What is a Portal?

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INTRODUCTION

The brief history of Web portals is beginning to be common knowledge for software and engineering designers and researchers specialized on the technologies of the Web (Berners-Lee & Fischetti, 1997). The first Web portals were a product of large government-sponsored "big science" projects in the United States and Europe that spawned private online services, such as AOL (Tuomi, 2002). These new businesses provided access to the Web for a fee. Then, in a second phase, companies such as Yahoo, Alta Vista, and Google appeared. As search engines they enabled users to find other pages on the Web. In contrast to AOL, they provided free access to all free pages to all users who had a technical connection to the Web. Now, in a third stage, many of these traditional search engines have begun their transformation into Web portals to attract and keep a larger audience (Tatnall, in this volume; *Webomadia*, 2006).

In contrast to the above kind of evolutionary knowledge about the evolution of portals, there has been less critical historical analysis and/or synthesis to get a "big picture" of what a portal really is. Especially, there has been a gap in knowledge about the strategic and organizational challenges in terms of further innovations and evolution of portals. In this article we thus ask: what are these strategic and organizational challenges in terms of further innovations and evolution of portals? To answer this question, we adopt, in this article, an architectural and design perspective.

The structure of the article is that we first clarify and specify our view of what portal is, and what it is not. We take inspiration from the above evolutionary view of portals to reveal some of the mechanisms underlying the historical evolution in order to map out future path dependencies and remaining room for innovation and new kinds of portals. Within this context, our novel perspective is not to focus only on technology or social history but to weave in also the business case of what is a portal.

WHAT IS A PORTAL?

In very general terms, defining what a portal is and what it is not is easy. A very precise definition—a specification or operationalization of the concept of Web portal—is more difficult than is defining a portal in general terms. There are many different types of portals and many and varied uses to which they can be put. The term portal takes on a somewhat different meaning depending on the viewpoint of the stakeholder. They can be used for such purposes as business services on demand by third-party providers as HP or IBM, for public services in a regional innovation system, for open innovation within any organization, for purposes of killing time, etc.

Despite this challenge of diversity, the concept of portal is now beginning to be established as a term to refer to all human-edited content aggregation that focuses on both organization and personalization of content.[1] Such aggregation typically provides automated search capabilities and other front ending Web services, but also such value-added services as common rooms and collaboration facilities. Thus, portals exist for more than one specific purpose. Rather than being first and foremost a way of categorizing content according for purposes of ranking or grading, for example, a portal is typically provided identity precisely by virtue of robustness of the schemata about its ways and purposes of use.

Usually, in the modern usage of the term *portal*, a Web portal is a gateway to information, services, and so on, on the Internet, whether on the public World Wide Web (WWW) or on a corporate or other proprietary intranet. Any portal is a gateway. It offers a point of access into a broad array of resources and services, such as e-mail, forums, search engines, and online shopping malls. Marketers have discovered the portal concept and its advertising potential, making portals a considerable modern "business case" (Korhonen & Ainamo, 2003).

Within this modern context, what the concept has gained in array of ways and schemata of use, it has lost some of its clarity. A Google search of the Web in May, 2005, revealed 170 million entries for the word *portal*, whereas in June, 2006, the same search lead to 1.12 billion entries. Even allowing for a considerable degree of overlap and misuse, portals are now pervasive and it would be difficult to make any use of the Web without encountering one. The study of portals also spans a bewildering range of topics and interest areas. What is peculiar about the portal as a technological concept is that this concept can equally refer to a Web site

specialized in a focused and select set of other sites that are closely related, in the case of special purpose portals, and to a quite general kind of portal and almost any array of sites that can are a several "clicks" away.

DIFFERENT KINDS OF PORTALS

There are many different types of portal. There are also many and varied uses to which most of these types can be put. While the first portals used to be oriented to a quite generic audience ("one-stop shopping"), many modern portals increasingly are specialized and quite a few can be seen as multidimensional concepts. There is a kind of generic portals exemplified in "www.yahoo.com" or "www.google.com," but also a proliferation of specialist portals, such as "maps" and "travel.yahoo.com," or "maps" and "scholar.google.com." This is just one aspect of how the term portal is difficult to define precisely, and takes on a somewhat different meaning depending on the viewpoint.

This said, the CRGP portal at Stanford University (http://crgp.stanford.edu), for example, provides an architecture where the various dimensions of the portal into research aspects of global projects are organized and designed to bring about an integrated and meaningful entirety. The hierarchy is not strictly formulated. Global project strategies (http://gps.hse.fi) is a research consortium in Finland with reciprocal links with the CRGP. In turn, both are in part financed by Tekes (http://www.tekes.fi), the national technology and innovation agency of Finland. These three interlinked portals are both in separation and in unison nearly decomposable architectures that have no hierarchy in terms of pre-determined meanings for "top" (i.e., important) and "bottom" (i.e., not important). This hierarchy and meanings are designed in part by the user of the portal, making for considerable amount of "co-design."

To provide a handle on the spread, evolution, declinations, and architectures of portals, we take inspiration from the little known work of Krishnan (2004), who in our judgment may have done more than anybody else to capture the essence of what has been the historical evolution of portals. We find that there are at least four groups of Web portals: (a) portals for play, (b) portals for serious business, (c) hybrid portals or portals for "serious play," and (d) other kinds of portals (e.g., portals for government use).

Portals for Play

It has long been proposed that especially paper-based solutions for consumers and business information processes, procedures, and transactions are generally being replaced by Web-based tools, such as corporate Web portals (confer Korpeinen & Ainamo, 2003). Within this context, one original meaning for "portal" refers to electronic games (Krishnan, 2004). Krishnan provides the example of Diablo, a computer game, where a consumer-user can connect, for a limited time, with powers in his or her "home base." For a long time, that kind of buttons for temporary bursts of power was the kind of portal that many computer users who were consumers were the most familiar with.

If we broaden the definition of a "portal for play" somewhat, we find that such portals can also include second-order uses. For example, movie or cinema enthusiasts can visit criticism of the latest films even when they do not intend to be a customer to the local theatre, video or DVD store, or an on-line distributor.

Portals for Serious Business

For business users of the World Wide Web, however, portals carry an altogether different meaning that they do for consumers and other hobbyists. Realizing the benefits of on-demand access and efficiency in our lives also means parting ways with some old, entrenched technology, and methods. In brief, the fact that a portal helps us to assemble the information employers and their employees need, transforming it "from a series of isolated tasks to the coordinated integration of knowledge" (Koulopoulus, 1999), is an important part of what makes a portal a business case. Portals, so to speak, enable access to new and valuable knowledge. Within this context, a portal is content/service aggregation and delivery systems which front-end a variety of other systems. Thus, it is in essence a platform that crosses over multiple machines and, moreover, multiple operating-system platforms (Microsoft, Linux, Apple, etc.). Such a platform provides a mechanism for authorization and access control. It is designed to remove many of the plumbing aspects of an application away from the developers and move the majority of the configuration aspects into the hands of the end users or administrators (Nachira, 2001). A portal like 365 Connect Resident Service Portal (365 RSP) is a portal designed to be an amenity to be used by tenants in tech-savvy environment, such as a technology park, to streamline resources, and to save time and money by eliminating paper memos, newsletters and decreasing phone traffic, yet to communicate with residents in the organization effectively.

Corporate portals—publicly assessable via the WWW or proprietary such as the company intranets—allow the acquisition and sharing of information between employer and employee at Internet speed, in an accurate, timely, and cost effective fashion. Within this context, corporate portals are designed to put employees closer to the information they need and add to employee satisfaction. An in-house corporate portal is now an affordable option for an increasing number of businesses, regardless of the size of their employee population. Thanks to the availability of pay-as-you-go,