Chapter 22

Researching an Activity–Driven Approach to Information Systems Development

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ABSTRACT

The primary objective of this chapter is to introduce a socio-technical approach called the Activity-Driven (AD) approach to Information Systems Development (ISD) in healthcare and social services. The approach is based on the application of Activity Theory in ISD and on participatory and cooperative design principles. It has been studied and developed for over a decade in cooperation between IS researchers and healthcare professionals around twenty practice-oriented research cases, hosted by the participating health facilities. The authors define the AD approach and describe the characteristics of the AD approach and the continuum of the interrelated research projects since 1998. They also provide a glance at the business utilisation of the approach and discuss the tentative educational experiences of the approach. The aim is to contribute to the knowledge of socio-technical ISD by providing a versatile description of the AD approach, the characteristics, and the long-term cooperative multidisciplinary research efforts, and show the interplay between the AD approach that was developed and the conditions under which it was elaborated.

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INTRODUCTION: CHALLENGES OF DEVELOPING ICT’S FOR HEALTH AND SOCIAL SERVICES

Despite the increased complexity within both health and wellbeing service systems and information systems, the ultimate purpose has remained the same: to promote the health and wellbeing of people. Healthcare and social services is a complex domain featuring multi-professional, cooperative, networked and dynamic workflows of several kinds of experts using sensitive and critical information within their working tasks (Westbrook et al., 2007). The healthcare service system differs from country to country, and on the national level, there are differences e.g. between healthcare in rural areas and metropolitan areas (Korpela et al., 2008). Broadening the discussion into social services multiplies the number of organisations involved, regulations, information systems, actors etc., thus magnifying the complexity.

Information is used as a critical tool for healthcare activities. Information systems are used to store, manipulate, and mediate the information necessary for taking action within the care process. ICTs are part of information systems, but there are also other means for handling information, e.g. paper-based documents and meetings, constituting the socio-technical information system (IS) in a broad sense (Mursu et al., 2007).

Generally, the starting point in any ISD project is often fuzzy and confused. The development does not start from scratch, but there are existing legacy systems (including computerised and non-computerised parts), standards, and regulations which must be considered. The development of an IS should be based on the real needs of the users of the system. Mainstream methods for requirements engineering have been criticized for being too technically focused and lacking the guidance for creating the proper understanding of human cooperative work activities (Korpela et al., 2004, Luukkonen et al., 2010), and stable rather than agile despite the major changes in the world (Cheng and Athlee, 2007). Despite the hype of computerisation, acknowledging organisational, social, and behavioural factors in addition to the technical factors is a necessity for successful ISD projects (Berg, 1999; Whittaker, 1999; Timpka, 2008). Such socio-technical analysis of work and information systems is not possible without appropriate methods for the analysis, and analysts who have been trained in the use of respective methods. This chapter will discuss the following questions: how can user needs for ICTs be captured with such methods? And what kind of research is needed for developing the appropriate methods?

This chapter is organised as follows. A short discussion of socio-technical approaches and the related challenges is provided as a background. Then a definition and the main characteristics of the Activity-Driven approach to ISD are presented. Further, the approach is discussed in relation to three large-scale research projects in which it was established, and in relation to four recent projects in which the approach has been applied and broadened to take account of new aspects. The aim is to contribute to the development of healthcare information systems by providing a theory-based, practically tested, and adjustable approach to creating a broad socio-technical view of ISD.

BACKGROUND

Research Behind and Around the Approach

There is no universal explicit definition of an information system in the literature, but instead numerous definitions that differ from each other (Alter, 2008). Depending on the view, the ISD process can be seen as a software engineering process (software developer view), or an application acquisition process (user organization view) (Mursu et al., 2007), or a work development process. In this paper we define an information
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