Indicator-Based Framework for Follow-Up of Vision for eHealth 2025

Feedback in accordance with the Swedish eHealth Agency's appropriation directions for 2020

(S2020/02472/FS)

Preface

In an amendment to the appropriation directions for 2020, the Swedish eHealth Agency has been tasked with developing an indicator-based framework for the follow-up of Vision for eHealth 2025. This framework shall include a selection of internationally comparable indicators that facilitate the follow-up of the vision. These shall be indicators where the quality of and access to data already allows comparisons to be made. The basis of the agency's work shall be the framework for follow-up that was produced in conjunction with the action plan for 2017–2019. Where possible, data shall be obtained from existing sources or ongoing projects involving the follow-up of the development of digitalisation. A report on the assignment shall be submitted to the Government (Ministry of Health and Social Affairs) no later than 31 October 2020.

In accordance with this assignment, the Swedish eHealth Agency has based its work on and refined the framework for follow-up that was produced in conjunction with the action plan for 2017–2019. This framework contains indicators that are comparable at the national and international level, and which are based on data from existing sources or ongoing projects involving the follow-up of the development of digitalisation. The indicator-based framework that was presented in the report is deemed important as a basis for future structured follow-up of Vision for eHealth 2025.

Decisions concerning this report have been made by Director-General Janna Valik. The investigator Gustaf Hedström has served as rapporteur. The investigators Gustaf Hedström, Morine Kalulanga, Åke Nilsson and Charlotta Holm-Sjögren have participated in the final stages of the report's preparation, as have Michel Silvestri, head of unit, and Annemieke Ålenius, head of department.

Janna Valik

Director-General

Stockholm, 27 October 2020

Contents

Summary

This report presents the work conducted to develop an indicator-based framework for the follow-up of Vision for eHealth 2025 in accordance with a directive in the agency's appropriation directions. This work has been based on the framework for follow-up that was produced in 2017/2018 within the scope of Vision for eHealth 2025. The objectives that the parties present in the strategy document "*A strategy for implementing Vision for eHealth 2025, The next step*" have been analysed and given tangible form in a number of target areas, which are linked to the indicators that have been developed.

One prerequisite for this work is that the proposed indicators are based on existing data from authorities and other national or international organisations. In summary, 79 indicators have been identified that can now be used to follow up Vision for eHealth 2025, with between 0 and 30 indicators per target area. It has been established that none of the target areas that can be derived from the strategy documents are possible to monitor more than partially using the indicators available.

Those indicators that are currently available largely focus on describing "services offered" and how these are used. However, there are only a few indicators that focus on the development of the fundamental conditions required, i.e. the conditions encompassed by follow-up areas B (structures that facilitate eHealth) and C (societal prerequisites for eHealth). Given the interdependency there is between the follow-up areas A, B and C, the lack of indicators within areas B and C will make analysis in subsequent follow-ups more difficult.

International comparisons have several difficulties, including the fact that indicators are defined differently in different countries and the lack of harmonised indicators and longitudinal follow-ups. A total of 15 indicators have been identified that may be possible to use for international comparisons involving one or more countries, which provides only a fragmented view when making comparisons.

In summary, it can be concluded that currently available indicators are only capable of partially describing development within the target areas linked to Vision for eHealth 2025. Comparable international indicators are few and scattered between organisations and countries. Future efforts to produce and actively manage indicators is judged to be a prerequisite for the ability to follow-up Vision for eHealth 2025 in future.

1. Introduction

This report presents work conducted to develop an indicator-based framework for the follow-up of Vision for eHealth 2025. This work has been based on the framework for follow-up that was produced in 2017/2018 within the scope of Vision for eHealth 2025. One prerequisite for the report is that the proposed indicators have a link to the objectives in Vision for eHealth 2025 and are based, as far as possible, on existing data from authorities and other national and international organisations. The report also highlights a number of indicator areas where the regular follow-up is deficient or completely absent.

1.1 Background

In 2016, the Swedish Government and the Swedish Association of Local Authorities and Regions (SALAR) presented a common vision for work with eHealth in Sweden until the year 2025, "Vision for eHealth 2025"[1]. To make it possible to monitor development towards the aim of the vision, a framework for follow-up was produced in 2017/2018 and initial indicators were proposed. Follow-ups have been implemented and published in 2018, 2019 and 2020 on the basis of this framework[2].

1.1.1 Vision for eHealth 2025

The overall aim of the vision is formulated as "*In 2025, Sweden will be best in the world at using the opportunities offered by digitalisation and eHealth to make it easier for people to achieve good and equitable health and welfare, and to develop and strengthen their own resources for increased independence and participation in the life of society*".

The vision stipulates that the work shall be conducted on the basis of a number of fundamental perspectives and principles. Some of these perspectives and principles that are mentioned in the vision are equality, gender equality, digital participation and usability, safety and confidentiality, as well as efficiency and long-term sustainability for social services and the healthcare system.

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[1] *Vision for eHealth 2025* (Ministry of Health and Social Affairs, SALAR, 2016), https://www.regeringen.se/contentassets/5a2c8365d1b04d33a9bc7512d5d1c5aa/overenskommelse-om-vision-ehalsa-2025.pdf.

[2] Swedish Government and SALAR, *Uppföljningsmodell För E-Hälsa Och En Första Testmätning - Ett Diskussionsunderlag [Follow-up model for eHealth and an initial test measurement – a basis for discussion]*, 2018; *Uppföljningsrapport 2018 [Follow-up report 2018], Vision for eHealth 2025*, n.d.; *Vision for eHealth 2025 - Follow-up 2019*, 2020.

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1.1.2 Plans linked to the vision

Agreements concerning the vision indicate that the intention is for one or more action plans to be produced.

The first action plan that the parties drew up covered the first three years after the presentation of the vision, "*Handlingsplan för samverkan vid genomförande av Vision e-hälsa 2025, 2017–2019*" [Action Plan for Cooperation on the Implementation of Vision for eHealth 2025, 2017–2019][3]. In addition, implementation plans were produced for three intervention areas: regulations, standards and more consistent use of terms.

For the subsequent three-year period, the parties have presented a basic premise for future joint interventions through the document "*A strategy for implementing Vision for eHealth 2025, The next step.*"[4] (subsequently referred to as the strategy document).

According to this aim, the strategy "*is not only to guide joint efforts but also the action the parties take individually. Regional or local actors, or other operators in the field of eHealth who need guidance in their own digitisation work will also be able to use the strategy as a starting point*".

The strategy establishes four objectives that rest on three fundamental conditions.
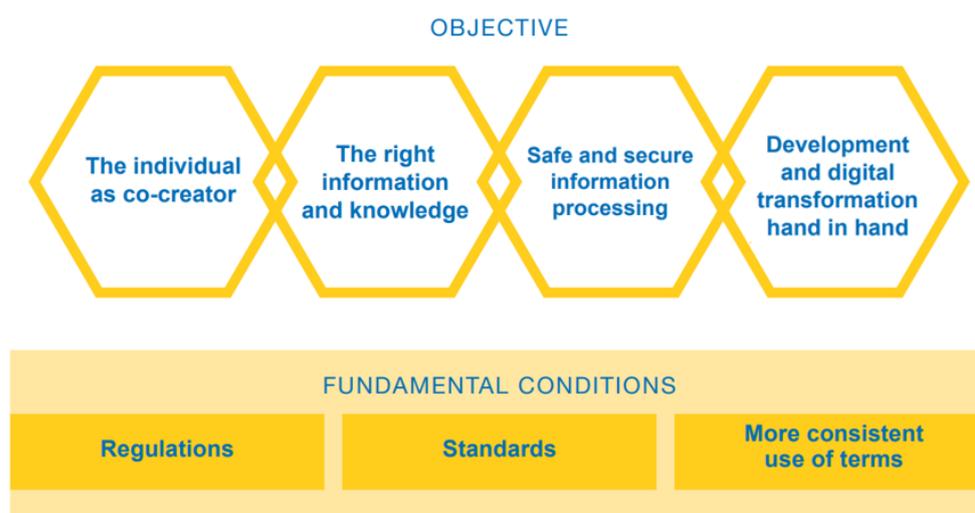
Figure 1. Objectives in A strategy for implementing Vision for eHealth 2025, The next step.

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[3] Ministry of Health and Social Affairs and SALAR, *Handlingsplan För Samverkan Vid Genomförande Av Vision E-Hälsa 2025 2017–2019 [Action Plan for Cooperation on the Implementation of Vision for eHealth 2025, 2017–2019]*, 2017.

[4] Ministry of Health and Social Affairs and SALAR, *A strategy for implementing Vision for eHealth 2025, The next step*, n.d.

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The objectives are supplemented with descriptions of priority areas for each objective.

For Objective 1 (The individual as co-creator), the strategy describes the following priority areas: *Digital services to increase security and independence, Digital services that make provision accessible and present, Joined-up infrastructure and basic services*.

For Objective 2 (The right information and knowledge), the strategy describes the following priority areas: *Support for more effective information processing, Digital knowledge-based support, Data-driven development*.

For Objective 3 (Safe and secure information processing), the strategy describes the following priority areas: *Exchanging information securely, Systematic work on information security*.

For Objective 4 (Development and digital transformation hand in hand), the strategy describes the following priority areas: *Digital skills at all levels, Support for introducing new technologies, Implementation support*.

As an appendix to the strategy document, there is also an implementation plan, "*Genomförandeplan 2020–2022*" [Implementation Plan 2020–2022][5], which describes the interventions that will be implemented within the priority areas, who will be implementing the interventions and how these will be monitored. This plan is being updated continually.

1.1.3 Existing framework and previous follow-ups

A working group for follow-up was established in 2017 in order to measure and follow up the degree to which eHealth development is proceeding towards the vision, and to enable decisions to be made on interventions to consolidate this development. This group has consisted of representatives from several national actors in the work to achieve the vision and has been working under instruction from the working group in the governance and cooperation organisation established for the work to achieve the vision. A proposed follow-up model was published in April 2018, and in conjunction with this, an initial test measurement was presented (using data from 2017) based on indicators described in the model. The model is described as a

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[5] *Genomförandeplan 2020 - 2022 [Implementation Plan 2020–2022] Appendix to the strategy document Vision for eHealth 2025*, n.d.

framework for annual follow-ups[6]. Two further follow-ups, for the years 2018[7] and 2019[8], have been published.

1.2 The assignment

The Swedish eHealth Agency was given the following assignment in its appropriation directions for 2020:

> *8. Follow-up in the field of eHealth*
>
> The Swedish eHealth Agency shall produce a report on the overall state of affairs regarding digitalisation within healthcare and social services by, for example, reporting statistical trends or results from specific studies concerning current issues within the field of eHealth. The agency shall also refine the framework for the follow-up of Vision for eHealth 2025. This framework shall include a selection of internationally comparable indicators that facilitate the follow-up of the vision. These shall be indicators where the quality of and access to data already allows comparisons to be made. The basis of the agency's work shall be the framework for follow-up that was produced in conjunction with the action plan for 2017–2019. Where possible, data shall be obtained from existing sources or ongoing projects involving the follow-up of the development of digitalisation. A report on the assignment shall be submitted to the Government (Ministry of Health and Social Affairs) no later than 31 October 2020[9].

1.2.1 Interpretation of the assignment

The Swedish eHealth Agency has interpreted the assignment to be made up of two parts and has separated the work as follows:

- Production of a report on the overall state of affairs, trends and current issues within the field of eHealth.

  > The Swedish eHealth Agency shall produce a report on the overall state of affairs regarding digitalisation within healthcare and social services by, for example, reporting statistical trends or results from specific studies concerning current issues within the field of eHealth.

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[6] Swedish Government and SALAR, *Uppföljningsmodell För E-Hälsa Och En Första Testmätning - Ett Diskussionsunderlag [Follow-up model for eHealth and an initial test measurement – a basis for discussion].*
[7] *Uppföljningsrapport 2018, Vision e-Hälsa 2025.*
[8] *Vision E-Hälsa 2025, Uppföljning 2019.*
[9] 'Ändring Av Regleringsbrev För Budgetåret 2020 Avseende E-Hälsomyndigheten S2020_02472_FS (Delvis)' [Amendments to the appropriation directions for fiscal year 2020 in respect of the Swedish eHealth Agency S2020_02472_FS (Partially)], 2020.

- Development of an indicator-based framework for the follow-up of Vision for eHealth 2025.

> The agency shall also refine the framework for the follow-up of Vision for eHealth 2025. This framework shall include a selection of internationally comparable indicators that facilitate the follow-up of the vision. These shall be indicators where the quality of and access to data already allows comparisons to be made. The basis of the agency's work shall be the framework for follow-up that was produced in conjunction with the action plan for 2017–2019. Where possible, data shall be obtained from existing sources or ongoing projects involving the follow-up of the development of digitalisation.

This report presents work conducted to develop an indicator-based framework for the follow-up of Vision for eHealth 2025, in accordance with the second point above.

1.2.2 Delimitations in respect of the assignment

It is judged to be difficult to predict at present which possible eHealth solutions may be available in 2025, which has a direct impact on the potential to develop indicators for the follow-up of eHealth development. International comparisons are also judged to be difficult to implement as similar indicators in different countries are affected by differing national circumstances (state of the government, scope of the welfare system, organisation and funding of the healthcare system etc.) and because methods of data collection differ.

The combination of interpretation of the assignment's potential scope and the stated time scale have required certain delimitations to be made to allow the assignment to be implemented within the given framework. These delimitations are:

- The report only presents indicators that can be obtained from existing sources at authorities and other organisations, but also points out the indicator areas that may be of interest for development as part of future follow-ups.

- Indicators have been included if they are tracked over time. Accordingly, indicators that are only found in individual report are not included.

Countries that have been investigated for the potential for international comparisons are a selection of countries with a similar form of governance to Sweden and/or that are deemed to be at the forefront of eHealth development.

The report is restricted to presenting the indicators produced and not a follow-up on the basis of these indicators. This is because this has not been interpreted to be within the scope of the assignment, and also because it has been judged that too little time has passed since the previous follow-up report was published in spring 2020 because many of the data sets that form the basis of the indicators produced are updated annually.

1.3 Method

1.3.1 Description of the term indicator

Indicators are used by principals and providers in order to monitor development within a certain area. They have to state the direction and pace of development and can thus be used as a basis for making improvements to activities.

Indicators differ from other background measures or key performance indicators thanks to the specific criteria and requirements that are placed on an indicator. The criteria and requirements that the National Board of Health and Welfare describes for the production of indicators has served as a guide in the work to refine the indicator-based framework for the follow-up of Vision for eHealth 2025[10]. These criteria are as follows:

- The indicator shall have an explicit direction where high or low values are an expression of good or bad quality and/or effectiveness

- The indicator shall be relevant and highlight an area that is important for the organisation to improve and shall reflect some dimension of quality and/or effectiveness in the outcome

- The indicator shall be valid, i.e. it shall measure that which it intends to measure and shall be measured repeatedly in a similar way

- The indicator shall be established and based on knowledge, i.e. based on evidence or best practice

- It shall be possible to influence the indicator so a principal and provider are able to affect the outcome

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[10] National Board of Health and Welfare, *Handbok För Utveckling Av Indikatorer För God Vård Och Omsorg [Handbook for the Development of Indicators: For Good Health and Social Care]*, 2017.

- The indicator shall be measurable and shall be possible to measure using nationally available and continually collected data.

1.3.2 Method of implementation

The objectives described in the strategy document have been given tangible form through the areas that have been prioritised for the period 2020–2022. In this assignment, the objectives have been broken down into a number of underlying target areas to which the various indicators have been linked.

The framework developed in 2017/2018 for annual follow-up of eHealth development has been used as a starting point for the work to identify and group indicators that may be of interest to track over time. Relatively small changes have been made to the framework and some clarifications are presented.

An inventory of existing national and international indicators has been compiled, with the requirement that they be possible to link to the objectives in Vision for eHealth 2025 and to the underlying target areas described in this assignment. The indicators have then been tested on the basis of the aforementioned criteria for indicators.

During the work on this report, a dialogue has taken place with actors in the field of eHealth about related ongoing projects, existing sources used as a basis for indicators and the state of knowledge and research concerning indicators. The actors that have been contacted are the National Board of Health and Welfare, SALAR, Inera, the Swedish Agency for Digital Government (DIGG), Research Institutes of Sweden (RISE), the Swedish Agency for Health and Care Services Analysis, Statistics Sweden and Swedish representatives at Karolinska Institutet and Linköping University that are part of the Nordic eHealth group. Data have been gathered from existing sources and ongoing projects.

The indicators have been analysed and assessed with respect to how well they collectively cover and describe each target area. The result is reported as a five-degree scale of the indicator's degree of coverage within each target area.

Data for international comparison has been gathered by reviewing published reports and documents, but also through personal contact with representatives of the relevant departments and authorities, in the following organisations and

countries: UN[11], WHO[12], OECD[13], HIMSS[14], GDHP[15], EU[16], Eurostat[17], Global Digital Health Index, Bertelmann[18], Nordic eHealth group[19], Nordic Innovation[20], Australia, Denmark[21], England, Finland[22], France, Hong Kong, Canada[23], Lithuania, the Netherlands, Norway[24], Portugal, Germany, USA[25].

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[11] United Nations department for economic and social affairs. DESA, *E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development.* (S.l.: United Nations, 2020).

[12] WHO Global Observatory for eHealth, World Health Organization, and WHO Global Observatory for eHealth, *Atlas of eHealth Country Profiles: The Use of eHealth in Support of Universal Health Coverage : Based on the Findings of the Third Global Survey on eHealth, 2015*, 2016; Weltgesundheitsorganisation, ed., *From Innovation to Implementation: eHealth in the WHO European Region* (Copenhagen: WHO Regional Office for Europe, 2016); WORLD TRADE ORGANIZATION (WTO), WORLD HEALTH ORGANIZATION (WHO), WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO), *Promoting Access to Medical Technologies and Innovation: Intersections between Public Health, Intellectual Property and Trade.* (S.l.: WORLD TRADE ORGANIZATION, 2020).

[13] OECD and European Union, *Health at a Glance: Europe 2018: State of Health in the EU Cycle*, Health at a Glance: Europe (OECD, 2018), https://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-europe-2018_health_glance_eur-2018-en; J. Oderkirk, *Readiness of Electronic Health Record Systems to Contribute to National Health Information and Research*, OECD Health Working Papers, vol. 99, OECD Health Working Papers, 2017, https://www.oecd-ilibrary.org/social-issues-migration-health/readiness-of-electronic-health-record-systems-to-contribute-to-national-health-information-and-research_9e296bf3-en.

[14] *HIMSS Analytics, eHealth Trend Barometer "Annual European eHealth Survey 2019"*, 2019.

[15] S. Hagens, E. Yu, and S. Maloney, *Citizen Access to Health Data: An International Review of Country Approaches to Citizen Access to Health Data: GDHP White Paper on Citizen Access* (Sidney, Australia: Prepared for the Global Digital Health Partnership, 2020); D. Jeffrey and R. Shaw, *Cyber Security: Foundational Capabilities: : GDHP White Paper on Cyber Security* (Sidney, Australia: Prepared for the Global Digital Health Partnership, 2020); B. Loo Gee et al., *Benefits Realisation: Sharing Insights: GDHP White Paper on Evidence and Evaluation* (Sidney, Australia: Prepared for the Global Digital Health Partnership, 2020); D. Rucker et al., *Advancing Interoperability Together Globally: GDHP White Paper on Interoperability* (Sidney, Australia: Prepared for the Global Digital Health Partnership, 2020).

[16] *Digital Economy and Society Index (DESI) 2020 Thematic Chapters* (DESI, 2020); M. Thonnet et al., *D8.1 –Draft National eHealth Strategies*, Draft, WP 8–Integration in National Policies and Sustainability (eHAction: joint Action supporting the eHealth Network, 2019), p. 1; European Commission and Directorate-General for Health and Food Safety, *State of Health in the EU: Companion Report 2019.*, 2019, https://op.europa.eu/publication/manifestation_identifier/PUB_EW0119848ENN; OECD and European Union, *Health at a Glance*.

[17] 'Eurostat', 2020, https://ec.europa.eu/eurostat/web/health/overview.

[18] R. Thiel et al., *#SmartHealthSystems International Comparison of Digital Strategies* (Bertelsmann Stiftung, 2018).

[19] H. Hyppönen, M. Kangas, et al., *Nordic eHealth Benchmarking*, TemaNord (Nordic Council of Ministers, 2015), http://urn.kb.se/resolve?urn=urn:nbn:se:norden:org:diva-3954; H. Hyppönen, S. Koch, et al., *Nordic eHealth Benchmarking*, 2017:528., TemaNord (Copenhagen: Nordic Council of Ministers, 2017), http://urn.kb.se/resolve?urn=urn:nbn:se:norden:org:diva-4840; C. Nøhr et al., *Nordic eHealth Benchmarking*, TemaNord (Nordic Council of Ministers, 2020), https://pub.norden.org/temanord2020-505.

[20] Nordic Innovation, *A Nordic Story About Smart Digital Health*, Nordic Welfare Solutions (Oslo: Nordic Council of Ministers, Nordic Innovation, 2018), http://urn.kb.se/resolve?urn=urn:nbn:se:norden:org:diva-5533.

[21] 'Status Paa Indikatorer for Udbredelse Og Anvendelse Af Sundheds_it Q3_Q4 2019' [Status of indicators for the spread and use of health IT Q3_Q4 2019] (Denmark, 2020).

[22] T. Vehko, S. Ruotsalainen, and H. Hyppönen, *E-Health and e-Welfare of Finland. Checkpoint 2018.*, vol. 2018, Report 7 (Helsinki, Finland: National Institute for Health and Welfare (THL), 2019).

[23] *Connecting Canadians Through Health Care Innovation, Annual Report 2019-2020* (Canada Health Infoway, 2020).

[24] Norwegian Directorate of eHealth, *Utviklingstrekk 2020* [Development Trends 2020], 2020.

[25] 'U.S. Department of Health and Human Services The Office of the National Coordinator for Health Information Technology', 2020, https://dashboard.healthit.gov/index.php.

2. Basic premises for the identification of indicators

2.1 Making the objectives tangible

The objectives and associated descriptions of the priority areas and interventions in the strategy documents have served as a guide to the work of identifying indicators that are able to provide a view of the development of eHealth. In order to make a clear link between objective and indicators, the objectives have been broken down into a number of underlying target areas.

2.1.1 Objective 1 – The individual as co-creator

> One prerequisite for person-centred activities is to use the needs and circumstances of patients and users as a starting point and make it possible for all of them to be active co-creators.

Target areas 1–3:

1. **Welfare technology and digital support at home**
   Social services and the healthcare system offer patients, users and relatives new technology/welfare technology and digital support outside of traditional care environments. This shall contribute to increase security, independence and participation (*for example, support with measuring vital signs, support in the home in order to maintain health and live independently, adapted information about the support available*).

2. **Digital services that facilitate the individual's contacts and information gathering**
   Social services and the healthcare system are available and present by offering digital services that facilitate the individual's contact with health and social care, making available relevant information and providing the opportunity to gain insight into and overview of processes and contacts (*for example, services for applying for support or assistance, booking appointments, getting advice about self-care, reading documentation, gaining access to medical information and information about care providers and the range of services available*).

3. **Attitudes to, trust in and experiences of eHealth**
   Inhabitants, patients, users and relatives have a positive attitude towards and positive experiences of eHealth and are confident that data, for example about health and life situation, is being processed securely and protected from unauthorised access.

2.1.2 Objective 2 – The right information and knowledge

One prerequisite for the provision of equitable and gender-equal healthcare and social services of a good quality is ensuring that members of staff have the right information and knowledge when interacting with patients and users.

Target areas 4–6:

4. **Information processing and accessible information**
   Appropriate and efficient information processing in organisations' processes is promoted in order to give healthcare and social services staff favourable conditions in which to work (*for example, appropriate healthcare information systems, the prerequisites for documenting work in a structured way, digital access to national catalogues and registers of organisation and the services they offer, digital access to relevant information in meetings with patients and users*).

5. **Decision support and the best available knowledge in every meeting**
   Knowledge-based governance of activities is supported so that members of staff have situation-specific access to the best available knowledge at all times so that every patient and user receives care and support based on the best available knowledge (*for example, integrated knowledge-based support/decision support and AI in the systems*).

6. **Data processing that creates new knowledge**
   Data is translated to a greater extent to information and knowledge that can be used to develop new working methods and smart services. The capacity to put the results of data processing into practice is being improved in organisations so that new knowledge is created with the potential to change processes, organisations and systems for the better.

2.1.3 Objective 3 – Safe and secure information processing

The capacity to handle and protect information in an appropriate manner needs to be developed continually to keep pace with external changes.

Target areas 7–8:

7. **Resources and expertise for information security management**
   The resources and expertise for information security management are in place in regions and municipalities and this work has been enhanced.

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8. **Exchanging information securely**
   Large quantities of sensitive personal data are processed within social services and the healthcare system. There is a 'good capacity' in these organisations' systems that enables information to be exchanged securely within and between social services and the healthcare system, but also with other organisations in the public sector. There are common principles for controlling identification and authorisation (*for example, joint identification and authorisation federation*).

2.1.4 Objective 4 – Development and digital transformation hand in hand

Digitalisation is changing the conditions for organisations in all sectors. Sustained effort is required in order to support the capacity for organisational development and to equip individuals and organisations with the capacity and skills required.

Target areas 9–13:

9. **Enhanced leadership, governance and organisation**
   The prerequisites for leadership, governance and organisation have been enhanced at all levels so that organisations are able to take advantage of the opportunities presented by digitalisation and deal with its challenges.

10. **Enhanced digital competence at all levels**
    Continuous professional development relating to the renewal of social services and the healthcare system through digitalisation is prioritised. Organisations are able to transform new knowledge, and the capability and ability of professionals to take on new ways of working has been developed.

11. **Coordinated national support for the introduction of new technologies** Coordinated national shared support is offered in order to create the prerequisites for the introduction and integration of new working methods and new technologies into organisations (*for example, support in questions concerning law, ethics, safety, support with automation and the testing of artificial intelligence, block-chain technology and precision medicine*).

12. **Regulations and technical and semantic standards**
    The right conditions have been created with regard to law/regulations, information security and standards (semantic and technical) such that organisations know what they have to take into account. Conditions

are created regionally and locally through the implementation of regulations and standards.

13. **New forms of collaboration and coordination**
    New forms of collaboration and coordination have been established between central government agencies, regions, municipalities, private providers and the enterprise sector for the purpose of increasing the pace of development and the implementation of new services.

2.2 Aim of the work to create fundamental national conditions

The action plan for 2017–2019 laid the foundations for a unified national effort within regulations, more consistent use of terms and standardisation. These areas were also highlighted in the strategy document for 2020–2022 and encompass a sustained effort at both the national and regional level in order to create the conditions under which the objectives can be achieved. These conditions are mainly encompassed by target area 12 above. The aims for the areas are:

Regulations
Create appropriate regulations that both safeguard the individual's integrity and safety and promote digital development. Facilitate the application and introduction of these regulations in the organisations concerned.

More consistent use of terms
It shall be possible for terms, concepts and classifications that are necessary for operations to be handled and interpreted in a similar way during exchanges between systems or organisations.

Increase the pace of the introduction of common terms, concepts and classifications in organisations' IT systems.

Standards
It shall be possible for organisations' information and communications systems to send and receive relevant information sets in an appropriate way and without the need for additional measures.

2.3 Framework for the follow-up of eHealth

The follow-up areas in the framework for the follow-up of eHealth produced in 2017/2018 are described below.

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2.3.1 Area A – Need for and use of eHealth

This follow-up area focuses on indicators that measure the need for and use of functions, decision support and services on the basis of three perspectives:

The individual – This encompasses, for example, self-service services, access to information, services that have a preventive and health promotion function and which reinforce social support structures, as well as services that help the individual in various ways in the contact they have with health and social care. Examples of these types of services are various forms of appointment booking, emergency medical alarms or apps for monitoring blood sugar.

The meeting – This encompasses, for example, services that support the meeting between patients, users, relatives and health and social care personnel. It involves services that prepare for the meeting, support the meeting itself or contribute to a follow-up dialogue. Examples of such services are digital healthcare meetings, being able to make a health declaration online before the meeting, or shared decision support such as remote monitoring.

The member of staff – This encompasses services that support staff members' day-to-day work, for example services that automate and streamline the work that is not directly patient- or user-centred such as the automatic transfer of data to quality registers, e-referrals, structured documentation or remote expert consultations.

2.3.2 Area B – Structures that facilitate eHealth

This follow-up area focuses on how central government, regions, municipalities and other actors are working to create the conditions for individuals and members of staff to use eHealth in their day-to-day lives, i.e. structures that meet needs and stimulate use. Four perspectives are covered:

Regulations – Interpretation, application and adaptation of regulations in order to encourage safe and appropriate use of information and data on the basis of the individual's and organisations' perspectives

Technology and infrastructure – The degree to which the principal is ensuring that staff needs are being met in terms of the provision of technical equipment, appropriate information systems and training to use technology and digital support.

Standards and more consistent use of terms – The degree to which standards are being applied in order to facilitate information transfer between actors and the degree of connection to national platforms, and in order to

ensure it is possible to transfer information without content and context being lost.

Capacity to implement and innovate – The principal's and providers' strategic, financial and operations prerequisites for introducing eHealth solutions and their capacity to develop their operations in order to utilise eHealth solutions.

2.3.3   Area C – Societal prerequisites for eHealth

This follow-up area encompasses background measures that are important to monitor in relation to eHealth development, as well as the contributions made to eHealth development by the enterprise sector and research.

E-demographics – Describes general societal prerequisites for eHealth in terms of the population's access to the internet, broadband, e-identification etc.

Health – Highlights the general health trend in terms of prevention and mortality linked to health and social care.

Enterprise sector – Highlights the contribution of the enterprise sector to speeding up eHealth development through research and innovation and the extent to which the enterprise sector's potential to be competitive is enhanced by the favourable development of Swedish eHealth.

Academia and research – Highlights the contribution of the research to speeding up eHealth development and the extent to which the research sector's potential to be competitive is enhanced by the favourable development of Swedish eHealth.

2.4   Related assignments

Several actors are working to enable themselves to track the development of eHealth and digitalisation in Sweden. For example, SALAR is undertaking work to discover indicators for regional conditions. Projects are also under way at the national and international level to produce indices within eHealth and digitalisation. Future development of indicators for follow-up within the scope of Vision for eHealth 2025 and annual follow-ups will have the potential to contribute to these indices.

2.4.1   Strategy for fundamental conditions

In order to take complete advantage of the opportunities of digitalisation, certain conditions must be in place, for example leadership, law, data-driven

innovation, shared infrastructure and digital functions. SALAR describes this in its report *Utveckling i en digital tid – en strategi för grundläggande förutsättningar* [Development in a digital age – a strategy for fundamental conditions][26]. The aim of this strategy is to create a common direction for municipalities, regions and SALAR with regard to fundamental conditions in various areas for development in a digital age.

The strategy is based on a vision consisting of four target areas that make up the core of the fundamental conditions: *Leadership, governance and organisation, Architecture and safety, Information supply and digital infrastructure* and *Coherent digital services*. It is possible to some extent to map the 16 broken-up targets in each target area to the objectives described in the strategy document for Vision for eHealth 2025.

In order to monitor fulfilment of these targets, 25 measurable KPIs (key performance indicators) have been produced. These are to constitute indicators that show how implementation of the conditions develops over time.

SALAR's strategy focuses on regional conditions, which in turn have dependencies with conditions created at the national level. Follow-up area B in the framework for follow-up, Structures that facilitate eHealth, includes both regional and national conditions.

2.4.2 The Digital Economy and Society Index

Since 2014, the European Commission has been monitoring member states' digital progress with the help of the reports on the Digital Economy and Society Index (DESI)[27], an index that covers the entire sector. The DESI reports contain both country profiles and thematic chapters. The country reports are based on quantitative data based on the DESI indicators in the index's five dimensions and data concerning country-specific policies and best practice. When it comes to the thematic chapter, the DESI report for 2020 contains an analysis at the European level of, among other things, broadband connectivity, digital skills, internet use, digitalisation of companies, digital public services, emerging technologies and cybersecurity. In order to improve the method used for the index and take into account the latest technological developments, a number of changes were made in the 2020 edition of DESI, which now also encompasses coverage with regard to

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[26] SALAR, *Utveckling i En Digital Tid - En Strategi För Grundläggande Förutsättningar [Development in a digital age – a strategy for fundamental conditions]*, 2019.
[27] *Digital Economy and Society Index (DESI) 2020 Thematic Chapters*.

fixed networks with very high capacity. The numerical data refer to 2019 and the EU average is calculated on the basis of 28 member states.
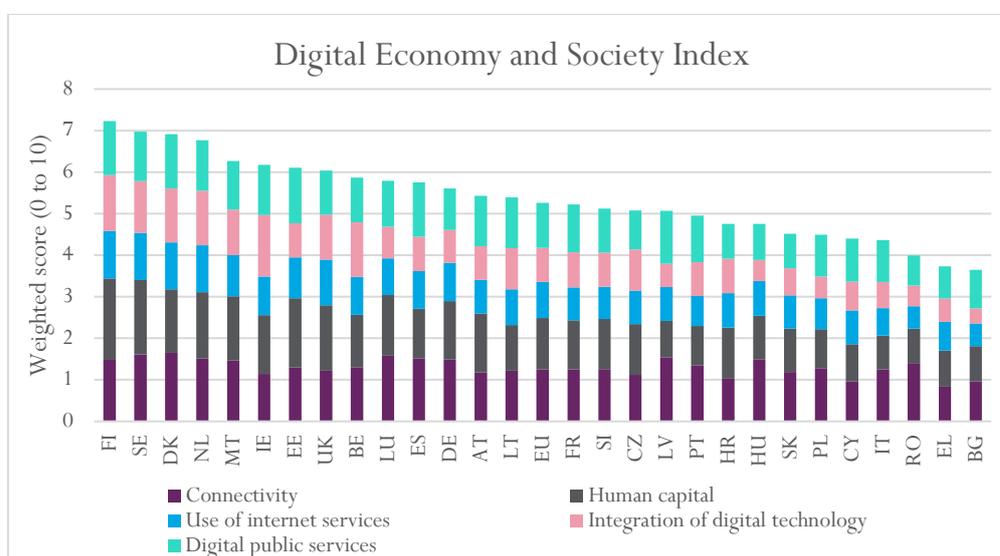
Figure 2. Retrieved from the Digital Economy and Society Index (DESI) 2020[28]

2.4.3 Initiative for a Swedish digitalisation index

In 2017, the Swedish Government adopted a digitalisation strategy with the overarching goal to make Sweden best in the world at using the opportunities offered by digitalisation. That same year, Vision for eHealth 2025 was published; an agreement between the central government and Sweden's municipalities and regions.

An initiative to create a *digitalisation index* has also emerged in Sweden through dialogue between the research institute RISE, SALAR, DIGG and the Swedish National Digitalisation Council, in consultation with Vinnova[29]. A preliminary study was conducted between May and September 2020, the goal being to define a methodology that measures and analyses how far different parts of Sweden (at the municipal and regional level) have come in their digitalisation journey, on the basis of the Government's digitalisation strategy. The index shall cover the entire sector.

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[28] *Digital Economy and Society Index (DESI) 2020 Thematic Chapters*; 'The Digital Economy and Society Index (DESI)', 2020, https://ec.europa.eu/digital-single-market/en/desi.
[29] *'Projektansökan till Vinnova: Diarienummer: 2019-02594* [Project application to Vinnova: Registration no.: 2019-02594] RISE Research Institutes of Sweden AB (556464-6874), Marco Forzati Digitaliseringsindex För Kommuner Och Regioner [Digitalisation index for municipalities and regions]', n.d.

The preliminary study describes health, healthcare and social care as one of the six priority areas where digitalisation has a clear and radical impact on the experiences of both staff and citizens. In addition, it describes follow-ups that have already been conducted on an annual basis within this area within the scope of Vision for eHealth 2025. The indicators that are highlighted as proposals for an index are taken primarily from two sources of data: 1. The National Board of Health and Welfare's annual survey to the municipalities concerning eHealth and welfare technology and 2. operational data from Inera. In the work to produce the index, a conscious choice of data can be made from both of these projects.

Several different structures and models for the index have also been tested. That which has been chosen is fundamentally based on the framework for follow-up produced within the scope of Vision for eHealth 2025 in 2017/2018 and which, in accordance with the preliminary study, has a similar logic. The model for the index has six dimensions. 1. *Interoperability, 2. data security, 3. digital support for staff, 4. digital support for users, 5. digital healthcare meetings, and 6. digital competence.* These are to be measured at both the regional and municipal level.

3. Results

This chapter begins with a presentation of the refined framework for follow-up of eHealth, with clarification of the framework's follow-up areas and the interdependencies for development.

Table 1 links the objectives in Vision for eHealth 2025 to the various follow-up areas in order to make it possible to follow up eHealth development.

The indicators are presented in Table 2, where the links to the objectives and follow-up areas are shown. Appendix 1 contains a complete description of the indicators, including the indicators' ID numbers, data sources and follow-up areas.

3.1 Refined framework for follow-up

The framework for the follow-up of eHealth that was developed in 2017/2018 has served as a starting point for this assignment. It has been judged beneficial to the annual follow-ups of eHealth development if the framework remains relatively constant over time. Consequently, in this assignment, only some minor additions have been made with the aim of clarifying the framework's follow-up areas and the interdependencies of these areas.

The development and use of eHealth (area A) is dependent on that which is included in area B (regulations, technical infrastructure, technical standards and standards for consistent use of terms) being in place. If important components and conditions within area B are lacking, this will impair the potential for development within area A, which will be reflected in the indicators linked to area A. Similarly, area B is dependent on the societal prerequisites in area C, i.e. academia and research, e-demographics, the enterprise sector and policy. This also encompasses the overarching legal scope there is in society.

The outcome for indicators within area A may therefore be dependent on unsatisfactory conditions in area B or C, which are not directly apparent from the individual indicators measured within area A.
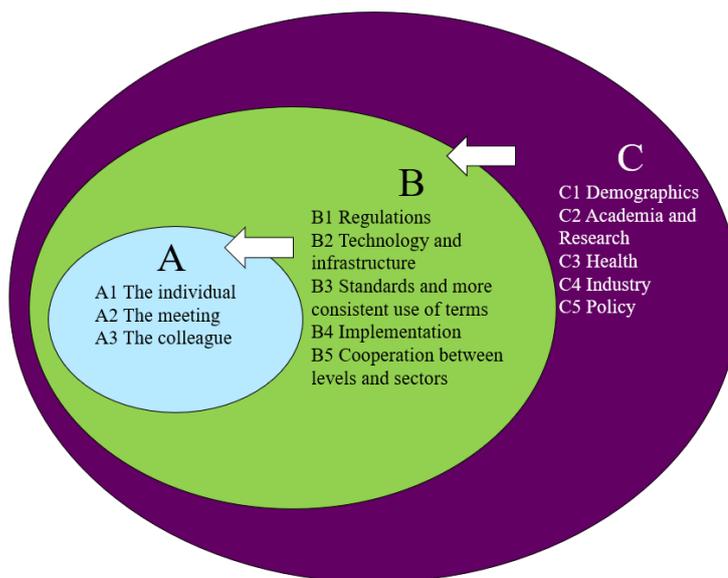
Figure 3. Dependencies between follow-up areas.

The fact that the implementation plans within the vision, over the years, prioritise different interventions does not mean that the framework needs to be changed. However, indicators that are highlighted may vary along with the objectives and priority areas that are specified. Some indicators are monitored annually, others only in certain years, and new indicators may be added. The chosen indicators should adhere to the objectives and priorities described in the vision.

A. Need for and use of eHealth
Functions, support, services
- Individuals
- The meeting
- The colleague

B. Structures that facilitate eHealth
Development, management and renewal
- Regulations
- Technology and infrastructure
- Standards and more consistent use of terms
- Implementation and capacity to innovate
- Cooperation between levels and sectors

C. Societal prerequisites for eHealth
- eDemographics
- Health
- Academia and research
- The enterprise sector
- Policy

Figure 4. Refined framework for follow-up.

3.1.1 Clarification of the framework's follow-up areas

This sections provides clarification of the follow-up areas A, B and C in the original framework in order to gain a clear link to the objectives in the strategy documents that applies for 2020–2022. Two of the follow-up areas are also supplemented with new sub-areas.

Need for and use of eHealth areas (area A)

This area deals with need and use based on the perspectives *The individual, The meeting* and *The member of staff*.

The individual (A1) encompasses technology, welfare technology and various forms of digital support outside of traditional healthcare environments that contribute to increased security, independence and participation, for example support at home in order to maintain health and live independently.

The meeting (A2) encompasses the member of staff, in their direct patient- or user-centred work, having access to relevant and unambiguous information about the individual's process and past contact with the healthcare system, as well as measures put in place and the results of these. It also encompasses how knowledge-based governance of operations contributes to the member of

staff having situation-specific access to the best available knowledge in every meeting.

The member of staff (A3) encompasses support and services that make work that is not directly patient- or user-centred more efficient.

Structures that facilitate eHealth (area B)

This area encompasses conditions that are created at the national, regional and local level within *Regulations, Standards and More consistent use of terms, Technology and infrastructure* and *Capacity to implement and innovate*.

Regulations (B1) encompasses both conditions created by current statutes and laws, as well as the work to renew regulations. Conditions in the form of interpretation and application of the regulations are also encompassed, for example to make it possible to document and protect information in an appropriate way. Conditions in the form of resources and expertise for work on information security in organisations is also included here.

Technology and infrastructure (B2) encompasses regional, local and national conditions. Regional conditions can be a functioning digital work environment, well-functioning processes in organisation, appropriate information systems and integrated knowledge-based support. National conditions consist of infrastructure and services that are developed and made available at the national level.

Standards and more consistent use of terms (B3) encompasses conditions in the form of both technical and semantic standards, i.e. standards both for the secure transfer of information and to ensure that the content (the information) retains its meaning and context when transferred and is possible to interpret unambiguously. One condition within this area is that organisations know which standards and national recommendations they have to take into account.

Capacity to implement and innovate (B4) encompasses conditions for digital transformation and renewal and the capacity to introduce new working methods and technologies, and to change processes, organisations and systems for the better. One condition is digital competence at all levels. Another condition is that organisations receive the support they need in order to introduce and implement new technology.

One additional sub-area is added to the area "Structures that facilitate eHealth", namely *Cooperation between levels and sectors (B5)*. One example of this is the conditions that are created through the work in the systems for

knowledge-based governance, which are now more clearly linked to the development of eHealth, including within the area structured healthcare information. Another condition is an enhanced partnership between the enterprise sector, academia and actors within social services and the healthcare system. The capacity to cooperate and benefit from one another's experience will increase the pace at which new working methods are introduced and the capacity to take advantage of the innovativeness of the enterprise sector. Further examples of conditions are cooperation between authorities, especially when it comes to forthcoming administration of joint national specifications. Joint projects between academia and organisations and formalised cooperation between organisations and the research sector are examples of areas that create conditions.

Societal prerequisites for eHealth (area C)

This area encompasses conditions that constitute the basic societal foundation for, among other things, positive eHealth development. This can relate to broadband development, tackling digital exclusion and conditions under which the enterprise sector, academia and the research sector are able to contribute to development.

An additional sub-area is added to the area "Societal prerequisites for eHealth", namely *Policy (C5)*. Political decisions and agreements linked to the digitalisation of society as a whole also create conditions within the field of eHealth. For example, this can relate to government assignments for authorities and interventions through agreements with SALAR for the purpose of supporting desirable development.

3.2 Objectives linked to the follow-up areas

The target areas' links to the follow-up areas in the framework for follow-up
are described below.

Target areas	Follow-up areas												
	Need for and use of			Structures that facilitate					Societal prerequisites				
The individual as co-creator	A1	A2	A3	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1. Technology/welfare technology and digital support in the home	x	x		x	x	x	x	x	x	x	x	x	
2. Digital services that facilitate the individual's contacts and information gathering	x	x		x	x	x	x	x	x	x	x	x	
3. Attitudes, trust in and experiences of eHealth	x	x			x		x		x	x			
The right information and knowledge													
4. Information processing and accessible information		x	x	x	x	x	x	x				x	x
5. Decision support and best available knowledge in every meeting		x	x	x	x	x	x	x				x	
6. Data processing that creates new knowledge			x	x	x	x	x	x			x	x	
Safe and secure information processing													
7. Resources and expertise for information security management			x		x		x						
8. Exchanging information securely	x			x	x	x	x	x					x
Development and digital transformation hand in hand													
9. Strong leadership, governance and organisation			x		x		x						
10. Enhanced digital competence at all levels			x	x	x	x		x			x		
11. Coordinated national support for the introduction of new technologies				x	x	x							x
12. Clarity in regulations and concerning technical and semantic				x	x	x	x	x					x

							X		X	X	X
standards											
13. New forms of collaboration and coordination							X		X	X	X

Table 1. Link between the target areas in the strategy and the follow-up areas in the framework.

3.3 Indicators linked to objectives and follow-up areas

A summary of the indicators that have been identified within the scope of this assignment are presented here. Appendix 1 contains a more detailed description of each indicator.

Indicators								
		Objective				Follow-up area		
ID	**Name of indicator**	**1**	**2**	**3**	**4**	**A**	**B**	**C**
1:1	Municipal welfare technology in different types of accommodation	X				X		
1:2	Municipal care planning via video	X				X		
1:3	Digital support for physical or cognitive training	X				X		
1:4	Digital support for activity	X				X		
2:1	Digital arrival registration	X				X		
2:2	Online appointment booking	X				X		
2:3	Digital contacts outside the region	X				X		
2:4	Inhabitants who seek digital healthcare from private providers	X				X		
2:5	Digital healthcare contacts at private providers	X				X		
2:6	Digital healthcare contacts per professional category	X				X		
2:7	Municipalities that allow appointments with case officers to be booked online	X				X		
2:8	Online services within social services	X				X		
2:9	Chat conversations via 1177	X				X		
02:10	Log-ins to 1177	X				X		
02:11	Information sets in 1177 Journalen	X				X		
02:12	Use of the support and treatment platform	X				X		
02:13	Digital healthcare appointments	X				X		
3:1	Trust in digital healthcare appointments	X				X		
3:2	Trust in 1177	X				X		
4:1	Producer calls in NPÖ		X			X		
4:2	Information sets shown in NPÖ		X			X		
4:3	Information sets that are technically possible to show in		X			X		

	NPÖ								
4:4	Private healthcare providers' connection to NPÖ as consumers		X			X		
4:5	Log-ins to 1177 Vårdguiden's online services		X			X		
4:6	Coherent record-keeping		X			X		
4:7	Digital appointment reminders		X			X		
4:8	National service for electronic referral		X			X		
4:9	Electronic management of free passes		X			X		
04:10	Digital dictation and voice recognition		X			X		
04:11	Attitudes of staff to the use of digital technology		X			X		
04:12	Attitudes of staff and students to digitalisation		X			X		
04:13	Municipal healthcare units' connection to NPÖ as consumers		X			X		
04:14	Municipal healthcare units' connection to NPÖ as producers		X			X		
04:15	Access to NPÖ for licensed healthcare personnel in the municipalities		X			X		
04:16	Guidelines for the use of NPÖ by the municipalities' licensed healthcare personnel		X			X		
04:17	Information sets in NPÖ accessible to the municipality's healthcare units.		X			X		
04:18	Use of structured documentation in municipalities		X			X		
04:19	Staff use of ICF when exercising public authority		X			X		
04:20	Staff use of ICF in the delivery phase		X			X		
04:21	Staff use of KSI when exercising public authority		X			X		
04:22	Staff use of KSI in the delivery phase		X			X		
04:23	Use of welfare technology by social care providers and municipal staff		X			X		
04:24	Attitudes of staff and students to digital technology for support and social care in the home		X			X		
04:25	Social services staff are able to read the documentation while mobile		X			X		
04:26	Licensed healthcare personnel in the municipality are able to read documentation while mobile		X			X		
04:27	Licensed healthcare personnel in the municipality are able to read national systems while mobile		X			X		
04:28	Licensed healthcare personnel in the municipality are able to document healthcare data in the municipality's IT system while mobile		X			X		
04:29	Licensed healthcare personnel in the municipality are able to add healthcare data to national systems while mobile		X			X		
04:30	Social services staff are able to read social services documentation in the municipality's IT system while mobile		X			X		

		C1	C2	C3	C4	C5	C6	C7
5:1	Analyses with the aid of electronic expert support (EES)		X			X		
5:2	IT support for medical services in the regions		X			X		
5:3	IT support for documentation in the regions		X			X		
5:4	Insurance medical decision support in the regions		X			X		
5:5	National source for prescribing reasons in the regions		X			X		
5:6	Code system for contact reasons in the regions		X			X		
5:7	IT support for handling medication in the regions		X			X		
7:1	Responsibility for information security in the municipalities			X			X	
7:2	Follow-up of information security in social services			X			X	
7:3	Information security classification in the municipalities			X			X	
8:1	Use of strong authentication in systems that process personal data in the municipalities.			X			X	
8:2	IT systems/other digital systems that require strong authentication for log-in, in the municipalities			X			X	
8:3	Social services staff use strong authentication when exercising public authority			X			X	
8:4	Social services staff that use strong authentication for log-in when providing services			X			X	
8:5	Legal basis of information security			X			X	
8:6	Application of the Patient Data Act			X			X	
8:7	Application of GDPR			X			X	
8:8	The federation SAMBI			X				
9:1	Person responsible for informatics in the regions				X		X	
9:2	Strategy for mobile working				X		X	
9:3	Budget for IT development and innovation				X		X	
10:1	Staff trained in the Patient Data Act in the regions				X	X	X	
10:2	Informatics expertise in the regions				X		X	
10:3	Measurement of perceived IT benefit in the regions				X		X	
12:1	Information security policy in the regions				X		X	
12:2	Barriers to the introduction of online services				X		X	
13:1	Electronic referrals across organisational boundaries				X		X	
13:2	Regional care planning via video				X		X	
13:3	IT cooperation municipalities and regions				X		X	
13:4	Digital agenda at the county level				X		X	
INT:1	Digitalisation index						X	X
INT:2	Healthcare data across national borders		X		X		X	X
INT:3	Visits to Nordic health portals	X				X		

ID	Indicator	1	2	3	4	A	B	C
INT:4	Online appointment bookings 1	X				X		
INT:5	Online appointment bookings 2	X				X		
INT:6	Online appointment bookings 3	X				X		
INT:7	Asynchronous communication in primary care	X				X		
INT:8	Video appointments in primary care	X				X		
INT:9	The use of electronic medical records		X			X		
INT:10	Proportion of ePrescriptions.	X	X			X		
INT:11	Electronic renewal of prescriptions	X				X		
INT:12	Log-ins to the pharmacopoeia	X				X		
INT:13	ePrescriptions possible	X				X		
INT:14	Voice recognition		X			X		
INT:15	Patient access to medical records	X				X	X	

Table 2. Target area and follow-up that each indicator measures.
Objectives: 1 The individual as co-creator, 2 The right information and knowledge, 3 Safe and secure information processing, 4 Development and digital transformation hand in hand.
Follow-up areas: A Need for and use of eHealth, B Structures that facilitate eHealth, C Societal prerequisites for eHealth.

4. Conclusions

In this assignment, the agency has refined the framework for the follow-up of Vision for eHealth 2025. The starting point was the framework for follow-up that was produced in conjunction with the vision's action plan for 2017–2019. The objectives presented in the strategy document "*A strategy for implementing Vision for eHealth 2025, The next step*" have been given tangible form in a number of underlying target areas. Two to five target areas have been described for each objective. The fundamental conditions (*Figure 1*) in the strategy document have been incorporated into the target area "Regulations and technical and semantic standards".

The degree of coverage of existing indicators is low

A total of 79 indicators have been identified, distributed among 13 target areas, each with zero to 30 indicators. In most cases, an indicator only belongs to one target area, but there are also indicators that are able to highlight the progress being made in more than one target area. How well the available indicators within each target area provide a view of development is described in the table below. The degree of coverage is reported using a five-degree scale, where 1 is minimal coverage and 5 is complete coverage. A degree of coverage of zero (0) indicates that there is no indicator for a target area.

Degree of coverage
5. Complete
4. High degree
3. Partly
2. Low degree
1. Minimal
0. (No indicator)

Objective	Target area	Number of indicators	Degree of coverage
1. The individual as co-creator	1	4	3
	2	13	4
	3	2	1
2. The right information and knowledge	4	30	3
	5	7	2
	6	0	0
3. Safe and secure information processing	7	3	1
	8	8	2
4. Development and digital transformation hand in hand	9	3	1
	10	3	1
	11	0	0
	12	2	1
	13	4	1

Table 3. Total degree of coverage of indicators for each target area.
Objectives: 1 The individual as co-creator, 2 The right information and knowledge, 3 Safe and secure information processing, 4 Development and digital transformation hand in hand
Target area: 1 Welfare technology and digital support in the home, 2 Digital services that facilitate the individual's contacts and information gathering, 3 Attitudes to, trust in and experiences of eHealth, 4 Information processing and accessible information, 5 Decision support and best available knowledge in every meeting, 6 Data processing that creates new knowledge, 7 Resources and expertise for information security management, 8 Exchanging information securely, 9 Enhanced leadership, governance and organisation, 10 Enhanced digital competence at all levels, 11 Coordinated national

Indicator-Based Framework for Follow-Up of Vision for eHealth 2025

During this work, discussions have taken place with a number of authorities and organisations. Several of these have ongoing projects involving the measurement and follow-up of eHealth development in Sweden.

A prominent problem is that only a few actors are continually collecting data that can be used for follow-up. There is a lack of longitudinal data in many cases, which means that only snapshots of the situation as regards development can be obtained. Consequently, existing sources are not sufficiently extensive to allow comprehensive follow-up within each of the target areas.

Many indicators focus on describing "services offered" and the use of these. It is not possible to track fundamental conditions for eHealth in the same way using existing sources. Above all, it is within follow-up area A (*Need for and use of eHealth*) where there are indicators currently. Some indicators can be placed in follow-up area B (*Structures that facilitate eHealth*), while only occasional indicators are found within follow-up area C (*Societal prerequisites for eHealth*). Given the interdependency there is between the follow-up areas A, B and C, the lack of indicators within areas B and C risks making analysis in subsequent follow-ups more difficult.

All target areas are judged to be in need of additional indicators in order to enable development to be tracked. For example, the fundamental conditions described in the strategy document, which are included in target area 12, cannot be tracked in a satisfactory way. Some examples of areas that are not covered by current indicators are artificial intelligence (AI), work on information security within municipalities and regions, coordinated national support and new forms of collaboration and coordination. The rapid pace of technological development makes it hard to predict future relevant indicator areas and indicators. Continual work with and updates to indicators are required.

International comparisons are difficult due to the lack of comparable indicators

One prerequisite for the ability to track and measure fulfilment of the overall aim of Vision for eHealth 2025 is the possibility of international comparison. A total of 15 internationally comparable indicators have been identified. These are found within a few target areas but do not provide complete coverage of these target areas. This makes international comparison difficult.

The difficulties identified with regard to international comparisons can be summarised as below:

- There is a lack of international coordination when it comes to the identification of comparable indicators.

- Indicators produced in different countries lack harmonisation, which pretty much makes comparison impossible as apparently small differences in the collection of data can result in incomparable data.

- The majority of published reports with regard to international comparisons have not been followed up with recurrent reports and when these have taken place, the indicators in a subsequent report have often been changed.

- Different legal, organisational, financial and other societal conditions for the healthcare system differ from country to country and affect the feasibility of comparison.

However, some countries have announced, when contact has been made with them within the scope of this assignment, that they have ongoing projects in their respective countries in respect of indicators for follow-up of eHealth development and digitalisation at the national level. The agency's assessment is that it would be valuable to cooperate with other countries on the production of indicators in order to improve the feasibility of comparisons across national borders.

Academic research regarding indicators in the field of eHealth is needed

One observation during this work is the lack of academic research regarding indicators[30]. Two requirements for an indicator to be of good quality are that the indicator be valid and established, i.e. measure that which it is intended to measure and based on evidence, best practice or other knowledge. Uncertainty with regard to the validity of some indicators and significance risks having consequences if decisions are being made on the basis of suboptimal indicators.

Some countries have acted on these conditions and Norway and Canada, for example, are investing central government funds in eHealth research

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[30] Loo Gee et al., *Benefits Realisation: Sharing Insights: GDHP White Paper on Evidence and Evaluation*.

Indicator-Based Framework for Follow-Up of Vision for eHealth 2025

(Norway: Norwegian Centre for eHealth Research[31]; Canada: Canada Health Infoway[32]).

5. Appendix 1

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[31] 'Norwegian Centre for eHealth Research', n.d., https://ehealthresearch.no.
[32] 'Canada Health Infoway', n.d., https://infoway-inforoute.ca/en/.