Product Passport (DPP),

which aims to support the products' sustainability and to enable sustainable business models, e.g., Product-as-a-Service.

Realising the benefits of the twin transition

Minimising the conflict of the two transitions: As mentioned in the Strategic Foresight Report 2022 - (SFR'22), the digital footprint is estimated at 3% of total GHG emissions and an ever-increasing amount of eWaste. That is why DG CONNECT has taken ambitious commitments towards data centers in the EU to become climate neutral by 2030 and to aim with our European Processor Initiative to improve digital energy and material efficiency. The Digital Decade Targets also aim at the sustainability of digital infrastructures. In our cooperation with other services, we work to improve the eco-design and material efficiency of electronics and support the right to repair of EU citizens.

Maximising the synergies: The potential of emission reduction using existing technologies is estimated at 15% of total GHG emissions by 2030. For example, digitalising energy grids can reduce leakages, enable their stability, and support consumers to manage energy consumption and seamlessly integrate their (micro) production. A digital twin of a building can reduce energy use by up to 17% and cut costs by 15-25%. Deploying smart mobility can cut commuting times by 15-20%. Many more examples and targets can be found in the SFR'22, Action plan on Digitalisation of Energy Systems and many specialised reports, e.g. Digital with Purpose-Smarter2030.

So what do we need to realise this digital 'enablement' potential and harness the benefit of such green digital solutions?

First, we need to be able to develop and agree on science-based metrics to measure the environmental impact of digitalization. Such metrics are essential to ensure sustainable financing for digitalisation with proven positive impact. For, Commissioner Breton launched the European Green Digital Coalition of major ICT companies that committed to working with expert organisations on such metrics. The first results are expected this year. This work has been also requested by the December 2020 Council Conclusions and is currently supported by European Parliament Pilot Project. We are also working with our DG FISMA colleagues to make proven green digital solutions eligible under the EU Taxonomy.

Second, we need to deploy at scale sustainable digital infrastructures supported by a skilled workforce and proper governance. For, the DDPP and NextGenerationEU are key programmes. The Digital Europe Programme supports the deployment of digital innovations such as the Destination Earth and Digital Product Passport, sustainable cloud and IoT applications, blockchain infrastructures (e.g.EBSI), and green dataspaces.

Ensuring just transition and protecting democracy

The fairness and the social impact of the twin transition will be critical for its success. Yet, many fellow citizens question climate change science and the evidence behind twin transition policy measures. We recognise that we have a problem with misinformation in our media, that has also significant impact on our democracy. We need to act to protect our media's independence and pluralism from the political political or other type of interference and at the same time ensure that our media is transparent and not 'directing' our citizens. This is one of the main goals of our Media Freedom Act. Human rights-centered policy is a pillar of the EU's approach to digital transformation that I am privileged to lead.

In conclusion, let me reiterate that properly governed digital transformation is key to attaining the EU Green Deal Goals. At the same time, we must harness the opportunities that the green transition is providing for the digital sector. Digital market players including start-ups and SMEs can bring new green digital solutions faster to the market. All industry sectors can to reach their climate and ESG targets with proper use of digital solutions. In other words, the green transition is important for achieving also the digital decade targets.

Electricity 4.0: When electric meets digital

PHILIPPE DELORME

Executive Vice-President Europe Operations, Schneider Electric

Last year was not short on evidence of why we urgently need to accelerate the transition to a new energy landscape. From extreme climate events to an unprecedented energy crisis and economic slowdown resulting from the war in Ukraine, it is clear we have reached a tipping point.

There is, however, light at the end of the tunnel. For Schneider Electric, achieving energy security and decarbonising our economy are two sides of the same coin and the answer lies in disrupting the way we manage energy, design buildings, optimise industries and electrify mobility.

Europe needs to act now so we can move to a new all-electric and all-digital world while securing our energy independence and meeting our climate targets.

The fastest route to achieving the energy transition at the magnitude and pace that is urgently needed is to embrace the wealth of opportunities brought by the convergence of electrification and digitisation at scale. At Schneider Electric this is what we call Electricity 4.0: the next chapter in our energy revolution, and the fastest way to net zero by delivering clean and affordable energy for all. Electricity 4.0 means digitalising the energy ecosystem from end-to-end, making it greener, smarter and more efficient.

Over the last 250 years there have been four technology-driven revolutions impacting both industry and electricity and modernising our economy and society. From Alessandro Volta and Michael Faraday, the pioneers in the 1800s (Electricity 1.0), to mass electrification by the end of the 19th century (Electricity 2.0), supply ever increased to meet the insatiable demand. Then there was the development of the first practical solar cells in the 1950s (Electricity 3.0) and then we saw the rise of digitalisation and then mass digitalisation (Electricity 4.0).

And, why is this revolution happening now? For the first time, we can connect everything from plant to plug and use the data generated to optimise operations. The key ingredient of this transition is data and a successful transition will depend on the capacity to collate data at all stages to intelligently optimise.

To date, the EU's response to the crisis focused largely on supply instead of demand. Concerted action at EU level led to an impressive reduction of Russian fossil fuel imports, with the share of Russian natural gas plummeting from 33 percent in October 2021 to 8 percent in October 2022[1]. EU countries have allocated more than €600 billion and counting in budgetary measures to shield households and businesses from rising energy prices [2].

This money could be better invested! All we need is the political will to make it happen. The soaring costs of energy and the genuine risk of blackouts force us to implement an energy transformation.

This transformation will be built around energy efficiency and digitisation.

The technology exists today. We just need to deploy it.

By connecting everything that uses energy, from the lights in our office buildings, to the machines in our factories, to the air conditioners in our homes, we can measure when, where and how much energy is consumed. Combining all this data, and layering it with software, artificial intelligence and analytics, we can control and adapt our usage for maximum efficiency, decreasing our energy demand by up to 30%.

1 Source: https://www.nature.com/articles/d41586-022-04467-w

2 Source: https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices

At Schneider Electric we are convinced that combining electrification and digital innovation is the key to tackling Europe's energy and climate crisis. The only short-term vaccine for this crisis is energy efficiency.

To accelerate Electricity 4.0 and create a new energy landscape which is reliable and resilient especially in the face of geopolitical and climatic threats, fast-tracking action in the following four areas will be essential:

- **Energy efficiency and digitisation:** Digitisation makes our energy use visible helping to eliminate waste. Connected devices, edge control and related software and services enable the monitoring, visualisation and management of energy

production, distribution and consumption. Active energy efficiency technologies are available, relatively easy to install (no permitting required) and provide up to 30% energy savings with quick return on investment (approx. five years). Plus, they can be implemented in all sectors: residential and commercial buildings, industry and infrastructure. Mandating energy efficiency in buildings and industries can yield rapid results and with long lasting systemic value. The Fit for 55 package with the EPBD and the EED in particular will be paramount to make this happen by speeding up measures such as the deployment of building management systems ('BACS'), the Minimum Energy Performance Standards (MEPS) especially for non-residential buildings, mandating new buildings to be net-zero instead of nearly-zero, enforcing energy audit obligations, just to mention some.

Digital technologies are a powerful driver for systemic energy optimisation across sectors and need to become the foundation of future energy policy.

- **Electrification** is undoubtedly the way forward for the decarbonisation of multiple sectors from transport (e-mobility), to heating (heat pumps) and cooling as well as industry (electrification of processes). When produced from renewables, it reduces carbon emissions drastically and when combined with digital innovations it is generated and distributed more efficiently and effectively. The action plan for the digitalisation of the energy sector together with the Fit for 55 package are fundamental pillars to match the climate neutrality ambition with the infrastructure needs on the ground; system efficiency and distributed clean energy generation being at the heart of the shift. It needs to encourage a faster deployment of proven and available technologies such as solar, wind, heat pumps, microgrids, electric vehicles and charging infrastructure, storage so we can accelerate the electrification of the energy system coupling it with the digitisation of the grid infrastructure to make it bidirectional, flexible and reliable. Schneider's latest report concludes that by focusing on key sectors where electrification is both technologically feasible and attractive (buildings and road mobility), the share of electricity in the overall energy mix could jump from 20 percent to 50 percent, which would drive a reduction in emissions at end-use of around 1,300 MtCO2/y, as well as a drop in natural gas and oil supply of around 50 percent[3].
- **Green energy:** the global energy crisis accelerated the growth of renewables, but according to the IEA's 2022 Renewables Report released in December[4], Europe's further capacity growth is being hampered by long permitting procedures, insufficient support schemes and slow network upgrades. Also here, the Fit for 55 package, will be a powerful agent for change with an ambitious EPBD and RED ramping up renewables in buildings, transport, heating and cooling as well as in industry and mandating green hydrogen in the hard-to-abate sectors like shipping and heavy industry. Reducing both our use and dependence on fossil fuels by accelerating the transition to renewable energy will be essential in tackling both the energy and climate crisis.
- **Flexibility** A potential setback in the transition to a new energy landscape is how the distribution infrastructure will be able to cope with the considerable increases in electricity demand. Beyond the necessary infrastructure upgrades, the rapid and parallel development of distributed generation (rooftop solar and backup battery systems) and digital solutions for efficiency and flexibility will be paramount to avoid grid issues. Demand-side is a critical tool to empower end-users to play an active part in securing and decarbonising the EU energy system. Demand-side optimisation and its dynamic management can reduce the burden on the electrical grid through digitisation. Despite this, fact is that the activation of consumers' flexibility still faces regulatory barriers, notably due to the delayed implementation by member States of the Electricity Market Design. Recent research by smartEN shows that the full activation of flexibility in buildings, electric vehicles, and in industry could generate savings of 37.5 million tonnes (Mt) annually in GHG emissions[5].
  The combination of increased local power generation capabilities with new and smart digital solutions has the potential to improve the energy-wide system efficiency resulting in a smarter and increasingly resilient grid.

3 Schneider Electric Sustainability Research Institute, "The Road to a rapid transition to sustainable energy security in Europe", October 2022, https://download.schneider-electric.com/files?p_Doc_Ref=SRI_SustainableEnergySecurity&_ga=2.212664340.1682177170.1672737951-1729682891.1672737951

As the clock ticks over into 2023, it is imperative to speed up the implementation of structural solutions that will move Europe from an over-dependency on fossil fuels to a decentralised, digitalised, and decarbonised energy system. Electricity 4.0 is our best path to put this in motion. Europe can act now to turn the tide of the energy crisis.

4 https://www.iea.org/reports/renewables-2022

5 smartEN, "2030 Demand Side Flexibility in the EU: Quantification of benefits in 2030, September 2022, https://smarten.eu/wp-content/uploads/2022/09/SmartEN-DSF-benefits-2030-Report_DIGITAL.pdf

THE DATA ACT: Utilizing **Europe's industrial** data

PILAR DEL CASTILLO

MEP (EPP Group), Member of the ITRE Committee, Chair of the European Internet Forum (EIF)

The European Institutions are well aware that today data is a key pillar of the European digital economy and data collaboration within, and across Europe's industries, public administrations and consumers will be key to future innovation and economic growth.

The Data Governance Act was one of the first measures announced in the European strategy for data to overcome that data re-use is hampered by low trust in data-sharing and technological obstacles. Its objective: to facilitate voluntary data sharing across the EU and between sectors by strengthening mechanisms that increase data availability and foster trust in one of the main novelties of the proposal, "data intermediaries".

However, the Data Governance Act is part of a wider European Data Strategy, and the Regulation on Harmonised Rules on Fair Access to and Use of Data (Data Act) is the remaining piece that completes the EUs ambitious step towards the Data Economy. Indeed the Regulation will govern access to data in business-to-business (B2B) relationships with a special focus on addressing issues related to usage rights of co-generated IoT data, it will establish when businesses are required to share their data with public bodies (B2G) and will improve switching between data processing services.

The Data Act has the potential to be an absolute gamechanger if it can create a data-agile ecosystem that enables easy access to an almost infinite amount of high-quality industrial data and consequently boosting the sectors competitiveness and the EUs economic growth.

This is of paramount importance for the EUs competitiveness at a time where data will mainly come from connected things and anything that can be connected will, in the near future, be connected.

Accordingly, data, and especially industrial data, is a growing competitive asset for Europe.

A competitive advantage that, in the current economic context and under harsh international competition, Europe must optimize. An asset that we cannot afford not to optimize. Let's not lose sight of what our international competitors are doing, the US, for example, not only exhibits far more dynamic industrial investment, it is developing policies, such as the Inflation Reduction Act that will further increase this advantage.

And here is where the biggest potential of the Data Act lays for the EU. This Regulation can contribute to optimizing existing business models and processes, boost the development of new ones, and by doing so creating new value, structures and partner networks.

The fundamental postulate of the Regulation is that the user must have access to the data produced by the connected products and related services, and consequently be able to share it. The complexity is how to do so while avoiding the creation of new considerable additional costs and legal uncertainties for stakeholders. In other words, circumventing a scenario where the development of and functioning data market might be hampered.

One of the main difficulties of this task is due to the fact that the Data Act will be a horizontal regulation, that might affect business differently depending on the products they manufacture, the services that rely on these products or their role in the aftermarket.

Nevertheless, I firmly believe that it is an effort that must be undertaken at European level. It is necessary to avoid the market fragmentation which could emerge from individual national legislations, while simultaneously removing barriers to a well-functioning internal market for data.

I am of the opinion that the Commission proposal is the step we needed to take in the right direction; however, as the European Parliaments rapporteur I have identified a number of important shortcomings that need to be solved. Being the first question we must answer is what IoT Data falls under the scope of the obligations of the Data Act and consequently be made available to the user of a connected product?

In my view, in scope are data in raw form as well as prepared data. That is data cleaned and transformed prior to processing and analysis. In other words, data that is pre-processed for the purpose of making it useable without however reaching the stage of deriving or inferring insights that would put in risk IP rights or trade secrets.

Likewise, the Commission proposal seems to have a simple approach to, sometimes, complicated value chains of products, data and services, which can, in occasions, produce an array of dependencies and multiple data holders. For this reason further clarification is needed on how this regulation applies to the different actors, in particular on who would be responsible for providing data access to the user, and potentially also to the data recipient.

Other central topics are: the protection of trade secrets; shielding SMEs from unilateral and unfair contractual terms in data sharing agreements; the conditions that must apply in order for public authorities to request data from private businesses; the setting of interoperability and portability standards; and international transfers of data, amongst other..

To finalise, I must insist in the fact that the Data Act is a horizontal legislation that will be directly applicable throughout the entire European Union and will set the principles of sectorial legislation to come.

This is a critical premise that we must not forget. Whatever concepts and definitions that at the end are set in the Regulation these need to be sufficiently flexible to be used in all sectors, but at the same time they need to be clear enough that they do not hamper legal certainty to all stakeholders.

Indeed, the colegislators have their work cut out for them. The point of departure is however very promising, that is: the clear awareness of the importance of this dossier for Europe's future competitiveness.

Circular Economy in the ICT sector: Call for a more comprehensive European approach

CHRISTEL HEYDEMANN

CEO Orange group

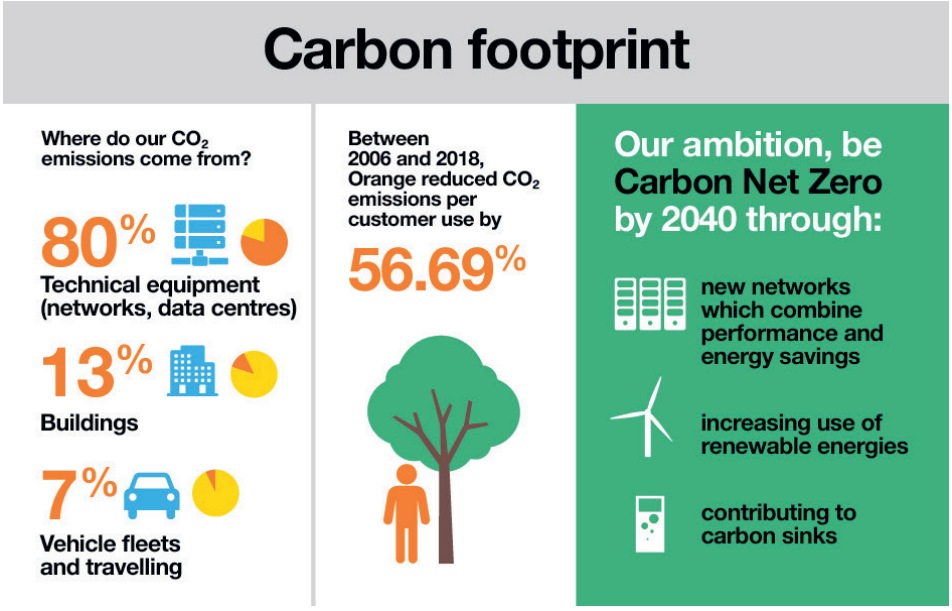
In December 2019, the European Commission presented an ambitious plan to decrease the EU's greenhouse gas emissions for 2030 by at least 50% and to reach climate neutrality by 2050: the Green Deal. Since then, many initiatives have already been adopted by EU co legislators including the Directive on Common Chargers or more recently the Carbon Border Adjustment Mechanism. Several others are still under debate including the Energy Efficiency Directive or the Ecodesign for Sustainable Products Regulation.

The digital sector is a key contributor to the Green Transition. First, it must reduce its own emissions, which represent between 3% and 4% of overall global emissions according to studies[1], representing a huge challenge to the industry. Orange is committed to becoming Net Zero Carbon by 2040 with an initial target of 30% less CO_2 emissions in 2025 compared to 2015[2]. To achieve this, we notably aim to source 50% of our electricity needs from renewable energy sources by 2025 and to reduce emissions generated by our buildings and networks. This also includes rolling out the new and more efficient FTTH and 5G networks, while decommissioning copper and 2G/3G mobile networks.

Second, digitalisation constitutes an essential asset to reduce emissions of other sectors. This is why the work undertaken at an international level, with the ITU-T, and at an EU level, with the European Green Deal Coalition, is essential in setting up robust, transparent and agreed methodologies to quantify such effects.

1 https://www.greenit.fr/empreinte-environnementale-du-numerique-mondial/

2 30% fewer CO_2 emissions in 2025 compared to 2015 for scopes 1 and 2, and -14% for scope 3 compared to 2018



While various initiatives supporting and speeding up the Green Transition are already on the table in the EU, it is fair to say that at least one important issue is still not addressed and deserve more scrutiny. I refer here to the circular economy principles that currently have too narrow a scope insofar as they do not cover ICT network equipment. If correctly addressed, this issue could constitute a step change for the EU and create an attractive precedent for the Rest of the World.

The EU Circular Economy Action Plan: an essential but incomplete approach

Back in March 2020, the European Commission, through its new Circular Economy Action Plan, demonstrated its willingness to introduce a sustainable product policy framework in Europe and rightly identified 'electronics and ICT' as a key product value chain. This did not come as a surprise given that less than 40%[3] of electronic waste is recycled today in the EU and that 57.6 million tons of electronic waste was generated in the world in 2021[4].

Nevertheless, in our view there is a key element missing from the EU's circular economy strategy: it does not tackle, for the moment, the category of ICT network equipment that underpins the digitalisation of our economy and society.

By enabling the extension of the life cycle of network equipment through better eco design and the increased re-use of products across the value chain via efficient and secured refurbishing and resale processes, the EU can expect a win-win formula delivering a

3 Eurostat figures, mentioned in the new Circular Economy Action Plan: https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_rt130&plugin=1

4 According to the European consortium EECONE

- Significant reduction of the supply chain's greenhouse gas emissions;
- Reduction of electronic waste, through the promotion of refurbishment (life cycle extension) and improved recycling;
- Better management of raw materials;
- and great potential for job creation in the EU.

Same issues, same rationale

The EU should apply the same rationale to ICT network equipment as it has started to apply to consumer electronics (smartphones, tablets, laptops, etc). This category of equipment purchased by telecom operators bears the same characteristics: new devices promoted instead of improving equipment maintenance; lack of certainty regarding the supply of spare parts in the long term in a given market, and sensitivity to international supply-chain issues. In addition, the re-use in another country of second-hand equipment in perfect working order is hampered by licensing schemes applying mostly at a national level.

In total, it is estimated that at least 800 kilotons of network equipment are sold each year[5], hence the need to encourage its reuse, remanufacturing and repurposing.

The need to involve the whole value chain

Orange has innovated to develop the re-use of IT and network equipment, aiming to incite the industry and other telecom operators to consider the benefits of applying the circular economy principles themselves. Through its "OSCAR" (Orange Sustainable and Circular Ambition for Recertification) Programme, Orange has introduced a new culture within the Group, maximising the use of circular economy principles for the management of its IT and network equipment.

Orange's partners are encouraged to include refurbished equipment in their commercial proposals and a dedicated marketplace within the company collects the different opportunities for purchasing and reselling available equipment across Orange affiliates or to other operators and partners.

In concrete terms, the OSCAR programme means:

- The setting up of an internal marketplace that enables buyers and technicians from our 26 subsidiaries to exchange and buy used equipment. Over 246,000 items of network & B2C equipment have passed through this platform over the past year;
- Substantial carbon savings: by re-using an existing product, Orange is avoiding the consumption of carbon generated by the manufacture of a new product;
- Substantial financial savings: by using equipment from other subsidiaries that is still in good working order or that has been reconditioned, significant savings can be made compared to buying new equipment. For the first year of its implementation, OSCAR led to several million euros in savings;
- Additional revenues: linked to the re sale of used equipment to companies outside the Group.

But to be successful, such a strategy and paradigm shift in the ICT network equipment value chain must be embraced by all stakeholders. This is where the GSMA comes into play: in March 2022, the association published a *Strategy Paper for Circular Economy*[6] that proposed three objectives to set the stage for a fully functioning circular market for this category of products:

1. Encouraging the reuse of network and IT equipment within subsidiaries of the same operator and between competing operators;
2. Promoting the eco-design of network equipment to allow it to be used for longer;
3. Improving the reparability of equipment and the supply of spare parts

This paper helps create public awareness of the benefits and challenges of using circular economy principles to extend the lifecycles of IT and network equipment. I hope it will help convince the whole IT and network equipment value chain to do things differently.

A key step forward will be to align the different environmental metrics currently used by equipment manufacturers to enable fair benchmarking on global CO_2 equivalent impacts, as well as the levels of repairability and e-waste. The work of the International Telecom Union (ITU-T) and the wider-use of existing standards could serve as a starting point.

We are already working with some vendors to develop the circular economy in this sector. For example, Orange and Nokia have signed an agreement to increase the use of refurbished equipment in telecoms infrastructure, with a focus on radio access network[7].

Given that more than 80% of telecom operators' emissions come from scope 3, it is important for us to develop a common understanding and to strengthen our cooperation and commitment with our partners in the value chain. In this regard, the future « digital product passport » proposed by the European Commission in the Ecodesign for Sustainable Product Regulation is promising. If applicable to network equipment, this regulation would enable us to get a more accurate understanding of the circular potential of the assets we acquire.

Towards an EU framework to support circular business models in the field of ICT equipment?

We are well aware of the challenges ahead of us, notably the lack of refurbishing capabilities and the fragmentation of the second-hand market for ICT equipment across the EU. But these hurdles can be easily overcome if all players work together to drive this paradigm shift.

If the EU wants a fully-fledged strategy capable of putting the circular economy at the heart of the digital sector, it should integrate the IT and network equipment used by telecom operators into its rationale. It will be equally important to work on commonly agreed KPIs and metrics that will apply throughout our value chain.

To conclude, adopting a comprehensive approach on the circular economy is of paramount importance to support the green transition of network operators and vendors. Orange is calling EU policy makers and all relevant stakeholders to sit down together and assess how to move forward and quickly deliver on this crucial goal.

Orange REcycling Programme for its devices

5 https://easychair.org/publications/paper/XvgV

6 https://www.gsma.com/betterfuture/resources/strategy-paper-for-circular-economy-network-equipment

7 https://newsroom.orange.com/orange-and-nokia-develop-the-use-of-refurbished-equipment-in-network-infrastructures/

The window for a **digital green energy transition** is **now**, and we **cannot miss it**

MORTEN PETERSEN

MEP (EPP Group – Denmark), ITRE Committee Member

Putin's horrific war in Ukraine has finally made us wake up to the reality we should have accepted a long time ago. We need to get rid of our dependency on hydrocarbons faster. Today we need to get rid of our dependency on Russia. But merely getting rid of *Russian* fossil fuels is not the *end* goal. That is to get completely hydrocarbon-sober. The only good thing that could come out of this terrible crisis is that if we do it right, we can take a leap in a green direction.

There is an enormous potential in digitalization as a catalyst for the green transition. In fact, digitalisation is a precondition for living up to our climate commitments and succeeding with the Energy Union. Digital technologies can make our energy systems more intelligent, reliable, efficient, and sustainable. Now is our window of opportunity, and we must give this the attention needed.

Right this moment we are building a new energy infrastructure system across Europe. Heat pumps and district heating are for instance being rolled out across Europe in a major scale. Tens of millions of heat pumps will be connected to the grid as we go towards 2030. Thinking in silos simply does not work anymore. Digitalising our energy systems will get us quicker and cheaper to net zero, and we are far behind.

We are seeing a shift to a new system architecture which is characterised by electrification and an increasing share of decentralised renewable energy. This will require a tremendous digitalisation effort. We need to design the energy infrastructure in a way that from the get go integrates intelligent digital components and solutions, such as smart meters, thermostats, and internet of things sensors, rather than letting this be an afterthought at a huge extra cost. By digitalising the grid and grid-edge, we dramatically increase control of the system through real-time automated communication and operation of the systems. With the intermittency of many renewable energies, we need grid-control to reduce weak points.

The data collection enabled by this will provide situational awareness and enable for instance more detailed demand forecasting and automated outage detection, all with great benefits for energy savings and energy efficiency, and not least the elimination of Putin's gas.

We do not need to build a Rolls Royce model. We cannot wait for the development of perfect solutions at elevated prices. Yesterday is better than tomorrow. In fact, we already have many of the solutions that we need. This includes solutions which are accessible and affordable. It is time to implement.

There are many low hanging fruits. Think about the way we heat our homes. Today we have 500 million heaters in the EU, which are wasting heat. By installing thermostats on these, there would be a yearly savings potential of up to 12 billion euro and 29 tonnes of CO_2. This would also mean huge savings for ordinary households.

Consumers will be a key driver of change. Today European citizens have a willingness not seen in decades to save on their energy usage. But consumers need to have better conditions for making smart budgetary and green choices.

European citizens are eager to take the necessary steps. For example, a recent survey showed that six of ten Danes said that they are more motivated to save energy this year than last year. Tips on how to reduce your consumption are popular in national papers and on social media alike. Low points in energy prices when the wind is strong can easily become a breaking news story. Consumers are washing their clothes at night and following fluctuation in prices online.

Understanding the actual prices and fluctuations as well as when the energy is the greenest is however very difficult for many consumers in the EU. For instance, in many EU countries, gas consumption is only measured once a year, and ongoing payments are based on a forecast of consumption. That means a consumer reducing her consumption will not feel the difference until long after. It is basically a system with no green incentives, and it serves as a perfect example of how we should not design the energy system.

The EU has an incredibly important role to play in ensuring that we do not miss the window of opportunity in front of us right now. Just like the EU played a crucial role in ensuring the implementation of smart-meters in the electricity grid, EU policy makers must make sure that we create the right conditions for digitalisation to be a catalyst for the green energy transition.

To get rid of our addiction to Russian fossil fuels supplies as well as to mitigate the inflated energy prices, European leaders with unprecedented speed were able to agree to reduce our overall energy usage, both gas and electricity. Out of this came REPowerEU, as part of which crucial revisions of the Buildings Directive, the Energy Efficiency Directive and the Renewable Energy Directive are currently making their way through the EU apparatus.

Buildings account for 40% of our energy usage in the EU. As shadow rapporteur for the Buildings Directive I am pushing very hard to include requirements for smart digitalisation of buildings.

It is clear that digitalisation is a much underappreciated part of the green transition, and there is a real risk that we are missing the train. Europe needs to build an energy system which is much more intelligent and interconnected than we have today.

Time to wake up! **Europe cloud infrastructures** must not be **monopolised** by a couple of **software**

MOGENS PETER CARL

Former Director General for Trade and then Environment, EU Commission

Our "cloud infrastructures" are indispensable to the operation of modern society. They are vital to the strategic autonomy of Europe across the whole spectrum of economic, government and social activities.

Yet some argue that we do not need a European cloud infrastructure industry and that we can rely on a handful of global foreign providers and on their continued benevolence. This sounds all too familiar. The same mistakes were made in recent years with a naïve recourse to "reliable" Russian supplies of gas or reliance on imports of cheaper Chinese solar panels and semiconductors to the detriment of domestic production of such strategic goods. During the Covid pandemic, the outsourcing of pharmaceuticals and other essential health-related products to Asian countries "on which we could rely" offered a painful reminder of our dependence on producers located outside of Europe.

Are we condemned to repeat the same mistakes in the digital economy? Do the words "strategic autonomy" have any meaning when it comes to Europe's cloud infrastructures?

The cloud should be a great democratiser. Its open, flexible, and relatively inexpensive to transform industries and encourage growth. But in reality, customers are finding it hard to use the software they already license on the cloud infrastructure of their choice. They are being discouraged from doing so by methods far too familiar in the area of the digital economy. Dominant software players continue to use archaic but very effective restrictive licensing terms; bundling, tying, self-preferencing pricing and technical and economic lock-in, to capture an ever-growing share of EU customers for their cloud infrastructures.

If allowed to continue, these abuses will inevitably squeeze out native cloud infrastructure companies, leaving European business and governments with no choice but to purchase cloud infrastructures from a limited number of ultra-dominant access providers ("gatekeepers").

European cloud service providers united in CISPE ("Cloud infrastructure service providers in Europe") have filed an anti-trust complaint to stop these abuses. They have

done this despite the fear harboured by some of retaliation, I have been told that some privately admit that a software gatekeeper could effectively *"turn off half of their business at the click of a finger"*. This, too, sounds too familiar. When I was responsible for trade action against unfair foreign competition in the Commission, such fear of retaliation was a recurrent reason why even major European companies did not dare to appear as plaintiffs against Chinese dumping strategies or unfair state subsidies. The dominance of a few, or of one software gatekeeper, has become such that it is, in itself, an eloquent demonstration of the need to act before it is too late.

But how to act? How can we avoid becoming a powerless digital colony and losing our cloud infrastructure sector? We need competition, variety, diversity, and respect for the "European way of life". These objectives must be non-negotiable. Dominant software providers must not be allowed to continue with unfair licensing practices that distort competition. Five mutually reinforcing actions should be taken to ensure this does not happen.

First, the Digital Markets Act (DMA), intended to achieve these very objectives, has largely failed to address the unfair software licensing practices by several software gatekeepers, despite many amendments filed in the European Parliament to that effect. The European Commission now has the power to update the DMA through a Delegated Act. The first action should be use this power to prohibit ultra-dominant gatekeepers from discriminating against competitors by self-preferencing their cloud infrastructures with unfair software licenses.

The proposed European Data Act is also ideally suited to address the problem of anti-competitive practices and eliminate unfair software contractual practices in the cloud. If cloud customers are locked-in by unfair software licenses, without the possibility to bring their own software to competing cloud services, the goals of the Data Act to encourage portability and interoperability are at best a wishful thought.

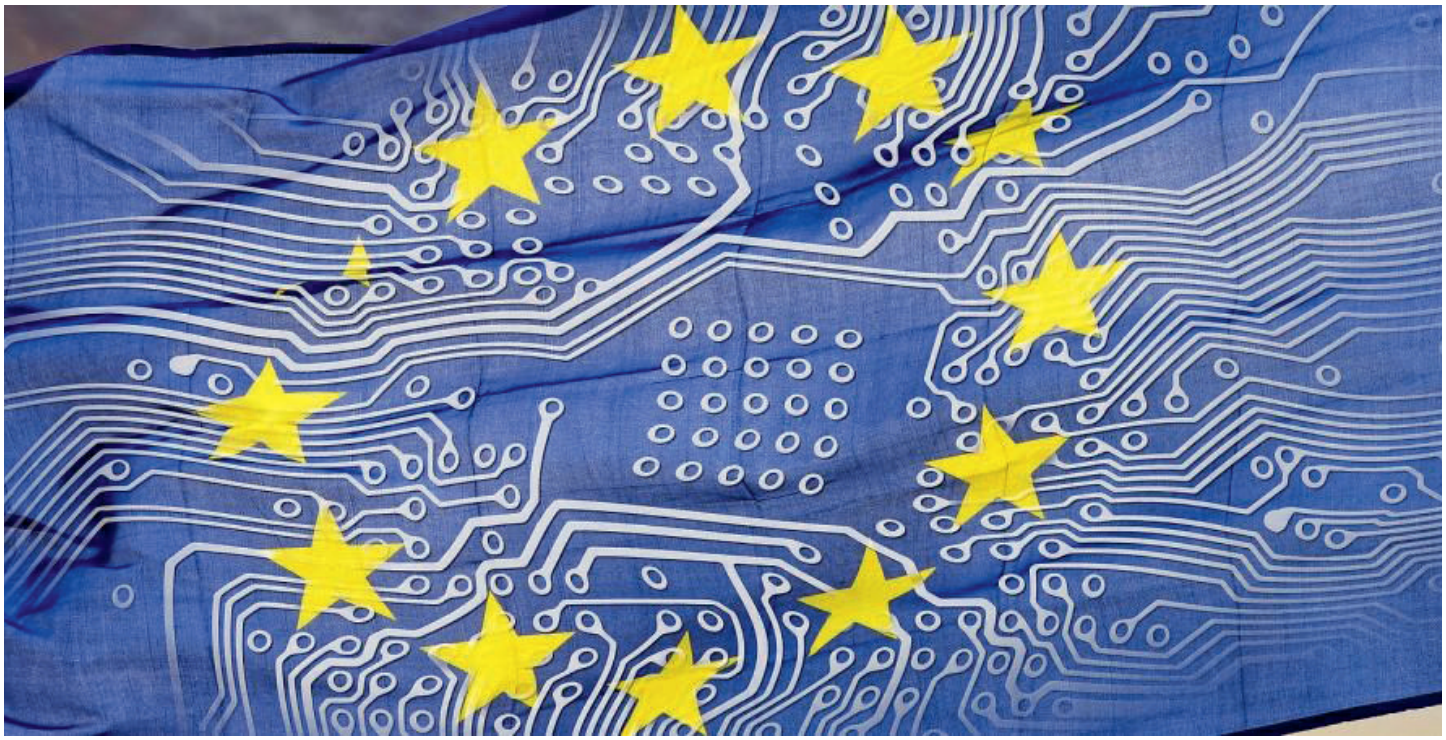
As the second step, the European Parliament and Member States must resist the inevitable, all-too-familiar lobbying of dominant software providers to water down the Data Act's pro-competitive provisions.

Thirdly, Commissioner Breton is actively promoting an Important Project of Common European Interest (IPCEI) in the field of the cloud economy. The participation of many companies working together to reinforce Europe's position on future cloud technologies is a must.

Fourthly, the recent competition complaint presented by CISPE should lead rapidly to the conclusion of a formal investigation by the European Commission. I hope that they will learn from our unfortunate experience in the field of international trade remedies against foreign dumping and subsidies: how often have I seen procedures drawn out for so long that irremediable damage was done before measures were put in place?

Finally, all cloud software and cloud service providers should adopt the Ten Principles of Fair Software Licensing, prepared and promoted by CISPE and customer association CIGREF. These Principles (for example: customers should be free to run their own software on the cloud of their choice) are available here: https://www.fairsoftware.cloud/principles/.

For companies active in the digital sector, and today that includes virtually all companies, observance of these principles should be as important as their commitment to European objectives in the field of the environment, social and governance principles (ESG). Only those who want to distort competition will have anything to lose by adopting them.



Carbon footprint of the public sector: to reduce, it is necessary to count well

EMMANUEL **LEMPERT**

Vice President, Head of EMEA South, Global Government Affairs, SAP

Interview by Laurent Ulmann

SAP is recognized by analysts as a leader in environmental issues. How does this translate into your relationships with public customers?

Let me illustrate this with an example. Since 2012, the French State's accounting system (CHORUS) is operated by a SAP based technology. The planned modernization of this system involves migrating this tool to our new generation intelligent ERP system, S/4HANA. This performance enhancement, which uses exclusively the SAP-developed database "In-Memory SAP HANA", allows users to access their data, to mine them and to create value from them in real time and regardless of their size.

With this in mind, we have initiated discussions with representatives of the French government to go even further and implement true carbon accounting. We suggested working on a methodology to assign a carbon value to each act of management in the government's financial accounting. The establishment of such a reference framework would allow the development of a carbon accounting ledger pilot project, which would mirror the State's financial accounting, in a fully integrated and transparent manner.

The objective is to enable public authorities to quantify and evaluate the environmental performance of each of the areas covered by their financial accounting, in particular:

- public procurement, with systematic and harmonized measurement of expenditure and the inclusion of a set of indicators to measure its economic, environmental and social impact,
- State's Real Estate,
- travels of public servants,
- sustainable use of land and nature.

We can even imagine implementing our most modern decision support tools (real-time visualization and simulation) in order to pilot, with an unprecedented degree of finesse and based on the data as they exist in real time, programs to reduce the carbon footprint of the public sector. I would add that these tools, thanks to their machine learning capabilities, can detect new correlations and potentialities.

Given the nature of the issue and the environmental crisis emergency, we believe it is essential that public policies be defined and implemented on the basis of data that are accessible in real time, consistent, comparable and auditable.

SAP is the European IT champion. Do you plan to work with other countries, particularly in Europe, on these issues?

Absolutely. With all those who wish to do so, particularly in the Middle East and Africa, regions that I am particularly involved in. However, as the European IT champion, we have naturally made the environment a major topic in our discussions with the European Union; especially since the adoption of the European climate law and the legally binding objective for member states of carbon neutrality in 2050. The European Parliament and the Council of the EU agreed in April 2021 to adopt the objective of a net reduction of at least 55% of the European Union's greenhouse gas emissions by 2030 compared to 1990 levels.

The example I have just mentioned for France could, in my opinion, serve as a model for all the member states of the European Union. Let me add that this would also be an opportunity to encourage synergies in the area of public sector transformation. This public accounting model, based on S/4 HANA technology, a carbon ledger and real-time visualization and simulation tools, would allow for a synergetic European management of carbon footprint reduction initiatives. In doing so, the Union would become an indisputable global model.

Let us imagine a Europe, or at least a certain number of European States, whose policies for reducing the carbon footprint of the public sector would be entirely based on

data as they exist in real time and on the possibility of designing scenarios and assessing, still in real time, both the consequences and the effectiveness. This exemplary role of the public sector in decarbonizing its operations and actions, thanks to holistic management, would necessarily have a knock-on effect on the private sector.

And what about the SAP organization itself? Where do you stand?

We have revised our ambitions upwards. We are investing more than 100 million euros each year on a global scale to be net-zero by 2030, across our entire value chain, both upstream and downstream (scopes 1, 2 and 3). Our goal is clear: zero emissions, zero waste and zero inequality by 2030. Sustainability is at the heart of our development strategy and our solutions. This is the reason why we strongly believe that we can help our partners and customers to decarbonize their actions and strengthen their commitment to the environment and society.

How the **energy crisis** laid bare **Europe's technology** deficit

CECILIA BONEFELD-DAHL
Director-General of DIGITALEUROPE

Vladimir Putin has intentionally used energy as a weapon since the beginning of the war in Ukraine.

A curse that has turned into a blessing for the acceleration of the European energy transition. Leaders have finally woken up to the urgency of finding sustainable fossil fuels alternatives.

The recent EU's Digitalisation of Energy Action Plan (DoEAP) has been both a strong reminder and a great recognition of the crucial need for collaboration between the energy and the digital sectors.

An efficient and sustainable energy ecosystem is not only the backbone of the European Green transition, but it is also a fertile soil for new business models to sprout. In fact, GreenTech is one of the most promising growth areas in the innovation space and it is a market that can attract a massive amount of investment. In 2022, European startups in the GreenTech space raised just over €1.2 billion. Six out of 9 companies that have made it to our 2023's Future Unicorn Award shortlist operate in the green tech sector.

However, there are **three major challenges** to overcome if we are to achieve energy sovereignty and a complete green transition.

Data sharing and legal bottlenecks

No potential of digital in the energy and green transition can be unlocked without data. Data is essential for measuring,

monitoring, predicting, innovating, and much more. Importantly, we need access to data as you cannot reduce nor improve what you cannot measure.

As EU policymakers quicken up the pace of their work on the Data Act proposal, let us admit that no one really knows what its effects will be. Before rushing to force widespread data sharing onto businesses that are already reeling from an enormous number of digital regulations, it is crucial to take the time to test-try those rules in real-world market conditions, also known as *pre-regulatory sandboxing*.

For businesses to be fully on board and for investors to step up funding, they need solid reassurances that trade secrets, security and privacy will be taken seriously. Effective safeguards to prevent data misuse and unfair competition should be part of the Data Act.

Lack of established tech infrastructure and skills gap

For digital to be effectively used as a major driver of the energy and green transition, it requires resources. That includes ICT infrastructure and specific skills which are both currently lacking in Europe.

Enabling access to troves of data will fall short if it is not able to move quickly or if it is not able to be processed. This is where the importance of connectivity and ICT infrastructure comes into play. For example, without WIFI or 5G on a manufacturing site, data would not be able to be collected or shared in real-time to enable systems and operators to make decisions that save energy and resources. In fact, 5G is expected to reduce Green House Gases emissions by 85% (per unit of data transmitted) compared to current 2G-4G networks.

Skills are another major barrier to unlocking the full potential of digital in the green transition. Many of the most alarming shortages are in the roles key to the digitisation of the energy ecosystem such as cybersecurity, AI and big data analytics. In 2019, more than half of EU enterprises that recruited or tried to recruit ICT specialists had difficulties in filling vacancies and the situation has only worsened by now. Data cannot flow securely without skilled cybersecurity staff and cannot be efficiently and quickly processed to inform critical decisions, without key specialists such as data scientists.

Weak Investment framework

In green tech, Europe is more ambitious than any other region on targets for cutting down on CO_2 emissions by 2030 but is losing ground in attracting investment. The rigid regulatory environment does not help to lure regional and global investors. Last week, European Commission president Ursula von der Leyen announced a new bill to give Europe's green tech industry a boost at the World Economic Forum in Davos. Yet, as little to no information about funding sources have been shared so far, it is safe to be sceptical at a time when the US has committed to over $369 billion to boost the green tech industry, while China, Japan and India have been substantially upping their investments in the sector.

Moreover, out of the over €700 billion made available through the Recovery and Resilience Facility (RRF), only €100 billion has been disbursed. The funds are available, yet they remain difficult for Member States to access.

The digitalisation of the energy ecosystem and the twin transition more broadly will shape Europe's ability to be increasingly independent from foreign actors, shift to renewables and become resilient. However, technological autonomy is compatible with open economies and global collaboration. The EU should not act in silos to achieve its climate targets and lead on green tech. It should rather rely on solid alliances with like-minded regions to source critical materials such as semiconductor chips. It should also lead on harmonising multilateral industry standards to attract investors and lure the world's top-notch talent.

The above-mentioned obstacles could jeopardise the EU's future economic growth and strategic ability. The good news is that it only takes a few trade-offs to be made for the sake of technological innovation and competitiveness to make Europe catch the technological wave in time.

KUMPULA-NATRI **MIAPETRA**

(S&D Group- Finland), INTRE Member , rapporteur for the data strategy initiative report

AGENDA: **Promoting data cooperation** to **enhance** access to and use of **sustainability data**

As the world grapples with the challenges of climate change and sustainable development, access to and use of data is more important than ever. From tracking progress towards environmental targets to identifying new opportunities for sustainable growth, data plays a crucial role in our efforts to build a more sustainable future. However, despite its importance, many challenges still exist when it comes to promoting data cooperation and enhancing access to and use of sustainability data. In this article, I will outline some key steps that we can take to overcome these challenges and foster a more data-driven approach to sustainability.

One of the biggest challenges when it comes to promoting data cooperation is overcoming the barriers to sharing data across different organizations and sectors. This can be a particularly daunting task when it comes to sustainability data, as it often involves sensitive information about natural resources, environmental conditions, and other critical factors. To overcome these barriers, we need to focus on building trust and fostering collaboration through clear legal frameworks. I am currently in the process of negotiations on Data Act, the landmark piece of legislation that seeks to reorganize the value chains and balance value creation benefits of the nascent data economy. Alongside the already adapted framework legislation, Data Governance Act, EU aims to create a culture of trust and collaboration. Governance should make it easy for organizations to share data and work together to achieve common goals in the field of sustainability. By sharing data, businesses can work together to better solve our climate crisis. Providing access for the user to data generated by the use of the product, opens doors for new ways to use that data for several new players and disruptive ways and with competition to thrive for more innovations.

Public data sets have a lot of information that can be harnessed too. For example, data on the emissions of greenhouse gases from different sectors can help policymakers develop targeted policies and regulations to reduce emissions in the most effective and efficient manner. Data on the use of natural resources, such as water and land, can also help identify areas where conservation efforts are needed to protect these resources from overuse or degradation. These government-to-business data sets have been opened in previously in Open Data Directive and the Data Governance Act.

In addition to providing valuable information for decision-making, data sharing can also help build trust and collaboration between businesses and governments. **In**

the Data Act in addition to business-to-business access to IoT data we also discuss the role of business-to-government data sharing. I believe Business-to-government data sharing has an important role to play in the tackling climate change. I believe that by working together and sharing data, businesses and governments can show that they are committed to addressing the challenges of climate change and working towards a more sustainable future. Overall, the importance of business-to-government data sharing in tackling climate change cannot be overstated. By providing valuable information and fostering collaboration, data sharing can help support the development of effective policies and actions to reduce greenhouse gas emissions and protect natural resources.

Legislation on the access, use and control rights is not enough. Another key challenge is ensuring that sustainability data is high-quality, accurate and relevant. Too often, data is collected and analyzed in silos, which can lead to inconsistencies and gaps in our understanding of key issues. This can hinder our ability to make informed decisions and take effective action. To address this challenge, we need to focus on improving the quality of sustainability data and making it more accessible and usable**.** This can be achieved through a variety of means, including investing in better data collection and analysis tools, as well as promoting the use of open data standards and interoperable systems. It is key that the European data economy does not end up existing only in the paper. That is why it is crucial to pay attention to how the standards for the European data economy are constructed. Here I believe the inclusive multi-stakeholder model of the European Data Innovation Board should have a role to play.

In addition to overcoming technical challenges, we also need to focus on the broader cultural and institutional factors that shape our approach to data and sustainability. This includes promoting a more data-driven culture within organizations and institutions, as well as building the capacity of individuals and communities to access, use, and share data. To do this, we need to invest in education and training programs that teach people the skills they need to work with data and make informed decisions. We also need to support initiatives that promote data literacy and empower communities to use data to drive positive change. Here we should learn from great initiatives like the open Finnish Elements of AI course (elementsofai.com) and adapt these models to teaching about data economy as well. By building the capacity of individuals and communities, we can create a more inclusive and participatory approach to data and sustainability.

Ultimately, promoting data cooperation and enhancing access to and use of sustainability data is not a simple task. It requires a multi-faceted approach that involves overcoming technical barriers, building trust and collaboration, improving data quality, and fostering a more data-driven culture. However, the rewards are significant. By promoting data cooperation, we can improve our understanding of key sustainability issues, see new disruptive innovations with opening access to data sets, identify new opportunities for sustainable growth and deliver for a greener future for Europe and the world.

Europe needs **flourishing industrial** data **markets** - the **Data Act could** help us get there

DAMIAN BOESELAGER

Co-founder and MEP of Volt. He is the Greens / EFA's chief negotiator for the 'Data Act'.

Data are an important source of profit and market power. Data lie at the basis for all complex analyses and the training of algorithms. Access to data, and the knowledge to exploit it, are an important input for product innovations and process optimisations. Data increases profits to the holders of the data when the results of these analyses lead to higher sales or lower costs. For example, if a company uses data to train an algorithm that reduces a machine's electricity use by five per cent, then that data has a value equal to the costs saved.

So data is an important part of economic value creation in today's economy. The problem is that this reality has only partially arrived in EU law. While the processing of personal data is regulated by GDPR, the many terabytes of machine-generated industrial data generated daily in factories, wind turbines or power lines are legally considered as undefined externalities of other processes. The value of the data remains invisible. Who is allowed to access it, who is allowed to share it, i.e. who is allowed to share in its value and who is not, is not legally determined.

The legal uncertainty in sharing data and the invisibility of data-based market power ultimately lead to the fact that in the battle for data in Europe, the law of the jungle applies. Today, it's mostly the manufacturers of connected devices that have access to its data - either because users are not informed about the options to have it or because manufacturers simply have a better leverage. This also predestines them to sell downstream digital services to the users of the product. Manufacturers of connected devices thus have an easier time with becoming monopolists in the 'aftermarket'.

At the same time, data is also 'invisible' in important parts of competition law. Since they have an economic value but often no readable price, they do not show up in analyses of market dominant positions, which usually have turnover as a core criterion. This is despite the fact that access to data has an essential influence on the competitive situation in a world in which connected devices constantly collect, utilise and exchange huge amounts of information.

This is where the Data Act must come in. It is time to make the power of data visible and to create the framework for a distribution of its added value based on fair competition. The right to share non-personal data with third parties, for money or for other purposes, must first lie with users. After all, they bought the product that generates the data. It is of course true that manufacturers of connected products have a legitimate interest in accessing data in many cases, not least to ensure functionality and product safety.

All of this must be done via horizontal regulation: the economic problems that arise from data-based market power are not sector-specific. They exist in the automotive industry, as well as in agricultural tractors, voice assistants and paper machines. Attempts by the respective industries to carve out a special role for themselves all stem from the interest in further protecting their own market power.

Clear regulation of non-personal data rights has another important value. It ensures that in the competition for good ideas, the company with the biggest legal department does not always win. Especially for start-ups and small companies, the unclear legal situation when sharing and acquiring data is a real barrier to market entry.

Clear rules could establish functioning data markets and thus finally break long established silo structures. Users whose products produce data could now make it available in a legally secure way to programmers and innovative start-ups that develop new and perhaps better solutions based on the data. Because they have the right to monetise this data, there is a financial incentive for users not to let this data slumber in the depths of the servers, but to share it with others. This, after all, is the goal of any data strategy: more data should be shared, for the benefit and added value of all.

The **role** of **standardization** in supporting **Europe's digital transition** –

ELENA SANTIAGO CID

Director General of CEN and CENELEC

According to Stephan Grabmeier, at the German Zukunftsinstitut, in 2020 we moved from a VUCA world (Volatile, Uncertain, Complex, and Ambiguous) into a BANI world (Brittle, Anxious, Non-linear, and Incomprehensible), shaped by climate and global systemic changes. Along the same lines, Economist Adam Tooze has described the current situation as "polycrisis": a moment of many disparate shocks tangled together, to overwhelming effects.

Even in this confusing context, there are reasons to be optimistic. And the European Union has seized this challenge as an opportunity: within the framework of the Green and Digital transition, its vision for the future aims to make Europe more sustainable, resilient, innovative, and competitive. A vision that for Europe we can all subscribe to.

At the very heart of the EU's ambition lies the **digital world**. In fact, for this vision to succeed, it relies on the digitalisation of all processes underlying our societies and economy, accompanied by a forward-looking support and regulatory framework. After all, new technologies fuel economic growth and help increase efficiency. But at the same time, they multiply concerns related to safety, security, and privacy.

The EU's ongoing and wide-ranging plans in the digital arena, going under the label of "Europe's Digital Decade", testify to the size of the ambition. The new year 2023, which coincides with the 30th anniversary of the Single Market, provides us with a golden opportunity to build on success stories and address existing gaps to the establishment of a fully functioning Digital Single Market by 2030.

In this, European standards play a key role. As recognised by the new European Standardization Strategy, they are ideal tools to improve security and safety, ensure interoperability, support climate neutrality and build trust in emerging technologies.

Based on this conviction, CEN and CENELEC, two of the official European Standardization Organizations (ESOs), are on the frontline to enable a successful digital transition in Europe. This commitment has guided us in the thirty years of the Single Market, working side by side with the industry, societal stakeholders, academia and European institutions. Now, it inspires our **Strategy 2030**, where we set the path to make our system future-proof.

There are many ways standards can help – and are already helping - the EU's digital transition. Allow me to illustrate a few of them.

The first priority is **cybersecurity**, a prerequisite for the uptake of new technologies. To help confront cyberthreats, CEN and CENELEC rely on Joint Technical Committee 13, devoted to the development of standards for cybersecurity, privacy, and data protection.

Another decisive area is **Artificial Intelligence**. The recent establishment of Joint Technical Committee 21 shows the commitment of our community to supporting the development of trustworthy and human-centred AI systems, in line with the AI Act.

A third relevant issue is **automation and industrial data.** It is particularly strategic because it supports the transition to Industry 4.0 as set out, among others, in the Resilience and Recovery Plans. Hundreds of experts contribute by working in technical committees such as CENELEC/TC 65X, which adopts standards for industrial process measurement, control, and automation.

These are just some examples of our work. Our community is involved in many more sectors, reflecting the distinctively **horizontal, cross-sectoral** character of digitalisation, to power the digital transition with actionable and up-to-date solutions.

At the same time, we are currently working hard to make our own processes fit for the digital transition. We are involved in two projects to develop "standards of the future". The first one, **Online Standards Development (OSD),** provides an online tool for experts to improve efficiency, collaboration, transparency and quality throughout the development process; the second one, **Smart Standards**, aims to deliver machine-readable standards, thus meeting the industry's digital needs.

For the promises of the digital transition to become reality, CEN and CENELEC will continue engaging with organizations like **ETSI**, the European Telecommunications Standardization Institute, the third official European Standard Organization. As ESOs, we have a shared responsibility to deliver market-driven European Standards that support European Policies and legislation.

Furthermore, some of the most urgent emerging challenges from digitalisation – from AI to semiconductors – are global. Consequently, we are committed to leveraging our strong agreements with the international standardization organizations **ISO and IEC** to work on global solutions and ensure Europe's leadership in defining future rules for the digital world.

Finally, attracting interested stakeholders is fundamental to deliver standards that are fit for purpose. The European Standardization System is as strong as it is inclusive: for standards to be effective and meet the industry's needs, we need the support of as many stakeholders as possible. For this reason, we invite all those interested in the industry to engage with us.

2023 is ripe with opportunities to work towards a fully functioning Digital Single Market. Let us work together to achieve a sustainable, digital and resilient Europe!

The **implementation** of **regulation** in the **digital space**, an ambitious new **model for Europe**

STÉPHANIE YON-COURTIN

MEP (Renew Europe Group - France), ECON Committee Member

In December 2020, the European Commission has put forward 2 major texts to regulate the online environment: the Digital Services Act (DSA) and the Digital Markets Act (DMA). It will ensure a better democratic and economic regulation of the online platforms.

The DSA will update our regulatory environment to reflect the new use of online platforms but also the new dangers such as fraud, counterfeiting, online hate, and disinformation. All these risks not only put consumers at risk but also our democracies. Now, online platforms will be obliged to be fully transparent about their content moderation techniques, and to commit to acquiring additional resources if deemed necessary by the regulator. Elon Musk can break the news every day but Twitter will have to respect our EU rules!

The DMA will ensure a level playing field online at a time when a handful of companies can set their own rules that enable them to keep their domination, hinder innovation and prevent competitors from accessing the market. This economic regulation is a milestone that will pave the way for other jurisdictions such as the US, China and South Korea. Ensuring a level playing field will contribute to making sure that some small companies but in key sectors for EU sovereignty do not suffer from unfair competition with no means to react again digital giants.

However, DMA and DSA are a first step. Our EU digital regulation is growing and growing with the Data Governance Act, the Data Act and the Intelligence Artificial Act to name a few. We have to make sure that we are not only a continent that regulates but also a continent that delivers and achieve concrete objectives. In order to do that, we must address the issue of implementation with adequate resources, adapted and in sufficient quantity if we want it to be successful. To face Big Tech, we will need to have the expertise, resources and experience. It will be of upmost importance to also rely on the expertise of national authorities to properly monitor markets and implement our regulations while preserving the integrity of the EU single market. That leads me to my second concern, which is the articulation of all these different regulations. We have started nearly from scratch and we are now at the forefront of digital regulation. There is no room for mistakes, we need to quickly deliver.

Our new regulation for digital space will make up for a situation that was unfair and not adapted to our current societies. The European Union must now adopt a policy of active support for its industry, through structuring investments, regulatory flexibility, and an assertive choice of preference for European solutions. Whereas the US are putting forward the Inflation Reduction Act, Europe must have a clear strategy of public and private support for key sectors and technologies, and invest massively in high-value-added sectors where European leadership remains possible. This is the case of digital technology. In this respect, the rules of public procurement should reflect the challenges of technological autonomy. Public procurement accounts for more than 14% of European GDP and represents a major lever for innovation and autonomy.

Whether it is for the recovery after the pandemic, to fight climate change, to cope with the Russian invasion to Ukraine, to ensure a fair taxation or to set our rules to Big Tech: it is clear that we need a European action. In all these sectors, we are taking Europe out of naivety and embracing a realistic and pragmatic Europe. We have set ourselves ambitious objectives, whether in terms of climate, digital, industrial or trade policy. It is now up to us to use our regulatory toolbox as an asset to achieve them rather than a brake.

Building a European ecosystem of federated cloud and data spaces

FRANCESCO **BONFIGLIO**

Gaia-X CEO

Established in 2021 as a privately funded not-for-profit Association, Gaia-X brings together an international community of providers, users and researchers of technology, from all different sectors and regions, with the aim to build a common standard for transparent, controllable and interoperable technologies in order to enable the creation of common data spaces and doing so boost the European data economy.

The key question is why data spaces do not exist today. Do we face a lack of technology, data or of, business cases or use cases? Absolutely not. There is more data out there that we can handle. What we miss is a Common Trust Framework. In other words, there is no regulation talking about trust.

Gaia-X is trying to translate this concept of trust into a technology framework implementing a set of rules. We aim to provide transparency, controllability, and interoperability of services through a Transparency Framework called the Trust Framework.

Data is currently collected everywhere, but still very little is used. The potential of available information is largely unknown and unexploited by most companies because they are scared of the control technology platforms will exercise on their data.

Also, industrial, economical, and societal ecosystems cannot fully become digital unless their value chain – involving all participants – becomes digital through data exchange. But data exchange requires the definition of a common value for all participants and requires trustworthy technologies.

Without digital value chains – that are common data spaces where all participants share one another their data – it is not possible to reduce dependencies from single sources, it is not possible to calculate ESG impacts of a product or service, it is not possible to optimise the cost of production or the overall energy footprint across the value chain, none can optimise its own product or

service without the data from all others in its value chain.

We already live in a world where our lives, the way we consume goods and create, heavily depend on digital technologies and solutions. What we are doing at Gaia-X is creating services that can be added to already-existing cloud technologies to create trusted platforms where data can be exchanged between parties in a secure, transparent, and user-controllable way, reducing reliance on opaque and black-box platforms, controlled often by private, monolithic, international parties.

Gaia-X is not designing new technologies or creating alternative platforms to compete with the market dominants; we are creating the premises to start adopting existing technologies, trusting them and creating those digital value chains to create competitive, innovative, and impactful services in the market, in the society, and the natural ecosystems.

As a user or a provider, we must ask ourselves, do I want, or does my company really profits from a technology where the decision on how the information is made and shared is centralised and controlled, often by one party? In this system, no single entity has access to a complete system of information, and the decision-making process is top-to-down, and the smaller you get, the less flexibility you have.

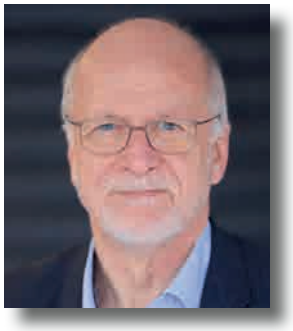
So, instead of a centralised system, we are offering a federated system of decentralised connections. Where information processing is distributed among multiple nodes of data providers and users, which agreed to adhere to the same rules and act in accordance with before mentioned Gaia-X Standards, this system is more robust and dynamic. It goes beyond maintaining a database and allows one to manage systems dynamically. With the Gaia-X Framework, and soon to be released to the public, Gaia-X Digital Clearing House (GXDCH), many actors of today and the future digital market, will be able to formalise and secure new business relationships.

At Gaia-X, we are developing digital governance based on regulatory, industry standards, and requirements from our project members (large and small industries, technology providers and users, academics, and trade associations) to allow them to define the rules and characteristics required to meet real market expectations.

What distinguishes us is that we not only define these criteria in textual specifications, but we also implement them into a technical framework - i.e., source code - to achieve Gaia-X Compliance.

The degree of cloud technology adoption in Europe is less than 25%, indicating a lack of confidence. This hurdle inhibiting the growth of the data economy cannot be removed without a description of the norms for obtaining trust and an objective evaluation of the amount of trust.

Under the above premises, Gaia-X has created a new standard for determining trust and controllability of digital services and developed a technology framework to implement its verification. In the first months of 2023, the first Gaia-X Digital Clearing Houses – nodes of execution of the Gaia-X compliance services – will be up and running, enabling the population of Gaia-X marketplaces with thousands of services already available from the members and ready to show a concrete alternative.



Can **data spaces support sustainability** in **manufacturing**?

THOMAS **HAHN**

Chief Expert Software, Siemens AG.

Example: Declaration of the Product Carbon Footprints

Data spaces can enable cross-company sharing of data while maintaining the data sovereignty of the companies concerned. An example where this functionality of a data space is needed and offers concrete business value is the declaration of the product carbon footprint (PCF) by companies along the supply chain. Determining the PCF as precisely as possible is the basis for being able to measure and influence CO_2 emissions holistically and sustainably.

Siemens has developed an ecosystem-based approach for the exchange of emission data

To calculate the PCF, a manufacturing company must determine the so-called Scope 1, Scope 2, and Scope 3 contributions to the PCF, then add them up and make the specific value available to the customer:

- As part of the Scope 1 calculations, the company must determine how many direct emissions are caused by the company to manufacture the specific product.
- As part of the Scope 2 calculations, the company must determine which resources, such as energy, are required by the company to manufacture the specific product.
- Scope 3 includes the contribution caused by the purchased components. One could consider databases providing such so-called secondary data. However, secondary data only reflects the facts imprecisely. Therefore, primary data should be used, where the suppliers make the PCFs of the supplied components available to their customers.

Depending on the produced product only a small amount of the PCF is visible within scope 1 and 2. That is why it is crucial to include scope 3 for full transparency needed to calculate the complete PCF - from scope 1 to 3.

Considered Value Network

From a business perspective, the considered companies are organized in an overall supply chain. The figure shows as an example a section from such a supply chain. Each of these companies declares the PCF of their products and shares this information with their customers within the data space under consideration.

In addition, two other business stakeholders must be considered:

- A software application provider offers software for managing PCFs. On the one hand, this software supports a manufacturing company in determining scope 1 and scope 2. This includes, among other things, how to allocate the overall emissions and resource consumption of a manufacturing company, which are recorded, for example, in an MES (Manufacturing Execution System) of the manufacturing company, to the specific products. Furthermore, this software enables the PCFs declared by the suppliers to be made available in a trustworthy

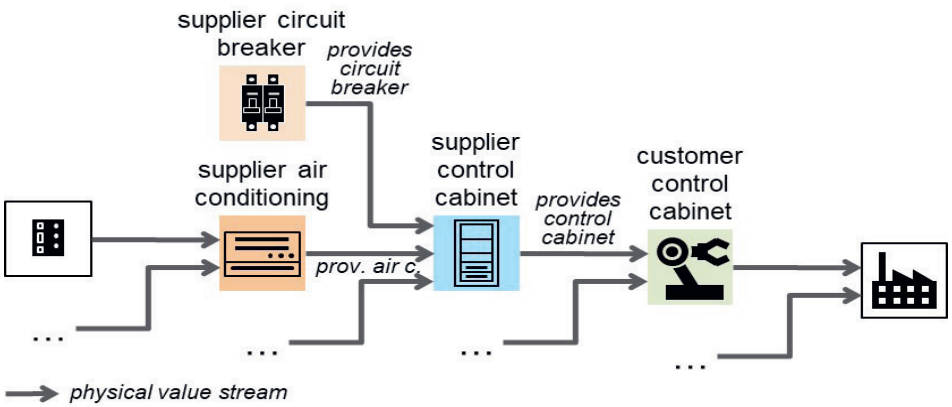


Figure shows an example of a supply chain

manner and that also the manufacturing company can make the own declared PCFs available to its customers in a trustworthy manner. In contrast to product properties such as weight, dimensions, or performance, which a customer can measure and check independently, a customer cannot do this with the PCF. And this necessary trust of a customer in a product supplier must be considered when designing the data space.

- To address the core issue of trustworthiness, an additional business role of a trustworthiness services provider is considered. The core value proposition of the trustworthiness services provider is to manage information from various sources in such a way that it can be verifiably passed on to others in an unaltered manner.

The Siemens Offerings

To design the described data space, Siemens is developing the following two portfolio elements:

- Siemens is developing a software application SiGREEN, a PCF management solution offered as a service for requesting, calculating, and sharing trustworthy PCF data. On the one hand, SiGREEN is offered as an on-premise option, in particular with the aim that customers can seamlessly integrate the software application into their existing IT infrastructure such as MES and PLM (Product Lifecycle Management) systems. This is typically a requirement of companies that offer a complex product portfolio. On the other hand, SiGREEN is also offered as a connect option. In this case, onboarding and operation of the software application are much easier. This is typically suitable for companies that offer a simple product portfolio, but it also serves as a low-effort entry offering to keep the hurdle of participation in the data space as low as possible with the option of successive expansion over time.
- Together with other companies, Siemens is involved in the development of the ESTAINIUM network, which is organized cross-industry and pre-competitively. The ESTANIUM network lays, among other things, the basis for trustworthiness services, and addresses the challenge of standardizing the PCF calculation and declaration.

The Community Behind

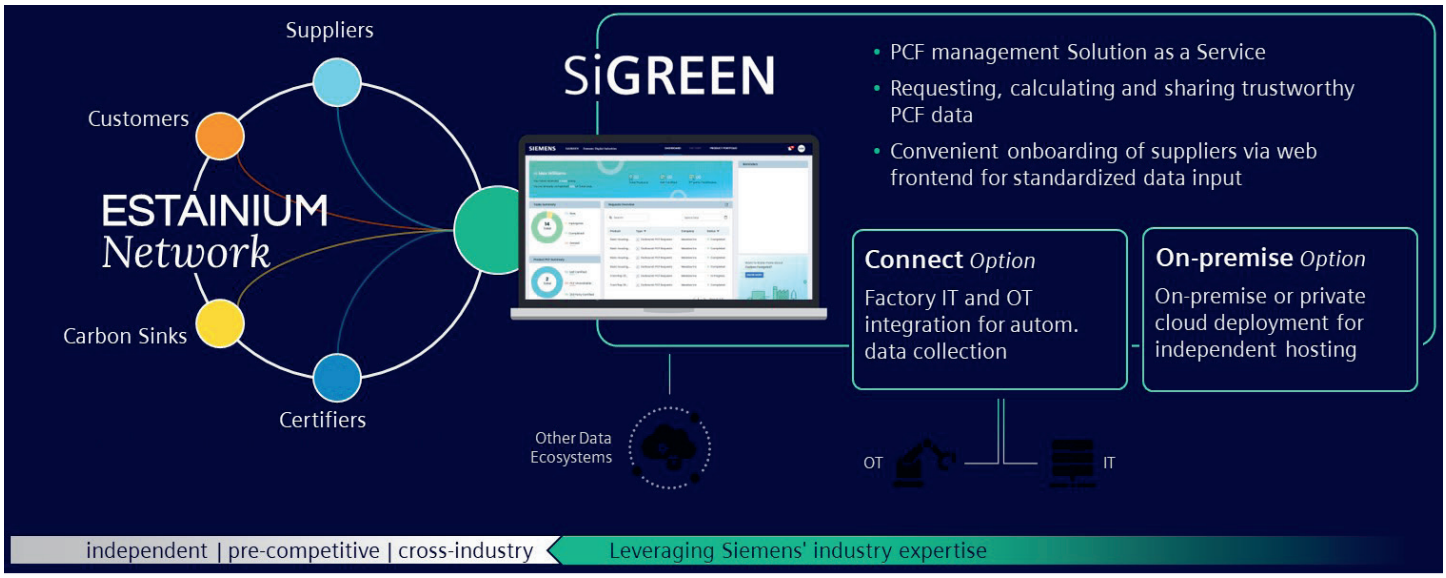
As illustrated by the example of a data space in manufacturing to support sustainability, to design data spaces it is necessary to motivate and orchestrate a broad community of different stakeholders and to offer concrete business value. For this reason, Siemens is involved in various committees, associations, and initiatives to jointly push the design of data spaces in manufacturing industries. Without claiming to be exhaustive, these include associations such as VDMA, ZVEI, IDTA, BDVA and GAIA-X, committees such as the Plattform Industrie 4.0, but also international standardization organizations such as IEC and ISO.

Coming back to the question "Can data spaces support sustainability in manufacturing?"

This example shows that there is a huge potential of data spaces to support sustainability in manufacturing and other domains.

At the same it shows what is needed to make data spaces functional and trustable

- A clear economic benefit and impact
- Mechanisms enabling a trustworthy sharing of the data
- Nobody can achieve this alone. A community is needed!



Siemens has developed an ecosystem-based approach for the exchange of emission data

Deployment of Artificial Intelligence is key to European competitiveness

HENNA VIRKKUNEN

MEP (EPP Group), Member of the ITRE Committee

Artificial Intelligence (AI) has enormous potential to improve our lives. Not only can AI help us to tackle climate change, improve our healthcare and combat pandemics, but it will also be the backbone of economic growth in the future. Large-scale deployment of AI by European companies will significantly increase productivity of the European economy on the macroeconomic level and encourage innovation in Europe. It will improve manufacturing processes and help oversee the resilience of supply chains. Thus, AI can be a true game changer for the competitiveness of European industries, and all this is reflected to our citizens as higher standards of living.

Maybe unsurprisingly, due to the massive opportunities artificial intelligence can offer to our societies and economies, all major world economies are competing over the leading position in the development and deployment of AI. Europe, however, has fallen far behind in the competition with the US and China – despite its long-standing tradition of being the home for science and the forerunner of development. Currently, we are not the leader in research, investment, nor in the development of artificial intelligence. As the winner of the global race over the development and deployment of AI will also be the one determining the social norms and rules in relation to its use, the EU is now speeding up its efforts to catch up by using the means that it is known for – setting standards by regulation. The Union's Artificial Intelligence Act is promoting human-centric and responsible use of AI with the view of setting regulatory standards for the deployment and development of AI also beyond European borders in a similar manner as with the General Data Protection Regulation.

This is, however, not enough alone. The way for the EU to become the global leader in artificial intelligence is to ensure a favorable environment for European small and medium-sized enterprises (SMEs) and start-ups to deploy artificial intelligence in their operations. SMEs represent the majority of companies in Europe, and therefore they are the backbone of the European economy. In order to become the global leader in artificial intelligence, the European Union needs to drastically improve three different areas with regard to AI: investment, skilled workforce and free circulation of data.

Under the current state of affairs, the EU accounts only for 7% annual equity investments in artificial intelligence and blockchain, whereas the equivalent number for the US and China together accounts for 80%. Investments are not only crucial only for development of AI, but also for its deployment. Large-scale integration of artificial intelligence into our economy necessitates modifications to our infrastructure, and companies are more likely to deploy, or build on, already existing AI tools instead of developing their own from scratch.

Secondly, our companies need skilled workforce in order to be able to deploy AI in their business. We need to ensure that our educational system answers to the needs of today's digitized society, and that the aging Europe attracts skilled workforce also from third countries. The need to invest in skills does not only apply to specialists, but to our society as a whole. One third of the persons working in Europe lack basic digital skills. The key to a successful and inclusive transformation of work is to ensure that people have basic know-how and digital skills, and that employees have the opportunity to update their personal competence throughout their career.

Thirdly, any AI system needs data to function. Therefore, we need to ensure that data is not concentrated only in the hands of the few biggest digital companies and that data is accessible for our companies within the Single Market. We also need smart use of data by fostering its reuse. These are issues that legislative proposals currently prepared in the EU, such as the Data Act and the Data Governance Act, aim to answer by removing barriers to access data and by increasing the amount of data available for re-use within the EU by allowing public sector data to be used for purposes different than the ones for which the data was originally collected.

All in all, Europe should strive for a harmonised and risk-based, modern regulatory environment for artificial intelligence that encourages innovation, while preventing unnecessary administrative barriers for SMEs and start-ups. Simultaneously, we need to ensure that the operating environment for our European companies as well as their employees is encouraging and enabling them to deploy AI in their businesses, and that companies have access to data relevant for their operations. In that way, we can have a flourishing data economy in Europe, that at the same time protects from the potential risks and harms as well as offers new opportunities and well-being to us Europeans.

Europe as a world leader in AI accepted by citizens and consumers

AXEL VOSS

Is a German Member of the European Parliament focussing on artificial intelligence legislation and other digital files. He is the EPP coordinator JURI Committee and Substitute Member LIBE committee. He follows the AI Act as EPP rapporteur in both committees.

Artificial intelligence (AI) is the groundbreaking technology of our time. Not only will it transform the way we work, travel and business - AI will accompany us in our personal and private lives such as in healthcare, e-governance and security. The presence of AI in our lives should not frighten us - rather it should encourage us. We must leverage on its potential and discuss how to mitigate the risks that accompany the technological transformation.

With the Artificial Intelligence Act (AI Act) currently under scrutiny in the European Parliament, the EU is now at a crossroad. It can shape legislation on how we want AI to transform our way of living and where we want innovation to take place. We must pave the way now to enable Europe to lead in this emerging technology while safeguarding fundamental rights and European values that we defend.

It is important to underline that even today's powerful data-driven algorithms can only solve tasks in domain-specific niches. In most applications, AI does not replace human work, but rather assists, through recommendations or taking over repetitive tasks. In that regard, the majority of AI applications are almost or even completely risk-free. Furthermore, AI does not 'understand' the task that is performed. It simply detect patterns in the data, extrapolate findings and apply them to new similar scenarios. Hence, the dystopian fantasy of computers developing their own will and taking over the wold is, to put it mildly, highly unlikely.

Nevertheless, even today's AI-based systems can cause harm if misused. Primary examples of such misuse are the deployment of AI to develop surveillance tools, social scoring or the spread of misinformation and propaganda. Furthermore, AI can make

discriminatory decisions if trained on data that has underlying biases. In such cases, regulatory action is of course required, while taking into account that no data-set can be completely bias-free.

On the other hand, AI has enabled key transformations in our society and will continue to revolutionise it for decades to come. Hence, the consequences for our competitiveness, our prosperity and our security should not be underestimated. For example, in healthcare, the rapid processing of data through AI can help make diagnoses faster and more targeted and adapt therapies and medicines to the patient, as well as relieving the burden on healthcare staff. In the area of sustainability, AI can help us optimise energy use, make transport systems more efficient and drive sustainable solutions in agriculture.

Currently, the EU has severely fallen behind in the global tech race. The EU lacks market power, investment, research and skills compared to the US and China and other global players. Only 8 of today's top 200 digital companies are domiciled in the EU. Moreover, the gaps are growing. The US and China invest up to 5 or 6 times more than the EU does in AI. Top European researchers are emigrating to the US and China. With risks, benefits and competition in mind, it needs to be the goal of the EU to be the shaping power in the use of AI, based on our values, fundamental rights and ethical principles, rather than always running one step behind other forces and only reacting to new developments. Otherwise, we will end up as the data colony of the US or China.

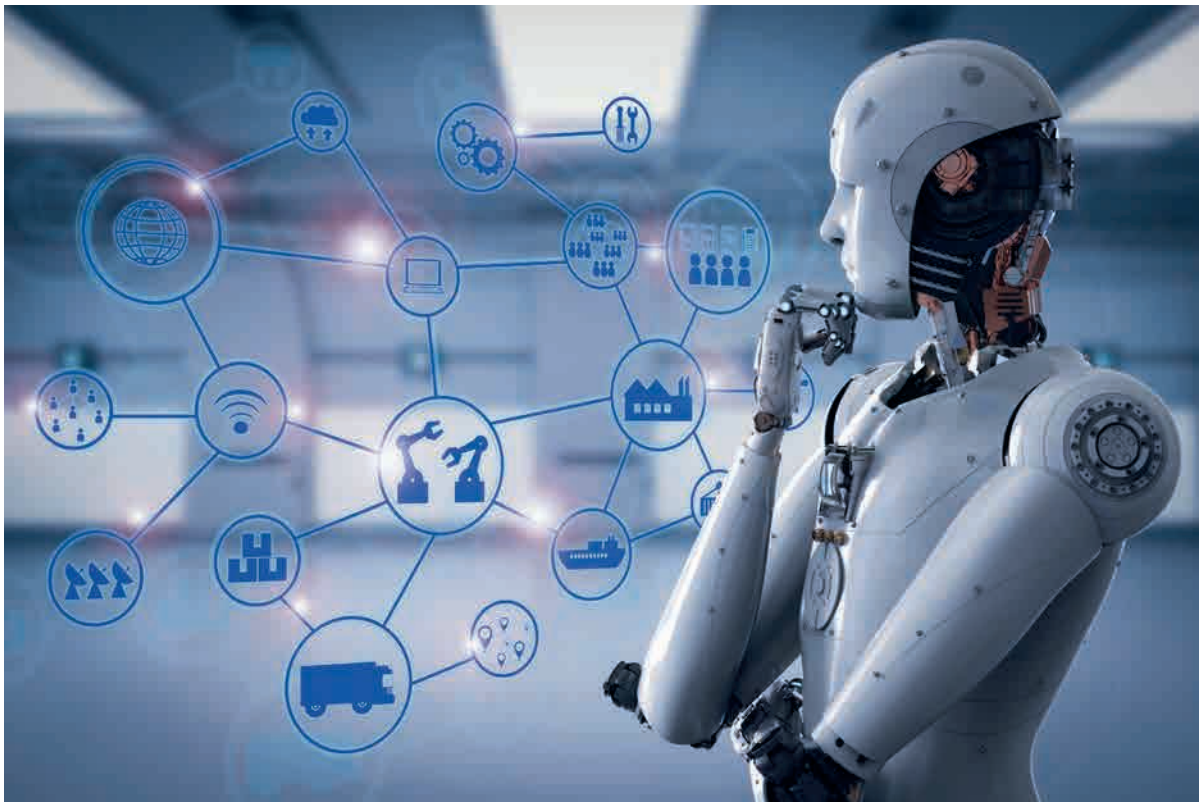
While the Commission's AI Act is a good starting point to regulate AI, the law nevertheless requires significant changes enabling it to cope with the complex and highly dynamic field of AI while ensuring leeway for innovation.

To strike that right balance between encouraging innovation and protecting our fundamental right, we must first create more legal certainty, harmonise rules across Europe and decrease bureaucracy. A risk-based regulatory approach can help reduce bureaucracy for businesses and SMEs while safeguarding prudence of AI algorithms deployed across the EU. In essence, the risk-based approach would only make high-risk AI applications subject to regulation while exempting the majority of risk-free applications. Furthermore, the AI Act must avoid overlaps with other regulation already in place.

Additionally, the AI Act should establish the concept of "Trustworthy AI", a European response to AI development, which is lawful, ethical and robust to cybersecurity and other risks. The European Standardisation Organisation and EU Commission should translate the above-mentioned principles and values into technical standards. This concept can increase trust in the new technology in the public sphere and function as a trademark in the global AI market, potentially giving the EU a competitive edge.

Furthermore, we should provide developers with regulatory sandbox environments in which they can experiment with AI algorithms under a less stringent regulatory environment. Such regulatory sandboxes will help spur innovation while protecting the public from unintentional harm that can result from experimenting with AI.

We must use our regulatory and market powers now to accelerate innovation in AI to make the EU a global leader in AI that shapes the international debate through setting standards. Only then will our continent be able to fully exploit the enormous potential of new AI technologies and use them to address topical challenges such as our energy dependence or climate change.



How do we ensure the **cybersecurity** of the **EU digital infrastructures** and **economy**?

JUHAN **LEPASSAAR**

Executive Director of ENISA

With the ongoing digitalisation of our society, the security of critical infrastructures that are connected to internet is now stirring the attention of all our EU economic sectors such as transport, energy, health, communications and public government services, etc.

As such infrastructures have become increasingly interdependent, ensuring their cybersecurity is now a key objective of the European Union (EU).

Although increased digitalisation improves the monitoring and delivery of services, it also comes with a significant risk of exposure to cyberattacks and cybersecurity incidents which can potentially jeopardise the security of supply chains and the privacy of consumers' data.

This is why the European Commission intends to strengthen the European resilience of such infrastructures against physical, cyber and hybrid threats in accordance with the EU Security Union Strategy presented in July 2020. The EU Agency for Cybersecurity, ENISA plays an important role in implementing the strategy and is utilising its mandate fully to do so. The revision of the Network and Information Services (NIS) Directive which provides a mandate for the newly formed Cyber Crises Liaison Organisation Network (CyCLONe) was timely given the geopolitical context following the invasion of Ukraine.

ENISA's mandate in relation to digital critical infrastructure security

The Cybersecurity Act (CSA) gave ENISA an extended mandate, which includes actions pertaining to the digital security goals to be reached in relation to critical infrastructures. ENISA engages with all the actors of the different sectors of the EU together with Member States and EU institutions and bodies to issue recommendations and ensure the highest level of trustworthiness in command, control and supervisory control systems used in all critical infrastructure networks.

Within this context, ENISA's role is to support the EU with these new endeavours. ENISA is doing so by providing support at technical, operational and policy levels to EU national authorities mandated to ensure both national and cross-border security of essential services.

ENISA supports operational cooperation at EU level

Given the nature of cross-border incidents, ENISA works to strengthen cooperation among Member States and EU institutions, bodies and agencies. This can be through operational cooperation such creating situation awareness jointly or through capacity building activities such as joint cyber exercises. ENISA acts therefore as a lead management coordinator between technical actors and political

decision-makers in the event of a large-scale cross-border cyber crisis.

ENISA also supports Member States with the organisation of cyber exercises such as Cyber Europe meant to test the cybersecurity levels, business continuity processes and crisis management capabilities of specific sectors. In 2022, the Cyber Europe exercise tested the resilience of the EU healthcare.

ENISA supports the development of EU certification schemes

ENISA stands as a central info hub for the European Commission contributing to and supporting the EU initiatives meant to implement the EU's Cybersecurity Strategy in the Digital Decade and providing support upon request.

An example of this commitment is the task given to us to draft cybersecurity certification schemes. Under its mandate, the European Union Agency for Cybersecurity has been assigned the responsibility to develop **cybersecurity certification candidate schemes**. The purpose of the EU Cybersecurity Certification Framework under the CSA is to establish and maintain the trust and security on cybersecurity products, services and processes. Drawing up cybersecurity certification schemes at EU level aims at providing criteria to carry out conformity assessments to establish the degree of adherence of products, services and processes against specific requirements. The first scheme covers the certification of ICT products, using the Common Criteria ISO/IEC 15408 and is the foundation of a European Cybersecurity certification framework with further schemes including on cloud services and 5G being prepared.

ENISA provides insights on Incident reporting and threat analysis

The Agency issues a yearly threat landscape report to identify trends. The ENISA Threat Landscape report is meant to give some essential insights into the evolution of threats. With more than 10 terabytes of data stolen monthly, ransomware remains the top threat alongside attacks against availability also called Distributed Denial of Service (DDoS) attacks. The analysis of threat actors and threat trends help support better preparedness across the EU and among relevant EU bodies and sectors.

With data on cyber incidents publicly available, ENISA collects and performs incident reporting analysis. Notification rules for cybersecurity incidents for operators of essential services in a wide range of critical sectors, such as energy, transport, finance and health were first introduced by the EU Directive on Security of Network and Information Systems (or NIS Directive) when it came into force in 2018 and will be extended further with the revision of the directive, known as NIS2.

ENISA supports the development and implementation of EU legislation

The NIS2 Directive adopted by the European Parliament and by the Council provides for stronger cybersecurity risk and incident management and will introduce mechanisms for effective cooperation among relevant authorities in each Member State. The new directive will also introduce reporting obligations across sectors. Cybersecurity provisions are included in a number of different legislative initiatives focused on specific sectors. This is the case for the Digital Operational Resilience Act (DORA), the Electronic Identification and trust services for electronic transactions in the internal market (eIDAS) and the European Electronic Communications Code (EECC). ENISA is also involved in the preparation of the new regulation on the cybersecurity of EUIBAs.

A major role of ENISA is to support the implementation of Union cybersecurity policy and law. The Agency will therefore continue to engage with Member States to identify best practices to help them navigate the different legislation and implement the revised Directive. ENISA is at the forefront of offering state-of-the-art advice and counsel to create a trusted and cyber secure future for all.

CISPE.cloud

Cloud Infrastructure Service Providers in Europe (CISPE) will be hosting its first annual Cloud Summit to tackle some of the critical issues impacting the industry.

CLOUD SUMMIT

An invigorating day of discussion with some of Brussel's key policymakers, cloud customers and industry leaders.

March 22, 2023
10:00 CET
The Warande, rue Zinner 1, 1000 Brussels

PANELS:

Can Europe Compete in the Cloud?
Thousands of organisations are shifting to the cloud. How can European cloud providers use this opportunity to provide new and innovative solutions, in a market that is increasingly dominated by only a handful of global players?

The Journey to the Cloud and What Success Looks Like for the Europe Data Economy
New rules on portability, privacy, electronic identities, and dataspaces provide important building blocks for the success of the European cloud and data economy. What are the practical steps underway to combine these into a uniquely European cloud?

Energy Efficiency and Sustainability of our Digital Infrastructures
Leading cloud providers and most data centre operators in Europe pledged to make their infrastructure climate neutral by 2030. Find out more about how the Climate Neutral Data Centre Pact is helping cloud operators achieve this goal.

CISPE's Women in Cloud and Digital Skills Initiative
Europe still lags in availability of digital skills and women remain underrepresented in cloud computing. How do we address the issues that are stifling progress?

Register at www.cispe.cloud/summit or scan the code below.