Country Brief: Switzerland

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About *eHealth Strategies* and this report

The eHealth Strategies study analyses policy action and implementation progress of eHealth in EU and EEA Member States, with a special emphasis on barriers and enablers beyond technology. Progress with regard to specific applications such as patient summary and ePrescription is assessed. In addition, legal and regulatory facilitators and financing and reimbursement issues are also dealt with.

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Executive summary

The current Swiss eHealth strategy is based on a revision of the "Strategy for an information society in Switzerland" from 1998. eHealth was addressed in 2006 by the added chapter "Health and health services". This was done after an evaluation by the Centre for Research and Technology Studies in 2002. The strategy includes plans on infrastructural issues and conceptual elements. Another important document is the "eGovernment Strategy", as here eHealth is seen as one key factor to keep pace with international competition.

Adhering to the decentralised political structure of Switzerland, national projects do not originate from the eHealth coordination office, rather the office links and coordinates regional and cantonal approaches.

In order to understand Switzerland's position in relation to key eHealth objectives this report has looked at various different aspects but particularly patient summary and electronic health record, ePrescription, standards and telemedicine. Here is an overview of Switzerland's position:

At present a standardised patient summary does not exist in Switzerland, the establishment of one is planned for the end of 2015.

ePrescription is one of the planned eHealth applications in Switzerland. Current regional initiatives include ePrescription as part of eHealth pilots, but there are no large-scale or national projects as of yet.

eHealth Suisse coordinates the activities of several professional associations and advocacy groups dealing with standards. However, this institution can only formulate recommendations, like it did in the document "standards and architecture, first recommendations" (March 2009) not enforce them.

Various telemedicine activities take place at a canton level including teleconsultation, remote consultation, videoconsultation, mobile telehealth and evisits. There is no national initiative.

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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",[1] 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*[2] 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.[3]

On the more specific aspects of electronic health record (EHR) systems, the recent *EC Recommendation on cross-border interoperability of electronic health record systems*[4] 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.[5] 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)[6] - and a project on "Good eHealth: Study on the exchange of good

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[1] European Commission 2004

[2] European Commission 2007

[3] European Communities 2007

[4] European Commission 2008

[5] European Patients Smart and Open Services (epSOS)

[6] eHealth Priorities and Strategies in European Countries 2007

practices in eHealth"[7] 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 Switzerland 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 the report on Switzerland the Swiss eHealth Coordination Office, Adrian Schmid and Stefan Wyss, provided information on policy contexts and situations, policies and initiatives and examples for specific applications. Since 2008, Adrian Schmid has been the Head of the eHealth office in the newly established coordinating body of the Swiss federal government and the cantons ("eHealth Suisse"[8]). Before that he was project manager at the sickness and accident insurance if the Federal Office of Public Health (BAG). In this position he was responsible for work on the regulation of the health insurance cards and the eHealth strategy of Switzerland.

The key tool to collect this information from the different national 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 possible when comparing developments in different countries, in spite of the well-know disparity of European national and regional health system structures and services.

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[7] European Commission; Information Society and Media Directorate-General 2009

[8] Coordination Office Confederation-Cantons

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 Switzerland is described in chapter 0 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 *Swiss* healthcare system. It is concerned with the overall system setting, such as decision making bodies, healthcare service providers and health indicator data.

Chapter 0 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[9]

Switzerland, officially known as the Swiss Confederation, is a federal republic made up of 26 cantons. Thus, Switzerland today is composed of 26 entities that are sovereign in all matters that are not specifically designated the responsibility of the Swiss Confederation by the federal constitution. Each canton and demi-canton has its own constitution and a comprehensive body of legislation stemming from its constitution. The legislative authority is a unicameral parliament that, in most cantons, is elected by proportional representation.

The political system of Switzerland as an important framework of the healthcare system is profoundly influenced by a high degree of federalism and by the important role of direct democracy. The Swiss constitution assigns the legislation in health insurance matters to central government and the healthcare sector – with some exceptions – to the cantonal level. Insofar as the provision of healthcare services is seen as public matter, it is on the cantonal agenda. The different size of the "Kantone" and the split in the assignment between insurance matters and healthcare matters is to some extent a source of micro-economic inefficiency.

The Constitution on Health (Gesundheitsverfassung) brings together the principal relevant constitutional standards to provide a framework for Switzerland's healthcare policy. Thereby, the Confederation can act only in areas in which the constitution has granted it explicit power to do so. Responsibility for issuing and implementing health legislation still rests largely with the cantons. In recent years, however, the Confederation has made greater use of its existing legislative powers and acquired new powers from the people and the cantons (Art. 119, 119a and 120 FC). The core of the Constitution on Health derives from Articles 117 – 120 of the Federal Constitution (FC).

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

> **Key facts about the Swiss healthcare system:**[10]
>
> Life expectancy at birth: 82.0 years
>
> Healthcare expenditure as % of GDP: 10.8% (OECD 2007)
>
> WHO ranking of healthcare systems: rank 20
>
> Public sector healthcare expenditure as % of total healthcare expenditure: 59.3% (OECD 2007)

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[9] Theurl 1999; Minder, Schoenholzer et al. 2000; Swiss Federal Office of Public Health 2005; Federal Department of Home Affairs 2010

[10] Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

2.2   Healthcare governance[11]

Decision making bodies, responsibilities, sharing of power

At the federal level, the Federal Council and the Parliament are responsible for determining health policy in Switzerland. They draft and pass laws and ordinances. Because of the way the country evolved (a federal system), the cantons have wide-ranging individual responsibilities within the health system, although joint efforts have been made for the past few years. The Swiss Federal Office of Public Health (FOPH) has had a 'Health Policy' directorate since the end of 2004, and there is a regular dialogue on health matters between the federal government and the cantons.

The Federal Office of Public Health (FOPH) is part of the Federal Department of Home Affairs (FDHA). As the national authority in health matters, the FOPH represents Switzerland in international organisations and in dealings with other countries. Within Switzerland it is responsible – together with the 26 cantons – for public health and the development of national health policy. This includes the management and development of the social healthcare and accident insurance system. The FOPH specifies which services are paid for by compulsory health insurance and supervises the social healthcare and accident insurance funds.

Health is basically the responsibility of the cantons, including those areas regulated by the federal government. In areas that are the responsibility of the federal government, the cantons' general function is to implement the laws and ordinances passed by the national government. Federal regulations may be supplemented by cantonal implementing legislation. The cantons are autonomous in their implementation of legislative requirements.

Healthcare and social welfare tasks may vary considerably depending on the size of the commune. In some cases, neighbouring communes may join together to meet their obligations, or the tasks may be delegated to private organisations.

Healthcare service providers

Doctors in independent practice provide most ambulatory healthcare in Switzerland. Most doctor contacts take place in office-based practices; most are individual practices, although some group practices exist.

Patients are free to choose any doctor although most have a regular doctor. Patients also have direct access to specialists in an ambulatory care setting. However, most patients are referred to hospital-based specialists. Certain hospitals, such as university teaching hospitals, run polyclinics which offer direct access to outpatient services and offer consultations for which patients can register themselves.

Secondary care can be divided into two parts, each of which is governed by different regulatory principles. The federal government has no planning authority for outpatient and short-stay inpatient care (one night or less) nor does it provide subsidies for it. In contrast, inpatient hospital care (of more than one night) is subject to state planning and receives public subsidies.

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[11] Swiss Federal Office of Public Health 2005; Federal Department of Home Affairs 2010

Highly complex and highly specialised treatment is provided by university hospitals, some large cantonal hospitals and, in certain areas, private clinics operating with or without subsidies. This situation has developed over time in a largely uncoordinated fashion, usually at the instigation of interested doctors and hospitals.

Figure 1: Important features of primary healthcare organisation in Switzerland[12]

Political/administrative unit responsible for primary healthcare	Canton Health Departments safeguard the provision of healthcare and monitor hospitals, clinics, etc. Communes provide and coordinate healthcare services.
Consumer Choice	Patients are free to choose any doctor. Also have direct access to specialists without referral (unless they have a gatekeeping managed care plan).
Financing	Citizens pay health insurance companies. Where citizens are unable to pay they are subsidised by their Canton which pays this contribution directly to the health insurance companies. Insurance covers GP and specialist care, but Cantons provide a substantial share of hospital funding.
Public or private providers	A mix of public, subsidised private and private. Citizens have free choice provided that the costs are covered by their insurance up to the level of the official tariff.
Gatekeeping function of the GP	GPs only really take on a gatekeeping function when patients have a gatekeeping managed care plan.

2.3   Recent reforms and priorities of health system/public health[13]

After some failed attempts, the Swiss decided by a narrow majority in a ballot on the 4th December 1994 on a health insurance law which came into effect on 1st January 1996. It replaced the old law of 1911 which is hardly workable.

The new law facilitates a liberal, efficient but also social health service by guaranteeing even the less-well-off a high quality health provision at an acceptable cost. It is not increased state intervention but the promotion of competitive elements which is intended to induce partners in the health service to seek optimal solutions.

The objectives of the new law are a compulsory basic healthcare insurance combined with a free choice of changing the insurance company without any disadvantage and for all adults the same premiums, irrespective of age, gender and health status. Furthermore the law provides targeted premium reductions for persons and families with low income as well as a uniform and comprehensive schedule of benefits.

Whilst basic healthcare insurance is regulated in a very narrow way with a high degree of solidarity, supplementary insurance, which in future will be subject to the liberal private insurance law also for the social health insurance companies, seem very adapted and deregulated. Looked at jointly, this creates a balance and is therefore capable of calming concerns in one direction or the other.

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[12] David Squires 2009;   Luca Crivelli(proof reading by Mary Ries) 2010

[13] Scheider 1996; Minder, Schoenholzer et al. 2000

The main aims of the revision were: increased solidarity, closing of benefit gaps, curbing of costs.

Currently ongoing reforms in the health and social care systems

- Prevention law in the phase of parliamentary negotiation

- Current reform project: Promotion, respectively introduction, of the managed care system on a national level (parliamentary phase)

- Reform of the hospital financing system (DRG to go operative in 2012)

- Implementation of the quality strategy for the health sector

- Implementation of the Swiss eHealth strategy of the year 2007

- Ongoing discussions about the introduction of the freedom of contract in the ambulatory sector

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 Austria 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 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, 3.5and 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.
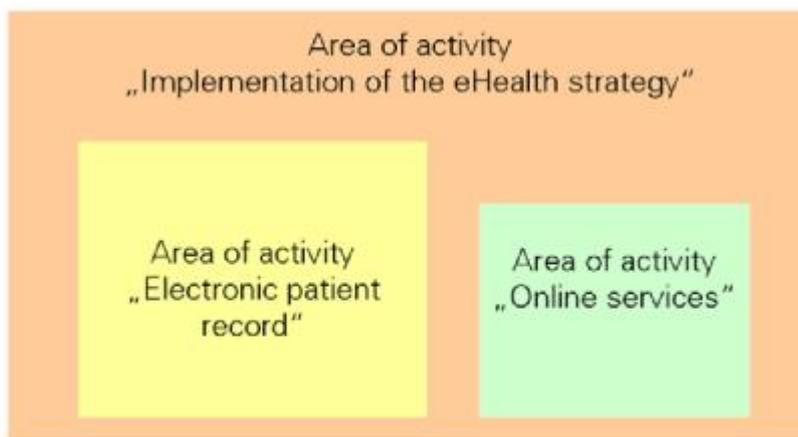
3.1.1 Current strategy/roadmap

The current Swiss eHealth strategy is based on a revision of the "Strategy for an information society in Switzerland"[14] from 1998. The field of eHealth is addressed in 2006by the added chapter "Health and health services"[15]. This was done after an

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[14] Bundesrat Schweiz 1998

[15] Bundesrat Schweiz 2006

evaluation by the Centre for research and technology studies in 2002, which identified a content-related gap regarding health. The follow-up assessment by the Federal Department of Home Affairs concluded further that national action is necessary. This led to a Swiss-wide survey in different boards in order to identify the issues that need to be addressed related to eHealth. The different cantons could also express their interest in pilots for different applications. After the evaluation process and on the basis of the added chapter, the official Swiss eHealth Strategy was launched in 2007.

Swiss eHealth Strategy (2007)

Central issues of the Swiss eHealth strategy[16], which are addressed in the document, are the following: Overall, the development and deployment of an electronic patient record and the implementation of online services (as

The three areas of activity in which the eHealth strategy needs to be pursued

seen in chart on the right) are prioritised areas of activity at the moment. Furthermore, the strategy includes plans on infrastructural issues- and conceptual elements such as a new national coordination body (see section 3.2 below on administrative and organisational structure), legislative and financial action, as well as standards definition and new health cards (see section 3.4.3 below). Regarding the EU Action Plan (2004), the Swiss eHealth strategy explains its creation and points towards other European and international strategies related to (e)Health.

Additional documents, which address eHealth in Switzerland, are the following:

- Strategy for an Information Society in Switzerland (2006)
- eGovernment Strategy Switzerland[17] (2007)
- For a more efficient healthcare system, eHealth in the public focus and electronic patient summary[18] (2007)

As mentioned above, the first document "Strategy for an Information Society", incorporated the "health and health services" chapter in 2006, which specifically addresses eHealth by stating that: (1) ICT in healthcare can bring advantages regarding access to health services, efficiency, security and costs; (2) It aims for a national eHealth strategy (which was then created in 2007) in cooperation with e.g. EU, WHO and (3) the Federal Department of Home Affairs (EDI) is assigned to develop the concept for the eHealth Strategy.

eGovernment Strategy

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[16] Bundesamt für Gesundheit 2007, [German], Federal Office of Public Health 2007, [English summary]

[17] Program Office E-Government Switzerland 2007

[18] Zentrum für Technologie-Folgenabschätzung [Centre for Technology Assessment] 2007

Another important document is the eGovernment Strategy, as here eHealth is seen as one key factor to keep pace with international competition. Furthermore, within the framework of eGovernment, the electronic identity management is planned to be realised together with stakeholders from the eHealth area – aiming to implement a coherent concept. The strategy has been developed in 2007 and last modified in May 2009.

Public brochure on eHealth developments

The Centre for Technology Assessment[19] also published a document on eHealth development in 2008: "For a more efficient healthcare system, eHealth in the public focus and electronic patient summary". The brochure was produced, aiming to explain the goals of eHealth, its meaning for the citizens and to raise awareness concerning eHealth.

Regional initiatives

At regional level, there are many eHealth projects, both cantonal and private. Very active cantons in Switzerland are St.Gall, Geneva, Basle, Tessin, Waadt and Lucerne. Examples for cantonal projects are the following:

[1] The canton Tessin realised the project "Rete Sanitaria"[20]. It took place from 2004 to 2007. Part of the project was an ecard for the patients.

[2] The canton of Geneva plans a major project to connect the most important healthcare players in the canton. The project is called "e-toile".

[3] The canton of St.Gall formulated an own cantonal eHealth strategy in 2005[21]. Various projects in the administrative and medical domain were or are being realised.

In sum, according to the decentralised political structure in Switzerland, the eHealth coordination office (further defined in section 3.2 below) does not initiate national projects, but tries to network and coordinate the existing regional and cantonal approaches.

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[19] Centre for Technology Assessment

[20] Iniziativa Rete sanitaria; Ufficio del Medico Cantonale [Network Health Initiative; Office of Medical Cantonale]

[21] Verein für Informatik im Gesundheitswesen 2005

Figure 2: Swiss policy documents related to eHealth

<div align="right">© empirica 2009</div>

3.2   Administrative and organisational structure

Competence centre "eHealth Suisse"

In order to address the federal structure of Switzerland and to coordinate and network regional initiatives, the competence centre for strategy and coordination "eHealth Suisse" was founded in 2008. It is based on a legal agreement[22] between the Confederation and the cantons. The main task is the implementation of the above described Swiss eHealth strategy (see 0 above). The main reason for the creation of the coordination office was the expected risk that isolated cantonal eHealth solutions could hinder the electronic exchange of health data. The agreement covers the period from 2008-2011. After that, another legal basis is needed – for this purpose different solutions are being developed, though it is not clear at the moment which legal form the office will have after the end of the current mandate.

At the moment, eHealth Suisse has the competence to formulate recommendations. Further tasks include:

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[22] Eidgenössisches Department des Innern [Federal Department of Home Affairs] 2007

> **Competencies of eHealth Suisse:**
>
> Formulation of recommendations, e.g. concerning specification of national infrastructure
>
> Coordination of the relevant players
>
> Implementation of the national eHealth strategy

According to the mentioned agreement between the Confederation and the cantons, these two finance the coordination office. There is no national think-tank that develops e.g. standards for the institute – for that reason; the project work is mostly based on voluntary work of the involved experts (from public and private actors). For the future it is planned to work more with mandates.

Informal stakeholder involvement through e.g. working groups, representation

In Switzerland there are currently three ways to informally consult stakeholders in the field of eHealth: First there are collaborations through temporary working groups (partial projects). Second, stakeholders are involved by representation in official decision making bodies in order to give recommendations and third, the coordination office also has an informal dimension of their work, which includes dialogues, workshops or information events where stakeholders participate. Thereby, persuasion work is a permanent task.

Main challenges, which the eHealth office has to face, are (1) the restricted amount of resources, meaning finances and workforce; (2) the federal structure of Switzerland; (3) to coordinate and network the broad variety of interests in the healthcare domain. Furthermore, eHealth Suisse has no competencies to take binding decisions, but only to formulate recommendations.

3.3   Deployment of eHealth applications

3.3.1   Patient summary and electronic health record (EHR)

In this study, the epSOS project's definition[23] 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

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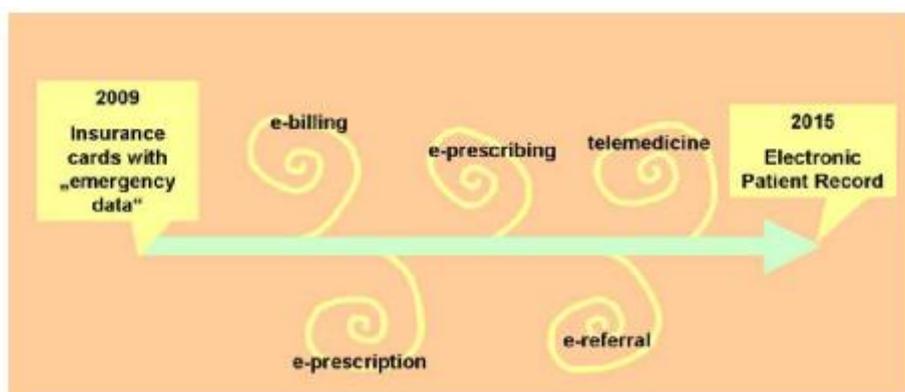[23] European Patients Smart and Open Services (epSOS)

health systems like Andalucia 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

Planned electronic patient record for 2015

Currently no standardised patient summary exists in Switzerland, but some healthcare professionals use electronic summaries for daily recording of administrative data. According to the Swiss eHealth strategy, the establishment of an electronic patient record is planned, as it is stated that: "By the end of 2015 everyone in Switzerland will be able to grant service providers of their choice electronic access to treatment-relevant information (electronic patient record) anywhere and at any time"[24].

The path to the electronic patient record will create a basis for further applications

Challenging aspects remaining for the establishment of patient summaries in Switzerland are on the one hand the coordination of centrifugal activities in a decentralised country and on the other hand, to create a technical framework, which also serves national purposes in this federal environment. In order to meet these challenges the eHealth coordination office was founded (see section 3.2 above) and the goal is to create a coherent eHealth architecture, which incorporates regional aspects of implementation.

However, individual projects are already establishing criteria for coordinated practice, e.g. the «e-toile» project[25] in Geneva, at the heart of which is a standardised, universally available virtual patient dossier.

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[24] Federal Office of Public Health 2007, p.3

[25] Secrétariat du Grand Conseil [Grand Council Secretariat] 2008

3.3.2   ePrescription

In the framework of this study and following work in epSOS[26], 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.

Planned ePrescription since 2008

The service of ePrescription is one of the planned eHealth applications in Switzerland and seen as a benefit for patient and healthcare provider. Therefore, the eHealth strategies aims for the electronic transmission of prescriptions to pharmacies and states that: "The cost-benefit analysis for insurance cards shows that if e-prescribing is implemented when the cards are issued or at a later date, and a list of current medication is provided on the card, further savings can be made. CHF 4.6 million could be saved annually through e-prescribing and a further CHF 144 million could be saved through documentation of medication (a list of medication, automatic check for interactions and contraindications, less out-patient and in-patient treatment for medication-related problems, savings on drugs not prescribed)"[27]. Currently, regional initiatives include ePrescription as part of eHealth pilots, but there are no large-scale or national projects ongoing. This leads to an overall ePrescription take-up of only a few percents right now.

Project group "standards and architecture"

The eMedication in a broad sense (including the medication history of a patient) is one of the officially recommended processes of the eHealth coordination office group "standards and architecture". This group sees ePrescription as an inherent part for a future eHealth infrastructure in Switzerland[28]. The other main process is the exchange of health data following the patient's way through the healthcare institutions, including administrative data like the referral of the patient to a healthcare institution, and the medical data like discharge letters.

In sum, it is challenging to deploy ePrescription in Switzerland, because of the following issues:

> **Challenging aspects of ePrescription deployment:**
>
> Creation of consensus between the different actors, such public actors (e.g. cantons) and private actors like thematically linked associations.
>
> Convincing actors of the use of ePrescription, as not all actors who invest in the implementation process will benefit
>
> Allocation of rights and duties, as there is no legal competence at national level – the cantons are in charge, but their involvement is not sufficient, because corresponding associations have to be involved

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[26] European Patients Smart and Open Services (epSOS)

[27] Federal Office of Public Health 2007, p.7

[28] eHealth Suisse Koordinationsorgan Bund-Kantone [coordination office] 2008, p.17

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.

eHealth Suisse coordinates standards activities and has a sub-group "standards and architecture"

In Switzerland, there is currently no national institution with the competence to take binding decisions in terms of standards development. The above mentioned coordination office "eHealth Suisse" (see section 3.2 above) coordinates at the moment the activities of the different relevant players. Especially the sub-group "standards and architecture" deals with interoperability issues in eHealth. Thereby this institution can only formulate recommendations, like it did in the document "standards and architecture, first recommendations"[29] (March 2009).

The document contains the overall recommendation to deploy process-oriented standardisation based on the IHE initiative[30] and defines the following pre-conditions:

- Unique identification of e.g. patients, healthcare professionals;
- Clear definition of processes and use cases;
- Surveillance and certification if standard-compliant implementation;
- Integration of new standards according to IHE

As the coordination office does not have the competencies to sanctify stakeholders that do not follow these recommendations, the following three instruments are planned in order to put pressure on concerned actors:

> **Enforcing measures for standards:**
>
> Cantons can declare the above mentioned recommendations as binding for their healthcare institutions;
>
> Institutionalisation of certification mechanisms for healthcare players is planned (market pressure: only certified vendors are serious vendors);
>
> The two previous measures are aiming to influence the market (industry included) to meet the recommendations, thus, de facto-standards could develop.

In sum, eHealth Suisse tries to coordinate the activities of several professional associations and advocacy groups dealing with this subject. But currently there is no other authority with the formal competence to formulate recommendations.

Standards, which are used or recommended by the coordination office, are the following:

Used standards:

- IHE specifications: XDS, PIX/PDQ, XUA (March 2009)
- ebXML as web service profile (March 2009)

Recommended standards[31]:

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[29] eHealth Suisse 2009

[30] Integrating the Healthcare Enterprise Europe

- HL7 CDA (for the exchange of clinical documents)
- ISO 13606 (document type categories)
- XDS (document exchange)
- PIX/PDQ (patient identification)
- XUA for authentication

The three overriding challenges in terms of standards development are the following: (1) to create a consensus between the different project partners with their different interests; (2) to integrate the industry in our project in a reasonable way. In the industry, short-term interests are dominant and (3) to reach compliance with the main actors to follow our recommendations.

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"[32]. 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[33]. It is therefore of great interest to this study to identify, which telemedicine applications are already available in Switzerland.

The following telemedicine applications are currently available nation-wide in Switzerland:

National telemedicine applications:

Teleconsultation (doctor-to-patient)

Teleconsultation or videoconferences between health professionals

Call centres for patient information/care by health insurance companies

Canton-based applications include the following:

Canton-dependent applications

Remote consultation or videoconferences between health professionals – cantons of Basle, Jura and Tessin; including telepathology and teleradiology – cantons of Schaffhausen, Uri and Tessin

Mobile telehealth – canton of Wallis and Basle

Remote consultations and eVisits – canton of Basle

As there is currently no national programme coordinating or incorporating the different telemedicine services, the eHealth Suisse coordination office recommends the

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[31] Further standards recommendations will follow (probably in 2010)

[32] Europe's Information Society 2009

[33] European Commission 2008

Confederation and the cantons to realise the measures of the European Commission on telemedicine[34].

Challenges of Swiss telemedicine deployment

Challenges concerning the further deployment of telemedicine applications include the following aspects: First, it is difficult to create a consensus among the different stakeholders, including public actors like the cantons and private actors like thematically linked associations. Further, these actors must be convinced of the added value while using telemedicine. Especially detaining is the fact that the stakeholders who invest in such innovations will not be the first ones to benefit from it. Last issue concerning telemedicine in Switzerland is the split competences – there is no legal competence at national level. Thereby, the cantons are competent in this matter, but their involvement is not sufficient and furthermore, corresponding associations have to be involved.

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 Switzerland and for which purpose.

3.4.1 Unique identification of patients

Social security number could serve as patient ID

In Switzerland, there is no national patient ID and its introduction is not planned. Since July 1, 2009 a new national social security number is in use. This number could serve as a secure patient identifier. But the corresponding law rules that because of data protection regulations in healthcare, the new number can only be used for administrative purposes. It is legally not allowed to use the new number e.g. as a patient identifier for an electronic patient record. As the use of the number would bring great advantages, there is an ongoing discussion at political and legal level with the goal to permit such use of the new number.

Assuming that the law would allow the use of the national social security number as patient ID, it would remain one identifier among many. Consequently, Switzerland will most likely realise a decentralised national registry to safely identify patients: One main or even the most important element of this registry will be an alignment instance that aligns the different identifiers of a patient to be sure that it is the right one.

Decentralised national registry for patient identification

In Switzerland, the essential force (in legal matters) in healthcare is the 26 cantons (regions). The big health data collection with patients' data is generated in hospitals or in regional projects. So the processes of the patient identification must adapt to this decentralised, regional distribution of health data. Because of this structure, a variety of patient identifiers exists. The creation of a unique patient identifier does not fit the decentralised structure of Switzerland.

At the moment, the cantons can legally allow the use of the number for pilot projects with the new health insurance card.

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[34] COM (2008) 689

3.4.2 Unique identification of healthcare professionals

Planned creation of compatible indexes for different health professional groups

For the identification of healthcare professionals, the same aspects apply as for the patient ID (discussed in section 3.4.1 above). It is planned to create compatible indexes of the different groups of health professionals in Switzerland. Consequently, a registry of the health professional ID with the corresponding alignment mechanisms (alignment instance) will be another important element of the mentioned Swiss eHealth architecture. But for political reasons, there will probably never be one unique health services ID for all health professionals in Switzerland.

Further, the Swiss medical association (FMH) started in 2009 to distribute a health professional card (HPC) for its members (for further explanation see section 3.4.3 below)

Challenges of patient and healthcare professional IDs

In sum, the decentralised political structures lead to a variety of identifiers for patients and health professionals. The challenge is to collect them and align them with national eHealth goals at national level (the goals of the Swiss national eHealth architecture, see section 0). For future developments it is recommended to build intelligent mechanisms in order to use the decentralised data at national level.

3.4.3 The role of eCards

The Swiss State Secretariat for Economic Affairs just launched an initiative for electronic identification in terms of business communication or eGovernment services. This so-called "SuisseID" is connected to a smart card or USB token, which enables the user to take advantage of tax, mail, payment or canton-based eGovernment services. This service is currently limited to state departments and firms which agreed to join up for the initiative. There is no direct conceptual link to eHealth planned at this stage.

Planned national eCard

In Switzerland, a national (Health Insurance) eCard was introduced in 2010. It was created for administrative data, while its main purpose is to be used as a healthcare ID. Every citizen will receive the new (insurance) eCard with a chip on it. On the chip, the patient can choose to save administrative and medical data (emergency data). These data are not simultaneously saved on a server. For the mentioned national eHealth architecture, the new eCard is important because of its function as an authentication instrument for patients.

Card-to-card authentication with a patient-assigned pin

For security reasons, the citizen can add a pin on an optional basis to protect all data or parts of the data on the eCard (no pin for simple administrative data like name, date of birth, sex, social security number, etc.). The citizen (patient) decides which health professionals are allowed to read or write data on his card. These health professionals receive a login and a password to do this. The possession of a health professional card for these health professionals is mandatory (card-to-card authentication).

Distribution of health professionals cards in 2009

Regarding a health professional card, the Swiss medical association (FMH) started in 2009 to distribute a HPC for its members. But as a physician, it is optional to have a HPC or not. For Swiss eHealth architecture, the HPC is an important instrument for identifying the physicians in the electronic communication. It is expected to be initiated, as for GPs it is necessary to read or write medical data on the health insurance card.
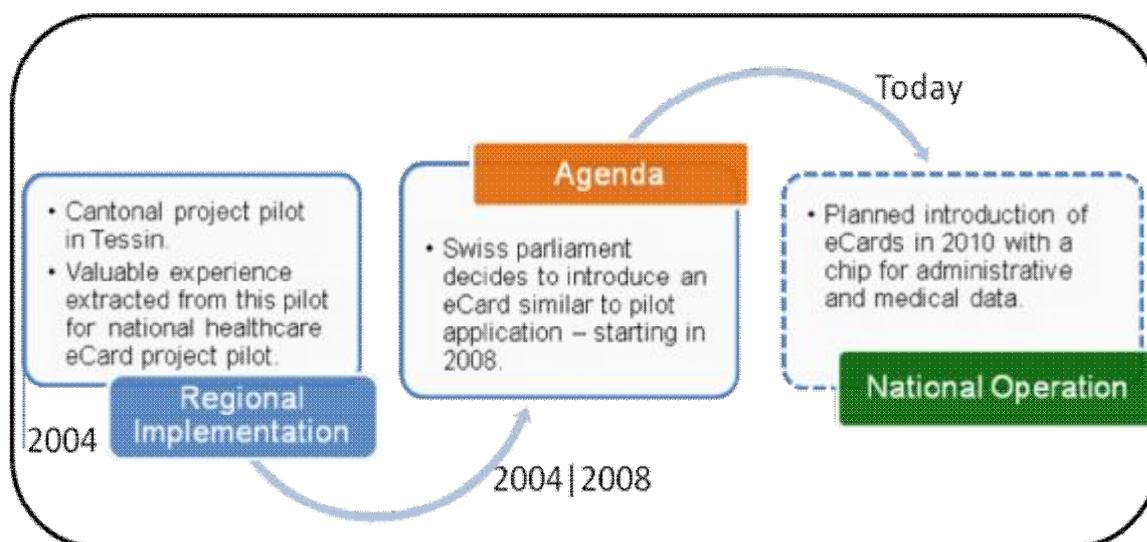
The main challenge is not of technical matters. It is rather the creation of acceptance in

all stakeholder groups (among others to convince the physicians). In this sense, there is a lot of persuasion work to do: All actors have to be convinced that the eCard will be useful.

Lessons have been learned for the national eCard from another project pilot, which started in 2004 in the city of Lugano ("Carta Sanitaria"). An internal evaluation of the project showed that many patients are willing to provide data for the smart card, but the key to success are the GPs – if they are not convinced, fewer patients are willing to take part. Responsible for the 4-million-Euro pilot (1st phase, see

Phase 1 (until 2006)
eCard trial, without online services
Temporary and regional not meant as pilot for national eCard
Phase 1b
Pre-test for phase 2a, especially through private and public partnerships
Phase 2 (until 2010)
2a: Extension of eCard implementation throughout the whole canton
2b: Trial of online services (temporary and regional), creation of the eHealth platform
Phase 3 (until 2015)
Consolidation of the eHealth platform and extension of the online services throughout the whole canton

image) are the canton Tessin, the project team "Rete sanitaria", a strategic steering committee and the National Health and Social Department.[35]

Figure 3: eCards in Switzerland

© empirica 2009

3.5 Legal and regulatory facilitators

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[35] Cassis and Santa 2006

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.

Legislative process of enacting for law on patient data record system

During the year 2010, an expert group prepares a factual decision basis for the coming legislation process on eHealth. A legislation process concerning the handling of a patient data record system was expected to begin in autumn 2009, after the required formal decisions of the steering committee and federal council were made. The legislation process will not only have to define rules for these patient records, but will also have to define the formal responsibility for the main elements of the planned Swiss eHealth architecture, including the following details:

- patient index inclusive alignment instance
- health professional index inclusive alignment instance
- document registry
- document repository
- online health portal
- data protection respectively access/role concept
- interface to administrative processes

It will be one of the main tasks of the legislation process to formulate common (nationwide) rules for the handling of the decentralised existing health data in Switzerland. The national level will define a legal frame; the rest will have to be regulated by the competent cantons. In November 2009, the cantons took a formal decision to implement the recommendations of "eHealth Suisse" and to start legislation where necessary.

3.5.1 Patient rights

In general, the following patient rights apply in Switzerland at that time:

Patient rights in Switzerland:

Patient need to explicitly consent to the creation of an electronic patient record [opting-in model]

Patient need to consent to the inclusion of medical data in their record on a case-by-case basis

Patient can hide certain type of information in their record

Patient can ban certain healthcare professionals from access to the healthcare record

Patient can demand the deletion of the entire healthcare record and specific data

Currently there is no legislation regarding telemedicine services, but the eHealth Suisse coordination office recommends the use of European Commission measures on

telemedicine[36] at national and regional level, aiming for harmonisation between the cantons.

3.6   Financing and reimbursement issues

Since the cantons are the competent authorities for healthcare in Switzerland, they are also primarily financing healthcare and eHealth services. As there is currently no funding system for eHealth, regulation on this is expected by the legislative act, which is under consideration at the moment (see section 3.5 above).

In general, the available public budget spent on eHealth is allocated to the following activities:

> **Spending of public budget:**
>
> Planning
>
> Project Management
>
> Long-term management
>
> Procurement costs

In particular, the eHealth Suisse coordination office – according to the agreement of the Confederation and the cantons – has a budget of 1.1 million Swiss Francs for the year 2010. In the years 2008 and 2009, it was financed with 560.000 Swiss Francs and for 2011 an amount of 1.02 million Swiss Francs is planned.

The higher amounts for the years 2010 and 2011 were raised due to a decision of the steering committee in 2009. The reason is that a lot of basic work for the planned eHealth architecture has to be done (specifications). Furthermore, the principle of voluntary work by project partners is limited.

Cantons participating in European projects
Regarding international sources of funding, some cantons in Switzerland participate in international projects and receive financial support. Examples are the canton of Basle (EU Netc@ards project) and the University Hospital of Geneva (debugIT (FP7)/ @neurist (FP6)).

Reimbursement activities will also be covered by the upcoming legislative act (see section 3.5 above). Until now, the 85 Swiss insurance companies have no obligation to invest in eHealth activities. However, they may invest in projects that have concrete use for them.

3.7   Evaluation results/plans/activities

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.

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[36] November 4th, 2008 (COM (2008) 689)

There are current and planned evaluation activities in Switzerland, including public and private initiatives. The creation of the eHealth Suisse coordination office is – since its establishment in 2008 – obligated to evaluate pilot projects, which are ongoing at cantonal level. So far no evaluation study has been carried out. In autumn 2010, a corresponding evaluation concept will likely be formally adopted and ready for use for evaluations of pilot projects. The main criteria of future work in evaluation studies of the coordination office are the conformance of projects with the official recommendation linked to eHealth Suisse.

Evaluation activities in the past include a cost-benefit analysis of the eCard, which will be introduced in Switzerland in 2010 (see section 3.4.3 above). The results of the study were positive: The benefits of eCard introduction were higher than the means that have to be invested. This report was developed the consultant agency "Debold & Lux"[37]. Most likely also cantons have evaluated their pilot projects in recent years.

4   Outlook

Switzerland has had a national eHealth strategy since 2007 and realised different aspects at different administrative and legal levels until today: Most important development stages are (1) the creation of the eHealth Suisse institute, which coordinates activities in different cantons and recommends the course of action; (2) eCards or rather chip cards like the healthcare eCard with administrative and medical data are about to be launched – whereas the data is not stored centrally, as this would not be possible at a political level in Switzerland, but in decentralised servers, at the moment, and data management is connected to extensive patient rights and (3) a new regulation on electronic health records is in the legislative process of enacting – this legislation will clarify funding/reimbursement mechanisms in eHealth, patient identification and health record management as well as data protection issues.

In sum, Switzerland is dealing with federalist obstacles concerning eHealth applications. This shows in the development of different eHealth applications, such as the existence of many different patient IDs or several pilot and evaluation projects at cantonal level, which were not coordinated until 2008. Since then, the eHealth Suisse office is responsible for networking these initiatives. It seems that through this coordination office, Switzerland tries to work against the fact that before health policy was of minor importance at national level, as responsibilities lie with the cantons. Furthermore, it can be shown that the Swiss government is willing to unite regional efforts for the goal of a coherent eHealth system.

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[37] Debold & Lux Ltd

5   List of abbreviations

CHF	Swiss Francs
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
FC	Federal Constitution
FMH	Swiss medical association
FOPH	Swiss Federal Office of Public Health
GDP	Gross Domestic Product
GP	General Practitioner
HCP	Healthcare Provider
HPC	Health Professional Card
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IHE	Integrating the Healthcare Enterprise Europe
IHTSDO	International Health Terminology Standards Development Organisation
IT	Information Technology
LSP	Large Scale Pilot
OECD	Organisation for Economic Co-operation and Development
PHS	Personal Health System
R&D	Research and Development
USB	Universal Serial Bus
WHO	World Health Organization

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