Chapter VII
Opportunities and Risks for Mobile Decision Support

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ABSTRACT

This chapter considers the mobility of persons while they are changing between different working environments and the influence of increasing mobility on strategic decision-making. The discrepancy of the concern of the decision and the dynamic of context information in mobile environments leads to a more sceptic use of mobile technology, in particular decision scenarios. The scope of this chapter is to discuss in which decision scenarios mobile technology support is advisable and on the other hand in which decision scenarios mobile technology support influences the thoughtfulness of a decision. This chapter introduces the "Mobile-Decision-Support Model (MDSM)" to categorise the efficiency and effectiveness of mobile tool support within disjunctive mobile scenarios.

INTRODUCTION

Tool supported decisions take advantage from the increasing capabilities of mobile devices and services. The number of decisions that have to be made in a mobile context increases. This work considers the mobility of persons while they are changing between different working environments and the influence of increasing mobility on strategic decision-making. The continuously changing context in mobile decision scenarios lack from a stable base of decision relevant information. The continuous evolution of mobile technology and the improvement on mobile communication facilities allow task fulfilment anytime and anywhere in a ubiquitous way (Weiser, 1991). Information is brought directly to the place of task execution and additionally allows remote

access to task relevant resources. Not only the support of operative tasks (including their resource and communication demands) is supported by mobile technologies but also decision support assignments are executed to an increasing extent within a mobile work context. While operative workers can utilize remote access to resources at the actual place of task execution, this technology also allows decision workers ubiquitous access to decision relevant resources. Out of restrictions on device portability in mobile scenarios the access to resources is often limited by a lack of sufficient communication infrastructure, or a lack of interaction capabilities (Doherty et al., 2001).

In mobile scenarios continuously changing context information enriches the spectrum of usage but also can overload necessary resources. Highly actual context-based information might be uncritical for ad hoc decisions in operative task fulfilment, but can mean a serious risk for tasks that require a stable set of information background for task fulfilment.

This chapter contributes to the discussion of existing research on decision support in mobile environments. After describing the risk of continuously changing context information for strategic decision-making, the MDSM is introduced and example scenarios are assigned to the quadrants of the MDSM. Moreover we line out possible risks associated to mobile decision support.

The chapter concludes with recommendations of mobile decision support scenarios in which mobile technology support is advisable.

BACKGROUND

Decision Support Systems

The history of decision support systems (DSS) started in the late 1960s, for example, Ferguson and Jones (1969). DSS are designed to assist a decision maker, from strategic to operational business decisions, from political group decisions to personal life decisions. Examples are management information systems (MIS) (Sprague & Watson, 1975), executive information systems (EIS) (Rockart, 1979), knowledge-based systems (Klein & Methlie, 1995), online analytical processing (OLAP) (Pendse, 2004) and business intelligence (BI) (Nylund, 1998), just to mention a few. With the rise of the Web most of the systems have been undergoing a sweeping transformation from traditional client server applications to Web-based decision support systems, overcoming the obstacle of system boundaries and availability (Power, 2000). The spatial flexibility of nowadays operatives requires ubiquitous access to information and communication resources (BenMoussa, 2003). The temporal flexibility brings the need for explicit asynchronous communication via shared media. Optimum profit of group or organizational knowledge as shared resource is based on clear ownership of data and artefacts.

This chapter concentrates on decision support systems (communicative tools as well as business intelligence connectors) as the base for time critical management decision.

Ubiquitous Environments

Mobility is based on the spatial difference of the place of information origin, information processing, and information use. For this research a division into three forms of mobility is essential: user mobility, device mobility, and service mobility (Pandaya, 2000; Kirda et al., 2001). Each of those formings has adequate technical support and therefore implies a set of corresponding technical risks. A different notion of mobility fragmented in micro- and remote-mobility is mentioned in Heath and Luff (1998); where micro-mobility describes mobility on site with restricted operating range and remote mobility describes spatial distribution at the specific points of action away from the central resources. Saugstrup and Henten defined parameters of mobility (2003):