

Learning from Everyday Knowledge and Working Practices: Systems Design using Current Systems as a Resource

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Abstract: A forgotten dimension of systems development is how developers use similar systems as a resource to design. Developers can take the procedures, working practices and data definitions from similar systems and “re-use” them in order to build the system without “reinventing the wheel”. Healthcare systems are of particular interest because of their highly complex nature.

Introduction

Healthcare systems are complex socio-technical entities. There exists a number of rules and regulations which stipulates what can be done and in what ways (*e.g.* Data Protection Act). The problem arises when policies have to be implemented in practical terms - *i.e.* how to make these rules apply to everyday work. Whilst technically, some of the challenges posed are not difficult, trying to solve these problems in the social environment of the workplace is more challenging. One resource in solving these problems is by examining other similar systems currently under operation. It can be easier to build “new” systems by looking at the mechanisms, procedures, working practices, data definitions *etc.* of other systems.

It is about looking at current system’s procedures/working practices and more importantly, the reasons behind that practice. This does not mean simply copying procedures blindly in the hope that it will improve systems reliability, nor is this merely an attempt at saving costs. By understanding the types of working practices that exists within the system’s social context (*i.e.* how to get things done), this knowledge can be incorporated into the development of the new system leading it to a more robust foundation for its design. This supports Suchman’s (2002) view that systems design does come from *somewhere* and that designers should not be “ignorant of their own positions within the social relations that comprise technical systems” (*ibid*: 95).

A Case Study Example

An ethnographic study of the development of a large scale translational research system was carried out. The system’s aim is to provide an infrastructure that facilitates the recruitment of patients into cancer research. The infrastructure consists of systems and practices to support the collection of the core dataset, data linkage with other sources (such as death records), data curation and its analysis.

Fieldnote Extract

The following fieldnote extract is taken from a discussion between the system developer of the new translational research system and the data

manager of a current specialist cancer study. The specialist cancer study is of interested because it has a dataset that is similar to the one that the translational system will be collecting. The systems developer (SD) is speaking to the data manager (DM) to gain a better idea of the data expected to be stored in the system and the ways in which data is collected, curated and used (note that he does this with several organisations):

Systems Developer (SD): ... so what happens if you get the consultant’s name from the patient and it is one that is different from pathology, how do you deal with that?

Data Manager (DM): We only go with [what is said by] the patient. It isn’t much of a factor, but we only go to pathology if the patient has no idea who it was

SD: Is that the same with GPs [General Practitioners]?

DM: Yes - we only go with what the patient said. <specialist cancer study> has a list with all the names and addresses of the GPs [in the UK] ...

SD: We’re not sure how the <translational system>’s recruitment process will work yet, but presumably recruitment will take place at the <translational system>’s office - we can lookup that way, there are multiple ways of lookup ...

DM: Well, it makes little difference at all, [this data is] only for checking up ... its just that we like to send the GPs a letter telling them that the patient is on the study

SD: What about the postcode? The database only has the first part of the postcode

DM: We just need the postcode to see what health board the patient is in

SD: So you don’t have to have the whole postcode? How is it generated?

DM: It just cuts off from the whole postcode

Analysis

The small extract above demonstrates the following points:

- **Sharing of working knowledge.** There is a sharing of knowledge in regards to how data inconsistencies are resolved on an **everyday** basis.
- **Importance of the accuracy of the data.** Finding out how important is it to make sure the data collected is correct? If accuracy is highly critical (which in this case is not) then there might be ways of reconciling the inconsistencies to ensure data quality.
- **What they do with that data.** It is not important just to find out what data is collected. As demonstrated above, this helps to unearth adjacent working procedures which the SD did not originally ask about (*i.e.* sending the letter to inform GPs that their patient is enrolled into the study). This practice might not be known to the SD.
- **Highlighting and recognising that parts of systems impact on each other.** At the beginning of the extract, it was the source of the data that was discussed. However, note how this impacts on the location and the form of data entry (paper/computer).
- **Other working practices that were unearthed through these discussions.** This is in regards to the GPs being sent letters inform them that their patient is enrolled onto a cancer study. Note again, that is was not asked at the start but the DM widened the discussion to include other working practices that the SD should take note of.

Conclusions

We have showed the usefulness of learning from “non-designed” parts of current systems (*e.g.* working practices, procedures - *c.f.* software) in order to inform systems design. Developers should not ignore the value of looking beyond their own immediate environment for insight.

References

Suchman, L. (2002) “Located Accountabilities in Technology Production” *Scandinavian Journal of Information Systems*, 12(4): 91- 105

