Chapter 14
Knowledge Based Business Intelligence for Business User Information Self-Service

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ABSTRACT

Due to a higher need for healthcare provision, and due to the decreasing number of contributors in the German healthcare system, the market situation has changed over the last years. The resulting competitive and cost pressure forces the executives to tap potentials in a competitive manner. Analytical Information Systems as part of business intelligence can be used to receive information from several integrated data sources that may be used in the decision making process. However, the system's complexity of use can be seen as problematic so that unskilled business users, unlike power users, are not able to execute analyses for their issues in an adequate way. The focus of the presented approach lies on a semantic metadata layer, which is capable to import and manage modeled semantic metadata. Based on this layer, the metadata is supposed to be used for further analyses support functionalities in order to allow a business user information self-service.

1. INTRODUCTION

Against the background of population's increasing awareness of health issues and the demographic change, it can be observed that there is a growing need for healthcare provision in Germany. Soar-

ing costs must be shouldered by ever-decreasing contributors which has financial effects on the German healthcare market. The German hospital market, in particular, is affected (Thoben, 2010). Hospitals are confronted with new financial challenges which derive from the introduction of the German DRG-based (Diagnosis Related Groups) compensation system in 2003, which means that

hospitals have to billing their hospitalizations case-related. The increased cost and competitive pressure causes the hospitals to position themselves as commercial enterprises to the market and set themselves apart from their competitors successfully. For ensuring the competitiveness potentials have to be developed target-orientedly.

Therefore, strategic hospital controllers, so called business users, need information on which decisions for the market strategy can be carried out. Here, the actual market and competitive situation - catchment area, market share, market potential, competitors (see Figure 1) - and how this situation will evolve against the backdrop of the demographic change are of particular interest. Accordingly, hospitals have to integrate the datasets of their own hospital information system with other datasets from the National and Federal Office of Statistics (mortality and diagnosis statistics), socio-demographic data (demographic statistics), referring physician data and competition data from the structured quality reports of the hospitals. Based on this integrated dataset, relevant analyses can be carried out. With the aid of geographic and statistical methods, business users can get a comprehensive overview of the actual and long term market situation. Information about changes in the group of patients, the behavior of the referring physician, supply gaps or hidden reserves can be detected (Stibbe, 2011). This information can be used as a basis for strategic decisions such as expanding the performance spectrum of the hospital.

To improve the decision making process and to empower business user concepts and technologies of the area of business intelligence described in the next section 2 can be used. Especially Analytical Information Systems as part of business intelligence allow users to analyze huge integrated datasets in a quality assured and multidimensional manner. However, these systems suffer from several shortcomings that will be explained in section 3. The scientific question and related requirements to an approach are discussed in section 4. Due to the use of ontologies in our approach a general understanding of ontologies and related concepts is discussed in section 5. Our approach to the problem, including the envisioned architecture, concepts and analyses supporting features as well as an example will be presented in section 6. Section 7 shows the corresponding projects to this research and makes statements to the planned evaluation. Section 8 discusses related work in this research area and section 9 summarizes all chapters and points out further work.

2. THE ROLE OF BUSINESS INTELLIGENCE FOR INFORMATION SUPPLY

A key objective of Business Intelligence (BI) is to improve the decision making process and to empower business user, to get all the required information at the right time. The understanding of the concept Business Intelligence may vary from information systems based on multidimensional data structures to system topographies for analysis and information supplying purposes. In Gluchowski, 2006 Business Intelligence is defined as integrated information technology (IT) overall concept that offers viable and interlinked solutions for different requirements of BI-Systems with decision support.

First IT-based Management Support Systems were developed in the 1960 and 1970 years. So called Decision Support Systems (DSS) and Management Information Systems (MIS) allow reporting and decision support in specific application areas. In the 1980 years the term of Management Support Systems (MSS) was introduced, that is used till this date. Through the use of internet technologies in the last fifteen years and the increasing functionality and dynamic as well as the complexity the new term Business Intelligence for MSS has established itself (Gluchowski, 2006).

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