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E-Health Standards – Austria Case Study

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Abstract: Today information systems for digital documentation and communication are used by many actors within their area of activity. However, an integrated care requires a multi-agency standardized communication in which the individual patient plays the main part. As already made investments in ICT numerous health facilities, it is urgently necessary to make rapid appropriate requirements to ensure that long-term system interoperability is guaranteed. The e-Health strategy aims to support the accuracy of decisions on future investments in ICT. **Objectives:** The purpose of this article is to provide an example of an e-health system from a European country. **Approach** This article shows the initiative of Austria to implement e-health being consistent with initiatives undertaken at EU level - eEurope 2005, eEurope +, i2010 by adhering to the principles of interoperability, interactivity public services, trust, security, privacy **Results:** The implementation of e-health is primarily seen as a project for the long-term organizational development and modernization of health care. The legal, organizational, technical and content aspects of the e-health strategy provide the basics for this development. The represents, shown in the appendix e-Health strategies of countries and organizations must be coordinated with the Austria-wide strategy.

Keywords: e-gov; electronic; digital

1. Introduction

The innovation, the development, the quality and the efficiency of the Austrian health system can be greatly enriched by the information and communication technology (ICT). Optimal treatment and support for inter-institutional treatment processes depends very largely on the „in time availability" of relevant and appropriate data, information and knowledge. The health care system of the future uses the ICT in an optimal manner for documentation, communication, storage, and processing of health-related data. The Austrian e-health strategy is the basis concept, in making the potential of ICT for citizens, health care providers, decision makers and payers in terms of quality and efficiency available.

The Austrian health care system is defined by a high fragmentation of the offered services and the financing. There becomes therefore a great need for a patient-related communication between the different actors of the health care system to achieve better cooperation and thus higher efficiency. One of the fundamental quality problems of today's medical care system is not so much the medicine itself, but the organization of the treatment processes, communication and cooperation between the actors involved and the integration of the citizen. Integrated supply, case and disease management requires a comprehensive application of information and communication technology and the interoperability of

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heterogeneous information systems. Furthermore, the availability of current, evidence-based medical knowledge for the quality of medical decisions of greatest importance will represent a major importance in the future (WHO 2004).

Today information systems for digital documentation and communication are used by many actors within their area of activity. However, an integrated care requires a multi-agency standardized communication in which the individual patient plays the main part. As already made investments in ICT numerous health facilities, it is urgently necessary to make rapid appropriate requirements to ensure that long-term system interoperability is guaranteed. The e-Health strategy aims to support the accuracy of decisions on future investments in ICT.

The e-Health Strategy identifies the necessary ICT technologies; it is geared to specific applications and their representation as processes which are supported by the ICT. It defines the roles of health service providers as well as the role of citizens as active participants in the health care system. Implementation must be done gradually, with the individual modules on the one hand systematically build on each other and on the other hand largely independent of each other. Therefore they could be developed in parallel. From the outset, are fundamental prerequisites, such as define technical communication standards or substantive documentation standards, essential? There are therefore infrastructural measures by public bodies to put in co-operation with health service providers or support. The overall e-health system must be involved in a legal framework. The e-Health Strategy defines the basic concepts for the business processes, applications and technologies (WHO 2004).

In the next few years, as part of the implementation, the processes will be changed or new introduced. Quality, efficiency and effectiveness are the criteria for judging the success. The development and implementation should be regularly evaluated and undergo a quality assurance. Technology assessment and accompanying scientific research are to be included in the planning and implementation.

The e-Health Strategy needs to be updated systematically and continuously, to reflect new developments. The implementation of e-health is primarily seen as a project for the long-term organizational development and modernization of health care. The legal, organizational, technical and content aspects of the e-health strategy provide the basics for this development (Pfeiffer, 2007).

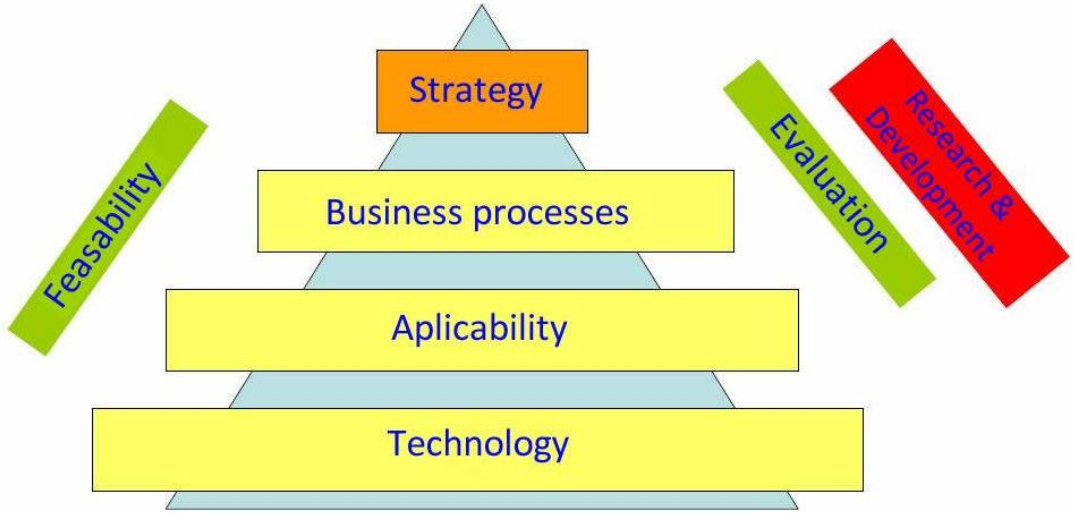

Figure 1. The central elements of the e-health strategy

Source: adapted from the official Austrian site for social insurance

2. Basic Principles of the E-Health Strategy

The aim of this e-health strategy is the establishment of Austria-wide, forward-secure information and communication system that functions, under the protection of the rights of citizens: rapidly, where it is needed, time-independent, cost-efficient, safe, based on uniform technical communications standards and on substantive documentation standards.

e-Health takes advantage of the technical and organizational level of privacy and data security measures for the eligible participants, the important, correct and relevant information for the diagnosis and treatment, prevention and rehabilitation. This includes the interfaces to the social and care sectors, as well as interactive systems to support health promotion.

The e-card, activities for integrated care, possibilities of e-Government and currently existing information strategies, especially the EHR feasibility study should be integrated in the e-health strategy, respectively it is to be built on these. The development of concepts of individual regions or organizations should be based on the national e-health strategy. The Austrian e-health strategy is furthermore based on the European development and international standards and recommends, in the same time, the active participation in the development of international standards. This concerns both the technical standards for communication and storage as well as the content standards, as terminologies or architecture documents. **The e-Health strategy is a long-term approach to organizational development and modernization of health care.**

2.1. E-health and the New Paradigms in Healthcare

Altered structures in health care and integrated care models require ICT for implementation. The health care system of tomorrow is:

- patient-centered;
- knowledge-based;
- evidence-based;
- process-oriented;
- results-oriented.

The key functions of a modern health system are: 1. network-connection, 2. communication and 3. cooperation.

The health care system of tomorrow is based on a paperless documentation and communication. E-Health combines evidence-based knowledge with complete and accurate patient data. The potential of e-health is the daily support of several thousands of interactions in healthcare. An improved data, information and knowledge management and a better patient management, provide a continuous development of the quality of the health care system and of the patient satisfaction.

3. Purposes of the Austrian e-Health Strategy

The aim of the e-health strategy is to define a framework for a coordinated long-term development of e-Health in Austria, so as to provide for citizens and patients the greatest possible benefits through the use of information and communication technology (ICT) in health care, to give health service providers as well as providers of information systems recommendations for content and technical

standards in order to achieve interoperability of information systems and to also allow a high degree of investment security and to ultimately demonstrate the benefits of e-health for the actors.

The need for continuous quality improvement and performance improvement, new models of care with regard to integrated care, knowledge management in health care, telemedicine services, increased patient mobility but also a more active role of citizens in their own health care requires a comprehensive use of information and communication technology. The e-Health Strategy sets out the main elements of e-health, such as the electronic health record EHR, knowledge bases for quality-assured health information for consumers and health service providers (HSP), organizational, technical and legal measures for data protection and data security requirements on the network infrastructure and the archiving requirements for an identification management for citizens and HSP 's, use of this information for the management of health facilities etc. Through the description of the basic use cases and their requirements for the infrastructure on the one hand and their benefits on the other hand, there are presented the possibilities of e-health and in the same time mapped out to a future development.

The overall objective is**: integrated health care delivery and interoperability of information systems**, whereas the citizen remains in the center of documentation, communication and knowledge management. The objectives and measures are related to the objectives of the e-Health Action Plan of the EU and this document is intended to fulfill the "Action Plan for e-health" of the EU Commission for the creation of a roadmap for e-health.

Through the use of ICT to health care in the future:

- More concern in regard to the single citizen and the possibility to offer him new opportunities to actively participate in their health care,
- To allow health care with as few administrative or geographical barriers as possible
- A better resource management support
- To sustain the HSP with more user-friendly and quality-enhancing tools, starting with easier access to data until the approach of the decision support systems

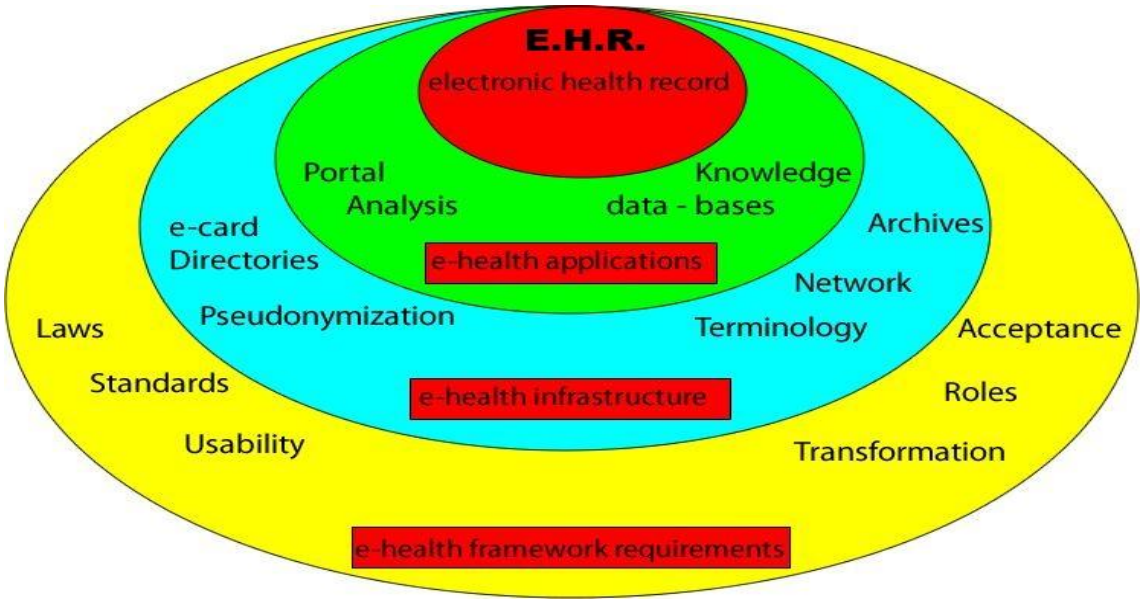

Figure 2: The e-health model

Source: adapted from the official Austrian site for social insurance

To achieve the objectives of the e-health strategy, it is required to have a framework architecture for the construction of a citizen-centric digital documentation, communication, storage and processing of health-related and administrative data, information and knowledge, that aims:

- to support a patient-centered service provision and documentation;
- to support all stakeholders in health care through better information and communication;
- to support the organizational development and to reach a better management of health facilities with the help of ICT;
- to approach an easier access to quality-assured knowledge bases for citizens, patients, health care providers and decision-makers at the latest, internationally recognized standards of technique and content and taking account of international, particularly European development.

E-health supports the mobility of patients in a European environment to the effect that, if necessary, a cross-border data exchange will be possible. The e-health strategy is to help build an appropriate ICT infrastructure for the health and social services in Austria, which is used for optimal care of patients and for health-promoting actions of citizens. The guarantee of data protection must therefore be ensured for all applications. The stakeholders, payers and policymakers will thus have the necessary information and knowledge for quality-assured best decisions. E-health requires a coordination of the development of ICT infrastructure and also the content on a national level, taking into account international developments. The cooperation between the HSP's should be facilitated by e-health. Authorized access to information across organizations must be possible and information and services for the citizens must be easily accessible.

e-Health is a strategy for organizational development and productivity in healthcare through ICT. Not the ICT itself is the driving force behind this development, but ICT is the tool for the implementation of a knowledge-based, process and outcome quality-oriented health care system. e-Health can increase the quality and efficiency of health care through better organization of inter-institutional processes. e-health affects both the treatment process itself and the patient's management by ICT support. However, the healthcare provider, the management of health facilities and the planning and management of health care, and quality management benefit from the availability of this information.

The essential elements of e-health are:

1. The electronic health record (EHR): EHR also includes an active participation of the patient to the documentation and communication
1. The e-card;
2. A directory for the public to identify;
3. A directory for the identification of health service providers;
4. The e- Health Portal as a central online access to the e-health applications for citizens, HSP, payers as a: information portal for quality-assured knowledge but also on services of the health and social services; personalized portal for health promotion, prevention, etc. and a safe and secure access to e-health applications and data (my EHR);
5. Inter-agency integrated ICT process support and interface management;
6. Telemedicine services, that guarantee free and flexible access to and the support of the Centers of Excellence and are especially for mobile devices for monitoring;

7. Decision support systems;
8. Tools for the analysis of data for science and research, planning, control and monitoring of the performance events in health care;
9. Technical and organizational measures for data protection and data security.

The e -health strategy based on the following basic principles of information technology:

- there is a clear identification of the patient, actors and products;
- the e-card is used for unique patient identification and it is added to provide a register of people without e-card;
- the unique identification of the HSP 's from trusted organizations of a current register of all actors is guided;
- there is a uniform nomenclature for diagnoses and procedures, such as products (medicines, implants, medical services...) are clearly included in relevant directories;
- the patient-related information based on a uniform model of exchanged documents and data:
    - based on a defined architecture and structure of the essential documents;
    - essential documents and content, such as Diagnoses and services are recognized structured;
    - the documents have a standardized layout including header (metadata).
- rights management must be possible locally. It must be ensured that the data protection standards are met, such as Rights management, signing, logging operation and control mechanisms;
- all documents are digitally signed by the producers;
- only data relevant to the health facilities be made available digitally;
- the data is stored locally;
- a high-performance availability is desirable and must meet the requirements of e-Health service levels;
- the data protection requirements must be guaranteed.

There are patient ID's to develop, based on a unique patient identification, which allows a clear, complete, as part of the authorization concept and fast retrieval of relevant documents. It is recommended to keep the hits on the various patient-indices for the individual actors transparent. It is therefore a comprehensive authorization concept for access to patient-related information to develop and keep under review in the context of e-Health. The transparency of data protection and data security measures are essential for acceptance.

The Austrian e-health strategy is based on and is part of the European development of e-Health. e-Health interferes, where it is necessary and useful to the e-Government developments or requirements. Above all, e-health exceeds due to the sensitivity of its patient oriented informations and through its numerous requirements, which are imposed by e-Government processes.

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