MEDINFO 2007
HISA Ltd Australia
© 2007 The authors. All rights reserved.

A Knowledge Portal for the Illawarra Community Mental Health Rehabilitation Services Community of Practice

Leone J Dunn

School of Economics and Information Systems, Faculty of Commerce, University of Wollongong, NSW Australia

1.Introduction

"Every person with mental health problems and their carers should have access to services that promote hope, help find meaning in life and support the individual in taking responsibility for their own recovery, enabling a collaborative working towards their goals, for the best possible quality of life" [1].

Rehabilitation is the component of the mental health service that focuses on these areas of a person's life[1] .

To guide service development and recovery, five goals have been identified in the Illawarra Mental Health Rehabilitation Services Strategic Plan. These are:

1. Provide recovery focused rehabilitation services and promote a recovery orientation throughout the mental health service;
2. Deliver best practice quality rehabilitation services
3. Ensure rehabilitation services are accessible and coordinated across the Area Health Service
4. Develop and maintain effective partnerships with key service providers and community organizations
5. Ensure rehabilitation services are effective and achieving positive outcome

This paper describes a new and ongoing research project in collaboration with the Illawarra Area Community Mental Health Rehabilitation Services, referred to in this paper as the Mental Health Rehabilitation Services (MHRS), based at Fern Hill in Wollongong NSW[1]. The aim of the project is o develop a knowledge portal and service oriented architecture for community mental health rehabilitation services. It is hoped that once the portal becomes operational, it will enable all members involved in mental health rehabilitation – clients, professionals, carers, advocates, educators, etc. to evolve into a more effective community of practice by providing a collaborative infrastructure for knowledge sharing. It is anticipated that the portal will enhance cross-domain integration and strengthen and support multidisciplinary teamwork in relation to mental health issues. The project is funded by the Faculty of Commerce Social Innovation Networks Program at the University of Wollongong.

2.Communities of Practice

A Community of Practice (CoP) is a voluntary network of people who share information, build on existing knowledge, develop expertise and solve problems for a common purpose, driven by the interest of the community involved. The CoP portal for MHRS is intended for clients and carers, as well as health care professionals involved in the delivery of rehabilitation services, so that they can share their knowledge and expertise to help close evidence practice gaps and improve services. The benefits of Communities of Practice have been researched by Fontaine and Millen [2] and are sumarized in Table 1 below.

Type of Benefit	Impact of Community *It has improved or increased the following*	% Agree
Individual Benefits *What does participating in the community do for individuals?*	Skills and Know How	65%
	Personal Productivity	58%
	Job Satisfaction	52%
	Personal Reputation	50%
	Sense of Belonging	46%
Community Benefits *How does collective participation benefit others?*	Knowledge Sharing, Expertise and Resources	81%
	Collaboration	73%
	Consensus and Problem Solving	57%
	Community Reputation and Legitimacy	56%
	Trust Between Members	50%
Organization Benefits *How does participating in a community increase organizational efficiency, better serve customers and partners, and provide insights for the future of the firm?*	Operational Efficiency	57%
	Cost Savings	51%
	Level of Service or Sales	46%
	Speed of Service or Product	42%
	Employee Retention	24%

Table 1 - Individual, Community and Organizational benefits of CoPs [2].

The concept of a community of practice comes from the work of Wenger and Snyder [3] who define it as "a group of people informally bound together by shared expertise and passion for a joint enterprise," or similarly, as a collection of individuals bound by informal relationships that share similar work roles and a common context. Examples

of communities of practice are found in many organizations and have been called by different names at various times, such as "learning communities" "family groups" , "thematic groups" , and "knowledge networks", but they remain similar in general intent [3].

2.1The evolution model of CoPs

According to Gongla and Rizzuto [3], the creation of a Community of Practice can be summarized in five distinct stages, according to an evolution model, as illustrated in Figure 1 below.

Table 1 Community evolution model definition

	Potential	Building	Engaged	Active	Adaptive
Definition	A community is forming.	The community defines itself and formalizes its operating principles.	The community executes and improves its processes.	The community understands and demonstrates benefits from knowledge management and the collective work of the community.	The community and its supporting organization(s) are using knowledge for competitive advantage.

Figure 1 - The CoP Evolution Model

These are the characteristics that distinguish COPs at each stage of their development. The Evolution model recognizes formative and growth stages of development but unlike Wenger's model, it is not a lifecycle model. Communities may stay at certain stages and not evolve to another level; communities may move "backward and forward" between the stages; communities may have some characteristics of one stage while they are still primarily at another stage; communities may "rest" for extended periods at one stage and suddenly evolve quickly to another stage. At each stage CoPs have defining characteristics and functions [3], as shown in Figure 2 below.

Table 2 Fundamental functions for the stages of evolution

	Potential Stage	Building Stage	Engaged Stage	Active Stage	Adaptive Stage
Fundamental Functions	Connection	Memory and context creation	Access and learning	Collaboration	Innovation and generation

Figure 2. Functions of each stage of the evolution model

2.2 The Influence of people process and technology on COP evolution

According to Fontaine and Millen[2], there are four types of resources required to enable effective CoPs. These are *People* – to fill certain community roles and manage the community's activities; *Activities*- to bring the community together in meetings and events; *Technology* – to facilitate the flow of knowledge and information between activities; and *Content* – to manage and share the explicit knowledge that the community creates. The next section will focus on the generic technology – the service-oriented knowledge portal.

3.Service Oriented knowledge portals

This research is proposing that the mental health rehabilitation service delivery be implemented as an ecology of e-business services providing services for all members of the MHRS community and enabling collaboration with global partners as well. What is presently manual (with desktop support) will become Internet based as a service. The services will be implemented as web services.

3.1Service Oriented Architectures

A Service Oriented Architecture views every application or resource as a service implementing a specific, identifiable set of (business) functions that are identified during business process analysis. The services may be fine- or coarse-grained depending upon the business processes. Services are defined by interfaces that allow them to be published, discovered and invoked. An enterprise can choose to publish its services externally to business partners or internally within the organization. A service can also be composed from other services. Services communicate with each other by exchanging structured information—messages or documents (sometimes called business objects). A Service Oriented Architecture views every application or resource as a service implementing a specific, identifiable set of (business) functions. Thus Service Oriented Architectures are a convenient way to achieve application integration by allowing new and existing applications to be quickly combined into new contexts. Existing applications are "adapted" to service declarations. The interaction of services can be direct, or can be mediated through an intelligent infrastructure, called an Enterprise Service Bus (ESB)[4].

3.2Web Services Architecture

A web services architecture (WSA) is a service oriented architecture that has implemented its services as Web Services, as is the case with the proposed research. The advantage of the web service oriented architecture is that it is based on global internet standards and protocols for all business application. This makes the application truly integrated across organizations. Web Services utilize the WS – I standard services.

3.3 Portals

Portals are commonly used to provide people with access to information and applications in a condensed form. Typically, portals display personalized information from various sources in a single page, thus allowing the user to efficiently access this information instead of visiting vari-

ous Web sites one after the other [5]. Depending on customizable user settings, various portlets usually rectangular areas that display information are included in the web page. Portals and portal development tools allow for integration of web services as data sources. An example of this integration can be illustrated by a news feed scenario. A news portlet that allows the user to configure the news categories to track and then gets the news for these categories live from a Web service whenever it is displayed. In this case, the portlet code runs locally on the portal and uses the Web service to access information. The rendering of the content is done by the portlet itself (see Figure 4 below)[5].

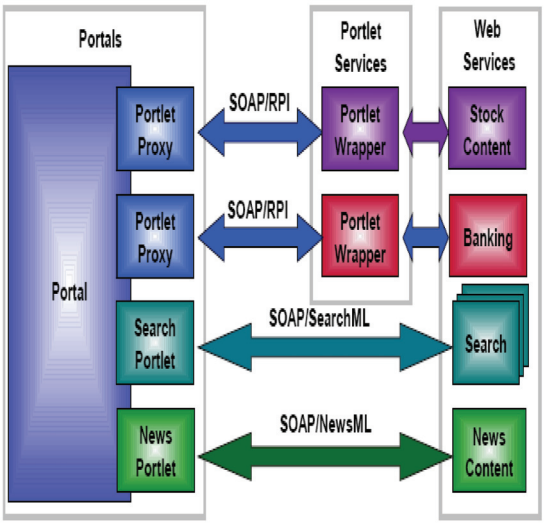

Figure 10. Portals and portlets

A portal should support the following desirable functions and features:

- Allowing different information- and service-providing departments to set up and update their own information and services tailored specifically for different user groups according to the common user profiles (such as grades, departments associated, etc.) and the specific needs of these user groups at specific times.
- Presenting automatically the information and services that a user would need according to his profile at the appropriate time.
- Allowing a user to select the information and services that are his interests and to customize their presentation.
- Setting up information and services from users' perspective rather than from the angle of convenience of the services providers.
- Supporting the "Single-sign-on" feature so that a single sign-on step would enable the user to gain access to the different information resource and services that are supported by different application systems provided by different departments and/or communities.

The Service Oriented Portal Architecture proposed for MHRS is illustrated below in Figure 4.

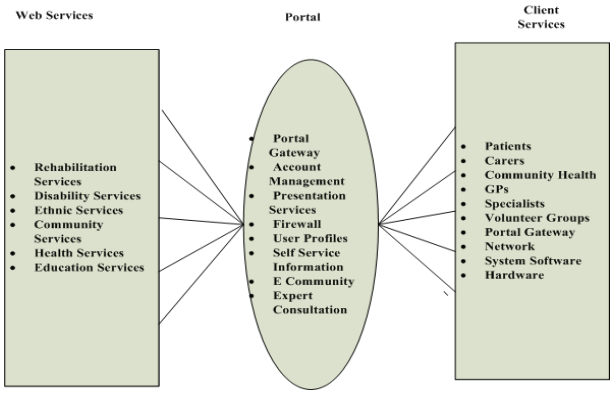

Figure 4 - MHRS Service Oriented Portal Architecture

4.The MHRS project progress

The MHRS project is in its initial stages of evolution – the *Potential* Stage. Several initial concept prototypes were developed last semester by students at the UoW in the Information Systems Project class. These prototypes were based on initial ideas by the author and staff members at Fern Hill rehabilitation centre. At the end of semester projects were presented to a larger audience at Fern Hill and permission was given to go ahead with the project.

Referring further to the evolutionary model, the enablers for moving forward are discussed below.

People: The project must now identify all stakeholders in the core community group, that is potential individual and group members

Activities: Location of potential community members.

Facilitate bringing members together. Establish roles of members of core group.

Perform stakeholder analysis and establish the requirements of the of individuals and groups in the CoP.

Technology: Technology at this stage will be electronic messaging, email, lists, teleconferencing, online forums and directories, and electronic document management.

Content: Information

5. Summary

This paper has described the initial stages of the MHRS project, which began in July 2006 and the proposed next 6 months of the project. The benefits to Mental Health Rehabilitation will be enormous from the carer, client, health

professional, and consultant perspective. It will provide an 'application aware development framework' for all mental health services. At present many basic point of care health services are implemented in individual applications and cooperation between different applications is difficult. By providing an infrastructure such as the service oriented portal architecture, a common standardized service can be provided. The portal architecture will also support the mapping of services to different clients based on their profiles delivered to their mobile devices. The model will also support location based service applications. The potential for location based community support is another component of this project and is described elsewhere [6].

Acknowledgements

[1] The author would like to thank the ongoing collaboration and support of the Fern Hill Rehabilitation centre staff, particularly Ms Kerry Searle and Ms Gaye Richardson.

References

[1] Strategic Plan Illawarra Area Mental Health Rehabilitation Services (2006).

[2] Fontaine and Millen (2004). *Understanding the Benefits and Impacts of Communities of Practice.* IDEA Group Inc.

[3]Gongla, P. and Rizzuto, C. (2001). *Evolving Communities of Practice.* KM Review, 3(5).

[4]Wenger, E.C and Snyder, W.M. (1999). Communities of Practice, Social Capital, and Organizational Knowledge, White Paper, IBM Institute for Knowledge Management.

[5] Chandran, A., Cutlip,R., Stearns,B.,Craig,G.,Rowe,R.,Smith,D.,Montavakine,D.,Ulmer,T.,Pal,M. (2003). *Architecting Portal Solutions.* IBM Redbook. http://www.redbooks.ibm.com/abstracts/sg247011.html

[6] Dunn, L. *Location- Based Decision Support for Illawarra Community Services*. Funded project 2006, Faculty of Informatics, University of Wollongong, NSW. Australia, 2522.