FINNISH GOVERNMENT

Finland's Digital Compass – Implementation Plan

8 December 2023

Contents

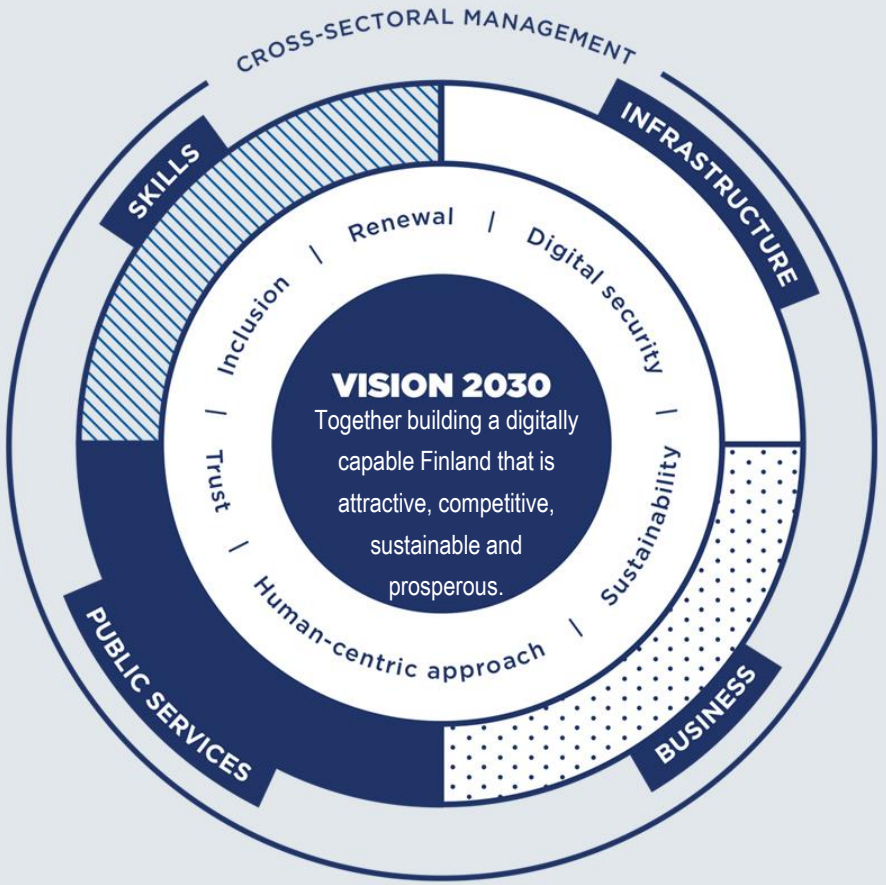
1. Background: Prime Minister Orpo's Government Programme

The Implementation Plan of Finland's National Digital Compass contributes to the implementation of the Prime Minister Orpo's Government programme, chapter 6.4.

"The current funding of the central government’s digitalisation projects will be brought within the scope of cross-administrative coordination. During the government term, the digitalisation budgets of different branches of government will be combined into an appropriately sized joint development budget, which will be allocated according to the priorities set in the Government Programme. The Government will outline funding criteria for digitalisation projects to guide the interoperability of these projects. The Government will reduce the appropriations for ministry-specific projects to the same extent to ensure that the reform is cost-neutral. We will improve digital management in such a way that the Ministerial Working Group and the Coordination Group for Digitalisation will continue to lead the coordination of information and technology policy in a sustained manner. The Government will monitor and continue to promote the objectives of the Digital Compass."

1. Introduction: Finland’s Digital Compass

- Finland's Digital Compass is a strategic development plan for 2030 (Government report 10/2022 vp).
- The cross-sectoral approach to digitalisation: comprises the national vision for 2030, the values on which the development of Finland's digitalisation is based, and the prioritised objectives in four areas and in cross-sectoral management.
- The Digital Compass has been created using the Objectives and Key Results (OKR) framework. The objectives describe the change at the strategic level. A number of measurable key results have been identified for each of the objectives. Performance is monitored through the key results. The objectives and key results are set in the Digital Compass Government report.
- The implementation plan contains measures for achieving the Digital Compass’ objectives.



2. Background: EU Digital Decade policy programme

- Finland's Digital Compass is based on the EU Digital Compass presented in 2021 and the related EU Digital Decade 2030 programme, adopted in 2022.
- The programme sets out EU targets for digitalisation to be reached by 2030 and obliges Member States to draw up national roadmaps.
- The national roadmaps will be updated for the first time in 2024 and, after this, every two years. In the annual report on the State of the Digital Decade, the Commission assesses progress and makes recommendations for action.
- Finland has submitted its own roadmap to the Commission on 9 October 2023.
- The broader, ambitious national objectives of the Finnish Digital Compass complement the common EU objectives. Hence, the Implementation Plan contains the measures reported to the Commission, and further comprehensive set of measures.

2. Background: The EU's common digital objectives 2030

COMPETENCE

ICT experts:
20 million + narrowing the gender gap

Basic digital skills:

at least 80% of the population

COMPANIES

Adoption of technology
75% of EU enterprises use cloud computing services/Big Data/Artificial Intelligence

Innovators:
growth of innovative scale-ups and their access to finance to double the number of 'unicorns' in the EU

Late adopters: more than 90% of SMEs reach at least a basic level of digital intensity

PUBLIC SERVICES

Key public services:
100% online

eHealth:
100% of EU citizens have access to medical records online

Digital identity:
100% of citizens have access to digital ID

INFRASTRUCTURE

Network Connections:
gigabit for everyone, 5G everywhere

Cutting edge semiconductors:
double EU share in global production

Data – Edge & Cloud:
10,000 climate neutral highly secure edge nodes

Calculation:
first quantum computer

3. Objectives set in the Government report on the Digital Compass

COMPETENCE

Digital bildung

Objective 1 Finland has a high level of digital Bildung, with everyone having the capabilities necessary for participating in the digital world, and mutual respect and trust are at a high level.

Basic digital skills

Objective 2 Basic digital skills in Finland are among the best in the world and help promote the sustainable development of society. *(EU target: at least 80% of the population aged 16–74 has basic digital skills.)*

Digital competence

Objective 3 : Digital skills and competences support innovation, competitiveness and wellbeing. Education, training and research generate the expertise needed in society. Finland is one of the world's best-known and most attractive hubs of technology education, research, skills and investment, and an attractive country for international digital specialists. *(EU target: 20 million ICT specialists + gender convergence and increasing the number of graduates.)*

INFRASTRUCTURE

Data economy

Objective 4 The Finnish data economy is a global pioneer in 2030. *(EU target: digital identity: 100% citizens using digital ID.)*

Cybersecurity

Objective 5 : Finland has a critical infrastructure with a high level of cyber resilience and a strong international cyber industry ecosystem.

Digital infrastructure

Objective 6 Finland has comprehensive, secure and resilient telecommunications infrastructure as well as server and computing infrastructure.*(EU target: gigabit for everyone, 5G everywhere; EU target: first computer with quantum acceleration; EU target: The EU's share of global semiconductor production will be at least 20%.)*

BUSINESS DIGITALISATION

Digital technologies as drivers of renewal

Objective 7 Finland is home to globally attractive technological competence clusters in selected areas.

Objective 8 The data economy and data-driven value creation in business will increase.*(EU target: more than 90% of SMEs reach at least a basic level of digital intensity; EU target: 75% of EU companies use Cloud/AI/Big Data)*

Digital and clean transition

Objective 9 Finland develops and applies digital technologies that respond to global climate and environmental challenges.

The digital competences of small and medium-sized enterprises

Objective 10 The number of digitally advanced SMEs will increase. *(EU target: 75% of EU companies using Cloud/AI/Big Data; EU target: more than 90% of SMEs reach at least a basic level of digital intensity; EU target: grow scale-ups & finance to double EU Unicorns.)*

DIGITAL PUBLIC SERVICES

Human-centric, digital and sustainable service packages

Objective 11 A significant proportion of public services has been digitalised or automated with a human-centric approach *(EU target: key public services are 100% online; EU target: 100% of citizens having access to medical records)*

Interoperable public services

Objective 12 Interoperable digital public services enable smooth service use for citizens, businesses and organisations, also internationally. *(EU target: digital identity: 100% citizens using digital ID.)*

Comprehensively secure public services

Objective 13 Public services are produced in accordance with the comprehensive security model.

CROSS-SECTORAL MANAGEMENT

Objective 14 The opportunities presented by digitalisation and the data economy are fully taken advantage of through a management approach that promotes cross-sectoral cooperation

4. Measures

- The measures to achieve the objectives of the Digital Compass have been identified together with stakeholders. The main focus of the measures will be on the time span of the current government term.
- The action plan comprises:
  - measures already in progress;
  - measures to be implemented for which funding has been granted or which do not need separate funding,
  - measures in accordance with the Government Programme for which no funding is yet available. Decisions on the funding of these measures will be made separately in the General Government Fiscal Plan and Government Budget Proposal processes.

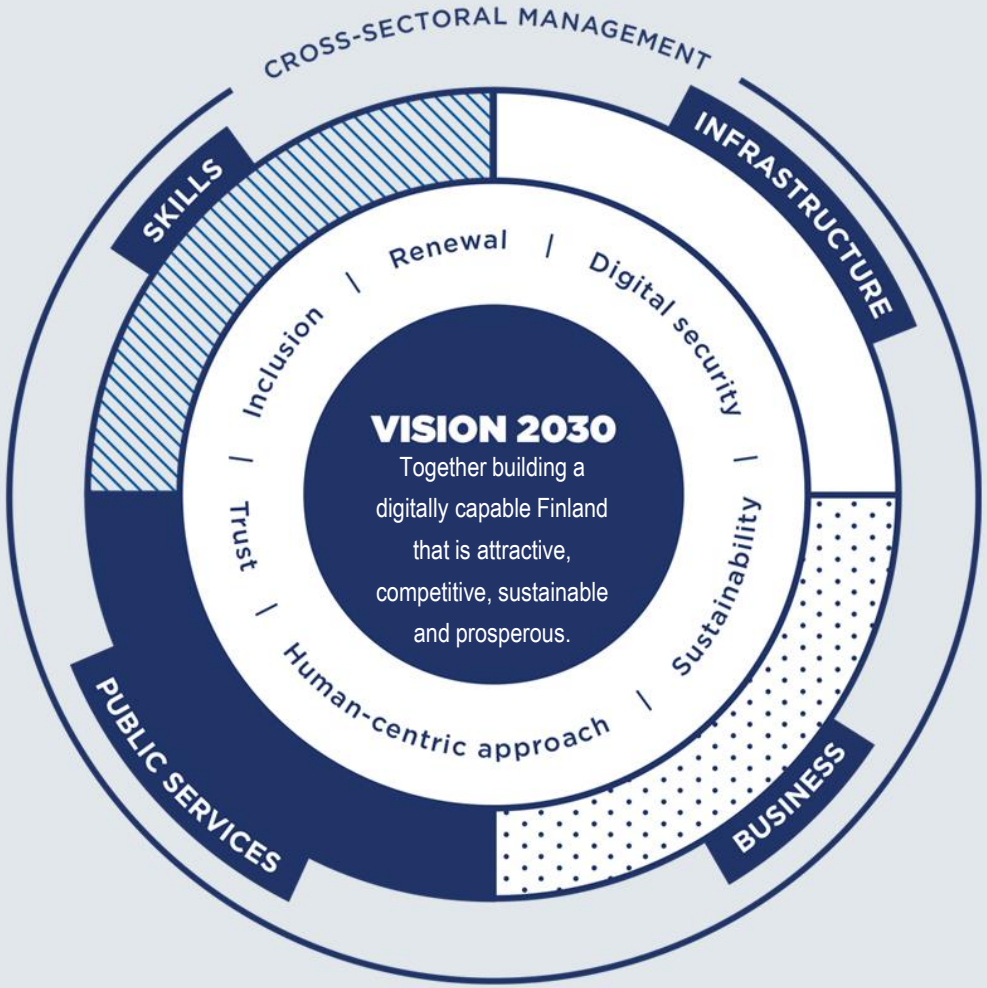
Objective	Key result	Measure
Strategic objective reflecting change at the strategic level; steering towards the vision	A measurable result that supports the realisation of an objective	Concrete measures to achieve the objectives

Sets of measures for the Digital Compass

1. Programme to develop digital Bildung and basic digital skills

2. Digital competence development programme

3. Action plan for digital experts



4. Data Interoperability structures

5. Cybersecurity

6. Well-functioning and sustainable digital infrastructure

10. Human-centric, digital and sustainable service packages

11. Interoperable public services

12. Overall secure public services

7. Digital technologies as drivers of renewal

8. Digital capacity of SMEs

9. Operating environment

Digital skills and competences

1. Programme to develop digital Bildung and basic digital skills

- Societal Discussion on digital Bildung
- (Self-)assessment, definition, description and development of basic digital skills
- Media literacy and ICT and programming competences
- Safeguarding the digital Bildung; Usability of scientific data and cultural heritage

2. Digital competence development programme

- Definition, objectives and indicators for digital competences, critical digital competence
- Development of education and training offered, taking field-specific needs in account
- Higher Education Cybersecurity Network

3. Action plan for digital experts

- Increasing the availability of digital sector experts
- Development of ICT sector educational pathways
- Science, mathematics and technology STE(A)M development
- Incentives for international students to stay in Finland and learn the language

OBJECTIVES IN THE DIGITAL COMPASS

Finland has a high level of digital Bildung, with everyone having the capabilities necessary for participating in the digital world, and mutual respect and trust are at a high level.

Basic digital skills are among the best in the world, and help promote the sustainable development of society.

Digital skills and competences support innovation, competitiveness and well-being. Education, training and research generate the expertise needed in society.

Finland is one of the world's best-known and most attractive hubs of technology education, research, skills and investment, and an attractive country for international digital specialists.

Infrastructure of digital skills and competences

1. Programme for the development of digital education and basic skills

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Societal Discussion on digital Bildung				
1.1 Societal discourse and intent around digital education *Measure included in Finland's national roadmap*	A series of societal discussions on digital Bildung to be launched to ensure the participation and inclusion of citizens in society.	Starting up. Opening event in spring 2024, other events in 2024. Schedule: 2024	Promoting digital Bildung will lay the foundation for the participation and inclusion of individuals in society, supporting the stability and growth of society.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: Finnish National Agency for Education, ministries, agencies
(Self-)assessment, definition, description and development of basic digital skills				
1.2 Taking part in the Commission's European Digital Skills Certificate pilot to develop and verify digital skills After this, the follow-up measures will be assessed.	Specification work will be carried out as part of the implementation of the EU pilot project. Possible follow-up measures will require additional funding.	In progress. Schedule: specification work in autumn 2023, possible follow-up measures 2024–2025.	Reducing digital inequalities, developing competence, strengthening resilience, increasing citizens' basic digital skills and thus improving productivity. EU cooperation and advocacy.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: Finnish National Agency for Education, Digital and Population Data Services Agency
1.3 The educational offering in the Studies Info service will be expanded into a national education offering service. Existing online digital competence courses will be imported into a common digital platform (JOD/Digivisio) *Measure included in Finland's national roadmap*	Part of the implementation of the Service Package for the Digitalisation programme for Continuous Learning. With regard to publicly funded education, technical solutions will be completed in 2023. It will be examined whether market-based education can also be included in the service. It will be possible to find education options for basic digital skills, digital education and digital competence in one place.	In progress. Schedule: During Project 2023, a transition to maintenance and material development in 2024.	Easier findability of the education and teaching services will increase people's ability to actively maintain their competence and thus cope with society and working life. The smart digital services developed in the project can be used to select an education and career for each individual that offers good employment opportunities, support inclusion and meets future needs. Competence capital will grow and the opportunity to respond to the availability of skilled labour and rapid changes in the labour market will improve. National and cross-administrative implementation can ensure the secure processing of continuously expanding competence data in the future and ensure the trust of citizens in national digital services for continuous learning.	*Funding:* RRF funding for 2021–2025. Funding needed after the project period EUR 2.5 million/year (EUR 2.5 million in 2026, EUR 2.5 million in 2027). *Responsibility:* - Ministry of Education and Culture - Ministry of Economic Affairs and Employment

1. Programme for the development of digital education and basic skills

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Media literacy and ICT and programming competence				
1.4 The qualifications of teachers to increase their students' critical media literacy and awareness of cyber risks will be improved to ensure broader societal resilience *Measure included in Finland's national roadmap*	Describes digital competence of teachers, taking into account critical media literacy as a whole. Based on the competence modules described, the contents of continuing education for teachers will be developed. Support materials will be created to promote the building of teachers' capacity in online media education services. This will be implemented with consideration of the work carried out under measure 1.2	In progress. Schedule: 2023-2027	Teachers will have the necessary digital skills and the competence to apply these in a pedagogically meaningful manner. Learners will have equal opportunities to acquire sufficient basic digital skills and competence. The digital skills of pupils and citizens will improve as the competence of teachers strengthens. Improving the digital skills of pupils will improve the basic digital skills of the population and increase productivity in working life as experts enter working life after their education.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: Finnish National Agency for Education, National Audiovisual Institute
1.5 A set of indicators will be developed for assessing the areas of media literacy *Finland's national roadmap*	Indicators have been developed for measuring the media literacy of citizens in a joint Nordic project, creating a knowledge base for assessing media literacy.	In progress. Schedule: 2023-2024	The improved media literacy of citizens will support individuals' ability to identify such things as misinformation and disinformation, which will reduce susceptibility to hybrid influence, reduce information security risks and strengthen the stability and security of society.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture, National Audiovisual Institute
1.6 The media literacy, ICT skills and programming skills of staff in the educational, teaching, youth work, culture and physical activity sectors will be bolstered. Digital inequalities between children and young people will be prevented by strengthening their experience of their abilities. *Finland's national roadmap*	The continued implementation of digital competence descriptions already created for children and young people as part of continuous basic work. Support for the development of critical digital literacy of children and young people, in cooperation with the Literacy Programme (as part of the implementation of the National Literacy Strategy). Media literacy and ICT competence are part of the basic skills of education and culture staff. The competence of guardians will be taken into account and recreational activities that increase digital competence will be developed in schools, cultural institutions, youth work and physical activity.	In progress. Schedule: 2023-2027	Reduced digital inequalities, competence development, improvement of resilience, increased basic digital skills. Improved digital skills will strengthen the basic digital skills of the population and increase productivity in working life as experts enter working life after their education.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: Finnish National Agency for Education, National Audiovisual Institute, Centre of Expertise in the Youth Sector
1.7 The recommendation on the use of new digital technologies will be implemented in an ethically and pedagogically sustainable manner in basic education and upper secondary education	The recommendation on the use of new digital technologies will be implemented in an ethically and pedagogically sustainable manner in basic education and upper secondary education	In progress. Schedule: 2023-2027	Work will be carried out to improve the quality of teaching, and the utilisation of digitalisation will be increased in teaching in a sustainable manner. The improved quality of teaching will improve learning outcomes and, in the long term, will improve competence and productivity.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Finnish National Agency for Education

1. Programme for the development of digital education and basic skills

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Safeguarding the digital Bildung; Usability of scientific data and cultural heritage				
1.8 Implementation of the e-lending compensation for public libraries and support for the joint eLibrary activities as part of official duties	The municipal eLibrary planning project will come to an end and the eLibrary will begin its operations in April 2024. This will improve the availability of e-materials in municipalities and the e-lending compensation currently under preparation will ensure that the authors receive compensation for the use of the library.	In progress. The project will end at the end of 2023, will be transferred to municipalities, the National Library of Finland will coordinate.	The availability of e-materials will improve in municipalities, and the authors of e-materials will receive a compensation for the use of the material.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture
1.9 Promoting the availability of open educational materials through the AOE (aoe.fi)	Open materials related to digital Bildung and skills have been created and made available to everyone, and the government takes the service into account in its funding decisions. Open Education Resources culture has been promoted. Open learning materials are widely used and produced.	In progress. Transfer of the service to the Finnish National Agency for Education for continuous maintenance at the beginning of 2024. Content will be produced for the service.	Improvements will be made to the quality and availability of learning materials, reducing costs and improving productivity as the availability of learning materials improves. Materials that have already been publicly funded at one time are openly available.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: Finnish National Agency for Education, IT Center for Science in a Finnish centre of expertise
1.10 Maintenance of Finna and the Digital Preservation Service for Cultural Heritage and support for the digitisation of other cultural heritage	Finna will be expanded, so it can be used through the Helmet service. The enterprise architecture of national long-term preservation services will support cultural heritage organisations, research institutes and higher education institutions. Implementation of mass digitisation.	In progress, continuous.	The improved availability of data for research and citizens. Better availability of data will improve the usability and thus productivity of the data. Direct savings from the digitisation of archive materials and indirect saving of space as analogue material decreases.	*Funding:* No separate funding. Mass digitisation would require EUR 6 million in funding between 2024 and 2027 (EUR 1.5 million per year). *Responsibility:* - Ministry of Education and Culture

2. Digital competence development programme

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Definition, objectives and indicators for digital competences, critical digital competence				
2.1. Definition of concepts, objectives and indicators, taking into account, in particular, the needs related to digital and clean competence as well as national and international benchmarks	A structured understanding of the competence needs of the twin transition has emerged through official work and stakeholder discussions. Indicators will also be assessed based on the work. Assessment of the Do-Digital Platform's continuation.	Being planned and partially in progress. Schedule: 2023-2025	An understanding of the competence needs of a twin transition has emerged, on the basis of which the objectives and indicators can be defined.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: ministries
2.2 Descriptions will be drawn up of the digital (digital pedagogical) skills and competences of education and training personnel	The development of operating models and the assessment criteria for digital skills and competence are carried out as part of official duties. The implementation of monitoring and reporting will require additional funding.	Currently being planned. Schedule: 2025-2028	Improving digital skills will strengthen the basic digital skills of the population and increase productivity in working life as experts move to working life after their education.	*Funding:* No separate funding. The need for additional funding will be assessed as the work progresses. *Responsibility:* - Ministry of Education and Culture
2.3 Vocational education and training and higher education must be utilised to ensure that an adequate number of people are educated to cover the competence needs of critical sectors (including digital sectors) to ensure security of supply	A situation awareness will be formed. Any additional measures and funding will be returned to after a situational awareness has been formed.	Currently being planned. Government ministries are working together on q security of supply pilot. The pilot will aim to identify competence critical to security of supply in one sector outside of the ICT sector (energy). Based on the pilot, possible further planning and implementation in other sectors. Schedule: 2023-2024	A situational awareness will be established and a procedure for maintaining it created, improving resilience to deal with disruptions. The information secure functioning of society will require an adequate level of competence and a sufficient number of experts in the sector. The sector also has significant growth potential. Also linked to cybersecurity competence.	*Funding:* The Ministry of Education and Culture has funded cyber security competence (see 2.8). The need for additional funding will be assessed as the work progresses. *Responsibility:* - Higher education institutions as an actor in cyber security competence - Pilot on competence Ministry of Education and Culture, Ministry of Economic Affairs and Employment, Ministry of Defence, Ministry of Transport and Communications, National Emergency Supply Agency, Finnish National Agency for Education
2.4 Safeguarding the operation of digital infrastructure for education, research and culture in all circumstances, including emergency conditions	Situational awareness of the educational and cultural administration’s critical infrastructure and the necessary measures, including resources, will be updated. Critical expertise and critical infrastructure are partly linked, and the infrastructure also requires special expertise related to these. Related to section 2.3.	Currently being planned. Schedule: 2024-2025	Secure use of critical competence infrastructure and improved resilience to disruptions.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture

2. Digital competence development programme

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Development of education and training offered, taking field-specific needs in account				
2.5 The education offered and the content of degrees and education will be developed, taking into account the competence needs of digitalisation, the utilisation of artificial intelligence and the data economy. *Measure included in Finland's national roadmap*	Vocational education and training qualification requirements work is carried out by the Finnish National Agency for Education part of its official duties. Small skill modules experiment in spring 2024. The development of range offered is linked to research and RDI funding.	Being planned and partially in progress. Schedule: 2024-2028	The aim is to develop the equivalence of demand and supply of studies and strengthen productivity through more accurate continuing education.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture - Others: Finnish National Agency for Education, education actors
2.6 The contents of education provided for the education administration's management will be developed.	These are developed through existing projects, such as Digivisio, and Digiosaava project.	In progress. Schedule: 2024-2028	The digitalisation competence of educational actors has developed and digital skills have improved. Training related to digitalisation competence is available.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture, Finnish National Agency for Education
2.7 New operating models will be created to support on-the-job learning at SMEs resulting in better digital skills	Models are being developed for the development of competence, which will mean that there is no need to participate in degree-awarding education. Small skills modules, continuing education. Supporting the role of UAS RDI work.	Work on the development of small skills modules is under way. Schedule: 2023-2028	Productivity will increase as companies improve their competence. The aim is to balance supply and demand of studies and improve productivity through more accurate continuing education.	*Funding:* No separate funding. Partially linked to procedure 1.3. *Responsibility:* - Ministry of Economic Affairs and Employment, Ministry of Education and Culture
Cybersecurity Higher Education Network				
2.8 Investments in Finnish cyber and information security expertise	Cyber competence networks between higher education institutions led by Jyväskylä (university and UAS) including research are in progress. The network has funding until 31 December 2025. The possibility of expanding to vocational education and training will be investigated.	In progress. Schedule: 2023-2028	Strengthening cyber security competence, critical competence. The information secure functioning of society will require an adequate level of competence and a sufficient number of experts in the sector. The systematic development of competence from upper secondary level to higher education will be supported. The sector also has significant growth and export potential.	*Funding:* EUR 6 million in funding needed for expansion and further work on the network. *Responsibility:* - Ministry of Education and Culture, Ministry of Transport and Communications, Ministry of Economic Affairs and Employment, education actors, Traficom

3. Action plan for digital experts

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Increasing the availability of digital sector experts				
3.1 The licencing process to be streamlined in a controlled manner *Measure included in Finland's national roadmap*	In the Government Programme: "The aim will be to have a maximum period of one month to process work-based residence permits. The maximum target processing time for specialists earning more than EUR 4,000 per month is one week."	Schedule: 2023-2025	High competence increases the productivity of work, which creates growth. The measures will contribute to ensuring Finland's competence base for the needs of the ICT sector and linking it to EU-level targets of EUR 20 million ICT professionals.	*Funding:* Between 2023 and 2024, digitalisation work aimed at streamlining work- and education-based permit processes will mainly be implemented with funding from the EU Recovery and Resilience Facility (RRF). Allocated RRF funding totals approx. EUR 7.7 million the funding will be directed to work that enables a processing time of one month. RRF funding will not be directed to enable the maximum processing time of one week for those earning more than 4,000 euros/month. During Q1/2024, the Finnish Immigration Service will produce implementation options for achieving a week's processing time and preliminary cost estimates. Funding has not been secured for the period after 2025. The amount of funding needed is unknown. *Responsibility:* - Ministry of Economic Affairs and Employment / Ministry of the Interior, Finnish National Agency for Education, Ministry for Foreign Affairs
3.2 The pathways of people who have graduated abroad to working life will be streamlined *Finland's national roadmap*	The recognition of qualifications/degrees that are unnecessary for working life will be reduced, and methods for developing the competence of foreign graduates will be developed to help them achieve the required qualifications.	In progress. Schedule: 2023-2025	High competence increases the productivity of work, which creates growth. The measures will contribute to ensuring Finland's competence base and strengthen the possibilities companies have for recruiting personnel on the basis of their competence and to increasing their productivity.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture, Finnish National Agency for Education
Development of ICT sector's educational pathways				
3.3 the ICT sector's competence needs will be addressed with degree-awarding education and by developing education paths for ICT sector experts and those with competence in the sector. *Finland's national roadmap*	Educational pathways and the contents of ICT sector degree programmes will be assessed and developed, including small skill modules, aiming at improving completion of studies and employment, and raising the level of education.	Currently being planned. Schedule: 2024-2025	The shortage of competence in the ICT sector will be addressed and the productivity and growth of companies will be improved by training new experts, and we will link this to the EU target of 20 million ICT professionals.	*Funding:* No separate funding. During the 2023 autumn budget session, an additional EUR 40 million was allocated to increasing the number of starting places in higher education institutions during the government term, but these increases focus especially on responding to the shortage of experts in early childhood education and care and the health and social services sector. Maintaining the starting places for higher education in the ICT sector at the level of additionally funded starting places in 2020–2022 would require a total of EUR 58 million in funding in 2024–2027 (2024: EUR 3.5 million; 2025; EUR 10.5 million; 2026; EUR 18.5 million and 2027: EUR 25,5 million). *Responsibility:* - Ministry of Education and Culture, Finnish National Agency for Education, higher education institutions

3. Action plan for digital experts

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Science, mathematics and technology STE(A)M development				
3.4 Student counselling will be strengthened, which will increase the attractiveness of the ICT sector also among girls and women *Measure included in Finland's national roadmap*	The targeting of guidance by information to student counsellors and young people and children, highlighting positive role models and career paths.	In progress. Schedule: 2023-2025	The attractiveness of the natural sciences, mathematics, technology and industry, and as part of them, the attractiveness of the ICT sector will increase, and e.g. gender equality in applying for studies in the sector will improve. The number of experts and opportunities for growth will be increased. Linked to the EU target for 20 million ICT experts and gender equality.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture
Incentives for international students to stay in Finland and learn the language				
3.5 More incentives for international students to find employment in Finland *Finland's national roadmap*	The creation of a grant similar to a student loan will be investigated to retain international students and help them find employment in Finland. Measures will be taken to strengthen the capacity of working life, for example through work placements and on-the-job learning. Functionally bilingual degrees. Vocational education and training in a foreign language will be promoted.	In progress. Work is in progress in the Ministry of Education and Culture's sector as part of the working group's work, which will, in accordance with the Government Programme, examine the tuition fees of students subject to tuition fees adjusting them towards full coverage. Schedule: 2023-2025	Growth and productivity will improve by reducing the shortage of experts and increasing new competence	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture, education actors, Ministry of Economic Affairs and Employment
3.6 A study will be carried out and an overall picture will be created covering all the different transition phases international students go through and the necessary measures will be assessed *Finland's national roadmap*	Critical transition phases will be identified in a study. To be assessed in relation to the measures carried out in TalentBoost and the integration project.	Currently being planned. Schedule: 2023-2025	The resulting overall picture of the transition phases that international students go through will enable the identification of the most effective follow-up measures and decisions based on them.	*Funding:* No separate funding. *Responsibility:* - Ministry of Education and Culture

Digital infrastructure

4. Data interoperability structures (data spaces)

- Effective implementation of EU data and digital regulation
- A situational awareness and roadmap for developing data interoperability structures
- Prioritised data spaces:
  - Health and social services data
  - Mobility
  - Digital product passport
  - Competence
  - Copyright

5. Cybersecurity

- Ability of public authorities to respond to cyber threats
  - Cybersecurity strategy
  - Exchange of information between authorities
- Security of critical information systems and networks
  - Information security requirements of different sectors
  - New technologies
  - Critical data resources, services and systems
- Cyber Security Development Programme
  - Ecosystem development
  - Quantum calculation
  - Exercises

6. Well-functioning and sustainable digital infrastructure

- Quality and availability of communications
  - Spectrum policy
  - Possible new broadband construction aid scheme
  - Submarine cable connections
- The Kvanttinova piloting environment for microelectronics and quantum technology
- EuroHPC

  Finland's National Space Situational Awareness Centre
- Preconditions for a sustainable digital transition
- Assessment of the repair backlog for digital and data infrastructure

OBJECTIVES IN THE REPORT:

The Finnish data economy is a global pioneer in 2030.

Finland has a **critical infrastructure with a high level of cyber resilience** and a strong international **cyber industry ecosystem.**

Finland has **comprehensive, secure and resilient telecommunications infrastructure** as well as server and computing infrastructure.

4. Developing data interoperability

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
4.1. Effective implementation of EU data and digital regulation	Defining roles and responsibilities of government agencies and functions. Ensuring that the cross-administrative structures for the implementation of regulation are clear and comprehensive and that the activities are predictable for the sector.	Regulation implementation 2023-2026.	The implementation of EU regulation on digitalisation and the data economy is a prerequisite for ensuring efficiency, competitiveness (growth) and a human-centric approach. The EU estimates that effective implementation will allow for 40% more GDP growth than weak implementation in the scenario.*	*Funding:* No separate funding. Implemented as part of official duties and with existing resources. Responsibility: - Ministry of Transport and Communications - Ministry of Finance, sectoral ministries
4.2 A situational awareness and roadmap for developing data interoperability structures. These support the allocation of funding for data space projects. Sector-specific EDICs are described below.	The ongoing development and the future development needs will be collected for the of scaling of horizontal interoperability structures and to support the EU funding application process and for the implementation of the digital obligations of both society and industries. The purpose of the measure is to ensure that development measures are not taken separately and those that have been implemented once are utilised in a scalable manner in different sectors and in uses. National roles must also be made clearer.	In progress. An implementation plan for data spaces will be drawn up in accordance with the EU regulation to ensure that the objectives of the Government Programme's digitalisation and data growth programme are met and that the needs and prioritisation of EU funding are matched.	Multilateral exchange of information will enhance the use of information in the public sector and in companies. The availability of data is also a prerequisite for the use of artificial intelligence, which is expected to result in a major productivity leap. The increase in the market value of data utilisation in the EU area is expected to be 6.9% in 2025–2030 (vs 0.6% if the data is not utilised).* * Source: European Data Market study 2023: https://ec.europa.eu/newsroom/dae/redirection/document/96294	*Funding:* No separate funding. The roadmap will be utilised in the application for EU funding. *Responsibility:* - Ministry for Transport and Communications - Ministry of Economic Affairs and Employment - Others: Ministry of Finance, Finnish Transport and Communications Agency Traficom, The Finnish Innovation Fund Sitra, VTT Technical Research Centre of Finland, companies, other organisations

4. Developing data interoperability

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Prioritised data spaces *				
4.3 Health and social services/health data	Implementation of the EHDS regulation to the extent required by EU regulation and public services). Making public data repositories/data in registers available and developing the necessary contractual and technical models are a prerequisite for the utilisation of data.	Preparation of the EU Regulation is in progress. From 2024 onwards, amendments will be prepared in national regulation, to ensure these meet the requirements of the Regulation and the implementation of the Regulation including health care activities and information systems. Kanta services	**Growth/information security:** Improves the opportunities citizens have for the management of their personal health data. Promotes the mobility of real digital health services and products and support the data economy through these. Ensures a coherent and effective framework for the reuse of individual health data for research, innovation, decision-making and regulation. **Productivity**: The total economic benefits over 10 years are estimated to exceed EUR 11 billion. Economic benefits (including for cross-border services) and better innovative services.	*Funding:* Funding needed EUR 51.2 million Findata has secured EUR 2.5 million in EU funding related to the implementation of the EHDS Regulation (secondary use of health data: FinHITS project, which will last four years. Its total budget is EUR 2.5 million, of which the share of self-financing is 40 per cent). *Responsibility:* Ministry of Social Affairs and Health - Others: Findata, THL, Kela, Fimea, Valvira, Sitra
4.4 Measures for the transport data space / ecosystem EDIC: Mobility and Logistics Data *Part of National Transport System Plan (Transport 12)*	Legislation update: data space parts 1 & 2. National transport data ecosystem work and EDIC and other EU project cooperation. The usability of passenger transport services and logistics data and the availability of essential traffic data will be ensured. The administrative sector's shared vision on the transport system's digital twin. A single national contact point for sharing transport, mobility and logistics data will be established (one-stop shop principle) The combination of publicly subsidised transport will support the development of data space.	In progress. Preparing the Government proposals part 1 starting in 2023 and part 2 starting in 2024, which implement the EU sectoral regulations on data regulation and update the national data regulation to meet the operating conditions and needs of the data space.	The availability of up-to-date and high-quality information improves both the preconditions for knowledge-based management (planning, development, maintenance, including modelling and prediction), ensures more efficient traffic management and control, improves traffic safety and fluency, and sustainable development of transport, mobility and logistics. Cost-effectiveness, savings achieved through traffic safety and flow. Improved availability and usability of data will create preconditions for the development of new digital transport services, the creation of new business models and the adoption of new technological solutions (AI & automation). Market growth, new business opportunities, scalability. In 2022, Fintraffic achieved a business impact of EUR 10-40 million and a societal impact of EUR 4-26 million for the Finnish transport data economy.	*Funding:* Funding needed totals EUR 25 million. System and information services based on EU legislation; real-time data, travel data, electronic freight data, port notifications (EUR 5 million), Information and ecosystem services needed to combine publicly subsidised transport (EUR 20 million) EDIC activities will require national public sector input. Responsibility: - Ministry of Transport and Communications - Others: Traficom, Fintraffic

4. Developing data interoperability

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Prioritised data spaces *				
4.5 Solutions for digital product passports	The development of digital product passport solutions will continue, and they will be put in production. The interoperability solutions required for the implementation of the passports will be incorporated in the roadmap for developing data interoperability structures. (Regulatory background: EU Eco Design, Sustainable product regulation)	Pilots (3) have been implemented in sectors (textile, construction, batteries) A decision on the overall coordination is yet to be taken.	The availability and distribution of lifecycle data on raw materials and products is a prerequisite for the circular economy. Identified impacts include the efficient recycling of resources and improved self-sufficiency, diversity of species and water management as well as a reduction in the amount of waste, reduced transport and energy needs and climate impact, and additional growth from service-intensive maintenance and repair activities.	*Funding:* - *Responsibility:* - trials; companies, Sitra
4.6 Skills data space	The implementation of the Digitalisation programme for continuous learning will create a national skills data space, including data disclosure. Interoperability will be promoted across borders in European cooperation, taking into account EMREX cooperation and piloting of the use of higher education degrees and student data in European wallet applications in the Spanish-led DC4EU consortium,	Schedule: In progress - 2025	In accordance with jointly agreed principles, the up-to-date, comprehensive and extensive utilisation of knowledge will enable the sharing and exchange of data between the sector and different life events. Better interoperability, mobility and utilisation of competence data also support finding solutions to the shortage of experts and will promote the creation of new services in the public and private sectors.	*Funding:* RRF funding in 2021–2025 for the digital service package for continuous learning. Funding needed after the project period EUR 2.5 million/year (EUR 2.5 million in 2026, EUR 2.5 million in 2027). (section 1.2). The implementation and cooperation of the European data space will be assessed separately for Finland. *Responsibility:* - Ministry of Education and Culture - Ministry of Economic Affairs and Employment - Others: Ministry of Transport and Communications, Ministry of Finance, Sitra, education organisations

4. Developing data interoperability

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Prioritised data spaces *				
4.6 Copyright data space EDIC: Copyright Infrastructure	The European Digital Infrastructure Consortium (EDIC) on Copyright Infrastructure, which promotes the development and compatibility of open standards for the creation of a common data space for copyright information. Transparency and compatibility and the opening of copyright databases in the creative sector by funding the construction of APIs. By investing in copyright infrastructure, the Government aims to provide equal opportunities for all creative actors to introduce new technologies and participate in cross-sectoral common principles and open standards-based ecosystem development	Establishment measures 2021–2027. A proposal for a change in the use of existing funds will be prepared (copyright system development grants) in 2024 for the establishment of the Copyright Infrastructure Consortium (CI-EDIC).	The open, up-to-date and reliable network on copyright information (ordf) strengthens the growth and competitiveness of European multicultural creative industries in the global market and, consequently, the employment opportunities of authors and performers as well as the right to receive compensation for creative work. The productivity of creative sectors will grow with the use of data transfer services that transfer unique identifiers and metadata, including the automated data processing potentially required by the exponential increase in protected content resulting from the use of creative artificial intelligence.	*Funding:* Establishment activities with minimum costs using existing resources 2021–2027. EUR 2 million in additional funding is needed. *Responsibility:* - Ministry of Education and Culture - Others: Ministry of Transport and Communications, Ministry of Economic Affairs and Employment, Sitra, Business Finland (Creative Business Finland), Finnish Tax Administration, Digital and Population Data Services Agency.

** Data space development utilises solutions developed in Virtual Finland where applicable*
** Data space development also takes into account the Real-Time Economy project (measure 10.1)*

5. Cybersecurity

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Ability of public authorities to respond to cyber threats				
5.1 Revising Finland's cyber security strategy	The revised strategy will define the national target state and take into account changes in the security environment, respond to the requirements of EU legislation and set targets for cyber cooperation within the framework of the EU and NATO. A cyber defence doctrine will be prepared on the basis of the strategy.	Starting up. The revision of the strategy and the working group appointed by the Prime Minister's Office will be launched in 2023 (headed by the National Cyber Security Director), must be completed by 18 October 2024 in accordance with the NIS2 Directive.	A common target state will be created for national cyber resilience and international cooperation.	*Funding:* No separate funding. Preparation of the strategy as part of official duties: 6–8 person-years during the period 2023–2024. *Responsibility:* - Prime Minister's Office - Ministry of Transport and Communications - Ministry of Defence, Cyber defence doctrine
5.2 Legislative amendments to enable efficient exchange of information and cooperation between authorities in preparation and response to cyber threats.	The necessary legislative amendments will be made. A cooperation structure will be created for authorities to increase their understanding of the situation. Coordination and current processes will be made more clear. However, constitutional constraints, such as the data protection for electronic communications, must be taken into account when increasing the exchange of information between authorities.	Will be implemented in several projects with varying timetables, some of which have started in 2023. 2024	The possibilities authorities have to exchange information, especially on serious information security incidents, will be improved and their operating practices will become more systematic.	*Funding:* No separate funding. *Responsibility:* - Ministry of Transport and Communications - Others: Ministry of the Interior, Ministry of Defence Prime Minister's Office, Traficom

5. Cybersecurity

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Security of critical information systems and networks				
5.3 Ensuring (by legislation, if necessary) the high level of information security requirements and compliance in different sectors	Includes risk assessment, including supply chain security, NIS2 implementation, audits, assessment bodies, certifications. Assessment of business impact in progress.	In progress. The NIS2 working group's work has begun, Government proposal circulated for comments, until the end of November 2023. Government proposal: early 2024. Target: entry into force 10/2024.	Strengthening (nationally and in the EU) the level of risk management of cyber security in key sectors; strengthening competences and capabilities.	*Funding:* No separate funding. Carried out as part of official duties. NIS2 implementation will require funding. *Responsibility:* - Ministry of Transport and Communications - Others: Ministry of Finance, Ministry of the Interior, Ministry of Defence, Ministry of Economic Affairs and Employment, Traficom
5.4 Cybersecurity to be ensured when introducing new technologies	Ensuring a coherent national approach to new technologies affecting cybersecurity. Work will be carried out to influence EU legislation and international norms and standards so that they guarantee information and cybersecurity when introducing new technologies. Part of the Government Programme's standardisation strategy work. Council conclusions on the security of supply chains adopted in 2022, on the basis of which a sub-group was established under the NIS cooperation group.	In progress, continuous. EUCS and NIS-5G-WS; work by working groups in progress and Traficom's participation in standardisation work in different groups. The NIS sub-group's work is expected to start in 2023. Will require more systematic work than previously.	New technologies and the growing complexity of supply chains increase the threats posed to cyber security, which requires preparedness.	*Funding:* No separate funding. Advocacy work carried out as part of official duties. *Responsibility:* - Ministry of Transport and Communications - Others: Ministry of Finance, Ministry of the Interior, Ministry of Defence, Ministry of Economic Affairs and Employment, Traficom
5.5 Defining and identifying data resources, services and systems that are critical to society and ensuring that they are reliable and secure.	A strategic coordination group on the emergency preparedness of ICT infrastructure will be set up to prepare an understanding of the situation regarding preparedness, and to make proposals on the necessary measures and funding. The National Cyber Security Director's function will be the contact point for the relevant groups.	Launching the strategic coordination group and preparing a shared understanding of the situation. The work will be kicked off by examining a narrower area of the topic, taking into account the Government Programme. Approx. 1 meeting/month	Will provide an overall understanding of the necessary improvement measures.	*Funding:* No separate funding. Potential measures will be assessed separately. *Responsibility:* - Ministry of Transport and Communications - Others: Ministry of Finance, Ministry for Foreign Affairs, Prime Minister's Office, Ministry of the Interior, Ministry of Defence, Traficom, National Emergency Supply Agency

5. Cybersecurity

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Cyber Security Development Programme				
5.6 The sector's ecosystem development will be supported through the activities of the National Cyber Security Centre and Business Finland	The Centre has started its operations and the continuation of its work must be ensured (from 2025 onwards). Support for exports and ecosystem development in the cyber sector will be ensured, especially by channelling funding through Business Finland and encouraging the active participation of cyber sector actors in international innovation and cooperation networks (e.g. EDF, NATO Diana, Horizon).	In progress. The next DEP application round in 2024. NCC-FI operational since 2023	**Growth:** The ecosystem accelerates the growth and development opportunities of cyber security sector companies and creates pathways for internationalisation and networking. **Productivity:** The DEP programme will make it possible to implement new technologies, in particular projects that utilise AI and aim at the development of new cybersecurity innovations **Information security:** EU funding can allow ecosystem participants to develop new kinds of information security solutions and promote their commercial implementation	*Funding:* Total cost EUR 12.5 million Funding only for 2023-2024: EUR 2.5 million in the spending limits. In the future, the need for funding will be approximately EUR 5 million/year. A total of EUR 2 million has been applied for from DEP, will require matching funding from Finland. Minimum funding requirement for the coordination centre. *Responsibility:* - Ministry of Transport and Communications - Others: Ministry of Finance, Business Finland, Traficom
5.7 Cryptography technology capability in the quantum era	National cryptography technology capability is a fundamental element in ensuring the security and functioning of critical infrastructure. Traditional cryptography methods are not enough to secure data in the quantum technology era; new quantum-proof cryptography methods are needed for. Finland is currently at the forefront in the development of both quantum technologies and quantum-proof cryptography. To maintain this position, it is important for Finland to invest in the development of quantum-proof cryptography methods. Cryptography technologies are essentially related to ensuring the knowledge capital of all sectors and to ensuring Finland's strategic competitiveness.	In progress.	**Growth:** Finland's reputation as a reliable partner creates new international markets for domestic industry as a developer of cryptography products. Will support national security of supply. **Information security:** National cryptography technology capability is a fundamental element in ensuring the security and functioning of critical infrastructure.	*Funding:* Previously granted funding / link to pending projects: EUR 9 million. Need for investments 2024-2027: EUR 40 million. *Responsibility:* -Ministry of Transport and Communications -Others: Ministry of Defence, Ministry of Finance, Traficom

5. Cybersecurity

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
Cyber Security Development Programme				
5.8 Additional resources for cryptography product assessment	Domestic cyber technology will be launched on the market faster.	The work is in progress, but will require additional resources	**Growth:** The creation of a cryptography product ecosystem requires that companies are willing to invest and that the authorities have sufficient resources to assess and approve the products of companies seeking to enter the market for approved cryptography products within a foreseeable timeframe. The approval process could be sped up by increasing resourcing to a level where increased number of assessments can be carried out in parallel and the access of Finnish cryptography technology to international markets is accelerated. **Information security:** Obtaining the status of a country granting international information security approvals will require that Traficom have national capabilities that meet international requirements and the ability to assess algorithms and cryptography products up to the international SECRET safety classification standard.	*Funding:* Need for investments 2024-2027: EUR 3.440 million. *Responsibility:* - Ministry of Transport and Communications -Traficom
5.9 Ensuring the continuation of the KYHA training activities after 2025. *Part of the Cyber Security Development Programme, Government Programme entry: The Government will implement the Cyber Security Development Programme.*	Cyber security competence ensures the cyber resilience of society. The EU's RRF funding will help train 2,000 technical experts for the public sector in the unique RGCE (Realistic Global Cyber Environment) Cyber Arena environment by the end of 2025. However, exercises must be continuous and permanent to strengthen and maintain competence.	In progress, continuation must be ensured after 2025.	Increase in information security competence. Exercises are an essential part of increasing the cyber resilience of society. Centralised funding has helped in making the exercises more systematic, and the resilience of different public administration sectors has already been increased. The exercises must be continuous so that technical expertise can be further improved and the disruption management processes and cooperation between different organisations can developed.	*Funding:* - Total cost EUR 5 million. - Secured RRF EUR 1 million until the end of 2025. - Financing needs as of 2025 approx. EUR 1.5 million/year *Responsibility:* Ministry of Transport and Communications

6. Well-functioning and sustainable digital infrastructure

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Quality and availability of communications				
6.1 Developing the quality and availability of communications in Finland: Frequencies *Measure included in Finland's national roadmap*	The efficient use of frequencies will be ensured through active spectrum policy and international advocacy.	In progress. Implemented continuously by granting frequencies as they become available. ITU advocacy work in WRC23 20 November–15 December 2023.	Revolutionary, future technologies will increasingly be wireless. An efficient spectrum policy creates prerequisites for the provision and use of digital services and improves Finland's growth and competitiveness.	*Funding:* No separate funding. Frequencies are granted through auctions, aiming to maintain moderate price level. *Responsibility:* - Ministry of Transport and Communications - Others: Traficom, Ministry for Foreign Affairs
6.2 Possible new broadband construction aid scheme *Measure included in Finland's national roadmap*	Broadband investments will be promoted in areas where high-speed connections are not constructed on a market basis. Broadband construction aid schemes have been implemented in sparsely populated areas. The objective is to obtain 6,400 new fibre availabilities by Q2/2024 and 16,000 new availabilities by Q2/2026.	In accordance with the Government Programme, the need for a broadband aid scheme will be assessed in the future, and the report is to be completed in early 2024. The current programme started on 3 February 2022, and applicants can apply for support until the end of 2023. Projects that have received a support decision should be completed by the end of 2025 at the latest.	If implemented, the broadband aid scheme would enable better connectivity to sparsely populated areas, where high-speed networks will not be constructed on market terms.	*Funding*: the current aid scheme is tied to the EU Recovery and Resilience Facility (RRF), from which EUR 32 million will be allocated through the aid scheme *Responsibility:* Ministry of Transport and Communications
6.3 The promotion of the Far North Fibre submarine cable project	Ensuring funding. The project consortium will also conduct customer acquisition to ensure a certain level of customer demand and revenue after the project has been completed. The aim is to move from planning to construction once the necessary funding and customer commitments have been acquired. Finland will support the project at the political level by improving awareness about the project and creating a positive image especially in the countries where the planned route and landing point of the cable are located.	In progress. Cinia's objective is to ensure the financing of the cable project during 2023 and to move to seabed research in early 2024. Estimated completion of the project q1 2027.	Data transfer speed between Europe and Asia to be improved. Resilience of critical infrastructure in Finland and throughout Europe to be improved by increasing data transfer capacity.	*Funding:* commercial and EU funding, no state funding. In addition, RDI inputs as a separate entity. *Responsibility:* - Ministry of Transport and Communications - Others: Cinia, Ministry for Foreign Affairs

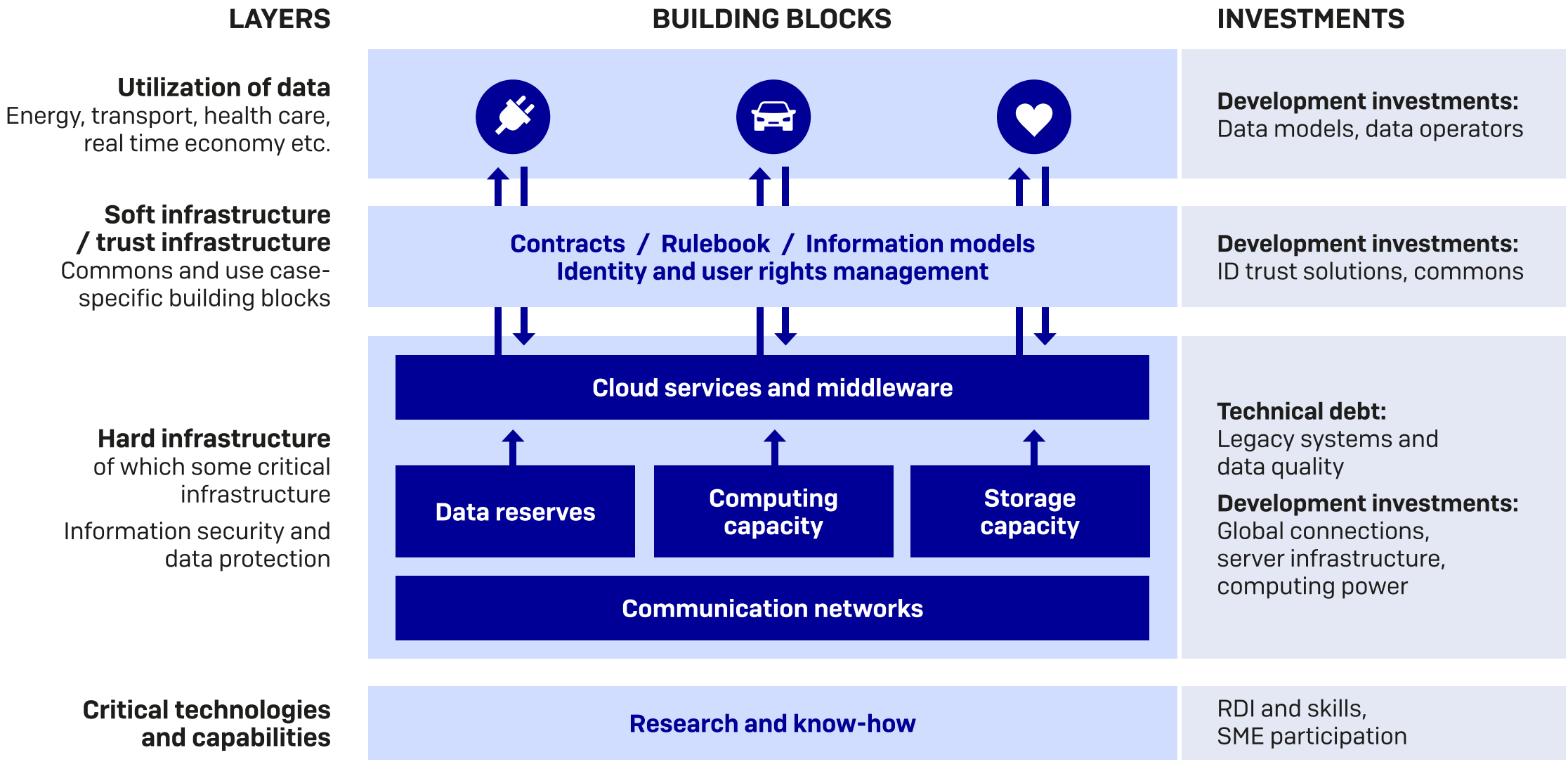
6. A well-functioning and sustainable digital infrastructure

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Investments in computing research environments for next-generation data management, critical technologies and high-performance in Finland				
6.4 The Kvanttinova piloting environment for microelectronics and quantum technology *Measure included in Finland's national roadmap*	Finland will form an RDI environment and business cluster for specialised microelectronics and quantum technology, which will be one of the largest and most significant in Europe. These will enable the scaling of new products and services to an industrial scale. Co-financing of the EU Chips Act in accordance with the Government Programme will be ensured, and Business Finland will implement the chip technology programme. Preparations will be made for the establishment of a chip centre in Finland as part of the chip package and national co-funding for it will be ensured.	2024–2027	Microelectronics and quantum technology are sectors in which Finland has special expertise and a competitive advantage, and whose markets are growing steadily, Finland will remain an internationally attractive RDI partner and a target country for investments and experts in microelectronics and the quantum sector.	*Funding*: national funding EUR 79 million. National funding allows for the application of funding under the EU Chips Act. *Responsibility:* Ministry of Economic Affairs and Employment
6.5 EuroHPC *Also linked to the measures in digital skills and competence and public services*	Investments in the research environment for next generation data management and high-performance computing in Finland. Research infrastructure work will be continued in the field in Europe.	Being planned and will begin later this government term. The EuroHPC Joint Undertaking will conduct a search for the hosts of new top-level EuroHPC supercomputers in 2024, national commitment in 2024. Schedule: 2024-2027	Next-generation high-performance computing, capacity building to deliver the next-generation solution.	*Funding:* Linked to the RDI funding entity. Participation in the EuroHPC application round at the end of 2024 will require a political decision on the commitment to national funding in early 2024. The additions to the Act on R&D funding may also focus on other ICT research infrastructures. *Responsibility:* Ministry of Education and Culture

6. A well-functioning and sustainable digital infrastructure

Measure	Description	Phase, timetable	Effectiveness	Funding, Party responsible
Space Situational Awareness Centre				
6.7 Establishing Finland's National Space Situational Awareness Centre	The Space Situational Awareness Centre would produce and disseminate situational awareness to the Defence Forces, other authorities, and to companies critical to security of supply, as well as to universities and research institutes.	(Pending)	The Centre would contribute to strengthening Finland's overall security, especially national crisis resilience, critical infrastructure and security of supply, and would also be part of ensuring national cyber security.	Funding: funding undecided The need for a new appropriation for the Centre in 2024–2027 would total EUR 5.135 million. *Responsibility:* -Ministry of Transport and Communications
Requirements for a sustainable digital transition				
6.8 Continuing the assessment of the climate and environmental impacts of digitalisation in international cooperation.	Monitoring of the energy consumption of networks and participation in related international cooperation will continue (Traficom). The reporting of energy consumption at data centres will be developed in accordance with the requirements of the Energy Efficiency Directive (Ministry of Economic Affairs and Employment). The results of Finnish studies will be made available internationally (universities, research institutes).	In progress.	One of the key challenges related to climate and environmental work in the ICT sector is the lack of knowledge on and comparability of the energy consumption and related emissions from digital infrastructure and services. Developing understanding and comparability will improve the competitive advantage of Finnish companies that provide energy-efficient solutions and use clean electricity sources.	*Funding:* No separate funding. To be promoted as official duties. *Responsibility:* -Ministry of Transport and Communications - Traficom - Ministry of Economic Affairs and Employment
Digital and data infrastructure repair backlog				
6.9 Central government digital and data infrastructure repair backlog to be assessed	An assessment of the required digital and data infrastructure development investments will be carried out to implement solutions and services that are required for the target level of the Digital Compass. In addition, the financing needs for the lifecycle maintenance of the digital and data infrastructure will be assessed.	Starting in 2024 Implementation in 2024	The report will provide an overall picture of the current state of infrastructure and its development needs and will highlight funding needs until 2030. This will add predictability for costs, repair backlogs and development needs and will help reduce lifecycle costs. The overall picture will enable continuity in the maintenance of infrastructure and services. This will contribute to improving the usability and safety of the services.	*Funding:* To be assessed separately. *Responsibility:* - Ministry of Finance - Ministry of Transport and Communications

The building blocks of the data economy



Digitalisation of companies

7. Digital technologies as drivers of renewal	Public RDI investments will be targeted at identified technology areas, including scaling phase of technology,	Innovation ecosystems around key technologies	Joint research and technology infrastructures and development and experimentation environments for academia and industry
8. Digital capacity of SMEs	EDIHs provide services for SMEs to support digital transformation	Data economy programme	Hybrid work and competence development for employed people
9. Operating environment	Real-Time Economy project (The digitalisation and interoperability of company data will be developed) * Public services	Digitalisation and streamlining of licensing * Public services	Digitalisation and the circular economy; interoperable solutions for data utilisation will be developed

OBJECTIVES IN THE REPORT:

The data economy and data-driven value creation in business will increase.

Take up of digital technologies in line with business operations in SMEs will increase and the number of digitally advanced companies will grow.

7. Digital technologies as drivers of renewal

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
7.1 As part of the RDI funding package, the strategic objectives of the development of key technologies will be specified. **) The link between the R&D financing plan and the digital compass measures is examined after the financing plan has been completed.*	Public R&D investments for 2024-2026 will be allocated in accordance with the financing plan to be completed in spring 2024.	The working group preparing the R&D financing plan was appointed on 20 October 2023 The working group's term of office 20 October 2023 - 30 May 2024	The aim is to increase Finland's R&D expenditure to 4% of the GDP by 2030, provided that private sector investments cover 2/3 of R&D expenditure. Public R&D funding is used to encourage companies to engage in RDI activities that promote renewal and economic growth.	*Funding:* To be supplemented in 2024 *) *Responsibility:* - Ministry of Economic Affairs and Employment - Ministry of Education and Culture

8. Digital capacity of SMEs

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
8.1 EDIHs provide services to SMEs to support digital transformation EDIHs serve as service centres that accelerate digital investments and, in particular, the digitalisation of SMEs. *Measure included in Finland's national roadmap*	EDIH (European digital innovation hub) The four Finnish hubs included in the European Digital Innovation Hub network: • Robocoast • HealthHub Finland • Finnish AI Region (FAIR) • Location Innovation Hub. EDIHs are non-profit consortiums and support the digital renewal of SMEs in particular through their services. They serve as service centres that accelerate digital investments and, in particular, the digitalisation of SMEs.	In progress. under the EU DEP programme. Funding for 3 years exists.	Small and medium-sized enterprises need to be more actively involved in utilising and producing solutions for digitalisation and the data economy in innovation and business ecosystems. EDIHs contribute to this. The digital capabilities of companies, especially those of SMEs trailing the leading companies in digitalisation, will evolve and companies will be able to develop and renew their business.	*Funding:* -EU (Digital Europe Programme) 50% - National funding 30% max. EUR 3.7 million during the first three years, no decision on continuation yet. - Other funding 20%. *Responsibility:* - Ministry of Economic Affairs and Employment
8.2 Data economy programme	Government Programme entry: A data economy growth programme will be launched to strengthen companies' capabilities in utilising data for developing business, products and services.	Mentioned in the Government Programme, but no resourcing in place.		*Funding:* Proposed for 2024 – 2027 EUR 14.8 million Responsibility: - Ministry of Economic Affairs and Employment
8.3 Hybrid work and competence development for employed people	The advancement of digital transformation will also require the development of the competence of the labour force. (especially digital competence)	ESF+ application process implemented under the national theme "Development of working life": Digital and smart technological solutions to support organisational renewal. Five projects will be launched.	Making progress in the renewal and competitiveness of companies and organisations.	To be implemented through the Work 2030 programme and the ESF+ programme, for which approx. EUR 5 million has been granted under its national theme.

9. Operating environment

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
9.1 Real-Time Economy project *Also linked to the public services section	The vision of the project for 2030 is to build a national ecosystem for business actors that would be compatible with similar systems in other Nordic countries. The package includes the changes to the eIDAS2 Regulation with regard to the digital wallet for companies and the implementation of the changes to the VAT in the digital age directive, Bringing business vouchers into a structured format will enable significant efficiency improvements in the automation and operation of business, financial administration and reporting processes as well as service development in companies and authorities utilising information.	In progress. Further funding undecided	Increasing the utilisation rate of digital business documents (e-invoices, procurement messages, e-receipts) will bring significant economic savings. A company's digital economy ecosystem can also allow for significant cost savings from new opportunities for data utilisation, improved services, reduced administrative burden and increased tax revenue. At the level of society as a whole, economic predictability and decision-making will become easier with real-time economic data.	*Funding:* Proposed for 2025 -2027 EUR 29 million *Responsibility:* - Ministry of Economic Affairs and Employment - Others: Ministry of Finance, Finnish Patent and Registration Office
9.2 Digitalisation and streamlining of licensing *Also linked to the public services section Development of the Licensing and Supervision Service and creating a national digital "one-stop-shop service" for licencing	The Licensing and Supervision service will offer a national one-stop shop digital service platform, in which all services related to licencing will be integrated in the future. The service provides shared functionalities that support the licencing of the start-up, implementation and/or changes of business in different substance sectors. The Licensing and supervision platform ecosystem streamlines and speeds up the licencing process, especially in multi-licence projects, enabling the simultaneous application and processing of several licencing matters. The Licensing and Supervision project has identified and partly launched customer-oriented service packages (business-centric) including, the establishment of production facilities and changes to these, the organisation of events, the establishment of a health and social services company and an investing rural enterprise.	In progress. Further funding partially undecided	The time spent on the processing of licences for corporate clients in multi-licence projects will decrease. The shared functionalities offered by the service save overlapping development work between different authorities. The reduced processing times for total licencing will advance the realisation of investments and increase Finland's attractiveness as an investment target. The platform ecosystem for licencing and supervision will enable the development of new types of services on the basis of centralised information. The one-stop-shop licencing services will increase the transparency of licencing processes, promote the formation of common licencing practices and interpretations, and provide basic information	*Funding:* Proposed 2024 - 2027 EUR 11.5 million, of which EUR 6.25 million was applied for/received (RePowerEU). *Responsibility:* - Ministry of Economic Affairs and Employment - Others: Ministry of Finance
9.3 Digitalisation and the circular economy; interoperable solutions for data utilisation will be developed	The introduction of interoperable digital solutions for the circular economy will be promoted across organisational and sectoral boundaries. This will require competence and skills, data harmonisation, target architecture and circular hubs to resolve practical challenges.	Business Finland is launching the Circular Economy Mission		*Funding:* through Business Finland Responsibility: - Ministry of Economic Affairs and Employment - Business Finland

Digital public services

10. Human-centric, digital and sustainable service packages

- Development programme in preparation for the digitalisation of life events and business activities
- Management of a deceased family member's affairs service package
- Prioritisatin of digital in public services
- Utilisation of artificial intelligence in public administration
- Real-Time Economy project *digitisation of companies
- Digitalisation and streamlining of permit processes *digitisation of companies
- Programme for the Digitalisation of Social Welfare and Health Care
- Maintenance and development of the Kanta service
- Development of knowledge management in social welfare and health care to increase the effectiveness of services

11. Interoperable public services

- Dismantling obstacles to digitalisation
- National preparation and implementation of the eIDAS Regulation

12. Overall secure public services

- Reliable digital infrastructure
- Digital security monitoring of public services
- Knowledge-based management for the safety of public services

OBJECTIVES IN THE REPORT:

Human-centred administration has **proactively automated and digitalised** a significant share of public services

Interoperable digital public services enable smooth services for citizens, companies and organisations also internationally.

Public services are secured in accordance with the model of comprehensive security.

10. Human-centric, digital and sustainable service packages

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
10.1 Development programme in preparation for the digitalisation of life events and business activities	The development programme will promote the Digital Compass' objectives by providing support in the preparation of proposals related to the digitalisation and automation of life events and business activities, and it will coordinate the progress of the proposals and will promote open and interactive co-creation around the topic.	Starting up	The digitalisation and automation of service packages aims to bring productivity and efficiency benefits to public administration activities. Effectiveness targets are defined for each service package. See e.g. the cost-benefit calculation, which contains calculations on several service packages.	*Funding:* EUR 1.25 million (confirmed). Responsibility: - Ministry of Finance
10.2 Management of a deceased family member's affairs service package	The project will make it possible for estates to use digital services. The project will develop the necessary information systems and registers and reform legislation to streamline the use of services by a family member or representative of the deceased and to improve the efficiency of official processes related to the processing of a notification of death. Digital services, automation and the efficient use of information will make it easier to for an estate to use services and reduce the need for the use of traditional services.	Starting in 2024, new project	Estimated savings to be produced by management of a deceased family member's affairs: Digital and Population Data Services Agency 6 person-years, Finnish Tax Administration 16.5 person-years, Finnish Institute for Health and Welfare 20 person-years, Traficom 1.2 person-years, and significant indirect benefits. See the cost-benefit calculation, which contains calculations on several service packages.	*Funding:* EUR 16.7 million (confirmed). *Responsibility:* - Ministry of Finance
10.3 Prioritisation of digital in public services	The programme will modernise official communications and, as a result, official messages will, as a rule, be delivered digitally to those who are able to use digital services. The necessary legislative amendments will be implemented, the authorities will be supported in switching to digital messages, the Suomi.fi Messages service will be developed, and clients will be supported when they begin to receive digital messages in place of paper documents.	Beginning, new project 2024-2027	This is a public administration productivity project in which the targeted savings of the transition to digital communications by the authorities would total EUR 58 million from 2026 onwards. The calculated savings are targeted at the entire public administration.	*Funding:* EUR 8.9 million (confirmed). *Responsibility:* - Ministry of Finance
10.4 Utilisation of artificial intelligence in public administration	The threshold for deploying AI solutions in public administration will be lowered with shared AI solutions in public administration.	Starting up, new project 2024-2027	Efficiency benefits with the utilisation of AI.	*Funding:* As a rule, as part of productivity measures, no funding yet. Need EUR 5 million. *Responsibility:* - Ministry of Finance

10. Human-centric, digital and sustainable service packages

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
10.5 Programme for the Digitalisation of Social Welfare and Health Care	The improvement and development of the digitalisation of social welfare and health care 1) Priority of digital services 2) Proactive identification of service needs 3) Utilisation of artificial intelligence 4) Clarifying and improving the flow of information 5) Study on the effectiveness of digitalisation and development of the data base	Starting in 2024, new project	Digitalisation of social welfare and health care is one way for addressing the resource shortage of wellbeing services counties. Service networks will be renewed and mobile and digital services will be increased. So far, there is little information on the effectiveness of digital services. This information will be collected as part of the implementation of the programme. However, the assumption is that correctly targeted digital services can increase the productivity of work. Significant opportunities are also included in e.g. the identification of care needs based on data analysis. As part of the digitalisation programme, enabling regulation will be created and experiments will be carried out to investigate, for example, the automatic identification of undertreated people suffering from chronic diseases. Based on the preliminary calculation made at the University of Helsinki, this includes a very high potential for productivity (> 100 MEUR/year). In addition, the utilisation of artificial intelligence in health care will be supported through enabling legislation and experiments. For example, AI aims to reduce the time it takes to record patient data. Even a small increase in the productivity of work will mean large monetary savings as 1% of working time for health and social service professionals costs several tens of millions of euros a year.	*Funding:* National information management in social welfare and health care (s 3 years) (confirmed) *Responsibility:* Ministry of Social Affairs and Health
10.6 Maintenance and development of the Kanta service	Patient data and social welfare client data available nationally from the Kanta service to health and social service providers, clients themselves (including well-being applications) and the possibility to also send these electronically to other authorities with the right to access information	Continuous, 2024-2027	Client and patient data is available wherever the client uses health and social services, which will reduce overlapping tests and services, increase efficiency and improve the quality and safety of the service when the information is available	*Funding:* National information management in social welfare and health care (s 3 years) EUR 20,932,000 *Responsibility:* Ministry of Social Affairs and Health
10.7 Developing knowledge management in social welfare and health care to increase the effectiveness of services	Increasing effectiveness in societal decision-making and increasing the impact and cost-effectiveness of services will require the development of information production. Effectiveness-based procurements and nationally implemented information management solutions will also increase the data economy.	Starting in 2024, new project	Nationally guided development of social welfare and health care knowledge management will minimise overlapping development work and thus increase productivity. The costs of overlapping development work can be reduced. Development work can improve the efficiency of data production, which will free up work time for other tasks.	*Funding:* National information management in social welfare and health care (s 3 years) EUR 3,600,000 *Responsibility:* Ministry of Social Affairs and Health

11. Interoperable digital public services will enable smooth services for citizens, companies and organisations also internationally.

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
11.1 Dismantling obstacles to digitalisation	The most important and impactful problem areas in digitalisation and data utilisation will be identified. Proposals for measures to dismantle obstacles will be submitted through a multidisciplinary review. In the second phase, the aim is to launch prioritised measures and legislative drafting projects.	Starting up, new project 2024-2027	Finding and implementing solutions to identified problems will potentially have a positive impact on productivity, as actors will be able to digitalise their activities and make better use of information. The actual impact on productivity will depend on the problems selected for examination and the implementation.	*Funding:* No separate funding. *Responsibility:* - Ministry of Finance
11.2 National preparation and implementation of the eIDAS Regulation *Measure included in Finland's national roadmap*	Cross-border e-services will be promoted by implementing the obligations laid down in the revised eIDAS Regulation, such as ensuring the availability of the European wallet application in Finland.	New project 2024-2027	The new wallet application would make it easier to use everyday services both online and during traditional visits to service points. The application could be used to prove one's identity and present various data or licenses (such as your right to drive or degree information) in a paperless manner throughout the EU. In addition, the application could be used to create reliable electronic signatures.	*Funding:* In line with the General Government Fiscal Plan (confirmed) *Responsibility:* - Ministry of Finance

12. Overall secure public services

Measure	Description	Phase, timetable	Effectiveness	Funding Party responsible
12.1 Reliable digital infrastructure	Cooperation and exchange of information between different actors will be promoted to ensure the reliability and security of the communication infrastructure IA joint government computing solution will be implemented	Partially in progress. 2024 - In progress	Information security: The reliability, safety and preparedness of the communications infrastructure will improve.	*Funding:* National funding Virve2 *Responsibility:* Ministry of Finance
12.2 Digital security monitoring of public services	Valtori's (Government ICT centre) cyber security will be improved The assessment of the compliance of information systems will be reformed The public services conformity assessment will be extended and supported The technical supervision of digital security in public services will be broadened.	Partially in progress. Starting in 2024- In progress In progress	Productivity and information security: Improving the security assessment, technical supervision and protection of public administration services will increase the level of information security in the services. At the same time, the growth of service lifecycle costs will be curbed and the ability to recover from disruptions will be promoted.	Funding: Ministry of Finance, customer funding *Responsibility:* Ministry of Finance
12.4 Knowledge-based management for the safety of public services	Creation of a national digital security material database Support for and communication of digitally secure cloud migration. Utilisation of the overall picture of digital security in knowledge-based management public service security The development of the organisation's digital security will be supported through recommendations based on level measurement The risks of open spatial data are assessed from the perspective of public and national security	Beginning in 2024 - In progress Beginning in 2024 - Beginning in 2024 - In progress	Productivity and information security: As the quality of the knowledge base related to the level of security of public services improves, resources can be allocated during decision making to the most effective protection and development measures.	*Funding:* No separate funding. *Responsibility:* Ministry of Finance

Cross-sectoral management of digitalisation

13. Finland has adopted an established management model for the development of digitalisation, which includes a permanent cross-sectoral coordination group for digitalisation and a ministerial working group that promotes digitalisation and the data economy.

14. Progress towards the digital compass objectives is monitored in an integrated and long-term manner, using the digital portfolio and the indicators defined for the key results.

OBJECTIVES

The opportunities presented by digitalisation and the data economy are fully taken advantage of through a management approach that promotes cross-sectoral cooperation.

Foundation of digitalisation management

MINISTERIAL WORKING GROUP

- The ministerial working group on reforming society steers the implementation of the Government Programme in the broad-scoped utilisation of digitalisation, robotisation and artificial intelligence in society as a whole and in public administration. The aim is to reform public administration and digitalisation and thus strengthen Finland as a whole.
- Strategic priorities include the promotion of digitalisation and the data economy, public administration reform projects, preparedness and information security of critical ICT infrastructure, and the role of cities as drivers of economic growth.
- Members: Minister of Transport and Communications, Minister of Local and Regional Government, Minister for European Affairs and Ownership Steering, Minister of Agriculture and Forestry, Minister of Climate and the Environment, Minister of Foreign Trade and Development. Secretary-Generals: Ministry of Transport and Communications, Ministry of Finance, Ministry of Education and Culture.

Coordination Group for Digitalisation

- Coordination by the Central Government in a network-based manner.
- The aim is to strengthen cooperation, coordination and information flow between government ministries in the area of digitalisation and the data economy. The aim is to plan, implement and prioritise measures at the Government level in a uniform and coordinated manner so that no sub-area is left behind, thus slowing the progress of other sub-areas.
- Ministry of Transport and Communications, Ministry of Finance, Ministry of Economic Affairs and Employment, Ministry of Education and Culture joint chair, all government ministries are represented in the coordination group.
- Digioffice@gov.fi: one contact point for stakeholders. Regular and flexible stakeholder cooperation.
- Government Programme: compiling a joint development budget during the government term as a new element.

DIGITAL COMPASS

- Finland's vision for 2030 prepared with stakeholders and adopted as a government report. **Objectives, key results and monitoring** by area (skills and competences, digital infrastructure, business, public services).
- The implementation plan adopted at the end of 2023, including **measures and indicators. Instrument for prioritisation and funding allocation.** Implementation supported by the **digital portfolio**: A shared, digital, regularly updated situational awareness of prioritised digital projects.

13. Established management model for the development of digitalisation: Coordination Group for Digitalisation and ministerial working group

Measure	Description	Phase, timetable	Party responsible
13.1 Ministerial working group for the promotion of digitalisation and the data economy	The ministerial working group on reforming society steers the implementation of the Government Programme in the broad-scoped utilisation of digitalisation, robotisation and artificial intelligence in society as a whole and in public administration. The aim is to reform public administration and digitalisation and thus strengthen Finland as a whole.	Ministerial working groups for the government term 2023-2027 were appointed on 14 July 2023. The ministerial working group meets on a monthly basis.	Ministry of Transport and Communications, Ministry of Finance
13.2 Permanent cross-sectoral Coordination Group for Digitalisation	The Coordination Group for Digitalisation is a permanent coordination group in the field of digitalisation, data economy and information policy. All ministries are involved. The Coordination Group for Digitalisation serves as the secretariat of the ministerial working group on reforming society in matters relating to the data economy and digitalisation. The Coordination Group for Digitalisation also acts as a contact point for stakeholders in matters related to digitalisation.	The Coordination Group for Digitalisation was reappointed on 26 October 2023 to meet the current structure of the ministerial working group.	Ministry of Transport and Communications, Ministry of Finance, Ministry of Education and Culture, Ministry of Economic Affairs and Employment
13.3 Joint development budget A steering and funding model that supports interoperability will be created.	A cross-sectoral joint development budget will be allocated to support the promotion of cross-administrative and cross-sectoral interoperability. Grant criteria and monitoring obligations will be created for the joint development budget. Effectiveness: Will reduce overlapping work in different ministries in terms of digital development and interoperability. Will facilitate joint development and guidance and better performance.	New project To be prepared in 2024-2027	*Funding:* No separate funding. *Responsibility:* - Ministry of Finance

14. Progress towards the digital compass objectives is monitored in an integrated and long-term manner, using the digital portfolio and the indicators defined for the key results

Measure	Description	Phase, timetable	Party responsible
14.1 Monitoring in the digital portfolio and using key result indicators	The digital portfolio is a monitoring tool for maintaining a situational awareness on the development of digitalisation and the data economy. It can be used to monitor measures implemented to achieve the Digital Compass' objectives. Indicators will be defined for key results, also taking into account the indicators jointly agreed at the EU level.	The development of the digital portfolio and key results indicators is underway.	Ministry of Finance
14.2 Regular stakeholder cooperation	Establishing structures for the stakeholder cooperation of Coordination Group for Digitalisation to achieve the objectives of the Digital Compass. Continuing network cooperation and regular information sessions.	Planning in progress.	Ministry of Transport and Communications, Ministry of Finance, Ministry of Education and Culture, Ministry of Economic Affairs and Employment

5. EU cooperation in the implementation of the Digital Decade Policy Programme

- As part of the implementation of the EU programme and Finland's Digital Compass, the Coordination Group for Digitalisation engages in close EU cooperation.
- The Coordination Group for Digitalisation is utilised extensively in cross-sectoral advocacy and preparation of EU affairs.

	Finnish representative/contact person
Digital Decade Board	Member Laura Eiro, Director-General, Ministry of Transport and Communications; Deputy member Jarkko Levasma, Director-General, Public Sector ICT, Ministry of Finance
Digital Decade Board Sub-group focusing on indicators	Member Anita Juho, Ministerial Adviser, Ministry of Finance; Deputy member Ilmari Hyvönen, Senior Adviser, Ministry of Education and Culture; Deputy member Maaria Mäntyniemi, Ministerial Adviser, Ministry of Transport and Communications
Digital Decade Committee	Member Maaria Mäntyniemi, Ministerial Adviser, Ministry of Transport and Communications Deputy member Olli-Pekka Rissanen, Chief Specialist, Ministry of Finance: Deputy member Merita Erkkilä, Senior Specialist, Ministry of Transport and Communications
Digital Decade Single point of contact	Maaria Mäntyniemi, Ministerial Adviser, Ministry of Transport and Communications
National coordination, EDIC	Olli-Pekka Rissanen, Chief Specialist, Ministry of Finance Markus Rahkola, Senior Specialist, Ministry of Finance

5. EU cooperation projects: EDICs

- The Digital Decade programme includes large-scale multi-country joint projects aimed at contributing to the attainment of the European Union's digitalisation targets. Investments by the EU, Member States and, where appropriate, other public and private stakeholders will be directed to EDICs in a coordinated manner.
- The Digital Decade programme creates a new legal framework for multi-country joint projects, i.e. the European Digital Infrastructure Consortium (EDIC). The aim of the consortia is to help Member States speed up and simplify the setup and implementation of multi-county projects in a situation where the projects do not have any other legal instrument.
- EDIC shall be open throughout its duration to all Member States which may join it as members or observers at any time.
- The final decisions on Finland’s participation in each EDIC will be made case-by-case. Accession will also require national funding.

EDICs in which Finland has participated or followed the discussion

EDIC	Description	Funding; Party responsible
1+Million Genomes	The 1+MG project aims to enable genomics and secure access to corresponding clinical data across the EU for better research, personalised healthcare and health policies	Ministry of Social Affairs and Health
Language Data Space	By developing artificial intelligence through multinational cooperation, a more versatile language-independent functionality can be achieved for artificial intelligence. The same can also be achieved in many other areas where the citizen is in contact with the authorities. However, it must be ensured that a question posed in a specific language does not automatically mean that a solution will be provided in accordance with the service offering or practices of a given country.	Ministry of Finance
Mobility and Logistics Data *Finland taking part as a founding member*	In June 2023, the Netherlands, Germany and Finland submitted a letter of intent to the Commission. In August 2023, Spain joined the founding Member States. The preparation of the official application has begun. The EDIC is thematically in line with the Commission's Communication on the creation of a common European mobility data space forthcoming in October and regulatory actions. The aim is for the EDIC to create a practical platform to support the implementation. As part of the EDIC's activities, Finland has submitted projects related to the theme and linked to EU-level cooperation. For example, the Government resolution on the digitalisation of logistics contains measures for cross-border cooperation to organise the exchange of information. The aim is to speed up the development of the European digital environment and data space related to transport, mobility and logistics.	Ministry of Transport and Communications
Copyright Infrastructure Digital European Infrastructure Consortium, CI EDIC; *Finland taking part as a founding member*	The role of the CI-EDIC consortium is to implement the Open Rights Data Framework (ORDF) to facilitate rapid, simple and accurate management, licensing, implementation and compensation for the use of copyright and related rights. The consortium works in close cooperation with the creative industries and shares the results of its work openly. The pre-notification was submitted in May 2023.	Ministry of Education and Culture
Blockchain (Finland is not included in the start-up notification, the project will be monitored)	EBSIC EDIC is a project introducing the blockchain infrastructure (European Blockchain Services Infrastructure EBSI), resulting from the European Blockchain Partnership cooperation, which will streamline cross-border transactions and the exchange of information between Member States in the public sector. The current key objectives of the project include enabling the transmission of verified evidence to the digital wallet in the possession of the person.	Ministry of Finance
Connected Government	Finland has monitored the project mainly through the Tax Administration's RTE (Real Time Economy) project, and the benefits of possible participation in this EDIC are mainly seen as a channel for promoting the development of EU-level interoperability and identifying its importance.	Ministry of Finance
Agri-Food	The project will promote the development of a common agricultural knowledge base. Finland will follow the discussion, no decision yet on participation	Ministry of Agriculture and Forestry

6. Digital portfolio

- The digital portfolio is an instrument for maintaining situational awareness on the development of digitalisation and the data economy. It can be used to monitor the measures for the implementation of the Digital Compass' objectives. The digital portfolio covers measures by administrative branches more extensively than those selected for the Digital Compass Implementation Plan.
    - The digital portfolio brings together situational awareness, automates the compilation of information from different sources and visualises information.
    - With the help of the digital portfolio, the digitalisation and data economy development measures of different administrative branches form a coherent and shared situational awareness.
    - The digital portfolio will link development measures to the Digital Compass' areas, objectives and key results.
    - The Digital Portfolio's data are collected from planning and reporting data of the two joint project portfolio management tools, namely the Project Portfolio Service and the Project Window.
- The digital portfolio will be used to create:
    - The situational awareness of the ministerial working group on reforming society for the management of the Digital Compass implementation.
    - A situational awareness of key cross-administrative development entities for digitalisation and the data economy, their dependencies on other development and their links to the situation and needs of legislative drafting.
    - An instrument for managing and monitoring cross-sectoral development.

The Digital Compass' measures will be monitored in the Digital Portfolio

The ministries submit proposals for monitoring the implementation of the Digital Compass, i.e. projects to be included in the digital portfolio.

→ The Digital Compass' areas, objectives and key results are linked to each project.

The proposals are discussed by the Coordination Group for Digitalisation.

→ A joint proposal on the projects/measures to be monitored with the digital portfolio will be formed.

Policy set by the chairpersons of the Coordination Group for Digitalisation

The Digital Portfolio 1.0 will be formed by the State Treasury

Analysis and further development of the Digital Portfolio 1.0.

New projects will be updated to be included in the monitoring.

Process development and follow-up measures.

Implementation plan

Legislative plan

Existing joint budgetary and other processes

7. Performance monitoring and impact assessment

- The effectiveness and impact of the Digital Compass' measures will be monitored regularly and systematically to develop the targeting and steering of investments.
- In the first phase, basic risk monitoring will be carried out at the project level and a uniform framework will be developed to support the monitoring and impact assessment of the measures. The realisation of effectiveness is assessed based on the indicators.
- Especially the assessment of long-term impact requires a better situational awareness and a systemic examination of the actions of different administrative branches. A structured mechanism for changes to measures should they not lead to an estimated trend, cause undesired impacts or in case the operating environment changes, must be created at a sufficiently early stage. The development of the impact assessment of digitalisation projects will also support the future prioritisation of various measures.
- The progress of the implementation plan and projects is regularly monitored by the ministerial working group on reforming society. Monitoring, updating the objectives and situational awareness are tied to the Government's annual clock and processes, such as the implementation of the General Government Fiscal Plan and reporting on the Government Programme's objectives to Parliament. The monitoring is supported by an up-to-date situational awareness of project monitoring, Digital Portfolio.
- The progress of the objectives and measures will also be reported to the European Commission in accordance with the EU's Digital Decade 2030 programme.

7. Performance monitoring and impact assessment: Stakeholders as implementers of the Digital Compass

- The effectiveness of the Digital Compass and its implementation relies on strong and close cooperation between public administration and stakeholders, including the business sector. The aim is to involve stakeholders in the promotion of national objectives.
- The measures outlined in the implementation plan focus in particular on central government. The aim is to support an operating environment that promotes digitalisation so that it encourages investments by private sector and other stakeholders and the utilisation of digitalisation.
- To reach the set objectives, it is important to secure private sector commitment and investments in digitalisation and the data economy.
- Stakeholders participate in the implementation of the Digital Compass' objectives in accordance with their respective roles and through their strategies, objectives and operational development.

8. Revising the Government report and the implementation plan

- The Government report on Finland's Digital Compass will be revised under the guidance of the ministerial working group on reforming society during the government term 2023–2027, in close cooperation with stakeholders.
- Measures and the required investments will be updated in the implementation plan once a year and more extensively at the beginning of each government term in accordance with the priorities of the Government Programme. Decision on investments are made as part of the budget process.
- The first revisions to Finland’s national roadmap (implementing the EU Digital Decade Policy Programme) will be made in 2024 and, after this, every two years.

FINNISH
GOVERNMENT

Appendix 1.

Digital Compass key results and indicators

Digital Compass key results and indicators

- The realisation of the objectives and key results of the Digital Compass is monitored with indicators. The indicators may be quantitative or qualitative.
- Indicators have already been defined for some of the key results, and other indicators will continue to be developed in 2024.
- Finland's national roadmap (implementing the EU Digital Decade Policy Programme) describes measures that will realise common EU digital targets. Development is monitored at the EU level using commonly agreed indicators (KPI, key performance indicators), which are in use also for the relevant Digital Compass key results.

Competence: key results and indicators 1/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
1. Good digital Bildung contributes to building mutual respect and participating in our increasingly digital society, including knowing one's rights and obligations.	
2. Actions have been taken to ensure the long-term retention of key cultural heritage and research knowledge for use by society and maintain a strong foundation of Bildung, skills and competences.	
3. Finland ranks first in the European DESI index, focusing on basic digital skills. National objective for the 16–74 age group: 87%. *(EU target: at least 80% of the population aged 16–74 has basic digital skills.)*	Digital Economy and Society Index (DESI): people aged 16-74 with at least 'basic' or 'above basic' digital skills. The indicator has five dimensions: information, communication, problem solving and software for content creation and safety. Source: Eurostat - European Union survey on ICT usage in Households and by Individuals (I_DSK2_BAB)
4. The acquisition of the jointly defined basic skills necessary for participating in the digital world is possible for everyone with the help of effective support and the provision of training and education.	
5. Cyber security training is an integral part of the education and training offering at all levels of education, and citizens' cyber skills have improved.	Digital Economy and Society Index (DESI): people aged 16-74 with at least 'basic' or 'above basic' digital skills. The indicator has five dimensions: information, communication, problem solving and software for content creation and safety. Source: Eurostat - European Union survey on ICT usage in Households and by Individuals (I_DSK2_BAB)
6. Citizens' capabilities to participate in the digital world, including media literacy and data literacy, have improved	Media literacy indicators are being developed jointly by the Nordic countries.
7. The skills and competence requirements related to digitalisation, the data economy and the digital green transition – including cyber and data skills – have been identified and taken into account at all levels of education, with due attention paid to the national language strategy.	Increase of education and training rates in the relevant fields of education.
8. A national view of the training and education offering is available, along with digital learning environments and pedagogical operating models for the flexible development of knowledge, skills, and competences, regardless of time and place where necessary.	System under development. Development of the indicators through the system, e.g. the number of study options available.

Competence: key results and indicators 2/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
9. The share of women among ICT specialists has increased. *(EU target: 20 million ICT specialists + gender convergence and increasing the number of graduates.)* National target 10% of ICT experts.	Share of employed ICT professionals among all employed people aged 15-74. Source: Eurostat - Labour force survey (isoc_sks_itspt)
10. National resilience with regard to digital skills as well as the infrastructure of education and research has been defined and ensured.	
11. The digital infrastructure of scientific research is world-class.	The indicator must be further developed.
12. The availability and development of ICT specialists in Finland is world-class *(EU target: 20 million ICT specialists + gender convergence and increasing the number of graduates.)*	Digital Economy and Society Index (DESI): Share of employed ICT professionals among all employed people aged 15-74. Source: Eurostat - Labour force survey (isoc_sks_itspt). Share ICT graduates accounted for by women.
13. The number of new foreign degree students will triple to 15,000 by 2030. The employment and retention rates of foreign students in Finland will rise to 75 per cent. *(EU target: 20 million ICT specialists + gender convergence and increasing the number of graduates.)*	Number of new foreign degree students. In addition, the number of new migrants and degrees in the ICT sector.
14. The objective is to at least double employment-based immigration by 2030 compared to the current level, and the number of employment-based immigrants annually will be at least 10,000 higher than it is now. *(EU target: 20 million ICT specialists + gender convergence and increasing the number of graduates.)*	

Digital infrastructure: key results and indicators 1/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
15. EU-interoperable data spaces based on open standards have been created for the following industries, and they are used by a number of Finnish enterprises representing different sizes and industries: wellbeing and health data, traffic and logistics, built environment, property industry, agriculture and food production, energy sector, use of location data, competence, cultural heritage, economic data, copyright, nature and environment data, and industrial data.	The indicator must be further developed. The topic can be approached using existing indicators
16. The public accessible data resources that support data spaces are available (100%) through interfaces either as open data or with access right management solutions or solutions for managing an individual's own data.	The indicator must be further developed. Possible approaches: Share of opened data resources, DESI open data indicator?
17. A general, joint, secure and open-to-everyone trust infrastructure of verified data has been created for using e-services and exchanging data. *(EU target: digital identity: 100% citizens using digital ID)*	Number of trust infrastructure users and number of trust infrastructure solutions
18. 5G and 6G networks are in use with network security in mind.	The indicator must be further developed.
19. Cyber security has been taken into account in the risk management and contingency planning of critical entities, and processes are audited regularly.	Monitoring of NIS obligations?
20. Information security in critical sectors has developed in line with the European requirement level at a minimum.	Monitoring of NIS obligations?
21. Finland has a centre for cyber security growth and expertise that has promoted the growth, expertise and international competitiveness of cyber industry enterprises	Cyber security company revenue and exports
22. Cyber security competence has improved among various parties in society.	DESI? NCSI? Number of participants in the exercises? Number of starting places?

Digital infrastructure: key results and indicators 2/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
23. All Finnish households and businesses have the opportunity to use a 1-gigabit telecommunications connection and the 5G network covers the entire population in 2030. *(EU target: gigabit for everyone, 5G everywhere)*	EU KPI; Gigabit connectivity (share of households) and 5G coverage (share of residential areas). Development of indicators is underway in the EU, for example 5G.
24. Finland will maintain its position as a leader in 6G research and test networks will be deployed in 2027 at the latest.	The indicator must be further developed. Frequencies, availability of experts, 6G applications
25. Finland's ranking in the "Connectivity" area of the DESI index has improved (ranking in 2022: 8th).	DESI/Digital Decade Indicator, European Commission
26. Finland acts as a hub in the resilient and secure submarine cable system that connects the European and Asian data networks	
27. A quantum computer with a minimum of 50 qubits is in use in Finland by 2025. *(EU target: first computer with quantum acceleration)*	EU KPI: By 2025, the Union will have its first very own quantum computer, which will create the conditions for the Union to be at the forefront of quantum capacity by 2030.
28. The pan-European LUMI supercomputer system and the related ecosystem and international cooperation networks are one of the world's main players in high-performance computing.	Lumi2/Lumi-q investment has been implemented Up-take/rate of use, number of users; especially companies and business cooperation in RDI
29. Finland has a pilot production line for manufacturing semiconductor components or an industrial scale semiconductor component production plant that is connected with European and global semiconductor research. *(EU target: The EU's share of global semiconductor production will be at least 20%)*	EU KPI: The production of high-quality semiconductors in the Union in accordance with Union law on environmental sustainability represents at least 20 % of the value of worldwide production
30. All new data centre investments promote the national carbon neutrality target.	Energy efficiency of new data centres (PUE, power use effectiveness, or other)

Companies: key results and indicators 1/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
31. Public RDI investments in identified key technologies have increased, boosting the size of the research ecosystems/competence clusters established around key technologies significantly by 2030 (AI, quantum technology, information security, software technologies, autonomous systems, telecommunications, 6G and microelectronics).	
32. Increased cooperation between businesses, higher education institutions and research institutions concerning the use of digital technologies.	
33. The ICT investments of businesses grow annually, enhancing their international competitiveness and growth.	In practice, distinguishing ICT investments from other investments is challenging. Generally, investment monitoring, at least through macro-level monitoring.
34. Companies have annually deployed new digital technology and services based on the use of data. *(EU target: more than 90% of SMEs reach at least a basic level of digital intensity & 75% of EU companies use Cloud/AI/Big Data)*	SME Barometer, EU-level indicators DESI (Cloud Services, Artificial Intelligence, Bid data.)
35. The sustainability impact of Finnish businesses (carbon handprint) grows globally, along with growth in the export of sustainable technology	There is a need for the development of indicators for measuring and verifying the carbon handprint.

Companies: key results and indicators 2/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
36. Public investments in technological development (including public procurement) are made annually, ensuring Finland's position of leadership in industrial climate and environmental solutions and the development of the circular economy.	
37. Growth in ICT investments by SMEs across all industries.	
38. A minimum of 90% of SMEs reach at least a basic level of digital intensity and at least 75% of SMEs use cloud services, big data and AI. *(EU target: 75% of EU companies using Cloud/AI/Big Data & more than 90% of SMEs reach at least a basic level of digital intensity)*	SME Barometer, EU DESI (Cloud Services, Artificial Intelligence, Bid data.)
39. The share of digitally very mature SMEs has grown to at least 30% by 2030.	
40. The number of start-ups increases and, by 2030, more and more start-ups are growing and entering international markets. *(EU target: grow scale-ups & finance to double EU Unicorns)*	Industrial and innovation policy instrumentation
41. Workplaces take advantage of the opportunities presented by digitalisation with regard to remote and multi-location work. Opportunities will be created for developing the digital skills of personnel.	Through the WORK 2030 package

Public services: key results and indicators 1/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
42. Unnecessary service use has been reduced through automation and digital services are the default service channel	User satisfaction. Measured by the Suomi.fi Quality Tool: customer satisfaction
43. Approximately 40 of the most significant life event service packages have been digitalised or automated. Human-centric digital services constitute a proactive, human-centric and efficient set of services. *(EU target: key public services are 100% online)*	Digital Economy and Society Index (DESI): The public administration's digital services for citizens measure the extent to which key public service activities can be handled online. Cost-benefit analysis; Anticipation of service needs and proactive provision of services; User experience
44. The key business situations in the life cycle of businesses have been identified and the related digital services constitute a proactive, human-centric and efficient set of services. *(EU target: key public services are 100% online)*	Digital Economy and Society Index (DESI): The public administration's digital services for companies measure the extent to which key public service activities can be handled online. Cost-benefit analysis; Anticipation of service needs and proactive provision of services; User experience
45. The public services used by businesses are primarily digital or automated.	Digital readiness of services
46. Organisations that provide public services reduce their carbon footprint by primarily communicating with citizens via the Suomi.fi service.	Number of public organisations and customers using Suomi.fi Messages
47. Finns have access to their digital health and social services data. Digital health services and data are used in everyday life. *(EU target: 100% of citizens having access to medical records*	Digital Economy and Society Index (DESI): 100% of EU citizens will have access to their electronic patient data Number of users in Finland
48. 90% of the data collected from – or delivered to – businesses is in digital, structured format and compliant with existing European standards.	An indicator must be developed.
49. Permit procedures, particularly concerning the green transition projects of the business sector, have been shortened across the board.	Duration of licencing processes for digital and clean transition projects
50. The share of innovative public procurement will be increased to 10% of all procurement activities, and public procurement has promoted the green transition through the use of new technologies and operating models.	The share of innovative public procurement in total procurement Promoting the green transition by utilising new technologies and operating models

Public services: key results and indicators 2/2

Key result	Indicator, including a common EU indicator (KPI), if one exists
51. The digitalisation of the public administration is developed with an approach that spans across sectoral boundaries and administrative levels.	Companies and citizens will be asked for information only once (the indicator must be developed)
52. Finland has shared soft infrastructure that enables digital services. *(EU target: digital identity: 100% citizens using digital ID)*	Number of users
53. Finland has a steering and funding model that supports interoperability	Yes/No
54. Finnish citizens and businesses can use digital services smoothly even across national borders.	Finnish systems use European classifications. (indicator must be developed)
55. Unnecessary obstacles to the use and sharing of data have been identified and eliminated in regulations governing the data pools of the public administration.	An indicator must be developed.
56. The comprehensive reform of healthcare and social welfare data management legislation has been carried out, and the information systems are interoperable.	Reform implemented yes/no Interoperability of information systems based on Finnish Institute for Health and Welfare's STePS survey
57. A reliable and resilient communications infrastructure is available to citizens and the public authorities.	Digital security level indicator (Digital and Population Data Services Agency) Selected indicators.
58. The digital security of the central government, wellbeing services counties and municipalities has improved.	Digital security level indicator (Digital and Population Data Services Agency) Selected indicators.
59. Digital security foresight in public administration is used in the planning of operations and finances.	Digital security level indicator (Digital and Population Data Services Agency) Selected indicators.
60. The digital security solutions of digital public services contribute to the identification and management of disinformation and influencing through information.	Digital security level indicator (Digital and Population Data Services Agency) Selected indicators.
61. Risk-based digital security requirements have been established for public digital services, and their achievement is assessed and monitored on a continuous basis.	Digital security level indicator (Digital and Population Data Services Agency) Selected indicators.

Cross-sectoral management: key results and indicators

Key result	Indicator, including a common EU indicator (KPI), if one exists
62. Finland has adopted an established management model for the development of digitalisation, which includes a permanent cross-sectoral coordination group for digitalisation and a ministerial working group that promotes digitalisation and the data economy.	Coordination Group for Digitalisation and ministerial working group appointed
63. Progress towards the digital compass objectives is monitored in an integrated and long-term manner, using the digital portfolio and the indicators defined for the key results.	Digital portfolio in use Monitoring of indicators

Thank you!

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