

## Country Brief: Sweden

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## About the eHealth Strategies study

The eHealth Strategies study analyses policy development and planning, implementation measures as well as progress achieved with respect to national and regional eHealth solutions in EU and EEA Member States, with emphasis on barriers and enablers beyond technology. The focus is on infrastructure elements and selected solutions emphasised in the European eHealth Action Plan of 2004.

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## Executive summary

In Sweden the implementation of eHealth strategies is divided into six action areas, which are defined in the National Strategy for eHealth, which was first published in 2006. The first three areas are concerned with establishing better basic conditions for ICT in health and elderly care. The last three are concerned with the improvement of eHealth solutions and adapting these to patient needs. Prior to this National strategy eHealth was dealt with at a local or regional level. The strategy is an evolving document; developed through a series of regular status reports. The latest version of the National Strategy for eHealth (Nationell eHälsa– strategin för tillgänglig och säker information inom vård och omsorg) was agreed upon by the Swedish government in June 2010.

In order to consider Sweden's position regarding eHealth interoperability objectives the following eHealth applications have been examined: patient summaries and electronic health records, ePrescription, standards and telemedicine. In overview Sweden's situation is as follows:

In Sweden a National Patient Summary- Den nationella patientöversikten- (NPÖ) has been in place since April 2008.

National ePrescription has been common routine in Sweden from before 2000 and has a take-up of almost 100%. It allows the secure and reliable exchange of confidential data, including images. Since 2003 the network has been based on VLAN technology from Song Networks with high built-in redundancy, and technically separated from the Internet. The separation from the Internet means better availability with regards to bandwidth.

Sweden has adopted different standards and is also a member of the International Health Terminology Standard Development Organisation (IHTSDO). Current tasks concerning the terminology standardisation are the work on harmonisation to complement concepts and terms used within the social and health services, as well as translating SNOMED CT into Swedish. This will take a few years and is expected to be completed in 2011.

The use of telemedicine services is widely spread in Sweden, as in 2008 it was in use in over 100 applications and in more than 75% of the hospitals. Among the telemedicine types applied are Teleconsultation (doctor-to-patient) and Telemonitoring and the most common telemedical area is radiology, where X-ray, computer tomography and magnetic camera images are transferred for consultation and second opinion.

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# 1 Introduction to the report

## 1.1 Motivation of the eHealth Strategies study

Following the *Communication* of the European Commission (EC) on “eHealth – making healthcare better for European citizens: An action plan for a European eHealth Area”,<sup>1</sup> Member States of the European Union (EU) have committed themselves to develop and issue national roadmaps – national strategies and plans for the deployment of eHealth applications addressing policy actions identified in the European eHealth Action Plan.

The *2004 eHealth Action Plan* required the Commission to *regularly monitor* the state of the art in deployment of eHealth, the progress made in agreeing on and updating national eHealth Roadmaps, and to facilitate the exchange of good practices. Furthermore, in December 2006 the EU Competitiveness Council agreed to launch the *Lead Market Initiative*<sup>2</sup> as a new policy approach aiming at the creation of markets with high economic and social value, in which European companies could develop a globally leading role. Following this impetus, the Roadmap for implementation of the “eHealth Task Force Lead Market Initiative” also identified better coordination and exchange of good practices in eHealth as a way to reduce market fragmentation and lack of interoperability.<sup>3</sup>

On the more specific aspects of electronic health record (EHR) systems, the recent *EC Recommendation on cross-border interoperability of electronic health record systems*<sup>4</sup> notes under “Monitoring and Evaluation”, that “in order to ensure monitoring and evaluation of cross-border interoperability of electronic health record systems, Member States should: consider the possibilities for setting up a monitoring observatory for interoperability of electronic health record systems in the Community to monitor, benchmark and assess progress on technical and semantic interoperability for successful implementation of electronic health record systems.” The present study certainly is a contribution to monitoring the progress made in establishing national/regional EHR systems in Member States. It also provides analytical information and support to current efforts by the European Large Scale Pilot (LSP) on cross-border Patient Summary and ePrescription services, the epSOS - European patients Smart Open Services - project.<sup>5</sup> With the involvement of almost all Member States, its goal is to define and implement a European wide standard for such applications at the interface between national health systems.

Earlier, in line with the requirement to “regularly monitor the state of the art in deployment of eHealth”, the EC already funded a first project to map national eHealth strategies – the eHealth ERA “Towards the establishment of a European eHealth Research Area” (FP6 Coordination Action)<sup>6</sup> - and a project on “Good eHealth: Study on the exchange of good

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<sup>1</sup> European Commission 2004

<sup>2</sup> European Commission 2007

<sup>3</sup> European Communities 2007

<sup>4</sup> European Commission 2008

<sup>5</sup> European Patients Smart and Open Services (epSOS)

<sup>6</sup> eHealth Priorities and Strategies in European Countries 2007

practices in eHealth"<sup>7</sup> mapping good practices in Europe - both of which provided valuable input to the present *eHealth Strategies* work and its reports. Member States' representatives and eHealth stakeholders, e.g. in the context of the *i2010 Subgroup on eHealth* and the annual European High Level eHealth Conferences have underlined the importance of this work and the need to maintain it updated to continue to benefit from it.

This country report on Sweden summarises main findings and an assessment of progress made towards realising key objectives of the eHealth Action Plan. It presents lessons learned from the national eHealth programme, planning and implementation efforts and provides an outlook on future developments.

## 1.2 Survey methodology

After developing an overall conceptual approach and establishing a comprehensive analytical framework, national level information was collected through a long-standing Europe-wide network of national correspondents commanding an impressive experience in such work. In addition, a handbook containing definitions of key concepts was distributed among the correspondents to guarantee a certain consistency in reporting. For Sweden the National Institute for Health and Welfare<sup>8</sup> (THL) provided information on situations, policies and examples for specific applications. THL generates information and know-how in the field of welfare and health and forwards them to decision-makers and other actors in the field. The centre is overseen by the Finnish Ministry of Social Affairs and Health. For Sweden relevant information on policy contexts and health system situation, policies and initiatives as well as examples for specific applications was collected by the overall project lead - empirica in Bonn, Germany.

The key tool to collect this information from the correspondents was an online survey template containing six main sections:

- A. National eHealth Strategy
- B. eHealth Implementations
- C. Legal and Regulatory Facilitators
- D. Administrative and Process Support
- E. Financing and Reimbursement Issues
- F. Evaluation

Under each section, specific questions were formulated and combined with free text fields and drop-down menus. The drop-down menus were designed to capture dates and stages of development (planning/implementation/routine operation). In addition, drop-down menus were designed to limit the number of possible answering options, for example with regard to specific telemedicine services or issues included in a strategy document. The overall purpose was to assure as much consistency as reasonably

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<sup>7</sup> European Commission; Information Society and Media Directorate-General 2009

<sup>8</sup> National Institute for Health and Welfare

possible when comparing developments in different countries, in spite of the well-known disparity of European national and regional health system structures and services.

Under Section B on eHealth implementation, questions regarding the following applications were formulated: existence and deployment of patient and healthcare provider identifiers, eCards, patient summary, ePrescription, standards as well as telemonitoring and telecare.

The data and information gathering followed a multi-stage approach. In order to create a *baseline* for the progress assessment, the empirica team filled in those parts of the respective questions dealing with the state of affairs about 3 to 4 years ago, thereby drawing on data from earlier eHealth ERA reports, case studies, etc. to the extent meaningfully possible. In the next step, national correspondents respectively partners from the study team filled in the template on recent developments in the healthcare sector of the corresponding country. These results were checked, further improved and validated by independent experts whenever possible.

Progress of eHealth in Sweden is described in chapter 3 of this report in the respective thematic subsections. The graphical illustrations presented there deliberately focus on key items on the progress timeline and cannot reflect all activities undertaken.

This report was subjected to both an internal and an external quality review process. Nevertheless, the document may not fully reflect the real situation and the analysis may not be exhaustive due to focusing on European policy priorities as well as due to limited study resources, and the consequent need for preferentially describing certain activities over others. Also, the views of those who helped to collect, interpret and validate contents may have had an impact.

### 1.3 Outline

At the outset and as an introduction, the report provides in chapter 2 general background information on the *Swedish* healthcare system. It is concerned with the overall system setting, such as decision making bodies, healthcare service providers and health indicator data.

Chapter 3 presents the current situation of selected key eHealth developments based on detailed analyses of available documents and other information by national correspondents and data gathered by them through a well-structured online questionnaire. It touches on issues and challenges around eHealth policy activities, administrative and organisational structure, the deployment of selected eHealth applications, technical aspects of their implementation, legal and regulatory facilitators, financing and reimbursement issues, and finally evaluation results, plans, and activities

The report finishes with a short outlook.

## 2 Healthcare system setting

### 2.1 Country introduction<sup>9</sup>

Sweden has a long tradition of local self-government combined with an active role for the central government. There are three independent government levels, which are all involved in healthcare: The national government, the 21 self-governed county councils/regions (län) and the 290 municipalities (kommuner). These bodies can either choose to deliver the care themselves, or use private companies, cooperatives or non-profit organisations (NPOs). The proportion of health and social care provided by private care providers is growing rapidly. Modern health and social care are based on collaboration between different personnel categories and different types of health and social care.

The box below summarises the key facts about the Swedish healthcare system:

#### **Key facts about the Swedish healthcare system:**<sup>10</sup>

Life expectancy at birth: 81.6 years

Healthcare expenditure as % of GDP: 9.4% (OECD 2008)

Public sector healthcare expenditure as % of total healthcare expenditure:  
81.9% (OECD 2008)

The 21 county councils play a dominant role in Swedish healthcare. According to the Health and Medical Services Act of 1982<sup>11</sup>, every county council should offer good health and medical services to persons living within its boundaries, and they are to promote the health of all residents. For the elderly, the 290 municipalities responsible for nursing-homecare are equally important for the delivery of services.

### 2.2 Healthcare governance

#### **Decision making bodies, responsibilities, sharing of power**

The main Actor of the Swedish healthcare system is the Ministry of Health and Social Affairs (Socialdepartementet) operating at the national level. Its principal responsibility is to ensure, in conjunction with the county councils, that the healthcare system runs efficiently and according to its fundamental objectives. These key tasks enclose preparing cabinet business, as well as dealing with policy matters and legislation in healthcare, social welfare services and health insurance. It allocates financial assistance directed at very specific treatments, and acts as a supervisor of activities in the county councils, e.g. the Government may legislate for temporary ceilings on county council and local municipality tax rates.<sup>12</sup>

<sup>9</sup> eUser 2005

<sup>10</sup> Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

<sup>11</sup> Hälso- och sjukvårdslagen [Health Law] (1982:763)

<sup>12</sup> Glengård, Hjalte et al. 2005, p.18-19

The three levels of government (central government, county councils and municipalities) are all involved in healthcare. The central government determines the health system's overall objectives and regulation, while local governments determine how services are to be delivered based on local conditions and priorities. As a result, the organisation of the delivery system varies at the local level.<sup>13</sup>

Sweden's 21 county councils are responsible for providing services across large geographical areas and that often require considerable resources. The major service involved is health and medical care. County councils are responsible for organising their services so that all their residents have access to care of a high standard. The county councils, in turn, are grouped into six regions. One of the purposes of the regions is to facilitate cooperation in highly specialised care.

Health and medical care can be divided into three levels: regional medical care, county medical care and primary care. In Sweden there are eight regional hospitals, some 70 county hospitals and just over 1000 health centres. In 2009 there were 25,862 beds for in-patients.<sup>14</sup>

## Healthcare service providers

The primary care services include both basic curative care and preventive services delivered through the local primary healthcare centres and family-physician surgeries. It is up to each county council to decide how to deliver primary care. Even if primary care is mainly publicly provided, there are also private providers at this level, e.g. private physicians and physiotherapists, district-nurse clinics and clinics for child and maternity healthcare.<sup>15</sup> It is now becoming more common for county councils to buy services from private healthcare, 10 percent of healthcare is financed by county councils but carried out by private care providers<sup>16</sup>. Various occupational categories are represented in primary care services, such as doctors, nurses, children's nurses, auxiliary nurses, physiotherapists, occupational therapists, social workers.<sup>17</sup>

For conditions requiring hospital treatment, medical services are provided at county and regional hospitals. The hospitals in Sweden are divided into district county hospitals, central county hospitals and regional hospitals, depending on their size and degree of specialisation. Public hospitals are larger than private hospitals and have more highly specialised sectors and equipment. They also have a different patient distribution. For the most part, private hospitals (both for-profit and not-for-profit) tend to concentrate on care that requires smaller investment. Private-hospital inpatient care is provided in few small, traditional hospitals in the larger cities. At these hospitals, both outpatient care and advanced hospital care, such as elective surgery, are offered.<sup>18</sup>

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<sup>13</sup> Anell 2008

<sup>14</sup> Ministry of Health and Social Affairs 2007

<sup>15</sup> Glengård, Hjalte et al. 2005, p.78-80

<sup>16</sup> Swedish Institute 2009

<sup>17</sup> Ministry of Health and Social Affairs 2007, p.2

<sup>18</sup> Glengård, Hjalte et al. 2005, p.80-82

The regional hospitals treat rare and complicated diseases and injuries. They are also university hospitals and conduct a great deal of research, teaching and training. County councils that do not have their own regional hospitals can offer their residents highly specialised medical care by agreement with other county councils. The most advanced care is only available at a few of the country's hospitals.<sup>19</sup>

The county councils are responsible for patients until the patient is fully medically treated. Then, the physician (together with staff from social care services, other outpatient services and the patient) develops a care-plan designed to achieve further rehabilitation and transfers responsibility for the patient to the municipality. The responsibility for home nursing and rehabilitation lies between the county councils and the municipalities, which causes tensions.<sup>20</sup>

Citizens have free choice of healthcare, meaning that they can seek treatment anywhere in the country. By January 2010, all county councils had introduced what is known as the primary choice system in primary care. This was adopted by the Riksdag (Swedish parliament) in February 2009. The system entails patients choosing whether they would prefer to go to a private or public health centre.<sup>21</sup>

Sweden had a state owned pharmacy monopoly for more than 35 years. On July 1<sup>st</sup> 2009 the market was deregulated; now everyone can own a pharmacy with the exception of pharmaceutical manufactures and prescribers.

600 of the 900 state-owned pharmacies have been sold. 150 pharmacies have been allocated to small private vendors.

Apotekens Service AB, a newly founded company, now provides infrastructure services to the whole pharmacy market. The company acts as a link between the pharmacies and the healthcare sector and runs the Swedish national database for e-prescriptions and several other national databases containing medical data for the Swedish public. Moreover, the company is responsible for compiling national drug statistics.

On pharmacy websites you can buy medicine and other products. Advice about illnesses, healthcare and other health issues, such as dieting and exercising, are also available on websites.

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<sup>19</sup> Ministry of Health and Social Affairs 2007, p.2

<sup>20</sup> Glengård, Hjalte et al. 2005, p.83-84

<sup>21</sup> Swedish Institute 2009

**Figure 1: Important features of primary healthcare organisation in Sweden**

<b>Political/administrative unit responsible for primary healthcare</b>	Primary health service at county level; long-term care at municipal level.
<b>Consumer Choice</b>	Mixed: area or list patient organised.
<b>Financing</b>	Mainly tax-based. There are 21 county councils with taxation rights.
<b>Public or private providers</b>	Both, private GP practices and publicly employed doctors.
<b>Gatekeeping function of the GP</b>	GP gatekeeping function in some counties, while patients have a free access to specialist care in others.
<b>Integrating health: initiatives for coordination</b>	Joint team work; municipal payment for long hospital stays. NPÖ and regional initiatives, for example Kronoberg.

## 2.3 Recent reforms and priorities of health system/public health

### Currently ongoing reforms in the health and social care systems

The healthcare sector has undergone several structural changes in the past 30 years, both at national level through legislation, and locally at county council level. The locally initiated reforms are mainly associated with the introduction of new management systems and new organisational structures, such as contracting out to private providers. Taking an aggregate view of reform over several decades, the general focus of the 1970s and early 1980s was on equity issues; in the late 1980s, on cost containment; the early 1990s on efficiency; and in the latter part of the 1990s, on structural changes in the delivery and organisation of healthcare. Reforms in the latter half of the 1990s have been a response to renewed concerns about cost containment, aiming at transferring the responsibility for healthcare from the state to the county councils.<sup>22</sup>

Although the health status of the Swedish population is one of the best of in the world, some challenges for the Swedish healthcare system remain:<sup>23</sup>

- There is a need for integration between hospital care, primary care and institutional care, a need to strengthen primary and home-based care and find a way of tackling the shortage of skilled personnel in the municipal sector.
- Cost containment in the Swedish healthcare system remains an important challenge, although in comparison to similar issues in the rest of Europe this is a mild concern.

<sup>22</sup> Hyppönen, Doupi et al. 2007, p.3;5-6;9-10

<sup>23</sup> Glengård, Hjalte et al. 2005, p.11-12

- The responsibilities of central government, the county councils and the municipalities for the provision of healthcare services need further definition.
- Effective interventions are needed to tackle increasing social inequality in health in Sweden, especially with regard to dental care.

There is a need to increase the availability of choice of provider for patients. In response to concerns from politicians about poor access to primary care, 3 of the 21 regional health authorities in Sweden have launched primary care reform programmes called Vårdval, and several additional authorities are planning to launch similar programmes. The reforms have focused primarily on three areas: improving each patient's opportunity to choose among GPs, increasing the number of private providers, and having reimbursement follow each patient's choice of provider. As there are a number of design choices in each of these areas, the regional health authorities have implemented their reforms in slightly different ways<sup>24</sup>.

### 3 eHealth Strategies survey results

*The following sections present the results of the eHealth Strategies country survey. In a first section, the eHealth policy actions undertaken in Sweden are presented. This is followed by a presentation of administrative and organisational measures taken. Section 3.3 presents results on key eHealth applications. Section 3.4 focuses on the technical side of eHealth, namely the role of patient and healthcare provider identifiers and the role of eCards. Legal and regulatory facilitators as well as financing and reimbursement issues are presented in the following chapters, 3.5 and 3.6. The report concludes with evaluation activities (3.7) in the country and an outlook (4.).*

#### 3.1 eHealth policy action

*The eHealth strategies of EU and EEA countries are not always labelled as such. Some countries may indeed publish a policy document which refers to the ICT strategy in the healthcare sector. Other countries such as France and Germany have enshrined the central eHealth activities in legislation governing the healthcare sector. In Germany, the relevant law is the law on the modernisation of healthcare; in France the introduction of an electronic medical record is included in a law concerning social security.*

*Sometimes, also documents from domains such as eGovernment or Information Society strategies may contain provisions which concern eHealth. In cases where the healthcare system is decentralised, i.e. where power is delegated to the regional level, there may even be strategy documents regarding eHealth from regional authorities.*

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<sup>24</sup> Hansson E. and McKenna S. 2009

### 3.1.1 Current strategy/roadmap

Traditionally, national and regional authorities developed Swedish eHealth solutions together, but without a common national eHealth strategy. Only in 2006 a High Level Group for eHealth was established and a central policy paper dealing with eHealth issues was published<sup>25</sup>.

#### National Strategy for eHealth (2006)

That central policy paper highlights the importance of using information and communication technologies to facilitate improvements for patients, health and elderly care professionals and decision-makers. The issues which are drawn upon are infrastructural aspects, specific applications such as the development of a National patient summary, standards, legal and financial action as well as evaluation through for example an interoperable ICT-based tool, which allows to assess the quality and efficiency of care.

#### Regular status reports on eHealth strategy

The National Strategy is further developed and followed-up through regular Status Reports, the latest of which was published in 2009. Generally, this report gives an insight into different development stages of action areas and the organisational structure behind it. It is emphasised that the next phase will be focused on organisational change and the integration of stakeholder views at the different deployment levels: county councils, municipalities, private and not-for-profit care providers.

Overall the implementation process is divided into six action areas, which are defined in the National Strategy for eHealth (2006):

1. Bring laws and regulations into line with extended use of ICT,
2. Create a common information structure,
3. Create a common technical infrastructure,
4. Facilitate interoperable, supportive ICT systems,
5. Facilitate access to information across organisational boundaries,
6. Make information and services easily accessible to citizens

The first three areas are concerned with establishing better basic conditions for ICT in health and elderly care. The last three are concerned with the improvement of eHealth solutions and adapting these to patient needs. Crucial to all six areas is education, training and research initiatives in the eHealth sector.

The National Strategy refers to the EU eHealth Action Plan: "With the National Strategy for e-Health Sweden has met the challenge set out in the European Commission's Action Plan for e-Health: Each Member State is to develop a national or regional roadmap for e-Health by the end of 2005." (National Strategy for eHealth, 2006, p.36.) The latest version of the National Strategy for eHealth was agreed upon by the Swedish government in June 2010.

Beside the National Strategy for eHealth and the regular Status Reports, two further documents are of importance: The National Action Plan for the Swedish eGovernment

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<sup>25</sup> Online available in English at: Ministry of Health and Social Affairs, Swedish Association of Local Authorities and Regions et al. 2006 ,  
<http://www.sweden.gov.se/content/1/c6/06/43/24/f6405a1c.pdf>

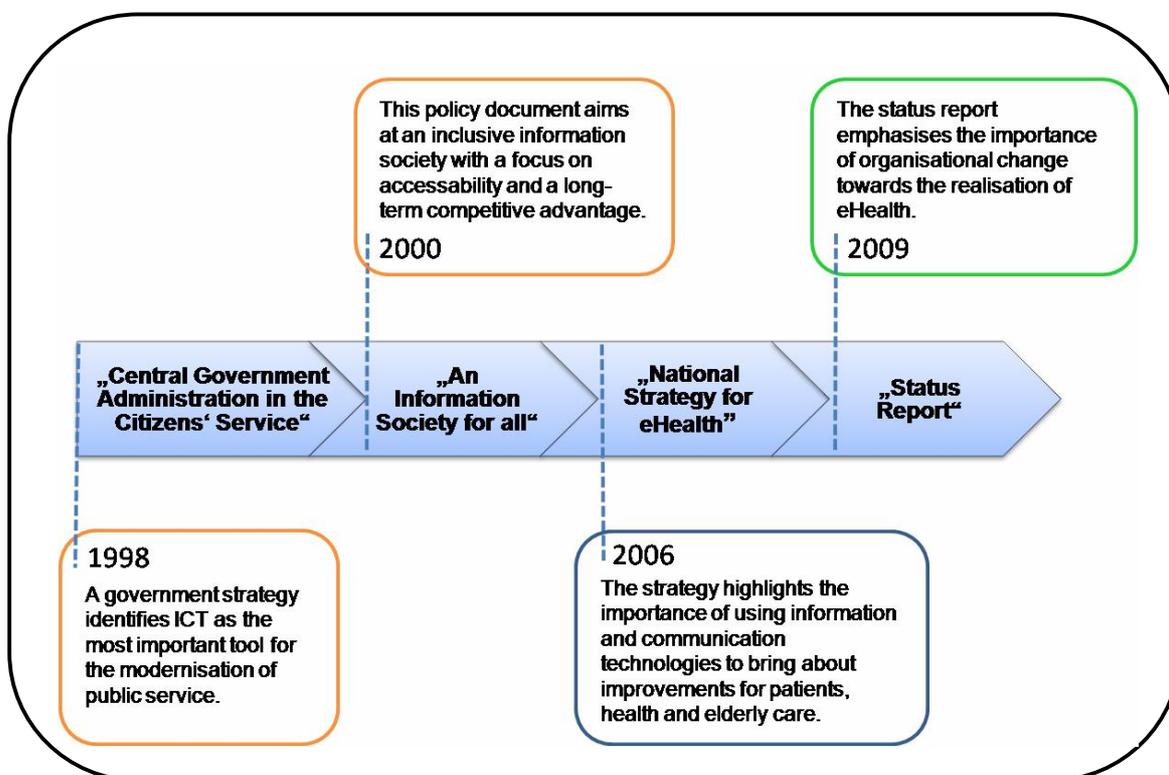
The IT strategy will also be available at a later date.

(2008) and “An Information Society for all” (2004). The latter is concerned with the Swedish Government’s policy to utilise the potential of ICT to stimulate growth, employment, and regional development, as well as to promote societal values such as democracy, equality, fair treatment, and quality of life. In the context of an efficient public administration it also underlines the importance of developing the healthcare system including IT usage. One application area is to further develop national prerequisites for the broad-based implementation of telemedicine.

**National Action Plan for eGovernment (2008) | An Information Society for All (2004)**

The National Action Plan for the Swedish eGovernment launched in 2008 – even though it is from another domain – deals with eHealth topics. It stresses the importance of creating a common technical infrastructure and facilitating access to information across organisational boundaries of the health and medical care system.

**Figure 2: Swedish policy documents related to eHealth**



## 3.2 Administrative and organisational structure

### Ministry of Health and Social Affairs | Ministry of Industry, Employment and Communications

A main issue of eHealth organisation in Sweden is – as shown above – the collaboration of the different implementation levels. On a national level, the main general actors are the Ministry of Health and Social Affairs (Socialdepartementet), and the Ministry of Industry, Employment and Communications, the Ministry for Education and Research is also involved. The Ministry of Health and Social Affairs has the overall responsibility for policy setting, legislation and coordination of activities between stakeholders in the field of healthcare and social affairs. It is especially active in international eHealth information exchange with several collaborative initiatives within the EU, the Nordic Council of Ministers (Nordiska ministerrådet) and the World Health Organization (WHO). The Ministry of Industry, Employment and Communications is responsible for ICT development in society as a whole. Additionally the Ministry of Finance is accountable for eGovernance and eServices within the public sector.

### National Board of Health and Welfare | Apotekens Service AB

Also working on a national level, but with a different scope of functions, are the National Board of Health and Welfare (Socialstyrelsen) and Apotekens Service AB. The National Board of Health and Welfare has, as a government agency, a supervisory function. It is in charge of national strategic planning for ensuring precise, unambiguous formulation, accessibility and monitoring of patient data, which requires a common national information structure, nomenclature, classifications, quality indicators and documentation procedures. Apotekens Service AB's mission is to secure access for all Swedish pharmacies to for example e-prescription, a national pharmaceutical product register, a national reimbursement system and a national register of dispensed drugs. Moreover, the company is responsible for compiling national drug statistics.

On a regional level, the counties and municipal Councils are in charge of investment and implementation within the eHealth sector. They decide independently for which purposes ICT is used and they also produce eHealth solutions implemented in their area. However, they must comply with information handling and reporting requirements set out by SALAR.

### National Centre for Coordination of eHealth (NCCEH) Swedish Association of Local Authorities and Regions (SALAR) Center for eHealth in Sweden CeHIS

As a negotiating partner for the Ministry of Health and Social Affairs acts the Swedish Association of Local Authorities and Regions (SALAR). SALAR represents the governmental, professional and employer-related interests of Sweden's 290 municipalities, 21 county councils, and campaigns for the adoption and implementation of the eHealth strategy by all municipal and county councils. An important part of SALAR is the Centre for eHealth in Sweden (CeHIS).<sup>26</sup> The main competencies of the CeHIS lie in the fields of strategy and coordination, specification of the national infrastructure as well as procurement and implementation management. With regard to this, the responsibilities include the coordination of all national activities in eHealth, the involvement of the county councils in the national work, the follow-up and evaluation of national work concerning interoperability and cost-effectiveness, and reporting to the county councils' CEOs.

The CeHIS is financed through county council contributions and the State ("Dagmar Funds"). The "Dagmar Fund" is money made available through negotiations between the Ministry and the Federation of County Councils. Overall it is a national approach, which

<sup>26</sup> Center för eHälsa i samverkan [Centre for eHealth] 2010

means that county councils share costs instead of funding separate and costly parallel development.

### Inera AB

SALAR jointly owns the company Inera AB. Inera AB manages and develops eHealth solutions. Since the creation of CeHIS, it has focused primarily project and operation management. The company is also represented in a number of drafting groups within the commissioning entity. Before Inera, the company Carelink used to initiate, develop and manage national eHealth solutions in collaboration with its members and other stakeholders. Since January 1st 2008, Carelink has been a part of Inera. Carelink no longer exists as a company, but their projects are still running.<sup>27</sup>

In all of the official decision making bodies, stakeholders are represented in different ways depending on the administrative level:

For the national level the integration of stakeholders is a main issue since the adoption of the National Strategy for eHealth. Before 2006 there has been no organised collaboration of county councils, municipalities and private providers. Now, the National Board of Health and Welfare holds special responsibility regarding stakeholder representation. It also lies in their responsibility to ensure that individual-based patient and user information is made clearer, easier to follow-up and more accessible by legislation.

### Stakeholder representation through SALAR

As the county councils have also adopted the National Strategy, the realisation of stakeholder representation is also an issue. Collaboration takes place through SALAR's commissioning entity, and the Centre for eHealth in Sweden (Center ska stavas på svenska). For the municipalities, not all have adopted or applied the eHealth Strategy (by autumn 2008) but are mostly familiar with the matter.

Private health and social care providers have been invited, through the Association of Private Care Providers, to take part in the work of the CeHIS at SALAR. Their contribution and especially their collaboration forms an integral part of the Swedish health and care services.

### National ICT steering committee

Another actor interface is the National ICT steering committee. It has been established to coordinate ongoing work including all concerned stakeholders. Additionally, the committee is composed of representatives of the Ministry of Health and Social Affairs, the National Board of Health and Welfare, SALAR and the Association of Private Care Providers.

Regarding stakeholder representation, municipalities and private care providers were – for a number of reasons – unable to organise and take part in ICT collaboration as quickly as county councils. Therefore an overall goal for the administrative and process support in Sweden is to pay more attention to the needs and interests of municipal and private care providers and to encourage discussions on collaborations and organised cooperation. Hence, future activities include taking organisational measures to facilitate exchanges of experience and collaboration, to further develop information structure and standards as well as the technical infrastructure.

<sup>27</sup> Ministry of Health and Social Affairs, Swedish Association of Local Authorities and Regions et al. 2009, p.8

### 3.3 Deployment of eHealth applications

#### 3.3.1 Patient summary and electronic health record (EHR)

*In this study, the epSOS project's definition<sup>28</sup> of a patient summary was used as a general guideline. There a patient summary is defined as a minimum set of a patient's data which would provide a health professional with essential information needed in case of unexpected or unscheduled care (e.g. emergency, accident), but also in case of planned care (e.g. after a relocation, cross-organisational care path).*

*Lacking a standard definition, a patient's electronic health record (EHR) is here understood as an integrated or also interlinked (virtual) record of ALL his/her health-related data independent of when, where and by whom the data were recorded. In other words, it is an account of his diverse encounters with the health system as recorded in patient or medical records (EPR or EMR) maintained by various providers like GP, specialists, hospitals, laboratories, pharmacies etc. Such records may contain a patient summary as a subset. As of yet, fully-fledged EHR systems rarely exist, e.g. in regional health systems like Andalusia in Spain or Kronoberg in Sweden, or in HMOs (health maintenance organisations) like Kaiser Permanente in the USA.*

*It should be noted that in most policy documents reference is made simply to an "EHR" without any explanation of what is meant by it, thereby in reality even a single, basic electronic clinical record of a few recent health data may qualify. As a consequence, this section can only report on national activities connected to this wide variety of health-related records without being able to clearly pinpoint what (final) development stage is actually aimed for or has been reached so far.*

#### National Patient Summary (NPÖ) in place since 2008

In Sweden a National Patient Summary (Den nationella patientöversikten- NPÖ) has been in place since April 2008. It is based on experiences from an earlier national patient summary pilot and includes the fundamental condition of patient consent. The implementation is still ongoing and so far the Örebro County Council and the Örebro municipality have subscribed (May 2009). Six more counties (Blekinge, Jönköping, Kronoberg, Stockholm, Södermanland and Västra Götaland) are introducing NPÖ starting in 2010. The introduction of NPÖ is implemented then in the remaining counties and regions in 2011 – 2012<sup>29</sup>. An overview of developments and progress of the patient summary in Sweden is provided in Figure 3 below.

The patient summary provides individual information on current care contacts, personal information, chronic diseases, medical alert information (e.g. allergies) and current medical examination results. Information about the patient's dispensed drugs is stored by Apotekens Service in Läkemedelsförteckningen (a patient's list of dispensed drugs). Access to this information by a healthcare practitioner, via NPÖ or otherwise, requires patient consent. This implies that the summary also contains condition-specific data

<sup>28</sup> European Patients Smart Open Services

<sup>29</sup> Ledningsgruppen för Nationell eHälsa [The management team of the National eHealth]: Johansson K 2010

including chronic diseases and medical alert information. Swedish residents also have direct access to their own medical records through the internet.

The Läkemedelsförteckningen database should also be mentioned here. It is a database of the dispensed drugs that Apotekens Service is responsible for, previously it was held by Apoteket AB. The purpose of the database is to enable more accurate prescriptions and preparation of care for the patient. The data in the database is saved for 15 months. Prescribers, pharmacists and patients themselves have access to it. It contains information about the patient's name and social security numbers, dates of collection of medicines, the name of the medicines taken out and the quantity and dosage. Patients must give their full consent before prescribers or pharmacists can access their data. All searches in the pharmaceutical list are logged and data is recorded for the patient.

We can now see that most counties have or are on track to introduce IT-support care documentation for hospitals and psychiatric units. It has proved difficult to establish a good documentary support that also supports healthcare processes. It requires both that the information is structured and the fact that healthcare processes are mapped and standardised. Introduction of IT support for care documentation ("log") for hospitals has been very rapid in recent years. In 2005, only one county ready to introduce a common IT support for care documentation for hospital services. In 2010 18 counties were fully completed and the remaining counties are well underway<sup>30</sup>.

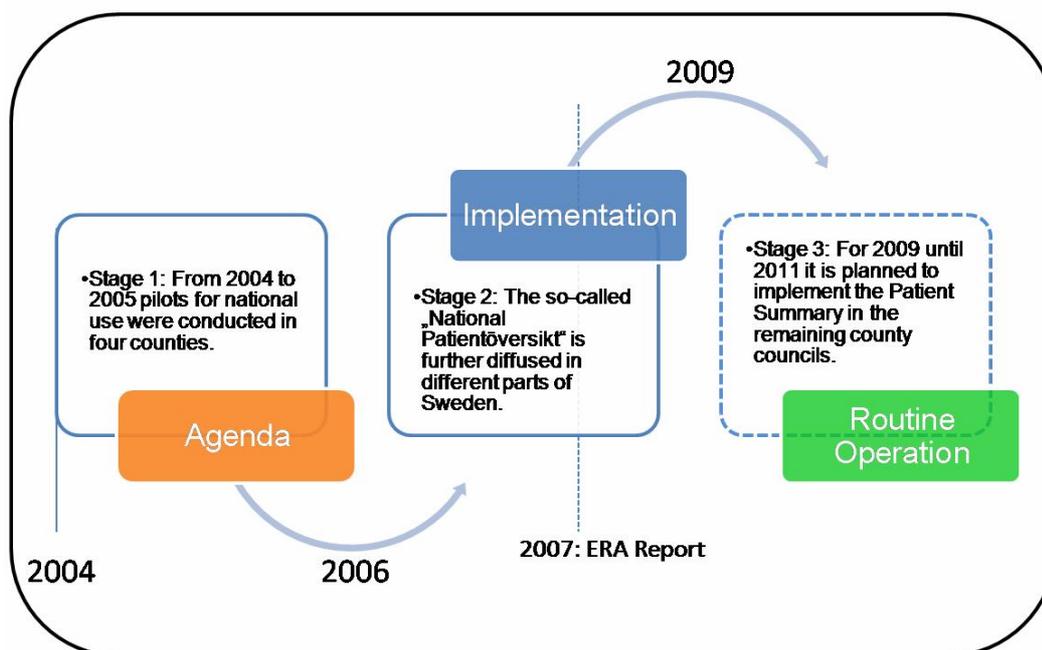
There is considerable effort within the counties to consolidate and integrate both technology and information for common access. There is a strong movement towards standardising within one system and with one supplier for all care documentation across organisations, ie. for hospitals, psychiatric and primary care. Strong motivation is the vision of 'one patient - a register "with the common medicines list and common terminology and conceptual structure. Internal consolidation, with only one point (a database) makes it easier to achieve this vision of "one patient - one record" within a county. Ten counties are now using the same system across hospitals, psychiatric units and primary care centres. Another eight county councils have this as a strategic direction and in the next few years will have implemented the same system<sup>31</sup>.

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<sup>30</sup> Jerlvall L. and Pehrsson T. 2010

<sup>31</sup> Jerlvall L. and Pehrsson T. 2010

Figure 3: Patient summary in Sweden



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### 3.3.2 ePrescription

In the framework of this study and following work in epSOS<sup>32</sup>, ePrescription is understood as the process of the electronic transfer of a prescription by a healthcare provider to a pharmacy for retrieval of the drug by the patient. In this strict sense, only few European countries can claim to have implemented a fully operational ePrescription service.

**Nation-wide ePrescription system “Healthcare-digital-network” has been common routine since before 2000**

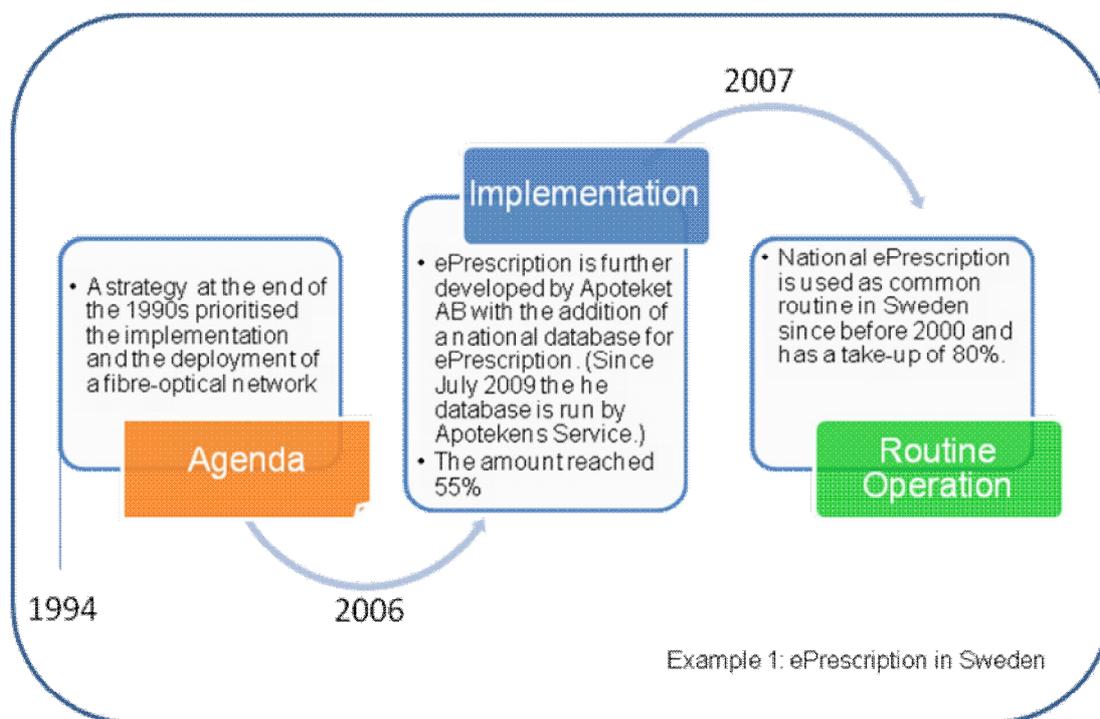
National ePrescription has been common routine in Sweden from before 2000 and has a take-up of 80%. The nation-wide spread of the ePrescribing system was encouraged by a strategy at the end of the 1990s which prioritised its implementation and the deployment of a fibre-optical network separate from the Internet and developed for eHealth purposes (The “Healthcare-digital-network”). It allows the secure and reliable exchange of confidential data, including images. The “Healthcare-digital-network” is an IP-based broadband network, connecting all Swedish hospitals, primary care centres and many other health services. Users connected to a county council network can reach either the Internet or Healthcare-digital-network depending on the service they need. In its first version the Healthcare-digital-network was set up as a virtual private network (VPN) with tunnels on the Swedish part of the Internet, and was delivered by the Swedish telecom company Telia. Since 2003 the network has been based on VLAN technology from Song Networks (Song Networks became a subsidiary of TDC in 2004 and is now called TDC Song and which belongs to TDC Sverige) with high built-in redundancy, and technically separated from the Internet. The separation from the Internet means better

<sup>32</sup> European Patients Smart Open Services

availability with regards to bandwidth. In addition to this NEF: Nationellt e-receptformat [National e-prescription formats] has been implemented in all counties<sup>33</sup>.

Integration and inclusion of SIL: Svensk Informationsdatabas för Läkemedel [Swedish Information Database for Pharmaceuticals] in large scale operations in the county began in 2009. So far nine counties have implemented SIL and the other 12 are introducing it<sup>34</sup>.

**Figure 4: ePrescription progress in Sweden**



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### 3.3.3 Standards

*Standards are not only crucial to enable interoperable exchange of meaningful information in the healthcare system; they also ensure secure access to patient records by healthcare providers and citizens. This study aims to identify, among other usage, standards related to the domain of health informatics, such as the SNOMED Clinical Terms or the LOINC terminology.*

#### Unit for Classification and Medical Terminology at the National Board of Health and Welfare

Sweden has adopted different standards and is also a member of the International Health Terminology Standard Development Organisation (IHTSDO). The competence centre in charge is the Unit for Classification and Medical Terminology at the National Board of Health and Welfare.

The Unit works in collaboration with the Federation of the Swedish County Councils (CeHIS inte landstingsförbundet), the National Centre for Patient Classification System,

<sup>33</sup> Ledningsgruppen för Nationell eHälsa [The management team of the National eHealth]: Johansson K 2010

<sup>34</sup> Ledningsgruppen för Nationell eHälsa [The management team of the National eHealth]: Johansson K 2010

which was established by the National Board of Health and Welfare. There are two projects carried out by the ministry that are connected to standards: The National Information Structure (2007-2009) and the National Interdisciplinary Terminology (2007-2011). Here stakeholders from the Swedish Association of Local Authorities and Regions (SALAR), health and social care principals and other actors in the field are involved.

The National Board of Health and Welfare is also Sweden's representative to the IHTSDO, where it leads the Swedish work on SNOMED CT. The translation of Snomed CT into Swedish is now finalised, and an organisation for implementing this on national level is now under preparation. Current tasks concerning the terminology standardisation and terminology binding (tillsammans med CeHIS) are the work on harmonisation to complement concepts and terms used within the social and health services. Here, SALAR has a central role with responsibility for coordinated training of regional "ambassadors" and universities and colleges running healthcare programmes to ensure that suitable training is incorporated into under-graduate and further education programmes.

#### Use of SNOMED CT, HL7 v3, EN 13606 and ICD 10

Beside SNOMED CT, Sweden has also adopted other international standards, such as HL7 v3, Tveksamt, DICOM däremot, EN 13606 and ICD 10. The Swedish translation for ICD 10 was created in 1997. The standard used for e-prescription is based on ENV 13607.

### 3.3.4 Telemedicine

*The use of telemedicine applications is recognised as beneficial to enable access to care from a distance and to reduce the number of GP visits or even inpatient admissions. Commission services define telemedicine as "the delivery of healthcare services through the use of Information and Communication Technologies (ICT) in a situation where the actors are not at the same location"<sup>35</sup>. In its recent communication on telemedicine for the benefit of patients, healthcare systems and society, the Commission re-emphasises the value of this technology for health system efficiency and the improvement of healthcare delivery<sup>36</sup>.*

#### Wide-spread use of telemedicine

The use of telemedicine services is widely spread in Sweden, as in 2008 it was in use in over 100 applications and in more than 75% of the hospitals. Among the telemedicine types applied are Teleconsultation (doctor-to-patient) and Telemonitoring. Service for remote patient health monitoring launched in Sweden in April 2005. Using GPRS in the mobile network, hospital and healthcare staff can remotely monitor patients with sickness or diseases that do not require hospital treatment or other types of medical care. About 9% of the practitioners in Sweden use telemonitoring.

#### Applications include e.g. tele-consultation, tele-monitoring or remote monitoring

Teleconsultation and videoconferences in Sweden enable up to 12 people/workplaces to take part at the same time. In addition, the national helpline (1177) gives citizens round-the-clock access to advice by nurses supported by expert advisory services. Patients

<sup>35</sup> Europe's Information Society

<sup>36</sup> European Commission 2008

**The Healthcare-digital-network offers secure services for telemedicine**

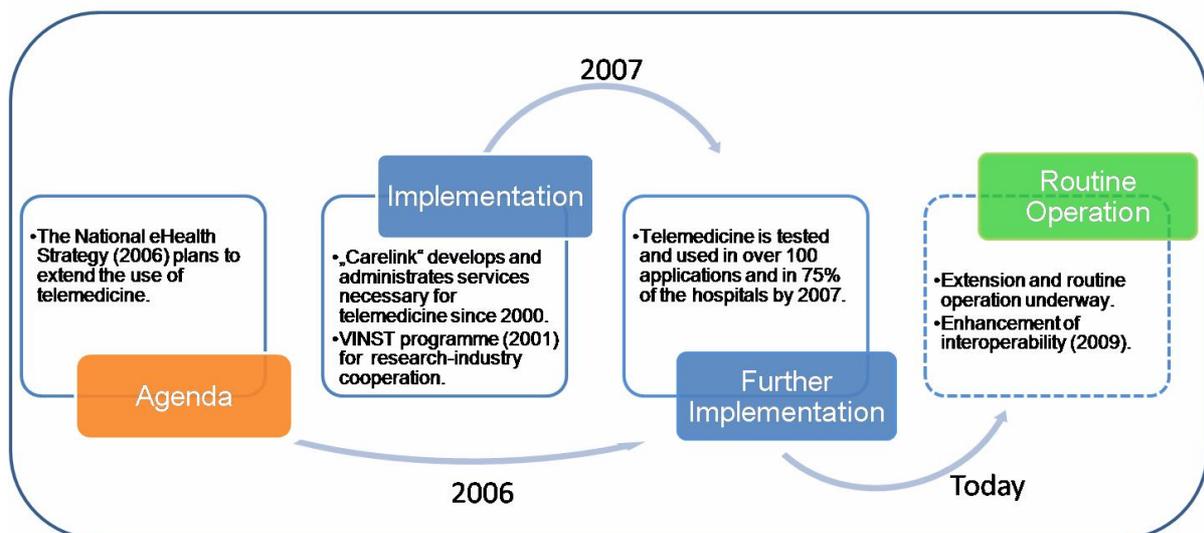
also have the possibility to get healthcare information on the web including supply, waiting times, options and personalised services (as for example accessing the own record or booking visits).

The most common telemedical area is radiology, where X-ray, computer tomography and magnetic camera images are transferred for consultation and second opinion.

From a technical perspective, the “Healthcare-digital-network” service within the field offers the secure transmission of patient information, clinical rounds and collaboration between caregivers in different organisations.

Many healthcare actors, e.g. the councils and the pharmacies, have eHealth portals on the internet containing practical advice for self-care. Typically, these web sites contain a dictionary of symptoms and illnesses coupled with tips on how to treat them on your own or if the potential patient should see a doctor about it. At the county council web pages there is also information about how to live a healthier life, quit smoking and similar issues in order to improve public health. The primary healthcare clinics offer telephone advice by a nurse and sometimes telephone advice from the family doctor during telephone hours.

**Figure 5: Telemedicine services in Sweden**



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### 3.4 Technical aspects of implementation

*A key prerequisite for the establishment of an eHealth infrastructure is the ability to uniquely identify citizens/patients and healthcare professionals. This part of the survey deals with identifiers and how they are stored. This section does not deal with the tokens through which identification can or will take place. One such possibility would be via an eCard. This topic is dealt with in the following section. The current section focuses solely on whether or not unique identifiers are in place in Sweden and for which purpose.*

### 3.4.1 Unique identification of patients

**National citizen and healthcare ID is the “personnummer”**

Sweden has a national citizen ID, a so-called “personnummer”, which is used in dealing with public agencies, from healthcare to the tax authorities. This personal identity number exists since 1947 and is registered in the “folkbokföringsregistret” or population register. The personal identity number is used as patient’s electronic healthcare ID as a matter of national routine. This number is a typical phenomenon also in other Scandinavian countries such as Denmark.

### 3.4.2 Unique identification of healthcare professionals

**Healthcare professionals are identified through official diplomas**

Professional groups are covered by the regulation on the recognition of diplomas through the National Board of Health and Welfare (Socialstyrelsen). The board is responsible for issuing medical qualifications for 17 groups: pharmacists, midwives, physicians, nurses, dentists, occupational therapists, chiropractors, speech therapists, opticians, psychologists, psychotherapists, dispensers, radiology nurses, physiotherapists, hospital physicist and dental hygienists.

**“Professional Activities in Health and Medical Care Field Act”**

This regulation is laid out in the Swedish “Professional Activities in Health and Medical Care Field Act”<sup>37</sup>, which deals with the requirements for the practice of medicine, professional liability and supervision by the National Board of Health and Welfare as well as by the Medical Responsibility Board (Hälso- och sjukvårdens ansvarsnämnd- HSAN).

Four professional groups, which are not accredited, have protected titles, namely audiologists, bio-medical analysts, dieticians and orthopaedists. Specialist competence is recognised by the operational manager conducting an individual assessment of qualifications/credentials, using objectives laid down by the National Board of Health and Welfare as a basis.

The Swedish tax agency (Skatteverket) provides a population register (folkbokföringsregistret) which contains personal identity numbers for all Swedish residents. For the identification of professionals there is also a centralised repository maintained by the Swedish National Board of Health and Welfare (Socialstyrelsen). Both were implemented before the year 2000.

HSA Directory and SITHS should also be mentioned here. HSA contains about 320,000 objects, that is, persons and devices, and contains the national directory service- Nationell katalogtjänst- and base for a variety of healthcare services. It serves to provide information on the duties of staff and their roles. This is the basis by which the right to

<sup>37</sup> Lagen (1998:531) om yrkesverksamhet på hälso- och sjukvårdens område. The act is repealed on January 1st 2011 and is replaced by patientsäkerhetslagen (2010:659), the Patient Safety Act.

register and access information is granted. HSA is now implemented in almost all counties and a large number of municipalities.

National Identification Service- Nationell identifieringstjänst- (SITHS) is a national security solution for electronic identification and secure communication of information. With the help of a SITHS card, healthcare professionals can identify themselves and prove their competence, regardless of organisational or geographical boundaries. All counties introduced SITHS in spring 2010. In 2010, SITHS will also be packaged together with the National directory service, (HSA) in order to facilitate the introduction into municipalities and for private care providers.

### 3.4.3 The role of eCards

#### eCards as part of patient and healthcare professional identification

As part of the identification of patients and professionals, eCards are used in Sweden. Citizens and patients can use the eCard nationwide since 2005 for different purposes: They can make use of the ID card to communicate with healthcare services, such as confirming age and proving identity when collecting prescription medication at a pharmacy. Additionally the eCard can also be appointed to pay in a shop or conduct banking business.

Beside the role of providing biometric data, it is planned to embed an electronic circuit in the eCard, which will be able to carry electronic information – so-called electronic ID services (e-ID) – and thus identify the bearer electronically. The goal set out by the Swedish government is to achieve a national, cross-sectoral e-ID solution capable of ensuring secure electronic identification when eServices are used.

It is required to possess the above mentioned personal identity number and be over the age of 13 to apply for an eCard. Applicants under 18 must have a parent/guardian's consent to apply.

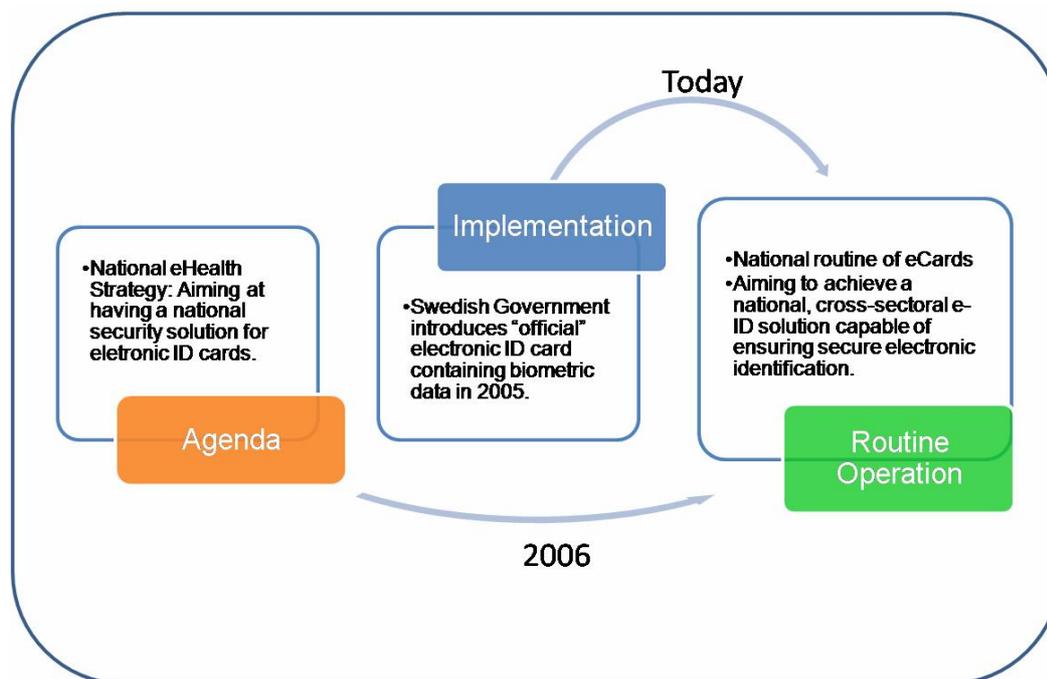
#### Healthcare professional identification via a directory and smart cards

Since 2009 there is also an infrastructure for the secure identification of healthcare professionals through so-called directory and smart cards. The implementation process of the distribution of about 205 000 cards is ongoing and planned to be finished by the end of this year. The framework for the system is provided by SITHS, which in Swedish stands for secure eHealth: In this model, health and social service employees have a personal electronic ID card with an electronic Public Key Infrastructure certificate (PKI). This enables care professionals to confirm their identity and authorisation. This has been so far applied in 15 of 21 county councils and 8 municipalities have joined.

As for security mechanisms, all parts of the identification system work along regulations where every user has his/her own key- and security code.

The development of eCards in Sweden is summarised in Figure 6.

**Figure 6: eCards in Sweden**



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### 3.5 Legal and regulatory facilitators

*Legal and regulatory issues are among the most challenging aspects of eHealth: privacy and confidentiality, liability and data-protection all need to be addressed in order to make eHealth applications possible. Rarely does a country have a coherent set of laws specifically designed to address eHealth. Instead, the eHealth phenomenon has to be addressed within the existing laws on professional liability, data protection etc.*

#### Patient Data Act (2008)

The "Patient Data Act"<sup>38</sup> from July 2008 is the most recent regulation dealing with patient data in Sweden. By replacing the Patient Record Act<sup>39</sup> and the Health Care Register Act<sup>40</sup>, the Patient Data Act constitutes a change in the law. On the one hand, the new law enables care professionals to digitally access a patient's entire care history from different levels within the health and medical care services and provides a nationwide share of locally stored information. On the other hand it strengthens citizen participation by enabling to determine, who is to be given access to their overall medical record and showing what personnel had access to medical records. It should be noted that access to medical data from other care providers always requires patient consent. Further the patient can block certain data from being shared.

Apotekens Service's processing of personal data in the national database for e-prescriptions and the national database of dispensed drugs is governed mainly by the Act of the Prescription Database<sup>41</sup> as well as the Act of Medication Summary<sup>42</sup>.

<sup>38</sup> Patient Data Act (2008:355), Patientdatalagen, complimented with the Patient Data Ordinance (SFS 2008:360, patientdataförordningen)

<sup>39</sup> 1985:562, Patientjournalagen.

<sup>40</sup> 1998:544, Lagen om vårdregister.

<sup>41</sup> Lagen (1996:1156) om receptregister.

The acts above are complemented by the Personal Data Act,<sup>43</sup> and the Digital Signatures Act<sup>44</sup>(issued 2001).. Apart from that electronic patient files, telemedicine and ePrescribing are regulated by the general legal framework.

### 3.5.1 Patient rights

#### Regulation on patient access and “care choice models”

The Patient Data Act specifies not only the rules for the legitimate processing of personal health data, it also introduced a coherent patient journal. One of the most important stipulations of the Act is the regulation of the access rights specifically for health data. When the requirements of the Act are fulfilled, healthcare providers can access each other’s information. One of those requirements is that only those who need the information in their healthcare are allowed to access the patient data. The Act thus supports the need to know principle and adheres to an internal secrecy. The access requires patient consent though. Further, the patient can block certain data. Furthermore, the care provider shall inform the patient about all access to the patient’s data. Overall, the patient is always given individual information on e.g. purpose of processing and the categories of data which are shared. Patients do have direct digital access to their own information as well as to a log on access history of personnel.

Related to the Patient Data Act, patients are given more rights through the development of “care choice models”. Such models allow patients and users of the health and social care services to choose from different providers, while the providers themselves have free right of establishment in order to increase the range of options open to patients. Due to the introduction of the care choice model, there is more need for common access to information about patients and users as well as for comparable information on the results and quality of health and social care provision, providing a basis for choice.

In sum, the processing of personal data for the purpose of the patient’s journal is allowed on the basis of the Patient Data Act even when the patient does not agree. In case of an exception on that specific rule or in case the processing is not allowed on the basis of the Patient Data Act, the patient has to expressly agree to the data processing in order for it to be legitimate. The Act restricts access to the personal data; access is only allowed in cases explicitly enumerated.

## 3.6 Financing and reimbursement issues

#### Joint responsibility of principals for financial costs

As Sweden mainly has a decentralised healthcare system, the basic responsibility for financing health operations rests with the principals. This means they are jointly responsible for most of the financial costs for work that needs to be done at the national level. The 21 county councils and 290 municipal councils are however dependent on taxes and central government grants.

Both the financing and the organisation of healthcare services are primarily the responsibility of the county councils. The healthcare facilities are, in most cases, also owned and operated by the county councils, which regulate the private practitioners’

<sup>42</sup> Lagen (2005:258) om läkemedelsförteckning.

<sup>43</sup> Personuppgiftslagen (1998:204).

<sup>44</sup> Lagen (2000:832) om kvalificerade elektroniska signaturer.

### County councils and municipalities receive subsidies and state grants

market in the sense that, by approving an establishment, a county council also approves public reimbursement for the respective practitioner. A county council cannot prevent a practitioner from establishing a private practice; the regulatory power is restricted to controlling the public financing of private practitioners. Private health centres and practitioners are common in major cities and in urban regions.<sup>45</sup>

County councils and municipalities also receive subsidies and state grants, which are financed through national income taxes and indirect taxes. The major part of the subsidies takes the form of reimbursements for pharmaceuticals listed in the Drug Benefit Scheme. State grants are partly based on a formula that re-allocates resources across municipalities and county councils with the aim of giving different local government bodies the opportunity to maintain similar standards, irrespective of differences in average income and/or need. This formula is based on individual level data, and uses demographic and socioeconomic variables as proxy measures of healthcare need. In practice, the new formula has meant that one county council, Stockholm, is a net contributor and all the other 20 county councils net recipients. For the 290 municipalities, a similar division between a small number of “losers” and a larger number of “winners” can be identified. The new formula created increased tensions, firstly between the “losers” and the national government, and secondly across local government bodies.

Regarding capital investment, there are recurrent and capital budgets for healthcare at different organisational levels. The actual decisions about investments can take place at any of these levels, depending on the size of the investment. For smaller investments, the decision can be made at clinic level, while bigger investments require a decision at a higher level. Thus, the clinic requests funding from the district board, which in turn may request funding from the county council.<sup>46</sup>

The government supports national infrastructure and common services as Inera AB as well as other activities.

### Swedish procurement model (within CeHIS)

The goal of the Swedish procurement model is to maximise the purchasing power of combined healthcare provider organisations and related organisations acting in various forms of consortia. The model can be effective in reducing products' costs, improving the affordability position and so maximising the available real financing for investments in eHealth. For more complex eHealth solutions, suppliers can work in partnership and subcontracting relationships.

The yearly budget amount is recommended by the SALAR board and decided by each county council individually. The national resources 2007-2009 for eHealth estimated 320 million SEK from which county councils contributes 220 and the State 100. These resources face total costs of IT for all county councils together of 6500 million SEK a year. It is planned that county councils will raise their funding about 25%.

## 3.7 Evaluation results/plans/activities

<sup>45</sup> Glengård, Hjalte et al. 2005, p.33-34

<sup>46</sup> see above, p.62

*From a public policy perspective, evaluation is a key activity in the policy-cycle. It provides insights into the success or failure of a policy or project and leads to new policy goals and new methods of implementation. The need for evaluation of eHealth policies and projects has been stressed time and again by the EC, not least in order to further the spread of eHealth in the process of healthcare delivery.*

**Evaluation responsibility shared among government agencies**

In Sweden, the responsibilities for evaluation of eHealth are shared between different government agencies: The two key questions for all evaluating institutions and defined by the National Strategy are: How quickly will the National Strategy for eHealth be implemented? When will the benefits become apparent? CeHIS does follow-ups and evaluations of national work regarding interoperability and cost-effectiveness. The Ministry of Health and Social Affairs, the National Board of Health and Welfare, the Medical Products Agency and SALAR all have – each in its own area of operation – a responsibility and the need to follow-up the impact, practical application and outcome of the National Strategy for eHealth.

**Some evaluation by eHealth Institute (eHälsa institutet)**

Some eHealth applications are also evaluated by the European Commissions Study on Economic Impact which is located at the University of Kalmar and aims to assess technology in healthcare in order to implement it. The institute runs about 20 projects in the field, including ePrescription. It is also working on the development of models for systemic evaluation and action of the introduction of new technology in health pro-motion and healthcare. The study of the European Commission has the objective to develop an evidence-based context-adaptive method of evaluation for eHealth. An important part of the Impact Study is the evaluation of specific cases/ eHealth applications and their economic impact. For the Swedish case, the study includes: ePrescribing, Electronic Health Record, Radiology consultations, integrated telemedicine and eHealth network, computerised medication management and direct access for patients to the medical record over the internet by emulating the internet banking for healthcare.

## 4 Outlook

Sweden scores well above average with regard to nearly all aspects of eHealth policy development and implementations covered by the survey. On the level of General Practitioners, Decision Support Systems are extensively used and storage of electronic patient data is common practice. Virtually all GP practices store at least one type of medical patient data in digital form. Especially remarkable in Sweden is the high prevalence of ePrescribing, which is used in 81% of prescribing overall. A National Patient Summary (NPÖ) is in place since April 2008. While the implementation is still ongoing it is planned to complete the process within the coming two years. It comes therefore as no surprise, that eHealth policy documents in Sweden are no longer strategy but progress reports.

In the future, progress is expected on the technological level with regard to eCards. Beside the role of providing biometric data, it is planned to embed an electronic circuit in the eCard, which will be able to carry electronic information – so-called electronic ID services (eID) – and thus identify the bearer electronically. The goal set out by the

Swedish government is to achieve a national, cross-sectoral eID solution capable of ensuring secure electronic identification when eServices are used.

These efforts also have financial repercussions. The national resources 2007-2009 for eHealth were estimated at SEK 320 million from which county councils contributed SEK 220 million and central government SEK 100 million. County councils have also raised their funding by about 25% in the recent years.

## 5 List of abbreviations

AB	Ltd
CeHIS	Centre for eHealth in Sweden
CEO	Chief Executive Officer
DRG	Diagnosis Related Group
EC	European Commission
EEA	European Economic Area
EHR	Electronic Health Record
EMR	Electronic Medical Record
EPR	Electronic Patient Record
epSOS	European patients Smart Open Services
ERA	European Research Area
EU	European Union
GDP	Gross Domestic Product
GP	General Practitioner
HCP	Healthcare Provider
HL7	Health Level Seven International (authority on standards for interoperability)
HPC	Health Professional Card
HSAN	Hälso- och sjukvårdens ansvarsnämnd [Medical Responsibility Board]
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IHTSDO	International Health Terminology Standards Development Organisation
IT	Information Technology
LSP	Large Scale Pilot
NEF	Nationellt e-receptformat [National e-prescription formats]
NPÖ	Den nationella patientöversikten [National Patient Summary]
NPOs	Non-profit Organisations
OECD	Organisation for Economic Co-operation and Development
PHS	Personal Health System

R&D	Research and Development
SALAR	Swedish Association of Local Authorities and Regions
SEK	Swedish Krona (Currency)
SIL	Svensk Informationsdatabasför Läkemedel [Swedish Information Database for Pharmaceuticals]
WHO	World Health Organization

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