A STRONGER DIGITAL INDUSTRIAL EUROPE

Digital transformation as its FOCUS

DIGITALEUROPE

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FOREWORD

The European industry stands at a crossroads. We are global leaders in many sectors, and our continent is home to thousands of world-leading companies. Equally, the European Green Deal and the Commission's digital ambitions offer businesses and our society tremendous opportunities.

For 20 years DIGITALEUROPE has advocated for Europe as a united, ambitious, and outward-facing continent. We are proud of Europe's industrial past, and we wish to see a Europe that punches at our industrial weight, that extends our industrial capabilities into the digital era and that gives smaller companies the opportunity they need to grow both here and globally.

The Commission has set out a great vision of a Green Europe fit for the Digital Age. Now is the time!

We, as businesses, have a big role to play in working with European leaders to define a common Industrial Strategy – and to execute the plan. But we also need strong leadership from the highest political levels of the EU that can bring Member States along with us.

So, what should be done in the next five years?

Firstly, we need to bring together the different policies – regulation, investment, and trade facilitation, aligned in a single European industrial strategy. The clear aim should be to boost digital-driven competitiveness in sectors like manufacturing, transport, health, agriculture, construction, and public services.

Secondly, we need to put our money where our mouth is. The EU's spending priorities in the next long-term budget must mirror our digital and green ambitions. We know that digital companies grow on average two and a half times faster than non-digital companies. So, money driving digital competitiveness and adoption will be money well-spent. The EU budget is a powerful tool that EU leaders have in their armoury to boost innovation, competitiveness, and inclusion.

We need to increase investment in research and the deployment of technology. Areas with a high impact on growth are industrial IoT and data sharing, artificial intelligence, 5G, and digital infrastructure. In addition, digitally empowered citizens with the right skills will be well placed to create the innovative solutions of the future. The EU and the Member States should set an example by modernising, upgrading, and digitalising their public services, public safety organisations, defence, and security operations.

Thirdly, we need to review and harmonise the existing regulatory framework in the EU, ensuring that we keep high regulatory standards but also that any new and existing regulations enable industry to prosper and innovate. Now is the time to consolidate and reinforce Europe's position as an innovative, competitive, open economy that leads globally through highly digitalised industrial development.

Markus Borchert
NOKIA - DIGITALEUROPE President

Cecilia Bonefeld-Dahl
DIGITALEUROPE Director-General

For 20 years DIGITALEUROPE has advocated for Europe as a united, ambitious, and outward-facing continent. We are proud of Europe's industrial past, and we wish to see a Europe that punches at our industrial weight, that extends our industrial capabilities into the digital era and that gives smaller companies the opportunity they need to grow both here and globally.

Industrial strategy with digital transformation as its FOCUS

Europe can lead, but we need to do so based on things that we excel at and the values we believe in.

One year ago, DIGITALEUROPE launched its manifesto for a Stronger Digital Europe: Our Call to Action towards 2025.

Our vision is for a Europe where digital technologies, innovation, and artificial intelligence can provide Europe's people with competitive jobs, better health, and better public services.

A strong, unfragmented, DIGITAL Europe that takes leadership in creating digital Inclusion, Green growth, Innovation, Trust, Agile mission-based policy making that drives prosperity and creates benefits for the European society and leads globally in an open economy.

2020 will be a crucial year for Europe. To make this vision a reality, we need to act now. To achieve the ambitious goals we set in our manifesto, we need to put the right policies in place for our industry to succeed.

For a sustainable, prosperous and stronger DIGITAL Europe, a comprehensive European industrial strategy with digital transformation as its **FOCUS** is essential.

This document contains DIGITALEUROPE's recommendations for an EU Industrial Strategy defining ambitious industrial policy goals for the next five years.

We believe that five key areas require action by decisionmakers from industry as well as government leaders, and public sector institutions: ▸▸

Framework for a European digital transformation of industry

Open markets and fair global competition

Crucial aspects of digital transformation

Upscaling SMEs and upskilling the workforce

Sustainability goals to drive industrial leadership

Framework

for a European digital transformation of industry

The European Commission would need to shift its digital policy focus towards driving the digitalisation of industry. This means building upon Europe's strengths in areas like manufacturing, mobility, and health and areas of common good like the environment, digital skills, connectivity, and cross-border data spaces for public data. This is a crucial contribution to successfully addressing the demographic and environmental challenges of our time.

The digitalisation of our industry is a pre-condition to reach the Green Deal climate targets and enable sustainable manufacturing, transportation and ensure better use of energy and infrastructure.

This means that we need a consolidated European Industrial Strategy under a common plan. Research, investment, and innovation must go hand in hand. To do this, we need common metrics on how digital will enable decarbonisation and reduce energy consumption.

We also need to accelerate the development of Artificial Intelligence (AI) technologies.

This requires a targeted and ambitious Multiannual Financial Framework (MFF):

- On the investment side, it is vital that we safeguard the proposed funding for the Digital Europe programme, and if possible, increase it. This is essential for digital transformation and to boost the role of Digital Innovation Hubs (DIHs), making them more visible and accessible.
- Funding authorities should prioritise EU spending on digitally transforming programmes and initiatives. This includes money earmarked for other areas like transport, agriculture, and regional development.

Open

markets and fair global competition

Strategic coordination between industrial and trade policies is vital. Each policy action must take into account the reciprocal relationship between the two.

Europe needs to focus and build our capabilities in digital and in key sectors, to be able to act from a position of strength.

We can maintain our core values while at the same time boosting our competitive advantages through the development of emerging technologies.

We can support the industry by aligning digital standards and rules globally.

This also requires Europe to take the lead on World Trade Organization (WTO) reform, on new global digital trade rules and ensuring a level playing field. To do this, we should promote new instruments to encourage trading partners to open up their markets, such as the International Procurement Instrument.

Crucial
aspects of digital transformation

Europe's success will hinge on five essential elements of digital transformation:

Research
The EU must have the courage to commit at least 3% of its GDP to fund research and innovation, particularly to support digital technologies.

AI and Emerging Technologies
AI will never replace human beings' creativity and ability to make ethical judgements.

Overall, broad AI regulation would be difficult and could be limiting AI uptake. It is better to focus on limited, high-risk applications. We also need to tailor our approach depending on the sectors – many already adhere to heavy regulation requirements and adding new rules on top would be burdensome.

Any new development of AI regulation from Member States and the European Commission must involve both industry and Small and Medium-sized Enterprises (SMEs). The piloting phase of the AI High-Level Expert Group was a good example of 'sandboxing', i.e. developing and testing new policy requirements. These efforts should be given time to secure Member State buy-in.

AI research and companies developing and implementing AI solutions should be supported financially, e.g. in Horizon Europe, and especially the Digital Europe programme, and through other investment enhancing initiatives.
For SMEs in particular, the EU must provide guidance, tools, and resources to help them understand the benefits of AI as well as to navigate them through the applicable regulatory framework.

Europe should build on its strengths and reinforce the leadership role of the public sector. It is a huge area of the EU market and effective policy-making there can be an ideal way to fund and develop projects with up-and-coming AI start-ups, as well as showcase trustworthy AI.

In summary, the use of AI can bring industry to a new level in a range of different applications provided it is accepted as a tool to enhance and complement human activity and not perceived as a threat.

5G – Deploy a digital infrastructure at scale

A European Industrial Strategy should prioritise building 5G and high-capacity network coverage throughout Europe, along with a favourable regulatory environment for industry connectivity. The EU should:

- Implement an industry-driven approach for accelerated collaboration and open up opportunities to roll out 5G and next-generation networks and services.
- Prioritise long-term societal benefits deriving from spectrum auctions over immediate state revenues, notably by setting low reserve prices, providing certainty regarding licence duration, and encouraging broader rollout and coverage.
- Enable the densification of the network and new sites for 5G deployment, such as the use of public buildings, and providing the necessary fibre infrastructure. We should avoid excessive taxation and costly and lengthy permit processes.
- Promote an evidence-based approach in setting harmonised radio frequency exposure limits.

Cybersecurity in Europe

Europe can lead in this area if it promotes both an increased level of cybersecurity and boosts the competitiveness of its industry. To deliver on this two-fold objective:

- EU certification needs to remain market-led and based on existing international standards. The EU should raise security levels by "Europeanising" existing national certification schemes to ensure a harmonised market among Member States, before drafting new candidate schemes under the Cybersecurity Act (CSA).
- The EU must guarantee a coherent and harmonised legislative framework at EU level and avoid inconsistencies in EU legislation (e.g. risks of non-aligned requirements with cyber provisions included in vertical legislations in the New Legislative Framework (NLF).

Establish a European data economy

The EU needs a more strategic approach to enable stakeholders to gather, store, pool, share and analyse data securely. It is important to accelerate initiatives towards sector-specific cross-European data spaces to allow for better understanding and analysis of data for the benefit of European society and competitiveness of its industry.

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To support the implementation of the Public Sector Information (PSI) directive, Common European Public Data Spaces could be created for areas like public transportation, health, or air quality. Those data spaces could seed and boost new scalable industrial innovators and start-ups.

Upscaling

SMEs and Upskilling the workforce

SMEs are the backbone of the European economy, and their importance for jobs and growth in European regions cannot be underestimated. To enable SMEs to benefit from the opportunities of digitalisation fully, we must facilitate their participation in collaborative research programmes, and encourage exchanges between SMEs, academia, and larger companies. Digital Innovation Hubs (DIHs) must play a crucial role in this effort.

In addition, the European Commission should also encourage the Member States to develop tax policies such as deductions for IT investments and SMEs focused on tech. Developing tax incentives will promote economic growth and innovation in digital technologies.

The digital transformation of the European industry will require reskilling and upskilling European citizens. Enabling people to work in a new digital environment is a shared responsibility for all stakeholders.

To do it, we need to involve industry, trade unions, institutes, NGOs, governments from all Member States in developing and leveraging public funds.

The EU should invest in analyses at the European level to address the skills gap in each Member State. It should define solutions and acknowledge the link between digital competencies and emerging ''21st-century skills'', like interpersonal and cognitive skills. The EU also needs to develop data models where it can forecast new jobs and the skills that are required.

Digitalisation will impact all sectors – new jobs are being created, and new competencies are needed. This should be reflected in school and study curricula but also in the mechanisms of learning while working. Structures for cross-learning exercises and exchange of best practices need to be intensified and made easily accessible at a European scale.

Sustainability

goals to drive industrial leadership

A European Industrial Strategy should be intrinsically linked to the EU Green Deal.

Digitalisation has huge potential to transform our most energy-intensive sectors and transition to a low carbon circular economy. Authorities should recognise this potential and fully integrate digital technologies and policies into the EU's Green Deal initiatives.[1]

We need to better understand figures on carbon footprint and the savings potential of a digitalised industrial sector. The EU should, therefore, develop performance indicators to measure the decarbonisation and sustainability potential that will be enabled by digital technologies.

We should allocate specific EU funds towards the implementation of digital technologies aimed at decarbonisation and the circular economy.

[1] Includes the Carbon-Neutral 2050 strategy, the 'Climate Law', and Circular Economy Action Plan

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FRAMEWORK FOR A EUROPEAN DIGITAL TRANSFORMATION OF INDUSTRY

As long as markets are fragmented along national borders, European businesses are hampered in their potential to scale up and compete successfully in open global markets. A successful industrial policy strategy with digital transformation as its focus therefore begins with tackling fragmentation in the European market, to enable all industrial actors to uphold European excellence inside and outside the continent.

A strong European framework should concentrate on enhancing innovation capacities and investing in strategic value chains, networks, and digital ecosystems. Coordinating important actions and removing fragmentation in the Single Market is crucial for the European industry to expand on international markets as well.

The Digitising European Industry initiative (DEI)[2] and its related Digital Innovation Hubs[3], Horizon 2020 with its Industrial Leadership pillar[4], the concept of Strategic Value Chains for Europe[5] as well as the new Digital Europe programme[6] are all valid examples of the degree of EU's attention to applied industrial research, technology scale-up, and deployment.

Yet, today activities exist mostly still in silos: Cross-border collaboration is scarce, the understanding of industrial strategy diverges across EU countries, and measuring the impact of European initiatives on the ground remains equally challenging.

Therefore, in order to accelerate industry's digital transformation and enable its potential to scale up and compete, we call on European leaders and in particular the European Commission to:

- Task the digital industrial framework to advance regulatory harmonisation, standardisation and investment-creating policies across Member States. It must become a policy flagship at the highest echelons of government and be driven by the President of the European Commission. It must associate stakeholders from Europe and from all Members States and be much more integrated into EU policymaking.

- Transform the DEI into the main platform (top-down and bottom-up) to further develop an industrial strategy for Business to Business (B2B) digital transformation and drive the necessary legislative, standardisation, and funding initiatives to digitally transform the EU's industry. DIGITALEUROPE's diverse membership of key vertical sectors provides world-class examples of innovation collaboration delivering breakthrough technologies while pooling scarce IT resources.

- Ensure that Digital Innovation Hubs (DIHs) play a prominent role in advancing funding activities, especially considering their impact on innovation at regional level, where the benefits from technology adoption are first seen. We must define relevant key performance indicators (KPIs) for a new EU industrial strategy, in cooperation with European institutions, national authorities, and industrial stakeholders. These KPIs will be crucial to monitor and regularly assess the strategy's progress in boosting competitiveness, fostering sustainability, and addressing societal disparities in Europe.

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[2] More info here: European Commission, Digital Single Market, The Digitising European Industry initiative in a nutshell, 2018
[3] More info here: European Commission, Digital Single Market, Pan-European network of Digital Innovation Hubs (DIHs)
[4] More info here: European Commission, Horizon 2020, Leadership in Enabling and Industrial Technologies
[5] More info here: European Commission, Growth, A stronger and more competitive EU industry: President Juncker opens 2019 EU Industry Days
[6] More info here: European Commission, Digital Single Market, Digital Europe Programme: a proposed €9.2 Billion of funding for 2021-2027, 2019

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OPEN MARKETS AND FAIR GLOBAL COMPETITION

Credit: ESA

Industrial and trade policies go hand in hand. Strategic coordination of these two key policy areas is vital and entails that any policy action considers the reciprocal impact on the other. In a time where countries aim for technological leadership, European companies are facing strong global competition. Especially in the area of the digital economy, European policymakers should coordinate their policy goals, objectives, and principles of trade regulation closely with international partners. The EU's industrial policy should be helping the European industry to expand on international markets. The EU needs to prioritise actions aimed at levelling the global playing field. Where needed, reciprocity in market access should be enforced by various means at the EU's disposal.

It is also key to avoid a fragmented policy landscape for businesses. Therefore, the EU should strive to align with global standards and specifications, promote global rules and standards, and make sure it does not lag behind in the adoption of international standards. The current rise of protectionism should urge the EU to continue taking international leadership and defend the rules-based multilateral trade system.

International trade of digital technologies can provide the global community with sustainable jobs, better health, better public services, and effective solutions to tackle climate change. We encourage the EU to develop an EU industrial strategy that is well-coordinated with a comprehensive and open EU trade strategy.

This will allow our industrial players to reassert their leadership globally and position our framework of industrial rules as a B2B standard setter. Europe is a relentless defender of open, rules-based, and fair trade worldwide.

To support European industry on global markets with a strategic economic diplomacy, we call for European leaders to:

- Continue to push for a realistic and meaningful reform of the WTO to stay relevant and to maintain the rules-based multilateral approach to trade. This requires updating the rulebook to address trade-distorting practices, which lead to an uneven playing field, unfair competition, and increasing challenges for European industry.
- Use its improved trade defence instruments (TDI) in a qualitative way, after careful consideration of possible harmful side-effects on other sectors, and always in line with WTO compliance, to enforce its rights.
- Follow a more strategic and coordinated approach in the EU's external relations (encompassing development policy and neighbourhood policy) to promote European economic interests abroad. Europe should ensure a level playing field and promote new diplomatic instruments, such as the International Procurement Instrument, to create leverage on trading partners to open up their markets.

- Invest in the modernisation of the EU's industrial base and ensure its competitiveness. The FDI screening tool is a powerful tool to respond to national security concerns. However, to enhance legal certainty for investors and to avoid the misuse of the term 'national security,' it should always remain interpreted within the scope of the Directive (EU) 2019/452.[7]

- Seek alliances with like-minded partners at the WTO, through Free Trade Agreements (FTAs) and Investment Protection Agreements (IPAs). Through these agreements Europe can remove barriers, create transparency, require reciprocity, and support the creation of a global level playing field. It is crucial that the EU's top priority remains tackling these trade barriers.

- Work towards the successful conclusion of the agreement on e-commerce at the WTO and make permanent the moratorium removing customs duties on electronic transmissions. Digital technologies and e-commerce are vital to ensure (i) the successful digital transformation of businesses and business models of European companies; (ii) the growth of the global economy, creation of jobs, and the ability of companies to innovate in Europe; and (iii) the future competitiveness of Europe in the world market.

- Ensure the external dimension of EU industrial policy builds on the EU Single Market in supporting Europe's strategic and competitive advantages where it has the opportunity to lead globally (i.e. digital and sustainable technologies, industrial AI and Internet of Things), while remaining aligned with its core values.

- Advocate a business-friendly approach to taxation policy at the global level. Taxation should enhance, not hinder, digitalisation and consider its benefits for more efficient and sustainable businesses and societies. A specific tax model targeting digitalisation and covering just the EU would lead to costly tax disputes, double taxation, and tax increases, harming not only European companies, but also the EU.

[7] Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019 establishing a framework for the screening of foreign direct investments into the Union

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CRUCIAL ASPECTS OF DIGITAL TRANSFORMATION

The EU needs ambitious policy measures as other countries are vying for industrial leadership worldwide. Upgrading capabilities in Europe in critical technologies, services, and platforms is therefore an important objective for decision-makers. Fostering this objective requires Europe to concentrate on enhancing its innovation capacities and investing in strategic value chains, networks, and digital ecosystems.

Europe will only be able to boost its digital and industrial capabilities if digital or technological sovereignty is understood as a concept that enables Europe to remain at the forefront of digitalisation without eroding trust in market openness and access, and freedom of choice. Digital sovereignty must be built upon a positive and outward looking projection of European values and industrial strengths.

To become a competitive worldwide hub for innovative technologies and services, European policies should take the innovation principle to a whole new level through specific measures focusing on the key levers for a successful B2B digital transformation: the protection of European assets and people through cybersecurity, the need for world-leading infrastructure through 5G, as well as the development of the largest B2B digital single market globally through a comprehensive AI and data strategy.

The integrated European framework should look at combining these key levers with an adequate policy framework addressing regulatory, standardisation, and financing issues at stake with the main goals to:

- Strengthen cybersecurity in Europe
- Deploy a digital infrastructure at scale
- Embrace AI's potential
- Establish a European data economy

Strengthen cybersecurity in Europe

Cybersecurity is now understood to be a strategic asset for both corporations and governments. It is fair to say that the wellbeing of entire economies and societies depends on them. At the same time, cybersecurity is a moving target and requires constant adjustment and collaboration to identify and remedy risks, particularly as the attack surface expands with the growth of connected products.

Europe has responded to this challenge with a comprehensive strategy to improve the overall level of cybersecurity in the EU, a key part of which is the Cybersecurity Act giving the European Union Agency for Network and Information Security (ENISA) a permanent enhanced mandate, and setting up a framework for the development of European certification schemes. We want this framework to be successful, which critically depends on the schemes' ability to generate uptake in the market, keep consistency with global standards, and build on existing international schemes. The success of this initiative will also rest on its ability to keep up with the various state of the art technologies and sectors that could be involved.

The future EU funding framework (post 2020) has placed cybersecurity high on the agenda and it shall look at ways to support the deployment of a cybersecurity industry in Europe that will bring solutions to players of all sizes.

To further strengthen cybersecurity in Europe, we call on European leaders to:

- Align security certification schemes to existing, globally recognised, international standards in relation to the technical requirements and evaluation procedures. This is essential for the success of the Cybersecurity Act. It is equally important that these schemes do not duplicate or contradict already existing and recognised standards.
- Ensure regulatory coherence, avoiding different Member State rules, overlaps or inconsistencies in the European legislation. In the context of the New Legislative Framework (NLF), if cybersecurity provisions were to be introduced, these should only address minimum base-layer for security of devices (mostly safety-related) common to vertical Directives and align with international cybersecurity standards that should be available before the entry into force of the legislation.

Deploy digital infrastructure at scale

A new industrial policy should prioritise the deployment of 5G and high-capacity network coverage throughout Europe, along with a regulatory environment that recognises the B2B aspects of connectivity for industries as well as new computing models such as edge computing and hybrid multi-cloud hybrids key to the digital transformation.

5G, in combination with other access technologies, meets the requirements of both consumers and industries with scale. Additionally, 5G's properties ensure a high level of network resilience that is required to operate critical applications (e.g. industrial operations and public safety).

Focused infrastructure investment to bring additional value for enterprises is key to strengthening European industry's innovation and competitiveness.

Such investment also represents an opportunity for Europe's software and application industry to catch up with competition in other regions.

Today, the European telecommunications market is highly fragmented. A 2019 study put the number of mobile network operators across Europe at 40. Many of these actors operate in just one or two countries.[8] By contrast, the US has just four country-wide operators and China has three.
Europe is also beset by a patchwork of different national rollout plans and varying terms and conditions for spectrum licence renewals. All this creates hurdles for investment in new network technology. Per capita, investment across Europe is lower than in the US.[9] Fragmentation makes business planning, including in the long term, more difficult and uncertain.

[8] Review of Industrial Organization, The European Framework for Regulating Telecommunications: A 25-year Appraisal, 2019
[9] Financial Times, 5G: Can Europe match the US and China on mobile networks?, 2019

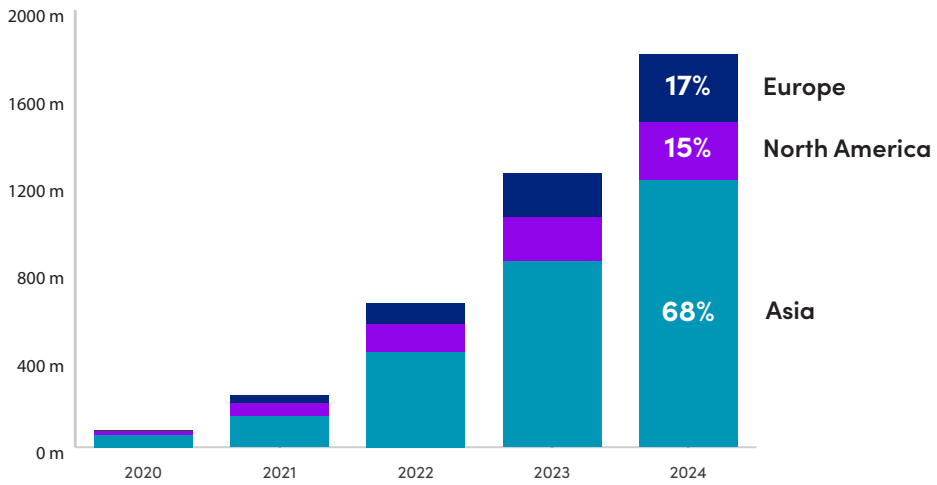
To maximise returns from 5G and industry innovations, and to deploy a digital infrastructure at scale, we call on European leaders to:

- Harmonise a pan-European business environment to promote uptake and adoption.
- Promote industry's innovation and avoid regulations that would hinder this, e.g. applying consumer regulations to industries such as net neutrality with respect to network slicing, and avoid subsidising technologies that create uneconomical duplications of networks.
- Implement an industry-driven approach for opening up opportunities to roll out 5G and next-generation networks. Government intervention and policy should therefore aim to support such deployment, for example by stimulating demand for new high-speed and 5G services.

  Government intervention should be kept to a minimum as an industry-driven approach has proven to be better at opening up new opportunities to roll out next-generation networks.
- Prioritise long-term societal benefits in spectrum policies over immediate state revenues, notably by setting low reserve prices, providing certainty regarding licence duration and encouraging broader rollout and coverage. Regulators should adopt conditions that maximise spectrum usage, for example by encouraging licensed spectrum sharing or enforcing the lease of unused spectrum. Together, these measures will incentivise the rollout of critical infrastructure such as 5G.
- Enable densification and new sites for 5G rollout. The use of public buildings with reasonable site lease conditions would support that. Regulators should mitigate barriers such as non-harmonised regulations on radio frequency exposure, lack of fibre infrastructure, taxation, and costly and lengthy permit processes.
- Promote an evidence-based approach in setting harmonised radio frequency exposure limits.

By 2024, Europe is expected to have over 300 million 5G connections

Forecast number of mobile 5G subscriptions by region (in millions) [10]



[10] Statista, Forecast number of mobile 5G subscriptions worldwide by region from 2019 to 2024, 2019

Empower industry with AI

Artificial intelligence will be a defining technology for the industrial sector in Europe. The EU's society, economy and environment stand to benefit immensely from efficiency gains, innovation, new processes, and developments based on big data analytics, machine, and deep learning.

By digitising aspects such as supply chain analysis and production process monitoring, AI can dramatically boost competitiveness. It is, indeed, also a formidable tool in the quest for a more sustainable society. The Commission's Communication on the European Green Deal mentioned that 'digitalisation also presents new opportunities for distance monitoring of air and water pollution or monitoring and optimising how energy and natural resources are used.' The European industry can flourish by embracing AI technology towards optimising such processes, thereby reducing waste production and substantially improving production yields.

However, these potential benefits can only be realised if AI development and deployment is rooted in European values and principles. Protection of fundamental rights is an essential prerequisite for the uptake of trustworthy AI.

That is why strong action and leadership is required from the EU to enable the positive effects of AI in industry and B2B services, boosting Europe's global competitiveness as well as ensuring that citizens truly share in the benefits and gains of this technological shift.

As AI technologies are very versatile, and their applications consequently incredibly broad, the task before EU decision-makers and Member States is similarly complex. Legislation and regulation in this area cannot happen in a vacuum, nor should it be 'business as usual'. More flexible and inclusive methods of policymaking are required.

DIGITALEUROPE therefore encourages, as an initial step, a deep analysis of the impact of AI and new emerging technologies on the industrial and B2B sector, before proposing any possible binding legislation.

This should then be built upon by regulatory sandbox exercises, wherein new technology can be deployed on a limited scale. For example, trialling a specific AI application area within a vertical sector, in order to assess strengths and weaknesses of the existing regulatory framework.

Of course, these policy measures need to be paired with a European investment strategy into AI, especially towards the application of AI for industry verticals. Synergies can only be unlocked through coordination between all stakeholders and across borders.

To embrace AI's full potential in the industrial sector, we advocate for:

- A deep analysis of AI in industry and B2B to fully understand the implications before proposing any possible binding legislation.
- Increasing investments for the application of AI for industry verticals.
- A more harmonised policy approach, aimed at shaping legal clarity and encouraging innovation, such as through regulatory sandboxing, will help boosting investment and uptake in AI.
- Enhanced cooperation between industry and regulators will help to build this process with the participation of all stakeholders.
- EU Member States to coordinate their actions and investment plans to optimise the allocation of resources to find synergies across national borders as well as across industries and sectors.
- Encourage public sector to be leaders on uptake and deployment of trustworthy AI, as defined in the work of the AI High-Level Expert Group's Ethics Guidelines.

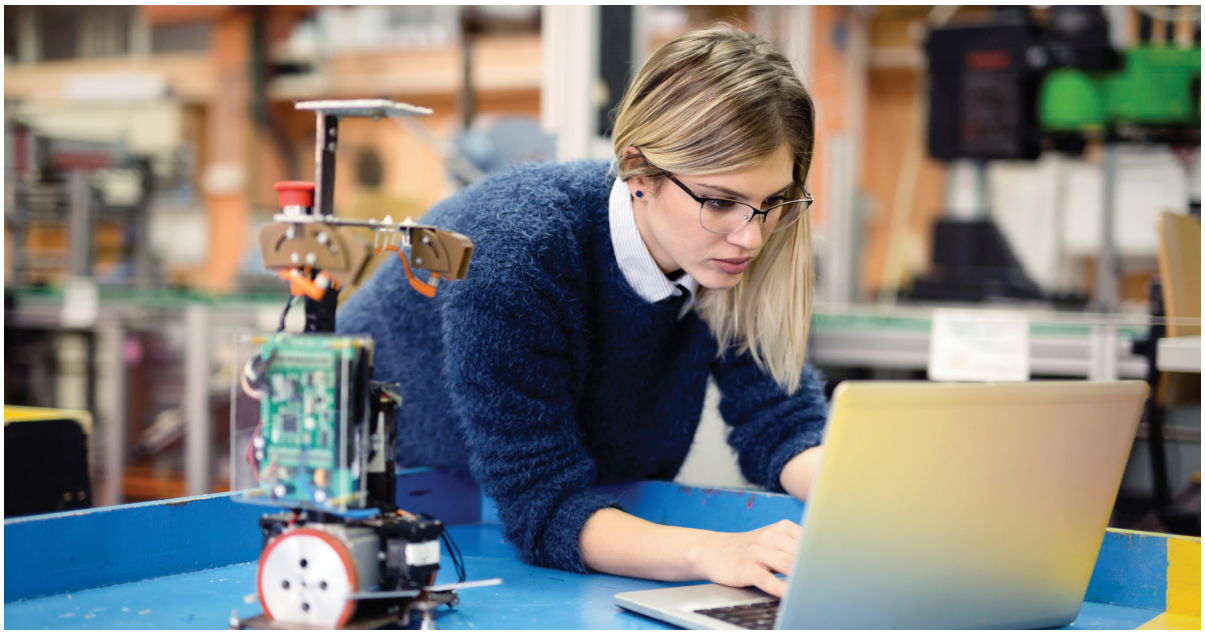
Establish a European data economy

Anyone seeking to develop or deploy AI or machine learning will need access to large amounts of data, in quantities that go well beyond the data controlled by one entity. The continued efforts by the European Commission to ensure data flows in the EU should remain a priority. GDP gains from the removal of existing data localisation measures are estimated to be up to €8 billion per year (up to 0.06% of GDP),[11] which is on par with the gains of recent free trade agreements (FTAs) concluded by the EU.

For the European economy to continue to thrive, it is essential that European companies also have access to data from their operations and clients in third countries. Therefore, we encourage the European Commission to introduce chapters on data flows in all trade agreements and continue working on developing adequacy decisions with trade partners, without undermining applicable General Data Protection Regulation (GDPR) provisions.

European data spaces can play a strong role in developing industrial data platforms, but further work is needed to define standards and incentives to encourage both the private and public sectors to provide and share valuable high-quality datasets. In any case, the development of such data space schemes should be based on a robust, secure, and market-friendly governance framework ensuring voluntary participation to these initiatives.

Organisations will need to develop ways to share or access data held by other entities, for instance to train AI models under development. Currently, however, several headwinds exist (both perceived and actual) to making data accessible across organisations, such as privacy legislation, security concerns, and intellectual property rights. Access to data is critical for anyone trying to develop or deploy AI in a trustworthy and useful way. The amount of data needed to make AI work well is much greater than any company can collect and provide so we should aim to develop responsible data sharing to enable AI capabilities.



[11] ECIPE 2016, Policy Brief "Unleashing Internal Data Flows in the EU: An Economic Assessment of Data Localisation Measures in the EU Member States"

To establish a European data economy and leverage the full potential of digital technologies such as AI, we call on European leaders to:

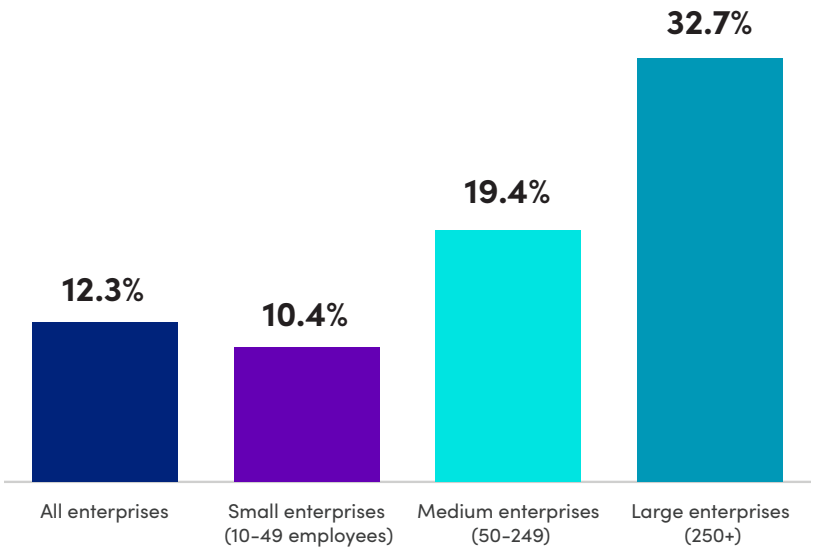
- Consider developing a strategy for the growth of quality data. Incentives, funding, and investments to generate valuable data should be incorporated into the DNA of policymaking. For example, the use of sensors in city lighting or in buildings would allow to collect real time data that could be used for countless different applications.

- Engage in a dialogue with industry on a soft approach (i.e. standards, industry agreements, EU model clauses, etc.) that recognises the differences sector by sector and accelerate the creation of sector-specific cross-European data spaces. There also needs to be a better acknowledgement of the role of interoperability and data portability as technically there are limitations in moving data between platforms. There are examples of leadership in industrial data sharing.[12]

- Simplify current and future legislation to help EU companies to stay competitive on a global level. For example, boosting investment will help businesses operating in Europe to migrate to the cloud and adopt data analytics, which are the digital foundations of the data economy. Only 12% of EU enterprises today use big data.[13]

In the EU, only one enterprise in ten uses big data

% of enterprises analysing big data from any data source[14]



[12] Technology Industries of Finland (TIF), a DIGITALEUROPE member, has published model clauses for the sharing of industrial data. This project was launched since TIF and its members realised that deployment of data is hampered by a lack of established legal models. For more info: TIF, Model terms of the Technology industries for data sharing, 2019

[13] Eurostat, Cloud computing services used by more than one out of four enterprises in the EU, 2018

[14] Eurostat, Enterprises analysisng big data from an data source by enterprise size, 2018

4

UPSCALING SMES

Credit: ESA

All too often fast-growing European businesses leave the continent in search of further growth that Europe is not able to offer. No EU industrial policy can succeed without specific investments and measures for the digitalisation of SMEs. We need a solid EU strategy to harness the potential of platforms and data for small business growth in the digital age.

Digital technologies foster the convergence of Operational Technology (OT) and Information Technology (IT), making the traditional distinction between goods and services increasingly obsolete. As a result, businesses are shifting from providing simple products to offering integrated value solutions. Linear supply chains, typical of the industrial world, are being transformed into value networks where industrial businesses team up and co-develop technology solutions that offer value to the customer. By connecting market actors and matching vendors and customers, industrial platforms are helping to spur this co-creation process. For SMEs across Europe, this paradigm shift presents opportunities as well as challenges, mainly because their role in the production process will change in a dramatic fashion.

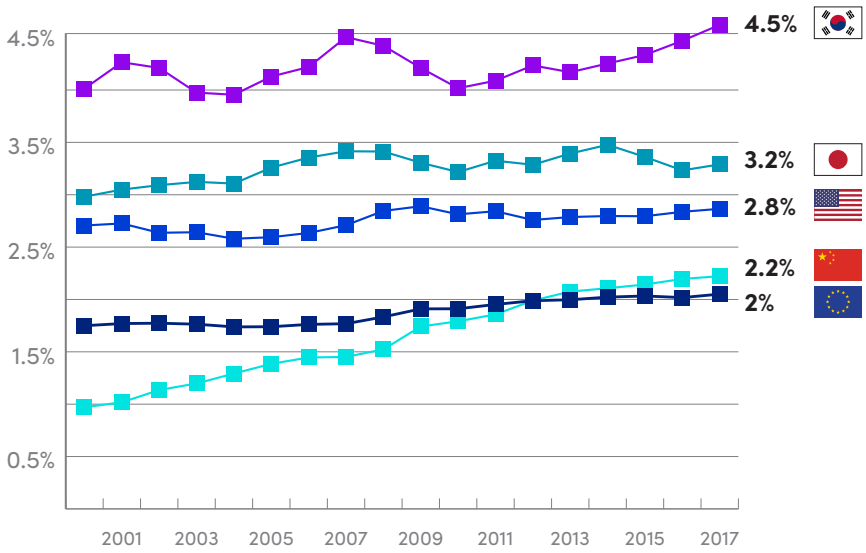
To grow in the single market and benefit from digitalisation, SMEs will need to expand their product portfolio to new digital-driven products and services quickly. Meanwhile, they will also have to rapidly digitise their internal industrial operations to be ahead of the global Industry 4.0 curve. In a nutshell, they will need to turn into both users and developers of digital tools.

Collaboration between established companies and start-ups, scale-ups, and small businesses is increasing. There are mutual benefits in this relationship. Large corporates need speed in their innovation process that agile SMEs can provide them. Small businesses, in turn, grow thanks to the resources and research infrastructure shared by large actors.

All this calls for ambitious and well-crafted EU investment policies. Innovation is the most effective way to increase industrial competitiveness. Public Research & Development (R&D) spending brings economic benefits and advances public policy goals. Yet, the EU is only spending 2% of its GDP on public R&D. By contrast, the United States and Japan hover around 3%. Boosting public R&D expenditure is key for the EU to catch up with competitors and stimulate private sector investments in Europe. The EU must commit at least 3% of its GDP to fund research and innovation, with a strong focus on digital technologies.

The EU invests less than 2% of its GDP in Research & Development (R&D)
This is lower than most other major countries

Research and development expenditure (% of GDP)[15]



To successfully bring SMEs into these new value networks and to enable European businesses to scale up, we call for:

- Public R&D funding from Digital Europe, Horizon Europe, and other future programmes to be designed in such a way that it reinforces the capacities in key digital technology areas through large-scale deployment and by fostering the uptake of innovative solutions jointly developed by research partners from academia, Research & Technology Organisations (RTOs), small businesses, and established companies. The European Commission recognises only 1% of the Horizon 2020's budget is dedicated to knowledge and tech-transfer activities.[16] Its successor must change course and prioritise these commercialisation goals.
- Bolstering EU funding for competences centres that would make the path to SME digitalisation less tortuous[17]. Digital Innovation Hubs (DIH), pilot lines, test and demonstration facilities and Key Enabling Technology (KET) Hubs are all ecosystems where industrial SMEs can test data- and platform-driven solutions as well as digitally upgraded equipment in a quasi-zero risk environment. They also offer training opportunity to align workforce with the new Industry 4.0 skills requirements. Competence centres need to be inspired by existing structures that look at SME digitalisation with a flexible work programme and with an agile contractual framework.

[15] OECD, Gross domestic spending on R&D
[16] European Political Strategy Centre, EU Industrial policy after Siemens-Alstom, 2019
[17] Digitising production processes and infrastructure can be an onerous task for resource-limited SMEs. Investments on upgrading equipment and workforce skills do not necessarily promise immediate rewards. A European Commission's survey showed only 8% of technology adopters have seen a decrease in their operational costs, while 36% reported an increase. The big benefits of digital technology tend to rather materialise in the medium-term and long-term, once new business cases gain traction.

- Fast action to accelerate connecting existing structures to maximise the impact of earmarked funding. The European Strategy Forum on Research Infrastructures (ESFRI) should guide this process in concert with the Digitising European Industry initiative.
- Development of a real SME strategy under the new EU industrial policy that guides small businesses into new digital value ecosystems. It will be successful if every EU industrial business, no matter the size, will have the opportunity to develop a data- and platform- driven strategy that responds to today's B2B digital needs.
- The European Commission to encourage Member States to develop further tax policies such as deductions for IT investments and SMEs focused on technology. Developing tax incentives will promote economic growth and innovation in digital technologies.
- The EU to bolster its participation, use and identification of open standards and technical specifications being developed by international consortia[18] and replicate and align this IT sector led interoperability workstream into other verticals, thereby reducing barriers to entry, promoting innovation, and optimising resources.

[18] For example, OASIS, W3C, IETF etc which are recognised in Regulation (EU) 1025/2012

5

UPSKILLING AND RESKILLING AGENDA

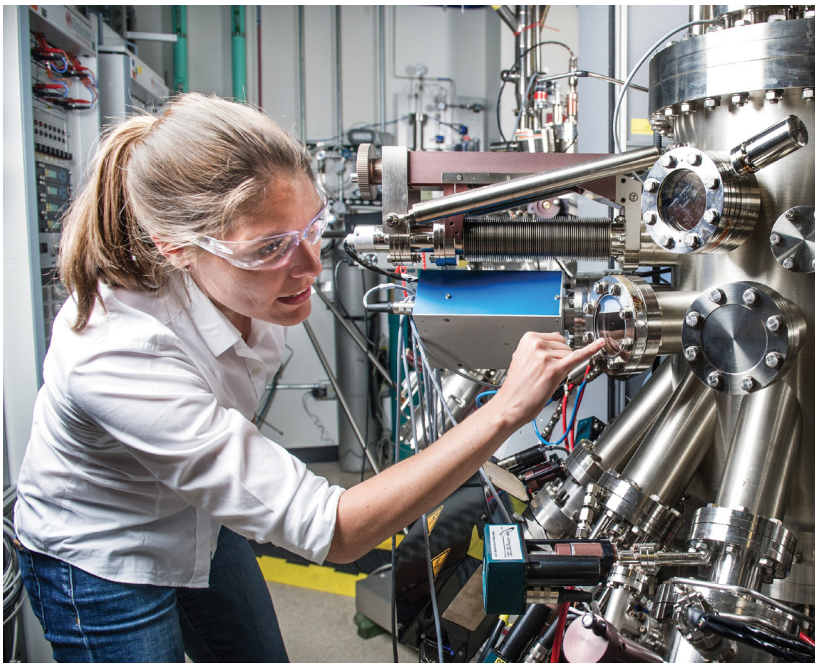
Ensuring the EU's workforce has the right skills for the digital age is a complex and difficult issue for Europe to solve but it is the key to its competitiveness and for companies to scale up. The digital transformation of the European industry will require reskilling and upskilling of the workforce.

Robots and automation cannot function without human involvement and oversight. This will require accelerating an action plan involving industry, trade unions, institutes, NGOs, governments from all member states to be involved in developing and leveraging public funds to reskill the workforce and ensure workers are not excluded as the industry transforms, achieving full employment.

A workforce with digital skills is mission critical for the EU's growth and to mitigate any impact on job losses caused by the digital transformation. Importantly, aligning workers' skills with the digital age is also about leveraging the enormous opportunities of technology. It will breed new ways of thinking in the workplace and thus bring new ideas into the market and society. As the world becomes digitalised, people must be able to transition smoothly from one job to another.

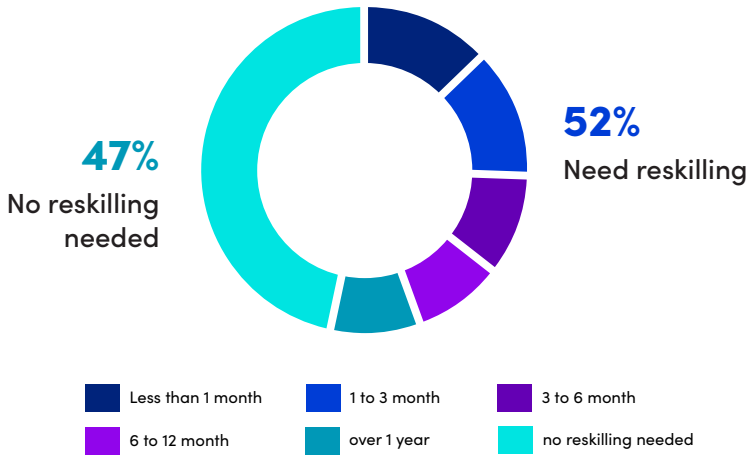
The EU and governments should collaborate with industry to deliver an assessment of the skills gap in each Member State and define solutions. AI should be regarded as a formidable tool to help with that. Examples of its benefits are already emerging. In Belgium[19] for example, industry and employment agencies teamed up to identify skills trends in the future of the country's labour market. In a first-of-its-kind exercise, they relied on AI's abilities to predict the trajectory of skills development until 2030.

The results were striking. Among others, the algorithm predicted that 4.500.000 employees in Belgium will have to update and improve their digital and related skills. The shortages and excesses in competences it predicted will inform decision-making on education and training and assist businesses in retuning their Human Resources (HR) strategies.



[19] Be the Change campaign, Agoria

By 2022, more than half of the European working population will require significant re- and upskilling[20]



Besides the necessary initiatives outlined above, specific emphasis is to be laid on science, technology, engineering, and mathematics (STEM) education in predominately secondary schools. Tellingly, in 2017 almost half of the EU population had an insufficient level of digital skills.[21] It is important to note that there are already many initiatives and networks in place that address STEM education and this is a high asset for the continuation of the effort. It will be crucial to streamline activities on the national and European levels and increasingly bring the regional and municipal policymakers to the core of the discussion.

To ensure that the EU's workforce has the right skills for the digital age, we call on European leaders to:

- Invest in analyses at the European level on the skills gap in each Member State to provide Member States with a greater insight into future skills needs. This would give the EU a better picture of possible trends in cross-border labour mobility. Better crafted EU and national policies on upskilling and reskilling workforce would ensue. They should acknowledge the link between digital competences and emerging '21st-century skills' such as interpersonal and cognitive skills.
- Enhance inclusion of STEM in school curricula and ensure it is taught in a holistic and integrative manner between the different subjects. Existing best practices should be shared, and teachers should be included much more in the development and identification of new skills relevant for the digital age. On a European scale, schools should be provided with relevant educational equipment which will enable students to experiment and make their own active experiences with translating analogue data into digital applications. Many DIGITALEUROPE members offer a range of digital skills programs. Governments should explore the involvement of company experts in schools and possible tax-deductible allocation for mentorship programs to the teaching staff.

[20] World Economic Forum, Future of Jobs Report, 2018
[21] Eurostat, Digital Skills, Data for the year 2017. Fortune 100, database

6

SUSTAINABILITY GOALS TO DRIVE INDUSTRIAL LEADERSHIP

The European Green Deal is, rightly so, one of Europe's top priorities. Climate change, and its related adverse economic, societal, and ecological risks, is the biggest challenge of our time and it requires a thorough approach that must be jointly addressed by the EU and industry. Building a circular economy is a further top priority which has the potential to make large contributions to the EU decarbonisation goals. It is essential to find sustainable and innovative ways for both society and business to move towards a low carbon circular economy and ensure sustainable growth.

Industry's digital transformation is offering new prospects to unlock innovation, provide new opportunities to workers, decarbonise, and generally do more with less. It is essential to integrate a European industrial strategy into the European Green Deal and make sure digital plays a key role. The sustainability goals from the Green Deal need to align with and further build on the industrial policy strategy objectives to drive industrial leadership.

Digital technologies are already used in energy end-use sectors, with the deployment of potentially transformative technologies in applications such as energy networks, water plants, and buildings. But it needs to go even further. Typically, the combination of hardware and software technologies in buildings (building management systems & software) could generate up to 50% energy savings in a smart building, with a return on investment between 3 to 5 years.[22]

In industrial sectors, digital technologies are offering unprecedented opportunities for increased energy efficiency savings while empowering users to manage and optimise their assets and processes. It is estimated that digital technologies have the potential to save almost 10 times more emissions than they produce by 2030.[23]

Ensuring a sustainable digitalisation is essential. It is important to note that the carbon footprint of Information and Communications Technology (ICT) products has largely improved over the past several years thanks to a combination of regulatory initiatives and industry efforts. Typically, the industry has invested a lot to improve the efficiency and green fuel alternative of data centres. That partly explains why the total energy consumption of ICTs remains close to 3% despite the ever-increasing number of digital technologies on the market.[24]

In addition to decarbonisation, big data analytics will drive digitalisation and create digital solutions that can contribute to the transition towards a more sustainable and circular economy. Digital manufacturing enables decarbonisation and material efficiency in key sectors of the EU economy, thereby enabling the European manufacturing sector to reinforce its leadership position. Digital solutions contribute to a lower carbon footprint, reduced use of natural resources and materials, sustainability of the manufacturing life cycle (including in the supply chain), extension of product life cycle etc.

[22] American Council for an Energy-Efficient Economy, Smart Buildings: Using Smart Technology to Save Energy in Existing Buildings, 2017
[23] GeSI, #SMARTer2030 ICT Solutions for 21st Century Challenges, 2015
[24] Gesi, #SMARTer2030 ICT Solutions for 21st Century Challenges, 2015

The European manufacturing sector can strengthen its leading role by combining digital technologies and the circular economy technologies. For example, digital twins in manufacturing and production planning in the B2B space can ensure process and product sustainability, by tracking the lifecycle of the product through all phases, from design to end-of-life.

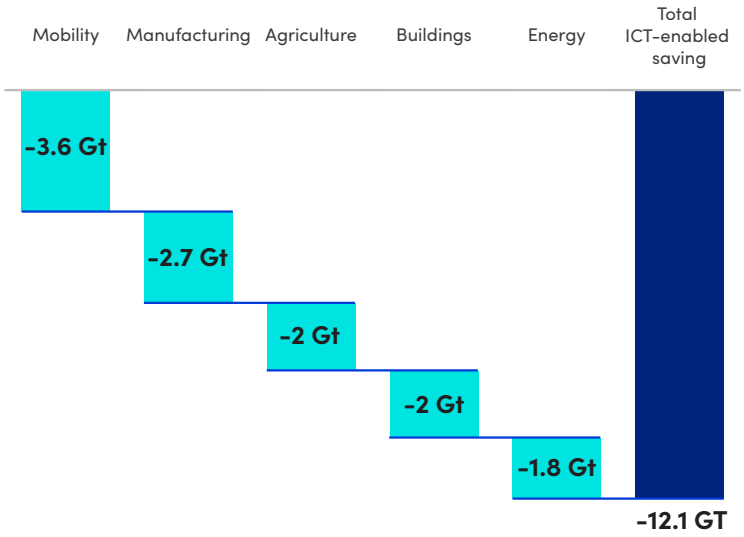
To align sustainability goals with industrial policy strategy and to drive industrial leadership, we need policymakers to put together the right framework recognising the full potential that the digitalisation and the fourth industrial revolution have in delivering a low carbon circular economy. We therefore recommend the following to policymakers:

- Develop European performance indicators to measure the decarbonisation and sustainable achievement enabled by digital technologies, particularly linked to UN Sustainable Development Goals (such as for industry 4.0).
- Adopt a digital manufacturing strategy prioritising sustainability and decarbonisation in industrial sectors of the EU economy.
- Fully include digital technologies in the EU's 2050 low carbon strategy and new circular economy action plan.
- Promote and further build on existing initiatives such as the Code of Conduct for Data Centres (EU initiative[25] aiming to improve the energy efficiency of data centres).
- Ensure environment and climate rationales are being included in all impact assessments of future digital regulation promoting the enabling power of technologies and vice versa.
- Guarantee all regulatory initiatives adopt the innovation principle and are strongly coherent with broader EU's objectives.
- Accelerate research and design of less carbon-intensive materials and adopt measures to support the development of markets for secondary raw materials.
- Encourage B2B actors to use digital tools to capture environmental information and increase transparency as well as ensure standardisation is used to develop measurement methods for circular economy concepts. An approach based on standards is best positioned to reach these objectives.

[25] More info here: Code of Conduct for Energy Efficiency in Data Centres, EU Science Hub

Digital technologies have the potential to enable a 20% reduction of global CO_2 emissions by 2030

Potential Gt of CO_2 abatement by sector 2015-2023[26]



[26] GeSi SMARTer 2030, 2015. Various studies have been conducted that come to similar conclusions. See Malmodin & Bergmark, Exploring the effect of ICT solutions on GHG emmissions in 2030, 2015.

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DIGITALEUROPE represents the digital technology industry in Europe. Our members include some of the world's largest IT, telecoms and consumer electronics companies and national associations from every part of Europe. DIGITALEUROPE wants European businesses and citizens to benefit fully from digital technologies and for Europe to grow, attract, and sustain the world's best digital technology companies. DIGITALEUROPE ensures industry participation in the development and implementation of EU policies.

DIGITALEUROPE's members include in total over 35,000 companies in Europe represented by 71 Corporate Members and 40 National Trade Associations from across Europe.

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