Star Rating for Social Care Services: Simulation Scenario in the PROLIX Framework

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Abstract. According to the Commission for Social Care Inspection, performance in Care Homes can be evaluated through a range of indicators in each of the different outcome areas specified by the UK Department of Health. Each indicator partially contributes to the result in its respective outcome area, in proportion to its weighting within the same area. The competencies of the employed staff affect the overall quality rating ("Star Rating") of services. Since the result of each area is linked to the competencies of the human resources involved, the Authors are designing a simulator which works as an assessment tool. The simulation of a possible or desired star rating is turned into prioritized potential competencies gap that should be filled in order to achieve the desired result. Thus the simulator acts as a Training Planner.

Key words. Simulation, Social Care, Quality Rating, Performance.

1 Quality and Performance in Social Care. Background Information

The actual performance of the Care Homes in the United Kingdom is assessed by the Commission for Social Care Inspection (CSCI).

The CSCI website shows some ongoing developments in the assessment methodologies: basically the main proposed development will be the introduction of a 'star-rating' for quality for all adult care homes.

Moreover, the performance of individual workers is related to the National Occupational Standards which are a set of competences that underpin the National Vocational Qualifications.

1.1 Describing the Quality of a Service: CSCI's New Ratings

CSCI has 100,000 downloads of its home inspection reports every month so it knows how important good information is to people who are trying to judge the quality of the care they are considering, and is aware that the way it describes the quality of a service needs to be clear and simple. People who use this information can then understand how well a particular service meets the needs of the user or patient.

An overall quality rating has a twofold objective: first, it allows a simple comparison between different social care services, in spite of their complexity; secondly, the quality rating is expected to be perceived as an incentive to improve by providers of services and involved workers.

Services rated as being among the best will want to maintain their rating and not let their standards slip. Services with the potential to make improvements will want to improve. They can be confident that when improvements take place CSCI reports will tell everyone about their success.

CSCI wants to achieve a ratings system that:

- is easily understood by everyone;
- providers of social care and their staff can relate to and which encourages them to improve their service. CSCI does not want providers to chase ratings but wants them to seek to provide high quality services;
- councils and health agencies can use in deciding how to give incentives to providers to improve services;
- shows an open and transparent way of reaching the rating.

1.2 CSCI Proposals for a Quality Rating

CSCI will be introducing a published quality rating for all care services from mid 2007. There are two parts to how they will do this:

Part One: a simple graph that shows how well the service performs under eight main headings called 'Outcome areas';

Part Two: an overall rating based on the evaluation obtained in the Outcome areas.

CSCI will use an outcomes graph to say how the service performs in eight main areas. It will be using the outcome areas published in the Department of Health's recent publication 'Our Health, Our Care, Our Say'. Mapping these to the existing CSCI areas of regulatory assessment will continue for the rest of 2007. The Department of Health outcomes have been identified as being important to people.

It will also add a further judgment area related to 'Leadership and Management'.

Some people using services will be able to make choices, retain degrees of independence and participate actively in decisions relating to their care.

Other people, for example those with complex needs, may have difficulty exercising choice. Independence and involvement may be represented by small signs of progress. In these circumstances, services will need to show that they engage with advocates and specialists to help people to communicate their needs and to involve them as much as they are able.

The outcome headings are shown below, and some examples of the way CSCI thinks they relate to regulated social care services are presented.

- Quality of Life – e.g. People who use the service have their independence actively promoted. People are supported to live a fulfilled life making the most of their capacity and potential.
- Exercising Choice and Control – e.g. People who use services, and their carers, have access to a service they think will be responsive to their individual needs and preferences. People have choices within the service they receive and feel able to express preferences that might be different from others receiving the service.
- Making a Positive Contribution – e.g. People are seen as full members of their community. They are helped to be as involved in their community as they wish and their contribution is valued equally with other people.
- Personal Dignity and Respect – e.g. Respect for individuals is a priority in every part of the service. The environment is good. The processes and procedures support respect. The way people are treated shows respect.
- Freedom from Discrimination and Harassment – e.g. People who use services have fair access regardless of their faith, beliefs, colour, sexuality, ethnicity or disability. The service has clear, open and transparent ways for people to express concerns and anxieties and these are acted upon and addressed.
- Improved Health and Emotional Wellbeing – e.g. Emotional and mental health needs are responded to even where the person has other primary needs. People have a right to exercise choice and control and where necessary this involves their advocates being involved on their behalf.
- Economic Wellbeing – e.g. People should feel in control of their resources so that they can make choices on a daily basis. People receiving social care services are facilitated to contribute to their community by carrying out paid and/or unpaid employment appropriate to their preferences and skills.
- Leadership and Management (the additional outcome) – e.g. People experience well led services. Providers and staff understand what makes a high quality social care service and how to make it happen. They know how to make the service better and are able to do so.

CSCI will group the current National Minimum Standards (NMSs) under the most appropriate outcome heading. And over the next few years as NMSs change CSCI will put the new ones into the Outcome areas. CSCI will no longer report against each national minimum standard in their report. Instead, inspectors will use the NMSs as part of the evidence to reach a judgment on each Outcome area. For each of these headings CSCI says whether the service is excellent, good, adequate or poor.

A graph will be used to show what the service does well and where it needs to improve. The chart will be published in the summary of each inspection report following a key inspection.

2 The Simulation in the PROLIX Framework

PROLIX is a 4-year research and development IP project co-funded by the European Commission under the 6th FP, Priority 2 "Information Society

Technologies". The objective of PROLIX is to align learning with business processes in order to enable organisations to improve the competencies of their employees more quickly as business requirements change.

The Social Care Institute for Excellence (SCIE) is facilitating the social care test bed in the PROLIX project. SCIE's aim is to improve the experience of people who use social care by promoting knowledge and awareness about good practice in the sector in order to increase the quality of the service.

2.1 The simulation Tool: Role and Objectives

The simulator would provide the care home owner/manager with a pre-inspection diagnostic tool that gives the care home manager a detailed insight as to what star rating he/she might expect and where services could be improved to increase the probability of obtaining a better star rating. Thus, once competencies have been weighted and linked to the different items contained in the model, and which contribute to determining the star rating, the simulator will simultaneously act as both a decision support system and a training planner: simulating a desired rating will be translated by the simulator into a list of **prioritized competency gaps** that should be filled (in order to increase the probability of obtaining a better star rating). Planning to fill these gaps according to the resulting prioritization means simply planning some training for the involved staff (Fig.1).

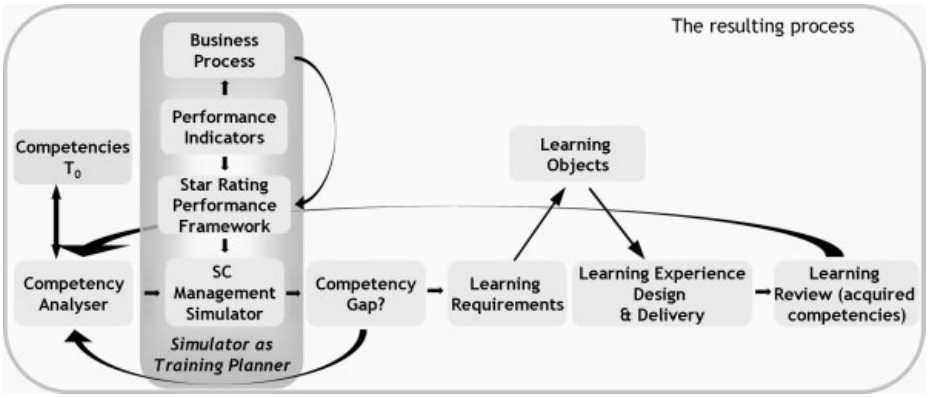

Fig.1. The whole process and the role of the simulator.

2.2 Empirical Approach to Set Up the Model

A set of rules has to be defined to model the business process in order to obtain the outcomes that describe how a service performs. Each outcome area (called “Factor” in the model) relates to regulated social care services via a set of items (called “Sub-factors” in the model). A rule takes the following entities into account:

- domain logic: what are the dynamics of the process, how do the outcomes have to be computed;

- a set of scenario parameters could be defined as fixed (i.e. scenario constraints) or changeable (by the user during the simulation start up phase);
- for each Factor a grid of Sub-factor weights could be defined to describe Sub-factor relationships;
- for each Factor a grid of Competency weights vs Sub-factors could be defined to describe how a competency weights in the related outcome area.

A rule is defined considering the possible relationships between domain logics, scenario parameters, Sub-factor weights and Competency weights. Once a set of rules is defined, the model will "compute" how well the service performs under the eight headings called Outcome areas.

On the basis of the case study the empirical model will be determined and used as basis for the development of the simulator: the output of the simulation will be expressed paying attention to both the quality level of the outcome (areas and items) of the simulated process and the levels of the competencies of the staff involved.

The CSCI rules used to assign a rating to care services can be used as guidelines to create rules and weights for the model. In fact they are expressed in linguistic terms: excellent, good, adequate, poor. The proposed evaluation is based on the relative importance of the proposed Outcome area in the global framework, therefore to determine an empirical model it is necessary to formalize the rules and develop an appropriate scale of weights. The formalization of rules in fuzzy terms will allow the model to respect the criteria used by CSCI. The flexibility of the rules will be maintained in the model; this ensures that it will be possible to monitor the levels of the Outcome areas which are of greater importance if the global desired performance level in the specific scenario is to be achieved. Each item contributes to generate the result of its Outcome area in proportion to its specific weight within the area. Moreover the item related to a fundamental Outcome area (i.e. for example Personal dignity) should have a stronger influence than items related to other areas deemed to be less important. The same ratio is valid for those human resources competencies which are more or less important for determining the final outcome of the entire process. Nevertheless the same competencies could sometimes influence different areas at the same time (which does not happen with items).

SCIE's knowledge base was mapped as the model for the simulation. Empirical evidence has now to be gathered from inspectors: It is necessary to gain familiarity with the 'rules' (expressed as "guidance" by CSCI) and to understand the judgments the Inspectors apply when arriving at scores. This will represent an important step in developing the model regulating the simulation.

3 Technical Description of the Simulation

The simulator is a web application based on a multi-tier architecture. To ensure scalability and flexibility, the Process Simulator has been designed as a "modular" application that will allow each module and the whole environment to be quickly and easily configured without needing to be re-implemented. The next step will be to interface the simulator with the so-called "Matching Engine" of the "Competency

Analyzer" module of the PROLIX project, to ensure that the prioritized list of competencies can be exploited by any other module in the project.

In order to reinforce these features and to facilitate the integration with the other PROLIX modules, the architectural approach of the process simulator "is migrating" to a pure MVC architectural pattern that decouples data access, business logic, and data presentation and user interaction. Framework Spring has been chosen as the MVC framework; it is an open source web application framework for the Java platform and offers the features that are required for the effective creation of complex business applications outside of the programming models that have historically been dominant in the industry.

The interface between the application (business logic tier) and the data tier is managed by Hibernate; Hibernate is an object-relational mapping (ORM) solution for the Java language: it provides an easy to use framework for mapping an object-oriented domain model to a traditional relational database.

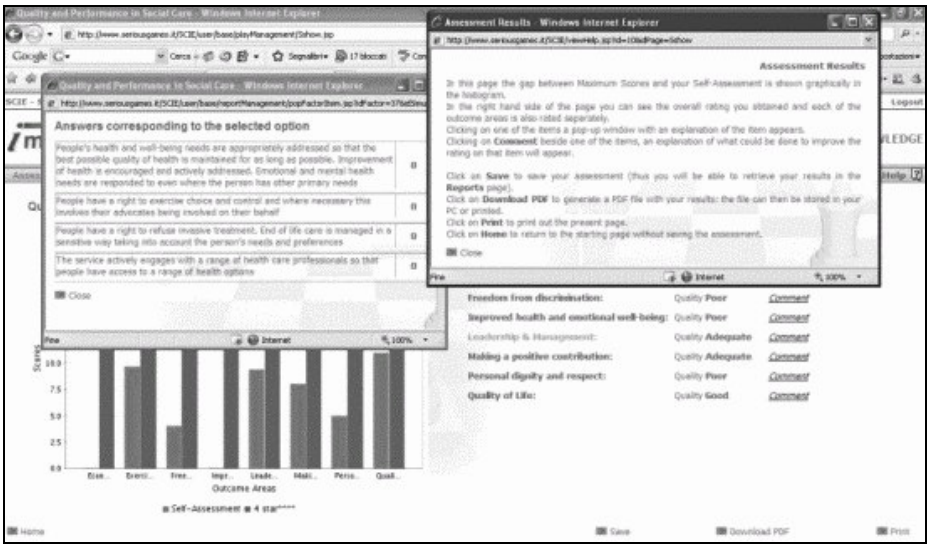

Fig.2. A screenshot of the simulation tool (prototype).

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