Chapter 4

Semantic Mobile Applications for Service Process Improvement

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ABSTRACT

The ongoing evolution of industrial field service is mainly driven by demographical changes, increasing complexity of products, and tremendous amounts of product information from enterprise information systems as well as from the emerging Internet of Things. To cope with these challenges, a combined approach utilizing semantic and mobile technologies fosters the provision of the right information, at the right time, in the right place, and to the right people. This paper investigates the exploitation potential of semantic mobile applications to support industrial service processes. Based on identified application scenarios, the authors developed concepts for process improvement and, thus, derived requirements. The necessary semantic data federations are considered in the presented architecture, which enables an integrated approach for tailored information retrieval from heterogeneous information sources.

1. INTRODUCTION

Instant availability of up-to-date information is a vital prerequisite in today business for decision making and the execution of any job task. Especially in service business, which is to a high degree human-based, knowledge is the key factor to deliver services efficiently and with high quality. It’s knowledge about customers, products, application domains, the history of installed equipments and service procedures and processes. In global operating enterprises, this knowledge is
in peoples’ heads, but also stored as electronic information in many databases of the enterprise information technology infrastructure. Because of the exponential growth of the data volume it’s getting more and more difficult to find the right information to the right time with low effort.

Additionally, the preservation of the existing knowledge is reasonable due to the aging structure of the employees in many industrial countries such as Germany. According to ABB AG (2009), 21.1% of the employees of ABB Germany will retire within the next 10 years and 53.7% within the next 20 years, respectively (cf. Figure 1).

The Aletheia project (see http://www.aletheia-projekt.de for details) is investigating in new approaches to retrieve information from various heterogeneous data sources. The obtained information pieces are aggregated to a consistent and meaningful conclusion, and presented with regard to the actual working context to the user.

2. SERVICE PROCESS SUPPORT

The entire service process and involved information systems are depicted in Figure 2. It starts by handling customer’s request in a call or customer center. Here, a Customer Relationship Management (CRM) system and a telephony system are utilized to provide the required information to the call agent. Afterwards, the customer request is forwarded to the corresponding service unit. The dispatching of service engineers, required spare parts, and information is done by the service planner using the CRM system and a dispatching board. Afterwards, the service engineer executes the field service job and records his activities utilizing a reporting software and sometimes still using paper. Finally, a clerk enters the invoicing data in an Enterprise Resource Planning (ERP) system.

Unfortunately, the aforementioned information systems provide only a limited information support to the corresponding users. Some of the required information is split across various information systems, thus requiring additional time-consuming investigations. Here, utilization of installed base information and Internet of Things (IoT) (International Telecommunication Union, 2005) could provide meaningful information. Access to installed base information allows keeping track of all products and systems information at a customer site, including technical and project details that might be very valuable to call center agents, service planners, and service engineers. Moreover, utilizing Internet-of-Things technologies to access the equipment condition information on-site, supplies service engineers with recent information about it and, thus provides a more detailed view on the problem. Figure 3 depicts an improved information supply scenario.

However, there are many other databases, information systems, Wikis, and data sources

Figure 1. Aging structure of ABB in Germany (ABB AG, 2009)
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