

Using Current Systems as a Resource for Systems Design

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There is wide recognition that systems need to be situated in their place of usage in order to afford the work of users. A forgotten dimension of systems development is how developers use similar systems as a resource to design. This thesis will examine these issues in the context of healthcare systems. The research will be through ethnographic studies of three healthcare systems. The first is the building of a new cancer research system, the second is the re-development of a room booking system and the third is the development of a common database tool for nurses. I will examine the way in which each developer(s) takes procedures, working practices and data definitions from similar systems and “re-uses” them in order to build a system which reflects the current working practices of users and their context. By doing so, it will decrease the level of transition of moving from one system to another. Healthcare systems are of particular interest because of their highly regulated nature, especially in regards to data protection.

Ethnomethodology, Co-realisation, Healthcare system, Resources for design, Situated design

1. INTRODUCTION

In systems design, there has been wide recognition that designers have to situate the system in its place of usage. The need to design systems and interfaces which will fit in which what current users (or users in their immediate context) is of paramount importance in order to understand the ways people do their work so as to develop systems that afford their work, as opposed to “getting in the way”. Building systems which afford user’s work will increase user’s acceptance and also impact on the system’s dependability. Whilst the importance of situated artefacts has been recognised, doing so is somewhat more difficult.

One resource to help situate systems is current systems. Through examining current systems, designers can see gain an insight into the context in which the system will be implemented and used. Currently, existing systems tend to be seen more as legacy and a burden rather than a resource for design. When computer systems are built, they inevitably replace other systems (IT or manual). Designers need to recognise that users do not react well “starting from scratch” and need to acknowledge current working practices of the systems it seeks to replace. This thesis sits in supporting current body of literature favouring incremental systems development. The knowledge gained can be either through the designer finding out what and how things are done this setting, or, they can further this by taking parts of current systems (such as rules, procedures, data definitions, work practices etc) and incorporate them into the (re-)designed system. Note that this is not attempt at reusing code to save costs, but rather, recognition that there is real value in viewing other systems as a resource. The important point here is that developers should work up the future by understanding both the future and the past.

The above has to two implications. Firstly, through looking at current systems and understanding the importance of context, it supports the view that systems design does come from “somewhere” and working practices cannot be drawn up in a social vacuum (see [1]). Secondly, there has been insufficient emphasis on the process of how previous (or current) systems are brought forward to the new. There seems to be a tendency to over-look this and perhaps not enough recognition (or willingness) to look beyond the designer’s own environment for insight.

In my thesis, I will be examining healthcare systems. Healthcare systems are, by their very nature, complex entities. There are a number of rules and regulations which stipulate what they can and cannot do and in what ways. In addition, in healthcare, there tends to be a heavier emphasis on the need to build affording artefacts since the practitioners often will reject systems that do not meet their needs due to their primary emphasis on patients.

Taking Co-realisation [2] as the orientation to systems development, this thesis aims to examine the process of how old systems are filtered into the new. It is about the building of the future through both the past and the future. It is about stressing the importance of situating the artefact in the workplace of its usage.

2. CO-REALISATION

Co-realisation calls for the design (and use) of systems which affords work by making the designers examine closely the ways users work. This close examination occurs by "IT professionals to shift the technical work of design and development into the users' workplace, if not completely, then at least routinely and over sustained periods of time" [2]. In other words, the designer should be around the workplace in question, and observe the ways users go about their everyday working lives. In doing so, the "emphasis in co-realisation is on tightly coupled, 'lightweight' design, construction and evaluation techniques" [2].

3. RESEARCH METHODOLOGY

The research will take the form of ethnographic studies on three different systems. All of these studies will be in a healthcare setting where each system supports the work of the clinicians and healthcare practitioners. Methods of data collection will include interviews, participant observations, etc. The ethnographic study will cover the initial design (or re-design) of each system.

The first case study is the development of an IT infrastructure to support a large-scale translational system. The system's aim is to provide an infrastructure that facilitates the recruitment of patients into cancer research. The infrastructure will need to support all parts of the research process - which includes epidemiological studies and clinical trials. The infrastructure consists of systems and practices which should support the collection of the core dataset, data linkage with other sources (such as death records), data curation and its analysis.

The second case study is on a room booking system at a large clinical research facility. The booking system is currently under operation, but it is not meeting needs of the users in the research facility. The aim is identify the problems of the system and produce a system that is more suitable to users needs by either re-developing the current system or acquiring a new system altogether. The decision has not been made yet, but the process to do so has been started.

The third case study is on the development of a Microsoft Access database to support nurses' work in a cancer research organisation. Currently, there are a number of nurses within the organisation and there is no commonly agreed system to do their work. Some nurses use paper based systems, whilst others use Access databases or Excel spreadsheets. Although the types of systems used are fragmented, the organisation does have a basic Access database in which to collect data. The aim is to further extend the database – creating a user interface, create access logins, and a user manual. The nurses would be asked to adopt the database as the standard/common system.

4. PRELIMINARY RESULTS – AN EXAMPLE

One notable example found in the fieldwork was in the second case study – a booking system within a clinical research facility. The clinical research facility sometimes has incoming patients in order to assist with some of its research. Usually, patients are only required for a couple of hours. However, on certain occasions, patients will be required for overnight stays over a number of days. The room booking system they purchased was originally designed for out-patient clinics and therefore, did not expect over-night stays. In order to work around this, nurses have to book the patient appointment as a series of multiple appointments rather than one. When there are changes in staff or if the appointment needs to be changed, the nurse has to go through the series of appointments and change each one individually rather than having the ability to change just one. It is hoped that when re-designing the system, this problem would be addressed. How this problem will be addressed would be of interest.

5. FUTURE WORK

I am currently in the latter half of the first year of my PhD studies. Fieldwork is being carried out on the three case studies over the next 18 months to examine the use of current systems as a resource for design.

REFERENCES

[1] Suchman 2002

[2] Hartwood 2002

[4] Grudin, J.