

Country Brief: Austria

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October 2010



European Commission,
DG Information Society and Media,
ICT for Health Unit



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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Acknowledgements

This report was prepared by empirica on behalf of the European Commission, DG Information Society & Media. empirica would like to thank Jos Dumortier, Time.lex CVBA for the review of the section on legal issues and Professor Denis Protti (University of Victoria) for valuable feedback.

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Bonn / Brussels, September 2010

Table of contents

1	Introduction to the report	6
1.1	Motivation of the eHStrategies study	6
1.2	Survey methodology	7
1.3	Outline	8
2	Healthcare system setting	9
2.1	Country introduction	9
2.2	Healthcare governance	10
2.3	Recent reforms and priorities of health system/public health	12
2.4	ICT use among general practitioners	13
3	eHealth strategies survey results	15
3.1	eHealth policy action	15
3.1.1	Current strategy/roadmap	15
3.2	Administrative and organisational structure	17
3.3	Deployment of eHealth applications	18
3.3.1	Patient summary and electronic health record (EHR)	18
3.3.2	ePrescription (eMedication)	21
3.3.3	Standards	22
3.3.4	Telemedicine	23
3.4	Technical aspects of implementation	25
3.4.1	Unique identification of patients	26
3.4.2	Unique identification of healthcare professionals	26
3.4.3	The role of eCards	27
3.5	Legal and regulatory facilitators	28
3.5.1	Patient rights	30
3.6	Financing and reimbursement issues	30
3.7	Evaluation results/plans/activities	31
4	Outlook	32
5	List of abbreviations	33
6	Annex	35
	Annex 1: Compound indicators of eHealth use by GPs	35
7	References	36

Executive summary

The Austrian policy paper for eHealth “An information and communication strategy for a modern Austrian Health Care”¹ was developed in 2006 and is based upon the eEurope 2004 action plan². The strategy aims to stimulate services, applications and content, covering both online public services and e-business.

Documents from other domains also relevant to eHealth include the eGovernment Act from 2004 and the internet declaration published in February 2010. The eGovernment Act is a “Federal Act on Provisions Facilitating Electronic Communications with Public Bodies”³. The Austrian Internet Declaration⁴ led to the formation of the 'Centre of Excellence for the Internet Society' whose main function will be the administration of the national ICT policy.

In order to consider Austria'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 Austria's situation is as follows:

At the national level, Austria is in the process of developing an electronic health record: ELGA (Elektronische Gesundheitsakte). ELGA contains health related data and information referring to a precisely identified person. This data derives from different health service providers and is stored in one or several different systems. The ELGA GmbH provides interoperability work in order to promote standards and create standard procedures to work with patient data. The foremost goal is to harmonise the various IT systems of different healthcare providers.

In terms of ePrescription or eMedication it was deemed that an integrated supply of eHealth services is only possible through ELGA and therefore eMedication is defined as core application. The national rollout of an eMedication database was planned for the end of 2008, but was stopped due to political obstacles until May 2009. In consequence the implementation process of eMedication in Austria had to start again from scratch. Pilot projects for eMedication started in 2010 in three regions (Vienna, Upper Austria, Tyrol).

With regards to standards the ELGA GmbH has the overall goal of ensuring technical interoperability and harmonised national standards. This harmonisation work resulted in implementation guidelines being developed. These guidelines define the implementation structure of all clinical documents. Thereby, Clinical Document Architecture (CDA) is used as a basis.

In Austria, pilot projects for telemedicine have been carried out since the late 1990s. Recent projects include Teledermatologic Network Services for Counselling on Diagnosis of Skin Diseases and the H.ELGA IT Platform. Telemedicine is part of the national eHealth strategy and some groups and companies are active. Obstacles for further national deployment are lack of a reimbursement scheme for such services and the need for legislation to be renewed.

¹ Pfeiffer 2007

² Commission of the European Communities 2002

³ Austrian Government 2004

⁴ Rundfunk und Telekom Regulierungs-GmbH 2010

List of Figures

Figure 1: Important features of primary healthcare organisation in Austria 11

Figure 2: eHealth use by GPs in Austria 14

Figure 3: Austrian Policy documents related to eHealth 17

Figure 4: Patient summary in Austria 21

Figure 5: Telemedicine services in Austria..... 25

Figure 6: eCards in Austria..... 28

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”⁵ 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*⁶ 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.⁷

On the more specific aspects of electronic health record (EHR) systems, the recent *EC Recommendation on cross-border interoperability of electronic health record systems*⁸ 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.⁹ 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)¹⁰ - and a project on “Good eHealth: Study on the exchange of good

⁵ European Commission 2004

⁶ European Commission 2007

⁷ European Communities 2007

⁸ European Commission 2008

⁹ European Patients Smart and Open Services (epSOS)

¹⁰ eHealth Priorities and Strategies in European Countries 2007

practices in eHealth"¹¹ 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 Austria 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 Austria, Karl-Peter Pfeiffer was the national correspondent. Pfeiffer is head of the working group "National eHealth Strategy" of the Austrian eHealth Initiative, and takes part in the development of an Austrian eHealth strategy. He was also responsible for the development and introduction of the Austrian DRG¹² system and is still involved in the development of this system. On 23 June 2009 Pfeiffer was elected by the College of Applied Sciences Joanneum¹³ as the new rector and scientific manager. 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 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

¹¹ European Commission; Information Society and Media Directorate-General 2009

¹² Diagnosis Related Groups

¹³ FH JOANNEUM University of Applied Sciences 2010

possible when comparing developments in different countries, in spite of the well-known disparity between 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 Austria 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 *Austrian* 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 introduction¹⁴

The basic structures and functions of Austria's public administration are determined by its constitution as a federal republic consisting of nine "Länder" (states). Each "Land" has its own constitution, parliament and government and executes a significant part of public administration independently or by way of delegation. The "Länder" administrations are divided into districts ("Bezirke") to which a number of tasks are devolved. District offices are headed by the district commissioner who is responsible to the governor of the Land. Finally, local government is in the hands of a directly-elected local council and the mayor ("Bürgermeister"). In larger communities the mayor is assisted by a local authority.

The Austrian healthcare system is characterised by this federalist structure of the country, the delegation of competencies to self-governing stakeholders in the social insurance system as well as by cross-stakeholder structures at federal and Länder level which possess competencies in cooperative planning, coordination and financing. According to the Federal Constitution, almost all areas of the healthcare system are primarily the regulatory responsibility of the federal government. The most important exception is the hospital sector: In this area, the federal government is only responsible for enacting basic law; legislation on implementation and enforcement is the responsibility of the nine Länder. In the outpatient sector, but also in the rehabilitation sector and in the field of medicines, healthcare is organised by negotiations between the 21 health insurance funds and the Federation of Austrian Social Insurance Institutions on the one hand and the chambers of physicians and pharmacists (which are organised as public-law bodies) and the statutory professional associations of midwives or other health professions on the other. The various sectors of the healthcare system have traditionally been characterised by different stakeholders and regulation- and financing mechanisms. However, in recent years there have been increased efforts to introduce decision-making and financing flows which are effective across all sectors.¹⁵

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

Key facts about the Austrian healthcare system:¹⁶

Life expectancy at birth: 80.5 years

Healthcare Expenditure as % of GDP: 10.1% (OECD 2007)

WHO Ranking of Healthcare systems: rank 9

Public sector healthcare expenditure as % of total healthcare expenditure: 76% (OECD 2007)

¹⁴ eUser 2005

¹⁵ Hofmarcher and Rack 2006, p.xvii-xviii

¹⁶ Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

2.2 Healthcare governance

Decision making bodies, responsibilities, sharing of power¹⁷

The Federal Ministry of Health is the main policy decision maker in Austria. The Ministry supervises the nationally active stakeholders in the social insurance system. It is partly supported in the execution of its statutory tasks (e.g. product safety, protection against infections, health professions) by subordinate authorities such as the Austrian Health Institute and the Federal Office for Safety in the Healthcare System.

The objective of healthcare structural planning is to provide evenly distributed, uniformly high-quality care across the country, which is easily accessible and financed in a sustainable manner. Healthcare structural planning in Austria is traditionally aimed at the area of acute hospital care, since the Austrian healthcare structure is relatively hospital-centred compared to the systems in other countries.

The Austrian Hospitals and Major Equipment Plan (ÖKAP/GGP) went into force as part of the 1997 Healthcare Reform Act, and has since been updated and expanded – and undergone further development based on new, quality-based planning methods – at regular intervals in concordance between the Federation and the provinces. Alongside the determination of hospital locations, the maximum number of beds per hospital and the maximum number of beds per specialty and province, the ÖKAP/GGP contains agreements on structural changes commensurate with demographic and medical developments (further information in section 2.3).

Additionally, a new, modern approach to healthcare structure planning was agreed upon in 2005, an approach which forms the basis for the Austrian Healthcare Structural Plan (Österreichischer Strukturplan Gesundheit, ÖSG). The ÖSG is to become the instrument of integrated planning for the whole healthcare field – inpatient and outpatient, acute and long-term care including rehabilitation, as well as the interfaces between the various care sectors and levels. The methodical approach employed is service provision planning, which is to replace the traditional methods of location, specialty structure and bed availability planning (further information in section 2.3).

Healthcare service providers¹⁸

The public health service is the responsibility of the Länder. It is mostly carried out by district medical officers employed by the Districts, Länder or in a few cases the federal authorities. They are in charge of health reporting, the prevention of epidemics and protection against infections, as well as for the supervisory activities of health inspectors and environmental medicine. In addition they are responsible for vaccinations (paid for by statutory health insurance) and they provide preventive check-ups.

The Federal Ministry of Health does not have any federal sub-authorities in the public health sector. Therefore the provinces and the municipalities are principally responsible for health administration. Accordingly, there is a separate department of health in each provincial government, headed by a medical doctor with civil servant status and the

¹⁷ Federal Ministry of Health and Women 2005; Hofmarcher and Rack 2006

¹⁸ Federal Ministry of Health and Women 2005; Grosse-Tebbe and Figueras 2005; Hofmarcher and Rack 2006

Provincial Health Director (“Landessanitätsdirektor”). A Provincial Health Councillor is available to each provincial government office for purposes of consultation. In addition, each district administrative authority has a health department (health office) which is headed by a medical health officer. Some matters such as those of the local health inspection officers are included in the municipalities’ sphere of responsibility. In some cases there are also municipal associations (health districts) where municipal or district doctors (medical officers of health) serve as expert bodies. The supervisory authorities here are those of the general state administration (district administrative authorities, provincial governments).

People covered by social health insurance have freedom of choice in the outpatient sector between service providers in private practice (predominantly single practices), hospital outpatient departments and 836 outpatient clinics (owned by individuals or the social insurance institutions). A “location plan” is negotiated at Länder level for outpatient care provision on the basis of which the health insurance funds selectively award individual contracts to a proportion of the physicians in private practice. The plan regulates the number and the geographical distribution of contracted physicians per specialty and is drawn up according to socio-demographic factors and existing hospital capacities in the catchment area. General practitioners coordinate care and referrals and serve as formal gatekeepers to inpatient care, except in emergency cases. In practice, however, patients often directly access outpatient clinics. A co-payment for this type of service did not impact substantially on fund revenues and care-seeking behaviour and was abolished in 2003.

Inpatient healthcare is predominantly provided by public hospitals as well as by hospitals owned by private non-profit making organisations, social insurance institutions and private profit-orientated owners. Of these, a total of 139 public or private non-profit-making hospitals are required to provide care to all patients requiring it. These “fund hospitals” receive public subsidies for investments and running costs.

Figure 1: Important features of primary healthcare organisation in Austria

Political/administrative unit responsible for primary healthcare	Principle laws are in the responsibility of the Ministry of Health; the implementation of the healthcare system is in the responsibility of the federal provinces.
Consumer Choice	There is a free choice of the GP, but a change can only be done after one or three month.
Financing	There is a mix of social insurance fees and tax.
Public or private providers	GPs are working in private practices. Most of them have a contract with social insurance companies.
Gatekeeping function of the GP	GPs should be the first contact, but patients can also go directly to a specialist.

Integrating health: initiatives for coordination	There is an Austrian health structure plan and there are regional health structure plans mainly for hospital beds and inpatient services.
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2.3 Recent reforms and priorities of health system/public health¹⁹

Since the early 1990s there have been a series of reforms in the Austrian healthcare system. However, in spite of numerous changes and amendments to laws, the organisational and financing structures set out by the Federal Constitution of 1925 and the social and care provision legislation of the ASVG²⁰ have been adhered to in all legislative periods. Since the mid-1990s, ensuring the financial feasibility of the healthcare system has been increasingly and more explicitly formulated as a key objective.

The Health Reform in 2005 was therefore orientated towards safeguarding the financial feasibility of the Austrian healthcare system via measures to contain costs, increase efficiency and exercise a controlling function. Its implementation effected smaller room for manoeuvre of the regional bodies with regard to the vertically defined extent and quality of care provision. However, the Länder gained more horizontal autonomy, because organisational conditions have been created in the form of the Health Platforms which make it possible both to coordinate the supply chain within a region as well as to enter into supra-regional cooperation schemes.

One of the most important measures in the Health Reform 2005 is the Quality Act²¹. With this law, the Federal Government has created a legal framework which enables it to further develop the numerous quality issues tackled in recent years in a structured way, and to thus pursue a targeted quality strategy. The basic principles of this law are patient orientation, transparency, efficiency, efficacy and patient safety. It has created the opportunity to develop and implement nationally standardised specifications which cover all the sectors of the healthcare system. The act affects all the sectors: public and private hospitals and outpatient clinics, physicians and all other health professionals, such as medical-technical staff, midwives and nursing personnel – in short, all providers of healthcare services.

In sum, The Federal Government's increased desire to regulate came at the price of a gain in autonomy for the Länder, and fostered decentralisation. This decentralisation lead to a stronger desire for regulation on the part of the Federal Government, which is reflected in the measures targeted in the Health Reform 2005.

¹⁹ Hofmarcher and Rack 2006

²⁰ General Social Security Act

²¹ Bundesgesetzblatt für die republik Österreich, 30 december 2004, Gesundheitsreformgesetz 2005, 179.

Currently ongoing reforms in the health and social care systems²²

In 2009, the Austrian Government phased in a series of legislative amendments of which some are already implemented and some will come into effect in 2010. These legislative amendments aim to safeguard revenues of sick funds which likely plunge further owing to the expected economic downturn. These measures will help, but a balanced budget will also require sick funds to cut costs. A new structural fund endowed with tax money will be established aiming at giving the central government more leverage to realise this. So far the government is silent about health reform which appears overdue. Stern leadership is necessary and in demand.

Dealing with sickness fund's deficits and in particular with deficits in regional funds has been on the policy agenda for years. So far many financial measures taken were short-lived because structural deficits have accumulated in light of intensified efforts in recent years to achieve a balanced budget on the level of the general government. For example, between 2000 and 2006 revenues for the unemployed were capped. Also, compensations for value-added-tax outlays were only partly recovered. On the other hand many measures taken in recent years aimed at compensating sickness funds for these revenue shortfalls.

While the failed 2008 reform approach²³ had its focus on bringing back social partners on the health policy agenda and on envisioning strengthening sickness funds as purchasers, the current "safeguard approaches" will bring back the central government. Therefore the measures as taken may be read as a continuation of the 2005 health reform (see above) where the government aimed at getting a bigger stake in health policy matters on both the level of federal states and sickness funds.

Furthermore, a Health Fund endowed with tax money will come into operation in 2010 aiming at safeguarding a balanced budget of sick funds. While still in infancy, the Health Fund gives the government more say in sick fund matters. The government endorsed a road map for cutting costs which is linked to disbursements from the Health Fund. It is uncertain if cost targets can be achieved. A wider health reform in response to the economic crisis also addressing the fragmented hospital sector is still overdue.

Starting in March 2010 the Federation has to submit evaluations about achievements in cost containment on a bi-annual basis. The Minister of Health reports these results to the government, also on a bi-annual basis. The Federation is requested to submit clarifications if cost containment targets deviate from what is specified in the road map. If deviations persist throughout the year, the Federation is required to propose cost cutting measures for achieving cost targets as stipulated.

2.4 ICT use among general practitioners

This section provides a brief overview of relevant ICT related infrastructure and services data. It draws on earlier studies commissioned by the EC, notably the Indicators eHealth

²² Bundesministerium für Gesundheit 2009; Hofmarcher 2009; Hofmarcher 2009

²³ In April 2008 attempts failed to relieve accumulated debts, measures as proposed by this draft legislation may not be sufficient to respond to the expected shortfall of revenues for sickness funds.

Study . Although the results of this study date from 2007 and may therefore not reflect latest changes, a more recent pan-European survey is not available²⁴.

In terms of infrastructure, 84% of the Austrian GP practices use a computer. 68% of the Austrian GP practices are connected to the Internet. Broadband Internet connections can be found in only slightly more than one third (37%) of the practices.

Electronic patient data storage is quite common in Austria. At least one type of individual data is stored in 77% of GP practices. Most frequently Austrian GPs store administrative and medical data e.g. on the patients' health status, diagnosis, treatments etc.

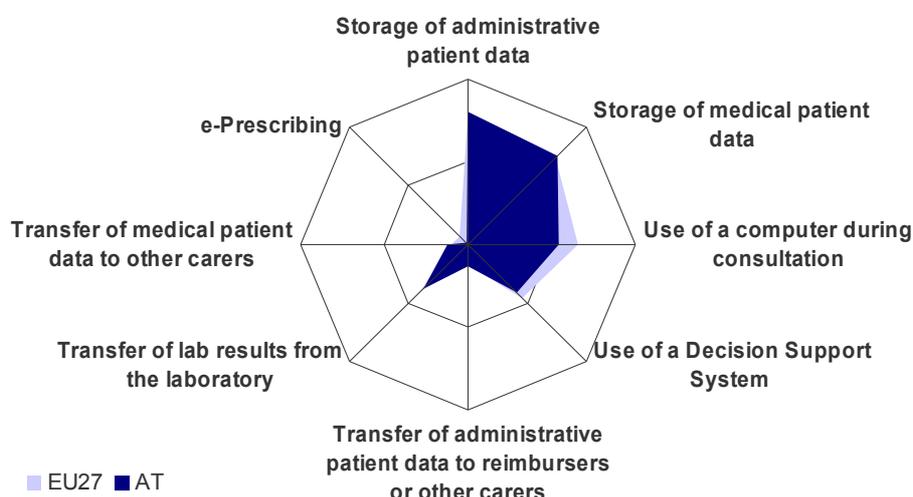
A computer is available in the consultation room of 77% of the Austrian GP practices. Notwithstanding the relatively high availability, only about half of the GPs actually make use of the computer in consultation with the patient. Roughly one out of two GP practices in Austria uses a Decision Support System (DSS).

In Austria the electronic exchange of patient data via the Internet or other dedicated networks is not yet well established. In Austria 37% of the GP practices receive results from laboratories electronically. 12% of the GP practices exchange medical data with other healthcare providers.

Electronic exchange of prescriptions, commonly referred to as ePrescribing, is practiced by only 2% of the GP practices in Austria.

7% of the Austrian GPs exchange administrative data with other care providers. Austria has a use rate of 19% for the exchange of administrative data with reimbursers.

Figure 2²⁵: eHealth use by GPs in Austria



Indicators: Compound indicators of eHealth use (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

²⁴ ICT and eHealth use among General Practitioners in Europe 2007

²⁵ The notion of „compound indicator“ designates an indicator build from a set of other indicators/survey questions regarding the same topic. The compound indicator reflects an average calculated from different values. (see Annex) The final results of the study on eHealth Indicators is available at www.ehealth-indicators.eu.

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 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.

3.1.1 Current strategy/roadmap

"An information and communication strategy for a modern Austrian Healthcare"

The Austrian policy paper for eHealth "An information and communication strategy for a modern Austrian Health Care"²⁶ was developed in 2006 and focuses on the following issues: 1) infrastructural aspects, such as standardisation and interoperability; 2) specific applications, e.g. telemedicine and eCards; 3) standards, as the use of CEN prEN 13606 or HL7 (V3) is discussed and 4) legal aspects regarding data protection and patient access.

As the main features of an eHealth system, the strategy identifies the electronic health record (Elektronische Gesundheitsakte:ELGA or EHR), the online access to quality assured health information, the IT support of organisational processes and in particular, the interface management, the use of decision-support-systems, telemedicine services, tools for data analysis and technical and organisational measures for data protection and data security. The eHealth Strategy is based upon the eEurope 2004 action plan²⁷, which aims to stimulate services, applications and content, covering both online public services and e-business; on the other hand it addresses the underlying broadband infrastructure and security matters.

²⁶ Pfeiffer 2007

²⁷ Commission of the European Communities 2002

Earlier or current documents from other domains include 1) the eGovernment Act from 2004 and 2) the internet declaration published in February 2010. Both are also important for the development and implementation of eHealth as the following shows:

The eGovernment Act is a “Federal Act on Provisions Facilitating Electronic Communications with Public Bodies”²⁸. This includes the peculiarities of keeping electronic (health) records, such as electronic signature or standard formats. This act made Austria one of the first EU Member States to adopt comprehensive legislation on eGovernment.

eGovernment Act (2004) and Internet Declaration (2010)

Recently, an Austrian Internet Declaration²⁹ was published. This led to the creation of the 'Centre of Excellence for the Internet Society' whose main purpose will be the coordination of the national ICT policy, based on the Declaration. It includes health issues, as it states that standards must be defined for health services and the development of a case and disease management system, which allows every patient in a hospital to access health information. Furthermore it is defined that for the future, the access to the electronic health record “ELGA” will be established by creating an online portal with a decentralised data storage.

Throughout the drafting process of the strategy paper stakeholders from different groups were involved through working groups. The informants identified 60 measures that Austria needs to adopt in order to strengthen its market position among the top ranking countries in the ICT sector. The Austrian Regulatory Authority for Broadcasting and Telecommunications (RTR) collected the proposed contributions and created the Internet Declaration.

Another policy document referring to the eHealth strategy of Austria is the convention on the organisation and financing of healthcare (“Vereinbarung gemäß Art. 15a B-VG über die Organisation und Finanzierung des Gesundheitswesens”)³⁰. In this strategic convention the federal government and the nine Länder governments agreed on the organisation and financing of healthcare and directly address eHealth and electronic health records (ELGA). The parties to the contract consent that eHealth solutions should be used as an instrument of modernisation of the healthcare system while ensuring social, technical and ethical standards (further information in section 3.5).

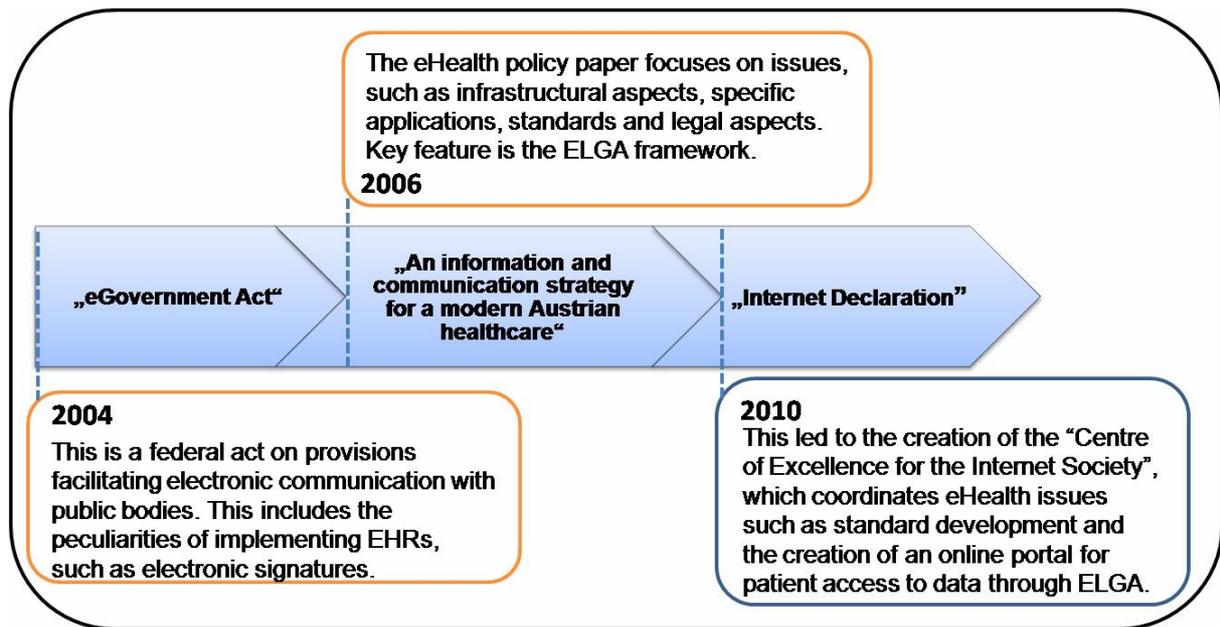
Figure 3 below summarises the different policy papers and legislative acts in connection to eHealth.

²⁸ Austrian Government 2004

²⁹ Rundfunk und Telekom Regulierungs-GmbH 2010

³⁰ Bundesgesetzblatt für die Republik Österreich 14. Juli 2008

Figure 3: Austrian Policy documents related to eHealth



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3.2 Administrative and organisational structure

**ELGA GmbH –
former ARGE
ELGA**

In Austria, the ELGA GmbH³¹, former Association for Electronic Health Records (ARGE ELGA) has the legal power to act as a competence centre regarding strategy and coordination, as well as specify the national infrastructure. The organisation has its legal and organisational basis in a decision of the Federal Health Commission of July 2006³². Here, tasks, responsibilities and the financial basis were specified. In November 2009, the ARGE ELGA was transferred into ELGA GmbH, which is defined as a non-profit institution on mandatory provisions for services in the field of eHealth for the implementation of the electronic health records.

Specifically, the tasks of ELGA GmbH include:

³¹ ELGA GmbH, <http://www.arge-elga.at/index.php?id=3>

³² 73rd Agreement in accordance with article 15a B-VG on the organisation and financing of healthcare. ELGA GmbH

Tasks of the Austrian ELGA GmbH:

- Setting strategic priorities for the establishment of the EHR and determining the roadmap for its implementation
- Implementation of projects for the introduction of the EHR and the preparation of funding proposals
- Mapping a legal framework and making the application of recognized standards mandatory
- Provide crisis or escalation management
- Evaluate project results

In sum, the work covers the coordination and integration of all operational actions for the establishment of the EHR, the construction of system components and the attendance of pilots according to the requirements of the Federal Health Commission. Furthermore the ELGA GmbH is responsible for the quality and acceptance management of the EHR.

Besides the ELGA GmbH, the Ministry of Health together with the ADV³³ working group for data processing founded the “eHealth Initiative” (eHI)³⁴ – in response to the European eHealth action plan – as an independent platform. Its main proponents come from the healthcare, business and science sector. The basic idea behind the initiative is to concentrate expertise to support the process of ICT application in healthcare. Meanwhile the primary aim is to promote and actively participate in the development, the harmonisation and coordination of ICT.

**eHealth Initiative
by Ministry of
Health, Family and
Youth, ADV and
IT-Community.at**

The eHealth Initiative develops recommendations for the use of ICT in the field of health and gives advice to decision makers. Since its establishment, the eHealth initiative presented results of its work and policy documents at three conferences. At the second conference of the initiative on the 26th of January 2007 it was decided on a recommendation for an Austrian eHealth strategy³⁵. The work of the eHealth Initiative continued until the end of 2008 in seven issue-focussed working groups.

At the beginning of 2009 the working group 1 ‘Strategy/Coordination’ has started to discuss, on the background of recent developments, on the further proceeding and proposed a reorientation of further activities to develop position papers on some important issues for the future development of eHealth in Austria.

3.3 Deployment of eHealth applications

3.3.1 Patient summary and electronic health record (EHR)³⁶

In this study, the epSOS project's definition³⁷ 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

³³ Arbeitsgemeinschaft für Datenverarbeitung

³⁴ eHealth Initiative and Strategie und Technologie

³⁵ Pfeiffer 2007

³⁶ Bundesgesundheitsagentur 2009; Schanner 2009

³⁷ European Patients Smart and Open Services (epSOS)

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.

At the national level, Austria is in the process of developing an electronic health record, the so-called ELGA (Elektronische Gesundheitsakte). ELGA contains relevant multimedia-based and health related data and information referring to a precisely identified person. This data originates from different health service providers. Thereby, the information is stored in one or several different systems and is available independently from time or place.

Development of ELGA (Elektronische Gesundheitsakte)

In 2007, the Federal Health Commission (BGK) decided on the architectural components as well as on core applications of ELGA and recommended the use of a basic set of standards³⁸. These core applications include a master patient index, a health service provider index and a document registry, an authorisation system and a portal as basic elements and a discharge summary, eMedication and eReports for radiology and laboratory work as core applications.

For the full development and deployment of these infrastructural issues, the ELGA GmbH, as mentioned in section 3.2, is providing interoperability work in order to promote standards and create standard procedures to work with patient data. The foremost goal is to harmonise the various IT systems of different healthcare providers – quickly and without the loss of content.

The task of ELGA GmbH to further harmonise and develop EHR system is combined with the assignment by the Federal Health Commission to implement appropriate pilot projects in order to evaluate the architectural components that have already been presented. As an example the "Nömed Wan"³⁹ patient index pilot can be named. It contains the following system components for Lower Austria:

³⁸ Bundesgesundheitsagentur 2007

³⁹ Grätzel 8 Jan 2008; Stolba and Schanner 2007

Pilot Project NÖMED WAN:

GOAL: To provide direct access to clinical documents from local document repositories by using standardized IHE XDS integration profiles;

PHASES: The project comprises two phases: 1. Master Patient Index (MPI); 2. Electronic Patient Record – Index (EPA-I)

PARTICIPATION (approx.): 1.6 million inhabitants, 27 hospitals, 8000 beds, 3000 GPs, 270 IT systems supplied by 70 manufacturers;

STATUS: The project has been implemented. It started in March 2005 and had its first phase (pilot project) accomplished till the end of the year. The goal of the pilot project was to connect five hospitals and a few private medical practices into a healthcare network for exchange of patients' clinical documents. In the subsequent phase, which started in summer 2006, remaining hospitals and private practices joined the network. The experience gained in this project in Lower Austria will be used for nation wide connection of care providers.

Another pilot, which has been carried out on a regional level, is the "health@net project"⁴⁰ – a concept for a distributed inter-organisational EHR. It was organised by the UMIT (The Health and Life Sciences University Hall/Tyrol) Research Division for eHealth and Telemedicine together with Tyrolean and national stakeholders. Between 2002 and 2009 this project was the eHealth core project within the Centre of Excellence in Medicine and IT in Tyrol. As a final result health@net was valuated as secure, flexible and standardised system architecture for a regional EHR.

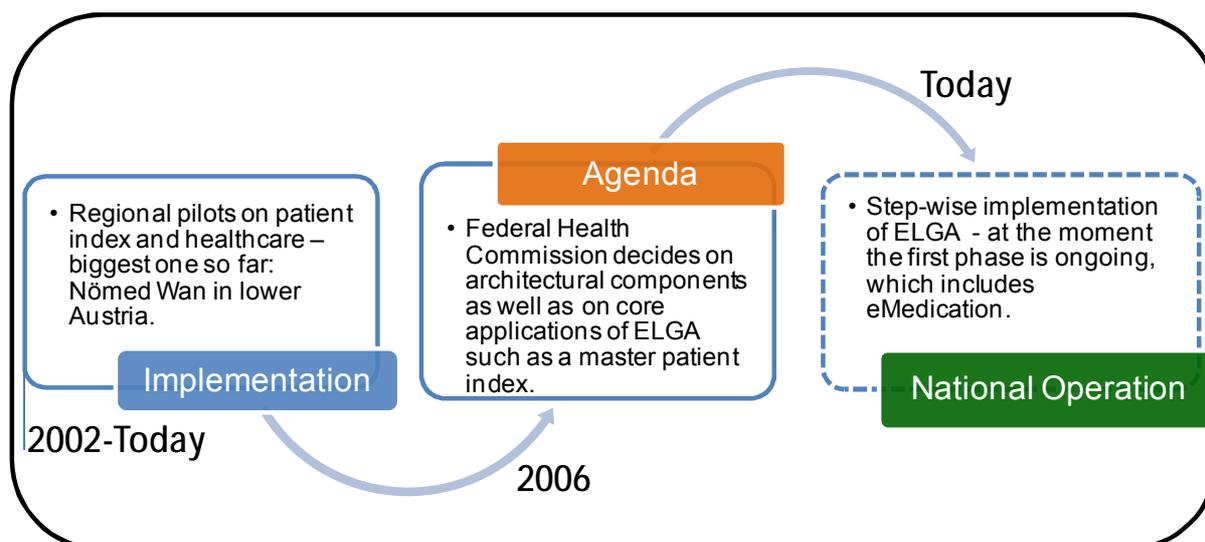
The development of condition-specific summaries is also at pilot phase, as there are some regional projects for diabetes and for medication documentation and interaction checks.

Challenging aspects for the development and deployment of an EHR system in Austria are the definition of standards for the content and the structure as well as the harmonisation of terminology. Further issues include data protection and security with respect to achieve a high level of acceptance from the public and from healthcare providers. This has to be adressed in the work of the ELGA GmbH.

Figure 4 summarises the development of an electronic health record in Austria.

⁴⁰ UMIT

Figure 4: Patient summary in Austria



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3.3.2 ePrescription (eMedication)

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

The provision of ePrescription or e-Medication is linked to the launch of the ELGA platform, the Austrian EHR solution (see section 3.3.1). The decision to connect services as ePrescription to an EHR solution, derives from a feasibility study⁴¹, which has been carried out in 2006. Here, it is stated that an integrated supply of eHealth services is only possible through ELGA and therefore eMedication is defined as core application, which belongs to the first implementation phase. This implies a step-wise implementation of ELGA and quick pilots for the core applications. An example for an eMedication pilot is the following.

Provision of eMedication service is linked to ELGA solution

In February 2007 a pilot project was launched to identify possible interactions of drug use at the level of public pharmacies in Salzburg (Pharmaceutical Safety Belt). In spring 2008 first results were presented to the public. First, full electronic billing of prescription drugs between the clearing house of public pharmacies (Pharmazeutische Gehaltskasse) and the Austrian Federation of Social Health Insurance (HVSV) was introduced in 2005. Second, the eCard⁴² (see section 3.4.3), which was introduced in 2006, could be used as key for identifying drug interactions on the level of patients.

The national rollout of an eMedication database was planned for the end of 2008, but was stopped due to political obstacles until May 2009. Since then the association of insurance carriers is responsible for this project. Due to the own initiative of the participating

⁴¹ IBM 2006

⁴² The Austrian eCard does not involve the storage of actual healthcare information of any kind.

companies during the project interruption the necessary technologies for a successful implementation of the eMedication infrastructure have been developed. Nevertheless the association will restart the project again. A steering committee will be in charge to clarify the legal and technical basic conditions. In consequence the implementation process of eMedication in Austria has to start again from scratch.

While technical developments as described above made the pilot possible, it had no explicit strategic ELGA-led support from the government. The pilot was initiated by the chamber of pharmacists. A special software was developed with an overall investment of 1.3 million Euros. These costs were financed by the clearing house of pharmacists and their chamber. The cost of an Austrian-wide roll-out of the Pharmaceutical Safety Belt is estimated to be 3 to 4 million Euros.⁴³

Pilot projects for eMedication will start in 2010 in three regions (Vienna, Upper Austria, Tyrol).

Legally, there is no obstacle for ePrescription in Austria. As long as the physician uses a qualified electronic signature in line with the Signature Act, the electronic prescription of medicine is allowed⁴⁴.

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.

As pointed out in section 3.2 on administrative and organisational issue of the Austrian eHealth structure, the ELGA GmbH has the overall goal to ensure technical interoperability and harmonised national standards. Thereby, the involvement of stakeholders plays crucial role and for that doctors and carers were included in the development of standards for clinical documents.

European and international standards which are currently used in Austria are the following:

⁴³ Hofmarcher 2008

⁴⁴ Prescription Act, Federal Law Gazette 413/1972 latest amendment Federal Law Gazette I 59/2008 and Signature Act, Federal Law Gazette I 190/1999, latest amendment Federal Law Gazette I 59/2008..

Use of IHE profiles in Austria⁴⁵:

HL7, Version 3

HL7, Clinical Document Architecture, Release 2

Logical Observation Identifiers Names and Codes (LOINC⁴⁶)

DICOM 3.0 and WADO

IHE Patient Care Coordination Technical Framework Volumes 1, 2 & 3,
Revision 1.0, 2005-2006 • Content for “Discharge Summary”IHE Laboratory Technical Framework Volume 3 (LAB TF-3), “Content” Revision
2.1 – Final Text, August 8, 2008 • Content for “Laboratory Report”

The harmonisation work through standards is divided into 2 phases: The first phase was undertaken in the first half of 2008 and achieved an intermediate result, which served as the basis for the continuation of the project. The second phase extended from winter 2008 to summer 2009. As a result, implementation guidelines⁴⁷ were developed. These guidelines define the implementation structure of all clinical documents. Thereby, the CDA structure is used as basis.

Remaining open issues include the cooperation with the basic components of the ELGA system, e.g. when there is a link to external documents or an online-platform is created for document validation. Furthermore, a challenging issue is the implementation of standardised terminologies like Snomed-CT and changes in the organisation of healthcare.

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”⁴⁸. 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 delivery⁴⁹.

⁴⁵ Arbeitsgemeinschaft Elektronische Gesundheitskarte 2009

⁴⁶ The LOINC database offers a variety of ID codes and universal names to identify laboratory and clinical test results.

⁴⁷ Arbeitsgemeinschaft Elektronische Gesundheitskarte 2009

⁴⁸ Europe's Information Society 2009

⁴⁹ European Commission 2008

Several telemedical projects since the late 1990s

In Austria, pilot projects for telemedicine have been carried out since the late 1990s. For example the Tyrolean telemedicine pilot project from 1999, which linked the University Clinic of Innsbruck to the district hospital in Reutte. Five medical specialties were investigated: teleradiology, telepathology, teledermatology, teleophthalmology and teleoncology. A Tyrolean 'four-column model of quality management in telemedicine' was introduced to ensure a global view of the project and to avoid mistakes.

The University Clinic of Innsbruck is furthermore part of TILAK. The TILAK is a hospital society which, beside the Innsbruck University Medical Centre (1500 beds), contains four other smaller hospitals in Tyrol. In 2003, an IT strategy⁵⁰ was developed which aims for full support of electronic communication in hospitals and mobile end-user tools.

H.ELGA IT Platform

Further projects include pacemaker surveillance. Within these projects ECG recordings are sent to a data base and analysed. The medical doctor gets a feedback if cardiological problems are identified. One important project is the **H.ELGA IT Platform**⁵¹. This project started in 2005 and focussed on integrated therapy and data management for Cardiac Rhythm Management (CRM). With the start-up of H.ELGA as a central data platform in CRM as well a tight interface with the municipal information systems (KIS), the increasing complexity of therapy management could be counteracted, processes designed more efficiently and quality of care could be safeguarded.

First results reflected the potential of integrated therapy management with respect to increasing efficiency and quality while at the same time unburdening the patient. H.ELGA was conducted as pacemaker patients are in contact with various doctors and hospital units, like patient hospitalisation (GP), implantation of the pacemaker (surgery), post-operative treatment (cardiology), and explantation. Therefore these patients reflect a challenge of therapy- and datamanagement, which could profit from improved patient data transfer and in general integrated therapy management. Main features of integrated therapy management refer to: 1) Data integration – merging, processing and refining examination data from various data sources (programmer, home-monitoring, telemedicine systems) and 2) Process integration – Information and communication technology supporting the collaboration between the units involved in the treatment process, triggering processes and bridging between intra- and extra-mural care.⁵²

Another important project and best practice case is the Teledermatologic Network Services for Counselling on Diagnosis of Skin Diseases. **TelDermserv** is a global service consisting of 20 providing sites, 200 requesting sites, 1 academic medical centre, a Cross Border Health Network, and eLearning, and Telemedicine capabilities⁵³. The telederm.org web application has been designed to promote quick and easy access to dermatological consultation and information for healthcare providers. Telederm.org is a web application whereby dermatologists, general practitioners, or any healthcare workers interested in teledermatology can quickly and easily seek diagnostic advice in dermatology from a pool of expert consultants. It can also allow healthcare providers interested in dermatology to

⁵⁰ Tiroler Landeskrankenanstalten Ges.m.b.H 2003

⁵¹ AIT Austrian Institute of Technology GmbH

⁵² Rotman, Perl et al. 2008

⁵³ European Commission; Information Society and Media Directorate-General 2009

Tele dermatologic Network Services for Counselling on Diagnosis of Skin Diseases (TelDermServ)

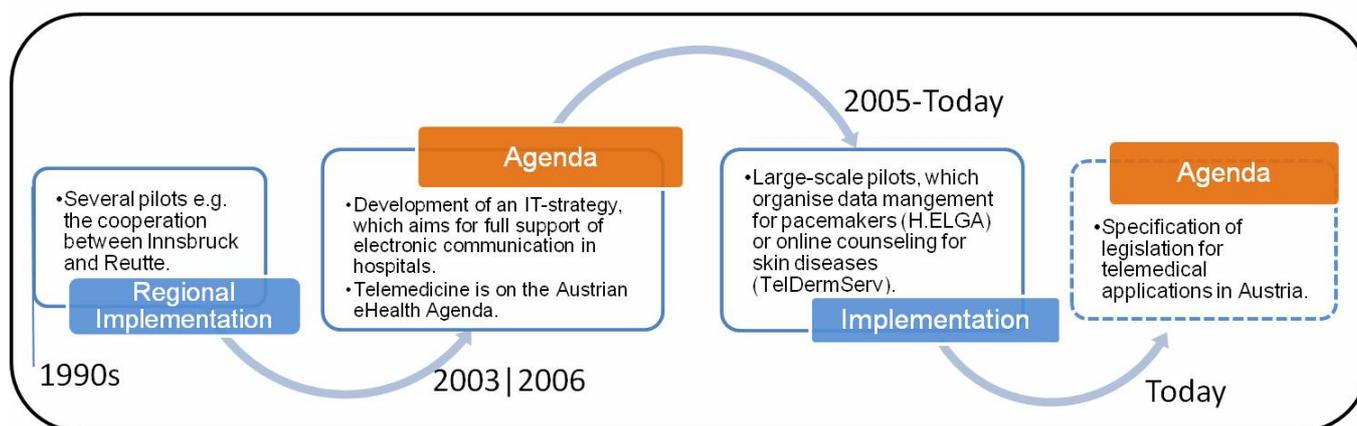
participate in discussion forums regarding interesting and unusual cases in clinical dermatology, dermatopathology and dermoscopy.

The telederm.org team includes dermatology consultants, a webmaster who maintains the application software, and a moderator of the discussion forum. Consultants are selected on the basis of their proven track record in medical dermatology, dermatopathology, or dermoscopy. Consultants undergo initial training upon their applications and participate thereafter in an ongoing quality-assurance program. All applications are archived in an electronic database, with a personal archive for each user. A user can choose to send a request for consultation only to a selected expert, or he or she can submit a request in an open forum as a "discussion case." In the former situation, the user receives a personal answer, and the interactions remain in a private field. Cases submitted as "discussion cases" are visible to all users, who can review the cases and submit online opinions. Every week, selected cases are posted in a special forum open to online, moderated discussion.

Telemedicine is part of the national eHealth strategy and some groups and companies (e.g. pacemaker industry) are active. An obstacle for further national deployment is on the one hand the missing reimbursement scheme for such services and on the other hand there is a need for a renewed legislation. In terms of the legislative issue Austrian civil regulations *are* sufficient to clarify the question of liability arising in connection with the practice of telemedicine. Although no specific legislation has been enacted as yet, one would not expect such legislation to produce different results in the legal assessment of telemedicine⁵⁴.

Figure 5 summarises telemedicine developments in Austria.

Figure 5: Telemedicine services in Austria



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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

⁵⁴ Brebner 2008

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 Austria and for which purpose.

3.4.1 Unique identification of patients

Patients in Austria are identified through their social insurance number, which is used as unique ID. Social insurances provide a service to obtain the insurance number by demographic data such as first name, last name, date of birth, address. This insurance number is not globally unique – it is comprised of a 4-digit sequential number plus the date of birth in 6 digit format – and will be reused after a person is deceased. And can thus only be used as an auxiliary means of identification.⁵⁵

Identification infrastructure where a security code and the social insurance number are combined

Therefore, an infrastructure has been developed, which allows the distribution of a unique number for each patient within the system. This number is, however, only for the creation of a specific person identifier. A central office distributes the numbers to the various healthcare providers and those then have a unique identifier. The link between the domain-specific identifiers and the central code cannot be reconstructed. Behind this lies a cryptographic process, which has so far proven to be secure.⁵⁶

As part of the ELGA framework, it is planned to provide access for citizens to medical knowledge of certified quality (e.g. via links to professional societies, self-help groups and social facilities) and to his or her personal health data. In the future it is further intended to allow citizens to access personal data in ELGA via a portal. Any access to ELGA data may be retraced via the portal.⁵⁷

3.4.2 Unique identification of healthcare professionals

The procedure that is described above is planned to be also available for healthcare professional IDs. This is again connected to the launch of ELGA, which has been planned since 2008. The healthcare provider index is aiming to enable the unambiguous identification of healthcare providers. Connected to the eHealth-Directory (eHVD), a national index of all healthcare providers including their roles and authorisations is planned to be realised that can also be used as a public reference book for finding a particular healthcare provider.⁵⁸

For now, healthcare professionals are partially registered with an Austrian medical association. There is one directory for general GPs (Österreichische Ärztekammer) and one for dentists (Zahnärztekammer). Although the professional ID has been in planning for several years, challenging aspects as the acceptance of the professional card (see section 3.4.3) and the definition of access rights for professionals remain.

⁵⁵ Vogla, Wozak et al.

⁵⁶ Baeriswyl 2009

⁵⁷ Duftschmid, Dorda et al. 2009

⁵⁸ Duftschmid, Dorda et al. 2009

3.4.3 The role of eCards⁵⁹

The electronic health card (e-card) is the central key to the benefits of the Austrian social health insurance system. Since the end of 2005 the e-card has replaced the former voucher system. More than 8.6 million eCards have been issued and about 12.000 contractual partners accept now the new card. As an extension of this card, the “citizen card”⁶⁰, with chip card functionality, has been launched



in 2008. This can be used for identification purposes for eGovernment services, as it provides an electronic signature. The Card does not contain personal healthcare data – access to this information is planned to be enabled within the ELGA framework by 2013.

Within ELGA the Card should take on the role of an electronic key providing access to electronically stored patient information. The goal of the connection to ELGA is to bring advancement in the communication between different sectors in the health system especially between inpatient care and the ambulatory care sector.⁶¹

eCard for patients and healthcare professionals in place

Another core element of the eCard system constitutes the GINA box. This box is a Set-Top Box, which is mini computer based on a MIPS platform equipped with sufficient RAM and Flash Memory, that makes redundant vulnerable mechanical components like fan or hard disk. The complete necessary decentralised software applications (e.g. application for the eCard) are installed on this hardware. The GINA box controls data transfer to the Health Information Network and allows for secure communication with network-based services as the eCard server.

Simultaneously with the introduction of the eCard for patients a Card for professionals was launched and is used as a key card for the access to the eCard system for patients. At the moment the card just stores the organisation the professional is working for (oCard), but no name or identification number is encompassed. With respect to security mechanisms, there is at the moment no picture or other biometric information on the eCards in Austria.

The main challenge of the eCard in Austria is to convince healthcare providers to use it and social health insurance bodies to issue it. Currently, ca. 40.000 citizens don't have the eCard. A regulation to store additional data on the card has not been decided on until now. Thus the eCard stores currently surname, name, academic degree, social insurance number and card number. Nevertheless the eCard is technically prepared to store additional data such as basic health information for emergencies. However, on the part of the medical doctors, it is doubted that in the case of an emergency the eCard will bring

⁵⁹ Pfeiffer

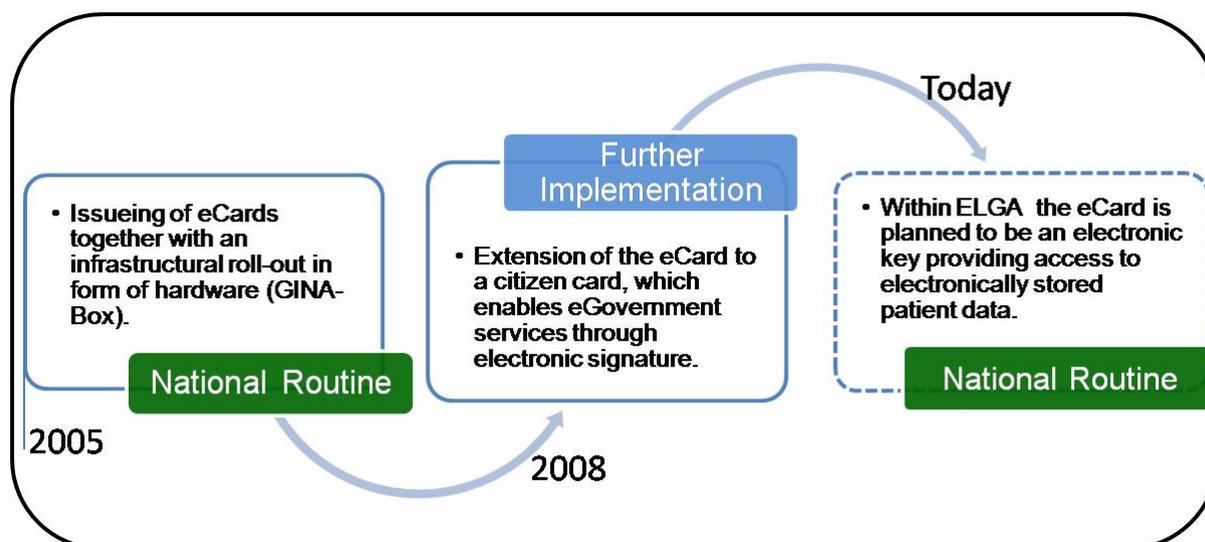
⁶⁰ Zentrum für sichere Informationstechnologie - Austria [Center for Secure Information Technology- Austria]

⁶¹ Bittschi and Kraus 2007

advantages, because in emergencies doctors do not have time to look for eCards and – more importantly – because mobile eCard devices are yet unavailable.⁶²

Figure 6 shows the development of the Austrian eCard between 2005 and today.

Figure 6: eCards in Austria



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3.5 Legal and regulatory facilitators⁶³

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.

In Austria the use of telemedicine is legally the most problematic case. In principle telemedicine is not allowed due obstacles found in general provisions on practising healthcare. The Physician Act requires physicians to carry out his profession personally and directly⁶⁴. In the Guideline Physician and Public this requirement is further clarified, stating that the use of telemedicine is only acceptable in case of emergency. However,

⁶² Bittschi and Kraus 2007

⁶³ Markaritzer 10.04.2009

⁶⁴ Arztesgesetz, Federal Law Gazette I 169/1998, last amended Federal Law Gazette I 57/2008.

since this requirement is quite rigid, the question to revise this provision has already been asked.

Regarding electronic health records, the legal embedding is much less problematic. There are up until today no specific legal provisions in place, but the use of electronic health records is not forbidden. Legislation on electronic health records is furthermore in the process of enacting. In the draft law it was opted to store patient data in decentralised repositories. The ongoing discussion on this legislation is connected to the data retention ruling by the European Commission in 2006, which said that:

Given the importance of traffic and location data for the investigation, detection, and prosecution of criminal offences, as demonstrated by research and the practical experience of several Member States, there is a need to ensure at European level that data that are generated or processed, in the course of the supply of communications services, by providers of publicly available electronic communications services or of a public communications network are retained for a certain period, subject to the conditions provided for in this Directive.⁶⁵

As Austria needs to comply with this EU regulation, it is currently debating on an exception for GPs and patients. The line of argument is that healthcare service providers and patients have special protection requirements, which are excluded from data retention.

Further important documents that are connected to legal and regulatory facilitators in eHealth include⁶⁶:

- General Agreement between Federal Government and Länder (2008-2013)
- Health Telematic Law (2005)
- eGovernment Bill (2004)
- Data Security Bill (2000)

The General Agreement⁶⁷ between the Federal Government and the Länder for the years 2008 to 2013 defines on the one hand financial issues, as it rules that in compliance with social insurance companies, Government and the Länder, the ELGA framework will receive 30 million Euro within these years (see also section 3.6). On the other hand, the legislation designates a change in the social insurance law regarding access and provision of eGovernment services in relation to health issues.

The Health Telematics Law⁶⁸ contains a comprehensive legal framework regulating the exchange of health data. It also elaborates on security measures already stipulated in the Data Protection law 2000. This legislation was motivated by acknowledging that expanding medical knowledge and new and improved treatment resulting from this expansion will only lead to improvements in the level of efficiency if the health sector makes use of information and communication technology (ICT). The law consists of 20 clauses covering definitions of terms, roles, identities, confidentiality, integrity, documentation and the eHealth directory. The further development of the electronic patient record (ELGA) is conditional on the provisions in the health telematic law.

⁶⁵ European Parliament and European Council 15 March 2006

⁶⁶ Hofmarcher 2008

⁶⁷ Bundesgesetzblatt für die Republik Österreich 14. Juli 2008

⁶⁸ Österreichische Ärztekammer 19. Mai 2005

Regulations of ELGA will be closely linked to provisions in eGovernment and in eHealth initiatives at the EU level.⁶⁹

Finally, the eGovernment Bill⁷⁰, as stated in section 3.1.1 on current strategies, has the objective to promote legally correct electronic communication with public bodies by taking into account the principle of freedom to choose between different means of communication when making submissions to such bodies.

3.5.1 Patient rights

In Austria, patient rights are currently under discussion. This includes the debate on an opt out (automatic creation of an EHR if the patient does not object) or an opt in model and further regulation on access rights of citizens to certain data. Thereby, privacy is the most sensitive aspect of the electronic health record system.

Generally, patient rights will need to be further defined before the ELGA system is fully operational. At that time, the following patient rights apply:

Patient rights in Austria:

Patients need to consent to inclusion of medical data in their regional/national record on a case by case basis;

Patients can demand the deletion of data from their healthcare record;

Patients can demand the deletion of the entire healthcare record;

Patients can bar certain healthcare providers from access to the healthcare record;

Patients can hide certain type of information in their healthcare record;

Patients have read-only access to their patient record;

Furthermore, patient data is reused for scientific purposes, but first, the data has to be anonymised or pseudonymised and second, for most scientific studies the vote of an ethics committee will be necessary.

3.6 Financing and reimbursement issues⁷¹

The financing of the eHealth infrastructure in Austria is done upon consultation between the Federal Government, the Länder and the social insurance companies. For the ELGA system, the General Agreement between Federal Government and Länder applies (see section 3.5). Here, it is stated that the funding of the system must be guaranteed and that 30 million Euros are foreseen for the system launch between 2008 and 2013.

⁶⁹ Hofmarcher 2005

⁷⁰ Austrian Government 2004

⁷¹ Pfeiffer and Auer 2009

Funding agreement between Federal Government, Länder and Insurance Companies

In general, there are currently only few scientifically based studies to analyse costs and benefits of eHealth in Austria. Therefore, the first implementation phase of ELGA focuses on applications such as an EHR or eMedication (ePrescription), as these have clearly been identified as cost-reducing eHealth tools.

Furthermore, there is a recurring public budget dedicated to eHealth, which is allocated to planning activities and pilots. A challenging aspect of funding is the fact that eHealth services are not always defined as such or in need of categorisation, e.g. home monitoring, pacemaker monitoring or teleconsultation.

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.

In 2006, a feasibility study⁷² was done by IBM for implementing the electronic health record (ELGA) in the Austrian health system. The recommendations given are mainly based upon the evaluation of the potential added value which ELGA can create for Austrian citizens/patients and for the health system. This includes an assessment from a technical, economic, organisational, content and legislative point of view and on the evaluation of the healthcare stakeholders' acceptance and potential resistance. As an outcome of the study, the following recommendations can be summarised:

Recommendation by feasibility study:

The study points out that the challenges will be the organisational, the legislative and the content related topics and not the technical realisation part;

A gradual step-wise implementation of ELGA and quick execution of pilot projects;

To build upon already existing components and use the experiences from available regional projects.

Furthermore, several smaller evaluation studies and cost-benefit analysis have been carried out.

⁷² IBM 2006

4 Outlook

In Austria the eHealth strategy is centred around the ELGA application. This does not only imply the implementation of an electronic health record, as the translation of “elektronische Gesundheitskarte” would suggest, but the development of a whole ICT framework for the healthcare system. The ELGA roadmap is also institutionally based in the ELGA GmbH (former ARGE ELGA). At the moment, ongoing work is done to review and evaluate the ELGA structure. For now, an infrastructural framework and a step-wise implementation plan have been decided on, which include basic features and core applications, e.g. eMedication.

A first step towards the establishment of such a system has been done in 2005, when the Austrian eCard was launched. Although, it does not store any health related data except administrative information, it will be connected to the electronic infrastructure. Furthermore, the eGovernment services were set-up in form of a platform, a citizen card and electronic signatures for identification.

The social security number is used in GP offices and hospitals to identify the patient. For the process of accessing the data of ELGA, this social security ID code is combined with a system to generate a unique, anonymised ID. This ensures that electronic transactions with regard to ELGA are secure and anonymised.

In sum, the goal of ELGA and the corresponding action plan was defined clearly at that time. This gives guidelines for politics and people; what next steps are needed and provides transparency which ultimately leads to a higher grade of acceptance in healthcare professionals and patients. Future steps will include solving interoperability issues connected to technical and terminology standards as well as further develop regulations for electronic communication in the telemedicine sector.

The following modules of ELGA will be implemented within the next years:

- The indices (master patient index and health professional index) for authentication of citizens and health professionals in the field of eHealth
- Health portal: this is the interface for the citizen for quality assured healthcare information and for access to their medical information in ELGA.
- eMedication: the pilot project will start in three regions in 2010
- eLab: LOINC based standardized documentation and communication of laboratory findings
- eRad: DICOM based standardized documentation and communication of radiology findings

Furthermore in some Länder pilot projects for e.g. eVaccination, diabetes disease management and patient information, presentation of the local healthcare infrastructure within the ELGA portal etc. are planned.

5 List of abbreviations

ADV	Arbeitsgemeinschaft für Datenverarbeitung [Working Group for Data Processing]
ARGE ELGA	Association for Electronic Health Records
ASVG	General Social Security Act
BGK	Federal Health Commission
CDA	Clinical Document Architecture
CRM	Cardiac Rhythm Management
DRG	Diagnosis Related Group
DSS	Decision Support System
EC	European Commission
ECG	Electrocardiography
EEA	European Economic Area
eHI	eHealth Initiative
EHR	Electronic Health Record
eHVD	eHealth-Directory
ELGA	Elektronische Gesundheitsakte [Electronic Health Record]
EMR	Electronic Medical Record
EPA-I	Electronic Patient Record-Index
EPR	Electronic Patient Record
epSOS	European patients Smart Open Services
ERA	European Research Area
EU	European Union
GDP	Gross Domestic Product
GmbH	Gesellschaft mit beschränkter Haftung [Limited Company]
GP	General Practitioner
HCP	Healthcare Provider
H.ELGA	Herzschrittmacher. Elektronische Gesundheitsakte [Cardiac Pacemaker. Electronic Health Record]
HL7	Health Level Seven International (authority on standards for interoperability)
HPC	Health Professional Card
HVSV	Austrian Federation of Social Health Insurance

ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IBM	
IHTSDO	International Health Terminology Standards Development Organisation
IT	Information Technology
KIS	Municipal Information Systems
LSP	Large Scale Pilot
MIPS	Microprocessor without Interlocked Pipeline Stages
MPI	Master Patient Index
OECD	Organisation for Economic Co-operation and Development
ÖKAP/GGP	The Austrian Hospitals and Major Equipment Plan
ÖSG	Österreichischer Strukturplan Gesundheit [Austrian Healthcare Structural Plan]
PHS	Personal Health System
RAM	Random-Access Memory
R&D	Research and Development
RTR	The Austrian Regulatory Authority for Broadcasting and Telecommunications
TILAK	Tiroler Landeskrankenanstalten GmbH [Tyrolean State Hospitals Ltd.]
UMIT	The Health and Life Sciences University Hall/Tyrol
WHO	World Health Organization

6 Annex

Annex 1: Compound indicators of eHealth use by GPs

Compound indicator name	Component indicators	Computation
Overall eHealth use	<ul style="list-style-type: none"> - Electronic storage of individual medical patient data - Electronic storage of individual administrative patient data - Use of a computer during consultation with the patient - Use of a Decision Support System (DSS) - Transfer of lab results from the laboratory - Transfer of administrative patient data to reimbursers or other care providers - Transfer of medical patient data to other care providers or professionals - ePrescribing (transfer of prescription to pharmacy) 	Average of component indicators
Electronic storage of individual medical patient data	<ul style="list-style-type: none"> - A2a - Symptoms or the reasons for encounter - A2c - Medical history - A2c - Basic medical parameters such as allergies - A2d - Vital signs measurement - A2e - Diagnoses - A2f - Medications - A2g - Laboratory results - A2h - Ordered examinations and results - A2i - Radiological images - A2j - Treatment outcomes 	Average of component indicators
Electronic storage of individual administrative patient data	<ul style="list-style-type: none"> - A1 - electronic storage of individual administrative patient 	A1 value
Use of a computer during consultation with the patient	<ul style="list-style-type: none"> - B2 - Computer use during consultation 	B2 value
Use of a Decision Support System (DSS)	<ul style="list-style-type: none"> - B3a - Availability of DSS for diagnosis - B3b - Availability of DSS for prescribing 	Average of component indicators
Transfer of lab results from the laboratory	<ul style="list-style-type: none"> - D1e - Using electronic networks to transfer prescriptions electronically to dispensing pharmacists? 	D1e value
Transfer of administrative patient data to reimbursers or other care providers	<ul style="list-style-type: none"> - D1a - Using electronic networks to exchange of administrative data with other healthcare providers - D1b - Using electronic networks to exchange of administrative data with reimbursing organisations 	Average of component indicators
Transfer of medical patient data to other care providers or professionals	<ul style="list-style-type: none"> - D1c - Using electronic networks to exchange medical data with other health care providers and professionals 	D1c value
ePrescribing (transfer of prescription to pharmacy)	<ul style="list-style-type: none"> - D1d - Using electronic networks to transfer prescriptions electronically to dispensing pharmacist 	D1d value

Dobrev, Haesner et al. 2008

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