



ENABLERS AND CHALLENGES OF THE DIGITAL TRANSITION IN THE EU

**Key recommendations for innovative business
ecosystems, effective implementation of new rules,
and a skilled workforce for the future**

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SUMMARY

Harnessing the value of data and bolstering the digital economy in the EU are at the heart of several recent European Commission initiatives, such as the European Strategy for Data and the Digital Decade. The digital transition has ramifications across policy areas and is expected to contribute significantly to the EU's recovery and transition towards resilience and sustainability over this decade. To make the digital transition work for everyone, we must take stock of the existing and emerging legislative initiatives and ask what challenges remain to be addressed. How can the successful implementation and enforcement of new rules governing the digital and data economy be ensured? How can innovation be fostered in industrial ecosystems? How can the workforce be prepared for the digital transition?

This policy brief outlines challenges and recommendations in three areas to foster the digital transition in the EU: i) how new business models driven by data are emerging, and their potential to transform industrial ecosystems; ii) the importance of ensuring the coherence of the emerging rules to govern the data economy as well as preparing for their implementation; and iii) the changing nature of work in digitised value chains.



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INTRODUCTION

With the von der Leyen Commission at its mid-term point, the time is ripe both to analyse the plethora of new legislative initiatives that have been launched and assess the consistency between them and the emerging EU industrial strategy. The digital transition plays a particularly important role in the Commission's agenda and the overall industrial strategy for Europe, having ramifications across several policy areas.

The Commission has put forward numerous initiatives governing the data economy in the EU, including:

- initiatives aimed at fostering a transition from the free flow of all digital data, towards 'managed data', at least in specific industrial sectors or ecosystems, and more generally to ensure a fairer distribution of value along supply chains (e.g. the [Data Governance Act](#), the upcoming [Data Act](#), the [GAIA-X](#) project to be scaled up into a fully-fledged [European Cloud Federation](#));
- measures aimed at ensuring human- and citizen-centric technology adoption and the protection of fundamental rights online (e.g. the [AI Act](#), the EU's emerging digital principles);
- digital targets for digital skills, digital infrastructures, business transformation and digital public services to ensure a sustained pace of the digital transformation of the economy and society in the EU (as laid out in the [Digital Compass Communication](#) and the [Proposal for a Decision on the policy programme "Path to the Digital Decade"](#)); and finally
- industrial policy measures aimed at fostering the EU's excellence and competitiveness.

Ultimately, the deployment of digital technologies should support the EU's recovery and transition towards resilience and sustainability over this decade. While it is particularly important to debate whether the EU industrial strategy is taking the changing landscape of digital technologies sufficiently into account, debate on how different approaches to technology deployment can shape the future of industry is also important.

Against this background, the CEPS Forum on the New Industrial Strategy set out to explore, among others, the factors and challenges enabling the digital transition and the emerging framework of rules governing the digital and data economy. The Working

Group on Making the Digital Transition Work for Everyone was established for this purpose and met three times between March and July 2022.

This policy brief outlines insights and recommendations from the Working Group debates across three main clusters of issues: i) how new business models driven by data are emerging, and their potential to transform industrial ecosystems; ii) the importance of ensuring the coherence of the emerging rules to govern the data economy as well as preparing for their implementation; and iii) the changing nature of work in digitised value chains.

Putting at the centre the need to incorporate a human-centric, resilient, and sustainable vision of technology (in line with the Industry 5.0 paradigm) in industry transition pathways, several recommendations have been developed, that can strengthen the interplay between the digital agenda and the industrial strategy.

EMERGING BUSINESS MODELS FOR THE DIGITAL TRANSFORMATION OF INDUSTRIAL ECOSYSTEMS

To understand what digitalisation means for industrial ecosystems, more emphasis needs to be put on emerging business models that tap the full potential of digitalisation and innovation.

The EU's Data Strategy, as overarching policy direction, and the connected activities and investments in digitising the Single Market bring to the forefront the relevance of developments related to the Internet of Things (IoT), cloud and edge computing among others. Against this background, alternative, new business models will indeed be key to harnessing the potential of these technologies to drive further transformation in the Single Market.

While the EU accelerated its support for the digital transition via its new [Digital Europe Programme](#) in 2021, there is a significant risk that inconsistencies in the developing regulatory framework and conflicting policy priorities may hinder the ability of SMEs and larger companies to leverage the potential of emerging data-driven business models.

These limitations could come at a great cost for European economies; Thierry Breton, Commissioner for Internal Market, [indicated](#) that: 'by 2030, data, cloud, edge and quantum computing will drive industrial and societal innovation, creating new business models'.



Recommendation #1: Encourage experimentation and lighthouse projects to better understand the value of data sharing models and foster collaboration between stakeholders

To drive innovation and explore new applications based on data sharing, experimentation in the field should be strongly encouraged. Lighthouse projects exploring data sharing arrangements can be a clear beacon for what digital transformation holds for the future of industry and can help set in motion more developments and convince more stakeholders of the value of shared data.

One such example is the [Catena-X](#) project, an initiative aimed at enabling data exchanges between stakeholders in the European automotive industry and strengthening its competitiveness. In a collaborative ecosystem, the members of Catena-X will select and implement different use cases for cross-organisational data exchanges.

Initiatives of a similar nature could be encouraged in different industries to spur innovation; smaller and faster projects could be particularly helpful to support both the transformation of businesses and contribute to the development of the European common data spaces with concrete use cases.



Recommendation #2: Foster trust across the ecosystem to encourage data sharing

For data-driven innovation, trust plays a crucial role. Companies may be reluctant to share data if they believe the data could be easily appropriated, and they then lose control over how the data they shared are reused. In the same vein, companies may be reluctant to reuse data if they do not trust the source. From this perspective, a framework of rules, principles, and standards governing not only how data are shared, but also the quality of that data, is essential to address the concerns stakeholders might have. In the evolving regulatory context in the EU, tools to enhance data quality could be particularly useful to foster trust and [encourage data sharing](#).

GETTING OVERSIGHT AND ENFORCEMENT MECHANISMS RIGHT FOR EU'S INDUSTRIAL DATA

On 23 February 2022, the European Commission released its long-awaited legislative proposal for a new [Data Act](#). In line with the 2020 European Data Strategy, this new proposal is expected to profoundly reshape the European regulatory framework for data, not only from the digital sector's perspective, but for the larger EU economy.

The Data Act proposal marks a significant shift in the EU's approach to the wider data economy, from championing the free flow of non-personal data in the context of the 2016 Digital Single Market (DSM) strategy to introducing specific requirements for governing data and stimulating data sharing to an optimal level in the context of the Data Act.

The Data Act is complemented by the Data Governance Act (DGA), adopted in May 2022 after having been advanced as a proposal in 2020. The DGA and the Data Act together provide a framework of rules on which data spaces in specific sectors will build. The Data Act, the DGA, as well other existing pieces of legislation, such as the GDPR, are meant as horizontal frameworks, whereas frameworks for the individual data spaces are meant to cater to sectoral requirements.

Given the specificities of the data created and shared in different sectors, the data spaces are expected to bring together data infrastructures, specific governance, and interoperability requirements for enhanced sharing of data and pooling data in key sectors.

A first concrete proposal for one of the envisioned data spaces emerged recently in the form of the [European Health Data Space](#). With multiple and intertwined ongoing initiatives to shape the EU's approach to governing the data economy, there will also be significant challenges.

Coordination and close cooperation between the different stakeholders involved will be key for creating a coherent framework of rules and facilitating their implementation. Additionally, the impact on citizens is crucial. The initiatives for governing the data economy are rooted in the importance of trustworthy and citizen-centric systems, from development through implementation and enforcement, as outlined in the overarching Data Strategy communication.

These developments emphasise the need to take stock of the emerging rules to govern data in the EU and assess the key areas to focus on when considering the need for the coordination and coherence of the emerging rules, as well as potential implementation challenges.

Ensuring legal coherence and consistency is needed for instance in relation to data portability for EU citizens. Introduced by the GDPR, the right to data portability is featured in several recent legislative initiatives such as the Digital Markets Act, Data Governance Act, and the Data Act. Yet, under the GDPR, data portability is [not well enforced](#) thus suggesting a vast unexplored potential. This can be explained in part by the various and diverging enforcement mechanisms envisioned by the corresponding legislative texts, which we intend to address as part of the following recommendation.



Recommendation #3: Ensuring stronger coordination between national bodies and EU bodies governing data sharing

With multiple and intertwined ongoing initiatives to shape the EU's approach to governing the data economy, there will also be significant challenges. Coordination and close cooperation between the different stakeholders involved will be key to creating a coherent framework of rules and facilitating their implementation.

In the context of the emerging rules for governing data, [Graef & J. Prüfer \(2021\)](#), argue that: 'mandated data sharing requires the design of a governance structure that combines elements of economically efficient centralisation with legally necessary decentralisation'. For creating a data sharing ecosystem, Graef and Prüfer emphasise the value of adopting governance structures that would task national authorities with investigation and decision-making, as well as creating a new EU-level [European Data Sharing Agency](#) responsible for the enforcement of data sharing.

As data rules are shaped and progressively adopted in the EU, ensuring a strong framework for coordination across national and EU bodies is essential for successful enforcement.



Recommendation #4: Fostering data sharing in the public interest and empowering citizens

The initiatives for governing the data economy are rooted in the importance of trustworthy and citizen-centric systems, from development through implementation and enforcement, as outlined in the overarching Data Strategy communication.

As suggested by the [Open Future Foundation](#), there is a need for stronger B2G data sharing in the public interest. Currently, the Data Act fails to meet the main goals of B2G for public good, due to a narrow sharing mandate limited only to situations of public emergency and exceptional need. Instead, more should be done to establish a mechanism for private data that is shared for public interest purposes other than public emergencies, for instance via the introduction of the [European Public Data Commons](#), a European body acting as a recipient and clearinghouse for the data made available by businesses.

In addition, a citizen-centric approach should include empowering citizens with [more control over their data](#) and should build on data intermediaries governed by key principles such as transparency, interoperability and more say for the individual over how their [personal data are used and shared](#).



Recommendation #5: Fine-tuning the development of data spaces and their interplay

The future launch of the European data innovation board, created by the Data Governance Act, is expected to support the horizontal organisation of data spaces, and identify cross-border issues.

Indeed, data spaces have both a legislative and non-legislative dimension which requires strong coordination to ensure legal certainty for users as well as to support their participation. All data spaces created under the Data Strategy should create opportunities and see how they can link to private data spaces / platforms under development.

THE FUTURE OF WORK IN A DIGITISED VALUE CHAIN

With increasing emphasis on fostering the growth of the data economy and adapting business models to be digitally and data-driven, the nature of work is also changing. While digitalisation holds great potential for the economy, serious questions have been raised about the extent to which it would render certain jobs extinct.

A [2018 OECD study](#) estimates that up 46 % of jobs across 32 countries are moderately to highly vulnerable to automation. [Industry 5.0](#) has taken the discussion one step further than the risks by putting the focus on human-centricity in the debates on digital transformation: it is vital to understand how to best leverage human capital alongside the benefits of automation and intelligent machines.

Looking to the future, a [2020 ILO study](#) in seven countries points to a significant future shortage in skilled workers for ICT-related occupations which it is essential to address. Skilling, upskilling, and reskilling are essential components for the future of work.

Within the EU, the pace of developments and the implications vary by region. A [2021 study conducted for industriAll Europe](#) finds that there are geographical differences in the digitalisation of industry in the EU: in north- and south-western Europe, the digital transformation of industry has been progressing faster, while central and eastern Europe have been lagging behind.

During the Covid-19 pandemic, this trend has been further accentuated, meaning that some countries are at risk of not benefiting from digitalisation. At the same time, central and eastern European countries lack national digitalisation strategies, and they face the risk of a shortage of skilled labour in the future. Actions that put humans at the centre, that focus on building the necessary skilled workforce for the future, and that ensure ecosystem-wide thinking are necessary.



Recommendation #6: Strengthening a human-centric approach to the transformation of work in digitised value chains

As the nature of work transforms with digitalisation and new technologies, it is essential to protect quality employment in the EU and ensure that workers are part of the debates shaping the future. Existing instruments and frameworks such as social dialogue and the [EU Quality Framework for anticipation of change and restructuring](#) should be reinforced to ensure that the perspectives of multiple stakeholders, including workers, are taken into account as new technologies transform the nature of work and the workplace.

When it comes specifically to the use of AI systems at the workplace, transparency, and the active involvement of workers in the deployment of such systems becomes essential. First, the active involvement of workers is necessary to understand the goals pursued with the introduction of the new technologies, while at the same time understanding the skills needed to operate the new technologies. Second, as AI systems may become more embedded in managerial and Human Resources' operations, [transparency about the data collected and the algorithms in place must be ensured](#).



Recommendation #7: Re- and upskilling the workforce of the future in digitised industries

The shortage of skills clearly points to the urgency for re- and upskilling the workforce. The [2020 ILO study](#) identified serious cause for concern for a growing shortage of skills in the future.

According to an [EY survey](#), companies in Europe already identify significant skills gaps when it comes to cybersecurity, AI, and robotics, and these are likely to be further exacerbated in the future. The European Commission has been putting skills at the centre of the digital transformation of the economy and society, with clear targets to increase the share of the digitally skilled population in the EU as well as the number of highly skilled digital professionals (see [Path to the Digital Decade](#) and [Digital Compass Communication](#)).

Against this background, it is essential to ensure that those workers already in the field have access to upskilling opportunities to allow their skillset to evolve at the same time as the emerging technologies. Furthermore, reskilling opportunities are also essential to ensure that workers with occupations that may be affected by automation can [gain access to new, in-demand occupations](#).

While highly technical skills will be necessary going forward, there will also be a strong requirement for transversal skills. [As industries transform](#), it is becoming increasingly evident that the workers of the future will need to be equipped not only with the technical skills specific to their sectors, but also with a set of transversal soft skills, such as collaboration, empathy, and communication.

A variety of stakeholders will play an essential role in reskilling and upskilling efforts, particularly in ensuring the necessary funding. For instance, public investment and development banks are already looking to support programmes equipping the workforce for the digital transition. Examples include the [Skills & Education Guarantee Pilot](#) of the European Investment Fund, the [Simplon initiative](#) supported by CDC in France, the [TUMO](#) centre for digital education for young people launched by KfW in Germany, as well as the [Generation Italy](#) project supported by the CDP Foundation in Italy.



Recommendation #8: Taking an ecosystem-wide approach to the future of work in digitised value chains

Several aspects need to be carefully balanced in a comprehensive, ecosystem approach, in order to reap the benefits of new technologies such as AI for industry: the need for new rules to match developments while fostering innovation; the need for appropriate enforcement and AI-based technologies require oversight and new or adapted rules to guarantee workers' privacy and the protection of their data, but one must be cautious not to stifle innovation and overburden small and medium-sized enterprises in particular. More broadly, [these new technologies](#) will require a greater focus not only on ex-ante identification of risks but also on ex-post surveillance to ensure positive social impact and identify pressure points.

CONCLUSIONS

The recent steps taken by the Commission reinforce the immense opportunities that can be tapped by fostering the development of the data and digital economy in the EU. For a digital transition that works for everyone, from industrial ecosystems to workers, human-centricity, trust, and sustainability should be the key guiding concepts across sectors and policy areas. Close cooperation between stakeholders will be essential. As emerging rules governing data and the digital economy move from the proposal stage to implementation, it is necessary to ensure their coherence and anticipate potential challenges at the level of enforcement and oversight. Businesses and industry need to be active players and key drivers in the digital transition, and for this an environment that enables innovation and fosters trust is essential. And finally, as the digital transition is shaping the nature of work and the workplace, the perspectives of multiple stakeholders, including workers, need to be taken into account.

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WORKING GROUP SESSIONS AND GUEST SPEAKERS

SESSION I – EMERGING BUSINESS MODELS FOR THE DIGITAL TRANSFORMATION OF INDUSTRIAL ECOSYSTEMS

Amaryllis Verhoeven, Head of Unit, Digital Transformation of Industry, DG GROW, European Commission

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Mariane ter Veen, Director, Data Sharing Lead, INNOPAY

John Zysman, Professor Emeritus of Political Science, University of California, Berkeley, and Co-Founder of the Berkeley Roundtable on the International Economy

SESSION II – GOVERNANCE OF DATA SPACES GETTING OVERSIGHT AND ENFORCEMENT MECHANISMS RIGHT FOR EU'S INDUSTRIAL DATA

Inge Graef, Tilburg Law School, Tilburg University

Ana García Robles, BDVA

Paul Keller, Open Future Foundation

Isabelle de Zegher, MyData

Athanasios Karalopoulos, DG GROW, European Commission

Session III – The future of work in digitised value chains

Isabelle Barthès, Deputy General Secretary, industriAll Europe

Ekkehard Ernst, Chief Macroeconomist, International Labour Organization

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- European Investment Bank (EIB)
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- Italian Innovation Fund
- Organisation for Economic Co-operation and Development (OECD)

Academia and Civil society

- AllBe
- Big Data Value Association (BDVA)
- Brookings
- ecoSurge
- European Trade Union Confederation (ETUC)
- Foundation for European Progressive Studies (FEPS)
- Hertie School
- JPS Public Policy
- Mercator Institute for China Studies
- Open Future
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