Design of a Proposed Nursing Knowledge Portal

Yin-Leng Theng
Nanyang Technological University, Singapore

Hui Ling Chan
Nanyang Technological University, Singapore

Fook Thim Liu
Nanyang Technological University, Singapore

Girish Gowda
Nanyang Technological University, Singapore

INTRODUCTION

Nurses responsible for making strategic decisions in the hospital are tracking performance metrics that accurately measure how well the hospital is performing. These nurses are always looking for the appropriate strategies that can be combined with qualitative measures to respond just in time and accurately to clients. The information presented to strategic decision makers is used to monitor and analyse the performance of the hospital so that, when necessary, appropriate modifications can be made for the hospital to remain relevant to the community. Hence, information leveraged on demand in hospitals would enhance knowledge discovery with better content organization and management of patient and non-patient related information from multiple sources to assist nurses in their day-to-day work.

In recent years, knowledge portals, as single-point-access software systems intended to provide easy and timely access to information and to support communities of *knowledge* workers who share common goals, have emerged as a key tool for supporting *knowledge* work.

This article describes our experience in designing a proposed knowledge portal prototype for nurses at the Singapore General Hospital (SGH). A team of four postgraduate students from the Division of Information Studies at the Nanyang Technological University (NTU) was formed to study the feasibility of implementing a knowledge portal for nurses (Chan, 2004; Girish, 2004; Jayakumaran, 2004; Liu, 2003), with the specific objectives identified:

- **Objective 1:** Gathering requirements of the knowledge portal.
- **Objective 2:** Constructing a mock-up of the knowledge portal.
- **Objective 3:** Evaluating the knowledge portal to get initial feedback from the nurses.

In subsequent sections, we describe how the three objectives were met, the findings made, and recommendations suggested for implementation of a proposed knowledge portal at SGH.

GATHERING REQUIREMENTS

To gather requirements for the portal, we interviewed the nurses as well as examined the existing SGH nursing intranet. This involved understanding the organization's goals and objectives, the observation of existing systems, studying of existing procedures and discussion with the nurses and the management.

INTERVIEWS OF NURSES

The team scheduled interviews with a stratified sample of nursing population at SGH to understand the needs and wants of the nurses. The focus of the requirements gathering phase was on *what* needs to be done. Table 1 shows the set of requirements for the knowledge portal summarized from the results of interviews and questionnaire. For example, Liu (2003) identified Yellow Pages as the portal feature that would meet the nurses' needs in Column 1 and gave a description of its use in Column 2. Column 3 is the result of the final analysis from the survey conducted and literature reviewed; in this case, it was an expert locator system to profile expertise in the organization so the nurses could seek help within the organization easily (see Table 1, Row 1).

Table 1. Mapping of requirements specifications to features in the new knowledge portal based on the interviews

Category	Description	Mapping
Yellow Pages	Access to all the people that the nurses need to interact with in the course of their work.	**Expert Locator:** Nurses will be able to find the expertise they need within the SGH organization.
Collaboration	Access to tools for the nurses to go online to share tacit knowledge in communities of practice.	**myFavourites:** Message boards, discussion forums, success stories.
Training and development	Very high priority to provide access to eLearning content, structured courses, journal clubs, in-service talks.	**myLearning:** Allows nurses to plan their learning paths, track their progress, and check on courses available.
Single sign-on	Single access point to all the disparate systems.	Allows users to log on to the enterprise knowledge portal once and have access to content and applications throughout SGH.
Performance indices	To be extracted from various databases based on requirements.	Depends on the role, therefore, the right of the user to view and extract information. May be made available under myWork and myApplication.
Administrative workflows	Automated processing of standard reports and processes to save time and eliminate errors.	May be made available under myWork and myApplication.
Knowledge base	Access to online databases.	Users are able to customize and build their own knowledge map in myFavourites to access databases that SGH subscribe in.

REVIEW OF EXISTING SGH NURSING INTRANET

A review of the existing SGH nursing intranet was conducted to understand the objectives and needs of the nursing department. Since the inception of the nursing intranet in 1998, it has served the Department of Nursing Administration well and has helped to elevate the problem of information management facing the department. However, since then, other systems were being developed in the hospital to address specific needs and with it, came the challenges of managing the overwhelming amount of information available. As a result, there is an *infoglut* in the SGH organization that needs to be addressed. At present, the SGH intranet itself has more than 90,000 pages.

Table 2 shows the proposed recommendations of the SGH knowledge portal over the existing SGH nursing intranet to relieve the information overload problem as well as to capture and share knowledge. The features of the generic knowledge portal shown in Table 2 with Column 1 were derived from Collins (2003) and matched with the existing SGH nursing intranet in Column 2.

For example, Table 2, Row 1 describes the feature *organization and management*. The situation of the current SGH nursing intranet is described in Column 2, which was manual and decentralized by department and task. Column 3 gives the ideal situation in which the knowledge portal hopes to achieve, where there is centralized management, with easy management of group and users' rights.

MOCK-UP DESIGN OF THE PROPOSED KNOWLEDGE PORTAL

An interactive mock-up of the knowledge portal was created with simple HTML (HyperText Markup Language) using Macromedia Dreamweaver MX. Figure 1 gives an illustration of the home page of the proposed knowledge portal for a nurse with an administrative role. It shows the nurse as the central object for the portal with access to various information sources, work-related resources, as well as knowledge sharing tools for communication and collaboration with other colleagues. Due to constraint of space, only selected design features unique to the proposed SGH nursing knowledge portal user interface are briefly explained.

Message Center

The message center provided a quick link to the user's e-mail, calendar, address book, as well as an expert locator (Collins, 2003). To ensure that people are able to seek help from within the organization, Collins (2003) and Terra and