

TOWARDS KNOWLEDGE PORTALS

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TOWARDS KNOWLEDGE PORTALS

From Human Issues to Intelligent Agents

by

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For my son, Ben Detlor, who makes all things worthwhile.

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Foreword

It was over a half-century ago, when Vannevar Bush published his critically-acclaimed visionary writing “As We May Think” in the *Atlantic Monthly*, with its fantasy of a personal desk-size information machine called Memex (Burke, 1994; Bush, 1945). There, Bush described how Memex would function as a bibliographic machine for personalized indexing and retrieval allowing convenient access to knowledge accumulated throughout the ages. Moreover, the machine would liberate knowledge seekers by allowing them to add, categorize, and create new associations between information items and documents at their own discretion. In Bush’s view, each desk would become an individualized knowledge base, which in turn could be used to create and leverage new knowledge.

Fast forward to the beginning of the 21st century and there is evidence of Bush’s vision turning into reality. Today, we live in a world where people have immediate access to quasi-Memex machines in the form of personal computers (PCs) and hand-held digital assistants (PDAs) connected to the Internet and the World Wide Web (WWW).

Organizations have been quick to realize the potential of this new technology to foster and promote the acquisition, creation, packaging, application, and reuse of knowledge across the firm. As such, many organizations have implemented enterprise portal systems to provide a gateway or launch pad for employees to find and reutilize the information they need and to help firms better know what they know. Such companies recognize the potential of an enterprise portal to capture, share, and grow organizational knowledge assets. Many view portal systems as being pivotal for the success and future wellness of their organizations.

This book acknowledges the knowledge-leveraging power of enterprise portals. Its primary purpose is to provide a novel, rich and comprehensive discussion on the factors affecting the design and utilization of enterprise portals for knowledge work. Somewhat boldly, the book puts forth a narrative of knowledge portals that moves beyond their design and delivery as mere information retrieval systems. Instead, a knowledge portal is viewed as a shared information work space that facilitates communication and collaboration among organizational workers, in addition to supporting the browsing, searching, and retrieval of information content.

By embracing an informational perspective towards knowledge work, the book provides an in-depth investigation of how enterprise portals can promote knowledge creation, distribution, and use. From an information vantage point, the book uniquely explores the “human issues” surrounding portal adoption and use, as well as the utilization of “intelligent agents” to ameliorate the utilization of portals for knowledge-based tasks. The result is a holistic and

balanced examination of this relatively-new type of information system found in organizations today.

The motivation behind this writing was the author's own personal desire to produce a well-reasoned and empirically-valid account of enterprise portals and their use for knowledge work in organizations. After many years of consulting, reading, researching, and teaching about portals, it was time to put down in writing observations and insights about this new phenomenon of interest. The hope is that other academics and industry practitioners will find these insights useful in spurring on new avenues of research and building better, more robust, portal designs—ones that avidly promote the active creation, distribution, and use of knowledge across the enterprise.

Doing so may lead us one step closer towards realizing the promise of Vannevar Bush's Memex machine.

Preface

One of the goals and hopefully benefits of this book is to offer new suggestions and unique insights on portals and their utilization in organizations as knowledge management tools. To facilitate this, discussion is grounded on the author's own personal research and consulting experience. Theoretical contributions are drawn across three varied, but complementary, literature backgrounds: Information Systems, Knowledge Management, and Information Studies. As such, the book covers a wide range of inter-related topics, including information behaviour, intelligent agents, knowledge work, information environments, information design, information seeking, participatory design, and technology acceptance. Underlying the discussion, however, is the relevance of these topics to knowledge portals, yielding a comprehensive and holistic examination into the design, adoption, and use of these systems in organizations today.

In terms of content and layout, the book consists of seven individual chapters, each pertaining to a unique but important perspective of knowledge portals.

Chapter 1, *Portals and Knowledge Work*, sets the stage for discussion. It provides a definition and overview of portals, describing what they are and why they are important. Adopting an information orientation to knowledge management, the concept of knowledge work is defined. This leads to a general description of how portals can facilitate knowledge work in organizations, and more importantly, into a working definition of knowledge portals. From there, the reader is introduced to various models of information behaviour, gleaned from the past 50 years of Information Studies research, and the application of these models to the design and use of knowledge portals in organizations. The intent of this chapter is to 'ramp up' the reader towards having a good grasp and understanding of portals and knowledge work from an information perspective.

Chapter 2, *The Knowledge Portal Framework*, gets down to business. It presents a three-entity model of the major factors affecting the development, adoption, and use of enterprise portals for knowledge work. Specifically, these factors are: 1) users; 2) the information environment; and 3) a portal's information design. A detailed account of the theory comprising the composition of this framework is given. From there, an in-depth research investigation conducted by the author is described, one which utilizes the framework as a conceptual lens to examine the various factors which impede or promote the use of the portal for knowledge work. Triangulation of both qualitative and quantitative data collection and analysis methods yields an in-depth exploratory empirical assessment of organizational knowledge portal use.

Chapter 3, *Users and Knowledge Portals*, discusses in detail the user component of the Knowledge Portal Framework. Case study results are reported. Discussion involves: the functional role of users; their passion or interest in portals; the perception of users in terms of the capabilities of portals to promote knowledge generation, sharing, and use; and the importance of motivating users to learn as a means of fostering the active use and exploration of portal systems. Specific attention is paid to the role portals can play in facilitating communities of practice within organizations, as well the factors which promote end user adoption with Web-based portal systems. The chapter's mantra is its call for a participatory design approach to portal development—a technique that advocates the active engagement of end users in portal design. A case study of a government portal development project showcases the effectiveness of having users actively engaged in the design of a portal interface. Lessons learned are described. A theoretical model of a participatory design approach to portal development is also proposed.

Chapter 4, *The Information Environment and Knowledge Portals*, talks about the information environment construct of the Knowledge Portal Framework with respect to an information environment's influence on the development, design, and adoption and use of knowledge portals in organizations. The information environment can be considered the information context of an organization. This includes factors such as: the information politics surrounding portal development; the information system development process itself; and the degree to which information is readily shared, valued, and controlled across the organization. Case study results are again reported.

Chapter 5, *Information Design and Knowledge Portals*, discusses the knowledge portal interface of the Knowledge Portal Framework in terms of a portal's information design. This includes the ability of a portal to support the tailorability or personalization of what information is displayed; the quality of this information; the organization of this information; the presence of collaborative tools; and the engagement of these systems in providing interactive and attractive interfaces. Case study results are described. Other Human-Computer Interaction (HCI) factors are discussed as well. This chapter emphasizes the need to display information on the knowledge portal interface to support different modes of user information behaviour (for example, search vs. browse activity). Of primary consideration is the need to present information in ways that signal the value of information to users and that support their modes of information seeking activity.

Chapter 6, *Intelligent Agents and Knowledge Portals*, introduces the concept of intelligent agents and their capacity to facilitate knowledge work in portals. This chapter defines intelligent agents and describes their benefits and challenges. The Semantic Web is discussed and its potential to provide an agent-based infrastructure for organizational knowledge work. Agent toolkits are also described. Much of the chapter is devoted to the potential application

of intelligent agents in knowledge portal design. It is shown that agents can be deployed in many ways which satisfy the information needs of individual knowledge workers, their information seeking behaviours, as well as their uses of information obtained from the portal. The chapter concludes with an agent-based architecture for knowledge portals.

Chapter 7, *Knowledge Portals and Digital Workers*, puts it all together. This is the capstone chapter of the book. Drawing upon the details presented earlier, this chapter summarizes, refines, and reflects on the role of knowledge portals in relation to the digital worker. Here, the digital worker is both the “human” organizational participant and the automated software agent (i.e., digital assistant) who works on behalf of a user or group of users.

The book’s primary audience would be faculty and students in masters and doctoral programs in schools and departments specializing in Information Systems, Information Studies, and Knowledge Management. Consultants and organizations designing and implementing enterprise-wide portal solutions or those spearheading knowledge management initiatives would find the book useful in providing research-based insights on the design of enterprise portals for knowledge work.

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