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Monitoring of horizontal recommendations 2024

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State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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European Commission

MONITORING OF HORIZONTAL RECOMMENDATIONS 2024

2025

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1 Introduction

This document presents an assessment following the requirements in **Article 6 of the Digital Decade Policy Programme Decision (Decision (EU) 2022/2481)** that mandates the European Commission to ensure that '*The Report on Digital Decade shall include information on progress regarding recommended policies, measures or actions*'.

In this context, this document assesses progress made between July 2024 and March 2025 against the EU-level recommendations presented in the 2024 State of the Digital Decade, based on available evidence. In line with the legal scope, the assessment focuses on the implementation of policies, measures and activities recommended in the 2024 report, rather than only tracking progress as measured by Digital Decade Key Performance Indicators.

Given the cooperative nature of the Digital Decade Policy Programme (DDPP), the scope of the assessment includes both joint actions involving the Commission and the Member States, and more specific actions undertaken by Member States that have a significant impact across the EU. While actions initiated solely by the Commission have been considered, these have been considered relevant only where there is a clear link to joint implementation with Member States or where they directly support the development of national measures. The type of evidence and input used also vary depending on the nature of the recommendations.

The analysis also includes a summary assessment, based on a qualitative judgement and using **available evidence** and expert input. Each recommendation was evaluated against the following scale:

- **No Progress** – No discernible actions were taken to address the recommendation.
- **Limited Progress** – One or few actions were initiated, but significant additional efforts are needed.
- **Notable Progress** – Several relevant actions were undertaken, showing clear engagement, though full implementation remains incomplete.
- **Significant Progress** – A broad set of measures were adopted, reflecting sustained commitment and tangible implementation.

To support consistency, each assessment was grounded in a review of tangible measures and policy steps, such as legislative initiatives, dedicated funding, adoption of strategies, or implementation of joint projects.

The objective of this classification provides for constructive analysis to support prioritisation of the actions by the EU and Member States in the follow-up process. The approach helps identify recommendations requiring renewed or increased attention in the coming year.

Summary overview

Out of 58 Recommendations monitored:	**No Progress: 4** (6.9 %)	**Limited Progress: 28** (48.3 %)	**Notable Progress: 20** (34.5 %)	**Significant Progress: 6** (10.3 %)
Connectivity (6)	0 (0.0 %)	5 (83.3 %)	1 (16.7 %)	0 (0.0 %)

Out of 58 Recommendations monitored:	No Progress: **4** (6.9 %)	Limited Progress: **28** (48.3 %)	Notable Progress: **20** (34.5 %)	Significant Progress: **6** (10.3 %)
Technological leadership (4)	1 (25.0 %)	2 (50.0 %)	1 (25.0 %)	0 (0.0 %)
Semiconductors (3)	0 (0.0 %)	1 (~33.3 %)	1 (~33.3 %)	1 (~33.3 %)
Edge Nodes (1)	0 (0.0 %)	0 (0.0 %)	1 (100.0 %)	0 (0.0 %)
Quantum (1)	0 (0.0 %)	0 (0.0 %)	1 (100.0 %)	0 (0.0 %)
Take-up of Cloud-AI-Big Data (4)	0 (0.0 %)	4 (100.0 %)	0 (0.0 %)	0 (0.0 %)
Digitalisation of SMEs (4)	1 (25.0 %)	1 (25.0 %)	1 (25.0 %)	1 (25.0 %)
Unicorns (1)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (100.0 %)
Cybersecurity (2)	0 (0.0 %)	2 (100.0 %)	0 (0.0 %)	0 (0.0 %)
Basic Skills (1)	0 (0.0 %)	1 (100.0 %)	0 (0.0 %)	0 (0.0 %)
ICT Specialists (1)	0 (0.0 %)	1 (100.0 %)	0 (0.0 %)	0 (0.0 %)
EU Digital Identity Framework (1)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (100.0 %)
Digital Public Services (5)	0 (0.0 %)	2 (40.0 %)	3 (60.0 %)	0 (0.0 %)
e-Health (3)	0 (0.0 %)	0 (0.0 %)	1 (33.3 %)	2 (66.7 %)
Safeguarding Rights (2)	0 (0.0 %)	0 (0.0 %)	2 (100.0 %)	0 (0.0 %)
Protecting Kids (2)	0 (0.0 %)	1 (50.0 %)	1 (50.0 %)	0 (0.0 %)
Human-centred AI (1)	0 (0.0 %)	0 (0.0 %)	1 (100.0 %)	0 (0.0 %)
Preserve information integrity and democracy (4)	0 (0.0 %)	3 (75 %)	1 (25 %)	0 (0.0 %)
Smart Greening (3)	1 (33.3 %)	2 (66.7 %)	0 (0.0 %)	0 (0.0 %)
Strategic Digital Decade National Roadmaps (3)	0 (0.0 %)	2 (66.7 %)	1 (33.3 %)	0 (0.0 %)

Out of 58 Recommendations monitored:	No Progress: **4** (6.9 %)	Limited Progress: **28** (48.3 %)	Notable Progress: **20** (34.5 %)	Significant Progress: **6** (10.3 %)
Fostering Coordination and Coherence (6)	1 (~16.7 %)	1 (~16.7 %)	4 (~66.7 %)	0 (0.0 %)

1 Connectivity

1.1 Member States are encouraged to work with the Commission to take action to transform the electronic communications sector and allow operators to reach critical size

PROGRESS AND STATE OF PLAY

Since July 2024, the process of transposing the European Electronic Communications Code ('EECC') was completed by all Member States, with the last Member State to transpose the Directive in September 2024. While this is a positive development, it marked an overall delay compared to the set deadline of December 2021.

The Gigabit Infrastructure Act ('GIA'), repealing Directive 2014/61/EU and complementing the EECC in infrastructure deployment and sharing, entered into force on 11 May 2024 and most of its rules will be applicable as of 12 November 2025. The GIA will increase deployment of very high-capacity networks, reduce costs and improve the efficiency of network roll-out.

The timely implementation of GIA by Member States contributes to accelerating the achievement of the 2030 Digital Decade connectivity targets for faster deployment of fibre and 5G networks. This requires Member States to continue their efforts for timely reducing the administrative burden associated with network deployment, simplifying and digitalising permitting procedures, and enhancing the availability of information on existing and planned civil works.

Based on the available data, the European electronic communications sector continues to face challenges in securing the funding needed to invest in future network technologies[1]. Indicatively in 2024 (but also in previous years), it had significantly lower mobile broadband ARPU[2], as well as lower capital expenditure (fixed and mobile), compared to the US, Japan, and South Korea, while shares in this sector underperformed globally and at EU level[3]. This was also one of the conclusions of the Draghi report, which articulates the view that EU telecoms operators lack the scale required to provide citizens with ubiquitous access to fibre and 5G broadband and to equip businesses with advanced platforms for innovation.

According to Draghi, the fragmentation of the sector into 27 national markets hinders its attractiveness for large investors, creating varying supply and demand conditions, network architectures, levels of coverage by very high-capacity networks, and regulatory approaches (although these have been partly harmonised).

To investigate the situation further and address identified issues, work is currently underway on a proposal for a 'Digital Networks Act' ('DNA'), following the review of the EECC, to create a more integrated single market for connectivity, driving further alignment across the EU. This means reducing fragmentation across Member States, simplifying processes, and reducing burdens for operators by removing or aligning applicable rules and conditions.

[1] The White Paper 'How to master Europe's digital infrastructure needs?' highlights that the EU's ability to carry out the investment and successfully transform the connectivity sector will depend on the financial situation of its electronic communications sector and its capacity to catch up with the technological shift.
[2] Average Revenue Per User.
[3] According to the 2025 State of the Digital Communications report (State of Digital Communications (2025).pdf), mobile ARPU in Europe fell at EUR 14.8 in 2023 - a real terms drop of 5.9% compared to 2022 -, and substantially lower than all peer countries when adjusted for differences in GDP/capita.

The regulatory framework concerning ex-ante market regulation is also under review, to ensure that it is up to date and contributes to the objective of fostering investment.

Developing future digital infrastructure — including 5G/6G, fibre, satellite, and cloud — will require not only private investment but also coordinated public policies and regulatory consistency across the EU. This includes using the existing EU tools for coordination, such as spectrum peer review, EU-level committees and coordination groups, as well as working closely with the European Commission.

In this context there is the opportunity to build on the recent Council Conclusions on Reliable and Resilient Connectivity, where the Member States recognised the need to foster ubiquitous and seamless connectivity across Europe, enhancing competitiveness and reinforcing the European single market as a precondition for resilient European connectivity infrastructure. Previously, the Council Conclusions on the White Paper "How to master Europe's digital infrastructure needs?" had notably welcomed the Commission's goals to foster innovation, security and resilience of digital infrastructures to unleash further benefits of the Single Market's potential within the digital sector[4].

SUMMARY ASSESSMENT: ***Limited progress***

[4] Council Conclusions (6 December 2024).

1.2 Member States should consider further public support, combined with European funds, as well as incentivise private investments, to reach market failure areas, and facilitate the development of new 5G use cases based on advanced connectivity and associated new ecosystems, such as Connected and Automated Mobility, Smart Cities, eHealth

PROGRESS AND STATE OF PLAY

A majority of Member States are participating in or supporting calls for proposals under the Connecting Europe Facility Digital (CEF Digital) in 2024.

A part of CEF Digital addressed market failure, by supporting and boosting the deployment of 5G infrastructure along sections of cross-border transport paths in more than half of EU Member States, thus enabling the deployment of future services such as automated mobility and automated rail operations (e.g. Via Baltica, North Sea-Baltic corridor, Baltic-Adriatic Corridor), as well as inland waterways from the North Sea, Orient/East-Med corridor, Scandinavian-Mediterranean Corridor and the Iberian and Mediterranean corridors.

Overall, via the 12 5G Corridor deployment projects funded thus far under CEF Digital, a total of 25 intra EU borders have been covered, for a distance of 7 275 kilometres[5].

To support the building of the CEF Digital project pipeline in the area of rail, i.e. in support of 5G-enabled automated rail operations and gigabit connectivity provision for rail passengers, the Governing Board of the Smart Networks and Services Joint Undertaking (taking into account Member States' advice) approved a 5G Strategic Deployment Agenda for Connectivity and Sustainability in Europe[6].

This Strategic Deployment Agenda, released in December 2024, represents a collaborative effort between the main European industry associations in the field of rail and will serve as a foundation for public-private cooperation and investment strategies in rail communications infrastructure.

A community survey concerning Public funding support for 5G roll-out in the EU Member States, ran via the 5G for Smart Communities Support Platform and validated by the national Broadband Competence Offices, aimed at gathering an overview of the public support (EU and national funds) available at national level across the EU-27 Member States for roll-out of 5G infrastructures in the period 2022-2024, revealed that:

- **Ten out of 27 Member States** (Austria, Belgium, Croatia, Czechia, France, Italy, Lithuania, Luxembourg, Portugal, Spain) have funded **5G pilots over the period 2022-2024**, for a total budget of **EUR 2.44 bn**, with **10% of these funds having been made available for implementation of 5G use cases** (as a standalone activity or together with the roll-out of the necessary infrastructure). The majority of the budget was allocated in just two Member States, Spain and Italy, for infrastructure investments.
- Given the low 5G standalone availability in the EU the development of use cases is a challenge. Often these are developed in limited sites, with scaling limited in the current environment. Some countries might foresee further action in the future to promote Standalone roll out and up-take.

[5] See Brochure: Projects funded under Connecting Europe Facility (CEF) Digital | Shaping Europe's digital future and 53 projects selected for up to €274 million under third CEF Digital calls - European Commission.
[6] SNS JU, The 5G Strategic Deployment Agenda for Connectivity and Sustainability in Europe, 2024

- In terms of funding sources, the **Recovery and Resilience Facility (RRF) stands out as the biggest source in the 5G funding mix**. This is particularly the case for the roll-out of 5G infrastructure investment, where all identified measures are RRF financed. For implementation of use cases, on the other hand, the funding mix is more balanced, with almost **60% of the funds allocated to implementation of 5G use cases coming from national budgets**.

- The majority of nationally supported 5G Use Case pilots were implemented under **General Block Exemption Regulation (GBER)** State aid regime, and hence had a strong innovative component. Therefore, the commercial viability of these is not guaranteed. Several countries plan assessments or impact assessments in 2025 to draw lessons on the commercial viability and possible businesses cases.

- **5G use cases were funded in seven countries (**Austria, Belgium, France, Luxembourg, Czechia, Lithuania, Portugal, and Spain). In terms of use cases and verticals addressed (in projects dedicated to 5G infrastructure and use cases), most of the projects address transport, defence and security and the healthcare verticals. From a country perspective, based on the mapping carried out in the context of the study, the different verticals are represented in a balanced manner across the countries:
    - transport related use cases have been implemented with priority in Czechia, Lithuania and Belgium
    - defence and security -related projects have been identified in Czechia and Belgium
    - healthcare -related 5G use cases were proposed especially in Belgium and Czechia.

  Use cases for industry, energy, agriculture and education are more limited in numbers, but have been identified in:
    - Belgium, Lithuania, Austria and Luxembourg (industry 5G use cases);
    - Belgium and Lithuania (-energy related);
    - Lithuania, Austria and Luxembourg (agriculture);
    - Czechia (education).

A number of projects have been proposed for various verticals, ranging from creative industries, connectivity networks and technology to public administration or waste management.

However, **the development of use cases overall remains suboptimal**, e.g. developed in limited sites, with scaling limited in the current environment.

SUMMARY ASSESSMENT: ***Limited progress***

1.3 Member States should take targeted measures to promote gigabit take-up by end-users, in particular applying best practices to connect end-users including to innovative applications as well as, where appropriate, support schemes to foster take-up by end-users and ensure affordability for higher quality broadband access.

PROGRESS AND STATE OF PLAY

Most available information is linked to the participation of Member States in Connecting Europe Facility (CEF) calls supporting 5G deployments for smart communities, or for socio-economic drivers, with a view to enabling innovative use cases and innovative applications. Most Member States are participating in these calls.

The third call for proposals under CEF Digital has provided financial support for an additional **25 projects** under **5G for Smart Communities** (5GSC), for a total of **EUR 78 million**[7].

This is on top of the EUR 50 million already committed to finance **17 projects for 5GSC under the first two CEF Digital calls.**

The funded projects integrate 5G infrastructure with **edge-cloud computing**, focusing on **standalone 5G**, enabling innovative use cases such as remote surgery, virtual reality for learning, drone-based monitoring and more.

Examples of projects:

- High Connectivity via 5G (EU contribution: EUR 2.8 million). Focusing on municipal services, this project will enable smart traffic management and surveillance as well as connectivity for services of general economic interest in the metropolitan area of Toulouse, France.
- 5G4LIVES (EU contribution: EUR 2.9 million). Focusing on safety and energy, this project will enable the development of an emergency management and risk prevention service focusing on search and rescue operations in Riga and the management of natural disasters in Turin.
- SmartMountain5G (EU contribution **EUR 1.7 million**). Focusing on climate change challenges in mountain areas, by deploying innovative 5G infrastructure, enhancing agriculture through optimisation and automation, improving renewable energy management, risk prevention, and sustainable tourism in Haute Maurienne.

Moreover, under the framework of the 5G for Smart Communities Coordination and Support Action (CSA) – a technical support scheme implemented under CEF Digital – delegates from Member States and regions met twice a year and had active discussions with the European Commission and each other, sharing good practice and contacting stakeholders to raise awareness about the Connecting Europe Facility Digital (CEF Digital) and related opportunities.

In collaboration with the Commission, several Member States organised national information days engaging stakeholders in their national languages. Another objective is to replicate the good practices identified via CEF.

[7] 53 projects selected for up to €274 million under third CEF Digital calls - European Commission

More precise information on the overall actions taken by Member States to stimulate take-up and affordability is not available. Instead, data on take-up shows that, despite an upward trend, there is still room to increase take-up of gigabit connectivity and 5G.

In 2024, only 22.3% of fixed broadband subscriptions were at speeds of 1 Gbps or higher (up from 18.5% in 2023). As such, there is still need for significant progress in this area.

SUMMARY ASSESSMENT: ***Limited progress***

1.4 Member States should ensure sufficient access for new players to spectrum for innovative B2B and B2C applications and encourage operators to speed up the deployment of standalone 5G core networks. Member States could explore public private partnerships where suitable, for instance where the public capital takes the form of guarantees or junior co-investment, on market terms to help the electronic communications sector fund its transformation

PROGRESS AND STATE OF PLAY

The EU-wide assignment of all three 5G pioneer bands is significant yet still incomplete (at 75%, mainly driven by the lack of use of the 26 GHz band), while refarming of EU-harmonised spectrum for 5G (e.g. 2 GHz band) is making some progress, with the ongoing switch-off of 2G/3G networks.

As of mid/end-2024, further progress had been achieved in authorising the 700 MHz and 3.6 GHz frequency bands across the EU, reaching an average volume of 90% of assigned spectrum in those bands. However, the 26 GHz band has been authorised in only 12 Member States, to a large extent due to absence of market demand. This band is pivotal for advancing innovative local and private networks and fostering overall technological innovation and small cell deployment.

Spectrum for local use by verticals (e.g. factories) has been made available in at least 10 Member States, yet in a fragmented way (i.e. in different frequency bands, e.g. 2.6 GHz, 3.6 GHz or 26 GHz). The 3.8-4.2 GHz band is in the process of EU harmonisation for local / vertical use, which is to be finalised in Q4/2025. Spectrum for intelligent transport systems (connected and automated mobility) in the 5.9 GHz band has not been taken up also due to lack of consensus in the industry on the preferred technology to be used.

By end-2024, Europe had only 10 operational 5G standalone (SA) networks, underscoring the need for accelerated deployment if the EU is to remain competitive globally. While additional operators have now launched 5G SA configurations, measuring the overall progress of 5G SA across the EU presents a challenge, due to reliance on public announcements and the lack of centralised data on the subject.

It can also be unclear how widespread 5G SA is, when operators launch, and whether it makes up a significant portion of their overall network.

More precise information on the overall action taken by Member States to stimulate the development of 5G standalone networks is not available. Instead, according to recent estimates, in 2025, Europe significantly lags in the adoption of 5G SA networks, with only 2% of 5G users connected via standalone infrastructure.

SUMMARY ASSESSMENT: ***Limited progress***

1.5 Member States should integrate a strong sustainability dimension in developing and deploying 6G, in particular aligning with the upcoming EU code of conduct and leveraging the EU taxonomy

PROGRESS AND STATE OF PLAY

Following up on the 2022 Digitalising the Energy System Action Plan, in March 2024 the Commission delivered an in-depth technical report on identifying common indicators for measuring the environmental footprint of electronic communications networks for the provision of electronic communications services. Building on this, the Action Plan further called on the Commission to establish a code of conduct for the sustainability of telecommunications networks by 2025.

As recognised by the 2024 White Paper on 'How to master Europe's digital infrastructure needs', this work is closely related to the EU Taxonomy, a common classification system, which is vital to help direct investment towards sustainable projects and activities and ultimately to foster the sustainability dimension in future 6G networks.

The incentives for attracting investment in environmentally sustainable networks were also discussed and recognised by Member States in the Council Conclusions on the White Paper of December 2024. This meeting was also the occasion for Member States to have a first discussion on how best to integrate sustainability in the future review of the Digital Decade, notably with regard to future connectivity networks.

In their December Conclusions on the White Paper, the Member States, through the Council, called on the Commission 'to consider proposing a target on green digitalisation in the context of the review of the Digital Decade Policy Programme, based on an agreed monitoring methodology'.

The Commission has been closely involving stakeholders with relevant expertise in developing the code of conduct, notably through a workshop on 6 May 2025. The Commission also involved standardisation experts via the StandICT project, which is funded by Horizon Europe.

At Member State-level, this work is notably supported by a study by the German National Regulatory Authority (BNetzA) on the comparability of sustainability standards for telecommunications infrastructure. The Commission plans to publish the code of conduct by the end of 2025, as envisaged in the Digitalising the Energy System Action Plan.

Overall, only a limited number of Member States are actively addressing this recommendation and supporting the coordinated development of the EU code of conduct.

SUMMARY ASSESSMENT: ***Limited progress***

1.6 Member States should implement the new submarine cable recommendation as quickly as possible to ensure a coordinated mapping and assessment of our cable infrastructures, establishing a Cable Security Toolbox of mitigating measures as well as a list of Cable Projects of European Interest

PROGRESS AND STATE OF PLAY

Following the 2024 White Paper on 'How to master Europe's digital infrastructure needs and the Recommendation on Secure and Resilient Submarine Cable Infrastructure, the Commission established an Expert Group composed of Member State authorities and the European Union Agency for Cybersecurity (ENISA), which had its third meeting on 12 March 2025. Moreover, in February 2025 the Commission and the High Representative adopted an EU Action Plan on Cable Security.

The Expert Group has been advancing on its comprehensive report on all core deliverables, supported by an external contractor. Moreover, the 2025 EU Action Plan on Cable Security put Q4 2025 as the target for these deliverables (mapping, risk assessment, Cable Security Toolbox, priority list of Cable Projects of European Interest). The broader scope of the Action Plan is expected to further promote a comprehensive and coordinated approach across all Member States.

The Recommendation constitutes the Commission's strategic policy framework on submarine cable infrastructure and its Expert Group is an opportunity to bring together expertise from different areas, but also to better align the work across authorities at national level. Supported by external expertise under contract EC-CNECT/2024/OP/0070 and as required by the 2025 Action Plan, the Group is to deliver a comprehensive report in Q4 2025, covering notably a mapping of existing and planned infrastructure, a consolidated and EU-wide assessment of risks, vulnerabilities and dependencies (accounting for existing assessments), including a stress test methodology, a Cable Security Toolbox of mitigating measures, and a draft list of Cable Projects of European Interest (CPEIs) to help refocus and prioritise public funding.

These policy measures were fully endorsed by the Niinistö report and complement recent legislation, in particular the Directives on measures for a high common level of cybersecurity across the EU (NIS 2 Directive) and on the resilience of critical entities (CER Directive).

The measures are also reflected in the EU's international cooperation. For instance, together with key partners, in 2024 the EU endorsed the New York Joint Statement on the Security and Resilience of Undersea Cables in a Globally Digitalized World. The EU is also in a regular dialogue with NATO, for instance on resilience in general and maritime security in particular. The EU-NATO cooperation will be further strengthened through dedicated expert exchanges, notably on critical infrastructure.

Finally, the work under the Recommendation and related areas was discussed in various Council Working Parties and recognised in the Council Conclusions of December 2024 on the White Paper mentioned above. In its Conclusions, the Council invited the Commission to consider further measures to promote the security, resilience and integrity of submarine cable infrastructure. Under the Polish Presidency, the Council TTE Telecoms Council Conclusions on Reliable and Resilient Connectivity, which put an even stronger focus on the security and resilience of these infrastructures, representing a collective effort by Member States.

SUMMARY ASSESSMENT: ***Notable progress***

2 Technological leadership

2.1 Member States are encouraged to effectively increase investment in digital R&I across sectors to achieve the target of 3% of EU GDP. This includes investing in critical infrastructure and technologies, as well as supporting projects of strategic interest for the EU's digital sovereignty.

PROGRESS AND STATE OF PLAY

Given the timeline in R&D statistics, data are not available to determine whether any progress has been made in 2024 towards the target of 3% of EU GDP for digital R&I expenditure[8]. However, it remains evident that there is a strong need to step up R&D investment, including in the digital sector, as underscored by recent initiatives such as the Competitiveness Compass[9].

Moreover, Eurostat data on business expenditure on R&D[10] and on R&D personnel in ICT sector[11] show a slightly decreasing trend between 2021 and 2022 in most Member States for which data across the two years is available.

In parallel, Member States are promoting projects in areas of strategic interest. The continued development of European Digital Infrastructure Consortiums (EDIC), the endorsement of the new possible IPCEIs in the digital sector, and the implementation of EuroHPC and Chips JU initiatives demonstrate tangible EU-wide efforts to enhance digital sovereignty and competitiveness. Specifically:

- **Further EDICs are currently in preparation**, with an advanced degree of commitment - one formal application and several pre-notifications have been submitted -and more initiatives are under consideration for becoming EDICs.
- The **first Annual EDIC gathering** is planned for autumn 2025. This event aims to harness synergies, foster knowledge exchange, identify common issues and strengthen the connections between different stakeholders. It also aims to provide a platform for a structured discussion on the functioning and the future of the EDIC ecosystem.
- The ecosystem of **Important Projects of Common European Interests (IPCEI)** is evolving too, the high-level formation of the Joint European Forum for IPCEI endorsed the proposal by participating Member States to start working on the design of three digital IPCEI-candidates: on Advanced Semiconductor Technologies (IPCEI-AST); on Artificial Intelligence Services (IPCEI-AI), and on Deploying Computing Infrastructure (IPCEI-ECI).

  The latter two build on the results of the ongoing IPCEI on Cloud Infrastructure and Services (IPCEI-CIS): as a baseline technology to further research and deployment into AI needs (IPCEI-AI), and for the development of the technologies that could be deployed in the relevant infrastructure (IPCEI-ECI).

[8] The latest data, referring to 2023, indicated that R&I in the EU stood at 2.2% of GDP.
[9] Competitiveness Compass for the EU, COM(2025) 30 final.
[10] Business expenditure on R&D (BERD) in ICT sector as % of total R&D expenditure by NACE Rev. 2 activity (Statistics | Eurostat). This indicator shows a decrease for 9 Member States, out of the 16 for which data are available.
[11] R&D personnel in ICT sector as % of total R&D personnel by NACE Rev. 2 activity (Statistics | Eurostat). This indicator shows a decrease for 13 Member States, out of the 17 for which data are available.

- The **EuroHPC JU** is making good progress towards delivering on its objectives and supporting the Commission's goal to set up AI factories across Europe, reinforcing the EU commitment to advancing AI technology and innovation. Seven consortia to establish the first AI factories were selected in December 2024, and the JU announced the selection of another six new AI factories in March 2025.
- The **Chips JU** is making good progress towards delivering on its objectives, having already selected 25 national competence centres and launched the first pilot lines in five key areas. Additionally, six Framework Partnership Agreements have been established for pilot lines focusing on quantum chip technology.
- The **three EDICs** formally established by mid-2024 (Alliance for Language Technologies EDIC, Local Digital Twins towards the CitiVERSE EDIC, and EUROPEUM-EDIC) **have progressed** to implementation (putting in place their registrations at national level and the required governance structures). They have also grown in size, each of them gaining new Member States as members or observers (eight new MSs joining ALT-EDIC, three joining LDT-EDIC and two joining EUROPEUM-EDIC).
- The **first Annual EDIC gathering** is planned for autumn 2025, as a platform for a structured discussion on the functioning and the future of the EDIC ecosystem.

SUMMARY ASSESSMENT: ***Limited progress***

2.2 Member States should help plan and coordinate investment and reforms to deepen the Single Market, which is an essential factor for accelerating an EU-based digital transformation.

PROGRESS AND STATE OF PLAY

In her 2024–2029 Political Guidelines, President Ursula von der Leyen reaffirmed the deepening of the single market and coordinated investment as a strategic priority to boost Europe's competitiveness and resilience.

Building on Draghi's report, which underscored the necessity for radical changes to prevent the EU from lagging further behind global competitors like the US and China, the **European Council** endorsed the priority to be given to coordinate investment and deepening of the single market during its November 2024 meeting in Budapest, culminating in the 'Budapest Declaration' and a competitiveness pact focused on administrative simplification and regulatory clarity.

These efforts reflect a coordinated institutional response to President von der Leyen's call for a fully integrated single market that stimulates targeted public and private investment, accelerates productivity and innovation, and secures Europe's competitive position in a shifting global landscape**.**

In response, the Commission launched the **Competitiveness Compass**[12] in January 2025 as a roadmap for reigniting economic dynamism in Europe through innovation-led growth, and to guide Member States in aligning reforms and investment with long-term EU priorities, including digital transformation, decarbonisation, and strategic autonomy.

The Council, notably through the March 2025 Competitiveness Council, discussed and welcomed the Compass and supported a set of common activities—ranging from strengthening the circular economy and diversifying energy supplies to enhancing digital infrastructure and workforce skills.

These concerted efforts by the Council and the European Council reflect a unified commitment to implementing the *Competitiveness Compass* and enhancing Europe's economic resilience and global competitiveness.

As part of the preparatory work for the next 7-year EU budget (multiannual financial framework, MFF), the European Commission has initiated a comprehensive MFF impact assessment to evaluate how best to align EU-level investment with clear strategic objectives, while enhancing agility, focus, and administrative efficiency, notably building on the experience of the Resilience and Recovery Fund.

This exercise aims to ensure that future EU spending and national investment plans are better coordinated, reinforcing key policy areas such as the green and digital transitions, security, and competitiveness. The assessment also explores ways to streamline delivery mechanisms, reduce administrative burdens for beneficiaries, and enhance the responsiveness of EU funding instruments to evolving challenges.

In line with the President's political guidelines, the goal is to shape a next generation MFF that is not only ambitious and future-proof but also delivers measurable impact through greater consistency between EU and Member State action. Another key priority of the guidelines is to ensure that no region is left behind in the digital transformation. As a consequence, greater prominence should be

[12] Competitiveness Compass for the EU, COM(2025) 30 final.

given to the digitalisation of rural areas within the framework of the Competitiveness Compass and the forthcoming MFF, considering the untapped potential held by rural regions for innovation, entrepreneurship, and sustainable development.

The information above shows that these topics have gained a significant attention in the last year.

SUMMARY ASSESSMENT: ***Notable progress***

2.3 Member States should engage with the research and innovation sector to increase research security in national research activities, with the aim of managing risks such as undesirable transfer of critical technology, malign influence, and ethical or integrity violations by non-EU countries.

PROGRESS AND STATE OF PLAY

With the **European Economic Security Strategy**[13]**,** the European Commission has committed to proposing measures to improve research security, while preserving the openness of the EU's innovation ecosystem. As part of the January 2024 Economic Security package[14], the Commission has adopted a proposal for a Council Recommendation on enhancing research security[15]. **This was adopted by Member States at the Council of 23 May 2024**[16]. The Recommendation focuses on **enhancing research security**, particularly **in response to the growing geopolitical risks and the evolving landscape of international research and innovation**.

Special emphasis is placed on **high-risk research areas, such as artificial intelligence, quantum computing, biotechnology, and advanced materials**, which have the potential for dual-use applications. Member States are encouraged to closely monitor these areas and implement stricter security measures as necessary. Moreover, the recommendation points to enhancing cybersecurity practices, ensuring better protection for sensitive research data, and increasing awareness among researchers and institutions about the potential security risks.

The Recommendation calls for regular evaluation of the effectiveness of the measures taken by Member States to enhance research security. It encourages the EU to monitor progress and provide updated guidance as new risks emerge or the geopolitical context changes. Reporting on action taken by Member States will be available in the next years. The Commission monitors the progress made in following up on this recommendation in a transparent way and based on clear indicators, in close cooperation with the Member States and after consulting the stakeholders concerned, using the ERA policy platform, and reports to the Council every two years, as part of its biennial reporting on the **Global Approach to Research and Innovation** and its existing reporting on the **Research and Innovation Framework Programme**.

The **first Biennial Report on the Implementation of the Global Approach**[17], published before the Recommendation was adopted, shows that, in the first two years (2021-23), the Global Approach proved its effectiveness and relevance and continues to be the appropriate strategic framework for international R&I cooperation – by preserving openness and promoting values and principles and by safeguarding the EU's strategic assets, interests, autonomy and security. The report also provides a snapshot of the EU's position in international research and innovation cooperation across various subject areas. The next Biennial Report will include the results from the monitoring of the Recommendation.

SUMMARY ASSESSMENT: ***No progress***

[13] EC/EEAS, Joint Communication JOIN/2023/20 final on the European Economic Security Strategy
[14] European Commission, New tools to reinforce the EU's economic security, Press release, 2024
[15] Council Recommendation COM(2024) 26 final on Enhancing research security
[16] Council Recommendation COM(2024) 26 final on Enhancing research security
[17] European Commission, First biennial report on the implementation of the Global Approach to research and innovation, Press release, 29 June 2023

2.4 Member States are encouraged to fully engage in the joint Economic Security risk assessment exercises. This involves coordinated risk assessments of technology security and technology leakage and notably to share the relevant information in their possession.

PROGRESS AND STATE OF PLAY

The 2023 **European Economic Security Strategy** proposed a common strategic framework to address the risks and challenges to economic security. In particular, the risks in the strategy's focus are:

- **Risks to the resilience of supply chains**, to be assessed by the Commission, by deepening the EU's strategic dependencies analysis, with a particular focus on dependencies that are more likely to be weaponised for geopolitical purposes
- **Risks to the physical and cybersecurity of critical infrastructure** – this will continue to be assessed in line with the Council Recommendation of 8 December 2022.
- **Risks related to technology security and technology leakage**, to be assessed on the basis of a list of strategic technologies critical for economic security.
- **Risks of weaponisation of economic dependencies or economic coercion**.

On 3 October 2023, the Commission adopted a **Recommendation to the Member States identifying 10 technology areas as critical for the EU's economic security**. Four of these technologies, three of which are digital, were recommended for an urgent joint risk assessment by the Commission and the Member States: Advanced Semiconductor Technologies, Artificial Intelligence Technologies, Quantum Technologies and Biotechnologies.

The Commission and the Member States continue to cooperate in the context of the ongoing economic security risk assessment exercises, aimed at identifying high-risk areas. Based on the outcomes, the Commission will propose a series of targeted and proportioned mitigating measures.

SUMMARY ASSESSMENT: ***Limited progress***

3 Semiconductors

3.1 Member States should stimulate secure and sustainable domestic chip design and manufacturing capabilities, including by reshoring packaging and assembly activities within the EU, increasing digital skills in advanced technologies across sectors and strengthening engagement with the European ecosystem

PROGRESS AND STATE OF PLAY

Since July 2024, several initiatives have been developing which include the activities under the Chips Act (launch of pilot lines, the design platform and the chips competence centres, attracting innovative investment to the EU, monitoring the value chain), the Industrial Alliance on Processors and Semiconductor Technologies (the launch of the working groups) and the Important Projects of Common European Interest (IPCEI) on Microelectronics (the conclusion of the first one and the progress of the second one, the IPCEI on Microelectronics and Communication Technologies).

With specific reference to the recommendation, concrete action has been observed by the Member States through State aid grants agreed for several companies participating in the second IPCEI ME-CT, as well as supporting investment as planned by Pillar II of the Chips Act, **for total private and public investment worth over EUR 50 billion**.

All this investment covers the whole semiconductor value chain from chip design and manufacturing capabilities to packaging and assembly. Increasing digital skills in advanced semiconductor technologies is the core activity targeted by the Skills working group that was launched under the Industrial Alliance.

Looking at available data, the European semiconductor sector continues to face challenges at global level to enhance technological sovereignty and secure a robust and self-reliant value chain, given the investment race by all the relevant regions in the semiconductors ecosystem.

Following March 2025, a series of initiatives are envisaged to stimulate secure and sustainable domestic chip design and manufacturing across the EU, including:

- new investment for innovative facilities in the EU, including on semiconductor design;
- ongoing discussions for designing the new IPCEI on Advanced Semiconductor Technologies (IPCEI-AST).
- new working group(s) under the Industrial Alliance.
- investment in common hardware platform for automotive, as committed to in the Automotive Action Plan.
- preparation of the review of the EU Chips Act.

As the digital transition accelerates, worldwide demand for chips will grow rapidly and is expected to exceed USD 1 trillion by 2030, essentially doubling its value over this decade. It is thus of utmost importance to keep focusing on the initiatives in the sector to face up to global competition and meet the envisaged target.

SUMMARY ASSESSMENT: ***Notable progress***

3.2 Member States should consider policies to leverage trusted electronics including, as necessary, standards, certification, and common requirements for secure chips, including security requirements and related performance-based specifications in public tenders (e.g. for communication networks or data infrastructure)

PROGRESS AND STATE OF PLAY

The EC lead initiative of trusted chips started in 2023. The project coordinator DKE held several workshops to define the scope and terminology. The agreed definition is semiconductor products that are trustworthy from the design stage onward and maintain this status until end of life, according to the characteristics of trustworthiness in ISO/IEC 5723:2022. This standard reference characteristics include accountability, accuracy, authenticity, availability, controllability, integrity, privacy, quality, reliability, resilience, robustness, safety, security, transparency and usability. Each of these characteristics might have sub-categories.

For some characteristics, standards are currently being developed, in particular for cybersecurity aspects under Regulation (EU) 2024/2847 (the Cyber Resilience Act).

The German 'Trustworthy electronics' initiative is about the sovereignty of manufacturing processes, ensuring that only trustworthy components are used. This means that the production and supply chain must be traceable beyond doubt. The individual components and the structure of the electronic components must be known.

Today, this is often not yet possible. For example, to find solutions for this challenge, Fraunhofer IPMS is involved in the flagship initiative 'Trustworthy Electronics', run by the German Federal Ministry of Education and Research BMBF[18]. One of their flagship projects is Velektronik, the platform for trusted electronics. The platform focuses on the technological overview, contributions to the necessary standardisation, connections between research and industry and the ultimate know-how, in order to provide concrete solutions to the increasing demand for higher trustworthiness in electronics.

Overall, the trusted chips initiative is lagging behind its original goals due to limited resources, as standardisation efforts are currently concentrating on developing the European Standards for the Cyber Resilience Act, which covers only one characteristic of the trusted chip framework.

SUMMARY ASSESSMENT: ***Limited progress***

[18] German Federal Ministry of Education and Research, Microelectronics. Trustworthy and sustainable. For Germany und Europe, 2024

3.3 Member States should develop a stronger Foreign Direct Investments policy to keep intellectual property in Europe

PROGRESS AND STATE OF PLAY

Since July 2024, the European Commission and EU Member States have implemented several measures to strengthen foreign direct investment (FDI) policies and safeguard intellectual property (IP) within Europe.

The European Commission initiatives include:

- **A proposal to revise the FDI Screening Regulation:** Following the adoption on 24 January 2024 of the Commission's proposal for updates to the existing FDI Screening Regulation to enhance the EU's economic security.
- **The fourth Annual Report on FDI Screening:** In October 2024, the Commission published its fourth annual report on the screening of foreign direct investment into the EU. The report highlighted the need to address divergences in national screening mechanisms among Member States and a proposal to revise the FDI Screening Regulation to improve the efficiency and effectiveness of the system.

On 17 December 2024, the Council approved conclusions emphasising the need for cooperation between the Council, the Commission, and Member States in shaping the EU's investment protection policy. The conclusions call for:

  - a stronger EU investment protection framework.
  - a balance between protecting investors and safeguarding public interests.
  - better cooperation among Member States to address the challenges in investment protection.

As of October 2024, 22 EU Member States have established active FDI screening mechanisms, with the remaining five expected to implement theirs shortly. This widespread adoption reflects a collective effort to protect national security and public order across the EU.

Collectively, these initiatives demonstrate a concerted effort by the European Commission, the Council, and Member States to enhance FDI policies and protect intellectual property within Europe, thereby strengthening the EU's economic security and competitiveness.

SUMMARY ASSESSMENT: ***Significant progress***

4 Edge nodes

4.1 Member States should support the deployment of secure and sustainable edge nodes as part of their connectivity, IoT and AI strategies. Member States should ensure that the deployment of edge nodes does not create new divides within the single market

PROGRESS AND STATE OF PLAY

The Joint European Forum for Important Projects of Common European Interest (JEF-IPCEI) announced in November 2024 the launch of the design phase of potential new IPCEIs in clean and digital technologies, including a potential **IPCEI on the Deployment of Computing Infrastructure** (IPCEI-ECI) and one on **Artificial Intelligence Services** (IPCEI-AI). Both initiatives, if pursued, could have an impact on technologies that are deployed on edge nodes and on edge nodes deployment. These two potential new IPCEIs can rely on technological foundations currently being created by the **IPCEI on Next Generation Cloud Infrastructure and Services** (IPCEI-CIS). More specifically, IPCEI-CIS results could be used in the IPCEI-AI as a baseline technology for further AI research and development. In the context of IPCEI-ECI, IPCEI-CIS -developed technologies could be deployed over the computing infrastructure.

As announced in the **Competitiveness Compass**, and in response to the **Draghi report** and the **mission letter** to EVP Henna Virkkunen, the European Commission will propose a **Cloud and AI Development Act** (Q4 2025/Q1 2026). The Act will aim to ensure that EU businesses and public administrations have access to sufficient AI compute capacity for the EU to become an 'AI continent'. AI capacity in edge nodes can be seen as part of these efforts, offering low-latency AI inference capacity.

The **dynamic of edge node deployment had gained momentum by end of 2024,** with a substantial single-year increase of 1 072 new nodes in 2024, and varied adoption rates among Member States.

France, Germany, Italy, and Spain are regarded as 'trend-setters', paving the way for the deployment of edge nodes. At the opposite end of the spectrum, Member States like Portugal, Romania, Slovakia, Slovenia, Greece, Hungary, Latvia, Lithuania, Luxembourg, Malta, Bulgaria, Croatia, Cyprus, Czechia, and Estonia show smaller penetration by edge nodes in their digital infrastructure. These Member States are encouraged to begin planning for foundational infrastructure to support the progressive deployment of edge nodes according to their needs.

SUMMARY ASSESSMENT: ***Notable progress***

5 Quantum

5.1 Member States should advance the objectives of the Quantum Declaration, namely, to collaborate with each other and with the Commission in the strategic and high-potential domain of quantum technologies, with the ultimate aim of making the EU 'the quantum valley' of the world. Member States should coordinate investment in quantum technologies across Member States and strive to address the relatively low level of Europe's private sector investment

PROGRESS AND STATE OF PLAY

In June 2025, the Quantum Declaration has now been signed by 26 Member States, signalling a very high level of commitment on their part. On this basis, a Member State Expert Group (the Quantum Technologies Coordination Group) has been set up to work on implementing the Declaration's goal of establishing a Quantum Pact. Particular focus is on increased coordination between Member States, pooling of resources, and on the need to ensure that Europe's most promising quantum start-ups can access the ambitious investment levels they need to scale up.

Member States continue to contribute to major EU initiatives in quantum technologies, supported by national and EU funding. The EuroHPC Joint Undertaking is in the process of jointly installing, together with the Member States, eight quantum computers, to be integrated into its supercomputers. The EU's Digital Decade target of having the first computers with quantum acceleration by 2025 should be met. Member States are also building, together with the EU, their national quantum communication networks, which will be linked across borders to form the basis of the EuroQCI, the European quantum communication infrastructure.

The publication of an EU Quantum Strategy (Communication from the Commission) will help foster cutting-edge research and deployment in quantum computing, communication, and sensing, drive growth in strategic markets, secure Europe's leadership in this strategically significant field, and build a resilient ecosystem that turns scientific excellence into global industrial strength.

The work of the Quantum Technologies Coordination Group is complemented by three working groups (for Research, Infrastructure, and Industrialisation and Standardisation), which bring together representatives and experts from national authorities and academia and meet regularly to discuss Europe's needs and the way forward.

The groups are expected to deliver their first analysis in early 2025. The Commission remains in regular contact with the Quantum Technologies Flagship's Strategic Advisory Board and with the European Quantum Industry Consortium in order to monitor developments in Europe's quantum landscape, and in particular the progress made towards the Flagship's Strategic Research and Industry Agenda. Overall, progress was made, but major effort is still needed, and Member States should be urged to take further action. In particular, the coordination of the national quantum strategies and integration of resources needs to accelerate if the EU wants to stay at the forefront in quantum.

SUMMARY ASSESSMENT: ***Notable progress***

6 Take-up of Cloud-AI-Big Data

6.1 Member States should take policy measures and earmark resources to support the adoption of trustworthy and sovereign AI-enabled solutions by European companies, step up public investment in general purpose/generative AI based and incentivise private investments. Member States should foster the availability of legal and technical support to procure and implement trustworthy and sovereign AI solutions across sectors

PROGRESS AND STATE OF PLAY

To further boost the development and deployment of trustworthy and sovereign AI solutions, the European Commission and Member States have launched several initiatives since July 2024.

Launched in February 2025 during the AI Action Summit in Paris, InvestAI is a programme aimed at mobilising investment in AI across Europe. It includes EUR 20 billion dedicated to building AI gigafactories equipped with cutting-edge computing resources, to support the development of advanced AI models.

The AI Factories programme, with an initial investment of EUR 10 billion co-financed by the EU and Member States, is the largest public investment in AI worldwide. This initiative is expected to unlock over 10 times more private investment and provide unprecedented access to supercomputers for start-ups and industry. The first seven AI factories, announced in December of 2024, will support strategic sectors such as health, manufacturing, climate, finance, cybersecurity, and agri-tech. These AI Factories will not only multiply the current EuroHPC AI-computing capacity by at least five times but also create a network of national centres to provide services and algorithmic support to the national AI ecosystem.

Furthermore, the European Digital Innovation Hubs (EDIHs) provide access to digital technologies, with a focus on AI, and support their adoption by SMEs and public sector organisations. The EDIHs offer a range of services, including training, testing, and experimentation facilities, as well as access to expertise and funding opportunities. By providing a local and accessible entry point for companies and organisations to develop and deploy AI solutions, EDIHs play a crucial role in fostering AI adoption and bridging the digital divide.

Specifically, more than 80% of EDIHs provide AI-related services, making it the most widely available advanced technology support. In addition, according to the latest JRC report on the State of Play of the EDIH Network in 2024, AI **& Automation services have shown the highest relative growth (more than 30%) in digital maturity improvement after EDIH interventions**. The network of EDIHs is planned to be continued in 2025-2026, and is set to continue supporting adoption of digital and AI technologies by businesses and public sector organisations.

The Testing and Experimentation Facilities (TEFs) initiative supports AI adoption by providing European companies with access to specialised facilities to test, validate, and certify their AI-powered products and services. This enables companies to refine their AI solutions, improve their performance, and demonstrate their safety and reliability, ultimately accelerating the development and deployment of trustworthy and sovereign AI solutions in Europe.

In addition to the AI factories programme, the EU has also launched the GenAI4EU initiative, which will support the development of novel use cases and emerging applications in several industrial and

societal sectors. This initiative will be implemented through the Horizon Europe and Digital Europe programmes, demonstrating the EU's commitment to fostering a vibrant AI ecosystem.

Furthermore, the Apply AI Strategy (expected to be Q3 of 2025) aims to boost new industrial uses of AI and improve the delivery of public services.

These initiatives are referring mostly to Commission's action and, at this stage, no additional information is available on the action taken by Member States since the publication of the 2024 State of the Digital Decade Report.

SUMMARY ASSESSMENT: ***Limited progress***

6.2 Member States should stimulate national efforts for cloud adoption through cloud targeted investment and exploitation strategies for advanced cloud solutions among businesses (in particular SMEs) as well as by developing dedicated skilling programmes, including on cloud security and environmental performance.

Member States should foster consistency and synergies when leveraging the Recovery and Resilience Fund for investing in business cloudification.

Member States should ensure that the effort towards greater business cloud uptake is jointly approached by all governmental and business actors.

PROGRESS AND STATE OF PLAY

Several Member States have made efforts to support business cloud adoption through targeted investment and exploitation strategies, including by leveraging the **Recovery and Resilience Facility.** In the absence of EU-wide data on national efforts for cloud adoption and their specific content, a few examples that stand out are included below.

Latvian Investment and Development Agency's grants for business digitalisation:

In November 2024, the **Latvian** Cabinet of Ministers approved a new support programme worth over EUR 27 million, providing support to companies for digitising their operational processes. Under this funding, the Investment and Development Agency of Latvia (LIAA) will be able to provide grants to at least 1 750 businesses for internal business process digitalisation.

By September 2024, LIAA had issued support to 100 businesses, totalling EUR 8.6 million[19]. This includes funding for ready-made solutions, hardware, sensors, equipment, software, IT infrastructure, licences, installation, and customisation, as well as related consultations. Moreover, non-financial support will be provided to 300 companies for initial and follow-up digital maturity tests, development of digital roadmaps, and expert opinions.

Romanian grant scheme helping companies adopt digital technologies:

Within its RRP, **Romania** introduced an aid scheme for the digitalisation of SMEs, including a grant scheme of up to EUR 100 000 per firm to help SMEs adopt digital technologies.[20] The Authority for the Digitalisation of Romania announced the eligibility for 188 SMEs registered in the project 'Skills in advanced technologies for SMEs', related to Investment 19, Component 7 (Digital Transformation) of the National Recovery and Resilience Plan.[21]

Croatia's digitalisation vouchers:

As part of the country's Recovery and Resilience Plan, **Croatia** has identified an investment scheme in the form of digitalisation vouchers to support SMEs in developing a digital business model, covering training and services for improving digital skills, including those related to cloud. By the end of 2024, several SMEs had participated and benefited from a call on increasing their level of digital maturity by

[19]Ministry of Economics of Latvia, Over EUR 27 Million Available for Business Process Digitalization, Press release, 26 November 2024

[20] Ministry of Investments and European Projects of Romania, PNRR: The Guide 'Digitisation of SMEs – grant of up to 100 000 euros per company to support SMEs in the adoption of digital technologies' has been updated, Press release, 20 May 2024

[21]Authority for the Digitalisation of Romania, The first SMEs declared eligible in the advanced technology skills training programme, 2025

developing digital business models, strengthening capacities for implementing digitalisation and digital transformation, and improving cybersecurity[22].

In addition to these examples, individual Member States have taken action to support the advancement of their national cloud industry, which may have indirect positive effects on cloud uptake. An example of this is the French call for projects 'Strengthening the cloud service offer'[23], aiming to strengthen trusted cloud services[24].

The future **Cloud and AI Development Act** equip the EU with the infrastructure needed to meet the computing demands of businesses. Sufficient infrastructure capacity is a prerequisite for the increasing adoption of cloud services in the EU.

SUMMARY ASSESSMENT: ***Limited progress***

[22]FondoviEU, Croatia, Details of the call 'VOUCHERS FOR DIGITALIZATION 2 - Voucher for Complex Digital Solutions (VSD)' - label 'NPOO. C1.1.2.R3-I2.01' - NRRP (National Recovery and Resilience Plan), 2025

[23] Direction Interministerielle du Numerique, France, France 2030 : la stratégie nationale cloud s'enrichit d'un nouvel appel à projets, 2024

[24] BPI France, Call for projects 'Strengthening the cloud service offering', 2025

6.3 Member States should boost the uptake of new advanced cloud-edge solutions among SMEs by setting up strategies and activities to fully exploit the IPCEI-CIS, by leveraging the complementarity activities of the Exploitation Office and the spillover commitments already undertaken by the direct participants in this IPCEI CIS. The Member States that do not participate in this IPCEI should actively seek out ways of engagement to benefit from spillovers, liaise with and possibly establish, post approval decisions, collaborations with its interested direct participants or indirect partners

PROGRESS AND STATE OF PLAY

As of June 2025, a total of 19 companies from seven Member States (France, Germany, Hungary, Italy, the Netherlands, Poland, and Spain) are participating in the IPCEI Next Generation Cloud Infrastructure and Services (IPCEI-CIS). This project is meant to put Europe on the path to the cloud infrastructure of the future.

To this end, the seven participating Member States are providing up to EUR 1.2 billion in public funding in the coming years, which is expected to unlock an additional EUR 1.4 billion in private investment.

The focus lies on R&D&I activities and the first industrial deployment of the outcomes. Since the kick-off in March 2024, IPCEI-CIS is in its project implementation phase (R&D&I and first industrial deployment), which will last until 2031 (as projects from different companies have different durations, this is the latest permissible end date for a participating project).

The milestones during the implementation phase vary from one participating company to another. Generally, the phase consists of the following steps: launch of R&D&I projects: their research and development activities; and the first industrial deployment of the results, including by developing use cases in many of the projects.

The IPCEI-CIS commits to delivering important positive spill-over effects across the EU, beyond participating Member States and companies. Dedicated positive spill-over activities by the companies (direct participants) in the IPCEI-CIS will play an important role[25]. The Cloud Infrastructure and Services Exploitation Resources Office (CISERO) funded under the Digital Europe Programme, may provide, if and where necessary, assistance to the IPCEI-CIS participating companies in delivering their spill-over actions.

Over the course of 2025, CISERO will contribute to the creation of a catalogue of the solutions and other outcomes delivered as part of the IPCEI-CIS; a catalogue of best practices for the adoption of IPCEI-CIS results; a technological and business roadmap to support sustainability strategies for these results; and will help put in place a platform to facilitate collaboration among interested stakeholders and participants of the IPCEI-CIS project.

CISERO may complement IPCEI-CIS actions as an additional contact point, besides the primary direct contact with the IPCEI CIS coordinators and governing bodies, as announced on the IPCEI CIS website

[25] For example they will (i) beyond their usual open-source software practices and business models, grant permissive, non-restrictive open-source software licenses to any interested party and actively engage with and contribute to the development of open-source communities; (ii) provide access to interested parties to at least 20% of the capacity of the edge nodes and laboratories employed in their projects; (iii) expand the developed technologies to additional sectors of the economy ; (iv) perform targeted trainings, produce self-standing technical materials, engage in conferences, publications, partnerships with universities and research organisations; and (v) license intellectual property rights at fair, reasonable, and non-discriminatory terms.

www.8ra.com, for non-participating Member States and industry to learn more about and ultimately benefit from the outcomes of the IPCEI-CIS.

Given that the activities under IPCEI-CIS are still in the early phases of project implementation, it is too early to evaluate whether participating Member States are boosting the uptake of the project outcomes. And given that the activities of CISERO are expected to take shape over the course of 2025, it is equally too early to evaluate whether non-participating Member States are seeking out ways of engagement through this additional intermediary.

SUMMARY ASSESSMENT: ***Limited progress***

6.4 Member States should continue to foster secure and trusted data sharing, in particular by supporting the deployment of common European data spaces and by implementing relevant data legislation such as the Data Governance Act and the Data Act. In this context, Member States should also take full advantage of relevant newly created EDICs (ALT-EDIC and LDT CitiVERSE EDIC), as well as speed up the creation of other relevant EDICs in preparation (e.g., Mobility and Logistics EDIC, the EDIC for Digital Commons)

PROGRESS AND STATE OF PLAY

Both the Data Governance Act (Regulation (EU) 2022/868) and Data Act (Regulation (EU) 2023/2854) provide rules governing the access to data, in particular industrial data, as well as governance structures to facilitate trustworthy and secure data sharing. Already, a number of these governance structures are being implemented by Member States[26]. Even so, some Member States are still in the process of designating competent authorities in accordance with the Data Governance Act. This is crucial for enforcing the Data Governance Act at national level, and needed for data intermediary service providers and data altruism organisations to register.

For similar reasons, it will be equally important that the Member States promptly designate competent authorities for the Data Act, which shall apply from 12 September 2025.

A good example is the European Legal Data Space, which aims at providing easily accessible, reusable, interoperable data in the area of legislation and case law across the EU. This data can be then used in decision making, research and the development of innovative legal tools (including AI tools tailored to the needs of the judicial sector).

However, while EU laws and case law are already available, national data rely on Member States' willingness to make the data available in the standardised formats (ELI and ECLI) and in a generalised manner. Currently, the availability of national data remains very fragmented and various efforts are being made at EU level to support Member States (including through funding).

Additionally, within the Digital Europe Programme the focus is on deploying data spaces and successfully exploiting high-value datasets. Over EUR 350 million have already been invested in fostering data sharing and the development of a European Data Infrastructure, not counting the substantial funding directed towards Simpl software as the cloud middleware for data spaces.

This covers a dedicated call on fostering the exploitation of high-value datasets and several projects creating a roadmap for developing 14 data spaces, all in areas of industrial importance such as the Green Deal, manufacturing, mobility, healthcare, agriculture or tourism.

Initiatives connected to the coordination of data spaces, such as the **Data Spaces Support Centre (DSSC) and the European Data Innovation Board**, continue to play an essential role in creating networks of stakeholders, ensuring interoperability across all data spaces and maximising impact.

Membership of the ALT-EDIC and of the LDT CitiVERSE EDIC has been expanding (25 Member States are participating in the ALT-EDIC and 14 in the LDT CitiVERSE EDIC, compared to 17 and 11 Member States in spring 2024). New EDICs are in the process of being set up, aiming to support secure and trusted data sharing in different domains (mobility and logistics, digital commons or health).

[26] European Commission, National competent bodies and authorities under the Data Governance Act, 2023.

To ensure European AI companies benefit from an expanding data ecosystem, the Commission will build on past and future initiatives to enhance data availability for AI. In this context, the forthcoming **Data Union Strategy** is intended to explore new and improved mechanisms to facilitate access to and use of data for AI development.

The Data Union Strategy could include several practical steps: listening closely to companies' data needs and finding ways to meet them, exploring ways to increase the availability of high-quality data, including potential investment to scale up data use and AI development in Europe.

Beyond making more data available, the strategy should also focus on cutting unnecessary bureaucracy. It should simplify how businesses can meet EU data rules, making it easier for them to share and use data for AI. At the same time, the strategy is poised to look at how Europe can attract more valuable data while ensuring that sensitive European data are protected when shared internationally.

A broad consultation is scheduled to be initiated in the second quarter of 2025 to assess the data needs of generative AI companies and other key stakeholders, ensuring that the strategy is well-aligned with industry demands and technological advancements. In parallel, building on the foundation of common European data spaces, it will focus on promoting the use of data spaces by AI factories, leveraging initiatives such as the Data Spaces Support Centre to facilitate adoption and integration.

To ensure trust in new technologies, including AI and Generative AI, the consistent and harmonised enforcement of the GDPR is essential, including its rules on international transfers in line with priorities identified in the Second report on the application of the GDPR.

In addition, through the Digital Europe Programme, the Commission will invest EUR 200 million over the next three years in deploying data infrastructures to support AI factories. This will include developing data spaces in critical sectors and further enhancing Simpl middleware software, and an additional EUR 100 million are earmarked for big data analytics research under Horizon Europe.

SUMMARY ASSESSMENT: ***Limited progress***

7 Digitalisation of SMEs

7.1 Member States should strengthen their policies and incentives for accelerating SMEs' digitalisation, in particular with specific strategies, sharing of best practices and leveraging common projects.

Member States should increase linkages between EDIHs and other networks (e.g., local and national digitalisation frameworks, Testing and Experimentation Facilities, National/European Cybersecurity Competence Centres and High-Performance Computing centres) and communities. The goal is to ensure a cohesive ecosystem that offers comprehensive digital transformation services across various technologies and sectors

PROGRESS AND STATE OF PLAY

Most EU countries are making strides in business digitalisation. There are considerable opportunities to further enhance this progress through various policy support measures already adopted, including sector-specific initiatives, as well as through support of the extensive EDIH Network.

One area of progress is the European Digital Innovation Hubs (EDIHs) network, a pan-European ecosystem supporting SMEs, mid-caps, and public sector organisations in their digital transformation. By bridging the gap between business needs and digital technologies, EDIHs play a crucial role in fostering innovation, enhancing competitiveness, and supporting the EU's digital transition goals.

Over the last year, the European Digital Innovation Hubs (EDIHs) Network has expanded its collaboration with TEFs, Cybersecurity Competence Centres, High-Performance Computing (HPC) Centres, and national digitalisation frameworks. These connections are critical for SMEs, mid-caps, and public sector organisations (PSOs) to access integrated digitalisation services.

TEF-EDIH collaboration has grown, ensuring AI, robotics, and automation technologies can be tested before full-scale deployment. Currently, more than 80% of EDIHs provide AI-related services, aligning increasingly with TEFs to deliver structured AI validation for SMEs in manufacturing, agri-tech, healthcare and smart cities fields.

Cybersecurity Competence Centres and EDIHs are strengthening cyber resilience initiatives. More than half of EDIHs offer cybersecurity services, providing SMEs with threat assessments, penetration testing, and compliance guidance under the Cyber Resilience Act.

HPC Centres are increasingly accessible to SMEs through EDIHs. More than 30% of EDIHs facilitate HPC-powered AI applications, big data processing, and computational modelling, particularly in biotech, climate simulation, and precision manufacturing.

Cross-border services remain limited, with only **2% of EDIHs services actively delivered to SMEs outside their own country**. However, more than a quarter of the 37 countries in the EDIH Network, comprising the EU Member States and 10 associated countries to the Digital Europe Programme (DEP) - Norway, Iceland and Lichtenstein, along with the seven newly associated countries (Türkiye, Serbia, Albania, Ukraine, Kosovo, Montenegro, and North Macedonia) - have EDIHs offering **interregional digitalisation services**, reflecting a growing trend toward pan-European cooperation.

The recent network expansion to include EDIHs and Seals of Excellence from these associated countries is expected to strengthen international cooperation and enhance digital transformation support across regions and national borders.

EDIHs are now well integrated into national and regional digitalisation frameworks, aligning with public funding programmes and smart specialisation strategies. This ensures SMEs receive more coordinated access to technical support, innovation funding, and digital skills training. The hubs facilitate networking, matchmaking and collaboration between businesses, research institutions, and solution providers, fostering synergies within the tech ecosystem.

Furthermore, AI factories, launched by EuroHPC in December 2024, are expected to accelerate AI adoption. These new facilities will provide SMEs, start-ups, and researchers with access to AI supercomputing resources, ensuring advanced AI solutions are developed and tested in alignment with European standards and values.

A more structured EDIH policy approach is being introduced through new calls for tender, ensuring the continuation of the network beyond 2025 and for the next three years, as the first funding period comes to an end. These calls aim to strengthen the network with AI foundations and further expand the EDIH Network to newly associated DEP countries. They are designed to enhance coordination between EDIHs, AI factories, TEFs, HPC Centres, and national digitalisation agencies, ensuring a cohesive, pan-European digital transformation strategy.

SUMMARY ASSESSMENT: ***Notable progress***

7.2 Member States are in particular encouraged to prioritise the integration and adoption of AI within the EDIH framework. This includes providing specialised AI services, facilitating access to, for example, AI Testing and Experimentation Facilities and the AI on demand platform

PROGRESS AND STATE OF PLAY

To accelerate AI adoption, EU Member States have introduced strategic measures that foster collaboration, provide financial support, and promote knowledge-sharing. One of the key initiatives that will promote the AI adoption and deployment is definitively the EDIHs network, jointly supported at the EU level, national and regional and local levels.

Over the last 12 months, the EDIHs have progressively evolved into key players within the AI ecosystem, helping SMEs, mid-caps, and PSOs integrate AI into their digital transformation, based on local needs. The new calls for consolidation and expansion of the network in 2025-2026 will further accelerate AI adoption, strengthening the EDIHs as centres for AI innovation and deployment. The EU is intensifying its focus on AI within the EDIH framework, expanding access to specialised services, Testing and Experimentation Facilities (TEFs), and the AI-on-Demand platform, ensuring a more structured and effective AI roll-out across sectors.

Over 80% of EDIHs currently provide AI-related services, supporting SMEs in AI adoption, testing, and deployment. AI services are now available in the vast majority of the regions covered by EDIHs, ensuring broad access.

As part of the AI ecosystem, EDIHs work more and more closely with TEFs to provide AI testing environments. SMEs can experiment with AI-driven automation, robotics, and digital twins, to ensure safe and efficient AI integration.

The AI-on-Demand platform serves as a central hub for AI models, tools, and computing resources.

High-Performance Computing (HPC) Centres, supporting more than 30% of EDIHs, enable SMEs to leverage supercomputing for AI-intensive applications in biotech, climate modelling, and smart manufacturing.

Cybersecurity Competence Centres and EDIHs collaborate to ensure AI adoption meets EU security and compliance requirements. More than half of the EDIHs offer AI-driven cybersecurity solutions, helping SMEs implement secure and compliant AI systems.

Despite progress, cross-border AI service delivery remains low at around 2%, highlighting the need for stronger cooperation between Member States.

SUMMARY ASSESSMENT: ***Limited progress***

7.3 Member States are encouraged to address the critical challenge of financing by establishing EDIHs as primary gateways for businesses to access public procurement opportunities in digital services and goods, and venture capital, facilitate connections with financial intermediaries and leverage EU support

PROGRESS AND STATE OF PLAY

The EDIH Network leveraged **synergy funding**, primarily from **ERDF (European Regional Development Fund) and RRF (Recovery and Resilience Facility)**, to co-finance its initiatives. More specifically, DEP (Digital Europe Programme) covers **50%** of project costs, requiring EDIHs to secure additional funding. The co-funding sources for the EDIHs have been so far as follows: 32% chose RRF; 22% opted for ERDF; 15% are using national funding and 21% mix funding sources. 11% rely on own funding or non-EU regional funding.

According to JRC research, EDIHs that relied on **RRF and ERDF experienced the most delays**, while those with **national or mixed funding** had fewer issues.

This new research indicates that better streamlining of co-funding mechanisms between the Member States and the EU is paramount for the success of the EDIHs network.

In terms of concrete results provided by the EDIHs, over the last year, **European Digital Innovation Hubs (EDIHs)** have reinforced their position as ***financial brokers*** (‘*sherpas*’) for SMEs, mid-caps, and PSOs, guiding them through funding, procurement, and investment opportunities.

Public Procurement and Financial Services – According to data reported by the EDIHs in 2024, 17% of EDIHs provide **direct funding support**, helping SMEs access public procurement, EU grants, and national financial schemes. EDIHs assist in navigating digital tenders, compliance frameworks, and contract acquisition.

Financial Matchmaking and Investment Access - According to data reported by the EDIHs in 2024, one-third of the EDIHs are involved in financial matchmaking, facilitating direct connections with financial intermediaries, venture capital firms as well as regional investment funds and increasing SME access to private sector financing.

Therefore, all in all, half of the EDIHs play a role in financial support, either through direct funding assistance or investment facilitation.

Pooling Financial Guidance and Innovative Funding Models - EDIHs are pooling financial intelligence by country and consolidating national co-financing opportunities, EU investment instruments, and local venture capital programmes. Some EDIHs are testing token-based funding models, allowing SMEs to exchange digital credits for financial advisory services and investment-readiness programmes.

Despite progress, cross-border financial access remains low at 2%, highlighting the need for stronger pan-European investment linkages.

SUMMARY ASSESSMENT: ***Significant progress***

7.4 Member States should intensify their activities to foster dissemination of the use of digital tools by SMEs, in particular with local actors (business organisation, cities, universities, etc.)

PROGRESS AND STATE OF PLAY

Beyond information described in the previous recommendation that relates to the dissemination of digital technologies – notably through EDIH and testing and experimenting facilities that are contributing to the use of digital tools by SMEs – no specific and relevant information has been collected.

SUMMARY ASSESSMENT: ***No progress***

8 Unicorns

8.1 Member States should mobilise public policies – especially in the area of tech transfer and the use of the public procurement budget to procure innovations from start-ups – to foster the scaling up of start-ups and facilitate the creation of spin-offs from universities and research centres. Progress in these areas should be monitored.

Member States should introduce or improve policy initiatives that aim to increase the amount and diversity of private capital (for example from national pension funds) available for co-investing in high-growth start-ups

PROGRESS AND STATE OF PLAY

Developments in 2024 in supporting of the Digital Decade unicorn goal include the following:

- The European Tech Champions Initiative (ETCI), a 'fund of funds' launched in 2023 by several Member States and the EIB, made progress in 2024 in supporting European technology scale-ups. ETCI has so far backed 8 funds with an amount of more than EUR 2 billion in commitments. This investment has mobilised five times that: EUR 10 billion in combined public and private sector resources. To date, 16 tech scale-up investments have been made in France, Germany, Italy, the Netherlands, and Spain, across various sectors, including cybersecurity, artificial intelligence, and deep tech.

- In 2024, three more Member States formally joined the European Startup Nations Alliance (ESNA), the Member State-driven initiative promoting the sharing and implementation of best policy practice for start-ups. Membership of ESNA is now at 21 of 27 EU Member States, representing 93% of EU's population, and 86% of its GDP. This expansion of ESNA membership signals a growing commitment by EU countries to implement, under national direction, growth-friendly policies and programmes for start-ups.

- In terms of tech transfer and spin-off creation, the '2024 EU Startup Nations' report (published by ESNA) outlined that Member States made progress in 2024 on the indicator relating to delivery of policies that support the smooth transfer of research developed in universities to spin-offs. In aggregate, Member States scored 77% on this indicator, an increase on the 71% achieved in 2023). Nevertheless, there is still considerable opportunity for growth in spin-off creation: while 28% of European researchers express interest in starting a spin-off, only 3% ultimately become academic entrepreneurs (source: WIPO, 2024).

- With over EUR 300 billion of a growth funding gap compared to the US, the EU has less capital to allocate to its companies with unicorn potential. EU pension funds can play a role to address this given their EUR 3 trillion in assets under management by increasing their tiny (approx. 0.01%) allocation to venture capital. There are initiatives in some countries to address this opportunity (for example ZuFinG II in Germany, Tibi 2 in France and Italy's amendment to the Decreto Concorrenza requiring funds to invest 10% of their assets in the real economy).

- The Commission has announced that in 2025 it would launch a Startup Scaleup Strategy [27] that is expected to address the difficulties that European start-ups and scaleups face in accessing

[27] European Commission, Towards an EU Startup and Scaleup Strategy, 2025.

capital, markets, services, infrastructure as well as talent needed to enable them to thrive in Europe and compete globally.

- The Commission is currently preparing a proposal for a 28th regime aimed at making it possible for innovative companies to benefit from a single, harmonised set of EU-wide rules wherever they invest and operate in the single market as announced in the Competitiveness Compass [28].

In Q3 2025 the Commission is expected to launch the Apply AI Strategy which will outline the EU level action needed to stimulate widespread adoption of AI. This will also address the role of start-ups in driving uptake of AI in Europe's key industrial verticals.

SUMMARY ASSESSMENT: ***Significant progress***

[28] European Startup Nations Alliance, EU Startup Nations Standard Report 2024, 2025; European Commission, Spin-offs: Driving innovation across the EU-27, 2025; European Commission, EU-funded startups drive technological sovereignty in Europe, 2025.

9 Cybersecurity

9.1 Member States should continue their efforts to take specific measures to address the cybersecurity skills gap

PROGRESS AND STATE OF PLAY

According to cybersecurity professionals' association ISC2, a Cybersecurity Skills Academy pledger, the growth of the cybersecurity workforce size in the EU in 2024 slowed while demand for these skills continued to increase[29]. While the overall workforce needs in the EU remained steady between 2022 and 2024, ranging between 1.15 M and 1.25 M, the gap in the cybersecurity workforce grew from an estimated 260 000 professionals to 274 000 in 2023 and to 299 000 in 2024.

The communication on a Cybersecurity Skills Academy[30] encouraged Member States to set up a European Digital Infrastructure Consortium (EDIC) addressing cybersecurity skills, an area of cooperation foreseen in the Digital Decade Policy Programme 2030. With the support of the Commission on awareness-raising about the project, Member States, under the leadership of Greece, have continued working on the project and the Commission has invested EUR 10 million in support of the implementation of the Cybersecurity Skills Academy under Digital Europe Programme calls in 2024.

Furthermore, the Polish Presidency of the Council has identified that 'the backbone of an efficient cybersecurity system is appropriately qualified professionals'[31], making cybersecurity skills a priority of their Presidency. Following up on a workshop with Member States held under the Hungarian Presidency of the Council and co-organised with the Commission and European Union Agency for Cybersecurity, in February 2025 the Polish Presidency of the Council hosted a dedicated debate under the Horizontal Working Party on Cyber Issues.

In parallel, National Coordination Centres (NCCs), in the framework of the European Cybersecurity Competence Centre (ECCC), are contributing to the implementation of actions laid down in the communication on a Cybersecurity Skills Academy – such as building a repository of cybersecurity training content and certifications, identifying funds invested in cybersecurity, or defining indicators to monitor the cybersecurity workforce.

The European Cybersecurity Skills Conference co-organised in September 2024 by the Hungarian Presidency of the Council and the ENISA[32] further provided an opportunity for Member States and other stakeholders (industry, European Cybersecurity Competence Centre, etc.) to discuss and present ongoing activities and explore synergies between them, in particular to advance the work on an attestation scheme for cybersecurity skills.

Lastly, in December 2024, building on the Cybersecurity Skills Academy's call for action directed at industry, which has resulted in a growing pledgers community, the European Commission published a call for expression of interest directed at higher education institutions, vocational education and

[29] ISC2, First Look at the 2024 Cybersecurity Workforce Survey, 2024
[30] European Commission, Communication COM(2023) 207 final on the Cybersecurity Skills Academy
[31] Polish Presidency of the Council of the EU, Programme of the Presidency
[32] ENISA, European Cybersecurity Skills Conference 2024, 2024

training providers and European Universities alliances[33], to create an Industry-Academia Network addressing skills development, to grow the cybersecurity workforce in Europe.

The formal application for the setting up of the Cybersecurity Skills Coalition EDIC is expected in 2025.

In 2025, the European Commission should launch the Industry-Academia Network of the Cybersecurity Skills Academy, addressing skills development, to grow the cybersecurity workforce in Europe.

As part of the Cybersecurity Skills Academy implementation, the ECCC is working on a report mapping funds invested at EU and national level in cybersecurity skills. Member States in the ECCC will ultimately decide whether this report can, in full, in parts or at all, be made public.

SUMMARY ASSESSMENT: ***Limited progress***

[33] European Commission, The Commission launches Industry-Academia Network to bridge cybersecurity skills gap, 2024

9.2 Member States that have not yet implemented the EU toolbox for 5G Cybersecurity should urgently adopt relevant measures to quickly and effectively address cybersecurity risks

PROGRESS AND STATE OF PLAY

A vast majority of Member States have reinforced or are in the process of reinforcing security requirements for 5G networks based on the EU Toolbox. However, some of the key measures have not been fully implemented in all Member States. In particular, while most Member States have legislative powers to perform a risk assessment of suppliers and issue restrictions, **only 13 have imposed restrictions on high-risk suppliers.**

This situation creates a significant risk of strategic dependency on high-risk suppliers in the single market and the EU's 5G networks being subject to interference from non-EU countries. This could also affect future 6G infrastructure, which could be built on 5G legacy networks from high-risk suppliers.

In light of this situation, it is now of utmost importance to avoid critical dependencies on single suppliers, de-risk our supply chain from high-risk suppliers and secure our critical infrastructure. Member States should therefore achieve the full implementation of the measures recommended via the Toolbox without further delay.

In addition, given the importance of increasing the effectiveness and consistency of implementation by Member States of the EU Toolbox measures, the Commission is looking at further action to enhance the resilience of the single market, including exploring possible legislative avenues.

More information on the state of play of the 5G Toolbox implementation can be found in the NIS Cooperation Group second progress report on the 5G Toolbox implementation from June 2023.

In addition, in its Communication from June 2023[34], the Commission assessed two 5G suppliers as presenting materially higher risks than other suppliers and committed to reflect this assessment in all relevant EU funding programmes and instruments, as well as in its corporate communications networks. Since then, the Commission has included strong security requirements to exclude high-risk suppliers from participating in EU projects or procurements. It has also taken steps to apply its commitment to its corporate communication networks.

SUMMARY ASSESSMENT: ***Limited progress***

[34] European Commission, C(2023) 4049 final.

10 Basic skills

10.1 Member States should prioritise investment in digital education and skills in line with the Council Recommendation on improving the provision of digital skills and competences in education and training, including targeted policies for groups most in need including vulnerable groups, the older population, people with little or no formal education, people living in rural areas and people with disabilities

PROGRESS AND STATE OF PLAY

Member States are actively engaged with the **Digital Skills and Jobs Platform**, operated by the European Commission. This platform provides Member States with a one-stop-shop for high-quality information on data, training initiatives and resources for digital skills at all levels, from basic to advanced. In 2024, the platform was visited 285 000 times. It is home to the Digital Skills and Jobs Coalition, consisting of over 15 000 registered stakeholders, and connects 25 **National Digital Skills and Jobs Coalitions**, representing the Member States. In addition, 22 national websites are connected to the core platform, continuously updating information on national initiatives. The Commission is also supporting the further development of the National Coalitions and exploring possibilities to set up new ones.

Under the Digital Decade Policy Programme, Member States began using the **Best Practice Accelerator** (**BPA**)[35] to share best practices and experiences with overcoming digital policy challenges, including the achievement of basic or advanced digital skills. In July 2024, under the leadership of Slovenia, the **Digital Skills Cluster** was launched, sharing over 25 replicable and concrete policy measures to increase basic skills across age groups and geographical areas. Additionally, on 4 July 2024, the winners of the 2024 edition of the **European Digital Skills Awards** were announced. Out of 267 applications, five outstanding projects were chosen, showcasing innovative approaches by Member States to empower individuals with digital competences, and foster digital literacy and inclusion.

SUMMARY ASSESSMENT: ***Limited progress***

[35] The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are available to all Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

11 ICT specialists

11.1 . Member States should swiftly develop initiatives, strengthen their policy and prioritise action in line with the specific recommendations for addressing the shortage of ICT professionals in the Council Recommendation on improving the provision of digital skills and competences in education and training. They should in particular support early exposure of young people, particularly girls, to STEM, promote VET and lifelong learning in the domain of ICT, increase the academic offer in advanced digital skills, facilitate collaboration among higher education institutions, boost industry integration and foster diversity and inclusion, particularly of women

PROGRESS AND STATE OF PLAY

Since July 2024, Member States have been expanding their academic offerings in advanced digital skills, focusing on creating joint programmes to foster collaboration among higher education institutions. They also provide short-term training programmes in key digital areas to support and promote lifelong learning in the area of ICT. At the same time, the community of stakeholders involved in developing **state-of-the-art education and training programmes** has grown to more than 435 organisations. This community includes 147 higher or secondary education establishments, 165 private companies and training providers, and 45 research organisations, from 26 Member States.

Member States have actively engaged in **EU Code Week**, an initiative aimed at promoting early exposure to STEM, particularly for young girls. In 2024, over 70 000 activities relating to coding and algorithmic thinking were organised across all 27 Member States, attracting two million young participants, with girls representing 48% of the total. In addition, on 4 July 2024, the winners of the **European Digital Skills Awards** were announced. Of the 267 applications, five outstanding projects were selected, highlighting innovative strategies used in Member States to empower individuals with digital competences, including initiatives to support women and girls in becoming ICT professionals.

The Digital Decade's Best Practice Accelerator has helped Member States to share initiatives aimed at increasing the participation of women in digital studies and careers. Notable best practices include an initiative by the Technological University in Dublin, Ireland, aimed at encouraging more women to pursue studies in computer science. Additionally, the 'Women in Digital' project by Croatia's Ministry of Justice, Public Administration and Digital Transformation has also been highlighted as a key effort in this area.

As part of the European Quantum Declaration, Member States are currently discussing their participation in **quantum competence clusters** of the Quantum Technologies Coordination Group. The aim of these clusters is to promote industry-focused research, innovation, and training. These efforts are integral to building a cohesive ecosystem across Member States and at the EU level, enhancing collaboration and development in quantum technologies.

SUMMARY ASSESSMENT: ***Limited progress***

12 EU Digital Identity Framework

12.1 Member States should give priority to the development of concrete use cases to support users and private and public service providers in the use of the EU digital identity wallet and trust services based on the European Digital Identity Framework

PROGRESS AND STATE OF PLAY

As of May 2024, following the entry into force of Regulation (EU) 2024/1183 establishing the European Digital Identity (EUDI) Framework, Member States are actively developing their own EUDI Wallets, with plans to launch them by the end of 2026. These efforts are supported by the adoption of rules in November 2024 and April 2025, which outline the core functionalities and certification requirements of EUDI Wallets, and the adoption of Directive EU 2025/25[36], which introduces the EU Company Certificate and digital EU power of attorney, both designed to work with the EU Digital Identity Wallet.

Under the Digital Europe Programme, Member States are participating in large-scale pilot projects aimed at testing EUDI Wallets in everyday scenarios that benefit citizens, businesses, and governments. Since April 2023, these projects have involved **over 350 private and public entities from almost all EU Member States,** as well as **Norway, Iceland, and Ukraine**, exploring 11 different use cases.

- Nordic-Baltic eID (NOBID), involving Nordic and Baltic countries along with Italy and Germany, is currently piloting the use of EUDI Wallets for SEPA Instant payments.
- Potential involves over 140 public and private partners from 17 EU Member States and Ukraine. It aims to pilot six use cases: access to online public services, mobile driving licences, opening of bank accounts, SIM card registration, e-signatures and e-prescriptions.
- EU Digital Identity Wallet Consortium (EWC), led by Sweden, focuses on testing three use cases: digital travel credentials, payments and organisation identity. This large-scale project (LSP) involves more than 50 public and private partners.
- Digital Credentials for Europe (DC4EU), led by Spain is focused on the piloting of educational and professional qualifications and social security credentials, including the European Health Insurance Card and Portable Document A1 for seconded workers.

To support the piloting of EUDI Wallets, the Commission launched a second funding round for **pilot projects in 2024**, which received strong interest from public and private actors across Member States. This initiative will support two pilot projects with a total investment of over EUR 23 million from the Commission. These projects, involving over 300 public and private entities from the majority of Member States, as well as Norway, Bosnia and Herzegovina, Moldova, and Ukraine, are scheduled to start in Q3-2025 and will run for two years.

The '**We Build**' pilot project, jointly led by Sweden and the Netherlands, includes participation from six other Member States and over 170 entities from various sectors. It focuses on expanding the use of wallets to a variety of business and 13 payments scenarios across B2C and B2B contexts.

[36] Directive (EU) 2025/25 amending Directives 2009/102/EC and (EU) 2017/1132 as regards further expanding and upgrading the use of digital tools and processes in company law.

Led by France, the '**Aptitude**' pilot project involved a high level of participation by public and private actors across 11 Member States and Ukraine, bringing together over 110 participants. This project focuses on advancing the use of wallets for travel and payment purposes.

Results from these two pilot projects will significantly contribute to the development of the wallet ecosystem and facilitating the launch of EUDI Wallets by Member States by the end of 2026.

The Council Directive (EU) 2025/50 of 10 December 2024 on **faster and safer relief of excess withholding taxes (FASTER)** (see also 13.1 below) is based among others on a common EU-wide **digital tax residence certificate** that will shift the issuance of tax residence certificates from a paper-based to a digitalised process. This will make the withholding tax relief procedures faster, more efficient and less resource intensive. The Directive envisages the use of the EUDI Wallet as a means of verification of the tax residence, provided that all EU-level legal and technical requirements are met.

SUMMARY ASSESSMENT: ***Significant progress***

13 Digital Public Services

13.1 Member States should focus investment and regulatory measures to develop and make available secure, sovereign and interoperable digital solutions for online public and government services, including possibly in the context of public procurements

PROGRESS AND STATE OF PLAY

Over the past year, Member States have continued to invest in robust digital infrastructures at both national and subnational levels, enhancing the support for secure and interoperable online services.

The 2024 Digital Public Administration factsheets show that investments are being made in upgrading existing infrastructure and creating new systems to improve digital connectivity and service delivery. The focus has been on data-related initiatives, primarily in establishing and enforcing legal frameworks for data management and access, to align with EU legislation and develop effective data policies. These initiatives highlight the pivotal role of innovative technology in driving societal and economic progress, and the importance of public sector data in fostering innovation and economic competitiveness. To support cross-border digital public services, the **Interoperable Europe Act**[37] , while an implementing act on **interoperability regulatory sandboxes** will be adopted in Q2/Q3 2025. These initiatives are analysed in Sections 13.2 and 13.4.

Member States are finalising the transposition of the **Digitalisation Directive (EU) 2019/1151**, enabling fully online company registration and preparing for the transposition of **Directive (EU) 2025/25**, due by mid-2027, which applies the **'once-only' principle** and introduces a **digital EU Company Certificate**, expected to save EUR 400 million/year. The application of the 'once-only' principle through the **Business Registers Interconnection System (BRIS)**, also making more company information publicly available and exchangeable between business registers, means that companies will not need to resubmit documents when they set up subsidiaries and branches in other Member States. In addition, they will be able to use the digital EU Company Certificate as a European corporate identity card, as it is compatible with the forthcoming European Business Wallet. Implementing acts related to this Directive will be adopted in 2026.

Member States are also making progress on the **Single Digital Gateway**[38] and its **Once-Only Technical System**. By the end of 2025, most Member States are expected to be technically ready to implement these tools, enhancing cross-border interactions for citizens and businesses and enabling direct document transfers between authorities. However, further efforts are needed to connect all relevant authorities and provide comprehensive online digital public services. A 2024 study has shown that these systems could cut SMEs' cross-border administrative costs and time by more than half.

Progress on the industrial permitting front, which is crucial for boosting the EU's business competitiveness in sectors like renewable energy and semiconductors, varies across Member States.

[37] Regulation (EU) 2024/903 laying down measures for a high level of public sector interoperability across the Union (Interoperable Europe Act).

[38] Regulation (EU) 2018/1724 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving services and amending Regulation (EU) No 1024/2012

While the Single Digital Gateway, the **Net Zero Industry Act**[39], and the **Critical Raw Materials Act**[40] provide a legal framework to streamline these procedures, only some Member States have made significant progress in streamlining and digitalising permitting. Consequently, several Member States still lack the necessary organisational reforms and digital infrastructure.

In March 2025, the High-Level Forum on Justice for Growth was launched to explore, among others, a common 'Justice IT/AI toolbox' to allow Member States to share AI and digital tools for the justice sectors. On 24 September 2024, the **Public Procurement Data Space** (PPDS) was launched, aggregating procurement notices from several Member States including Austria, Finland and Germany as well as Norway. This platform aims to improve reporting on public procurement. Member States are required to integrate approximately 80 000 national authorities into the Once-Only Technical System under the Single Digital Gateway Regulation in order to enhance interoperability and the availability of online public services across the EU.

Regarding the work carried out by Member States since July 2024 to develop **sovereign digital solutions** for online public and governance services, no specific information has been submitted to the Commission.

Member States are also making progress on customs and taxation through EU-supported digital reforms. The Customs and Fiscalis programmes fund both central systems and national implementation, helping Member States to develop digital capacity. The Union Customs Code has advanced paperless and automated customs, with key projects like I Control System 2 and the new computerised transit system (NCTS), improving national efficiency and security. New VAT rules (Council Directive (EU) 2025/516) will allow Member States to introduce mandatory e-invoicing and real-time digital reporting, easing compliance and harmonising cross-border trade. The FASTER Directive supports Member States by streamlining withholding tax relief through a digital tax residence certificate. For SMEs, Directive (EU) 2020/285 promotes interoperable digital tools that simplify VAT procedures across Member States.

SUMMARY ASSESSMENT: ***Notable progress***

[39] Proposal for a Regulation on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act) COM/2023/161 final

[40] Regulation (EU) 2024/1252 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020

13.2 Member States should monitor the effective use of online public services by national and, possibly, by cross-border users as well as possible gaps, including between urban and rural areas

PROGRESS AND STATE OF PLAY

Through the adoption of the **Interoperable Europe Act**, Member States committed to enhancing cross-border interoperability and further developing trans-European digital public services (TDPS). Interoperability assessments – Article 3 of the Act – aim to ensure that binding requirements for TDPS have fully addressed cross-border interoperability issues early on. Depending on the scope, public organisations, including both Member States and EU entities, are either **legally required** to carry out interoperability assessments, or, in other cases, a public organisation may carry out interoperability assessments on a **voluntary basis**. Depending on the context, interoperability assessments can be conducted at national, regional and local level.

The criteria for the selection of labelled **interoperability solutions** have been approved by the Interoperable Europe Board in May 2025.

Following this milestone, the first selection of Interoperable Europe solutions will happen during the third Board meeting in December 2025. During this meeting, Board members will also discuss the first Annual Report on the State of Interoperability in the Union, drafted under the new **Monitoring Mechanism,** which monitors the Act's implementation in the EU.

SUMMARY ASSESSMENT: ***Limited progress***

13.3 Member States should intensify their efforts to ensure that everyone, including older people and people with disabilities, has equal access to online public services

PROGRESS AND STATE OF PLAY

Initial data from the 2022-2024 monitoring period of the Web Accessibility Directive indicates that Member States are increasing their efforts to ensure that everyone, including older people and people with disabilities, has equal access to online public services. Member States' reports highlight ongoing training and awareness-raising initiatives, which are crucial for improving the accessibility of these services.

To align with the **European Accessibility Act**, the harmonised standard EN 301 549 on the accessibility of ICT products and services, is being updated. A new version of this standard is scheduled to be published by 15 September 2025. This update is essential as it will ensure that the standard and its supporting documents meet the latest web accessibility guidelines and maintain compatibility with the **Web Accessibility Directive**.

Overall, progress in ensuring people with disabilities have equal access to online public services is steady. Member States are improving their monitoring and reporting capabilities, which improves their ability to assess the accessibility of websites and mobile applications of public services. While improvements have been made in website accessibility, significant efforts are still needed to make all online public services fully accessible to people with disabilities.

SUMMARY ASSESSMENT: ***Notable progress***

13.4 Member States should work with the Commission on ways to ensure digital technologies and tools are put at the service of more agile, red-tape free, data-based regulatory frameworks

PROGRESS AND STATE OF PLAY

The Competitiveness Compass identifies regulatory sandboxes as key tools to support the EU's innovation and simplification initiatives. Introduced by the Interoperable Europe Act, regulatory sandboxes allow new technologies and regulatory approaches to be tested in a controlled environment before being fully implemented. Several Member States are integrating AI tools for data analysis to inform regulatory decisions. Some of them have shown interest in collaborating on regulatory sandboxes to support cross-border digital public services. With the implementing act on regulatory sandboxes (Q2/Q3 2025) and the EDIC in the making (IMPACTS EDIC) planning a cross-border sandbox, the Interoperable Europe Board is set to define specific use cases.

SUMMARY ASSESSMENT: ***Limited progress***

13.5 Member States are invited to make further progress with their multi-country commitments and cooperation in the field of connected public administration and the European Blockchain Services Infrastructure, through the EDICs recently established

PROGRESS AND STATE OF PLAY

The Innovative Massive Public Administration InterConnected Transformation Services (IMPACTS) EDIC is currently being set up, with a significant milestone reached on 4 December 2024 when four Member States – Greece, Croatia, Hungary and Poland – submitted a formal application. Additionally, Cyprus, Finland, Germany, Luxembourg, Malta and Slovenia are listed as observers. The applications are now being assessed by the European Commission. The goal of IMPACTS EDIC is to create a long-term collaboration mechanism between Member States to launch common innovative projects to support cross-border interoperability in advanced public services.

SUMMARY ASSESSMENT: ***Notable progress***

14 e-health

14.1 Member States should ensure that access to electronic health records, with a minimum set of health-related data stored in public and private electronic health record systems, is technologically enabled and easily accessible for people (via a patient portal or patient mobile app). In alignment with the goals of the European Health Data Space, this minimum set should include electronic health record summaries, electronic prescriptions and dispensations, as well as electronic results and reports including medical imaging studies, laboratory results, and hospital discharge reports

PROGRESS AND STATE OF PLAY

Significant strides have been made towards achieving the objectives outlined in the Digital Decade Policy Programme, particularly the target of ensuring that 100% of EU citizens have access to their electronic health records. The composite score for the EU's progress in this area has risen from 79.1/100 in 2023 to 82.7/100 in 2024, reflecting an annual growth rate of 4.5%. All Member States have some form of electronic health access service in place, whether at regional or national level, and have extended the range of health data accessible to users. This includes advancements in technology and methods used for access, as well as broadening the categories of individuals who can access services.

Despite improvements in the availability of hospital discharge reports across the EU, no progress has been noted in the availability of medical images. The most significant data enhancements in 2024 were in the areas of personal information, procedures and operations, e-dispensation, and lab test results.

Moreover, there has been a steady increase in the number of healthcare providers integrating and contributing data to electronic health records across Member States. However, a significant gap remains between public and private providers, with private actors lagging behind in their integration efforts. The adoption of a (pre-)notified eID compliant with the EUDI Regulation for authentication purposes has increased substantially across Member States, facilitating more secure and widespread access to health data.

The European Health Data Space Regulation[41] entered into force on 26 March 2025. This regulation supports citizens' rights to access their electronic health data, requiring Member States to ensure such access through services provided at national, regional or local levels.

SUMMARY ASSESSMENT: ***Significant progress***

[41] Regulation (EU) 2025/327 on the European Health Data Space and amending Directive 2011/24/EU and Regulation (EU) 2024/2847

14.2 Member States should cooperate to fully deploy the innovation potential of health data by maximising the use of existing and future health data initiatives and infrastructure, investing in the research and deployment of advanced technologies such as high-performance computing and trustworthy AI applications in healthcare, while strengthening cybersecurity measures

PROGRESS AND STATE OF PLAY

The European Cancer Imaging Initiative's central hub was set up and completed its technical validation in 2024. These developments will further support data analytics and the access to clinical data by clinicians, researchers and innovators across Member States to develop AI-based solutions. Additionally, a public procurement funded by the **DIGITAL programme** for **EUR 24 million** was launched to develop a platform for **Virtual Human Twins**, aimed at improving interoperability among computational models and datasets. Eight Horizon Europe actions (EUR 80 million) are expected to contribute as users of the platform in the future.

The European Health Data Space (EHDS) will provide Member States with a common legal and technical framework to enable secure, privacy and data protection-compliant re-use of health data. It aims to support national efforts by giving researchers and policymakers access to high-quality, interoperable datasets, overcoming fragmentation and strengthening data-driven innovation in health. In 2024, 70 institutes from 24 European countries advanced the development of the **European Genomic Data Infrastructure** (GDI) that in its second year of technical progress showcased demonstrators for federated access to genomic data. A new large pan-European project, the **Genome of Europe** (GoE) started in late 2024 to build the first European reference genome. The GoE data will feed into GDI, enabling groundbreaking medical research, and supporting public health policy. A coordination and support action project starting in 2025 to facilitate the overall strategic orientation of the 1+MG Initiative and to facilitate the creation and operation of a Genome EDIC will support the sustainability of the data infrastructure.

Following the announcement of the AI Innovation package in early 2024, the EuroHPC Joint Undertaking launched the AI factories initiative around AI-optimised supercomputers, aiming to pioneer advancements in AI models and applications in, health and life sciences among other areas. In December 2024, the sites to host the first AI factories were selected across seven Member States in a collaborative effort involving 17 European countries. Five of these sites will include a focus on life sciences.

On 15 January 2025, the European Commission presented a European action plan on the cybersecurity of hospitals and healthcare providers, a '100 days' priority for the new Commission. It focuses on strengthening the sector's capacities to prevent incidents; improving threat detection, as well as response and recovery; and deterrence. The plan will be implemented progressively during 2025 and 2026, in collaboration with health providers, Member States, and the cybersecurity community.

SUMMARY ASSESSMENT: ***Notable progress***

14.3 Member States are invited to make further progress in setting up the proposed EDICs in the area of genomics and cancer imaging data with a view to driving innovation in personalised healthcare and AI solutions in cancer care

PROGRESS AND STATE OF PLAY

In 2024 Member States engaged in the long-term implementation and sustainability of the European Genomic Data Infrastructure (GDI). Within this framework and as part of the 1+ million genomes (1+MG) initiative, they proposed creating an **EDIC for genomics**. This EDIC is envisioned to sustain the operation of the 1+MG Data Infrastructure, facilitating secure access and curated genomic and related health data. It is also intended to align with and connect to the broader European Health Data Space (EHDS).

In addition, an **EDIC Task Force** was created under the GDI project. This task force focused on discussing the setup, technical and legal interoperability with the EHDS, and the long-term implementation of the 1+MG initiative. Over the past year, the task force made progress on the draft statute and business model of the future EDIC and prepared the additional documentation needed for setting it up.

Progress was also made in setting up the **European Cancer Imaging (EUCAIM) EDIC**, with the pre-notification of the EDIC application submitted to the Commission in January 2025, supported by Spain, Latvia, and France.

SUMMARY ASSESSMENT: ***Significant progress***

15 Safeguarding rights

15.1 Member States should accelerate action that is necessary for the implementation of the regulatory framework, particularly the DSA. They should focus on establishing the necessary governance system at national level and to foster close cooperation and engagement with the Commission, the newly created European Board for Digital Services, Digital Services Coordinators and civil society

PROGRESS AND STATE OF PLAY

By 17 February 2024, Member States were required to designate their national Digital Service Coordinator (DSC) and empower them to oversee intermediary service providers and enforce the Digital Services Act (DSA). **26 Member States have designated their DSCs, and 19 have empowered them**. The European Commission had opened infringement proceedings against 13 non-compliant Member States for not having fulfilled their obligations. Since then, it closed 3 proceedings with 10 still ongoing. In addition, DSCs must have all the necessary resources (technical, financial, and human) to supervise providers and carry out their investigative and enforcement powers independently. By 31 January 2025, 16 DSCs had increased their staff working on the DSA, according to a survey of 26 designated DSCs and 1 prospective DSC. The same survey found that 10 had taken some enforcement action, including 3 that sent requests for information (RFIs), while 17 had not yet acted.

DSCs are also responsible for **certifying trusted flaggers**, independent entities such as NGOs that detect and notify illegal content, and out-of-court dispute settlement bodies. As of 31 January 2025, 16 trusted flaggers and 6 out-of-court dispute settlement bodies have been certified. These certified entities play a crucial role in ensuring the effective enforcement of the DSA and protecting users' rights.

The European Board for Digital Services, an independent advisory group for the cooperation and coordination of DSA supervision and enforcement among the DSCs and the Commission, has held 12 meetings as of 13 March 2025 and established **8 thematic working groups (WGs) to help ensure the consistent application of the DSA**. The Board has adopted documents on elections and information integrity.

SUMMARY ASSESSMENT: ***Notable progress***

15.2 Member States should step up effort to develop research and knowledge on – and monitor the trends in – the online domain, notably on the interplay between digital tool usage, exposure to harmful content, and mental health (including on children and adolescents)

PROGRESS AND STATE OF PLAY

The European Commission is committed to ensuring that people have safe and healthy digital experiences. The Digital Services Act (DSA) obliges the providers of all online platforms to ensure a high level of privacy, safety – including mental well-being – and security for children on their services. Moreover, the DSA obliges the providers of very large online platforms and search engines that have more than 45 million average monthly active recipients in the EU to analyse systemic risks to their users' mental and physical health and to mitigate against any identified risks. As part of the ongoing enforcement of the DSA, the Commission has for example launched investigations against the providers of TikTok, Facebook and Instagram, which include grievances related to these platforms' measures to safeguard users from 'rabbit hole' effects and online addiction.

A notable example is the Commission's intervention against TikTok Lite's 'Task and reward programme', which was deemed to pose a risk of exacerbating addiction and other mental health concerns. As a result of this intervention, the provider of TikTok suspended the programme and committed to not introducing similar initiatives in the EU, a pledge that has been made legally binding[42]. Moreover, one of the working groups (WG 6) of the European Board for Digital Services is dedicated specifically to the protection of minors.

In addition, the political guidelines for 2024-2029 emphasise the commitment to support young people. To that end, **the Commission will launch an inquiry on the impact of social media on young people's mental well-being, propose measures to address the addictive design of online services and, still in 2025, launch an action plan against cyberbullying.**

SUMMARY ASSESSMENT: ***Notable progress***

[42] European Commission, TikTok commits to permanently withdraw TikTok Lite Rewards programme from the EU to comply with the Digital Services Act, 2024.

16 Protecting children

16.1 Member States should work with the Commission to ensure secure, privacy preserving, user-friendly and interoperable digital identity solutions and trust services, including for age verification, to enable the development of a harmonized solution from 2025 across the EU, notably leveraging the EUDIW

PROGRESS AND STATE OF PLAY

Some Member States strongly prioritised this topic, including proposing age verification solutions at national level, notably in the process of transposing Article 28b of the Audiovisual Media Services Directive (AVMSD). However, to avoid fragmentation across Member States, a multifaceted, harmonised, and holistic approach is required at EU level. This should include policies and effective actions that restrict minors' access to explicit or violent content, and ensure an age-appropriate digital childhood across the EU, in close cooperation with the Member States. The **EU Digital Identity Wallets (EUDIW) which will be available by the end of 2026** to EU citizens and residents, will play a key role in this respect.

Meanwhile, the Commission has been working with Member States on a short-term solution to age verification, and has set up a **Task Force on Age Verification** with Member States' authorities, ERGA[43], and EDPB. The task force has been focusing on developing an EU-wide privacy preserving solution for age verification, in line with single market rules and rooted in the EU Digital Identity framework. The task force met three times in the first half of 2024, and its work continues under the **WG6 of the DSA Board,** where age verification is a key priority. The WG6 is the main forum to discuss progress at EU level and ensure Member States' continued commitment. ERGA and EDPB representatives are also involved.

Importantly, an EU-wide **age verification solution (AV app)** is being procured by the Commission, with the contract launched in January 2025 to deliver a white label app by summer 2025. This will be a privacy preserving and interoperable short-term solution to bridge the gap until EUDI Wallets are available.

SUMMARY ASSESSMENT: ***Notable progress***

[43] See also ERGA's 2024 report on the coordination of approaches to the protection of minors on video-sharing platforms (VSPs) and on-demand services, including age verification tools, criteria for content flagging, and parental control. Moreover, the successor of ERGA, the European Board for Media Services ('EBMS'), is expected to continue to focus on the issues of protection of minors and age verification in an online environment.

16.2 Member States are encouraged to continue coordinating with the Commission to increase protection, digital empowerment and safety of children online, notably in the implementation of the European Strategy for a Better Internet for Kids (BIK+). Special attention should be given to awareness-raising initiatives concerning new challenges to child safety and well-being raised by artificial intelligence, virtual worlds, overexposure to digital content, digital threats (such as hate speech, cyberbullying, harassment, child sexual abuse, grooming, and violent content), or aggressive marketing, including through child protection safeguards by design.

Member States should step up effort to cooperate on protecting children from the risks that the use of digital technologies has on their health including with better monitoring and research

PROGRESS AND STATE OF PLAY

The **2022 Better Internet for Kids (BIK+) strategy** supports and complements the implementation of the Digital Services Act (DSA) provisions on protection of minors, through the expertise and activities of the network of Safer Internet Centres (SICs) and by the BIK platform[44]. Together they develop awareness campaigns and provide resources on online risk for children, parents/carers and teachers in all EU official languages. The SICs also offer helplines services to provide support on a wide range of online topics, and hotlines to which the public can report child sexual abuse material online.

In 2024, the network and the BIK platform:

- Reached more than 35 million users, providing them with almost 2 300 new resources. Network resources address diverse online opportunities and challenges, including topics such as algorithms, artificial intelligence, cyberbullying, online harms, media literacy, healthy screen use, and digital marketing tactics, alongside many others.
- On **Safer Internet Day 2024** almost 19 000 schools and over 17 000 other organisations were involved in SIC actions across Europe alone.
- Organised more than 2 100 events involving youth participation.
- Launched the #MediaSmartOnline campaign to spotlight media literacy actions, initiatives, and resources across Europe. The campaign builds on the resources available within the SICs network while maximising the efforts and activities of other stakeholders involved in supporting practices, developing policy and carrying out research into media literacy including NGOs, government agencies and industry. The campaign aims to raise awareness on issues such as disinformation and misinformation, and generally to enhance media literacy skills among children and young people, while also better upskilling those that support them (such as parents, caregivers and teachers).
- Launched the #AdWiseOnline campaign (a joint DG CNECT/DG JUST initiative) to address the risks faced as young consumers by children online. The campaign aims to raise awareness on children's consumer rights by informing parents, guardians, educators, and policymakers about specific manipulative gaming and digital marketing practices (e.g. persuasive design,

[44] European Commission, Better Internet for Kids, https://better-internet-for-kids.europa.eu/en

dark patterns, and loot boxes) targeting children and young people.

- Created a guide to age assurance, available on the BIK platform, including: family-friendly explainers, a report mapping age assurance typologies and requirements, a guide to age assurance for digital providers.

The full results of the first evaluation of BIK+ were s published in May 2025[45]. The monitoring of the implementation of BIK+ is also under way at national level through the BIK Policy monitor (6th report has been published in May 2025).

In addition, the Commission and Member States continue to work towards a better protection of children against online risks while fostering their empowerment and active participation online in 2025, as exemplified with the actions described under preceding recommendations. Preventing and protecting children against any form of violence, including online, is also underlined in the 2024 Commission Recommendation on integrated child protection systems[46]. The Commission and Member States are advancing in its implementation, notably via the EU Network for children's rights.

SUMMARY ASSESSMENT: ***Limited progress***

[45] European Commission, First evaluation of the European strategy for a better internet for kids, May 2025

[46] Commission Recommendation (EU) 2024/1238 of 23 April 2024 on developing and strengthening integrated child protection systems in the best interests of the child.

17 Human-centred AI

17.1 Member States should accelerate action that is necessary to accompany the implementation of the AI Act. This requires notably to foster close cooperation and engagement with the Commission, the newly created AI office and National regulators, and civil society.

Member States should step up their efforts to develop research on human-centric AI systems

PROGRESS AND STATE OF PLAY

The **AI Board**, where Member States come together regularly to exchange best practices and discuss implementation issues, has started operating, with its first meeting held on 10 September 2024. The AI Board has two official support groups, the Scientific Panel and the Advisory Forum, and numerous subgroups that address detailed areas of the implementation process. In addition, on 2 February 2025 the prohibitions of AI systems that are incompatible with fundamental rights became applicable. To help users understand these provisions, on 4 and 6 February 2025 the Commission adopted **guidelines regarding prohibited practices, and guidelines regarding the definition of an AI system**.[47] For general purpose AI (GPAI) models, the Commission has launched a group of stakeholders, coming from industry, academia, and civil society, among others, to create codes of practice. These will be adopted before the rules for GPAI enter into force in August 2025.

The Commission also launched the **AI Pact, an initiative to accompany organisations in their compliance journey and foster early action by front-running organisations to support the development and deployment of trustworthy AI**. The Pact consists of a network of more than 2 300 stakeholders (including companies, not-for-profit organisations, academics, and public organisations) who should contribute to the creation of a collaborative community, sharing their experiences and knowledge. To that end, the AI office organises webinars for a better understanding of the AI Act and how to prepare for its implementation, and gathers insights into best practices and challenges faced by the participants. In addition, more than 190 companies are involved in the Pact. These companies come from diverse sectors and include multinational corporations and European SMEs that provide or deploy AI systems. They have accepted to sign pledges to take measures to anticipate compliance with key AI Act requirements as far as possible, and to share corresponding good practices.

Member States have continued working to enhance research on human-centric AI systems through several programmes, and through participation in EU-supported initiatives:

1. Horizon Europe, providing substantial funding for AI research with a focus on human-centric approaches. This involves collaborative projects that prioritise user safety, privacy, and ethical considerations in AI development.
2. The Digital Europe Programme aiming to boost Europe's digital capabilities, including AI, by supporting the development of state-of-the-art infrastructure and by fostering collaboration among Member States.

[47] Commission on the Commission Guidelines on prohibited artificial intelligence practices established by Regulation (EU) 2024/1689 (AI Act), https://ec.europa.eu/newsroom/dae/redirection/document/112367, 4 February 2025

3. Digital Innovation Hubs supporting the creation and expansion of networks of AI innovation hubs to promote collaboration of entities based across the EU.
4. Public-private partnerships between governments, industry, and academia translating human-centric AI research into practical applications.
5. Providing targeted support for SMEs and start-ups, including financial incentives, guidance and resources.
6. Infrastructure development including investing in computing resources, and data storage facilities that can support AI development and deployment.

SUMMARY ASSESSMENT: ***Notable progress***

18 Preserving information integrity and democracy

18.1 Member States should foster the growth of a community that would tackle different challenges linked to disinformation, like fact-checking, media literacy and research activities, such as engaging in more research on disinformation, regarding structural, psychological, sociological, and technological factors driving it.

Member States could in particular foster the growth of fact-checking services to contribute to the new digital media ecosystem as well as invest in developing technological tools that can help users better detect and contextualise disinformation.

Member States should create and implement a strategy for countering foreign information manipulation and interference (FIMI) campaigns. They should continue working on identifying FIMI campaigns, while also creating efficient and effective channels for the exchange of data.

PROGRESS AND STATE OF PLAY

The fight against disinformation remains an important priority, despite efforts to enhance fact-checking, media literacy, and research activities. A cornerstone of these efforts is the **European Digital Media Observatory (EDMO)**, an independent platform that unites fact-checkers, academic researchers, and other stakeholders with the aim of combating disinformation. EDMO has expanded into a network of 14 hubs covering all 27 Member States, as well as Norway. These hubs are instrumental in detecting and analysing disinformation campaigns and organising media literacy activities at both national and European levels.

Regarding fact-checking services, the EU has been proactive in supporting initiatives that increase the capacity to identify and counter disinformation. For instance, the Commission supports a new set of projects that improve media literacy skills among Europeans, promote critical thinking, and mitigate the impact of disinformation. These efforts are complemented by the development of technological tools designed to help users better detect and contextualise disinformation. Different research projects have resulted in the development of tools to detect disinformation and AI-generated content, as well as tools to help the public, fact-checkers, and journalists with content verification and analysis.

One important initiative spanning the entire EU is the **European Fact-Checking Standards Network (EFCSN)** - an independent coalition of fact-checking organisations spanning Europe. The EFCSN was set up to promote high standards in fact-checking, enhance collaboration among fact-checkers, and counter disinformation effectively. As of January 2025, the EFCSN comprises 48 verified member organisations from 19 Member States and several other countries.

The **2022 Code of Practice on Disinformation** was converted into a code of conduct under DSA[48], marking further progress in this area. As part of the code, signatories, including providers of online platforms, players from the advertising ecosystem, fact-checkers, civil society, research, and other organisations, agreed to create a framework for close collaboration through a permanent taskforce. The Code's Taskforce has since proved its effectiveness in exchanging information and cooperation between signatories. In particular, the Rapid Response System (RRS) of the Code proved to be a very effective tool during European Parliament and national elections in 2024 (e.g. in France and Romania),

[48] Converted into a code of conduct under Article 45 DSA in February 2025, see Commission Staff Working Document "Digital Decade 2025: progress and outlook" accompanying the State of the Digital Decade 2025

allowing civil society organisations, fact-checkers and online platforms to cooperate on time-sensitive content that they deemed a threat to the integrity of the electoral process.

In addition, the enforcement of the Digital Services Act (DSA) is ongoing and will continue throughout 2025. Through this work, the European Commission will systematically scrutinise the algorithmic systems of very large online platforms and search engines and how their providers implement measures to fight disinformation.

SUMMARY ASSESSMENT: ***Notable progress***

18.2 Member States should explore the establishment of a European Observatory on the Digital Divide to analyse, from a comparative perspective, the issue of digital divide impacting vulnerable social groups across the EU

PROGRESS AND STATE OF PLAY

The digital divide in the EU disproportionately affects vulnerable groups, with only 33.61% of individuals with low education, 28.19% of those aged 65-74, and 47.5% of rural residents possessing at least basic digital skills, limiting their access to essential services and economic opportunities in an increasingly digital society. In this context, the Digital Decade targets are consistent with those of the European Pillar of Social Rights Action Plan to improve skills and employment and reduce poverty, and with the commitment of the European Declaration on Digital Rights and Principles, to 'a digital transformation that leaves no one behind'.

Setting up a European Digital Divide Observatory[49] is a crucial opportunity to monitor and address digital inequalities at the local level, helping municipalities identify gaps, share best practices, and secure targeted funding for digital inclusion. By enabling cities to analyse the digital divide within their populations, this initiative would support evidence-based policymaking and collaboration to ensure that no one is left behind in the digital transition.

Setting up local Digital Divide Observatories involves a wide range of stakeholders, including municipal governments which are responsible for implementing local digital inclusion policies, European city networks like Eurocities which facilitate knowledge exchange and advocacy, and EU-funded projects such as Living-in.EU, CitiMeasure, and UserCentriCities which provide frameworks and resources for digital transformation.

However, these initiatives remain sparse and fragmented, with only a handful of cities, such as Barcelona, Ghent, and Bordeaux actively developing Digital Divide Observatories. Specifically in 2024, Bordeaux Metropole carried out a qualitative sociological study, gathering testimonials from citizens. But many municipalities lack the resources, expertise, or political prioritisation to engage in such projects, resulting in uneven progress across Europe. Without structured EU-level support and dedicated funding, smaller or less well-equipped cities risk falling further behind, exacerbating regional disparities in digital inclusion.

Should the creation of an EU-wide observatory not be immediately pursued, Member States could be encouraged to support and scale up existing local observatories across Europe, including by facilitating their collaboration and enabling them to function as a network.

In this context, the Commission is exploring with Member States best practices to encourage digital inclusion.

SUMMARY ASSESSMENT: ***Limited progress***

[49] Digital Divide Observatories by European cities, https://eurocities.eu/latest/a-digital-divide-observatory-by-european-cities/

18.3 Member States are encouraged to continue supporting the Commission in the effective enforcement of the Digital Services Act in relation to the fight against disinformation, especially by providing supporting data

PROGRESS AND STATE OF PLAY

In February 2024, the European Board for Digital Services, an advisory body tasked with supporting the Commission with the enforcement of the Digital Services Act (DSA), notably by helping coordinate the work of the national Digital Services Coordinators (DSCs), started operating[50]. A working group was set up under the Board - Working Group 4 on Integrity of Information Space (WG4) - to coordinate the work on information integrity, which includes disinformation and online integrity of elections.

This facilitated intensive collaboration, with a special focus on major elections such the European Parliament election, but also elections in France, Austria, Lithuania, Croatia, Romania and Germany. The experience and best practices gathered during this work were formalised in the Elections Toolkit for the DSCs adopted by the Board in February 2025.

Gathering data to help better understand the online environment at both EU and Member State-level is an important part of this workstream, as is the sharing with the Commission of potential evidence on the potential breaching of the DSA obligations by very large online platforms and very large online search engines. Coordination on this via WG4 has been steadily progressing.

The delegated act on data access, planned for adoption in the second quarter of 2025, will further boost data gathering capabilities at EU and Member State-level. The role of the DSCs will be to designate the vetted researchers that would be able to access the non-public data on online platforms. Although indirectly (via networks of researchers supporting the implementation of the DSA), this will help Member State and EU authorities to gain a better understanding of the functioning of the online environment and capture potential breaches of the DSA.

SUMMARY ASSESSMENT: ***Limited progress***

[50] See Recommendation 15.1 above.

18.4 Member States should foster media freedom and pluralism to help citizens to access a diverse online information and news space, by supporting the industry and cooperating with other Member States and with the European Commission

PROGRESS AND STATE OF PLAY

A free and pluralistic media environment is essential for the rule of law, with free and independent media playing an important role as watchdogs of democracy and holding power to account.

Since 2020, the Commission's annual Rule of Law Reports monitor the rule of law situation in each Member State and the EU as a whole, including media freedom and pluralism. Since 2022, the Reports include specific recommendations to Member States, also on issues related to media freedom and pluralism, such as independence of public service media, allocation of state advertising or working environment of journalists, which the Member States have been addressing to varying degrees.

The European Media Freedom Act (EMFA)[51], which entered into force on 7 May 2024, aims to improve the functioning of the single market for media services as they become increasingly digital and inherently cross-border.

The Commission has actively assisted Member States in applying the Regulation, including by organising a preparatory meeting in December 2024 and a bilateral 'readiness check' meetings with each Member State which focused on the provisions of the Act that require Member States to adopt measures to bring their legal frameworks into compliance with the EMFA, most of whose provisions will become applicable in August 2025.

The importance of the EMFA is illustrated by the fact that when citizens get their news from traditional media tend to be equally convinced of the positive contribution of information to public debate. Conversely, people who get their news from social media are more likely to think that the news is divisive, harmful or spreads lies (2024 EU-27 Media consumer survey).

In addition, Member States are in the process of transposing Directive (EU) 2024/1069 of 11 April 2024 aimed at protecting people who engage in public participation from manifestly unfounded claims or abusive court proceedings ('Strategic lawsuits against public participation', SLAPP) by the deadline of May 2026. With this directive, for the first time ever in the EU, a system of powerful procedural safeguards for cross-border SLAPP cases has been put in place. The safeguards presented therein (protection against early dismissal of manifestly unfounded claims, remedies against abusive court proceedings and protection against third country SLAPP-judgements) enable courts to deal with abusive litigation, as well as deter potential claimants from engaging in such practices.

The Commission will publish in Q2 2025 a new edition of the European Media Industry Outlook, which will provide insights at EU-27 level on market data and trends in the audiovisual, videogames, news media industries and XR, and consumer preferences, using the results of the 2024 consumer survey.

SUMMARY ASSESSMENT: ***Limited progress***

[51] Regulation (EU) 2024/1083 establishing a common framework for media services in the internal market and amending Directive 2010/13/EU (European Media Freedom Act)

19 Smart greening

19.1 Member States should consider wider deployment of digital solutions in supporting the sustainability targets of climate-critical sectors such as energy, transport, buildings, and agriculture. This will also support the competitiveness and growth of the EU green digital tech market

PROGRESS AND STATE OF PLAY

By early 2025, the EU had accelerated the deployment of digital solutions across climate-critical sectors through a range of EU-level initiatives, policy measures, and innovation projects. In the energy sector, a flagship Horizon Europe project 'TwinEU' was launched to develop a digital twin of Europe's electricity grid, improving grid efficiency and enabling the integration of renewables. The Horizon Europe project 'Divine' was launched to set up an ecosystem to aggregate private and public agri data that interconnects existing agri data spaces, thereby enabling the sharing of data among stakeholders, while other initiatives such as 'AgriDataValue' have been working on combining advanced big data and data-spaces technologies with agricultural knowledge, new business models and agricultural policies. In parallel, the ECLIPSE project, co-funded by the Digital Europe Programme, began deploying the Common European Reference Framework for energy-saving applications. This Framework integrates smart meter data and user-specific tools to enable real-time energy monitoring and behavioural change, contributing to energy demand reduction and security. Furthermore, in March 2024, the Commission adopted a delegated regulation under the recast Energy Efficiency Directive making it compulsory for large data centres to report energy-related key performance indicators (KPIs), laying the groundwork for greater transparency and efficiency in the ICT infrastructure sector.

In transport, the common European mobility data space (EMDS) started to be deployed in late 2023 with the launch of the deployEMDS project, piloting data-sharing use cases in nine cities and regions across several Member States. The objective is to accelerate sustainable and smart mobility and contribute to a reduction in transport emissions.

Digital solution and tools are crucial for the proper uptake in policies of environmental big-data (e.g. satellite) also through the development of AI-based solutions that is explored in a series of Horizon Europe projects.

In agriculture, the conclusion of the AgriDataSpace project in Q2 2024 resulted in a comprehensive blueprint for the Common European Agricultural Data Space (CEADS), with deployment actions to commence in 2025.

In buildings, digital tools such as AI-driven energy management systems and simulation models began to be deployed in smart city energy grids and public buildings, although these efforts remain fragmented. The Digital Product Passport initiative gained momentum with the adoption of the Ecodesign for Sustainable Products Regulation in mid-2024, mandating digital traceability of sustainability metrics.

In other cross-cutting sectors, the European Green Digital Coalition published in 2024 a science-based methodology to assess the net carbon impact of ICT solutions, creating an evidence base to scale green digital technologies. A follow-up pilot was launched in February 2025 to produce 50 case studies and involve financial institutions in drawing up eligibility criteria for climate-aligned investments. Additionally, Destination Earth (DestinE) released its first high-precision digital twins of the Earth system in mid-2024, enabling improved modelling for climate adaptation and disaster prevention. The

pre-operational core public infrastructure of the EU Digital Twin Ocean has been unveiled in June 2024. By enabling sophisticated "what-if" scenario analysis, the EU DTO will offer unprecedented capabilities for modelling and science-driven decision making by authorities and businesses.

SUMMARY ASSESSMENT: ***Limited progress***

19.2 Member States should accelerate and intensify their preparatory action necessary to report on data centre sustainability building on the Energy Efficiency Directive

PROGRESS AND STATE OF PLAY

The EU Energy Efficiency Directive (EED recast) requires that large data centres (above 500 kW capacity) report on a number of KPIs related to the environmental impact of data centres. In March 2024, the Commission adopted Delegated Regulation (EU) 2024/1364 laying down the KPIs that data centre operators must report to a European database, for the first time by 15 September 2024 in line with Article 12 of the EED recast. These cover detailed information regarding the energy and water consumption, cooling efficiency, use of waste heat and type of refrigerant used in date centres. Since March 2024, the Commission has been working with Member States to set up the process and the platform for the reporting. The first annual reporting exercise, which was extended to give data centre operators time to adapt, yielded incomplete and insufficient information on data centre sustainability performance in the EU. Nevertheless, it was a significant first step. Existing data and data that is collected in the future will inform further policy action under the EED recast.

The KPIs laid down in the Delegated Regulation, on which data centre operators are now reporting, will form the basis for an EU-wide rating scheme for data centre sustainability, work on which will take place over the course of 2025. To prepare the rating scheme, the Commission has launched a technical study, which includes surveys and interviews with industry, and a series of workshops to discuss the design of the rating scheme with stakeholders. In accordance with the EED recast and based on the information gathered through the study and workshops, the Commission will present by May 2025 a report to the European Parliament and to the Council. This report will assess the sustainability of data centre in the EU and the steps that are being taken to improve it. On this basis, the report will outline a proposal for the rating scheme alongside possible minimum performance standards or other pathways towards climate-neutral data centres.

The second reporting cycle ended on 15 May 2025.

In accordance with the Energy Efficiency Directive, the Commission is assessing the available data and submit a report to the European Parliament and to the Council, possibly exploring future possible policy action such as future legislative proposals on minimum performance standards for new data centres.

Overall, despite significant advances in drawing up the reporting methodology and setting up the mechanism/platform, more action needs to be taken for the reporting to provide more complete and consistent data for policy-making.

SUMMARY ASSESSMENT: ***Limited progress***

19.3 Member States, in cooperation with the European Commission and relevant stakeholders, should develop a methodology to assess the carbon footprint and enablement of digital infrastructures, and in particular, the energy consumption of edge nodes, with the view, by end of 2025, to progress towards Digital Decade metrics to improve the sustainability of digital infrastructures and energy efficiency of edge computing.

Member States should use the European Green Digital Coalition methodology released in April 2024 to measure avoided GHG emissions due to the use of digitally enabled solutions in sectors such as energy, transport, buildings, agriculture, health, smart cities, and manufacturing. These measurements will provide the necessary evidence for eligibility of climate (green) financing for digitalisation of climate critical sectors.

Member States should intensify the work with the European Commission and institutional financial actors on eligibility criteria for green finance to support the deployment of digital infrastructures and solutions that demonstrate positive sustainability impact.

PROGRESS AND STATE OF PLAY

The methodology to assess the carbon footprint and enablement of digital infrastructure has been developed by the Commission and a call for proposals has been launched. The study will start soon (Q2 2025). During the next two years, 50 measurements will be done in order to gather data about energy consumption. To make progress, Member States should look at what the European Commission is doing for inspiration.

SUMMARY ASSESSMENT: ***No progress***

20 Strategic Digital Decade National Roadmaps

20.1 Member States should ensure that all EU targets are covered by national targets and trajectories, reflecting EU's level of ambition.

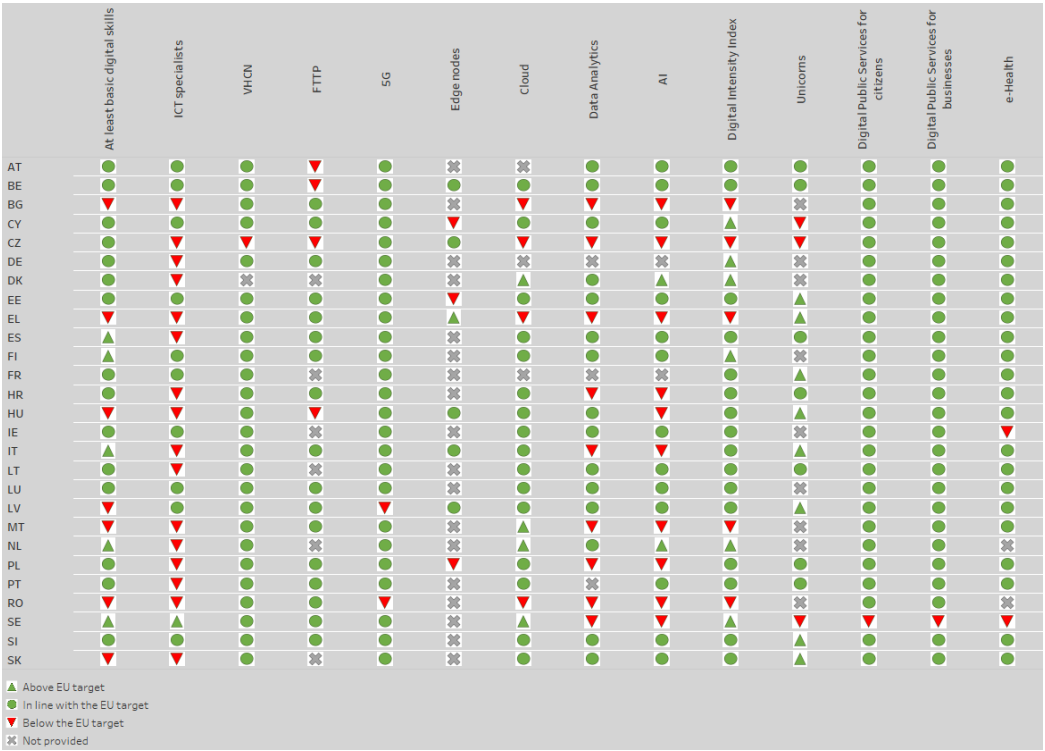
Member States should ensure that those national targets and objectives are translated into more ambitious measures, including budget considerations.

Member States should present an analysis of the impact that these measures create to ensure a more sustained progress towards these targets and objectives

PROGRESS AND STATE OF PLAY

Article 8 (3) of the Decision establishing the Digital Decade Policy Programme 2030 requires the Member States concerned to submit adjustments to their national roadmaps within 5 months of the publication of the second report on the Digital Decade. This update shall consist of policies, measures and actions Member States intend to undertake, including, where relevant, proposals for multi-country projects to foster progress in achieving the general objectives and the areas concerned by the digital targets. If a Member State considers that no action is required and that its national roadmap does not require updating, it shall provide its reasons to the Commission.

A total of 21 Member States submitted a fully updated roadmap and/or an addendum, i.e. a document focusing on the key elements mentioned above. 11 Member States provided an addendum, 8 provided a full roadmap update and 2 provided both a full roadmap update and addendum. The below graph presents an overview of the targets set by Member States in their national roadmaps and a comparison with the EU-level targets.



SUMMARY ASSESSMENT: ***Notable progress***

20.2 Member States should pay greater attention to the challenges concerning the achievement of general objectives (i.e. human centred digital space, competitiveness, resilience, sovereignty, inclusiveness, sustainability and greening, coherence of the action) and on the necessary measures that should be taken, including as regards the implementation of the Declaration on Digital Rights and Principles

PROGRESS AND STATE OF PLAY

In 2024 and 2025, Member States and the EU have taken several measures to address the challenges related to achieving general objectives. These include creating a human-centred digital space, enhancing competitiveness, resilience, sovereignty, inclusiveness, sustainability, and ensuring the coherence of actions. These efforts are particularly focused on the implementation of the European Declaration on Digital Rights and Principles. Key actions and developments with a specific focus on competitiveness and sovereignty include:

1. **National Strategic Roadmaps**:

    - Member States submitted national roadmaps detailing their planned actions to reach the 2030 Digital Decade targets. These roadmaps were reviewed and adjusted also to better align with the EU's digital objectives. The roadmaps focus on enhancing digital infrastructure, promoting digital skills, and supporting the uptake of digital tools among SMEs. The roadmaps also emphasise the need to focus more on overcoming challenges to achieving the general objectives, including competitiveness and sovereignty.

2. **Digital Rights and Principles**:

    - With the contribution of Member States, the Commission monitored the application of digital rights and principles across the EU, identifying gaps and providing recommendations to improve implementation at national level. The Commission, supported by a study[52], identified over 2 000 initiatives that implement digital rights and principles across all Member States by the end of 2024. **The total number of ongoing initiatives continued to increase in 2024, with a majority of initiatives running for several years. However, fewer digital rights initiatives were launched in 2024 than in 2023**. The bulk of the activity in the 27 Member States is associated with two main Declaration areas of Solidarity and inclusion (Chapter II) and Safety, security and empowerment (Chapter V), while the biggest gaps are seen in the area of Sustainability (Chapter VI).

    - The impact indicator framework developed by the study suggests that an **effective implementation of digital rights initiatives on the ground is still limited, estimated to be applied only at 61%** on average and across all Declaration areas. This shows that significant gaps still exist and digital rights and principles require further attention from the Member States.

    - The highest impact (67%) is seen in horizontal commitments related to 'Putting people at the centre of the digital transformation' (Chapter I). This shows that Member States

[52] Study to support the monitoring of the Implementation of the Declaration on Digital Rights and Principles, Available here: https://digital-strategy.ec.europa.eu/en/news-redirect/883230

implement measures at a rather strategic level, while more operational action in more concrete Declaration areas is needed, especially in 'Participation in the digital public space' (Chapter IV) and 'Safety, security and empowerment' (Chapter V).

3. **Funding and Investment**:

    - The EU has made a significant financial contribution to the digital transformation through various programmes, including the Recovery and Resilience Fund, the Digital Europe Programme, and the Connecting Europe Facility. These funds support the deployment of digital infrastructure, the development of digital skills, and the adoption of advanced technologies by businesses and public services. The investments aim to foster competitiveness and reduce dependencies on foreign technologies.

4. **Collaborative Efforts**:

    - Member States and the EU have worked together to promote a safer and more responsible online environment notably with new legislation such as the Digital Services Act. The European Board for Digital Services and other regulatory bodies have played a crucial role in ensuring the effective implementation of these frameworks. In the same vein, the Member States and the EU collaborate to promote fairer and more contestable digital markets in Europe with the Digital Markets Act, coordinating with sectoral regulators within the DMA High Level Group, and cooperating with Member State authorities through the European Competition Network. The EU's digital sovereignty agenda aims to reduce reliance on foreign technology, enhance infrastructure, and address privacy concerns while facing challenges from US and Chinese dominance[53].

These actions demonstrate the commitment of Member States and the EU to developing synergies and improving coordination to achieve the objectives set out in the Declaration on Digital Rights and Principles, ultimately contributing to a more coherent and effective digital transformation across the EU, with a strong focus on competitiveness and sovereignty.

SUMMARY ASSESSMENT: ***Limited progress***

[53] World Economic Forum, What is digital sovereignty and how are countries approaching it?, 2025.

20.3 Member States should associate stakeholders in appropriate consultation in the adjustment of the national roadmaps

PROGRESS AND STATE OF PLAY

For 9 out of the 21 adjustments submitted, a consultation on the entire adjustment took place. For the remaining adjustments, stakeholders were consulted on some aspects of the adjustment and/or the consultation took place in the form of regular ongoing exchanges and/or other consultations (e.g. as part of national digital strategy).

SUMMARY ASSESSMENT: ***Limited progress***

21 Fostering coordination and coherence

21.1 Member States should cooperate with the Commission to implement tools and solutions to promote consistency in the application of existing legislative acts and to explore ways to reduce administrative burdens, in particular for SMEs.

PROGRESS AND STATE OF PLAY

Reducing the administrative burden is one of the European Commission's main priorities, as reflected in the guidelines and mission letters presented to the new College of Commissioners. The Commission has committed to simplifying regulations, reducing bureaucracy, and enhancing digital transformation to support these goals.

Since July 2024, the European Council[54] and the Council[55] have supported these efforts, recognising the importance of streamlining regulations to foster economic growth and innovation. The Council has backed initiatives aimed at reducing the regulatory burden on businesses, particularly SMEs, and has encouraged Member States to implement measures that align with these objectives.

The Commission and Member States have taken several actions to reduce the administrative burdens for SMEs, with a particular focus on enhancing competitiveness and simplifying regulatory environments. Key actions and developments include:

1. **Omnibus Simplification Package**:

   This package, adopted on 26 February 2025, aims to streamline EU sustainability reporting requirements and reduce the administrative burden for companies, particularly SMEs. It includes amendments to the Corporate Sustainability Reporting Directive (CSRD), the Corporate Sustainability Due Diligence Directive (CSDDD), and the EU Taxonomy. The goal is to reduce administrative burden by at least 25% in general and by at least 35% for SMEs by the end of the Commission's mandate[56]. On 21 May 2025, the Single Market Simplification proposal introduced a new category of small-mid caps. The measures will ease compliance obligations and thus free resources for growth and investment across the Single Market. The measures boost incentives for SMEs to scale up, digitise regulatory processes, reduce red tape, and support the Commission's goal to cut administrative costs by 25% overall and by 35% for SMEs by the end of this mandate.

2. **Digital Transformation**: The Commission has emphasised the role of digital tools and platforms in reducing administrative burden. Initiatives such as the Single Digital Gateway provide a one-stop-shop for regulatory information and online procedures, simplifying compliance for businesses.

3. **Simplification of Revenue Administration:** The EU's Technical Support Instrument 2025 Flagship project focuses on simplifying and modernising tax and customs administration systems to reduce the administrative burden for SMEs. This initiative aims to streamline processes, implement digital solutions, and enhance tax certainty. The project supports Member States in reviewing their tax policies and administrative procedures to create a more

[54] European Council meeting on 20 March 2025 – Conclusions.
[55] Council of the European Union, Council conclusions on a tax decluttering and simplification agenda which contributes to the EU's competitiveness, 2025.
[56] European Commission, Commission simplifies rules on sustainability and EU investments, 2025.

business-friendly environment. This is the case for the 2025 TSI project aimed at introducing an electronic transaction-based B2B tax reporting system in Germany, and the project on reforming the design of concurrent payment systems for payroll tax and social security contributions in Greece.

4. **Digital Tools and Support:** The Single Digital Gateway (SDG) provides a one-stop-shop for reliable administrative and regulatory information, online procedures, and assistance at all levels of public administration. This tool aims to reduce the burden and costs for SMEs by simplifying access to regulatory information and procedures.

5. In 2025, several TSI projects from five Member States—Denmark, Finland, Germany, Romania, and Spain—have been identified as supporting the implementation of the Single Digital Gateway (SDG) and the Only Once Technical System (OOTS). Denmark, through the Danish Agency for Digital Government, is working on a digital solution to ensure vertical and horizontal traceability of interoperability assessments for planned digital public services. Finland, represented by the Digital and Population Data Service Agency, is focusing on eIDAS information security audits and compliance management, benefiting both Finland and other Member States. In Germany, efforts are directed at improving the digital interoperability of 294 German counties. Romania, through the Authority for the Digitalisation of Romania (ADR), is developing innovative technologies and tools to create user-centric digital public services. Lastly, Spain is enhancing the governance of digital public services at the regional level, with initiatives led by the Viceconsejerías de Transformación Digital in Castilla y León and Castilla-La Mancha, as well as the Agencia Digital de Andalucía.

6. **Council and Member State Reactions:** The Council and Member States have been involved in discussions and actions to reduce administrative burden. The Council has supported initiatives to simplify regulatory environments and reduce compliance costs for SMEs. Member States have also taken individual measures to streamline their regulatory frameworks and implement EU directives aimed at reducing administrative burden.

These actions demonstrate a collaborative effort between the European Commission and Member States to create a more supportive and competitive environment for SMEs by reducing their administrative burden and simplifying regulatory processes.

SUMMARY ASSESSMENT: ***Notable progress***

21.2 Member States should exchange best practices on consolidation and codification of the existing digital regulatory framework together with the Commission.

PROGRESS AND STATE OF PLAY

The Commission had a preliminary discussion with Member States on regulatory simplification and administrative burden reduction during the meeting of the Digital Decade Board on 6 March 2025. Member State representatives were invited to consider organising an exchange on that subject under the Best Practice Accelerator of the Digital Decade Policy Programme.

SUMMARY ASSESSMENT: ***No progress***

21.3 Member States should cooperate with the Commission to develop synergies and improve coordination of existing EU laws with their various governance structures and entities to increase the overall efficiency and coherence of EU legislation while contributing to the improvement of compliance and the reinforcement of the single market.

PROGRESS AND STATE OF PLAY

Member States, in collaboration with the European Commission, have taken several actions to develop synergies and improve the coordination of existing EU laws. Key initiatives and efforts include:

1. **Streamlined Implementation**:

Member States have been working to ensure a coherent and efficient implementation of EU directives and regulations. This involves transposing EU laws into national legislation while considering specific local characteristics, and aligning with overarching EU objectives. Additionally, the European Board for Digital Services has set up working groups on specific issues related to platform environment and regulation (see 10.3 above). The AI Board also helps to ensure a coherent application of the AI Act, in cooperation with local and international stakeholders (see 9.1 above).

2. **Collaborative Governance**:

Member States participate in collaborative governance structures to improve the coordination of EU laws, including in EU-wide initiatives where they share best practices and cooperate with other Member States and EU institutions. The Commission's work programme for 2025, developed in cooperation with Member States, emphasises the importance of shared responsibility and joint efforts to achieve common EU objectives.

The **Best Practice Accelerator** (BPA), an operational component of the Digital Decade Policy Programme (DDPP), was officially launched in summer 2024. The BPA was conceived during discussions at the Digital Decade Board meetings and was developed to enhance structured cooperation among EU Member States in addressing shared digital policy challenges. The BPA is organised into thematic clusters, each co-led by Member States, providing a systematic framework for the collection, sharing, and replication of proven policy measures through a cluster-based approach. Its goal is to identify and promote the adoption of effective solutions that can be replicated by Member States, contributing significantly to the attainment of the Digital Decade's 2030 targets.

So far 11 BPA workshops have taken place, focusing on three clusters: Digital Skills, Green IT, and Tech Uptake. The Digital Skills Cluster, led by Slovenia, has been particularly active, with 34 best practices shared by Member States in 7 workshops between July 2024 and June 2025. These practices focus on a wide range of demographic groups, including children, adults, seniors, public institutions, and businesses, rural and urban areas, and have been developed in collaboration with the National Skills and Jobs Coalitions.

The governance of the BPA is supported by a dedicated IT platform and a measure repository hosted by the European Commission. This platform gathers all best practices and challenges in one place, providing a uniform template co-developed with the Member States. Although the repository is not yet publicly accessible, it provides a secure and collaborative environment for preparing submissions, facilitating peer exchanges, and supporting the documentation process. For a measure to be recognised as a best practice, it must meet specific criteria: it should contribute to the Digital Decade

targets, demonstrate replicable and measurable results, be grounded in concrete implementation, and exhibit significant evidence of effectiveness or potential impact.

By June 2025, 52 best practices were submitted to the repository across the initial clusters. Contributions have been submitted by many Member States, as follows: Germany (10 best practices), Finland (6), France (5), Belgium (5), Slovenia (4) best practices), Hungary (3), Ireland (3), Italy (3), Luxembourg (3) Czechia (2), Netherlands (2) and Croatia, Denmark, Greece, Portugal, Romania, Spain (1 best practice each). Additional practices are currently being developed. On top of those included in the repository, several other best practices were presented during workshops by Ireland, the Netherlands, Austria, Czechia, and Denmark.

New thematic clusters are also being considered for the next reporting period, focusing on implementing the digital rights and principles, reducing the administrative burden on businesses, and ensuring digital sovereignty. Member States were invited to express interest in leading these new areas.

3. **Policy Alignment**:

Member States align their national policies and reforms with EU priorities to create synergies and avoid fragmentation. This involves adapting national legislation to comply with EU laws, ensuring a coherent regulatory framework that supports the single market and other EU objectives.

SUMMARY ASSESSMENT: ***Limited progress***

21.4 Member States should fully leverage the Digital Decade Board's role and expertise to help support the implementation of digital acquis

PROGRESS AND STATE OF PLAY

Throughout 2024 and 2025, the Digital Decade Board (DDB) has been acting as a platform for sharing ideas through dynamic roundtable discussions and regular exchanges with Member State representatives. These activities have helped to improve alignment and cooperation among Member States on the Digital Decade Policy Programme (DDPP) and the priorities of the new Commission.

DDB meetings are held four times a year to discuss the implementation of the Digital Decade Policy Programme (DDPP). The agendas of these meetings have included monitoring the Programme's various instruments and their concrete implementation across Member States. These meetings also collect feedback on any obstacles, including the complexity of administrative due processes. This directly fulfils the recommendation by ensuring that challenges are addressed and progress is tracked. In addition, **several DDB Members called for the DDB to play a greater coordination role.**

Such strategic and practical discussions were held under the Belgian and Hungarian Presidencies, in May 2024 and November 2024, respectively, in Brussels and in Budapest. While these meetings enabled an exchange of views, as well as a demonstration of the EU Digital Wallet's applications in Belgium, their outcomes highlight the need to take further steps to translate discussions into actionable progress. For instance, the DDB meeting of March 2025 focused on regulatory simplification but underscored the persistent need for streamlining processes across Member States.

DDB meetings have also been linked to the Best Practice Accelerator (BPA) of the DDPP, with BPA participants sharing potential solutions for implementation challenges. In addition, in 2025, Member States were encouraged to lead new Clusters of work within the BPA, including considering the creation of a cluster on administrative burden reduction, which remains at an early stage of discussion.

In addition, **preparations for the 2025 State of the Digital Decade Report (SDD25)** have provided a key opportunity to assess the implementation of the body of EU law in this area. This assessment would benefit from more comprehensive reviews, broader stakeholder engagement, and data analysis to ensure consistent progress in integrating and operationalising EU law across Member States.

Further discussions at DDB meetings are expected under the Polish Presidency (June 2025), and the Danish Presidency. The Commission is already holding discussions with Cyprus in preparation for the first half of 2026.

In addition, DDB Members will facilitate the presentation of the report in their respective countries, fostering discussions to identify actionable next steps.

SUMMARY ASSESSMENT: ***Notable progress***

21.5 Member States should cooperate with the Commission to develop further synergies across the funding programmes that are mobilised for EU's digital transformation, to avoid duplication and pursue complementarities.

Member States should maximise the impact of the EU budget by supporting in particular projects with strong cross-border dimension which have received Seals of excellence or should further extend their coverage, thus ensuring European investments act as an accelerator for upcoming initiatives to achieve the Digital Decade's objectives and targets.

Member States should cooperate with the Commission to promote a streamlined investment process to ensure the visibility of project pipelines and maximise existing synergies

PROGRESS AND STATE OF PLAY

Creating synergies between different programmes is often an explicit part of their establishing legislation. However, under the current set up, in practice, unless embedded in the very structure of the implementing body at instrument level (such as a Joint Undertaking, or a European Digital Infrastructure Consortium - EDIC),[57] the creation of synergies by combining funding at project level remains complex and difficult to implement.

The complexity of the funding landscape makes it difficult for stakeholders to understand how the different programmes fit together in an overall intervention logic for moving digital technologies up the technology readiness level (TRL) scale and to deployment and use. This is the case especially for SMEs that, unlike large companies and research organisations, do not have the capacity to invest in opportunity seeking, often with relatively low chances of success.

There is also a clear need for more synergies between programmes at EU, national and regional levels. For example, there are many national and regional support schemes in place for start-ups and spin-offs that could provide close-to-market support to innovators with market ambition emerging from an EU-funded project, though clear signposting and operational bridges between those are largely missing. In many cases, the burden of creating the actual synergies is left to the stakeholders and misses a clear top-down driver.

Partnerships, Joint Undertakings in particular, have created clear synergies among programmes. While they originated mostly from Horizon programmes, they are now often funded from multiple programmes, in effect taking the entire ecosystem that they represent from one programme to the other. The EuroHPC JU is a highly successful example of this.

Synergies between sectors have been more difficult to orchestrate. For instance, because of the twin transition, strong synergies with the transport and energy sector were expected. However, the synergies across programmes were limited, even between the Digital strand of the CEF and the Transport and Energy strands of the same programme. Difficulties in creating bridges between the ecosystems of multiple sectors in a substantial way (that is, beyond the occasional cross-participation of a few actors) have not been addressed to the same extent as those within the digital sector itself.

[57] Combination of funding from multiple sources is foreseen in the basic acts of these instruments.

The emphasis on maximising the impact and effectiveness of public spending, by increasing coordination and focus, is also a key element of the Competitiveness Compass and the Communication on the next multiannual financial framework (MFF)[58]. During the European Council of March 2021, EU leaders stressed the importance of supporting EU competitiveness, welcoming the Competitiveness Compass, and had a first exchange of views on the new MFF.

Moreover, a recent ECA report on the contribution of the Recovery and Resilience Facility to the digital transition recommended to **better link EU funding schemes and the main digital needs identified**. The Court recommendation is to 'target the allocation of funding more effectively, such as by requiring a clear link to the EU's digital transition strategy and prioritising the funding of the previously identified digital needs'[59]. These conclusions will be used notably in the preparation of the next MFF.

SUMMARY ASSESSMENT: Notable progress

[58] Communication (EC) COM/2025/46 final, The road to the next multiannual financial framework.
[59] European Court of Auditors, ECA Special report 13/2025, Support from the Recovery and Resilience Facility for the digital transition in EU Member States, A missed opportunity for strategic focus in addressing digital needs, 2025.

21.6 Member States should cooperate with the Commission to stimulate a closer and bidirectional dialogue with regions and cities including through existing networks; and to identify, collect and disseminate best practices, notably reflecting the Declaration of Digital Rights and Principles. This should build on existing 'Local Observatories' which could act as the main vehicle for collecting best practices and disseminating them across governance levels. Member States should improve data collection and monitoring of the digital transformation at the local level in support of the Digital Decade Policy Programme

PROGRESS AND STATE OF PLAY

There has been notable and continuous progress in stimulating a closer and bidirectional dialogue between Member States, the Commission, regions, and cities. Several EU-led initiatives have contributed to addressing this recommendation:

- **The Living-in.EU movement** has continued expanding its network, fostering cooperation among cities and regions to exchange best practices and align digital transformation efforts with EU principles. However, engagement levels remain inconsistent across Member States. Initiatives like the Eurocities Lab[60], launched through the Eurocities Digital Forum, support the co-creation and scaling of smart urban solutions by testing new methods of collaboration and accelerating the uptake of proven innovations across cities. This approach enables cities to learn from each other and deliver more efficient, people-centred digital services.

- **The European Digital Innovation Hubs (EDIHs)** have increasingly supported cities in adopting advanced digital tools, with their core mission focused on the digitalisation of businesses. EDIHs have proven to be powerhouses for delivering digital solutions that empower local communities—whether by offering courses through a national service catalogue (as in Finland), pooling digital services for rural communities in the Somme department (France) or organising joint events with other EDIHs on smart cities and innovation (Germany, Poland, Czechia). Their role is expected to grow further in the coming years.

- **The LDT CitiVERSE EDIC** currently involves 14 Member States (France, Belgium, Croatia, Slovakia, Czechia, Italy, Ireland, Luxembourg, Slovenia, Netherlands, Latvia, Estonia, Portugal, and Spain) and is rapidly expanding with an expected membership of tens of cities by the end of 2025. The EDIC and its members already started to create its structures, developing an EU-wide ecosystem for AI-driven solutions, services, and platforms, with a focus on scaling up innovations such as those from the Local Digital Twins (LDT) Toolbox by bringing together cities and technological companies. The European AI office closely oversees the ongoing development of the LDT Toolbox. Once delivered, this useful set of tools for creating Local Digital Twins will be handed over to the CitiVERSE LDT-EDIC so that it can be used by other interested parties.

To sum up: these recent initiatives provide a structured approach to supporting cities with data-driven policy tools. However, take-up by national and regional authorities remains a critical challenge if this initiative is to reach its full potential.

[60] Algorithm Register, Eurocities' Digital Forum Lab, available at: https://www.algorithmregister.org/eurocities

Moreover, on data collection and monitoring, progress has been limited. Some Member States have improved local-level digital indicators, but there is no harmonised methodology for systematically tracking digital transformation progress at city and regional level.

The Local and Regional Digital Indicators framework (LORDI) digital maturity assessment tool (LORDIMAS) provides valuable insights, but data integration from cities and municipalities remains fragmented. The first report on LORDIMAS seeks to partially address this knowledge gap by utilising LORDIMAS data to provide insight into the state of digital maturity of subnational public administrations. 2024 marks the first full year of LORDIMAS data collection, encompassing data from approximately 100 local, metropolitan, and regional governments. It features an analysis of digital maturity based on the LORDIMAS self-assessments conducted in 2024 by 99 local, metropolitan and regional authorities. To enhance the representativeness of data and strengthen the evidence base for European policymaking, LORDIMAS aims to increase the number of participating administrations year-on-year. The number of participating local and regional administrations continues to rise in line with ongoing outreach campaigns (status 6 March 2025: 135 entries).

In addition, the **LDT CitiVERSE EDIC** will contribute to **European common data infrastructure and services** area of activity, with a focus on the transversal Data Space for Smart Communities, and Climate Neutral Cities initiatives. It will ensure an open digital infrastructure environment, foster an industrial ecosystem for digital twins and a market for EU SMEs and industry. It will also carry out targeted training for digital smart city solutions. Strategic business and policy priorities for the LDT CitiVERSE EDIC concentrate on:

- **Technical developments:** design, development, deployment, and scaling up of EU infrastructures for digital twins; implement the common EU architecture blueprint for the Smart Communities Data Space; develop Artificial Intelligence-based solutions for Smart Communities; establish sustainable mechanisms for the EU infrastructure; contribute to the CitiVERSE (Virtual Worlds) initiative to support a strong EU ecosystem; creation on and animation of an open-source community for Smart Communities; and liaising with existing EU infrastructures like Destination Earth and the Euro High-Performance Computer joint undertaking.

- **Cooperation:** identify opportunities for Member States' digital transformation with the support of LORDIMAS; implement an EU-based data strategy and common governance; define funding schemes and draft joint procurements; develop an active digital strategy; cooperate with other relevant EU initiatives (e.g., EDIHs, Scalable Cities, EU mission 100 climate neutral cities, digital public services, eID, EU Product passport). A special action point is to create a New European Bauhaus node for sustainable urban development which also supports digital services and capacity building.

- **Communication and dissemination:** capacity building and concerted actions; assistance to cities in the process of introducing and implementing Digital Twins; transfer of knowledge in relation to scale-up solutions across Europe; share expertise and coordinate mechanisms for an interoperable EU (including standardisation).

Furthermore, cities continue to play a key role in implementing the Declaration of Digital Rights and Principles, ensuring that digital transformation is ethical, inclusive, and aligned with fundamental freedoms. Local initiatives such as the Brussels Digital Rights Charter and Leipzig's Hardware for Future illustrate how cities are translating these principles into concrete actions that reinforce digital

inclusion and citizen protection. However, awareness and implementation remain uneven across Member States, and further action is needed to systematically embed digital rights at local level. The Commission's monitoring of digital rights and principles aims to pay closer attention to cities' and local actors' initiatives and emphasise their role in promoting digital rights.

SUMMARY ASSESSMENT: ***Notable progress***