



Norwegian Centre for
Integrated Care and Telemedicine

Making a web based ulcer record work by aligning architecture, legislation and users – a formative evaluation study

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Agenda

- Background: The Danish ulcer record, challenges encountered in Norway and the evaluation research project
- Research question and strategy: domains, scripts and interaction - a formative approach
- Results and discussion: adjustments and resulting functionalities
- On formative evaluation
- The way ahead



Background 1

- Several projects at The University hospital of North Norway (UNN) where home healthcare nurses photographed ulcers and transmitted images electronically to the department of dermatology (DoD) by using a digital camera and a web based tool (Well Arena – a predecessor for DIPS Arena)
- Not optimal technology, but professionals reported a great potential for this mode of collaboration
- In spring 2009, the DoD asked the Norwegian centre for telemedicine (NST) to assess a web based ulcer record from Danish Telemedicine; Pleje.net with the purpose of implementation in the North Norwegian Health Region (Helse Nord)



Background 2

- Challenges were encountered, but by February 2011 a Norwegian version of the Danish record was in regular use
- In 2010 Helse Nord financed a two year research project with the objective of assessing the use of the record
- This presentation is a result of the research project
- It discusses the process of making the record work through interaction between actors and interests within the domains of architecture, users and Norwegian legislation



The ulcer record and challenges

- Pleje.net can be accessed from a computer connected to the Internet and from mobile phones
- It consists of one database, an application to communicate images and text between participants and a tool to analyze ulcers
- The service includes advice between a specialist and the home health care nurses and is easily accessible across institutions
- In Norway, access to sensitive medical data is illegal across institutional borders
- Changes and adjustments thus had to take place before the ulcer record could be legally used



Research questions

- How did the ulcer record, health professionals' needs and legal and safety regulations align in the process to 'make the ulcer record work'?
- How were they mutually reshaped in the same process?

In the light of current collaboration reforms in Norway, knowledge of processes like this is considered crucial in order to contribute to insight in how agency is enabled and enacted in innovation processes



Concepts: scripts and domains

- Script denotes programs of action as inscribed in a technical artifact, in this case, the ulcer record (Akrich 1992)
- The script for the legal domain was a program of action allowing communication across institutions
- Scripts within technologies thus involve expectations to other participants (domains): institutions should collaborate seamlessly

(Akrich M.: The de-description of technical objects. In: Shaping technology/
building society. 1992:205-24.)



Concepts: formative evaluation

- Have a focus on competing discourses, conflicting scripts, and the socially contingent nature of knowledge and improvements
- Strive to strengthen or improve the object being evaluated and to help shape it
- Research strategy: to make scripts and different interests transparent and to articulate negotiations and their results



Specifying the research question

- Which scripts (programs of action for different stakeholders) were present in the functionality of the Danish solution?
- Which ones were made topical by domains involved in the process to make it work?
- How did they correspond to interests?
- How did involved actors respond?
- How were programs of action adjusted?
- How was the service reconfigured?



Methods

- Participatory observation in meetings and discussions, planned and ad hoc
- Interviews and conversations with actors involved in the work
- Linking experience-based knowledge with the theoretical base for reflection
- Timeline: from February 2010 – February 2011



Data and analysis

- Observational data
- Interview data
- Minutes from meetings
- Information from participants about additional meetings with authorities and other stakeholders
- Analysis of emerging thematic patterns of change and adjustments



Results

The inscriptions for the domain of health care delivery
(Programs of action):

- Possible to use the camera and *connect directly* to the service from the phone
- *Easy log on* procedures
- Health professionals can *collaborate* seamlessly via the system
- It *simplifies the collection of data* both at the DoD, at the GP's office and the patient's home
- E-mail based communication with attached images *facilitated immediate intervention* if the status of the ulcer changed
- Available images would allow *comparing images and observing how the ulcers changed over time*
- images were making *ulcer documentation* less person-dependent
- images could be used for *work based training*



Results

The inscriptions for the legal and security domain

- *unrestricted communication between institutions and levels of care*
- *communicating patient data of the highest sensitivity level as specified by the Health Directorate*

Norwegian legislation:

- Only those who are employees of the organisation that owns an IT-system or service in the health care sector are allowed to access the system or service
- The security level of the log on procedures was not acceptable. Highest level of security is necessary for access to health information via mobile units



Discussion - adjustments

- Each actor must have their own application and database for which they are responsible, thus a communication service had to be developed in order to share information between different users' applications and databases
- Stricter security procedures was necessary for logging on to the system



Resulting adjustments

- The Norwegian Pleie.net, which today is the result of the process, has a common portal and login page (www.pleie.net) with general information about the service
- Participants from the various service locations might also select their own login page directly
- Two factor authentication for access via external networks is established, including a password on the mobile phone



Adjustments - summary

- In the technological domain, one database was replaced by four
- In the domain of the users, easy access was replaced by a more complicated log on procedure
- In the domain of law and security, a clarification of risk levels was obtained, thereby allowing for access by mobile phones with today's authentication mechanisms



Comments on the methodology

- Attention to the technological/system functionality and inscriptions for involved domains and actors, and attention to interests and interactions turned out to be valuable:
- Creating a climate for mutual understanding
- Conceptualizing and negotiating adjustments and functionality of the improved service: agency and innovations
- This approach can be recommended for assessments of innovations in real life settings in order to take part in the work to improve them
- It is complimentary to effect studies, which assess the effects of real life use



Conclusions

- Transparency and flexibility concerning programs of action was important in all domains
- Changes were made that improved the platform for further development of legitimate communication of patient data via mobile units – an innovative step
- The study shows the value of formative evaluations in innovation processes



Ongoing development

- So far, there is no integration of the electronic ulcer record with EPR's
- Health professionals at the hospital have to make notes in the EPR to inform that the patient has a wound record, who has access, necessary information about the ulcer and the prescribed treatments
- There is an explicit need to log directly on to the Ulcer Record from the patient's EPR
- In that case an integration mechanism has to be established between the two systems, which responds to legal requirements for authentication of users
- There are no plans today for such integration
- Full integration as a goal?



Further action

- The Pleie.net ulcer record is in regular use at UNN, Tromsø as a dynamic tool
- The relation and integration between dynamic tools and general electronic patient records is an upcoming topic
- The process has produced a clearer platform for the ongoing development of web based electronic records and electronic communication by mobile phones between levels of care
- Legal and security challenges are being addressed as a consequence of the processes around the ulcer record
- Actions are taken to develop secure solutions for mobile communication
- We continue our study to assess the ways in which knowledge and actions are being integrated via use of the ulcer record
- The experiences from use of the four databases will also be assessed in this study



The system functionality - challenges

- Electronic messaging as an alternative to a common ulcer record?
- The Electronic Patient Records (EPR's) for hospitals, general practitioners and the care sector do not have a functionality to handle dynamic collaboration
- It is difficult to store images in the EPR's and to send images from one EPR to another
- It is challenging to send images and text from mobile phones/ smartphones to the EPR's and to read answers in EPR's via mobile/smartphones
- The Norwegian version of the electronic ulcer record is configured as an electronic messaging service, but with a specific storing and display program with extended functionality



Thanks for your attention

Questions?

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www.pleie.net

<http://www.telemed.no/interaction-through-a-web-based-patient->

