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## Volume 13, Issue 1/2011 - Facility Management

### Using Innovation to Optimise Hospital Business Models

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With any major hospital build comes the notion that a much better corporation will come out of the new buildings – for staff, for patients and financially. The idea is to create an ultramodern hospital in all possible aspects, both once inaugurated and in many years to come. The parties involved use buzzwords such as 'flexibility', 'sustainability' and 'general standards'; however, a hospital meeting all of their formulated expectations is yet to be seen. We are currently in the early phase of the hospital construction project dubbed "Nyt Hospital Bispebjerg", and we wish to suggest how different sources of innovation – combined with a detailed and evidence-based baseline – can ensure that heavy fixed asset investments also result in an operationally optimised business model.

The market area of welfare innovation is growing rapidly. User-driven innovations of many kinds take their starting points in any type of product, ranging from syringes to buildings. An often-used innovation term regarding welfare is innovations with user involvement, more commonly referred to as user-driven innovation. The logic is to create innovation by focusing on the end-users, which has become an accepted premise within both private and public corporations.

#### Limitations of User Involvement

It has long been common to initiate major user process innovation with the participation of staff in Scandinavian hospital constructions. There are however only a small number of individuals amongst public hospital management and staff who have work experience within other industries or sectors, or who have experience with previous hospital constructions.

Knowledge must therefore be gained elsewhere if a public hospital is to learn from the experiences of other industries, for example the retail industry's logistics, or the systematic work of the hotel industry regarding customer satisfaction of the services provided. Furthermore, there is the distinct possibility that when asking the current doctors and nurses about their visions for the design and organisation of the future hospital, the result will be today's hospital but with new furniture and equipment, freshly painted, and with more space.

The latest trend is the active involvement of patients and citizens in the construction project. This is done to ensure that the completed new buildings meet the demands, expectations and wishes of "the patient of tomorrow".

#### Detailed Baseline

Prior to the initiation of the user-driven innovation processes, it can often be beneficial to establish a detailed baseline so the organisation can map its hospital by facts. It is not enough to ask experienced members of staff, patients and citizens for their preferences and opinions. The individual end-users will often have the tendency to merely focus on a small part of the innovation potential, connected with their own needs.

By having a proper baseline it is possible to focus the innovation effort onto where it can have a positive impact on the goals set by the organisation. The idea is to create a cover of data on the existing corporation. As a sort of navigation for the development of the "Nyt Hospital Bispebjerg", we have chosen an approach inspired by an American figure of evidence-based design (Figure 1). In order to do so, we have been – and will continue to be – forced to develop our own tools and methods. It is important now to express that we wish for more research and method development of innovation-creating processes for evidence-based design.

Working with pre- and post- occupancy data, the basis for decisions and designs is benefited and the future hospital's specifications and ways of measurement become apparent. This way we learn what can be expected of both the physical surroundings and how they collaborate with the rest of the corporation.

#### Room Analysis Shifts Priority

The coefficient of room utilisation has been recently analysed at both Frederiksberg Hospital and Bispebjerg Hospital, which is a good example of the positive influence of a detailed baseline. The two hospitals are to be merged in the new buildings upon completion, and the waiting rooms need to be optimised.

An obvious solution to this problem is to reduce the patients' time spent in waiting rooms. Optimising work processes in ambulatory care and more efficient continuity of care could do so. As part of in-house organisation and process innovations, the hospitals have chosen to establish a detailed baseline on the coefficient of utilisation of all waiting areas across the two hospitals.

This analysis showed that the waiting rooms capacity is only used to an average of seven percent, which indicates the potential merging of several smaller waiting areas into larger ones. The hospital does therefore not need – in this first phase – to examine the workflows of the staff.

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## **Risk of Sub-Optimisation**

If we had chosen to optimise the workflows from the very beginning, it would not have had an effect on the utilisation of the rooms. We would merely have transformed our less used waiting rooms into even more less used waiting rooms. Changing the workflows would naturally have shortened the individual patient's waiting time, but it would not have reduced the total area of waiting rooms.

Had we chosen the user-driven approach, the individual end-user would not have had an overview of available resources and possibilities within the hospital. The end-users will naturally have their starting point in their individual situations and will therefore not as easily reach solutions most optimal when assessing the hospital as a whole. As a hospital organisation, the challenge is to possess competences that allow one to view across the entire organisation. Another challenge is to possess enough leadership to be able to change a certain activity, if the solution is suboptimal.

## **Healing Architecture in a New Perspective**

A detailed baseline makes it possible to ask the right questions about the end-user processes. A good example of this is "healing architecture" within the future hospital. The average patient stay in Denmark is 3.5 days (2009), which is expected to decrease additionally throughout the next ten years. We can therefore conclude that a large number of our patients will only be hospitalised for 24 hours.

The common perception of "healing architecture" focuses on light, colours, gardens and outdoor surroundings and the more emotional values for patients. Let's take a look at our everyday lives as an analogy to this: If we are asked how the hotel on our next trip should ideally be, we would often wish for a room with a lovely view and a nice restaurant. The problem is that if we do not know the baseline data for patient stay we cannot ask the right questions.

For instance, if our next trip was a one-day meeting in the centre of London with flights out the night before, our hotel requests might be completely different. Now we would want a location close to the airport and subway, wireless Internet access in the rooms and express checkout. For a patient hospitalised for 24 hours, he or she would perhaps prioritise the hospital designed to prevent accidents and the spread of infections rather than healing architecture.

## **Architecture for the Staff**

Short patient stay periods imply that a differentiated approach to healing architecture is relevant. Danish public hospitals are social and close-knit workplaces; many permanent staff members have been educated at the very same hospital and have never worked anywhere else. Other staff members – often doctors – have worked at many hospitals. Significantly few members of the clinical staff have worked anywhere other than in public hospitals.

Facts therefore state that it is the staff who spend the most time within hospital architectures and so we might prioritise the prevention of work-related injuries, physical wear etc. These aspects could, if unattended to, make the almost permanent shortage of skilled employees even worse.

## **Appropriate use of Data**

Knowing the existing business model in detail is therefore essential for setting proper goals and results for the construction project. The data should be accurate and relevant, and of both qualitative and quantitative form. However, not all data and topics are consistently relevant for a construction project. Figure 3 can be of some assistance. As shown in the figure, focus group interviews are for instance less relevant if the data are to be used to design visions and overall goals for the future hospital, but highly relevant for mapping the current situation.

## **Additional Sources of Innovation**

Let us return to the topic of user-driven innovation. There is a growing need to focus on user-driven innovation methods in hospital construction projects. We are concerned by the fact that many user processes are initiated mainly for the sake of processes. It can be reasonable to do so regarding aspects as commitment, ownership and awareness. But the actual impact by which these processes cocreate an optimal, future-proof construction project is however limited. A central explanation is found in fundamental innovation theories and more research-based debates. Two essential aspects should be monitored closely when integrating user innovation into a hospital construction project.

Firstly: User-driven innovation is being used when you think you need innovation. But in reality, because of the market situation, it is not needed because of the already lucrative market.

Basically, the above states that innovation driven only by the users will only scratch the surface of possibilities for future-proof innovation. Classical user behavioural analyses are often overlooked, which incidentally could provide valuable insight (as per Figure 3), and thereby contribute to the understanding of both basic cultural phenomenon and mechanics within the hospital's complex systems.

Secondly: There are more sources to welfare innovation than user-driven innovation alone (Figure 4). Innovation today is often created due to research, technology, prices and economy. We should pay as much attention to other innovation sources as we do to user-driven innovations, and these should be monitored and integrated similarly. The most important aspect is, however, that all innovation sources should be combined

into a logical and productive delta across the different phases of the construction project.

#### **User-Driven Innovation as Supplement to Data**

It is however not the case that end-user processes focusing on today's reality cannot be of use. On the contrary, by initiating such end-user processes, today's current potential can be mapped and activated, and thereby the complex correlations of a modern hospital becomes clear. The challenge here is to act in the present, understand the context and thereby gain the inspiration to challenge current terms and conditions. The data developed from the room analysis is a good example: By generating sufficient and valid data based on the current corporation, dilemmas worth analysis become apparent. The contribution of user-driven innovations to this case would therefore be to challenge both staff and patients to relate to new design concepts, to new work processes and to new service processes and how these can improve both the area usage and the sense of quality of stay in hospital waiting rooms. Perhaps the future waiting rooms are used for other purposes than merely waiting?

#### **Eliminate Waiting Time**

Innovation sources not presented to the endusers should be considered as well. Equipment innovations and IT innovations are obvious factors of optimising waiting room usage. Health research can furthermore contribute to the redesign of physical surroundings and "way of waiting". Could the term "waiting time" be eliminated from hospitals completely, as waiting time in future hospitals is spend on activities relevant to your condition or illness?

In short, user-driven innovation is often insufficient as the sole innovation source in designing a new hospital. Combining it with other sources of innovation will ensure a helicopter view of your hospital and facilitate the most appropriate redesign. As this article has illustrated, a detailed baseline provides all the information necessary for making the correct decisions and a construction project does not have to be in pipeline in order to benefit from knowing your hospital from inside out.

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**Figure 2.** Statistics for Frederiksberg and Bispebjerg Hospitals

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**Figure 3.** Methods and tools for welfare innovation

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**Figure 4.** Sources of welfare innovation

Published on : Tue, 29 Mar 2011