

MUDRLite – AN ELECTRONIC HEALTH RECORD APPLIED TO STOMATOLOGY BY THE USAGE OF A DENTAL-CROSS COMPONENT

Introduction

Currently, most hospitals have an electronic form of health records integrated into their hospital or clinical information systems. But the systems are often more suitable for the hospital management than for physicians, the clinical part is not structured enough and the set of collected attributes is fixed and practically impossible to be extended. Physicians gathering information for the purpose of medical studies often use varied proprietary solutions based simply on MS Excel Sheets or similar office-software tools.

The European Centre for Medical Informatics, Statistics and Epidemiology (EuroMISE Centre) focuses on new approaches to the electronic health record (EHR) design. The participation in European projects as well as the CEN TC 251 standards and the cooperation with physicians had produced much experience, which helped to develop a pilot EHR system called MUDR (MULTImedia Distributed Record) [1]. It is based on a three-tier architecture with an unusual data-storing approach based on so-called knowledge base and data-file principles.

Within MUDR development, an extra branch was separated, simplifying both the MUDR architecture and the MUDR data-storing principles. It creates the MUDRLite EHR application, which can be without problems deployed to a particular environment.

Materials and Methods

The MUDRLite architecture is based on 2 layers. The first one is a relational database. Currently, MS SQL server versions 7 and 2000 are supported. The second layer is a MUDRLite User Interface (UI) running on a Windows-based operating system.

The database schema corresponds to the particular needs and varies therefore in different environments, as opposed to the fixed database schema in the MUDR data layer. MUDRLite universality is based on a different approach. MUDRLite is able to handle varied database schemas. This feature often simplifies the way of importing old data stored with other databases or files.

All the visual aspects and the behaviour of the MUDRLite UI are completely described by an XML configuration file. The end-user can see a set of forms with various controls placed on them by appropriate XML elements. MUDRLite operates as a kind of commands' interpreter; it processes the instructions encoded in the MLL language as described in [2] and manipulates the database layer as well as the visual aspects of the UI.

As the set of predefined controls is limited MUDRLite provides an interface to include a user-defined control or module. This interface can be used to offer graphically and functionally advanced components as well as new features, e.g. an advanced security policy, integration with other existing information systems, standards-based EHR communications.

To gain MUDRLite's user-acceptance in the field of stomatology we have developed a high-advanced component representing the dental cross, which is a crucial part of medical documentation in dental medicine. This component was included dynamically by means of the mentioned interface. It operates about 30 various entities where the related patient's data are included in about 150 different attributes. A demonstrating screenshot can be seen in the Figure 1.



Figure 1: The dental-cross MUDRLite component

Results and Conclusion

The dental-cross component was designed and is nowadays being evaluated and fine-tuned within a close cooperation with physicians from the Stomatology clinic of Charles University, 1st faculty of medicine and General teaching hospital in Prague. It has verified the component itself as well as the mentioned interface.

References

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- [2] Spidlen J., Hanzliček P., Zvarova J.: MUDRLite – Health Record Tailored to your Particular Needs. In: Duplaga M., Zielinski K., Ingram D. (eds.): Transformation of Healthcare with Information Technologies. Amsterdam, IOS Press, 2004, pp. 202 – 209.