Interface: Web-based Application for Registration and Processing of Information about Care Needs of Elderly in Home Care and Institutions

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Introduction

The current social security system in Belgium uses the KATZ-scale to determine the care-needs, to plan the care, to finance care and to admit elderly to nursing-homes. According different sources, from care-givers in the field to researchers, this scale is too limited for the many complex situations. Therefore the Belgian government requested to test and evaluate other instruments in the field, instruments which are better suited for these complex situations.

The goal of testing these instruments is to determine the care-needs of the individual elderly as a base for the development of a care-plan. With a care-plan it is possible to couple appropriate actions, (re)-assign human and financial resources to elderly. A care-plan is more effective and beneficial for both the government and the elderly if the care-needs are mapped correctly with the most suitable instruments.

Another important goal is to examine the feasibility of completing these instruments in the different work environments of care-givers. The task of gathering the care needs of the elderly, completing the instruments thus, is performed by different kinds of care-givers from different retreats, rest- and service homes, day-care centre, G-services, etc.

1 Background

During a first research phase data was collected by paper. Although many applications and procedures are available for completing the different instruments; none of them are really suitable for this project. The existing applications and procedures differ very much from each other, are often not user friendly, are limited to one instrument and sometimes even the calculations are not correct.

After the first research-phase care-givers didn’t get the results of the instruments directly, data was incomplete, not clear, interpreted subjectively or simply wrong. Above all collecting information is a time-consuming and tedious work. Therefore the idea rose to collect the care-needs via the electronic highway, the internet thus. Using a web application would solve a lot of problems and opens a whole range of new options for the future.

Using a web application (and a PDA application) to complete instruments allows a collaborative approach: this way every care-giver has access to his or her patients at “any place at any time”.

The added value of these applications in comparison with traditional methods are clear for all types of users:

- **Patients** are the greatest beneficiaries of this application. Making instruments available via a web application leads to a structured and objective gathering of information about their care-need. The results of this information gathering will lead to a better view on the patient and a better developed care-plan. So this new system will result in better care for the patients themselves. Moreover the patients are able to access their own personal information (cf. patients rights).

- **Authorities** are able to provide more objective grounds for possible policy adjustments.
With all data being gathered in a uniform and digital manner researchers can easily compare instruments (based on extracted statistics), adjust instruments, monitor the effects of these adjustments and export information in different formats.

2 The system

The entire system with all its components is fitted into a framework compliant with the Model-View-Controller (MVC) model, a well known design pattern which perfectly provides the flexibility needed for this project.

At this point in time there is not a single system in Belgium which centralizes care-needs of the elderly population. The Interface system changes that situation; a database system is created for storage of gathered data; instruments and algorithms are centralized in a file system on the server. All this opens a whole range of new perspectives:

- Imported instruments are displayed in an uniform, structured and easy to use way, which makes it user friendly for non-specialist computer users
- Statistical calculations can be performed on the gathered data e.g. regional differences
- Information can be related into a larger perspective
- Consulting information “any time, any place”
- Exporting information (e.g. to paper, other database)

And even the database module is a paragon of flexibility; the relational database is accessed through an open-source middle-ware solution which makes the entire system database vendor independent.

The flexible approach of the system makes it possible to add new instruments, to decouple the underlying algorithms and to provide a way to adapt existing instruments quite easily. The usage of well known standards as XML and XML Schemas combined with extended instrument research ensures a solid structured but flexible base to mold instruments. Content and structure are separated in different XML structures while algorithms are converted in an uniform way to JAVA. In this way libraries of instrument building blocks can be created (see figure below).

Flexibility is also the keyword when tackling the multilingual issues; the system is build in such a way it can handle as many languages as desired i.e. the system is language independent, this for both the User Interface language as the instruments. Again the usage of open standards and platform independent technologies such as JAVA/JSP gives comfort.
The first limited test results of the web application are expected to be available during spring 2005, shortly followed by PDA test results. Thereafter the systems will be tested in a broader environment. If the accomplished results are satisfying the application might be expanded throughout Belgium or might function as a starting point for further development to more expanded systems. In every way the system will have a huge effect on the data collection, calculations and analysis which eventually lead to a more effective and better care for elderly.