



Support of Patient Empowerment by an intelligent self-management pathway for patients

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Introduction

Patient empowerment aims at involving patients to a greater extent in their own health care process and at making disease management an integrated part of daily living [1]. Methods of self-management motivate patients to contribute to their own health care and manage their diseases. Within the scope of the EMPOWER project a modular and standard-based patient empowerment framework will be developed which facilitates the self-management of diabetes patients based on Personal Health Records (PHR) and on context-aware, personalised services.

EMPOWER focuses its research and development efforts on the definition and implementation of knowledge-based self-management pathways for diabetes patients. These include

- services for the specification and execution of actions to enable changes of behaviour according to diabetes-specific health care needs and
- services for monitoring of vital, physical, mental parameters as well as physical and lifestyle activities.

A patient-centric [2] perspective and the involvement of healthcare professionals are vital for the project's success.

Methods

EMPOWER semantically integrates various information sources (EHR/PHR, diabetes guidelines, patterns of daily living) into a shared knowledge model. It advances present data management methodologies by

- utilization of existing standards (ISO 13606 [6], HL7 [7] and IHE [8]);
- supporting semantic interoperability between different data exchange standards;
- a patient-oriented solution supporting multimodal interfaces (e.g. mobile, web, speech-based);
- innovative user friendly presentation of medical data and guidelines;
- common knowledge models for diabetes management [5];

Pilot applications will be deployed in Germany and Turkey to evaluate the implemented solution and to measure its impact on the patient-doctor communication and on patient empowerment.

Self-Management of Diabetes

The empowerment framework is designed to extensively support diabetes patients in adequately managing their disease. Integrated self-management pathways are based on patients' data and preferences, disease-related best practice guidelines and patterns of daily living. Aside from self-controlled vital and other diabetes-relevant parameters also recommendations from the persons' physicians, personalised long-term goals and diabetes relevant information material are integrated. Pathways are iteratively adapted to the actual patient's needs and also to his/her self-management competences and preferences. Thus the pathways provide individual action plans including short-term actions to support patients in their effort to changing their daily behaviours, and adapting their life styles.

Central goals are to

- increase the quality of relationships between medical professionals and patients;
- Fostering self-management by collecting patterns of daily living;
- Supporting changes of behaviour patterns with personalised action plans.

Integrated interfaces to relevant medical and AAL devices for example blood glucose meters will be offered to support collecting and tracking parameters easily. In order to facilitate efficient data aggregation from various heterogeneous sources -like PHRs and EHRs- technical and semantic interoperability is achieved by implementing international standards for information communication and representation like IHE, HL7 and EN13606. Available diabetes-relevant data can thus be professionally analysed and intuitively presented to the patients.

Data and recommendations will be stored in a PHR that is included as component in the modular and standards-based patient empowerment framework.

Personal Health Records

A PHR system is a tool for collecting, tracking and sharing important, up-to-date information about an individual's health, current medications, allergies or sensitivities, summaries from recent examinations, current educational materials or web links relating to a person's health, diet and exercise logs [9]. It enables lifelong management of citizens' health care records where the citizen manages and takes responsibility for his/her own healthcare related data and is thereby empowered to actively contribute to his/her own health.

Although the implementation of electronic PHRs is still in its early stages in most European countries, the PHR is seen with good perspectives for future development and is observed as a basic component for implementing self-care and chronic care platforms [10].

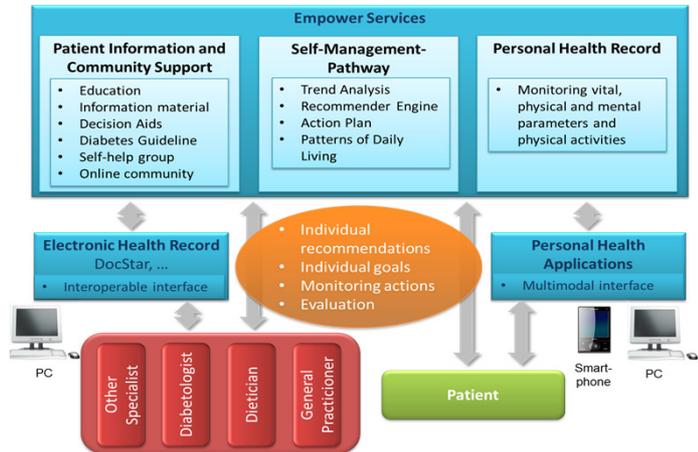


Figure 1. Architecture of the German EMPOWER Pilot Application

Pilot Application in Germany

The German pilot application (Figure 1) will be deployed within the GOIN Doctors' Network in the region of Ingolstadt (Bavaria) - a resident Doctors' Association whose doctors are practicing in different areas of medical expertise. The evaluation phase will include Type 1 and Type 2 diabetes patients of different ages (young adults, adults, elderly people). Besides the actual functionality acceptability, ease of use, suitability and appropriateness in achieving the overall goals will be assessed.

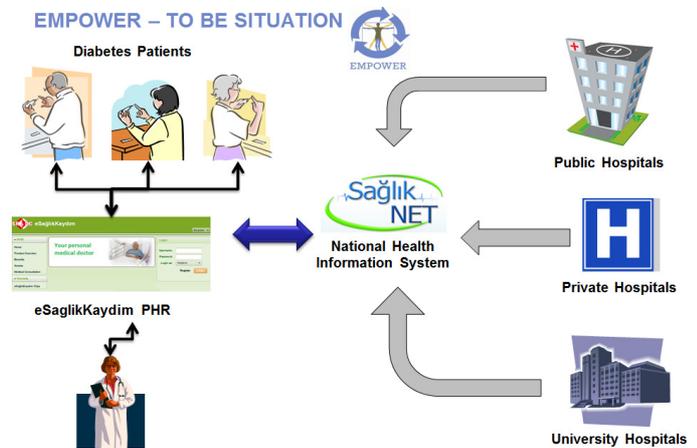


Figure 2. Architecture of the Turkish EMPOWER Pilot Application

Pilot Application in Turkey

The pilot application in Turkey addresses the Ministry of Health's National Health Information System (NHIS) which has a very large database that collects the medical information about every healthcare activity (including diabetes diagnosis and monitoring) in public hospitals through HL7 Clinical Document Architecture compliant Web Services. In the Empower pilot application, a group of diabetes patients and general practitioners in Ankara will be established and the patients will be able to retrieve their health information from NHIS using the eSaglikKaydim Personal Health Record System of SRDC as shown in Figure 2.

References

1. Alpay L, van der Boog P, Dumaj A. An empowerment-based approach to developing innovative e-health tools for self-management. Health Informatics J. 2011 Dec;17(4):247-55.
2. Tsalatsanis A, Gil-Herrera E, Yalcin A, Djulbegovic B. Designing patient-centric applications for chronic disease management. Conf Proc IEEE Eng Med Biol Soc. 2011;2011:3146-9.
3. Logue MD, Effken JA. Modeling Factors That Influence Personal Health Records Adoption. Comput Inform Nurs. 2012 Apr 19. [Epub ahead of print]
4. Moser W, Heller U, Gries FA, Engelbrecht R; Enabling guidelines for computer-based decision support - process and tools. Stud Health Technol Inform. 2001;84(Pt 1):231-5.
5. Menárguez-Tortosa M, Martínez-Costa C, Fernández-Breis JT. A Generative Tool for Building Health Applications Driven by ISO 13606 Archetypes. J Med Syst. 2011 Oct 4.
6. López DM, Blöbel B. Architectural approaches for HL7-based health information systems implementation. Methods Inf Med. 2010;49(2):196-204. Epub 2010 Mar 8
7. Koschinsky T. Diabetes Management Report Deutschland 2010 - Entwicklungen und Handlungsbedarf. Diab, Stoffw und Herz 2011; 20; 135-142. <http://www.roche.de/presse/medien/Diabetes-Management-Report-Deutschland-2010Besser-messen-und-den-Alltag-souveraen-meistern-mit-der-Blutzucker-Selbstkontrolle-Alle-1-2707.html>
8. AHIMA. The Value of Personal Health Records A Joint Position Statement for Consumers of Health Care. 2007. https://www.ama-assn.org/files/ahima-amiaphrstatement_1.pdf
9. Gearon C. Perspectives on the Future of Personal Health Records. 2007 California HealthCare Foundation iHealth Report. <http://www.chcf.org/~media/Files/PDF/PHR/PHRPerspectives.pdf>
10. Diabetespass 2010. http://www.diabetesde.org/ueber_diabetes/was_ist_diabetes/diabetes_pass

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