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PART 9/27

COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

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

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European Commission

DIGITAL DECADE 2025
COUNTRY REPORTS

Finland

Finland

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Executive summary

Finland positions itself as a technological leader with digitally agile enterprises, skilled citizens and a strong semiconductor industry. While its gigabit infrastructure requires further development, digital public services are widely available to people and businesses.

Finland shows a high level of ambition in its contribution to the Digital Decade having set 12 national targets, 100% of which aligned with the EU 2030 targets. The country is following its trajectories well with 83% of them being on track (considering 2024 trajectories defined for 6 KPIs out of 8 analysed). Finland addressed 72% of the 11 recommendations issued by the Commission in 2024, either by implementing significant policy changes (27%) or making some changes (45%) through new measures.

In 2024, 5G almost covered the entire country. Finland strengthened European sovereignty with developments in semiconductors and cross-sectoral support for artificial intelligence (AI) and other disruptive technologies. Notably, it hosts one of the first European AI Factories. Finnish businesses rely on digital tools and close to three quarters of them use cloud solutions. Digitalisation enjoys strong public support, individuals have solid basic digital skills and relatively high privacy and content evaluation skills. There is a widespread use of digital government solutions. However, the need for ICT specialists persists. Finland is actively preparing for the implementation of the European Digital Identity Regulation and the European Health Data Space Regulation.

Digital Decade KPI (1)	Finland				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	FI	EU
Fixed Very High Capacity Network (VHCN) coverage	77.7%	81.7%	5.1%	66.6%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	61.1%	68.3%	11.6%	66.6%	69.2%	8.4%	100.0%	-
Overall 5G coverage	98.3%	99.5%	1.2%	99.6%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	24	47	95.8%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	92.5%	1.7%	-	72.9%	2.8%	95.0%	90%
Cloud	73.0%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	15.1%	24.4%	61.4%	26.0%	13.5%	67.2%	75.0%	75%
Data analytics	40.6%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	79.5%	-	-	-	-	-	-	75%
Unicorns	7	7	0.0%	-	286	4.4%	-	500
At least basic digital skills	82.0%	-	-	-	-	-	87.0%	80%
ICT specialists	7.6%	7.8%	2.6%	7.9%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	90.6	96.3	6.3%	92.0	82.3	3.6%	100.0	100
Digital public services for businesses	100.0	98.8	-1.3%	-	86.2	0.9%	100.0	100
Access to e-Health records	82.6	84.7	2.5%	-	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on 'the Digital Decade' 2025, 77% of Finnish citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 92% consider it important to counter and mitigate the issue of fake news and disinformation online, and on competitiveness, 88% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Finland boasts excellent 5G infrastructure and is making good progress in improving fixed connectivity despite remaining below the EU average. The country is putting significant efforts into advancing digital technologies, particularly through its active participation in the 'Chips for Europe' initiative, supporting research, development and innovation (RDI) in quantum ecosystem and gathering scientists and enterprises in Finland's AI efforts. Although Finland has made good progress in adopting digital technologies and leveraging the data economy, achieving its ambitious AI and data analytics targets will depend on continuous efforts. The country has a start-up friendly ecosystem, but scaling up remains an issue and, in general, Finnish enterprises struggle to achieve high productivity and innovation. Nonetheless, they show good awareness of cybersecurity measures. In this area, in October 2024 Finland adopted a comprehensive cybersecurity strategy for 2024-2035.

Protecting and empowering EU people and society

Finland's digital skills performance indicates inclusive growth across various demographic groups, although some gaps remain among rural populations and older people. Most of the population also have the skills needed to critically evaluate digital content. The number of ICT specialists, including women, is increasing but they continue to be in high demand. As result, there is some action under way to support higher education in ICT. Finland's digital public services are achieving scores close to 100; however, access to digital health records is progressing slower than in the rest of the EU. In the second quarter of 2024, Finland successfully notified the 'Citizen Certificate' eID scheme. By actively participating in European large-scale pilots and other cross-country projects, the country is preparing for the implementation of the European Digital Identity Regulation and the European Health Data Space Regulation.

Leveraging digital transformation for a smart greening

Finland is a leader in monitoring and reducing the environmental impact of its ICT sector. It also links clean energy with advantages for enterprises and aligns technological advancements with sustainability goals. The EuroHPC LUMI supercomputer hosting Climate Change Adaptation Digital Twin is a notable example of this. The country plays a key role in green initiatives in the Digital Decade's Best Practice Accelerator.

National digital decade strategic roadmap

Finland submitted an addendum to the national Digital Decade roadmap on 29 November 2024. The addendum, like the original roadmap, is based on Finland's Digital Compass. The content of the roadmap and its update have been developed in cooperation with stakeholders. The new roadmap addresses a substantial number of roadmap recommendations issued in 2024, containing both additional and revised targets and trajectories. All targets align with the EU-level goals for 2030, and two are even higher, 87% for basic digital skills and 95% for the basic digital intensity of SMEs. The revised roadmap continues to prioritise semiconductors and quantum, RDI activities and the digital

empowerment of enterprises. It contains 14 measures with a budget of EUR 559 million, comprising EUR 556 million from public budget (equivalent to 0.2% of GDP). It covers many objectives of the Digital Decade, such as creating a human-centred digital space, boosting technological leadership, sovereignty, competitiveness, and supporting the green transition.

Funding & projects for digital

Finland allocates 29% of its total recovery and resilience plan to digital (EUR 526 million)[1]. In addition, under cohesion policy, EUR 385 million, representing 20% of the country's total cohesion policy funding, is dedicated to advancing Finland's digital transformation[2].

Finland is a member of the Alliance for Language Technologies EDIC. Finland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). The country is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Finland is co-leading the Green IT cluster of the Best Practice Accelerator[3], promoting the exchange of information on public policies aimed at the environmental transition of digital technologies. The country has already contributed with two best practices in this area. Additionally, Finland has shared best practices on digital skills development and the adoption of digital technologies by enterprises.

Digital rights and principles

According to a support study, France has been relatively active in implementing the **European Declaration on Digital Rights and Principles**, with 53 initiatives overall but no new initiatives launched in 2024. France is most active in the area of participation in the digital public space. Less activity has been identified with regards to digital public services online. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

[1] The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.
[2] This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.
[3] 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 made available to 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.

Recommendations

- **Gigabit:** Intensify efforts to develop fixed gigabit connectivity, including by encouraging the take up of the existing broadband support measure and identifying the most suitable strategies to achieve full coverage.
- **ICT specialists:** Intensify efforts to attract ICT specialists, including those from abroad, by offering tailored training pathways, and addressing the gender gap in the field.
- **Advanced technologies:** Further promote cooperation between academia, businesses and other stakeholders, with a view to advancing innovation with the support of digital technologies.
- **AI:** Continue strengthening the AI ecosystem to boost Finland's leadership role in this area.
- **Cybersecurity**: Continue efforts in cybersecurity to address evolving threats, particularly for enterprises and public administration.
- **Unicorns**: Continue improving the business environment and access to finance for digital start-ups to scale-up and compete globally.
- **Semiconductors and digital innovation**: Continue investing in the development and manufacturing of critical technologies in the areas of digital and deep tech.

A competitive, sovereign and resilient EU based on technological leadership

Finland's digital competitiveness has been a priority for policymakers, with the goal of establishing the country as a global technological leader and driving the growth of the national economy. Despite budgetary constraints, authorities and stakeholders are trying to build on their achievements, pool resources and make use of EU opportunities. Notably, Finland is home to an AI Factory in Kajaani and is extremely active in the 'Chips for Europe' initiative.

The country's high level of digitalisation allows for digitally enabled growth. Finland benefits from excellent 5G networks and growing gigabit connection, especially in urban areas. 9 out of 10 small and medium sized enterprises (SMEs) have at least a basic level of digital intensity and uptake of technologies such as cloud, AI and data analytics, and are making good progress in these areas. However, if they wish to scale up, growth companies often need to move abroad once they reach a certain stage of development.

Finland has an ambition to increase research, development and innovation (RDI) expenditure to 4% of GDP by 2030 (from 3.09% in 2023). The ICT sector is particularly research and development (R&D) driven, with its spending accounting for 36.68% of total R&D business expenditure in the country, which is among the highest levels recorded in the EU in 2022 (but visibly behind countries such as Malta, Estonia or Latvia)[4]. R&D personnel in the ICT sector account for 38.36% of total R&D personnel, also one of the highest levels in the EU. Moreover, the Finnish ICT sector represented 5.81% of the gross value added in 2022. This is slightly lower than the 2020 value and higher than the EU average of 5.46%, pointing to the overall importance of ICT to the national economy. According to the 2025 Eurobarometer[5], 93% of Finnish people think that increasing research and innovation to have more secure and strong digital technologies should be a priority for the public authorities.

Finland was identified as an innovation leader in the European Innovation Scoreboard 2024, performing at 127.8% of the EU average. While digitalisation in terms of networks and skills is considered a strong enabler, supported by attractive research ecosystems, challenges remain in resource productivity and innovation by SMEs, including through cooperation and innovation expenditure.

Building technological leadership: digital infrastructure and technologies

In 2024, Finland made significant strides in digital infrastructure, with its 5G coverage leading the EU. The country also excels at spectrum assignment. Although Very High-Capacity Network (VHCN) and Fibre to the Premises (FTTP) coverages remained slightly below the EU averages, they grew at a faster pace. Finland's thriving semiconductor ecosystem bolsters the EU's sovereignty, and efforts in quantum technologies further position the country as a competitive leader in advanced technology landscapes.

[4] Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

[5] Special Eurobarometer 566 on 'the Digital Decade' 2025: https://digital-strategy.ec.europa.eu/en/news-redirect/883227

Connectivity infrastructure

In terms of VHCN coverage, in 2024 Finland's total coverage stood at 81.65% (2030 national target 100%), just below the EU average of 82.49%. However, Finland's growth rate of 5.1% outpaced the EU's 4.9%. The country is also on track according to its national trajectory. Fixed broadband subscriptions with download speed of 100 Mbps or more were at 53.10% and of 1 Gbps or more at 5.21%. For households in sparsely populated areas, Finland's VHCN coverage was 49.95%, significantly lower than the EU average of 61.89%, but with a higher growth rate of 27.0% (EU: 11.3%).

Finland's total FTTP coverage was 68.26% (2030 national target 100%), slightly below the EU average of 69.24% but exceeding the EU average growth rate (8.4%) with 11.6%. The country is on track according to its national trajectory. For households in sparsely populated areas, Finland's FTTP coverage was 49.95%, lower than the EU's 58.78%, but with a growth rate of 27.0%, the country again outperformed the EU's 11.9%.

In terms of overall 5G coverage, Finland was an EU frontrunner with 99.49% (2030 national target 100%) and a growth rate of 1.2%, compared to the EU average of 94.35% (+6.0%). The country is on track according to its national trajectory. For households in sparsely populated areas, Finland's 5G coverage was 97.08%, significantly higher than the EU average of 79.57%, but its growth rate of 5.1% fell short of the EU average (11.9%). In the 3.4-3.8 GHz band, 5G coverage rose by 2.4% to reach 91.86%, well above the EU average of 67.72%. For households in sparsely populated areas, 5G coverage in this band was 58.84%, much higher than the EU average (26.19%), but with a much slower growth rate (17.1% vs an EU average of 65.1%). As in the previous year, 5G spectrum assignment for pioneer bands stood at 99.17% in 2025, significantly higher than the EU average of 74.63%.

VHCN and FTTP

In its adjusted roadmap, Finland upheld the 100% 2030 target for VHCN and proposed a 100% target for FTTP, in line with the SDDR24 recommendation. Based on the current progress rate and given that no new public funding measures are in place, these targets remain ambitious.

Finland's broadband aid scheme under the Recovery and Resilience Facility (RRF) received applications in 2022-2023 and connections for 16 000 households covered by this measure should be put in place by the end of 2026. According to the country's adjusted roadmap, broadband construction is currently supported by the European Agricultural Fund for Rural Development. In the Finnish Rural Development Fund Plan, EUR 53 million has been reserved for financing broadband connections in rural areas (through 'village network projects') in 2023-2027. As of early 2025, 29 projects worth approximately EUR 9.4 million had been awarded under this fund, and an additional 12 applications are being processed. This should help alleviate the difficulties with market-based deployment of broadband in sparsely populated areas. EU funds for agriculture also support other initiatives to enhance digitalisation in rural areas, such as Smart Villages projects.

The roll-out of VHCN and fibre is progressing well, and hopes are high that the national implementation of the Gigabit Infrastructure Act (GIA) will play a significant role in further acceleration. Notably, stakeholders see the chance in the introduction of a streamlined permitting process. In 2023, investments in fixed networks in the country amounted to a record high of EUR 385 million, focusing predominantly on fibre. Although there are three main players in the telecommunications market, when it comes specifically to fibre network coverage, a quarter of the national market belongs to new entrants, demonstrating good competition.

Copper networks in Finland are being decommissioned, with less than 100 000 broadband subscriptions still relying on copper. Some operators plan to stop using copper as early as 2025. It will be substituted in part by high quality mobile networks, especially in rural areas.

The country is also seizing opportunities to strategically deploy submarine cables. The most significant project funded under Connecting Europe Facility (CEF) Digital has been Far North Fiber that aims to build a submarine cable connection from Northern Norway via arctic areas of Canada to Japan. Recently, Finnish Far North Fibre and Swedish Polar Connect have laid the ground for cooperation on this project. Other submarine cable projects include C-Lion2 and Terrestrial Backbone Finland projects, and the new Eastern Light connection between Finland and Sweden.

2024 recommendation on connectivity infrastructure: Intensify efforts to develop fixed gigabit connectivity, including by reinforcing public investments where necessary.
In 2024, Finland continued to implement existing measures but did not introduce any new ones. Based on a 2024 study, the country does not plan any new public support scheme. At the same time, sums remaining to be allocated from EFARD might suggest that the measures to support remote areas to date have not been fully used by the operators. A further chance for market-based deployment might be the GIA implementation.

5G

Following the roadmap adjustment, Finland's target for 2030 remains at 100% as per the initial roadmap submitted in 2023. Given the figures above, the target seems achievable in the coming years. The country has also adjusted its trajectory to reflect this good progress.

Finland is consequently realising its roadmap goal of maximally efficient use of frequencies within the confines of the existing frequency bands. Almost all 5G pioneer bands have been assigned (99.17%). In addition, with the recent shutdown of 3G networks, frequencies are being released for the more efficient 4G and 5G technologies.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.
Finland made efforts to address the recommendation through new policy actions in 2024. There are multiple ongoing 5G projects and trials, focusing notably on sustainable growth, road and rail transport and shipping. In addition, operators are well on their way to deploying 5G standalone networks. Most of the operators have deployed 5G standalone (frequently referred to as 5G+) either in the entirety or major part of their networks, and some of them already provide services commercially. For example, the largest Finnish mobile network operator launched 5G standalone network broadband subscriptions.

Semiconductors

Finland is a strong player in the EU semiconductors ecosystem, strengthening the EU's sovereignty and contributing to a secure chips supply. The 2024 industry-led strategy for semiconductors has mapped out the opportunities and set a solid framework for growth. In addition, the country is actively leveraging possibilities under the 'Chips for Europe' initiative, notably through co-hosting all five EU

pilot production lines procured by Chips JU (APECS, FAMES, NanoIC, PIXEurope, WBG). All of them represent Finnish strengths in semiconductors and create an opportunity to connect with European partners. Pilot lines develop new semiconductor processes and technologies that are available to companies to develop and scale products into production. The most recent one is Advanced Photonic Integrated Circuits Pilot Line for Europe (PIXEurope) jointly funded by the EU through the Horizon Europe and Digital Europe Programmes, participating states, and private organisations.

To support the development of advanced chip technologies and drive their demand in Finland and across Europe, the Finnish Chips Competence Centre (FiCCC) - another initiative under the EU Chips Act - became operational in early 2025. FiCCC brings together companies, networks of stakeholders and universities to provide technical expertise and experimentation and thus allow companies, in particular start-ups and SMEs, to innovate e.g. on chips design. It is important to note that Finland's chips and quantum efforts are intertwined.

The semiconductors ecosystem in Finland is very regional, with companies that leverage opportunities coming notably from geographic proximity of and working together with higher education institutions. This also drives the possibility for regional actors to actively participate in EU-wide initiatives. For instance, the Tampere region features globally competitive expertise in chip technology and possesses a strong talent pool, especially in system-on-chip design and in the development, manufacturing, and integration of III-V compound semiconductors.

Edge nodes

According to the Edge Node Observatory, there were an estimated 47 edge nodes in Finland in 2024, an increase of 95.8% since 2023. This is almost double (+23 edge nodes) the amount estimated for 2023.

As explained in the roadmap adjustment, Finland sees the increase of edge nodes as being due to grassroots market development. Therefore, the country does not set a separate target. It expects an increase in the number of edge nodes when businesses generate sufficient demand for cloud-based AI exploitation.

Quantum technologies

As a quantum competence cluster, Finland is a strong player in the European quantum ecosystem. The country continues to implement the roadmap measures in this area. Notably, VTT Technical Research Centre of Finland and IQM Quantum Computers, have launched Europe's first 50-qubit superconducting quantum computer in March 2025. The quantum computer is open for use by companies and researchers in universities and research institutes through the VTT QC quantum computing service and it will be integrated into the Finnish high-performance computing infrastructure to promote hybrid computing. VTT continues upscaling the quantum computer to 300-qubit together with IQM by 2027. Finland is also participating in the LUMI-Q quantum computer in Czechia, which will be linked with the LUMI supercomputer to develop a national quantum computing environment. The future AI factory will include an experimental platform combining AI and quantum computing, with an investment of EUR 40 million.

In addition, Finnish Quantum Flagship funded by the Research Council of Finland brings together leading quantum experts in physics, computational science, mathematics, nanoscience and nanotechnology, and economics to consolidate and expand Finland's national ecosystem for quantum technology. Through cutting-edge research, the Flagship boosts the emergence of new businesses and

secure Finland's position as a leading quantum-enabled society. Flagship host organisations are Aalto University, University of Helsinki, CSC, University of Jyväskylä, Tampere University, University of Oulu and VTT. More generally, the Flagship status of the Academy of Finland is given to a small number of scientifically top-level competence centres that support future knowledge and know-how, and sustainable solutions to societal challenges, and advance economic growth by developing new business opportunities.

State funds are supporting the development of Kvanttinova, a piloting and development centre for microelectronics and quantum technologies in Espoo. Kvanttinova is a joint initiative by VTT Technical Research Centre of Finland, the City of Espoo, Aalto University and the industry members of the semiconductor industry group of Technology Industries of Finland (TIF). The aim is to increase quantum RDI, boost internalisation of the sector and attract investments. To support this piloting environment and make the most of European partnerships, Finland aims to actively participate in all the European quantum pilot line proposals. To catalyse collaboration with other European countries, Finland participates in mapping of Nordic-Baltic quantum ecosystem under the Nordic Council of Ministers.

In April 2025 Finland's quantum technology strategy was published. The working group that coordinated the preparation of the strategy proposes setting up a quantum competence centre and ensuring access to world-class quantum computers, while also creating a competitive research environment and introducing quantum-secure encryption to support Finland's quantum technology sector by 2035. They emphasise the importance of a long-term research, development and innovation (RDI) programme, leveraging private funding, influencing EU and international regulations, and national coordination to foster the growth and development of the Finnish quantum ecosystem.

2024 recommendation on technological leadership: Secure further sources of funding and encourage private investment in disruptive technologies.
Finland made some effort to address the recommendation by introducing new policy actions in 2024. The country has seized opportunities in semiconductors, quantum and AI (see below), notably by participating successfully in emerging chips pilot lines.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

By prioritising the widespread adoption of basic digital intensity among SMEs, and advances in AI, cloud services, and data analytics, Finnish enterprises can cultivate a highly competitive business landscape, supported by a stable regulatory environment. While the country has ambitious plans for AI adoption by enterprises, a strong collaboration between industry, academia and public entities will remain essential to make the most of emerging opportunities.

SMEs with at least basic digital intensity

In Finland, most SMEs (92.51%) achieved at least a basic level of digital intensity (2030 national target 95%), with an annual growth rate of 1.7% between 2022 and 2024. This is well above the EU average of 72.91%. Furthermore, when looking specifically at more digitalised SMEs, 61.01% had high or very high digital intensity, almost double the EU average of 32.66%. As such, Finland maintained its leadership in the digital transformation of SMEs.

Following the 2024 recommendation on its roadmap, Finland raised its target for at least basic digital intensity of SMEs from 90% to 95% in the roadmap adjustment. Given the current level and growth metrics, this target seems reachable.

Finland decided to build on achievements of the RRF-funded Real Time Economy project with a national budget of EUR 3.3 million in 2025. The Patent and Registration Office will be responsible for overseeing the network of companies' digital financial management. It will also coordinate development work so that digitalisation projects implemented in public administrations and the private sector can ensure an efficient digital financial management of the network of companies. Furthermore, a provision on the cooperation group for companies' digital financial management will be added to the law.

The Data Economy Growth Programme outlined in the roadmap was launched in December 2024. The objective of the programme is to increase the common impact of current actions and funding. To that end, it will introduce concrete measures to improve the capabilities of companies. It will also create opportunities for data-driven value creation e.g. by fostering synergies with other actors' initiatives and projects, and by improving the capacity of companies to utilise data thanks to cooperation within the Ministry of Economic Affairs and Employment work areas. To support the work on data economy opportunities, the government prepared a report which examines the opportunities and challenges of measuring the size, economic significance, and impact of the data economy in Finland. The report found a cost-based approach to be the most suitable, given the availability of necessary registry data in Finland. It stressed that foreign collaboration on developing comparable metrics and on data collection is essential to monitor the development of the data economy at international level.

A well-established roadmap measure is the Digital Native mission of Business Finland, which provides EUR 265 million in funding to accelerate the digital transformation. With its Data Economy programme (2023-2027), 6G Bridge programme (2022-2026), generative AI campaign and quantum computing campaign, Finnish enterprises can increase their competitive advantage. In addition, Finland hosts four European Digital Innovation Hubs (Robocoast, HealthHub Finland, Finnish AI Region (FAIR) and Location Innovation Hub). Specialising in manufacturing, construction, health, energy, maritime, and transport, the hubs cooperate closely together and have produced a common service portfolio, among other outputs.

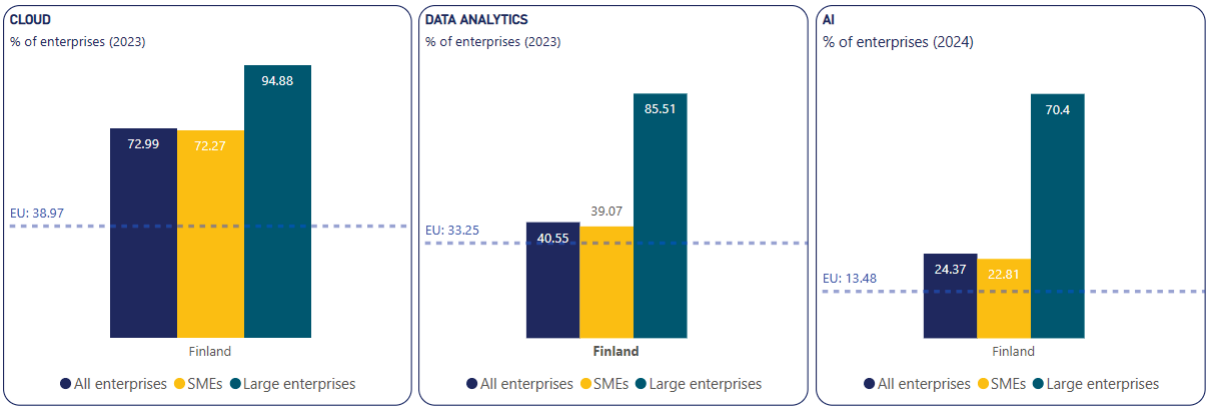
Take-up of cloud/AI/data analytics

According to 2024 data, 24.37% of enterprises in Finland adopted AI (2030 national target 75%), which is an impressive figure compared to the EU average of 13.48%. This reveals a growth rate of 61.39% compared to 2023, slightly lower than the EU-level growth rate of 67.2%. More specifically, among SMEs, the uptake rate was 22.81%, while the majority (70.4%) of large enterprises used AI. This corresponds to a gap of 47.59 percentage points (pp.) between SMEs and large enterprises, which is considerably higher than the EU average gap of 28.53 pp. The country is lagging behind compared to its national trajectory, but its good progress is reflected in the ambitious 2030 target of 75% enterprises using AI in Finland. The 2025 Eurobarometer shows that 89% of Finnish people think that public authorities should prioritise shaping the development of AI and other digital technologies to ensure that they respect our rights and values, same as last year.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, cloud uptake among Finnish enterprises stood at 72.99%, well above the average EU uptake of 38.97%. This brings Finland very close to its 2030 target of 75% of enterprises using cloud. More specifically, SMEs demonstrated a high uptake rate of 72.27%, but large enterprises saw an even greater uptake at 94.88%. This indicates a 22.61 pp. difference in uptake between SMEs and large enterprises in Finland, which is lower than the EU-level gap of 31.68 pp.

Approximately 2 out of 5 enterprises in Finland (40.55%) performed data analytics in 2023, well above the EU average of 33.25%. Among these, uptake reached 39.07% among SMEs, while a significantly higher proportion of large enterprises (85.51%) performed data analytics. This resulted in a gap of 46.44 pp. between SMEs and large enterprises, which exceeded the EU-level gap of 39.72 pp.



Taking the three technologies together (adoption of either AI, cloud, or data analytics), Finland stood at 79.51%, significantly above the EU average of 54.7%. Uptake among SMEs was slightly lower at 78.9%, while almost all large enterprises (98.03%) used AI technologies, sophisticated or intermediate cloud computing services, or data analytics. This indicates a percentage point difference of 19.13 in uptake between SMEs and large enterprises in Finland, which is lower than the EU-level gap of 32.97 pp.

In conclusion, Finland's adoption of cloud computing, data analytics, and AI technologies significantly outpaced EU averages. While large enterprises led in adoption rates, particularly in AI and data analytics, SMEs also demonstrated notable engagement, particularly in cloud computing and data analytics.

- **Cloud**

Finland is very close to achieving its 75% cloud adoption target before 2030. Given the good results, no roadmap measures are directly targeted at promoting cloud solutions among enterprises. Cloud's symbiotic relationship with the data economy and AI can further reinforce growth in this indicator.

- **Data Analytics**

Finland retains a 75% target of enterprises using data analytics, in line with the EU target. No roadmap measures are directly targeted at promoting data analytics solutions among enterprises. However, as data analytics provides the tools and methodologies necessary to harness the power of data, it will be indispensable for the development, implementation, and refinement of AI systems, actions which are at heart of Finland's digital agenda. In addition, Finnish stakeholders are also very active in the field of data spaces, notably through the Data Spaces Alliance gathering enablers and builders of various data spaces.

- **Artificial Intelligence**

Finland is at the forefront of AI efforts in the EU and is working towards its 75% target of AI adoption by 2030. Among significant developments in this area in 2024, the country was selected to host one of the European AI Factories. LUMI AI is an investment of EUR 614 million (with EUR 306 million in funding from the EU, national funding of EUR 250 million and the remaining sum covered by other hosting consortium members, namely Czechia, Denmark, Estonia, Norway and Poland). LUMI-AI

Factory services began in April 2025 based on the current LUMI EuroHPC supercomputer in Kajaani. LUMI's successor, a new LUMI+ AI optimised supercomputer will start operating later in 2025. The main target areas of the Finnish AI Factory are manufacturing industries, health and life sciences, communication technologies and networks, digital twins and AI for science.

The country can rely on solid partnerships to boost RDI activities based on AI. The **Finnish Centre for Artificial Intelligence (FCAI)** is a Finnish RDI Flagship which unites top experts from academia and industry to solve real-life problems using both existing and novel AI. It was initiated by Aalto University, the University of Helsinki, and VTT Technical Research Centre of Finland.

In addition, the European Laboratory for Learning and Intelligent Systems (ELLIS Institute) was established in Finland in December 2024 to promote top AI research, large-scale R&D collaboration and ethical AI development. The existing **ELLIS Unit Helsinki** hosted by FCAI is projected to grow into a **world-class AI research hub** that will bring AI expertise into use for different fields. An innovation ecosystem will develop around the ELLIS Institute, attracting talent, companies and investments to Finland. The ELLIS Institute Finland initiative has gathered support from over 20 top companies, the Technology Industries of Finland, the Confederation of Finnish Industries, and all the current Research Council of Finland Flagship projects. A direct link between the LUMI AI and ELLIS provided by FCAI will facilitate their collaboration and synergy.

Technology Industries of Finland will act as business interface of the AI Factory. The AI Finland network brings together Finnish companies and other entities interested in AI. Nearly 400 companies have already registered to join the network, which was set up in March 2024. The network's goal is to increase adoption and development of AI in Finland.

2024 recommendation on AI: Encourage enterprises to apply existing advanced technological solutions, such as AI or quantum testing possibilities and innovate further in these areas.
Finland made some effort to address the recommendation through new policy actions in 2024. The LUMI AI Factory aims to unite key stakeholders to increase collaboration opportunities and support their HPC and AI projects. LUMI-AI has strong synergies with other recent national investments in AI, e.g. FCAI Flagship, ELLIS Institute and pilots for doctoral training, which strengthen scientific research and higher education in Finnish universities. Through planned inclusion of businesses to LUMI AI possibilities, the private sector will be encouraged to make use of AI and other advanced technologies.

Unicorns, scale-ups and start-ups

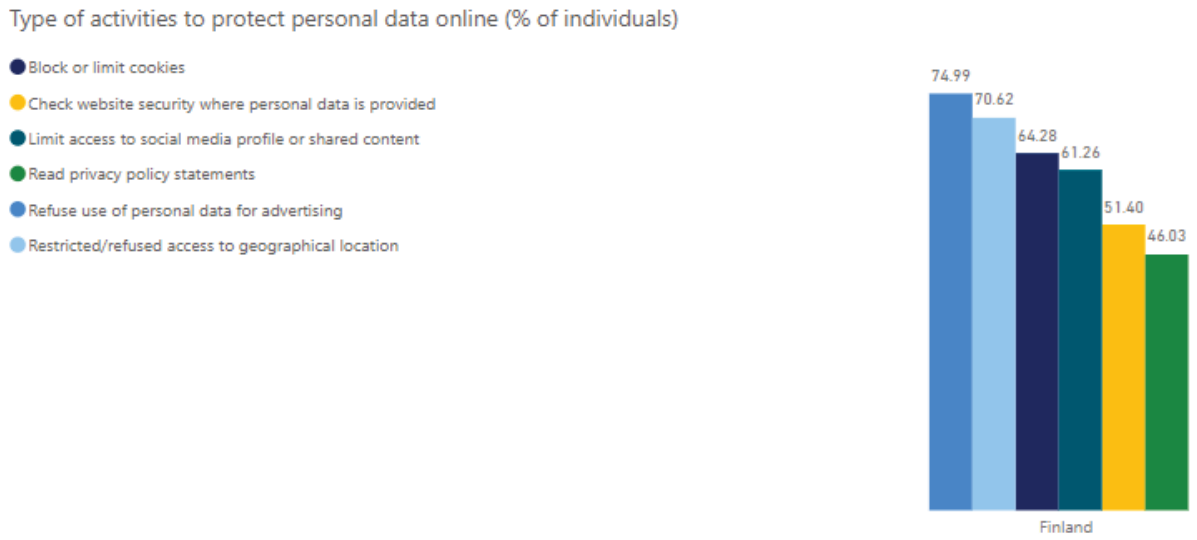
Finland offers good conditions and overall environment for start-ups, but the available later stage financing falls short when it comes to scaling up on a global level. In 2024, Finland was home to seven unicorns - the same as in the previous year - with some companies having the potential to become unicorns. The country decided not to set a national target for the number of unicorns and stressed that it is important for the EU to be an attractive and competitive environment.

To support growth-oriented SMEs, the Growth Entrepreneurship Programme was launched. The first part of the programme proposes measures to be undertaken by the Ministry of Economic Affairs and Employment's administrative branch - Business Finland, Finnvera, ELY Centres, Tesi, and VTT - to accelerate growth entrepreneurship. The second part proposes measures to improve the operating environment of growth companies to make it more conducive to growth and renewal. The Ministry of

Economic Affairs and Employment is in the process of preparing the programme. The ultimate objective is to commit to measures that will double the number of growth-oriented medium sized entrepreneur-led companies (known as '*Mittelstand*') by 2030.

Strengthening Cybersecurity & Resilience

In Finland, most individuals (92.35%) of individuals took steps to protect their personal data online, far exceeding the EU average of 69.55%. Moreover, 75.3% of the Finnish population carried out three or more activities to protect their personal data online (see the graph below) and can therefore be considered as having above basic digital safety skills. Refusing the use of personal data for advertising purposes was the most common measure (74.99%), while the least frequent was reading privacy policy statements (46.03%).



Finnish enterprises tend to experience significantly more incidents related to cyberattacks than their EU counterparts. However, they are also better prepared to confront them, as employees are more aware of their ICT security related obligations compared to the EU. The number of enterprises in Finland that experienced ICT security incidents leading to the unavailability of ICT services due to attacks from outside (e.g. ransomware attacks and denial of service attacks) increased significantly, from 4.92% in 2022 to 7.21% in 2024. It is the second highest in the EU after Latvia (8.02%), well above the EU average (3.43%). Finnish enterprises are also much more prone to incidents related to hardware or software failures (37.40%) than their EU peers (17.97%). In terms of measures, almost all (98.74%) enterprises deployed some ICT security measures (against the EU average of 92.76%) and three quarters (74.81%) made their employees aware of their obligations on ICT security related issues, significantly above the EU average (59.97%).

Finland leads the EU in the roll-out of Domain Name System Security Extensions (DNSSEC), an important standard to be rolled out as it introduces security features to the DNS. In Finland, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 97% (data from Q3-2024), more than double the EU average (47%). Concerning the deployment of secure internet standards, Finland hovers around the EU average in the roll-out of the secure Internet Protocol version 6 (IPv6) for end users (35% vs an EU average of 36%) and is below the EU average on the server side (13% vs 17%, according to data from Q3-2024). IPv6 is an important protocol as it ensures the scalability, stability, and security of the

Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have long been depleted.

To respond to technological and geopolitical challenges, in October 2024 Finland adopted a new cybersecurity strategy for 2024-2035, accompanied by an implementation plan. The strategy the refers to NIS2 Directive requirements and takes into account other key strategies and reports. It underlines the need for a whole-of-society approach to cybersecurity and the importance of maintaining trust in digital services, while also stressing its role as a vital component in the Finnish model of comprehensive security. Built on four pillars: (i) competence, technology and development and innovation activities; (ii) preparedness; (iii) cooperation; and (iv) response and countermeasures, it provides a comprehensive outlook on Finland's cybersecurity priorities.

Although Finland does not include cybersecurity measures in its roadmap adjustment, it continues to boost the cybersecurity skills of its population. One of the priorities of the implementation plan is ensuring application and funding of the outcomes of the Cyber Citizen project. This RRF-funded project focused on developing an EU-wide unified learning model to teach basic cybersecurity skills through research, online education, and gamification. A noteworthy and tangible result is Cyber City Tycoon, a game designed to help players (children and adults) identify cyber threats. It is available in all EU languages and downloadable from app stores. Another resource from the project is SecPort, a comprehensive platform to help users master key cybersecurity skills. It serves as a hub for learning resources such as courses, articles, videos and games, and covers various cybersecurity topics including threat detection, risk management, and safe online practices. The portal's AI-driven personalisation enhances user experience by providing tailored content that matches individual learning needs and preferences. SecPort is also available in all EU languages, ensuring accessibility to a broad audience.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

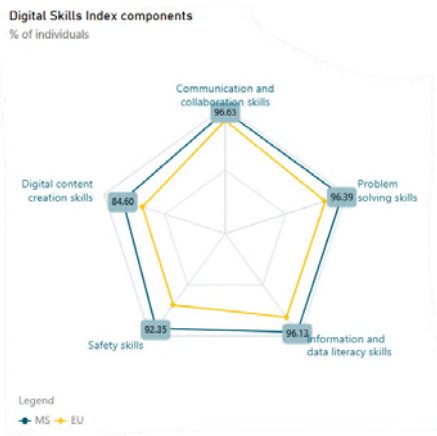
In Finland, digital skills are notably high thanks to inclusive growth and education systems that enhance skills across demographics. AI literacy and digital public services have also seen improvements, with initiatives like the New Literacies Development Programme contributing to enhanced media literacy and ICT skills. Finland is involved in measures to train ICT specialists and, to a lesser extent, to attract them and tackle a gender gap in this field. The country is a leader in digital public services and cross-border services, but at the same time, digital health could benefit from even further improvements.

Equipping people with digital skills

Basic Digital Skills

Finland's population has excellent digital skills, with evidence of inclusive growth across multiple dimensions. According to data from 2023, 81.99% of its population has at least basic digital skills (2030 national target 87%), well above the EU average of 55.56%. While there is no new data for 2024, a breakdown by demographic factors provides some insights.

- **Gender Gap:** Interestingly, Finland's gender gap is in favour of women, with 80.94% of men and 83.05% of women possessing at least basic digital skills, leading to a 2.11pp gap. This is to be compared with the EU average gap of 2.23pp in favour of men.
- **Education Level:** High levels of formal education correlate with digital proficiency; 92.26% of Finns with high formal education have at least basic digital skills, which is greater than the EU average of 79.83%. The least digitally skilled are individuals with no or low formal education, at 78.36%, which is the highest number for this group across the EU. Therefore, the gap from national average is only 3.63 pp., which is minimal compared to the average EU gap of 21.95 pp.
- **Living Areas:** In rural areas, 74.02% of residents have basic digital skills, which is significantly higher than the EU average for rural areas (47.50%). The discrepancy between rural and national averages in Finland is 7.97 pp., close to the EU average gap of 8.06 pp.
- **Age Groups:** The 35-44 age group leads in digital skills with a proficiency rate of 94.05%, outperforming the EU average of 65.26%. 65-74-year-olds, while being the least skilled age group in Finland, still have a noteworthy proficiency rate of 50.24%, which is considerably above the EU average of 28.19%.
- **Digital Skills Index components:** Finland excels in all five areas of the Digital Skills Index, surpassing the EU average across the board. Its highest score is in communication and collaboration skills at 96.63%, way above the EU average of 89.33%. The lowest



score, yet still high, is for digital content creation skills at 84.60%, well above the EU average of 68.28%.

Overall, Finland demonstrates robust digital proficiency levels throughout its population and is well on track to achieve its 87% target for basic digital skills, an ambition higher than the EU's target of 80% by 2030. The nation's strengths in digital skills are evident and are almost independent of the differences in levels of education. While discrepancies between age groups and living areas exist, they remain moderate compared with the corresponding EU averages. This can be explained by digital education beginning in early childhood, but also by a positive approach towards lifelong learning, as suggested by the overall high literacy and numeracy of adult population.

2024 recommendation on basic digital skills: Continue empowering literacy of its population and developing competences in areas such as cybersecurity.
In 2024 Finland continued to strengthen the literacy of its population. For children and young people, the New Literacies Development Programme 2020-2023 strengthened media literacy, ICT and programming skills through competence description, curricula and local pilot projects. Educators continue to use the guidelines and materials developed as part of this programme. In addition, the Ministry of Education and Culture is preparing AI recommendations for early childhood education and care, and primary and secondary education, which will contribute to the development of AI literacy. Concerning adults, as a part of AI coordination, possible measures will be identified and mapped out to develop educational offering for different target groups. Finland plans to create a knowledge base for assessing media literacy as part of an ongoing joint Nordic project (Nordic MIL Index). Finland will be focusing on adult population in its part of the project, with the first results available by summer 2025. Projects such as Cyber Citizen (see above) contribute to enhancing the cybersecurity skills of the Finnish population.

ICT specialists

In 2024, 7.8% of total employment in Finland was in ICT (2030 national target 10%), after a progression of 2.6%, outpacing the EU's 5.0%. The country is on track according to its national trajectory. On gender distribution among ICT specialists, Finland shows a higher percentage of female ICT specialists compared to the EU average. In 2024, 22.4% of ICT specialists in Finland were female (from 22.2% in 2023), compared to the EU average of 19.5%. The growth rate for female ICT specialists in Finland was 0.9%, higher than the EU's 0.5%. This indicates that Finland is making progress in increasing the representation of women in the ICT sector, outperforming the EU in this area.

While Finland has a higher proportion of enterprises offering ICT training, the rate of decline in this area was more pronounced than in the EU. In 2022, 39.83% of enterprises with 10 or more employees in Finland provided ICT training, significantly higher than the EU average of 22.37%. However, by 2024, this figure had decreased to 38.33%, still above the EU's 22.29%. The annual growth rate for enterprises providing ICT training in Finland was -1.9%, which is lower than the EU average of -0.2%.

In terms of demand from the labour market, Eurostat's experimental statistics based on web scraping show that in Finland the profiles of 'software and applications developers and analysts' are the most sought after, accounting for 63.4% of online job advertisements for ICT specialists (EU average: 58.0%). Three other types of profiles are more wanted in Finland than in the EU in average: 'database and network professionals' (13.7% of online job advertisements for ICT specialists), 'other information and

communications technology specialists' (10.4%) and 'information and communications technology service managers' (4.6%).

Finland retained its 10% target for ICT specialists. However, it did not introduce any new measures related to ICT specialists in its roadmap adjustment, putting the target in danger. Looking at specialised skills, the initiative of Technology Industries of Finland to fund thesis scholarships in AI and post-doctoral research would boost the number of ICT students and professionals. Finland continues to have difficulties in retaining foreign students (ca. 12%), including in the ICT sector. As reported last year, Finland is discussing incentives for international students to stay in Finland to work after graduation, for example by waiving tuition fees. However, a major practical obstacle to retaining foreign students is limited supply of training and employment opportunities that do not require Finnish or Swedish language skills. For this, cooperation with the private sector is primordial. It is important to note that Finland has a lower share of population (between 25–34-year-olds) with tertiary education compared to the OECD average.

2024 recommendation on ICT specialists: Intensify efforts in attracting ICT specialists and offering tailored training paths as well as address the gender gap in this field.
Finland continued to implement existing measures but did not introduce any new ones. Notably, the country's STEM strategy includes promoting gender-inclusive development in those fields. In addition, the government has been increasing the number of ICT graduates through agreements with higher education institutions and allocating around 400 PhD positions in ICT for the period 2024-2027. Students in other fields can choose ICT-related courses and gain micro credentials.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

In 2024, Finland's total score for digital public services for citizens was 96.32 (2030 national target: 100), outpacing the average EU score of 82.32. Finland's growth rate of 6.3% in this area surpassed the EU's 3.6%. The country is on track according to its national trajectory. For cross-border digital public services, Finland's score was 93.91 in 2024, higher than the EU average score of 71.28. Finland's growth rate of 10.5% in this category also exceeded the EU's 4.3%. The share of people using government internet websites or apps has minimally decreased from 97.61% in 2023 to 97.14% in 2024. However, the use of government websites in Finland is still far above the EU average of 74.71% in 2024.

On digital public services for businesses, Finland's total score was 98.75 in 2024 (2030 national target: 100), higher than the average EU score of 86.23. The country did not provide a national trajectory point for 2024, likely because the target was already achieved in previous years. For cross-border digital public services for businesses, Finland's score was 97.5 in 2024, higher than the average EU score of 73.76. One newly introduced Single Digital Gateway Regulation-related service (reporting the termination of business activity, excluding involvement of insolvency or liquidation procedures) was not found online, lowering the average score.

Regarding access to e-health records, Finland's total score was 84.7 in 2024, higher than the average EU score of 82.70 (2030 national target: 100). However, Finland's growth rate of 2.5% in this area was lower than the EU's 4.5%. The country did not provide a national trajectory point for 2024.

Finland's digital public services and access to e-health records were generally above the EU average, with high scores in most categories. However, the country's growth rate in access to e-health records is slower than the EU average growth.

eID

Finland has been working actively on the national implementation of the EU Digital Identity Wallet (EUDIW) through technical and legislative means. The Finnish Digital and Population Data Services (DVV) is responsible for preparing the wallet, while national stakeholders (both public and private) are active in four large-scale pilots before EUDIW becomes fully operational by the end of 2026. The latest one is the consortium Wallet Ecosystem for Business & Payment Use cases, Identification, Legal person representation and Data sharing (WE BUILD), jointly led by Sweden and the Netherlands. It aims to pilot the usage of EUDI Wallets across 13 use cases in the areas of businesses, supply chain, and payments. It will become operational in autumn 2025. In addition to the wallet, Finland will also promote electronic services for legal entities by issuing them with identification data.

2024 recommendation on eID: Notify to the Commission an eID scheme under the eIDAS Regulation.
The recommendation has been fully addressed. The Finnish 'Citizen Certificate' has been notified to a high assurance level and was published in the Official Journal of the EU in April 2025. Finland still needs to implement some technical changes during 2025 before the full usage of the eID scheme. Once completed, people in Finland will benefit from the increasing number of services available across borders in the EU.

Digitalisation of public services for citizens and businesses

Finland still aims to attain a score of 100 for the digitalisation of public services for citizens and businesses, and has proposed a trajectory to reach this score for services for citizens.

To support businesses in the complex digital regulatory environment, public and private stakeholders in Finland and Denmark are cooperating to create a catalogue of electronic tools designed to clarify legislation such as the AI Act, the Data Act, and the European Health Data Space (EHDS) Regulation. Led and funded by the Finnish Innovation Fund Sitra, their goal is to empower innovators and implementers of digital solutions to make informed decisions concerning these regulations. In November 2024, the first e-tool interpreting the AI Act became available.

Finland is making good progress towards a seamless, automated exchange of authentic documents and data across the EU. It has already successfully tested its first transactions through the 'once-only' technical system of the EU Single Digital Gateway. The country participates in the Nordic DigiGovLab project (2024-2026) which aims to provide insights and recommendations for human-centric and inclusive digital government in the Nordic-Baltic countries. The project sets out to develop strategies for the automatic exchange of data in the event of death, and subsequent inheritance, and to establish cohesive governance principles, e.g. in relation to AI in public administration.

e-Health

Finland aims to achieve a score of 100 in e-health by 2030, in line with the EU target. To support this ambition, the country has introduced a new measure on electronic health records - a mobile application of My Kanta, the Finnish health portal, to be launched in spring 2025. The app will enable health documents and referrals to be safely stored and displayed on mobile devices, with the same access to services and data as the existing web-based version. The app may function as a digital wallet app in the future, possibly enabling users to manage their health data and care contacts efficiently.

Finland is leading European work on health data. In its role as co-lead in the e-Health Network, Finland is preparing an implementation roadmap to support all Member States in the implementation of the European Health Data Space Regulation. Finland has been the pioneer country in Europe for the secondary use of health data. With regard to Nordic collaboration, the Ministry of Social Affairs and Health steers the Nordic VALO project on secondary use of health data, which supports EHDS preparations in the Nordic region by strengthening RDI cooperation. The formal Nordic Ministry Council e-Health group receives updates on the VALO progress and discusses EHDS related Nordic questions. Finland's internal EHDS preparations are primarily centred on the area of primary use. The current focus in the area of digital services is to help people become more involved in their own health management. Finland is also actively seeking for international collaboration to share the experiences.

Broader digitalisation of healthcare services is supported by the RRF. The welfare sector, together with national authorities, have developed and introduced digital services aimed at citizens, information systems and management solutions for professionals. As reported by Finnish authorities, citizens' digital transactions with social and healthcare professionals have increased by 16.1 pp. from 2020 (25.8%) to 2024 (41.9%).

2024 recommendation on e-Health: (i) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online; (ii) Widen the catalogue of data available to citizens in that service; (iii) Consider offering a mobile application for citizens to access their electronic health records and enhanced authentication methods.
Finland made some effort to address the recommendation by introducing new policy actions in 2024. On the data catalogue, patients now have access to their electronic hospital discharge reports. However, data on e.g. medical images, and medical devices/implants remain unavailable for the time being. Regarding coverage and mobile application, the country announced that in 2025 it will roll-out a mobile application using existing authentication methods. . With EHDS implementation, a wider data content for citizens is being considered. Given that banking ID is the most common method for gaining access to electronic health data and not all citizens have banking ID, eID EUDI wallet-use possibilities will be assessed during 2025, also in alignment with EHDS Regulation obligations.

Building a safe and human-centric digital environment and preserving our democracy

Online participation in political and civic life is decreasing in Finland. In 2024, 23.73% of people used the internet to participate in consultations, to vote or to share opinions online. This share is above the EU average but is trending downwards (25.64% in 2022), which is the opposite of the trend observed at EU level (17.59% in 2022 and 20.45% in 2024). According to the Digital Decade Eurobarometer 2025, 79% of Finnish respondents consider that digital technologies will be important for accessing education and training opportunities by 2030.

The majority of Finland's population critically evaluates online content and almost 2 out of 5 of those who encounter doubtful information check its accuracy. In 2023, 69.81% of individuals reported having come across untrue or doubtful information or content on internet news sites or social media, significantly higher than the EU average of 49.25%. 38.31% of them checked the truthfulness of doubtful information found online, significantly more than the EU average (24.29%). Young people (16-24) (79.6%) reported slightly more exposure to doubtful information than adults (25-64) (73.84%),

with a striking difference in verification rates (61.12% for young people vs 38.95% for adults). Men (72.62%) were relatively more likely than women (66.99%) to report encountering untrue or doubtful content, as well as to verify its accuracy (43.42% vs 33.2% of females). Media literacy and critical thinking are included in national curriculum, what might contribute to the overall good results compared to the EU average.

In 2023 almost half of the Finnish population (46.33%) encountered messages online considered hostile or degrading towards groups of people, such as those based on LGBTIQ identities or racial origin, well above the EU average of 33.5%. Young people (16-24) (69.1%) reported substantially higher exposure than adults (25-64) (47.02%), showing one of the largest age-related differences in the EU. Women (49.55%) and men (43.12%) reported similar rates of exposure, with a slight but notable gender gap.

In addition, according to the Digital Decade Eurobarometer 2025, Finnish people consider it urgent that public authorities act to protect children online regarding the negative impact of social media on children's mental health (96% of Finnish respondents), cyberbullying and online harassment (96%) and to put in place age assurance mechanisms to restrict age-inappropriate content (90%).

Traficom, the Finnish Transport and Communications Agency, in its role of national Digital Services Coordinator under the Digital Services Act (DSA), has been increasing awareness on the DSA among users and stakeholders. This has resulted in over 70 complaints to this coordinator in 2024, mainly about Facebook, Instagram and TikTok, which were also transferred to other DSCs notably the Irish one. Traficom has awarded a status of 'Trusted Flagger' to three Finnish organisations.

Leveraging digital transformation for a smart greening

As explained in Finland's recent industrial policy strategy, the country sees the clean transition as an important opportunity. The country's high level of digitalisation sets out good conditions for the two transitions, green and digital, to support each other. According to the Digital Decade Eurobarometer 2025, 66% of Finnish people consider digital technologies important to help fight climate change, while 77% of Finnish respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities, below the EU averages (74% and 90%, respectively).

Finland incentivises the use of clean energy by enterprises. The taxation of electricity has been implemented in such a way that energy efficient industry, for example data centres using waste heat, receive an advantage i.e. lower tax band[6]. While the Climate and Environmental Strategy for the ICT Sector is being implemented, the Finnish Transport and Communications Agency Traficom has ceased monitoring power consumption in Finnish networks based on the yearly reports issued by the operators. The statistics did not achieve sufficient levels of reliability, demonstrating the challenge of monitoring the impact of networks on the environment.

[6] Ongoing government proposal to change the relevant regulation might affect the existing solution, see Regeringens proposition till riksdagen med förslag till lag om ändring av lagen om punktskatt på elström och vissa bränslen - Valtiovarainministeriö.

On top of an analysis of the carbon footprint, discussions have commenced between the government and stakeholders on a 'carbon handprint' - a term used to describe the positive climate impacts of products or services. The key principle of the handprint is that it does not grow by reducing one`s own footprint. Instead, an organisation`s handprint increases when it helps other parties e.g. by reducing their carbon footprint. Both Finnish Environment Institute Syke and the Confederation of Finnish Industries produced reports on the carbon handprint of Finnish exports. Technology Industries of Finland has started working towards calculating the carbon handprint of companies and products. One of the biggest challenges in calculating the carbon handprint is the lack of a common calculation method. LUT University has developed methods assessing carbon handprint in joint research projects with VTT. Before commencing work on a carbon handprint, Syke had also assessed the environmental impacts of the digitalisation of public sector services.

The Finnish population recycles only a small part of its ICT equipment. Finland's inhabitants are more likely to recycle their laptop and desktop devices (15.26% for laptops and tablets, 18.31% for desktops) than the EU average (11.31% and 14.66%, respectively), with recycling of mobile phones being close to the EU average (11.16% vs 10.93%). Moreover, only 14.20% of people consider energy efficiency as important when purchasing ICT devices (EU average: 19.35%), but the eco-design of the device is considered important by 12.92%, which is just above the EU average (12.04%). However, those two eco-friendly criteria take on less importance for the buyer than price, performance, and design of the ICT device.

Finland provides an example of how technology can help understand climate change. Finnish supercomputer LUMI is also successfully implementing in the Climate Change Adaptation Digital Twin (Climate Digital Twin), a high-priority digital twin of Destination Earth. The Climate DT is a simulation system that can be used to support decision-making on the impacts of climate change and different adaptation strategies at local and regional levels over multiple decades.

2024 recommendation on green ICT: (i) Continue developing a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs; (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing; (iii) Demonstrate leadership in using digital transition for environmental purposes by promoting national tools and methodologies at European level.

Finland fully addressed the recommendation by introducing significant policy actions in 2024. The country promotes the efficiency of digital infrastructures (see above) and puts significant efforts into mapping the carbon handprint of products and services, including digital ones. Finland participates in the Digital Decade's best practice accelerator as co-leader for sharing information on the digital environmental transition, demonstrating leadership in this field (see Annex II below).

Annex I – National roadmap analysis

Finland's national Digital Decade strategic roadmap

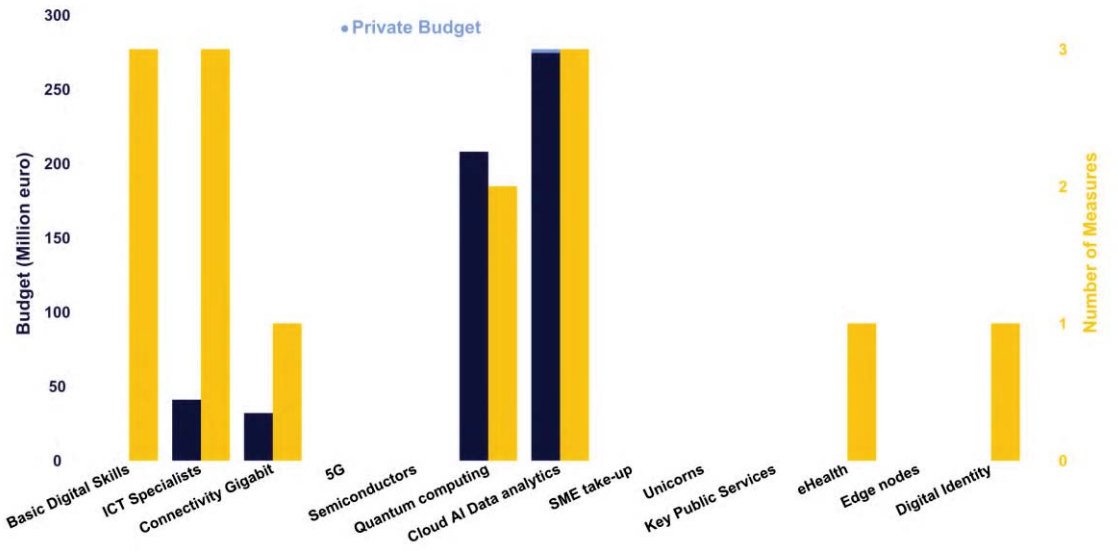
Finland submitted an addendum to the Digital Decade roadmap on 29 November 2024, which includes an additional measure, revised measure descriptions, new targets and revised trajectories. The addendum, like the original roadmap, is based on Finland's Digital Compass and its yearly implementation plans that comprehensively address digital action by the country. The content of the roadmap and its update have been developed in close cooperation with stakeholders, as part of regular consultations conducted notably by the Coordination Group for Digitalisation (the 'Digital Office').

The new roadmap addresses a substantial number of roadmap recommendations issued in 2024:

- *Propose a target and trajectory for FTTP, edge nodes and unicorns, design a trajectory for VHCN, cloud, data analytics, AI, digital public services for citizens and e-health*: Finland provided the requested trajectories except for e-health and added a FTTP target accompanied by a trajectory. Regarding edge nodes, the country argues there is no database or public influence allowing for a target. Regarding unicorns, Finland did not consider it appropriate to set a separate national target and considers it important that the EU is an attractive and competitive environment.
- *Propose a higher target for basic digital intensity of enterprises*: Finland raised the target from 90% to 95%, above the EU ambition level.
- *Strengthen the measures on ICT specialists and gigabit, add measures on digital public services and e-health*: Finland added a measure related to e-health and mapped a supporting broadband deployment in rural areas which was absent in the initial roadmap.
- *Review the budget description of all presented measures, duly highlighting national and EU sources such as Recovery and Resilience Facility*: A budget for some existing measures was added.
- *Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it:* Some link between the measures and the corresponding rights and objectives was provided. The roadmap clearly reinforces Finland's contribution to the Digital Decade objectives of tech leadership, sovereignty and green ICT.

Overall, Finland presents a non-exhaustive list of policies and measures that will contribute to achieving each of the Digital Decade targets. All targets align with the EU-level goals for 2030, and two are set higher: a target of 87% for basic digital skills, and a target of 95% for basic digital intensity of SMEs. The measures presented also cover several types of objectives: technological leadership, sovereignty, competitiveness, and the green transition. In total, the 14 measures have a budget of EUR 559 million, equivalent to 0.2% of GDP. The roadmap also underlines the importance of RDI activities, by offering possibilities in multiple areas (e.g. 5G, semiconductors, quantum, and to some extent, AI).

Measures and budget in national roadmap[7]



[7] When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Finland is a member of the Alliance for Language Technologies EDIC, and is also working towards setting up an EDIC in the area of genomics. Finland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Finland is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Finland is co-leading the Green IT cluster of the Best Practice Accelerator[8], promoting the sharing of information relating to public policies on the environmental transition of digital technology. Finland has notably shared two best practices: on the Climate and Environmental Strategy for the ICT Sector in Finland, and on increasing the knowledge base on the environmental handprint and footprint effect of the ICT sector.

Finland also participates in the Digital Skills cluster (with shared two best practices: Finnish National STEM Strategy and Action Plan and New Literacies Development Programme) and in the uptake of the Digital Technologies cluster (with best practice: RELEX Solutions as an Example of Successful Startup Innovation and Support).

EU funding for digital policies in Finland

Finland allocates 29% of its total recovery and resilience plan to digital (EUR 526 million)[9]. In addition, under cohesion policy, EUR 385 million (representing 20% of the country's total cohesion policy funding), is dedicated to advancing Finland's digital transformation[10]. According to JRC estimates, EUR 566 million directly contribute to achieving Digital Decade targets (of which EUR 391 million comes from the RRF and EUR 175 million from cohesion policy funding)[11].

The largest digital measure in the recovery and resilience plan is dedicated to the digitalisation of healthcare services (EUR 145 million). Other measures are designed to support (i) rail digitalisation, (ii) boosting the potential of the data economy, (iii) RDI in advanced technologies such as 6G, AI and quantum, and (iv) training in the public and private sector, including in cybersecurity. The high-speed broadband scheme receives EUR 32 million from the plan.

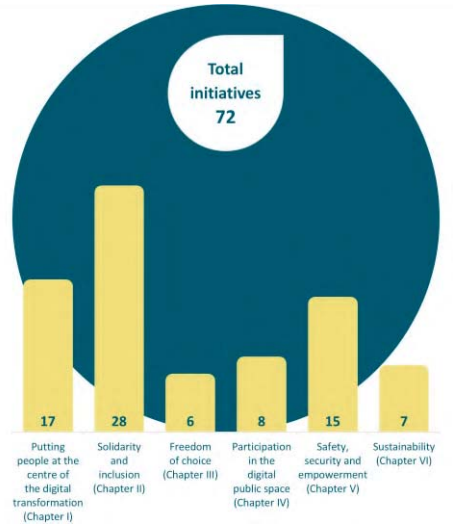
[8] Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular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

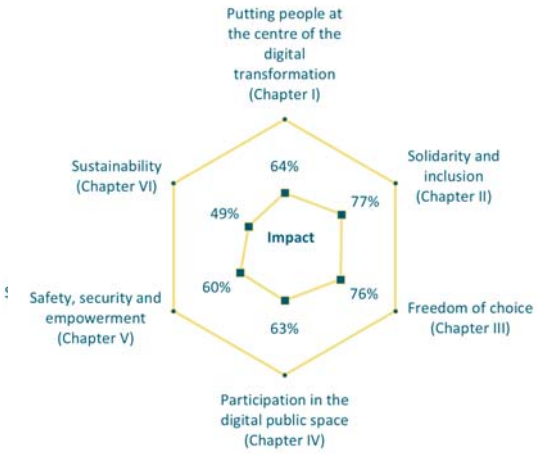
[9] The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

[10] This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

[11] Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital rights and principles[12]





Activity on digital rights and principles *(figure 1)*

Finland has been relatively active in implementing digital rights and principles, with 72 initiatives overall and 5 new initiatives launched in 2024, showing limited progress towards its commitments. **Finland is most active in the area of Putting people at the centre of the digital transformation** (I). There is room for improvement, especially with regards to Interactions with algorithms and artificial intelligence systems (III) where less activity has been identified.

Impact of digital rights initiatives *(figure 2)*

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Finland (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Finland is most successful in implementing commitments related to Solidarity and inclusion** (II). Finland could strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Sustainability (VI).

According to the Special Eurobarometer 'Digital Decade 2025', **55% of citizens in Finland think that the EU protects their digital rights well** (a 3% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting freedom of assembly and of association in the digital environment and getting access to safe and privacy-friendly digital technologies (76%, above the EU average of 59% and 55% respectively). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (57%, above the EU average of 48%).

[12] Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available here. For a more detailed country factsheet accompanying the study, click here.