

# Adoption of Portals Using Activity Theory

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## INTRODUCTION

An obvious goal of a Web site today is to dynamically acquire content and make it available. A portal is a group of services provided electronically, through the Web, to a set of users. The items that are typically included in the portals consist of business intelligence, content and document management, enterprise resource planning systems, data warehouses, data-management applications, search and retrieval, and any other application. The ultimate portal provides the Holy Grail for organizational knowledge, true data aggregation and information integration coupled with knowledge worker collaboration (Roberts-Witt, 1999). A portal is the next evolutionary step in the use of Web browsers.

There are different forms of portals ranging from simple to complex. Beginning with the simplest form of a portal, defined as “an information gateway that often includes a search engine plus additional organization and content,” to more sophisticated forms of portals (McCallum, Nigam, Rennie, & Seymore, 2000). Sophisticated examples include Yahoo and Alta Vista, (examples of horizontal portals) or high level university campus portals such as described in Eisler (2000) as examples of vertical portals. The services provided in a portal also vary widely with the purpose of it. Typically, services are personalization, member registration, e-mail and discussion boards, search engine, organization and indexing of content from internal and/or external sources. To use a portal, a user has to register in it and provide a name and password each time he/she uses it. This allows the system to personalize the services and contents to the specific user. The portal constitutes a single point of entry and a single logon to the services provided.

## BACKGROUND: ADVANTAGES OF PORTALS

A modern business environment is complex and expensive, which has motivated many companies to invest in enterprise portals as a mechanism by which they can manage their information in a cohesive and structured fashion. Portals offer many advantages over other software applications. They provide a single point of access for employees, partners, and

customers to various types of (structured and unstructured) information, making an important contribution to enabling enterprise knowledge management. Intranet portals also provide business intelligence and collaborative tools. They promise to create significant and sustainable competitive advantages for early adopters.

## Adoption

Portals provide users with a personalized window into the enterprise. They offer users access to relevant content and applications. Because of this, it is obvious that the portal evolution will continue. What factors influence the adoption of portals? In order to study adoption, it is necessary that we talk about diffusion. Diffusion is the means by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995).

In our example, the content is portal diffusion, the innovation is portal, and the social system is the group of perspective users of portals in an organization. Adoption must be made before diffusion can occur. For study of the diffusion of portals in an organization, the organization first has to make a decision on the adoption of the innovation. In our example, this is the portal. Information about the innovation is then collected. This information then leads to the formation of perceptions about the innovation. A decision is then made whether to adopt or reject the innovation.

Mere adoption of technology does not provide the expected benefits until sustained diffusion is achieved (Quaddus & Xu, 2005). End users must infuse, routinise, and implement the innovation into their daily tasks (Saga & Zmud, 1994). The diffusion process starts from adoption of a technology and continues through various stages of infusion, routinisation, and adaptation until the technology becomes obsolete (Quaddus & Xu, 2005). Several factors influencing the diffusion of an innovation have been identified by researchers (Ajzen & Fishbein, 1980; Davis, 1986; Norton & Bass, 1987). These authors suggest that external factors affect the perceptions of an innovation, which in turn impacts the diffusion of that innovation (Quaddus & Xu, 2005).

It is our belief that several factors affect the adoption of portals. These include motivation of adoption; things that would encourage people to use the portal; barriers to access-

ing the portal; experience; culture; accessibility. Perceived benefits are education and training; goals and budgets. These factors can be grouped into three categories: cost, user interface, context, and development. Although cost is an important factor that influences the adoption of portals, we believe that other factors would be the determining factors that influence its adoption.

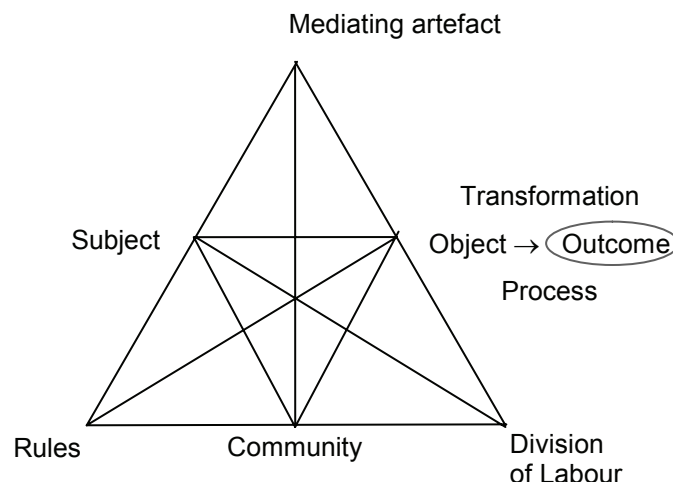
The current design of Web portals is mainly focused on the general technical aspects of World Wide Web Consortium (W3C) <<http://www.w3.org>>; on Web technologies and the different proprietary approaches taken up (and even promoted) by the different IT and publishing software vendors, like Adobe and Microsoft (see <http://www.adobe.com/> and <http://www.microsoft.com>). Both the standardization and vendor-based solutions mostly ignore the aspects of HCI and usability of the portals in building up different technical “windows” to online information. Although some designers applied some HCI principles to their designs, these applications often failed to meet users’ needs. The reason is that traditional approaches to HCI design have limitations (Uden & Willis, 2000). These limitations include treating the human agents as passive elements, not autonomous agents that can regulate and coordinate their behaviour. It treats the actual use of the system as a short-term process. That is, it ignores the development process of the use of the application. Another problem is that design is often restricted to artificial laboratory conditions instead of actual practices. The design is not in context. There is consensus among researchers that the cognitive approach to HCI fails to take account of the social, organisational, and cultural context in relation to the goals, plan, and values of the user, or in the context of development. It is our belief that activity theory, the social cultural historical theory, provides us with the design and study of the adoption of portals. This chapter describes how

activity theory can be affectively used in the design and study of the adoption of portals in society.

## A BRIEF REVIEW OF ACTIVITY THEORY

Activity theory was originated by Vygotsky (1978) in the former Soviet Union as a cultural psychology. It focuses on understanding human activity and work practices. Activity theory incorporates the notions of intentionality, mediation, history, collaboration, and development (Nardi, 1996). The unit of analysis is the entire activity. An activity consists of a subject and an object, mediated by a tool. A subject can be an individual or a group engaged in an activity. An activity is undertaken by a subject using tools to achieve an object (objective), thus transforming it into an outcome (Kuutti, 1996). Tools can be physical such as a hammer or psychological such as language, culture or ways of thinking. Computers are considered as special kinds of tools (mediating tools) (Kaptelinin 1996). An object can be a material thing, less tangible (a plan), or totally intangible (a common idea), as long as it can be shared by the activity participants (Kuutti, 1996). Activity theory also includes collective activity, community, rules, and division of labour that denote the situated social context within which collective activities are carried out. Community is made up of a number of people sharing the same object with the subject. Rules regulate actions and interactions with an activity. Division of labour informs how tasks are divided horizontally between community members. It also refers to any vertical division of power and status. Figure 1 shows Engeström’s model (1987) of an activity system.

Figure 1. Basic structure of an activity



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