

# Integration and Information Sharing Needs in Cross-organizational Health Care

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## Abstract

*Holistic patient care is a cross-organizational issue including information sharing between different health facilities via integrated information systems and other media. Designing the integration often starts with technical descriptions, neglecting broader scopes of study. In this study the results of two case studies, one in Finland and one in China, are combined. The cases were parts of larger technically driven projects, hosted by the local authorities, and aiming at developing computer-based information sharing between the organizations. In our case studies, the research objective was to explore the health professionals' information sharing needs with Activity Driven Needs Analysis and identify the spots for development in information sharing. The research group was partially the same in both cases. In this study, issues impacting the integration design decisions are categorized into four scopes. The results contribute to discussions preceding integration design decisions.*

## Keywords:

Systems analysis, Systems integration, Healthcare facilities, manpower, and services, Continuity of patient care

## Methods

Activity Driven Needs Analysis (ADNA) was utilized within both cases, the Finnish and the Chinese. ADNA can be rooted in the one hand to Activity Theory, explaining human activity; and in the other hand to Information Systems Development (ISD) and Software Engineering (SE) methodologies in general and Participatory Design (PD) in particular, explaining design activities. ADNA is part of the larger Activity Driven ISD approach developed for over a decade in several larger research projects by the authors and related research groups. In this study, the fieldwork included e.g. workshops and group interviews with the target hospitals' staff. The fieldwork was analyzed by the research group and constructed into reports.

## Results

In order to categorize issues impacting integration decisions we define the following scopes: 1) Health information system (HIS), 2) Healthcare activity system (within an organization), 3) Healthcare service system (between organizations) and 4)

Nationwide context with different political and cultural factors. The latter scopes contain the earlier scopes, constituting a series of expanding scopes. In this study information sharing needs were identified within the scope of healthcare activities, but the study revealed issues in the other scopes, too, impacting the needs.

The main differences between the two cases were identified in the wider scope of the healthcare service system (e.g., the structures of funding and management) and the nationwide scope (e.g., citizen identification, language, use of standards). There were also differences within the narrowest scope of health information systems (e.g., the maturity of software applications, the frequency and usage of electronic patient records). These issues should be taken into consideration when planning the realistic and feasible integration of health information systems and when deciding on the design principles.

The information needs of the healthcare professionals were surprisingly similar in both cases. Within the healthcare activities, the primary purpose of using patient related information (both clinical and managerial) is to ensure good patient care, but the information sharing between hospitals of different levels contributes to professional learning also. Thus the information needs of the stakeholders should drive the integration decisions concerning what information should be shared.

## Conclusion

The comparison of two cases in highly different contexts opened our eyes to see 'obvious' issues by highlighting the similarities and differences within the four scopes. It reinforced the importance of the participation of the healthcare professionals to gather the actual needs of information sharing in a cross-organizational service chain. Thus the scope of healthcare work activities should be the primary one when studying information sharing needs. Another conclusion was the importance of considering the larger scopes, too, of the healthcare service system and the nationwide context as object of study in integration design, besides the technical integration requirements in the scope of the health information system.