

eHealth Strategies on the Move: Researching State of the Art

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Abstract. The target timeframe of the existing eHealth strategy for the multicultural city of Vienna, Austria is nearly over. A revised strategy is therefore developed. The intention was to address cutting edge technologies and best practices. For this reason the available literature was reviewed, focusing on published eHealth strategies of ten European regions and nations and on publications from four national and international eHealth focused conferences. From the review, recommendations were derived, regarding topics and approaches that the new strategy may address. Results show that certain topics are widely spread in both, political application plans and scientific research.

Keywords. eHealth strategy, literature review.

1. Introduction

Vienna, Austria, the site of this conference, is a growing and modern city, building on a rich historical heritage of culture, medicine and technology. The city uses strategic approaches to carefully support continuous and innovative development, while preserving valuable achievements. The existing eHealth strategy of 2012 [1] is currently under revision, with the clear goal to consider cutting-edge eHealth technology as well as current best practice examples. The literature review described here contributed to the revision effort, by providing recommendations on issues and approaches that may be considered in the future strategy. Selected national and regional European eHealth strategies were reviewed to provide an overview of political views, implementation projects and emerging technologies on a large scale, with a focus on eHealth and telemonitoring. The resulting recommendations will be considered by the strategy development board during the design of the new eHealth strategy for the City of Vienna.

2. Methods

A literature research was performed on national and regional eHealth strategies. Strategies were only included if they are available in English or German language and if

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they are publicly accessible. Based on these criteria the following 10 strategy documents have been selected and reviewed:

- Ireland
- Switzerland
- Lithuania
- Slovakia
- Austria
- Netherlands
- Germany
- Scotland
- Sweden
- Denmark

In order to review the state of the art from a scientific point of view, the papers published in the proceedings of the following four national and international conferences were included in the literature survey:

- International Conference on Wearable Micro and Nano Technologies for Personalized Health, phealth 2015 in Vasteras, Schweden
- eHealth Summit Austria 2015
- eHealth Week in Riga 2015
- Medical Informatics Europe Conference 2015, Spain

From the strategies, the following items were collected for further consideration:

- Definitions of the term “eHealth”
- Measures and recommendations
- Other items of interest

From the scientific literature, the following items were collected for further consideration:

- Emerging technologies
- Experiences from implementations

The measures and recommendations were then clustered into topics, e.g. “Electronic healthcare record implementation” and “improving quality of care delivery”. The list of selected topics was used as a first indicator of relevance within a 360-degree overview. These topics were then used to summarize the specific findings from the selected source strategies. This summary includes strategic aims and goals, as well as implementation activities that are underway in the selected regions and states.

The list of topics was then also used to select specific papers from the proceedings of the four events that were analysed. Additional topics were added to the list only if a critical mass of papers was available that addressed the topic. Again the findings from the scientific sources were summarized according to the selected topics. This summary typically includes reports on projects that implement existing technologies within the local healthcare systems. Additionally projects were listed that implement existing technology in innovative scenarios of healthcare, as well as projects that develop and test new technologies. The final list was then ranked according to the occurrence in eHealth strategies. Topics that did not appear in the strategies were then listed separately. The

ranking of those additional topics was performed by the authors individually and an average ranking was then calculated.

The findings exceed by far the limits of this paper. A full report is available in [2].

3. Results

3.1. Topics

Topics addressed by strategies, ranked by number of occurrence:

- Electronic health records and IT infrastructure
- Syntactic and semantic interoperability
- Integrated healthcare
- Quality and decision support
- Self- and Telemonitoring

Additional topics found in research literature:

- mHealth and pHealth
- Privacy and Security
- Secondary use of data
- Ambient Assisted Living
- Information- and knowledge representation
- Education and training
- Usability and patient empowerment

The topic of privacy and security is an immanent component of the studied strategies, because the systems in place already provide sufficient privacy and security according to the given legal requirements. Hence, these topics are not listed as strategic topics. Research in these areas typically addresses future scenarios of threat and abuse that need to be addressed by innovative implementation.

3.2. Recommendations and Measures

On the political map the analysed European countries and regions show parallel developments in some topics, but also clear differences in many other topics.

- Ten countries implement electronic health records and IT infrastructures
- Eight countries apply semantic interoperability in form of structured and harmonized document formats
- Six of the analysed strategies include the actual application of integrated healthcare and support of medical workflows
- In five of the countries the strategies name the increase of quality as one of the major goals
- Four of the countries include application plans for self- and Telemonitoring systems

3.3. *Emerging Technologies and Experiences from Implementations*

The publications of all four conferences had several topics in common. Some of those topics appeared in all conferences, others only in singular tracks. A wide range of mHealth and pHealth implementations have been reported. The clinical benefit in diagnostics, prevention, monitoring, research and education was substantiated by strong evidence. In the topic of privacy and security approaches towards decentralized management of identities, authorization and access policies were reported with a special focus on cross-border communication. The issue of anonymization and pseudonymization for research purposes is considered to be of high importance by most authors because it facilitates secondary use of data. The benefits of secondary use were demonstrated by various reports, for example in the field of oncology and nursing. The reports show that Ambient Assisted Living is still in an early stage. Education and training were found to be an essential element of successful eHealth solutions, but in most cases the designated resources do not address the requirements.

Discussion

According to the selected strategies and research reports the field of eHealth is emerging from a mainly research driven activity to an integral part of care delivery in many regions and states. A strong rise in hard evidence that indicates a clear benefit in many applications is obvious in many reports. The speed of development is increasing and more progress in the near future can be expected. The IT infrastructures and electronic healthcare records that are emerging in most regions and states are a substantial driving force towards adoption of eHealth technologies on a large scale.

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