

Chapter 19

A Distributed Cognition Analysis of Mobile CSCW

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We use a distributed cognition perspective to analyse mobile CSCW (computer supported co-operative work) among service technicians at a telecom operator. We focus on three aspects, the physical conditions for the interaction, the knowledge necessary for the management of the interaction, and the technology (cognitive tools) that can support the interaction.

INTRODUCTION

Mobile work is not equivalent with telework, but the two share some characteristics. Our definition of mobile CSCW (Computer Supported Co-operative Work) includes (1) Individual workers move among several locations, as required by the objects of activity being to at least some part located outside of the computer; (2) People working together may be physically separated. Let us at some length explain this definition. While telework means working at a distance from colleagues and/or customers, the mobile worker is

“one whose ‘place of work’ isn’t fixed at all, and who needs to be effective in a range of different work settings [...] for example, field service engineers” (Dix & Beale, 1996).

This does not imply total independence of any place. In fact, mobility is often required by the fact that certain places have to be visited - it is hard to repair a telephone pole if you are not on the particular site.

Another thing differentiating mobile work from telework is that in telework, the main activities typically take place “inside the computer,” e.g., working on a spreadsheet or supervising a computer from a distance, whereas in mobile work, impor-

tant parts of the work takes place “outside” the computer. Thus travelling becomes a necessary part of the work.

So far, most studies of mobile work concern the technology itself, such as mobile networks, RPC (Remote Procedure Call), ATM, satellite systems etc, or usability and reliability aspects of PDAs and other handhelds (Kristoffersen et al, 1998; Varshney, 1998). Little is done on charting the social and psychological territory of the mobile worker such as the work situation and the ability of the technical tools to support people in completing tasks alone and in co-operation with others. This study is part of an attempt to do this.

METHOD

We used ethnographic techniques to collect data, the objective being to “present a portrayal of life as seen and understood by those who live and work within the domain concern” (Hughes et al. 1993). We made participant observation of mobile service workers for approximately 40 hours and five qualitative interviews (Mason, 1989) with staff and their manager (each lasting 60 - 90 minutes).

Distributed cognition (DC), focusing on the distributed nature of cognitive phenomena across individuals, artefacts, and internal and external representations (Hutchins, 1995), was used as a theoretical framework.

THE ‘ARENA’ OF WORK PRACTICE: A DISTRIBUTED COGNITION INFORMED TOOL FOR CHANGE ANALYSIS

The framework of distributed cognition gives an opportunity to conceptualise services as the dynamic outcome of the interaction and communication of different intelligent agents, organisational settings, and cognitive and physical artefacts. For the analysis we used the following categories:

The physical conditions for interaction form the *arena* for the actors involved in the interactions. Since mobile work takes place at several locations with very different physical conditions this means studying conditions at individual work places such as cars and customers’ sites, but also travel patterns. *The knowledge that is necessary for the management of the interaction* concerns where knowledge is allocated - “in the heads” of the workers, in machines, in some central administration body, or other, and how it is represented. This influences how interaction episodes are initiated, maintained and managed.

The technologies (cognitive artefacts) that can support the interaction refers to the issue of how the ICT is used for getting work done, and what role the technology has on how the cognition is distributed.

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