Chapter 26
Identifying Requirements for Healthcare Information Systems with Focus Groups

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ABSTRACT

Healthcare Information Systems (HIS) are essential in the healthcare industry since they manipulate vital information. For example, HIS may keep track of the patient's medical history, avoiding mistakes with medications, dosages, and treatments. However, the traditional methods for identifying HIS requirements focus on specifying functional requirements for the software. Moreover, system scope should be fully understood by stakeholders, such as healthcare workers and hospital managers, something extremely difficult to achieve in practice. As such, many requirements are incomplete, missing, or not needed, leading to expensive and inadequate HIS. The authors identify requirements for Healthcare Information System using Focus Groups. They evaluate this method with experiments, applying a variety of techniques and having encouraging preliminary results. In particular, they verify that stakeholders can reach consensus on high-level requirements by discussing different perspectives about the system scope. The authors conclude that Focus Groups are really effective.

INTRODUCTION

Sauerborn and Lippeveld (Bodart, Lippeveld, & Sauerborn, 2000) state that good management is a prerequisite for increasing efficiency and effectiveness of health services. They also argue that the World Health Organization identified HIS as critical for achieving this goal. In fact, HIS should provide useful information, based on good data, to influence decisions. These information-based decisions will lead to a more effective use of scarce resources and health planning. However, HIS is inadequate in most countries and represent a management obstacle rather than a tool.

Many reasons have been pointed for this inadequacy, including irrelevant information gathered, lack of timely reporting and feedback, poor quality of data or poor use of information. These reasons, as we may see, are strongly related to data collected that is incomplete or inadequate, resulting on useless information. In fact, a well-designed information system starts with functional analysis and identification of information needs (Bodart et al., 2000). This is where we get to the Requirements Engineering field in the domain of HIS.

Requirements are the heart of Information Systems development since the earliest days of computing (Avison & Fitzgerald, 2006; Bodart et al., 2000). The Requirements Engineering process handles with these requirements. It is regarded by many authors as the most important and crucial part of the development process because the process determines how the system will operate (Coughlan & Marcredie, 2002; Davey & Cope, 2008; Zowghi & Coulin, 2005). Nevertheless, problems still exist with requirements (Burg, 1997; Group, 2009; Hossenlopp & Hass, 2007; Nuseibeh & Easterbrook, 2000; Preece, Rogers, & Sharp, 2002), and these problems are considered the major causes for the high failure rate of the projects (Group, 2009).

This chapter focuses on the Requirements Elicitation activity for Healthcare Information Systems (HIS), an activity of the Requirements Engineering process. Because Healthcare Information Systems are social systems of human activity designed to operate in the dynamic context of the Health organization (Avison & Fitzgerald, 2006), they demand the involvement of stakeholders and of the dynamic context of the organization in their development (Avison & Fitzgerald, 2006).

Requirements Elicitation aims to identify requirements through intense communication between stakeholders, such as healthcare workers, hospital managers, and analysts. This communication is complex and error-prone because stakeholders are not always clear when describing what they need and analysts have difficulties

understanding business concepts (Al-Rawas & Easterbrook, 1996; Burg, 1997; Maté & Silva, 2005; Nuseibeh & Easterbrook, 2000; Preece et al., 2002). The consequences of errors in this activity become expensive and hard to fix (Kitzinger, 1994). Costs of fixing errors at the requirements stage are around 80-100 times less than if discovered at the development stage (Avison & Fitzgerald, 2006). As a result, the Requirements Elicitation activity is usually accepted as a critical one (Apshvalka, Donina, & Kirikova, 2008; Davey & Cope, 2008; Engelbrektsson, Yesil, & Karlsson, 2000; Geisser & Hildenbrand, 2006).

Many directions of recent research focus on the social nature of Requirements Elicitation, which has been leading to the usage of social sciences approaches (Coughlan & Marcredie, 2002; Hossenlopp & Hass, 2007; Pfleeger & Atlee, 2009; Zowghi & Coulin, 2005). For example, there are many studies focusing on the usage of ethnography (Crabtree, 1998; Crabtree, Nichols, O'Brien, Rouncefield, & Twidale, 2000; Goguen & Linde, 1993), interviews (Al-Rawas & Easterbrook, 1996; Davey & Cope, 2008; Goguen & Linde, 1993), or group approaches (Davidson, 1999; Engelbrektsson et al., 2000; Geisser & Hildenbrand, 2006; Goguen & Linde, 1993; Kock & McQueen, 1997; Sadiq, Shahid, & Ahmad, 2010).

We have been evaluating the use of Focus Groups variations to overcome major problems of Requirements Elicitation (Geisser & Hildenbrand, 2006). This group's social approach gathers stakeholders' perspectives through discussions focused on real needs. We believe that applying techniques in this group discussion method provide all participants an overview of the global needs of the system. As such, it completes the identification of requirements and allows the negotiation of conflicts more efficiently. This would allow overcoming well-known limitations of group approaches, including dominant users, limitations of gathering stakeholders at the same time and place, biased opinions and logistic costs (Maté, 2005; Zowghi, 2005). It would also allow overcoming

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