IMPROVING DIGITAL COMPETENCES OF THE HEALTH WORKFORCE IN SPAIN AND ESTONIA

REFORM/SC2022/108

D2. Report on good practices on education and training pathways for digital competences and on governance models

October, 2023

The project is funded by the European Union via the Structural Reform Support Programme and implemented by NTT DATA in cooperation with the Directorate General for Structural Reform Support of the European Commission (DG REFORM)

Glossary

A list with the abbreviations that will appear in this documents is presented below:

- ***AHPs**: Allied Health Professionals*
- ***AI:** Artificial Intelligence*
- ***BfArM**: Federal Institute for Drugs and Medical Devices*
- ***BMG**: Federal Ministry of Health*
- ***BMWK**: Economic Affairs and Climate Action*
- ***D:** Deliverable*
- ***DCs**: Digital competences*
- ***DG REFORM**: Directorate-General for Structural Reform Support*
- ***DHSC**: Department of Health and Social Care*
- ***DICT**: Department of Information and Communication Technology*
- ***DIDZ**: Divaardig in de Zorg*
- ***DigiD**: Digital Identification*
- ***DiPA**: Digital Nursing Applications*
- ***DLC:** Digital Literacy Coalition*
- ***DMA**: Digital Maturity Assessment*
- ***DSAT**: Digital Skills Assessment Tool*
- ***DUTCH**: Digital United Training Concepts for Healthcare*
- ***DVG**: Digital Healthcare Act*
- ***EHR**: Electronic Health Record*
- ***eGK**: Elektronische Gesundheitkarte*
- ***EIF**: European Interoperability Framework*
- ***EMN**: European Metropolitan Region Nuremburg*
- ***ePA**: Elektronische Patientenakte*
- ***FIMEA**: The Finnish Medicines Agency*
- ***FIOH**: The Finnish Institute of Occupational Health*
- ***HI-NL:** Health Innovation Netherlands*
- ***HWF**: Health Workforce*
- ***ICT**: Information and Communication Technology*
- ***IHE**: Integrating the Healthcare Enterprise*
- ***IMI**: Institute of Medical Informatics*
- ***KANTA**: Kansallinen Terveystietoakisto*
- ***MOOC**: Mass Online Open Courses*
- ***MW**: Medical Sciences*
- ***NGOs:** Non-governamental organisations*
- ***NL AIC**: The Netherlands AI Coalition*
- ***NWO**: Dutch Research Council*
- ***NZa**: Dutch Healthcare Authority*
- ***PHR**: Patient Health Record*
- ***SALAR**: Swedish Association of Local Authorities and Regions*
- ***SMEs**: Small and medium-sized enterprises*
- ***STEA**: The Funding Centre for Social Welfare and Health Organisations*
- ***STM**: Ministry of Social Affairs and Health*
- ***STUK**: Ethe Radiation and Nuclear Safety Authority*
- ***THL**: The National Institute for Health and Welfare*
- ***TTT**: Train-the-trainers*
- ***UCDHC**: Center for Digital Health Care*
- ***UMCG**: University Medical Center Groningen*
- ***Valvira**: The National Supervisory Authority for Welfare and Health*
- ***VWS**: Ministry of Health, Welfare and Sport*
- ***ZON**: ZorgOnderzoek Nederland*

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1. Introduction

1. Introduction

1.1 General context

This document is framed within **Deliverable 2 (D2)** of the project **"Improving digital competences of the Health Workforce in Spain and Estonia",** financed by the European Union through the Technical Support Instrument and executed by NTT DATA, in collaboration with the Directorate General for Support for Structural Reforms of the European Commission (DG REFORM).

The project consists of 19 phases, and this document constitutes the Final Report of D2**: "Report on good practices on education and training pathways for digital competences and on governance models".**

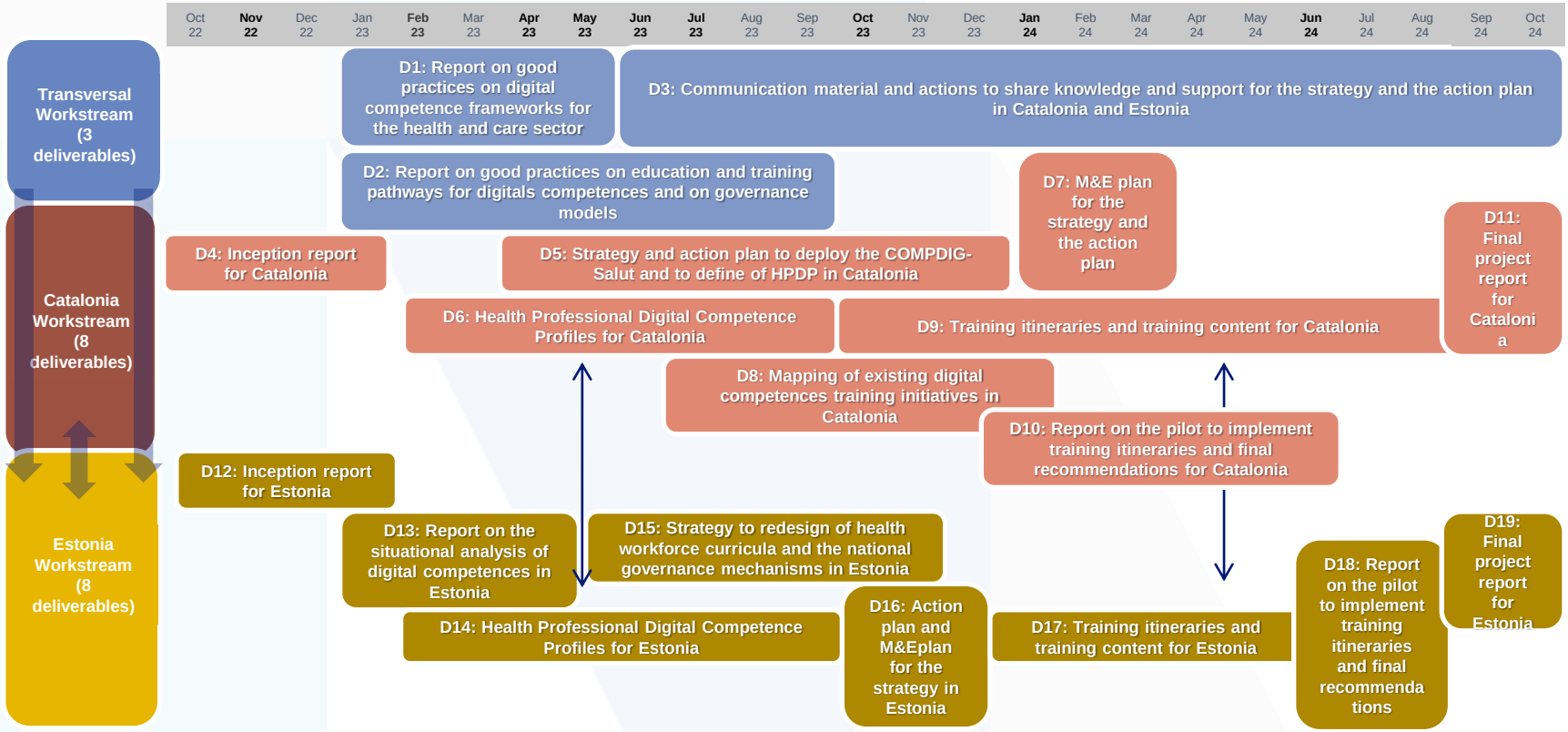


Figure 1. General overview of the deliverables of the different workstreams of the project

1. Introduction

1.2 Objectives and expected results

General objective of the project

To improve **Digital Competences** (DCs) among the Catalan and Estonian Healthcare Workforce (HWF).

Outcome of the project

The implementation by health authorities of a strategy to standardise, assess and improve DCs of the HWF to bolster the access and quality of services for patients.

Objective of Deliverable 2 – *Report on good practices on education and training pathways for digital competences and on governance models*

Gain knowledge on the **policies and actions to set up DCs training itineraries** driven by reference country and EU's public authorities in digital skills.

Specific objectives of the deliverable

- Conduct a detailed **desk research** about the 5 reference countries selected in a common workshop
- Analyse how public authorities, organisations and providers work together to **develop formal education and training**, **informal learning options** and **train-the-trainers (TTT) programs**

2. Methodology

2. Methodology

2.1 Methodological process summary

Considering the RfS and the inception report, the following **methodology** is proposed for the **identification and selection of reforms, policies and trainings to enhance DCs:**

Selection up to 8 reference countries in the field of DCs enhancement and governance

- Selection of indexes to assess human digital development
- Calculation of the index average score on human digital development
- Ranking of the countries to consider for this selection
- **Conduct a workshop to select the references countries to analyse**

Definition of an investigation protocol considering the following specific items

- Preliminary desk research to provide a first **list of examples** about:
  1. *European, national, regional or sectorial **policies and actions** to set up DCs **education and training initiatives***
  2. ***Reforms and policies** to foster the development and use of digital tools and services and eHealth infrastructure considering DCs for healthcare providers*
  3. ***EU initiatives** addressing the need to build specific courses for the health sector*

Desk research on specific DC courses for the health sector

- Analysis of **available documents** and information
- **Bibliographic review** of scientific and academic papers of information in each of the selected countries
- **Mapping** of the initiatives that are building specific DC courses for the health sector

Semi-structured interviews with the informants of country/initiatives selected

- Identification of **key informants** in each of the countries and EU initiatives selected
- Conduct 1 **semi-structured online interview** per country/initiative selected to complete information gathered

Fiches with reforms and policies identified

- Design of the **thematic fiches** to present the information of policies and actions identified
- Validation of fiches **structure and content**
- Completion of up **to 8 fiches** with the most relevant reforms and policies
- **Workshop** to select the **shortlist** of policies and reforms

Production of D2 report

- Production of the **final deliverable D2**

2. Methodology

2.2 Country selection (I)

In the selection workshop that took place on **March 27th, 2023**, these **5 countries were selected** by DG REFORM together with the Catalan and Estonian beneficiaries as **good practices** in the field of **digital competencies and skills**, with **interesting initiatives or strategies:**

Sweden

Population:
- 10,277,715 inhabitants

Population density:
- 25 inhabitants/km2

Health expenditure:
- 11% of GDP (2021)

GDP/Capita:
- EUR 41,800 (2022)

Financing of the health system by taxation, universal coverage

Finland

Population:
- 5,564,805 inhabitants

Population density:
- 18 inhabitants/km2

Health expenditure:
- 7.7% GDP (2021)

GDP/Capita:
- EUR 38,400 (2022)

Financing of the health system by taxation, universal coverage

United Kingdom

Population:
- 68,893,862 inhabitants

Population density:
- 281 inhabitants/km2

Health expenditure:
- 9.9% GDP (2021)

GDP/Capita:
- EUR 37,319 (2022)

Financing of the health system by taxation, universal coverage

The Netherlands

Population:
- 17,241,151 inhabitants

Population density:
- 508 inhabitants/km2

Health expenditure:
- 14.5% GDP (2021)

GDP/Capita:
- EUR 45,500 (2022)

Financing of the health system by compulsory basic private insurance, universal coverage

Germany

Population:
- 84,536,913 inhabitants

Population density:
- 240 inhabitants/km2

Health expenditure:
- 13.2% GDP (2021)

GDP/Capita:
- EUR 41,100 (2022)

Financing of the health system by taxation, universal coverage

2. Methodology

2.2 Country selection (II)

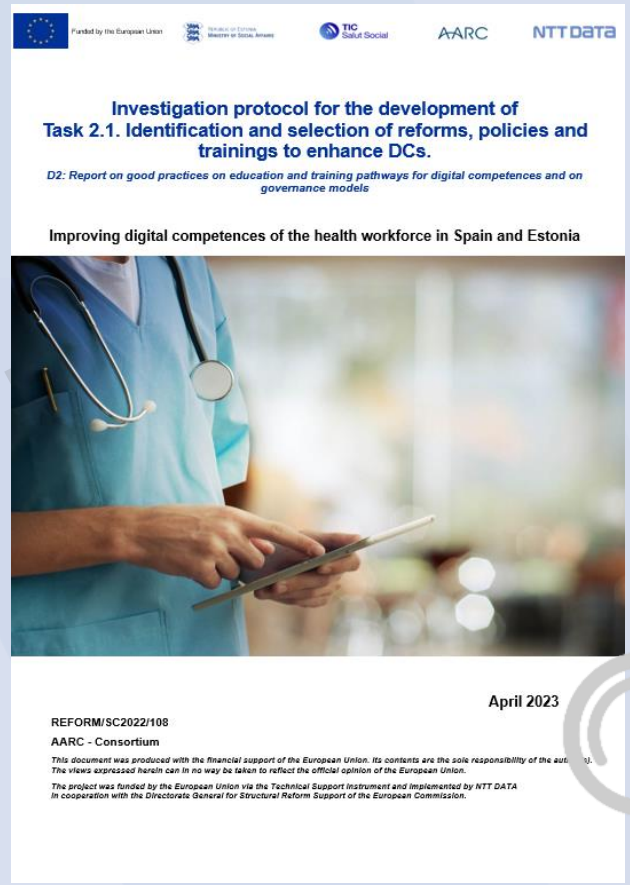
The following **participants with different project positions** (policy officer, external, PM Catalonia, member from the Catalan team, PM Estonia, member from the Estonian team, project manager, and member from the project team) were **involved in the country selection** during the **workshop developed on March 27th, 2023**:

Participant	Organization	Participant	Organization
Maria Isabel Farfan	European Commission (DG REFORM)	Carlos Gironella	NTT DATA
Francesca Cattarin	European Commission (DG REFORM)	Helena Badenas	NTT DATA
Marie Maasbol	European Commission (DG REFORM)	Paula Puig	NTT DATA
Katarzyna Ptak-Bufkens	European Commission (DG SANTE)	Guillermo Kirchner	NTT DATA
Irina Kalderon	European Commission (DG CNNECT)	Francesc Saigí	Universitat Oberta de Catalunya (UOC)
Elisenda Reixach	Fundació TIC Salut Social	Eulàlia Hernández	Universitat Oberta de Catalunya (UOC)
Fernando Leeson	Fundació TIC Salut Social	Montse Guitert	Universitat Oberta de Catalunya (UOC)
Marc de San Pedro	Fundació TIC Salut Social	Teresa Romeu	Universitat Oberta de Catalunya (UOC)
Katre Trofimov	Ministry of Social Affairs	Kadi Lubi	HealthEst Agency OÜ
Liliana Ramalho	NTT DATA	Mall Maasik	HealthEst Agency OÜ

2. Methodology

2.3 Research protocol elaboration

A research protocol was drawn up for the development of this phase of the project where the methodology for the conduction of the desk research is explained:



Investigation protocol for the development of
Task 2.1. Identification and selection of reforms, policies and trainings to enhance DCs.

D2: Report on good practices on education and training pathways for digital competences and on governance models

Improving digital competences of the health workforce in Spain and Estonia

April 2023

REFORM/SC2022/108

AARC - Consortium

This document was produced with the financial support of the European Union. Its contents are the sole responsibility of the aut... The views expressed herein can in no way be taken to reflect the official opinion of the European Union.

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2. Methodology

2.4 Desk research sources

To guide the search for information and to carry out structured analysis, the following official information sources have been consulted about the selected countries.

Official information sources consulted (non-exhaustive list)

Country sources:

- *Ministry of Social Affairs and Health (STM)*
- *The National Institute for Health and Welfare (THL)*

- *Ministry of Social Health, Welfare and Sport (VWS)*
- *National Health Care Institute*
- *Dutch Healthcare Authority (NZa)*

- *Ministry of Health and Social Affairs*
- *Swedish Association of Local Authorities and Regions (SALAR)*

- *Department of Health and Social Care (DHSC)*
- *The National Health Service (NHS)*

- *Federal Ministry of Health (BMG)*
- *The Federal Joint Committee (Gemeinsamer Bundesausschuss, G-BA)*

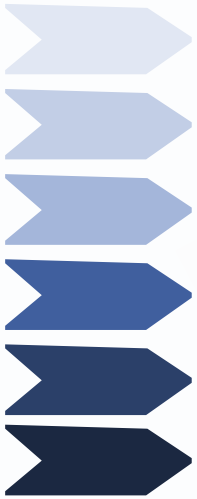
Note: All underlined titles in each country section naming strategies, initiatives, tools, etc. have the corresponding link attached. This applies to the whole document.

3. Results

3. Results

Overview

The **desk research for each country** was conducted seeking information on **best practices across the six following areas:**



i. General contextualization

ii. Description of the strategy and specific initiative, policy and actions deployed

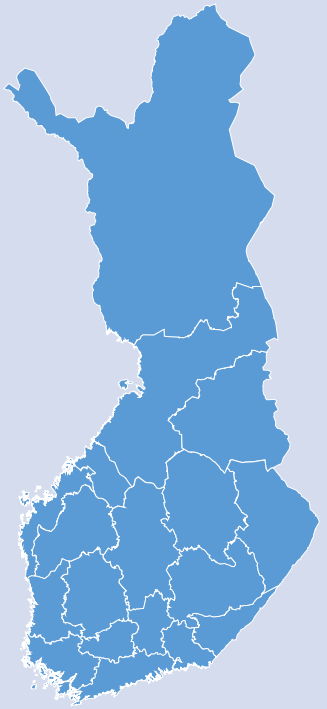
iii. Governance model

iv. Education and training programs

v. Technology and resources used

vi. Impact achieved or expected

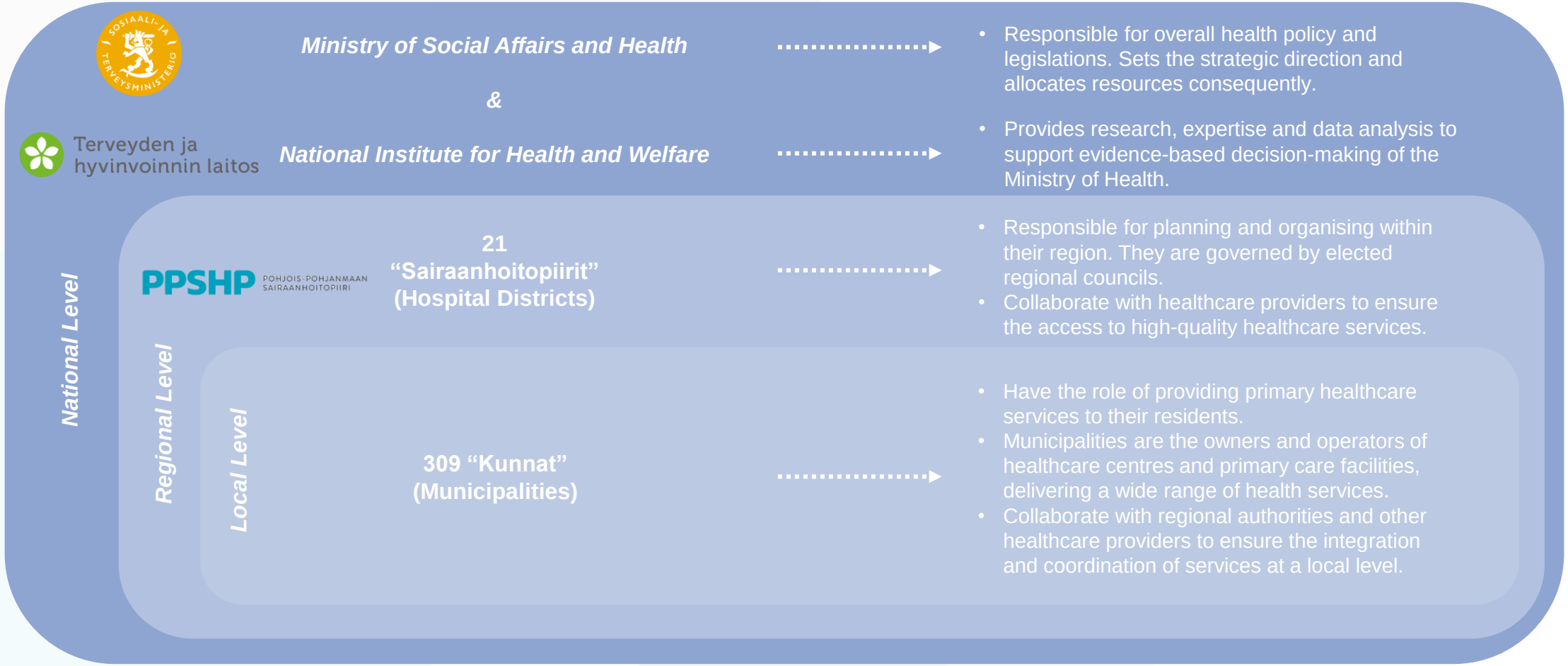
3.1 Finland



3.1 Finland

General contextualization

The following graphic depicts how the **health and care system of Finland is organised:**



3.1 Finland

Description of the strategy and specific initiative, policy and actions deployed (I)

In terms of Finland's digital strategy, we can differentiate between general **strategies of digital skills** and **eHealth strategies**. Strategies in the healthcare sector mainly involve the assurance of free flow of data, with digital skills having been identified as a key factor in this process. Most strategies have a specific focus on university students.

General Digital Skills Strategies

Digital Finland framework

Strategy supporting the **effective coordination of digital transformation in Finland**. Focuses on ensuring the implementation of a platform economy in Finland and identifies the **development of a skilled workforce** as a key aspect to succeed.

Identifies the use of **Mass Online Open Courses (MOOC)** as the most effective tool for skill development.

Finland Digital Compass

National Strategic roadmap for Finland until the year 2030. Based on the EU's Digital Decade Policy Program, which establishes skills as one of the four key aspects that should guide national strategies, both in terms of specialists and general skills

Annually reports on the progress on the aspects of the compass, highlighting the impact achieved for each of them.

eHealth Strategies

Virtual Hospital 2.0

Project allocating more than 7M€ in funding to projects related to the **development of eHealth strategies** both directed at patients and healthcare professionals.

In all projects related to eHealth strategies, the University Hospitals are at the forefront of their ideation and implementation.

The most ambitious project developed under this scope has been the **"Health Village" project.**

Health Village

The Health Village is a **comprehensive digital service platform for healthcare**, delivering public health services for the general public, digital care pathways for patients with specific diagnoses and digital tools for professional. It is a key step in Finland's aim to implement digitalization in healthcare.

Given that the project involves the implementation of an eHealth service platform, ensuring that healthcare professionals have the necessary skills to operate in them has been identified as a key issue. The latter is due to the lack of digitally skilled labour in Finland.

To ensure sufficient digital literacy, the eHealth Development Program was established, and web-based eHealth courses for professionals were implemented in their HealthVillagePRO platform.

3.1 Finland

Description of the strategy and specific initiative, policy and actions deployed (II)

Apart from the previous strategies identified within the healthcare sector, the actions deployed by **Digifinland Oy** are worth mentioning. It is a Finnish company dedicated to **promoting digitization in various sectors**, including public administration and the healthcare industry. Its focus is to drive advanced technological solutions to enhance **efficiency, accessibility, and the quality** of public services. It also develops **innovative strategies and tools** to transform the way governmental and healthcare services are managed and provided.

DigiFinland Oy

Digifinland Oy's work translates to **increased process automation, the introduction of electronic platforms, and the optimization of interactions** among citizens, healthcare professionals, and government entities. Another interesting task that Digifinland carries out is to **support the utilization of the authorities' national electronic business support services** and to promote the **integration and interoperability** of public administration ICT. The company also promotes management with information and the implementation of customer-oriented and cost-effective solutions, enabling the digitalization of the future. They work on these 4 areas:

Projects around the different areas

1. **Information management**
   - The **Virta project** supports the informed management of future health and safety provinces.
   - The **AuroraAI program** implements a data management solution with the aim of better allocation of public services.
2. **Social and healthcare digital services**
   - **Omaolo.fi** is a national social and healthcare digital service where citizens can promote their own health and well-being together with professionals.
   - **Emergency help 116117** is a social and healthcare counselling and guidance service for urgent contacts, non-emergency situations.
3. **Development of new digital services and technical solutions**
   - **Electronic family centre project** is a service channel for the family centre activities of wellbeing services counties.
   - **Electronic Archiving service** for appropriate and secure archiving of old social welfare and health care data.
4. **Specialized expertise to state administration operators**

3.1 Finland

Governance model

In Finland, the **Ministry of Social Affairs and Health (STM)** is responsible for **social and health policy and prepares legislation**. The Ministry steers health care in collaboration with the agencies and institutions under it. **Agencies and related national authorities under the Ministry of Social Affairs and Health** include:

The National Institute for Health and Welfare (THL)

THL is a research and development institute that produces statistical and comparative information and information on best practices in the health and welfare sectors and disseminates it to decision-makers and other actors in the field.

The National Supervisory Authority for Welfare and Health (Valvira)

Valvira is in charge of supervising the social and health care, early childhood education and care, and alcohol sectors. They lead the implementation and supervision of health protection at the national level. They provide licenses for health and social care providers and offer guidance to regional state administrative agencies to achieve harmonized licensing, guidance and supervision practices throughout Finland.

The Finnish Medicines Agency (Fimea)

FIMEA regulates pharmaceutical products. It promotes the health and safety of the population by regulating medicines, medical devices, blood and tissue products, biobanks, and by developing the pharmaceutical sector.

The Radiation and Nuclear Safety Authority (STUK)

STUK sets out the regulations for radiation and nuclear safety and ensures their implementation. It also carries out research on radiation and its effects, determines risks caused by radiation and monitors levels of radiation in the environment.

The Finnish Institute of Occupational Health (FIOH)

FIOH is an expert of well-being at work involved in research, services and influencing. It carries out research, offers training for occupational health and safety professionals, provides advisory services and disseminates information on occupational health.

The Funding Centre for Social Welfare and Health Organisations (STEA)

STEA is responsible for the preparation, payment, monitoring, and impact evaluation of funds granted to social and health organisations.

The Council for Choices in Health Care (COHERE)

COHERE is a public body responsible for recommending treatments for public funding in Finland.

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3.1 Finland

Education and training programs

In Finland there is an **education and training program: the HealthVillagePro**, which implements **eHealth courses for professionals:**

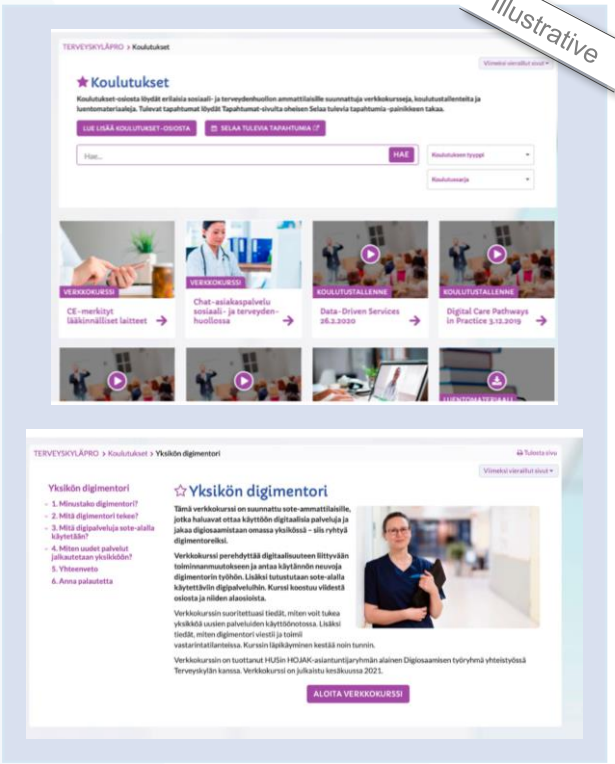
HealthVillagePro

This platform, developed under the scope of the HealthVillage project, provides **eHealth related content that ranges from information on diseases for patients to training content for health professionals.**

Through a combination of online courses, training recordings and materials, health professionals can learn, free of change about those topics in which they have a particular interest.

Health professionals can complete these courses in a flexible manner, adapting their learning schedule to their needs as a professional.

All contents are free of charged and can be accessed by professionals employed in the Finnish Healthcare system.



3.1 Finland

Technology and resources used (I)

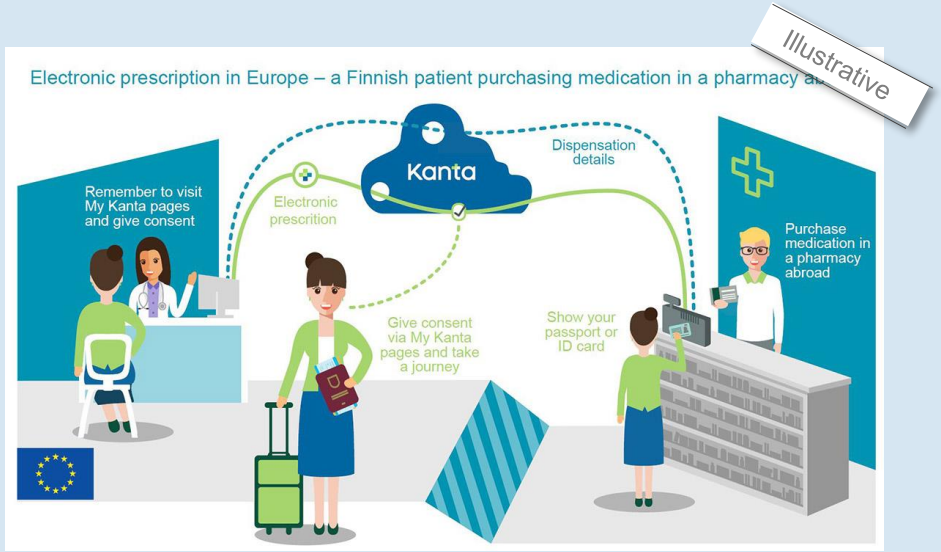
KANTA (*Kansallinen Terveystietoarkisto*, which means “National Archive of Health Information”) is a national **digital service infrastructure** that encompasses **various eHealth services and systems** and aims to facilitate the **sharing of electronic health records and health-related data** between healthcare providers and organisations. Also, it aims to improve the **quality, efficiency and safety of healthcare services**.

KANTA

The KANTA system **stores and manages the electronic health information** of Finnish citizens, including electronic medical records, electronic prescriptions, healthcare information, and other health-related data. It enables healthcare professionals to securely access their patient records and share relevant information between different healthcare providers, facilitating more coordinated and efficient care. In addition, KANTA **guarantees the privacy and security** of health data, with strict controls to protect the confidentiality of citizens' personal and medical information. This national eHealth system is considered one of the most advanced in the world and has been instrumental in improving medical care and communication between the different players in the health system in Finland.

The Kanta Services are maintained by **Kela,** who develops the KANTA Services together with the Finnish Institute for Health and Welfare and the Ministry of Social Affairs and Health. The services provide the following **benefits:**

1. Citizen **data** is in **one place**
2. The data is **extremely well protected** and therefore no outsiders can view citizen’s records
3. Promote the **continuity and safety** of services
4. Keep citizen's data **up to date** and **available** to professionals
5. Allow healthcare professionals to **securely access their patient records** and **share relevant information** between different healthcare providers, facilitating more coordinated and efficient care
6. Information on **paper is eliminated**



Note: Kela, the Social Insurance Institution of Finland, is a government agency that provides basic economic security for everyone living in Finland.

3.1 Finland

Technology and resources used (II)

KANTA plays a significant role in **advancing digitalization** in the healthcare sector in Finland, aiming to improve patient care, streamline processes, and enhance the accessibility of health-related information for both citizens and healthcare professionals. Its services form a **unique service concept** and are the following:

KANTA services

My KANTA Pages

Citizens can view:

- Health data and prescriptions
- Organ donation testament and living will
- Consents and refusals
- Log data of sharing of health data
- Acting on behalf of another person
- Information entered in the wellbeing data by client

Prescription service

All prescriptions are issued electronically:

- Prescription dispensing data from pharmacies
- Prescription renewal requests
- Prescription corrections and invalidations
- Dispensing reservations for prescriptions in pharmacies and prescriptions issued overseas

Pharmaceutical data

A database that contains information about medicines:

- Basic data of preparations
- Generic substitution data
- Prices
- Substitutability data

Patient data repository

- Care records in patient documents
- Consents, refusals, declarations of intent
- Summaries of key health data

KANTA PHR (Personal Health Record)

- Measurement data
- Preliminary data notified by the citizen
- Queries and responses

Archive of imaging data

- ECG and imaging studies

Kelain

A doctor or dentist can issue a prescription in the online service on the basis of their professional practice rights.

KANTA client test service

The Kanta client test service is meant for the suppliers of information systems to be connected to Kanta and for the organizations and pharmacies acting as their client testers.

Client data archive for social welfare services

An information system for social welfare services, used with the client data system.

- Client documents
- Consents, refusals, declarations of intent

Note: Technologies and resources can only be accessed with the credentials of Finish healthcare users or professionals.

3.1 Finland

Impact achieved or expected

Below are the anticipated **impacts and benefits** resulting from the digitalization efforts, presented by the **Ministry of Social Affairs and Health**:

1 Patients' benefits

- **Promote their own health and well-being** with digital services
- Offer of **services independent of time and place**
- **Access to own** and customer **health information**
- Possibility of **producing own data** (well-being data)

2 Health professional's benefits

- **Work effectively** in accordance with operational methods and processes
- **Patient information** is **available** to professionals regardless of organization
- They have **smart devices** at their disposal that are **easy to use**

3 Manager's benefits

- Uniformly monitored and controlled service system with **indicator data** and based on efficiency
- Updated **picture of** the need for **services and their use**
- Integrate knowledge bases and control activities for **supervision** tasks

3.2 The Netherlands

3.2 The Netherlands

General contextualization

The following graphic depicts how the **health and care system of the Netherlands is organized**:

3.2 The Netherlands

Description of the strategy and specific initiative, policy and actions deployed (I)

There are some plans with implemented initiatives in the Netherlands that focus on **digital health,** and they are **recommended by the Dutch government.** Some examples can be:

National Action Plan for eHealth

This strategy focuses on **using digital technologies to enhance healthcare delivery, improve patient engagement, and increase efficiency** in the Dutch healthcare system. The Ministry of Health, Welfare and Sport wants to make the digital healthcare solutions widely known. The are many eHealth options already available to patients, healthcare providers and informal carers. These include applications for contacting your family doctor (GP), or assistance that enables you to stay in your own home for longer.

Digital Agenda for the Netherlands

This comprehensive strategy aims to position **the Netherlands as a leader in the digital economy**. It focuses on areas like digital infrastructure, cybersecurity, **digital skills**, and digital innovation. Following on from the previous Digital Agenda (2011 – 2015), the new Digital Agenda contains several short-term activities (2016 – 2017). The Dutch government will work on these activities **based on the following lines of action**:

- **Education, knowledge and innovation**
- **Open and high-speed infrastructure**
- **Security and trust**
- **More scope for entrepreneurs**
- **Digitisation of sectors**

Arising from this original plans, **other specific strategies** have been developed. The following 2nd and 3rd initiatives are embedded at the area or digitization of sectors, specifically health

1 Healthcare of Now (*Zorg Van Nu*)

This initiative aims to make **innovative healthcare solutions and digital tools accessible to patients and healthcare professionals**. It promotes the use of technology to improve healthcare experiences while sharing many examples of smart care on its website as well as information for healthcare professionals and innovation managers on how to implement those healthcare innovations, how to use them, when and why.

2 Fasttrack initiative

This initiative aims to **accelerate the development and implementation of innovative eHealth solutions** by providing guidance and resources to small and medium-sized enterprises (SMEs) and startups. It seeks to speed up the process of **bringing promising eHealth innovations to patients**, thereby making these **innovations available sooner and integrating them into the Dutch healthcare** sector.

3 Health Deal

An initiative introduced in the Netherlands to **promote collaboration between public and private parties within the ICT** (Information and Communication Technology) **and healthcare sectors**. The aim of Health Deals is to **accelerate the implementation and scaling up of healthcare innovations** by fostering cooperation and addressing barriers that might hinder their adoption.

3.2 The Netherlands

Description of the strategy and specific initiative, policy and actions deployed (II)

There are some other initiatives **recommended by Dutch ministries** (Ministry of Health, Welfare and Sport, and Ministry of Economic Affairs and Climate Policy) which also **target the improvement of digital health:**

Dutch Digitisation Strategy 2.0

In July 2019 the State Secretary for Economic Affairs and Climate Policy, the Minister of Justice and Security, and the State Secretary for the Interior and Kingdom Relations presented an **update of the Dutch Digitalisation Strategy**. By updating the strategy, the government **aims to maintain the Netherlands' position in Europe's digital vanguard**.
The Dutch Digitalization Strategy 2.0 delineates **several key focal points for the forthcoming years**. These encompass the following:

Priorities of the Dutch Digitisation Strategy

- **Artificial intelligence (AI)**
- **Data science**
- **Digital inclusivity and skill-building**
- **Digital governance**
- **Digital infrastructure**
- **Digital resilience**

Health~Holland

Health-Holland works together with a large public-private coalition to **realize five health and care missions**, consisting of a **core mission and four underlying missions** focused on lifestyle and living environment, offering more care in the right place and better perspectives for people with chronic diseases, lifelong and dementia. The core mission states:

The five health and care missions

Central mission

By 2040, all Dutch citizens will live at least five years longer in good health, while the health inequalities between the highest socioeconomic groups will have decreased by 30%

- **Mission I: lifestyle and living environment.** By 2040, the burden of disease resulting from an unhealthy lifestyle and living environment will have decreased by 30%
- **Mission II: care in the right place.** By 2030, the extent of care will be organized and provided to people 50% more than present
- **Mission III: people with chronic diseases.** By 2030, the proportion of people with a chronic disease or lifelong disability who participate in society will have increased by 25%
- **Mission IV: people with dementia.** By 2030, quality of life of people with dementia will have improved by 25%

3.2 The Netherlands

Description of the strategy and specific initiative, policy and actions deployed (III)

According to priorities set by the **Dutch Digitalisation strategy**, there are **two more relevant initiatives** to point out:

NL AI Coalition

The Netherlands AI Coalition (NL AIC) is a **public-private partnership** that was set up in October 2019, in which governmental authorities, the business sector and educational and research institutions, as well as civil society organizations, collaborate to **accelerate and connect AI developments and initiatives**.

It collaborates to **cover the necessary common knowledge and expertise** in five main themes, or building blocks: 1) Human Capital, 2) Research and Innovation, 3) Data Sharing, 4) Human Centric AI and 4) Start-ups and Scale-ups. These common building blocks are essential for ground-breaking impact in **different application areas such as healthcare**. Each building block has its **working group**, in which **participants tackle cross-sectoral challenges**. The working groups are the **core source of knowledge and experience** by and for their members and decide on their approach based on members' know-how and experience.

Working groups

Participants work together to **identify the most significant opportunities and challenges for AI in the field of healthcare,** to **strengthen partnerships and to work on a programme**. The working group operates in separate teams and focuses on the following themes: ecosystem and matchmaking, need for data in health infrastructure and appointments system, COVID overview, citizen and patient participation, information and education of care providers and citizens, financial support and case overview.

Health Innovation Netherlands (HI-NL)

HI-NL is a **multi-stakeholder infrastructure** via which patients, healthcare providers, methodologists, CE-experts, entrepreneurs, insurers, investors, and regulatory authorities can **contribute to bringing better medical devices to users faster.** It is based on the proven fact that early **dialogue between innovators and relevant stakeholders improves the value and effectiveness of health innovations**. The HI-NL offers the **Round Table service**, which is the following:

HI-NL Round Table service

The Round Table service is designed to **give innovators early insights into the path to marke**t and the needs of all stakeholders along the way. In particular, HI-NL supports innovators in the medical technology space, including eHealth, AI and diagnostics. The service consists of **three steps:**

1 Step 1: Review of the context of the innovation

- Review of the context of the innovation
- Critical stakeholders are identified

2 Step 2: Round Table session

- Direct interaction with critical stakeholders, all at the same time
- Tailored guidance endorsed by all stakeholders

3 Step 3: Innovation Guide

- Desk research and Round Table discussion are summarized in one document
- Personal attention and close-out call with the case team

3.2 The Netherlands

Description of the strategy and specific initiative, policy and actions deployed (IV)

One **platform recommended by the Dutch government** is **Healthcare Enablers**. Its website combines **insights from all Healthcare Enablers publications** and presents domestic and foreign **technological healthcare innovations in one database.**

Healthcare Enablers

Healthcare Enablers is an initiative from the **strategy- and innovation bureau BeBright and the National eHealth Living Lab**. It provides an **overview of the most important technological developments in healthcare**, **showcases domestic and foreign technological** healthcare innovations in a **structured database**, and **shares tips and tricks** for strengthening the innovative capacity of the organization.

Healthcare Enablers facilitates and participates in the **dialogue on digital healthcare transformation** for, among others, government, insurance providers and regional collaborations; supports IT suppliers and new entrants to the healthcare market; supports organizations in implementing their digital agenda; and inspires other interested parties with interest in digital healthcare innovation.
The team often **provides keynotes**, **guest lectures and masterclasses** on national-and international meetings and events.

Healthcare Enablers offers

1. Guaranteeing **continuity of healthcare** due to staff shortages is in some regions
2. Work in an **efficient** and **quality** sustainable health system
3. **Knowledge** on **technical developments** to increase the innovative capacity of healthcare
4. **Increase the innovation**- and learning capacity of healthcare and **accelerate and perpetuate healthcare transformation**

Healthcare Enablers' annual publication

Healthcare Enablers provides an annual publication with an overview of the **most important technological development** regarding healthcare in the Netherlands and abroad.

3.2 The Netherlands

Governance model

In Netherlands, the **Ministry of Health, Welfare and Sport (VWS)** is the main governing body **collaborating** with several **organizations** to comply with its role regarding **healthcare**.

Ministry of Health, Welfare and Sport (VWS)

National Health Care Institute

Dutch Healthcare Authority (NZa)

Collaborating organisations

The Ministry counts on the **National Health Care Institute, the NZA, and multiple partners** like Health~Holland or ZonMw when working on the implementation of the strategic direction and the allocation of resources to support the objectives to be achieved within the Dutch healthcare system. The Ministry is the most important contractor of ZonMw:

ZonMw

In 2001 ***ZorgOnderzoek Nederland*** (**Care Research Netherlands**, Dutch abbreviation: ZON) established a **partnership** with the **Medical Sciences** (Dutch abbreviation: MW) corresponding to the Dutch Research Council (NWO) creating ZonMw which constitutes an **independent self-governing organization.** It not only has the Ministry of Ministry of Health, Welfare and Sport (VWS) and the Dutch Research Council (NWO) but other ministries as contractors of their programs and cofounders such as Health~Holland, the organization also partners with the European Commission to **contribute to various initiatives.**

ZonMw plays a role as a **stakeholder** in the establishment of the **governance and the drawing up** of international **strategic research and innovation agendas, funding, training, and communication** by identifying knowledge requirements, facilitating its development through the different **core activities** including **programming and funding** health research and innovation in care as well as **collaborating** with people and organizations (**policymakers, care providers and researchers**) to address the issues identified.

3.2 The Netherlands

Education and training programs (I)

The Dutch coalition aims **to develop a movement in the Netherlands targeting and leading digital skills for inclusion, innovation and economic benefits**. The premise behind this purpose lies in the rapid tempo of digital developments which necessitate complementary digital skills. The Dutch coalition is focused on **ensuring citizens at all levels are ready for the digital transformation and ensuring coding and digital skills become a cornerstone of the education curricula**.

Digital Literacy Coalition

The Digital Literacy Coalition (DLC) in the Netherlands is an initiative established in 2018 to **promote and enhance digital literacy across various sectors of society**. The coalition consists of twenty partners representing education, science, business, government, healthcare, and the educational and cultural sectors. Its primary goal is to **stimulate and improve digital literacy at all levels of society through collaboration, research, and concrete projects.**

The overarching vision of the Digital Literacy Coalition is tied to the Agreement of Groningen, which **aims to position Groningen as the most digitally literate region in the Netherlands by leveraging the collective efforts and expertise of its diverse partners.**

The DLC consists of the University of Groningen, Hanze University of Applied Sciences Groningen, the Municipality of Groningen, the Province of Groningen, University Medical Center Groningen (UMCG), Alfa College, Noorderpoort, SKSG (childcare organization), O2G2 (school organization), MKB Noord (a business organization), Noordhoff Publishers, NDC Mediagroep, Goldmund, Wyldebeast & Wunderliebe, Basicly (an educational platform), Bossers & Cnossen (IT company), Biblionet Groningen, Groninger Forum, RTV Noord (a regional broadcaster), Samenwerking Noord (an IT network organization), and the GGD Groningen (Public Health Service Groningen).

3.2 The Netherlands

Education and training programs (II)

The Dutch government also aims to **spread awareness regarding the digital skills bottleneck affecting healthcare organizations** as digital applications are part of today's care. To do so and with the objective of making the experience of digital technology unlimited, several **knowledge sites** have been made **accessible to healthcare professionals:**

Digivaardig in de Zorg (DIDZ)

The DIDZ is an initiative **supporting healthcare organizations** in educating and training health professionals towards digital and technical skills, improving their competencies **to access eHealth services**. DIDZ **website** helps with **learning communities and instruments, self-assessment and digicoaches** who are health employees with digital knowhow assisting their colleagues. In addition, there are materials to support a digital skills project for people who are involved in making healthcare professionals more digitally literate such as leaders, ICT professionals. Conferences, learning sessions and other free (online) events are also organized.

Digital United Training Concepts for Healthcare (DUTCH)

DUTCH project is a **collective of university medical centers, training institutions, top clinical and general hospitals, universities and industry** that aim to **increase healthcare staff training capacity** and to be able to offer sufficient **continuing education** by replacing 50% of the practical hours in the training with **physical and virtual simulation** that allowed more healthcare professionals to be trained more completely and faster to have time for care tasks. It is now focused on specific profiles such as surgical assistants, anesthetists and radiodiagnostic laboratory technicians but will be scaled up to other professionals and is planning to start using Extended Reality (XR) technology, robotic assistants and digital monitoring as well to develop several 'digital united' training centers in the Netherlands with set up facilities. The National Growth Fund is investing around 132 million euros in the project.

3.2 The Netherlands

Technology and resources used

The technological resources and tools currently available within the Dutch healthcare system include **solutions for both healthcare professionals and citizens/patients in the digital environment**. Acknowledging that there is a daily exchange of data digitally, the government decided to focus on making **data available** and **securing access** to it by committing to **fully suit login tools** (recognized login means) for today's large-scale use and needs.

Digital Identification (DigiD)

Digital Identification, in short DigiD is a form of online ID that allows citizens to **access many national services and national government websites** in the Netherlands. It consists of a username and password linked to the person's personal public service number (BSN) that must be used to do administration processes online such as applying for benefits, making arrangements with educational institutes or healthcare institutions, authorizing someone to manage your affairs, and other actions related.

This tool complies with:

- **Privacy policy**
- **Digital accessibility** based on the ease of use from different devices and for people who are blind, dead, or visually impaired
- **Protection of personal data** as establishing **high requirements** (digital key) to access medical data. These include the supplementation of **SMS code** with and **ID check** and **authorization provision** for specific purposes

New UZI direction:

In relation to the purpose of establishing recognized login means, national institutions also **aim to provide a uniform care identity** and address the wishes of health professionals towards a **more user-friendly solution**. Until now, health professionals were using a unique healthcare provider identification called UZI register but it wasn't perceived as **future-proof**.

With the **set up of official login tools** such as DigiD, **healthcare professionals** will also have the possibility to **log in through these means** for medical data consultations and medical data exchanged by **automatically retrieving their identity from UZI register**. This change includes:

- **Access to updated information**, having the right resources at the right time
- **More possibilities** in requesting patient data
- **Flexibility** in the event of change of profession or employers
- Option to **link multiple organizations as a healthcare professional**

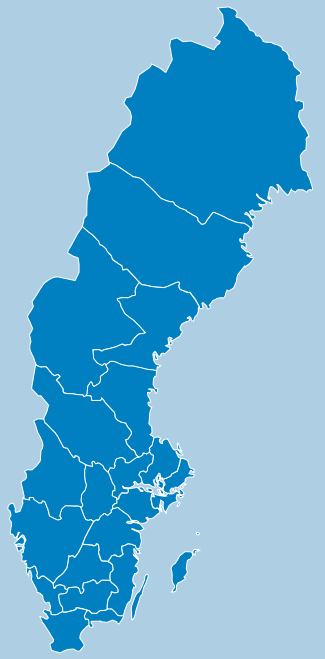
3.2 The Netherlands

Impact achieved or expected

The expected **impacts and benefits** that will be achieved with digitization in the Netherlands are presented below:

1. **Strengthen the innovative capacity** of the health system
2. Develop greater **awareness, knowledge** and **competencies**
3. Introduce a legal obligation to **ensure information ends up in the right place** and improve information security in the care sector
4. **Encourage information sharing** in the care sector
5. By leveraging digital technologies, the healthcare system can become more **efficient, effective, and accessible**, particularly in **low-resource settings**
6. Digital health can **support disease surveillance, outbreak response**, and **health information management**, among other applications

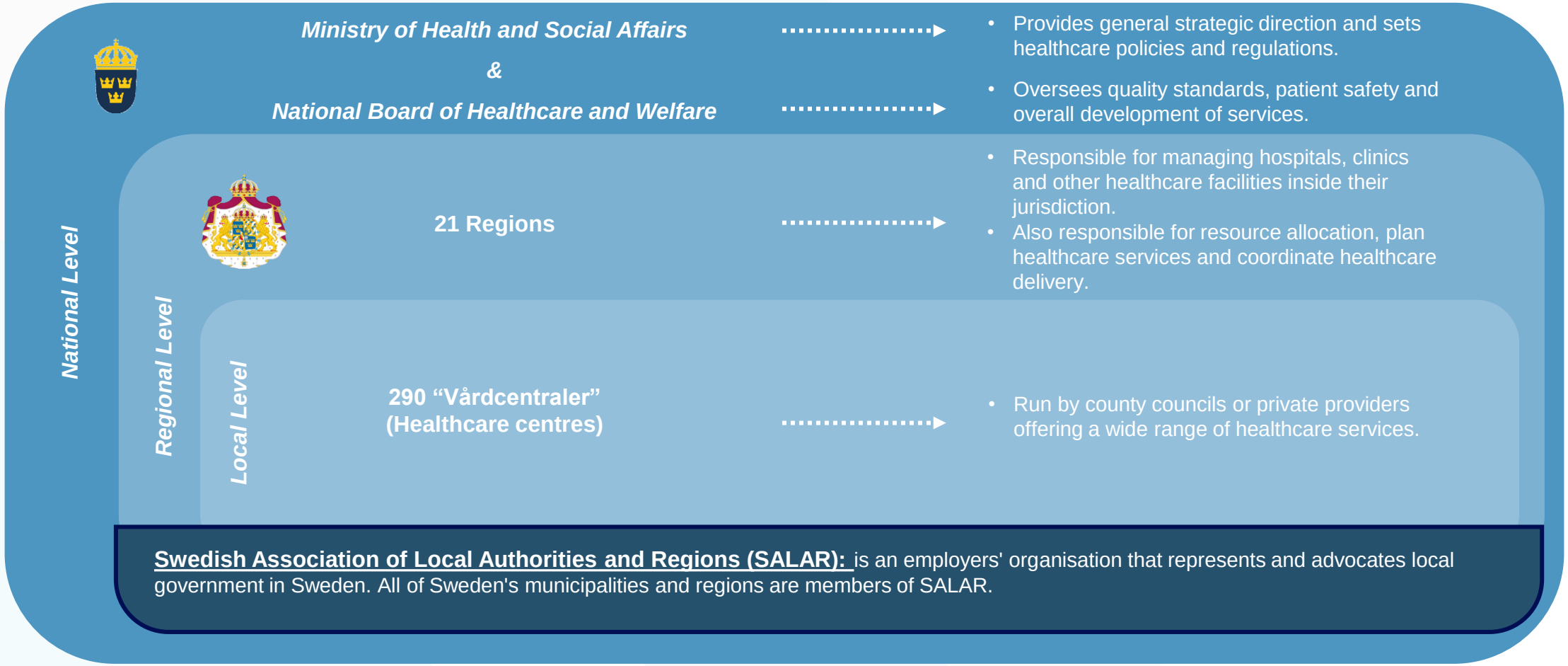
3.3 Sweden



3.3 Sweden

General contextualization

The following graphic depicts how **the health and care system of Sweden is organised**. The **complimentary Swedish Association of Local Authorities** (SALAR) is also included in the graphic due to the key implementation support it provides to the healthcare sector.



3.3 Sweden

Description of the strategy and specific initiative, policy and actions deployed (I)

Digital Strategy in the Swedish Healthcare system has been established through one, overarching plan:

eHälsa 2025 ("Vision for eHealth 2025") (2016)

This strategy focuses on the achievement of one clear objective: for Sweden to be the **best country in the world at using the opportunities offered by digitisation and eHealth**. By being the best, Sweden aims to ensure that it is easier for all its citizens to **access good and equal health and welfare**, and to develop and strengthen their own resources for increased independence and participation in the life of society.

In this strategy, **4 objectives** were set to be able to achieve this ambitious plan:

1. Set person-centred activities drawing on the needs and circumstances of patients and users
2. Workers should possess the right information and knowledge when dealing with patients and users
3. Workers should have the capacity to process and protect information appropriately
4. Development and digital transformation should go hand in hand

Arising from this original strategy, several other specific ones have been developed:

A tech agenda for Sweden (TechSverige)

From the evaluation of the current situation of the Swedish technological sector, **37 policy proposals are presented that are deemed necessary to strengthen the country's position as global tech nation.**

One of this policies is the need to secure the **need for tech skills.**

Strategy for digital development (SKR)

Strategy to **strengthen digital development in Sweden** at the level of municipalities and regions (see previous slide).

Involves the creation of a **common directory establishing basic prerequisites for digital development**. In this collaborative effort the European Interoperability Framework (EIF) is taken as reference.

National support to municipalities in the introduction and use of eHealth

Project developed with the objective of **ensuring all municipalities are at the same level in terms of digitalisation**, regardless of their progress until now.

The project consisted was based mainly on a mapping of implementation necessities developed through interviews with users and municipal service managers.

To achieve this objective, 3 areas are set as priorities:

(1) Digital Skills at all levels

(2) Support for introducing new technologies

(3) Implementation support

This objective is, therefore, the one that focuses more concretely on digital skills enhancement

3.3 Sweden

Description of the strategy and specific initiative, policy and actions deployed (II)

The **Swedish eHealth Agency** (ëHalsomydigheten) is a government organization that is **dedicated to the digitalization of healthcare processes and enhancing information exchange among patients, healthcare institutions, and pharmacies throughout Sweden.**

ëHalsomydigheten (Swedish eHealth Agency)

The agency provides a range of **e-health services and digital solutions** for both individuals and professionals in the healthcare and social services sectors, with notable examples being the widely recognized **e-prescription service and the Covid certificates service**. It coordinates the **government's e-health initiatives and monitors developments in the e-health field**, both nationally and internationally. It is also responsible for **registers and IT services** used by individuals, healthcare providers and pharmacies.
Its main responsibilities are:

- **Ensuring the secure exchange** of health information
- **Carrying out** the **government's e-health initiatives**
- **Storing digital prescriptions** from doctors and forwarding them to pharmacies
- **Offering a drug verification service** that allows you to log in and view information about your prescriptions
- **Medicine Sales Data Collection**: the agency collects information about the quantities of and which medicines have been sold in Sweden
- **Medicine Checking**: it offers a service that allows patient to log in and view information about their prescriptions. They can also see when they will be eligible for the high-cost protection card. When they receive this card, they no longer have to pay for medicines for a set period of time
- **Electronic Expert Support**: pharmacies can use this service to check whether the prescription medicines work together
- **Implementing digital health records, telemedicine services,** and other technological innovations that can enhance the quality of healthcare delivery while safeguarding patient privacy and data security
- **Collaborating with healthcare providers, government bodies, IT companies, and other stakeholders** to drive the adoption of digital solutions that improve patient outcomes and contribute to the overall advancement of the healthcare sector in Sweden

3.3 Sweden

Description of the strategy and specific initiative, policy and actions deployed (III)

Additionally, Sweden has its national digitalization strategy in the Education sector and some **recommendations** (14) are proposed by the council to **promote the necessary structural reforms at national level in the Member States** to enable a **digital transformation of education systems**. These ones are the following:

1. Increase the **effectiveness and sustainability of digital education policies** through coordination with other policy areas and with external stakeholders
2. Offer **training opportunities** for all teachers and other staff by ensuring the capacity of training providers at different levels
3. **Foster ongoing dialogue** between education providers and industries that develop products used in education.
4. **Ensure that all schools have access** to staff with technical knowledge who can assist teachers and students, especially on data protection and security issues.
5. **Promote equity and efficiency** in investment in high-quality education in digitization.
6. **Promote diversity and inclusive work** based on research, to counter gender disparities for cultural, socioeconomic and other reasons that hinder opportunities for girls.
7. **Monitoring and evaluating initiatives** at the local level.
8. **Start early to guide students** in the digital world and offer equal opportunities to develop digital skills.
9. **Ensure that a cross-sectional assessment** of students' digital skills can be carried out regularly.
10. Aspire to more **transversal approaches with digital tools**, including them in all initial training and professional development of teachers.
11. **Consider the introduction of informatics as a separate subject** and ensure that teaching is carried out by qualified teachers.
12. **Leverage existing initiatives to develop exchanges** between education providers and the private sector or encourage teachers to collaborate with professionals in digital professions.
13. **Vocational training** in areas such as AI, cybersecurity and software development must increase according to the needs of the labor market.
14. **Promote the development of a wide range of digital skills training** in higher education to address the skills gap in the labor market.

3.3 Sweden

Description of the strategy and specific initiative, policy and actions deployed (IV)

The national digitalization strategy in the education sector must contain national objectives for the digitalization of the system that must follow the **strategic priorities of the Digital Education Action Plan**. It is proposed to the Member States to:

Ensure that children and parents are **supported to develop digital skills and better understand the opportunities and risks.** Emphasis is placed on using them in a well-thought-out manner and being backed by research and proven experience, as well as the importance of retrained use

Teachers must participate in decisions about how and when digital tools will be used in learning and in the development of digital content in teaching

Assessment methods and teacher training must be improved

Take advantage of **the opportunities in available in Erasmus+ and participate in activities such as the EU Code Week and Hackathon**

Equal access to digital tools for all students. They must have access to relevant technical support and available learning materials, especially those with special support needs

3.3 Sweden

Governance model

In terms of the governance model, the **main strategy (eHälsa 2025) has the following governance structure**:

Steering Group

Comprises political representation from central government (especially Ministry of Health) and SALAR. Has the responsibility for steering overarching prioritisation of work to attain the vision and follow up the implementation for the strategy.

Coordination secretariat

Independent resource shared by the parties. Has the task of supporting and driving the work of the governance and coordination organisation. Responsible also for communicating joint activities and informing external stakeholders od the work carried out, as well as the visual profile of the vision and the joint website.

Preparatory Group

Comprises officials from central government, SALAR and regions and municipalities. Has the responsibility for implementing and coordinating both strategic and operative activities in the strategy and implementation plans. The group also decides on the setting up of working groups.

Cooperation and working groups

The preparatory group can establish cooperation or working groups when deemed necessary. These groups will be responsible for supporting and working in joint, consistent work on a limited issue that is linked to the objectives of the strategy or its fundamental conditions. They are set with a time limit, and are to be given the appropriate competences needed to carry out their tasks by the preparatory group.

In general, both **eHälsa 2025** and the other, previously mentioned **complimentary strategies** have several common **collaborating organizations**:

- **Ministry of Health:**
  - **eHälsaomyndigheten** (eHealth national authority)
- **SALAR** (Swedish: Sveriges Kommuner och Regioner; SKR)

3.3 Sweden

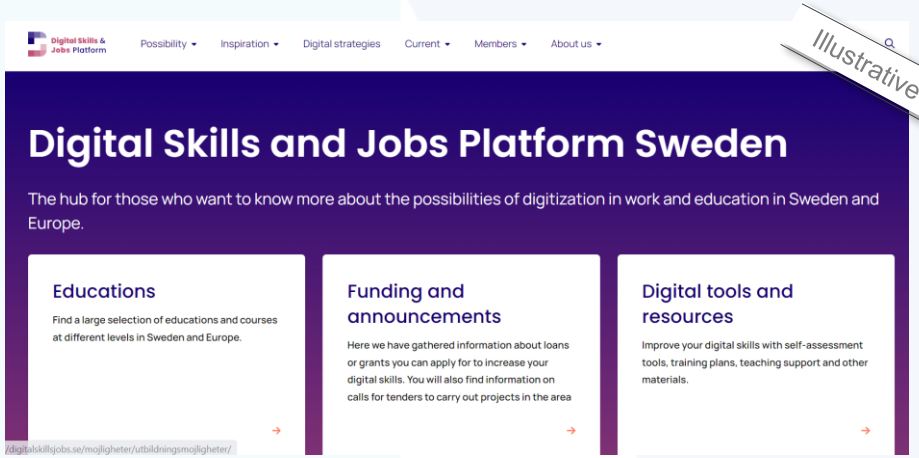
Education and training programs

Education and training programs are not documented online, except for the **Digital Skills and Jobs Coalition initiative** (which is not specific to healthcare). It is a **multi-stakeholder partnership** bringing together organisations that play an **active role in fostering the development of digital skills and strengthening overall digital competence** in Sweden.

Digital Skills and Jobs Coalition

It encompasses all sectors that currently require the enhancement of digital skills. With approximately **30 member organisations**, members of the Swedish Coalition cover a broad range of sectors: from government agencies and universities, to industry associations, private sector representatives and non-governmental organisations (NGOs).

The platform website includes the **digital strategies** that are being carried out currently at a country level, as well as a compilation of **educational resources, European initiatives, and best practices**. Although not focused specifically on health, the platform considers the health sector as one of its focus points, and includes certain content related to it.



3.3 Sweden

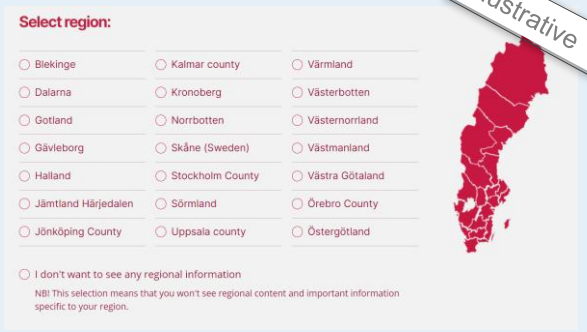
Technology and resources used

These are some **technologies and resources that Sweden** uses in the **healthcare system**:

1177 Vårdguiden

Is the **national healthcare portal** in Sweden. It provides **information and guidance on healthcare services**, advice on **medical conditions**, and **resources to find healthcare providers.**

Citizens can communicate digitally through 1177 directly when they need to seek health care by logging in with electronic identification and answering questions about their symptoms at any time of the day. They help by **chat** or **video** during service hours.



Swedish Electronic Health Record (EHR) System

Sweden has a comprehensive EHR system called "**Journalen**. It allows patients to **access their medical records online, view test results, and communicate with healthcare providers**.

Mina vårdkontakter, which translates to "My Care Contacts" , is a part of the Journalen system. It's a portal that patients can use to communicate with their healthcare providers, book appointments, and manage their care.

Note: The underlined title above does not have the corresponding link attached. The related information can be found by consulting 1177 Vårdguiden.

3.3 Sweden

Impact achieved or expected

The expected **impacts and benefits** that will be achieved with **digitization in Sweden** are presented below:

1. **Higher expectations of patients** and users of companies and politicians.
2. **Access to new digital media** that provide opportunities and a more efficient business and an increasingly digitized environment.
3. Digital development will fundamentally **affect social and health services** and will have **consequences in daily life for managers and employees as well as for patients, users and families.**
4. Employee time can be freed up and **processing times shortened**.
5. Introduction of digital services within wellness technology, which aims to provide users with **greater security, independence and participation**.

Health professional's benefits

Digitalization can contribute to a more **egalitarian, equitable, efficient** and **accessible** social and health service, but also to **better working conditions** for employees.

Citizen benefits

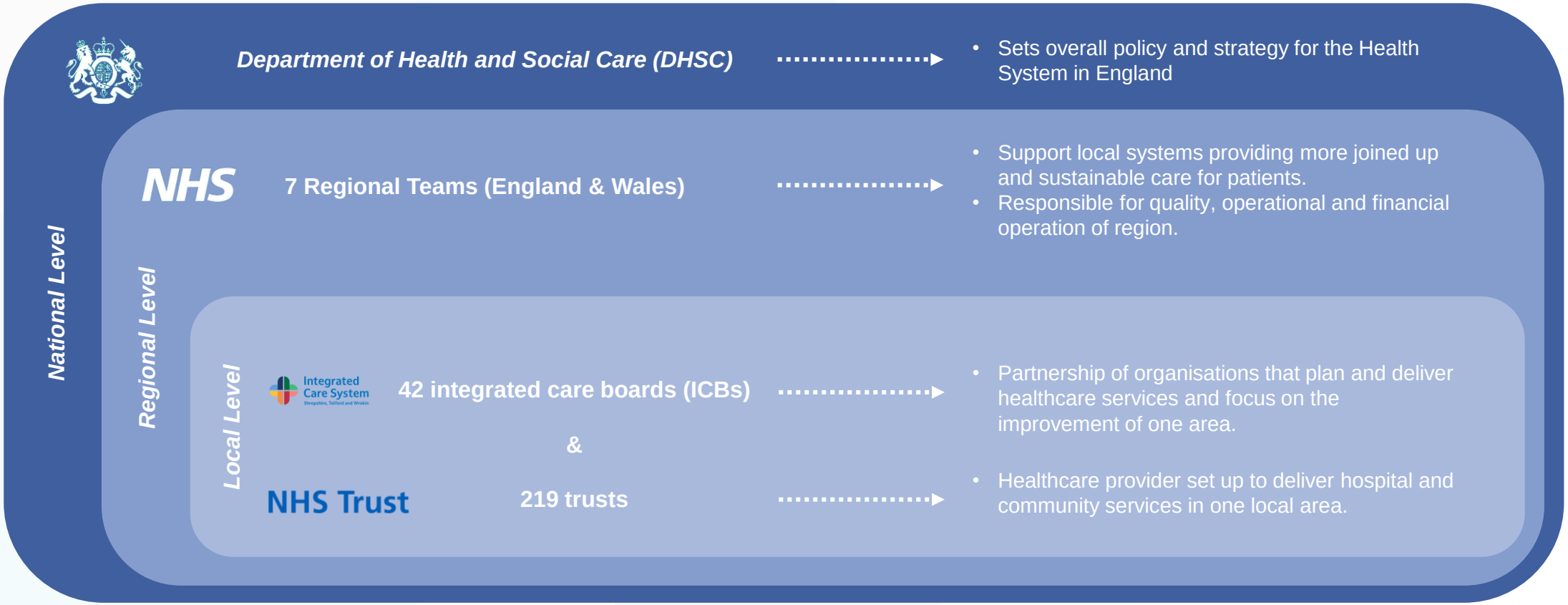
Digitalization creates great opportunities **for individually tailored support, easier communication routes**, and the possibility of **greater control over their health and life situation**.

3.4 United Kingdom

3.4 United Kingdom

General contextualization

The following graphic depicts how the **health and care system of the United Kingdom is organised**. **Specific strategies** are organised at a **local level (regions)** and **support** is given to integrated care systems to **apply them locally.**



3.4 United Kingdom

Description of the strategy and specific initiative, policy and actions deployed (I)

Digital Strategy in the **United Kingdom's healthcare system** has been set by **two main overarching plans**:

NHS long-term plan (2017)

View of how the **NHS** should look like **in 10 years** and establishment of **strategies and policies to follow** in order to reach this point. **Updated** through the **"A plan for digital health and social care policy"** established **in 2022.**

Topol Review (2019)

Sweeping review by the renowned Dr. Eric Topol to make **recommendations** on how to **adapt the NHS to the challenges** arising from **digital transformation**. Used as a **reference** in the **monitoring and evaluation** of the digitalization **progress.**

These **have led to the creation of bodies such as the ones mentioned previously**, who have in turn **developed many programmes** regarding **digital skill enhancement** amongst the **healthcare workforce**. Here are some of those strategies:

E-Learning for healthcare hub

Platform providing **+450 learning programmes** on all **health-related matters**.

The platform is **free** for use **for the HWF**, and currently has **+2M registered users.**

Amongst the **+31K eLearning sessions**, many offer content related to **enhancing digital skills**

Digital Readiness Programme

Created the **NHS Digital Academy**, a platform offering **learning products** to **enhance digital learning** in the **NHS**

Provides **digital training** for different **types and levels** of **professionals** across the **HWF**

Developed **general** and **profession-specific** DC **frameworks** and **reviews,** through **collaboration** with **specialist organisations**

Digital Learning Solutions

Provides training on **tools** that are generally **used by the HWF**

Involves training on **both health-specific digital tools** such as "digital health terminology" and **general IT tools** such as Excel

Allows HWF to **create additional learning content** and **track** theirs or their staff's **learning progress**

Digital Inclusion in Health and Care

Established through the Good Things Foundation to **ensure digital inclusion** and **prevent the widening of inequality** because of the **disparity of access** to digital health.

Digital Champions Network

Network that provides resources to form **digital champions** – workers that can **lead** their organisations in **the process of adopting** digital technologies. The NHS has a **specific toolkit** to train these future trainers in the **healthcare sector**

Strategies **focusing** on the **improvement of digital skills in the HWF**, all developed **by Health Education England**. Each strategy includes programmes that **focus on different roles** (nurses, midwifes…etc) or **skills** (tools, cybersecurity…etc.)

Complimentary strategies that ensures that the **enhancement** of **digital skills** amongst the HWF has the **largest possible effect**

3.4 United Kingdom

Description of the strategy and specific initiative, policy and actions deployed (II)

Digital Strategy in the **United Kingdom's healthcare system** has been set by **two main overarching plans,** from which **different initiatives** have emerged:

PLANS

1 NHS long-term plan (2017)

View of how the **NHS** should look in 10 years, establishing strategies and policies to follow to reach this point. **Updated** through the **"A plan for digital health and social care policy" in 2022.**

2 Topol Review (2019)

Sweeping review by the renowned Dr. Eric Topol in which **recommendations** on how to **adapt the NHS to the challenges** arising from **digital transformation** were made. Used as a **reference** in the **monitoring and evaluation** of the digitalization **progress.**

INITIATIVES

Digital competence improving initiatives

Digital Readiness Programme
Created the **NHS Digital Academy**, a platform offering **learning products** to **enhance digital learning** in the **NHS**

E-Learning for healthcare hub
Platform providing **+450 learning programmes** on all **health-related matters**

Digital Learning Solutions
Provides training on **tools** that are generally **used by the HWF**

Complimentary initiatives

Digital Inclusion in Health and Care
Ensures **inclusive access to digital health** through the Good Things Foundation

Digital Champions Network
Provides resources for workers to **lead** their organisations in **the adoption** of digital technologies.

3.4 United Kingdom
Governance model

In terms of the **governance model** that has been established in the **carrying out of the digital transformation strategy** of the Department of Health and Social Care, the **structure is the following:**

NHS Health Education England

Developer of many of the **initiatives to improve digital skills** for the healthcare sector

NHS Digital

Delivers **information, data and IT systems** to the NHS and wider healthcare sector

NHSX

Responsibility for setting **national policy** and developing **best practice** for the NHS

Objectives of the new NHS England

- Ensuring **healthcare workers** have the **right skills**, **values** and **behaviours** to support the delivery of excellent **digital healthcare**
- Running the **vital national IT systems** which support health and social care
- **Collection**, **analysis**, **publication** and **dissemination** of **data** generated by healthcare services to **improve outcomes for patients**

In April 2023, as a consequence of the new "Plan for digital health and social care" (2022) these organisations merged into:

NHS England

With the objective **of avoiding duplication**, allowing more **effective collaboration** and enabling **local organisations** to **benefit** from a wider range of **support** and **expertise**

NHS England structure

10 National Directorates:
National teams to deliver core functions of NHS England, divided by areas of expertise (Transformation; Workforce training & education; strategy…)

7 Regional Teams:
Regional teams from HEE and NHS England will be integrated.
These regions will look for opportunities to transfer accountabilities to ICB level (local level)

3.4 United Kingdom
Education and training programs

Education and training programmes vary how they are **provided** depending on the **target population** that they are aimed at. There is **differentiation** between the way that training is provided for **leaders (more formal)** and the one offered to **healthcare workers** as a whole **(more informal).**

	Healthcare leaders (train-the-trainers)	General Health Workforce
Target	**"Healthcare Leaders":** This term doesn't refer to those at the top of the hierarchy, but those that want to **lead** the **digital transformation** in their healthcare organisation.	**All healthcare workers,** regardless of their position. **Some** programmes are **specifically designed** for **specific healthcare workers** (ex. Nurses, midwifes…etc).
Eligibility requirements	Given the **limited space** and their **personalised nature**, most programmes have **employment, academic** or **wider eligibility requirements** (ex. Qualifications, time availability). **Cohorts** are formed **each year** with selected participants.	**No eligibility requirements** apart from being a **healthcare worker** in a recognised NHS centre. CCCxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Tools	Carried out through **modules**, that may be in the form of **live, interactive sessions** or **online webinars.**	Content provided either through **"learning hubs"** which **healthcare workers** can **access** with their **credentials;** or through **pre-recorded informative sessions**.
Assessment & certification	**Most** programmes are **not evaluated** and **no certification** is given as they are **purely experiential**. **Those that are**, are assessed in a **variety of methods** (practical exercises, group work, essays, reflective journals…).	**Some** modules **require a "pass"** to be completed, whilst **others** simply require **all content** to be **viewed**. **Certification** is given for **all modules completed** and can **allow** for **Career Professional Development (CPD) points** to be **obtained**.
Structure	Programmes have a **set structure** with **specific topics** and **dates** in which they **have to be covered. Length is varied**, with **some** being carried out **intensively in a couple of days** and **others** carried out **progressively** through **up to 12 months.**	Most programmes are **flexible** and can be **completed** at the **discretion of the healthcare worker**. Some offer the **possibility** for **administrators** to **set courses to be completed** and establish **due dates**
Examples	**Topol Digital Fellowship**: 12-month programme to work on a NHS-funded digital innovation project in the workplace **Health Innovation Placement (HIP)**: Intended for leaders that need to be drivers of digital change inside their organisation **Digital Health Leadership**: Postgraduate diploma aimed at those wanting to become eHealth leaders	**E-Learning for Healthcare Hub**: Allows healthcare workers to complete subject-specific modules. The platform tracks their progress, which can be shown as proof of their training. **Digital Learning Solutions**: Platform through which compulsory training is provided. Allows superiors to set the training that they consider their workers require

3.4 United Kingdom

Technology and resources used

To **provide** these **training programmes**, certain **resources and technologies** have been a **key.** The following are some of the ones that have **been essential** and others which are being **currently developed in support.**

Learning Hubs

These hubs are the **main way** in which **training is provided** to healthcare workers at a **large scale**. They have been **specifically designed** to **adapt** to the **concrete needs** that the **healthcare sector and its workforce** require.

This tool allows the healthcare worker to have **unlimited training content** at their disposal. Workers are **encouraged to use the platform**, not only in case of need, but also to **gain skills** that can allow them **to progress professionally**. These are some of their **main features**:

Bitesize format

Given the lack of time workers can dedicate to training, sessions are designed to be completed in 20 minutes or less.

Personalized

There are 9 pathways workers can choose from (including digital) designed with specific sets of modules to complete them

.

Easy provision

Professional organisations can create and upload their own modules in the hub for workers to access

.

Progress tracking

Provides record for certification, avoiding training repetition when moving to another organisation

Controllable

Leaders can set trainings, due dates or even create their own by providing just a few details

Constant updates

New modules are constantly introduced to address the most recent training needs in the sector (ex. AI)

Profession-specific frameworks

From the **basis** of the overarching **"A Digital Skills and Capabilities framework",** NHS Academy has partnered with **expert professional organisations** to develop **frameworks** that are **adjusted** to **address the needs** of **specific professions** in the healthcare workforce.

Some of these have been a **reference** to develop **specific training programmes** for the **profiles** in question

Frameworks developed for:

- **Psychological** practitioners
- **Allied Health Professionals (AHPs)**
- **Pharmacy** Workers
- **Artificial Intelligence** and Digital Technology workers
- **Mental Health** workers (in progress)
- **Primary Care** Workers (in progress)

Digital Skills Assessment Tool (DSAT)

Currently **in development** (launch in Spring 2023), will allow workers to **know their current digital skills level**. It will also provide **leaders/managers** with **data** on the **digital skill level** of their **staff.** This tool is also **linked** with the **future development** of an **online digital certificate** that can **credit basic digital knowledge.**

How it works:

1. Workers answer a set of questions in an online format

2. With the answers, the tool determines digital level, and areas of need

3. Participants are re-directed to the content that is more relevant for them, depending on their skill gaps

3.4 United Kingdom

Impact achieved or expected and M&E mechanisms (I)

Given that **about five years have passed** since the first **digital healthcare strategies** were **implemented** in the **UK**, the NHS has **aimed to evaluate** the impact that the **measures arising from them** have had in the **digital evolution** of the **sector**. **Several reviews** have been carried out, both by **NHS bodies** and **research universities**. NHS is also **currently developing periodical M&E mechanisms** that can give **clearer, quantitative data** on how progress is being achieved.

Topol Review: progress on the recommendations (2023)

Sweeping review of the **progress** that has been made **for each individual recommendation** set, back in 2019. The **impact** related to **enhancing digital skills** has been the **following**:

	R1. "Similarly to other public health education initiatives, programmes aimed at engaging and education workers on genomics and digital healthcare technologies should be developed"	R2. "The NHS should support the development of educators/trainers who can lead the educational programme to ensure upskilling of the NHS workforce"	R3. "Employment and training organisations must ensure that staff are supported to reach an appropriate level of digital literacy for their career stage."
Recommendation made			
Initiative developed	The **Learning Hub** has been developed, boasting **+77M** e-learning sessions, **+2M** registered users and **+450** programmes on offer	Formation of the **Digital Champions Network,** through which workers can become trainers that can lead digital progress inside their organisation	Implementation of **self-assessment tool** and **online digital certificate** to allow digital skill level follow-up. **Profession-specific competency frameworks** with **signposting** to appropriate educational resources

Coventry University review of NHS digital evolution (2021)

Research project to **examine** the importance of **technological change** to challenge the **issues** facing the **healthcare sector**, through interviews and literature review.

The report **acknowledges an improvement in digital skills** of the **healthcare workforce**, but notes that there is **still a gap** between **current** and **optimal digital literacy**. It highlights certain **key issues**:

1. Some workers, especially front-line, might have the skills, but they **lack familiarity and confidence** to **operate** with **state-of-the-art digital technologies**
2. **Senior managers** still **don't appreciate the importance** of having a **digitally literate workforce**
3. **Resistance to change** by healthcare workers is still a **big barrier** towards **innovation**

Digital Maturity Assessment (DMA) Questionnaire (launching soon)

Tool that will **allow trust leaderships** to **evaluate** how **their organisation** is doing in the different **aspects of digital progress** by completing a **questionnaire.** The DMA will allow for **impact to be measured** at a **country level,** whilst at the **same time** provide improvement **guidelines** at a **local level.** It currently has been piloted in maternity services

Key features:

- Trusts will **measure themselves** against the **"What Good Looks Like" framework,** a newly-developed reference of **how trusts should look like** in terms of **digital progress**
- Trusts will **not be ranked** or **compared** with one another. The DMA will only serve to **assess** what should be **focused on** in each **individual organisation**
- **Workshops** will be carried out to **help trusts** use the **data generated** in **improving their organisations**

3.4 United Kingdom

Impact achieved or expected and M&E mechanisms (II)

In addition to the previous, qualitative impact indicators, recent reviews also include quantitative figures to try to measure the impact policies have had on digital skill confidence and use. In particular, the NHSx's "**Review on Digital Technology Innovation and digital skills in adult social care**" serves as a **reference of the indicators to use in this evaluation.**

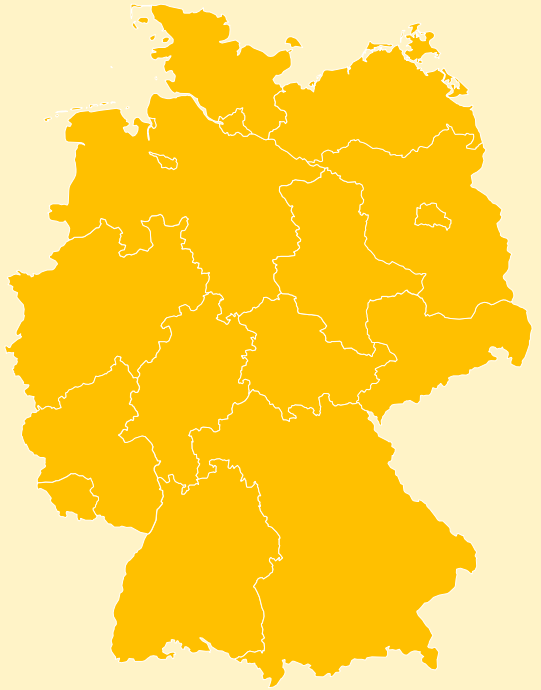
Digital Skills Review

The review consisted of a survey to workers in the care sector with the aim of identifying their perception of the evolution of digital technologies in the sector. The review puts emphasis on both the perception of their own skill development and the digital evolution of their organisations. The indicators measured in this review are the following:

- Views of the social care workforce on the impact of digital technology (ex. Do you agree that digital technologies are important in adult social care?)
- Impact of Covid-19 on the use of technology (ex. Do you agree that there is now a greater use of technology in the workplace than before the pandemic?)
- Digital confidence amongst the workforce
- Differences in digital confidence by job role, age and access to digital technology
- Views on the areas with biggest gaps in terms of skill development
- Motivation to develop digital skills
- Views on the barriers to digital skills learning and development identified
- Manager's perception on ways to use new technology (ex. As a manager, do you look for ways to use new technology to improve care delivery

This Digital Skills Review is the first of its kind, but it provides now a benchmark for the healthcare sector to evaluate its performance in the following years, by comparing the figures of the indicators from one year to another.

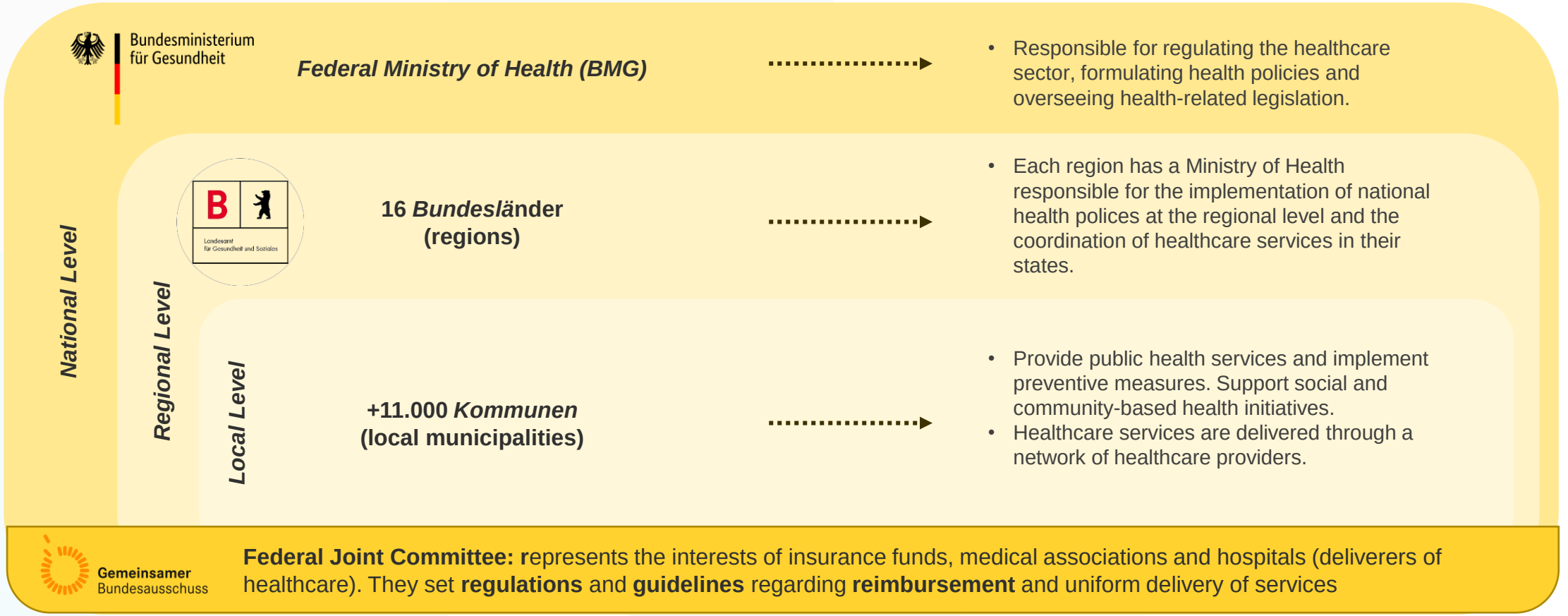
3.5 Germany



3.5 Germany

General contextualization

The following graphic depicts how the **health and care system in Germany** is organised. Strategies are set at **a national level** and **implemented** in the different **regions** through the **health ministries** of the *Bundesländer*.



German healthcare system follows a **dual system**. Citizens under a certain income threshold have mandatory, statutory health insurance (covers 84% of the population). Citizens above the threshold can opt for private health insurance options, which have a more personalised set of services.

3.5 Germany

Description of the strategy and specific initiative, policy and actions deployed (I)

Germany's digitalization strategy for health and care is a program devised by the **Federal Ministry of Health (BMG)** in accordance with the **Digital Healthcare and Digital Care Acts**.

Germany's digitalization strategy for health and care

The strategy has fixed objectives towards **consolidating a digital health ecosystem in 2030**. It sets out a vision of a resilient, future-proof, sustainable, and digitally assisted health and care system, and provides guidelines on how to achieve it.
These are the five main general objectives of the strategy:

- Ensure **equitable and affordable access to healthcare**
- Improving **data availability** and data **quality**
- **Promoting digitalization** in healthcare
- **Improving the working conditions** of healthcare professionals
- **Improving care and treatment** in all health situations

The strategy also contemplates the **digital literacy** of citizens. It is necessary for users of the new digital health system to know the available tools and their functions.

Central fields of action

1. Establishment of **people-centric, digitally assisted cross-sectoral and cross-professional healthcare processes**
2. Generation and use of **high-quality data** for better healthcare and research
3. Use of **benefit-oriented** technologies and applications

The success of the strategy will be evaluated using suitable instruments, such as measuring the degree of digital maturity and backed up by KPIs.

Digital Healthcare Act (DVG)

Act to **improve healthcare provision** through **digitalisation** and **innovation.** It establishes a set of strategic measures that are to be undertaken such as:

(i) Use of healthcare apps for services such as prescriptions
(ii) Obligatory digital network to be utilised in the health sector
(iii) Online video consultations to become routine
(iv) Achieving a paper-less healthcare
(v) Establishment of cybersecurity standards to be implemented
(vi) Allow for equal participation (private/public) in digitalization

Digital Care Act

- Aims to enhance the **use of digital technologies** in the nursing healthcare sector, to provide a more efficient service to patients
- Aims to **improve the support given to patients** through the use of mobile apps and telemonitoring

All of these eHealth strategies are a showcase of **Germany's technological prowess**. However, to **evaluate** their **success**, the government will not only measure the degree of digital maturity backed up by KPIs but has developed an **implementation strategy** to ensure the **workforce** and **population** have the **capabilities** to **apply these initiatives.**

Note: The underlined title above does not have the corresponding link attached. The related information can be found by consulting Digital Healthcare Act (DVG).

3.5 Germany

Description of the strategy and specific initiative, policy and actions deployed (II)

The German authorities are working on an **implementation strategy** to ensure the workforce and population have the necessary digital capabilities. All information related not only to healthcare, but several topics can be found in the form of a **website** focused on **digitalization** and the **initiatives** being developed.

Digital-made-in.de (Government digitalisation implementation strategy)

It is an **overarching digitalisation implementation strategy**, in which all ministries of the German Government pointed out **challenges related to the digital transformation process**. All issues identified have a specific solution that has been developed, and every solution has a particular implementation plan set to ensure its development, and which indicates the responsible body, the target group, and the key activities involved in the initiatives.

Specific goals of digital strategy related to Health and Care

Use of the electronic patient record by at least 80% of those with statutory health insurance and the establishment of the **e-prescription as the standard in the supply of medicines** as the basis for better, digitally supported health care.

The following information corresponds to **two of the implementation plans related to digital skills in health**:

Promotion of digital skills in health care professions

Involves the **inclusion of digital skills** both in **official training regulations** and **university education.**

Digital platforms have been planned to achieve this outcome.

Orientation guide for dealing with digital health information

Project aimed at **healthcare patients**. Looks to **enhance their digital skills** and allow them to make the most of the newly developed digital solutions.

Involved developing **two websites** to provide this information.

Note: The two underlined titles above presenting implementation plans do not have the corresponding link attached. The related information can be found by consulting Digital-made-in.de (Government digitalisation implementation strategy).

3.5 Germany

Description of the strategy and specific initiative, policy and actions deployed (III)

These are the **innovation hubs and clusters** that bring together and facilitate the incubation of new technologies in Germany:

Medical Valley

Medical Valley European Metropolitan Region Nuremberg (EMN) associations is an **internationally leading innovation ecosystem in the field of healthcare management**. It allows fast and easy interaction with all relevant stakeholders by cooperating closely with world-renowned health research institutions in order to jointly find solutions for the challenges of the healthcare of today and tomorrow.

In April 2017, Medical Valley, in cooperation with the Zollhof Tech Incubator and the Health Hackers, was named one of twelve national “Digital Hubs” by the Federal Ministry for Economic Affairs and Climate Action (BMWK). From those, Medical Valley is the only one that focuses exclusively on health.

German Digital Health Association

The German Digital Health Association acts as the **common voice of all eHealth providers and promoters in Germany**. This association represents its members towards the other partners of the health system, politics, and the public.

Moreover, they have created a complete information package about DiGAs which are the medical applications that have been evaluated and approved by the Federal Institute for Drugs and Medical Devices (BfArM).

Deutsches Forschungszentrum für Künstliche Intelligenz

The German Research Center for Artificial Intelligence is a **research center for artificial intelligence**, in close cooperation with France on AI applications in healthcare.

Integrating the Healthcare Enterprise (IHE)

IHE is a **global non-profit initiative of healthcare professionals** with the aim of improving **communication between different IT systems and medical devices**. It provides a pragmatic methodology that ensures interoperability between healthcare IT systems and leads to a set of technical and semantic specifications that are published by IHE as Technical Frameworks.

Digital Ecosystems (de-hubs)

The Digital Hub initiative takes the form of **twelve digital hubs** that create a **network of innovation by exchanging expertise in technology and business**. It connects SMEs and corporations with the newest innovators from the science and star-up scene.

This hub counts with the support of the Federal Ministry for Economic Affairs and Climate Action for the development of digital projects, particularly the Nuremberg and Mannheim clusters, specialized in e-health.

3.5 Germany

Governance model

No information has been found regarding the governance model.

3.5 Germany

Education and training programs

Germany has planned to **implement digital platforms for patient-related learning** (e.g. DigiPal) but has not yet provided information on how they are going to be carried out. However, there are some **educational and training projects** already being developed on behalf of **the collaboration of universities and regional institutions that** want to support **digital health innovations.** Two examples are the following:

Center for Digital Health Care (UCDHC)

The University Center for Digital Healthcare (UCDHC) aims to optimally exploit the **potential of digital health technology** and make it usable for the **best possible care for patients**. To this end, the three institutions of the Frankfurt University Medical Center, the Medical Information Systems and Digitization Unit (ID), the Department of Information and Communication Technology (DICT) and the Institute of Medical Informatics (IMI), have joined forces in one center trying to ensure the link between teaching, research and patient care.

In this way, the UCDHC offers **training to the future generations of physicians** as well as the opportunities to **integrate scientific findings directly into patient care.**

The three supporting institutions combine the upgrading of the IT system landscape, security and further development to mobile systems and communication standards (e.g. 5G), internal and regional innovation projects related to medical data in the mirror of scientific findings and research in university medicine.

The goal for all UCDHC participants is a **close cooperation with regional institutions** and relevant courses of study at Goethe University as well as the **involvement of interns, and bachelor's and master's students.**

Digital University Hospital Frankfurt

This initiative consists of 14 sub-projects and is going to be **funded by the Hessian Ministry of Higher Education, Research, and the Arts** from 2018 to the end of 2023.

The focus of the funding relies on **improving patient care while enhancing the expansion of digital infrastructure**, promoting networks between the sectors of general practitioners, specialist medicine, and maximum care, as well as the **use of digital tools to relieve the burden on healthcare professionals**, especially in a clinical context.

The **main projects goals** are the following:

- Efficient service delivery with improved quality of care and patient safety
- Support for research and teaching
- Development of transparent control options
- Interoperable data management

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3.5 Germany

Technology and resources used

Some examples of **technologies and resources** that have been implemented in the health system of Germany are the following:

Electronic Medical Record
Elektronische Patientenakte (ePA)

Initiative set with the aim of allowing patients and health professionals to **access electronic medical records**, which **improves the coordination of medical care** and **reduces the duplication of tests and procedures**.

Since 2021, all people with compulsory health insurance can receive from their health insurance company an electronic patient record (ePA), in which medical results and information from examinations and previous treatments, beyond the limits of the consultation and the hospital.

Electronic Health Card
Elektronische Gesundheitskarte (eGK)

Initiative set with the aim of **digitalizing** all **German citizen's insurance health cards**.

In achieving this, **data will be readily available for provider consultation**, and transfer between medical centres will be much easier. It is also linked with the aim of the German healthcare system to become "paper-less".

It allows you to authenticate patients and facilitate access to digital health services, including ePA.

Telemedicine

Telemedicine is promoted to **provide medical care remotely**, allowing patients to receive more convenient care and reducing the burden on hospitals and doctors' offices.

Additionally, with the digital law, assisted telemedicine is expected to be offered in pharmacies or health kiosks, especially in underserved regions.

Digital Health Applications (DiGA)

DiGAs are **medical applications that have been evaluated and approved** by the Federal Institute for Drugs and Medical Devices (BfArM) in collaboration with the Federal Institute for Health Insurance (BfS), and which are considered medical devices.

The objective is to **provide concrete medical benefits**, such as monitoring chronic diseases, rehabilitation or support in medical treatment. Some DiGA apps may be prescripted by doctors and in some cases the costs may be covered by health insurance.

Digital Nursing Applications (DiPA)

DiPAs are designed to provide **long-term care and support to seniors or patients with special needs**. They may provide services such as health monitoring, communication with caregivers or health professionals, and coordination of long-term care.

The goal Is to improve the quality of life and autonomy of people who need long-term care.

3.5 Germany

Impact achieved or expected

The tangible **benefits and opportunities** that will be achieved with the **digitalization strategy for health and care in Germany** are presented below:

1. **Telemonitoring reduces rehospitalization** and mortality rates among cardiac insufficiency patients.
2. **Reduced bureaucratic effort:** electronic documentation simplifies work and saves time.
3. **Reducing withdrawal:** data from the electronic patient record can assist automated medication checks and help detect medication-related risks.
4. **Earlier detection of complications:** digitalisation helps to detect the risk of kidney damage in diabetics at an early stage.
5. **Faster detection of risks:** through digitalisation available data can be used to ensure that gestational diabetes is treated earlier.
6. **Robot-assisted** coronary intervention systems can result in a 95.2% **reduction in cardiologists' exposure to radiation** when performing surgical operations.
7. **Relieving the burden on family carers of people** with dementia through digital applications that can provide support in the home for the purposes of entertainment, monitoring and reminders.
8. **More time for patients:** the time saved in using teleconsultations enables more patients to be seen.

4. Conclusions

4. Conclusions

The following are the main conclusions of the comparative analysis:

General contextualization

Three level organisational structure

Each of the selected territories' healthcare systems is organized at different levels (national, regional and local) corresponding to the Ministry or department responsible for overall health policy and which sets the strategic direction and the councils in charge of planning, operations in relation to healthcare providers and quality of services.

Description of the strategy and specific initiative, policy and actions deployed

Adoption of digital health strategies with institutional and governmental support

All the countries selected have strategic roadmaps, digital agendas or action plans available focused on the digitization of healthcare and collaborative development. Initiative planning and execution occur in a unified approach with the backing of governmental entities and reference organizations in digital skills that have set specific objectives regarding the enhancement of digital literacy among the healthcare workforce. As a result, the actions deployed include the creation of healthcare digital platforms and solutions, e-learning programs, associations, coalitions, partnerships, and hubs.

Governance model

Coordinated leadership based on the collaboration and cooperation between stakeholders

The selected countries present a clear picture of their governance structure. In Finland, the Ministry (STM) steers health care in collaboration with the agencies and institutions under it. Similarly, in the Netherlands, VWS sets the strategic direction and allocates resources with the aid partners and contractors. The main strategy in Sweden also counts on several organizations that cooperate in a coordinated manner with the government at a national (eHealth authority) and regional level (SALAR). The governance model established in the carrying out of the digital transformation strategy in the United Kingdom consists of NHS education, digital, and policy divisions. However, no information could be found regarding Germany's governance model.

4. Conclusions

Education and training programs and methods deployed (M&E and certification process)

Knowledge sites accessible to health professionals and citizens

Most of the educational and training tools currently available in the countries selected consist of e-learning platforms including a wide range of materials: information about the digital strategies and initiatives being carried out, eHealth courses for professionals, programs to strengthen digital competencies, self-assessment activities, etc. These websites offer instruments and the support of learning communities based on agreements between universities, institutions, and organizations that want to support digital skills enhancement.

Technology and resources used

Promotion of digital culture from government institutions

The European countries selected aim to provide solutions that allow both the healthcare workforce and patients to access health-related information in the digital environment. Accordingly, the respective governments provide national healthcare portals and medical applications from which medical records, test results, and communications can be consulted. Moreover, to keep data updated and safe while being exchanged, it will only be readily available through recognized means and credentials.

Impact achieved or expected

Ensuring access to digital health tools

The benefits and opportunities intended to be reached involved patient information being available to professionals regardless of the organization as well as having smart devices at their disposal that are easy to use. Taking advantage of technology resources is resulting in a reduction of burden within the healthcare system and greater awareness regarding the need for innovative capacity. This digital skills review provides a benchmark to evaluate future performance in the following years regarding health information management, processing times shorten, and support disease surveillance, among others.

5. Annexes

Annex 1: Selection workshop

5. Annexes

5.1 Selection workshop

Objectives and methodology

Below is presented the dynamic of the workshop to select the reference countries to study in D2:

Duration of the dynamic: *30 minutes*

Objective

- To **select the reference countries** in the field of Digital Competences (DCs) enhancement and governance in which to focus on further; and present a preliminary list of reforms, policies and trainings to enhance DCs among the countries identified.

Methodology

1. The **indexes** used to select the preliminary countries will be presented.
2. The **index results** will be presented, along with a **preliminary shortlist of EU and Non-EU countries.**
3. The **reforms, policies and training itineraries** preliminarily identified from the selected countries will be presented.
4. A discussion will take place to select the **reference countries** to focus on further, according to the following criteria:

1 Level of human capital digital development (considering the indexes presented)

2 Similarities in the healthcare provision models with the Catalan and/or Estonian context

3 Degree of relevance of the initiatives considering the project's objectives

5. Annexes

5.1 Selection workshop

Selection of indexes

To produce a rank of countries, several **indexes** that **asses digital human development** have been analysed. Three indexes have been decided upon, considering the following factors: i) **completeness** in terms of number and relevance of countries analysed; ii) **elaboration by EU bodies** (e.g. DESI) **or well-renowned private institutions** in the field of research and specifically, **research on digital development**; iii) mention of **healthcare** as one of the sectors analysed; and iv) exclusive focus on **digital development** and not other forms of development. The three selected indexes are presented below:

Index	**Digital Economy and Society Index (DESI) – *Human Capital***	**Digital Skills Gap Index (DSGI)**	**IMD Digital Competitiveness Ranking**
Publisher	Produced in its yearly report by the **European Commission (2022).**	Produced by the well-renowned scientific publisher **Wiley (2021).**	Produced by the **IMD World Competitiveness Center (2022).**
Description	Analyses **digital transformation adoption** in the economies and societies of the **27 EU countries,** and focuses on different sectors of society, including **healthcare.** It has a sub-index of focus about **human capital**, which analyses the **Digital Skills levels** of each country's citizens, used for this selection.	Analyses the **gap** between demand for **digital skills** and the **capacity** that **134 countries'** policy makers and trainers have to **close it,** focusing on different sectors, including **health.**	Analyses **capacity** and **readiness** of **63 economies** to **adopt digital technologies** in the transformation of their government practices, business models and society in general.
Considered factors	The index obtained has been based on the following **7 human capital indicators** that together provide an average score: 1. % individuals with at least basic digital skills 2. % individuals with above basic digital skills 3. % individuals with at least basic digital content creation skills 4. % individuals in employment aged 15-74 that are ICT specialists 5. % ICT specialists that are female 6. % enterprises providing ICT training 7. % ICT graduates	The DSGI index is build on **six pillars**: 1. Digital Skills Institutions 2. Digital Responsiveness 3. Government Support 4. Supply, Demand & Competitiveness 5. Data Ethics & Integrity 6. Research Intensity Each pillar consists of 2 to 9 sub-pillars, with the exception of Pillar 6 . Each sub-pillar includes primary research inputs on the 21 APEC economies from Wiley's Digital Skills Gap Survey, and secondary research indicators compiled from various sources to provide a genuinely global comparison.	The IMD defines digital competitiveness into **3 main factors, each of them having 3 sub-factors.** The 9 resulting sub-factors comprise 54 criteria. The factors and sub-factors taken into account are the following: 1. **Knowledge**: a) Talent, b) Training and education, c) Scientific concentration 2. **Technology**: a) Regulatory framework, b) Capital, c) Technological framework 3. **Future readiness**: a) Adaptive attitudes, b) Business agility, c) IT integration

5. Annexes

5.1 Selection workshop

Index results (EU countries)

After the selection, an **index score** for the 3 indexes selected (DESI, DSGI and IMD) has been identified for the **27 EU countries.** Then, to obtain a **preliminary rank** of EU countries in terms of human digital development, an **average score for each country** has been **calculated,** taking the **average among the three index scores (assigning equal weighting to each)**. In the following table a ranking of the **12 EU countries** with the **highest average score** among the three indexes analysed is presented. The countries have been ordered in this table from the highest average score to the lowest one.

Rank	Countries	Average Score	DESI	DSGI	IMD
1	Finland	80,7	70,5	75	96,6
2	Sweden	77,9	61	73	99,8
3	Netherlands	77,3	62	72	97,9
4	Denmark	75,7	59	68	100,0
5	Estonia	69,7	54	70	85,1
6	Luxembourg	68,8	58	72	76,5
7	Ireland	68,7	61,5	65	79,6
8	Germany	67,1	45	71	85,2
9	Austria	67,0	50,5	65	85,4
10	France	65,1	50	64	81,4
11	Belgium	65,1	49	65	81,3
12	Spain	62,5	51	59	77,4

5. Annexes

5.1 Selection workshop

Index results (Non-EU countries)

To consider other potential reference countries apart from those in the EU, the same process has been conducted for **non-EU countries**, with the difference that **2 indexes** have been taken into account, since the DESI index only evaluates European countries. In the following table a ranking of the **10 Non-EU countries** with the **highest average score** among the two indexes analysed is presented.

Rank	Countries	Average Score	DSGI	IMD
1	Singapore	88,7	78	99,5
2	Switzerland	85,1	72	98,2
3	UAE	83,2	75	91,4
4	Norway	82,6	72	93,2
5	South Korea	82,6	70	95,2
6	United States	81,4	63	99,8
7	Hong Kong	80,2	66	94,4
8	Canada	79,6	65	94,2
9	United Kingdom	79,2	72	86,5
10	Israel	79,2	71	87,4

5. Annexes

5.1 Selection workshop

Reforms, policies and training itineraries (EU countries)

After the selection of the shortlist of reference countries, a **desk research** will be conducted. Topics of this desk research will include the **reforms and policies** to foster the development and use of digital tools and services and eHealth infrastructure, as well as **DCs education and training itineraries**. From the EU countries previously ranked, and by analysing the **2022 DESI profiles**, a **preliminary overview of some initiatives** that they have developed is presented below:

Country	Average Score	Initiative	Area of Focus	Description	Link
Finland	80,7	**Digivisio 2030**	DC education & training	Collaboration between all Finnish education institutions to put digital skills at the core of education	https://digivisio2030.fi/en/frontpage/
Sweden	77,9	**Artificial Intelligence (AI) in Public Sector**	DC education & training in AI	Mission with the objective of improving the capacities of the public administration to make use of AI	https://www.regeringen.se/regeringsuppdrag/2021/06/uppdrag-att-framja-offentlig-forvaltnings-formaga-att-anvanda-artificiell-intelligens/
Netherlands	77,3	**Count on Skills 2020-2024**	DC education & training	Overarching strategy to improve basic digital skills amongst Dutch citizens of different industries & backgrounds	https://www.telmeemettaal.nl/over-ons
Denmark	75,7	**Digital Growth Strategy 2025**	DC education & training	Collaboration between the Government and various industries to improve access to digital skills formation in the areas of both formal education and employee training	https://digital-skills-jobs.europa.eu/en/actions/national-initiatives/national-strategies/denmark-digital-growth-strategy-2025
Estonia	69,7	**DC training for family doctors and nurses**	DC education & training	3-year strategy to train 500 doctors and nurses through 3 one-day modules	xxx
Luxembourg	68,8	**Digital Luxembourg**	DC education & training	Ongoing public initiative to support different DS skills initiatives in conjunction with different stakeholders and partners	https://digital-luxembourg.public.lu/

Note: Other strategies from non-leading human digital development countries (ex. Greece – Digital Transformation 2020 – 2025) might also be considered.

5. Annexes

5.1 Selection workshop

Reforms, policies and training itineraries (Non-EU countries)

Taken into account the **desk research** which will be conducted, the same exercise exposed before has been done for **Non-EU countries**. Regarding the **reforms and policies** to foster the development and use of digital tools and services and eHealth infrastructure considering DCs for healthcare providers, and **DCs education and training itineraries**, a **preliminary overview of some initiatives** in Non-EU countries from the ones previously ranked is presented below:

Country	Initiative	Area of Focus	Description	Link
Singapore	**RIE2025 Plan**	R&D and training	Ongoing strategy driven by the government to make Singapore a reference in R&D in the science and technology sector (including healthcare). Great focus on talent development to achieve it	https://www.nrf.gov.sg/rie2025-plan
United Kingdom	**Digital Readiness Education Programme**	DC education and train-the-trainer programme	Overarching programme across all healthcare and social workers to uplift DSs through different initiatives (e.g. Digital Health Academy)	https://www.hee.nhs.uk/our-work/digital-readiness
United Kingdom & GDHP	**International approach to AI healthcare**	AI implementation & training	Produced by the NHS under the context of the Global Digital Health Partnership (GDHP) to design an international strategy to implement AI in the workforce	https://gdhp.health/wp-content/uploads/2022/11/AI-for-Healthcare-Creating-an-International-Approach-Together-1.pdf
USA	**AMA STEPS Forward**	DC training	Project to create a set of resources that provide proven approaches of how to implement digital proven solutions (playbooks, toolkits, etc.)	https://www.ama-assn.org/practice-management/ama-steps-forward/practice-innovation-strategies-digital-health
United Kingdom	**Digital Inclusion in Health and Care**	DC training & inclusion	Project aimed to reduce inequalities derived from an implementation of digital tools in the HWF, allowing all patients around the country to receive the same level of care	https://www.goodthingsfoundation.org/insights/digital-participation-lessons-learned/

5. Annexes

5.1 Selection workshop

Countries to consider

EU countries

1. Finland
2. Sweden
3. Netherlands
4. Denmark
5. Luxembourg
6. Ireland
7. Germany
8. Austria
9. France
10. Belgium

Non-EU countries

1. Singapore
2. Switzerland
3. UAE
4. Norway
5. South Korea
6. United States
7. Hong Kong
8. Canada
9. United Kingdom
10. Israel

Annex 2: Investigation protocol

Funded by the European Union

Investigation protocol for the development of Task 2.1. Identification and selection of reforms, policies and trainings to enhance DCs.

D2: Report on good practices on education and training pathways for digital competences and on governance models

Improving digital competences of the health workforce in Spain and Estonia

April 2023

REFORM/SC2022/108

AARC - Consortium

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ABBREVIATIONS

Acronym	Description
CCT	Catalonia Consulting Team
D	Deliverable
DC	Digital Competence
DESI	Digital Economy and Society Index
DIGCOMP	Digital Competence Framework for Citizens
DS	Digital Skills
DSGI	Digital Skills Global Index
EC	European Commission
ECT	Estonia Consulting Team
EU	European Union
IMD	International Institute for Management Development
OWG	Operational Working Group
TC	The Consortium
TCT	Transversal Consulting Team
TTT	Train-the-trainers

INDEX

1. Summary

1.1. Project typology

Under the frame of the project "Improving digital competences of the health workforce in Spain and Estonia", financed by the European Commission (EC), its Deliverable 2 (D2): "Report on good practices on education and training pathways for Digital Competences (DCs) and on governance models", entails the concrete task of **analysing actions and policies set up by governments to set up DC training itineraries and to analyse public authorities' work to develop these training options,** by carrying out a desk research to collect and analyse information on the matter. In order to successfully conduct this task, this investigation protocol is defined and developed to agree on the methodology of the analysis.

1.2. Objectives

- To gain knowledge on policies and actions to set up DCs training itineraries.
- To analyse how public authorities, organisations and providers work together to develop formal education and training, informal learning options and train-the-trainers (TTT) programmes.

1.3. Study area

The study areas of this task are **policies and actions regarding DC education and training itineraries**, including TTT programmes; reforms and policies fostering the development and use of digital tools; and European Union (EU) initiatives addressing the need of building specific courses for the health sector.

1.4. Involved parties

The parties involved will be the following:

- **Transversal Consulting Team (TCT), responsible for:**
  - The preliminary selection of 5 reference countries in the fields of DCs enhancement and governance (completed).
  - Developing the investigation protocol (on going).
  - Systematic review of scientific and academic papers and grey literature following the protocol in each of the selected countries (on going).
  - Identifying key informants in each of the countries and EU initiatives selected.
  - Designing and completing the thematic fiches to present the information of policies and actions identified.
  - Design of the interviews to be conducted with stakeholders of each selected country, in case of need.
  - Sending of the invitation for the interview and conduction of the interviews (subject to stakeholder's availability).
  - Collecting and analysing the information obtained during the interviews.
  - Selecting the most relevant reforms and policies.
  - Elaborating a report that will present the policies and reforms on policies and actions to set up DCs education and training itineraries.
- **Catalan and Estonian Operational Working Groups (OWGs), responsible for:**
  - Participating in the online workshop to validate the selection of countries to analyse (completed).
  - Agreeing with TC on an investigation protocol that defines the methodology of the analysis.

- Providing any available documents or information that could be useful for the desk research.
- Validation of the thematic fiches' structure and content.
- Participation in the selection of a shortlist amongst the 5 countries analysed.
- Validation of the D2 report.

- **Project Officer (EC):**
  - Help in contacting responsible agents for the interviews, from those countries where TC nor the beneficiaries have a contact person.

1.5. Deliverable diagram

1. Start of the development of D2 (completed)
2. Selection of reference countries (completed)
3. Definition of the investigation protocol for D2 (on going)
4. Elaboration of a pre-proposal for the thematic fiches' index
5. Analysis of available documents and information provided by the beneficiaries
6. Desk research - Exhaustive bibliographic review to collect information
7. Identification of key informants in each country investigated
8. Conduct of interviews with key informants (in case of need)
9. Design, validation, and completion of thematic fiches
10. Production of the final report (D2)
11. Selection of a shortlist of 3 country initiatives to present in the D3's workshop

2. Methodology for the desk research

2.1. Country selection

As determined in the selection workshop, the analysis of this deliverable will focus on the training pathways and governance models of the following countries:

- Finland
- The Netherlands
- Sweden
- United Kingdom
- Germany

This list of countries was determined in the selection workshop carried out with the participation of the Catalan and Estonian beneficiaries, and DG REFORM. The selection criteria used in the selection has been the following:

1) **Level of human capital digital development**, considering the following indexes:
   i) "Digital Economy and Society Index" (DESI) – European Commission
   ii) "Digital Skills Gap Index" (DSGI) – Wiley
   iii) International Institute for Management Development (IMD)'s "Digital Competitiveness Ranking" – IMD
2) **Similarities** in the **healthcare provision models with** the Catalan and/or Estonian context.
3) Degree of **relevance** of the initiatives considering the project's objectives.

Other criteria were individually considered by beneficiaries, such as **geographical proximity** (e.g. Finland for Estonia); **development of health information systems** (e.g. Netherlands); or the **advancement** of their medical devices and digital therapeutic areas (e.g. Germany).

2.2. Exhaustive bibliographic review

Establishment of search criteria

The research will be based on databases of official sources of the health administrations of selected countries and European Union health organisations (primary sources); and existing publications (scientific and academic papers, and grey literature) in other databases in the health field such as Pubmed, EBSCO, Scopus, Web of Science, ERIC, IEEE Xplore, Science Direct, Directory of Open Access Journals, Google Scholar, JSTOR.

The previous experience of the beneficiaries on digital skills policies, will also be taken into account as sources of information.

To ensure the relevance and transferability of the information to Catalonia and Estonia, we will try to select initiatives from 2008 on.

Development of the thematic fiche's index

TC is expected to develop the thematic fiche's index, which will help to conduct the bibliographic search and organize the information collected. Its use will also be relevant in identifying the information not found through this bibliographic research, that will need to be completed through the interviews. Further information on the thematic fiche's index can be found in the annex.

2.3. Review of information and critical reading

During this phase, TC will carry out a critical reading of the information selected, synthesizing the information found in relation to the questions formulated in the thematic fiches, summarising results, and drawing conclusion. Eventually, this information will be used to determine the 3 most relevant countries that will be invited to the D3's workshop.

2.4. Interviews

The objective of the 5 interviews with the key informants (if needed) of the different countries and EU initiatives is to delve into those aspects whose information has not been possible to access through the desk research, to know the specificities of each policy, actions and DCs training programme, as well as their vision and lessons learned.

TC (together with the EC and the beneficiaries) will carry out interviews with the identified key informants in case of need and missing information.

2.4.1. Interviews design

Based on the critical reading, TC will prepare a script for conducting the semi-structured interviews according to the information identified by the beneficiaries as missing.

First of all, key informants of the selected countries and EU initiatives will be identified, and they will be asked to attend for an in-depth interview. For those countries where neither TC nor the beneficiaries have a contact person, support to EC will be asked for contacting the identified expert.

In case that some of the representatives of the initiatives selected are not willing to share the information requested, and alternative informants and/or other experiences can't be sourced, the issue will be scaled up to DGREFORM and beneficiaries, and alternatives will be studied.

2.4.2. Interviews conduction

Interviews will be conducted (if the interviewees agree to it) with an estimated duration of approximately 1 hour and they will be carried out by videoconference or phone call.

Before starting the interview, interviewees will be informed about how the data collected in the interview will be used, how confidentiality and anonymity of the interviewee will be maintained, and how their rights will be protected.

2.4.3. Interviews analysis

TC will exploit the results of the interviews, according to the remaining items to be completed in the thematic fiches, and further information requested by the beneficiaries. The collected information will be summarized.

2.5. Final report on good practices

The analysis activity will conclude with the elaboration of a **report on good practices on education and training pathways for DCs and on governance models**. The report will contain:

1) The complete methodology, data consulted, and work-plan of the activities conducted during the research of the good practices, 2) A description of the policies and reforms initiatives studied, organised in technical fiches, 3) Analysis of elements identified as advantages and disadvantages of the model and elements applicable to Estonia and Catalonia, 4) Transferability analysis, 5) The mapping of the key stakeholders that participated in the research activities, 6) A summary of the conclusions gathered during the research, 7) The list of relevant data, documents and other information, reviewed during the research, and 8) The shortlist of initiatives and good practices selected that will be presented in the workshop of D3.

3. Practical considerations

Some of the sections of the activities mentioned in the present documents can be adapted, in accordance with the opinion of the majority of beneficiaries to facilitate the viability and completion of the planned calendar.

4. Estimated calendar

D2: Report on good practices on education and training pathways for digital competences and on governance models	Responsible	Deadline
1. Preliminary analysis and identification of potential countries to analyse (completed)	Consulting Team	27/03
2. Selection of countries to study further (completed)	Consulting Team OWGs	27/03
3. Investigation Protocol elaboration	Consulting Team	14/04
4. Analysis of available documents provided by the beneficiaries	Consulting Team	21/04
5. Desk Research - Exhaustive bibliographic review	Consulting Team	10/05
6. Identification of key informants	Consulting Team	07/05
7. Interviews with key informants	Consulting Team Key informants	05/06
8. Design, validation, and completion of thematic fiches	Consulting Team	30/06
9. Final Report (D2)	Consulting Team	30/06

5. Annex

The main elements to be considered during the desk research is listed below (tentatively):

- Country or region of the policy or strategy
- General contextualization
- Description of the initiative, policy and actions deployed
- Governance model description
- Education and training programs and methods deployed
  - M&E processes used to assess participant skills
    - Certification process
- Technology used to support the reform
- Resources used
- Impact achieved or expected

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