



DELPHI GROUP

# InfoService: New Model for the Business Portal

August 2002

## WHITE PAPER

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*First generation portals offered a new metaphor for the real estate of the desktop. Today's new breed of portals is redefining the scope of single-point-of-access solutions by integrating premium content, classification, personalization, and integration from both sides of the firewall into an InfoService portal.*

~ Delphi Group {July, 2002}

### Executive Summary

The next generation of portals is a new breed of info-appliance integrating external premium content and internally-developed content into a personalized decision portal for knowledge work. One of the breakthrough developments of this new breed of portal is the ability to help define, support, and augment the day-to-day functions of professional knowledge workers through information and application context built into the portal itself. This capability allows organizations to create portals which begin to replace or minimize many of the time-consuming manual processes used today, in essence streamlining the execution of information-centric business processes.

From the individual's point of view, the fundamental change underlying this next generation platform is the new capability of the portal to become a continually accessible, low-overhead information service tailored to specific work requirements. This replaces the current situation in organizational computing, in which the typical middle office knowledge worker is obliged to serve as his or her own integration service to multiple, unconnected, restricted access, high-overhead information sources.

The end product is an individualized "InfoService" for network-connected professionals. This InfoService or info-appliance represents a personalized business workspace which delivers information in context as well as focused decision and action tools. It integrates the most relevant sources of information and the underlying connections that make this information valuable into a single-point-of-access. The Yahoo!-Inktomi alliance combines Yahoo!'s distinctive approach to personalization, a dashboard for different applications, and premium content with Inktomi's search capabilities and the ability to perform indexing and classification across multiple internal repositories. It offers a glimpse into the InfoService engines which will characterize the personalized Web content device(s) that will set new paradigms for the delivery and use of professional information in the enterprise.

## Introduction

The next generation of portals must help users cope with the lack of time to correlate, categorize, analyze and act on information. The amount of available raw information is staggering, but the truly relevant information is often hidden in reports, emails, documents, databases, and other sources. Valuable time is spent searching for pieces of information before the knowledge worker attempts to “manually” synthesize disparate snippets into an integrated whole. Delphi research indicates that more than 30% of the knowledge worker’s day is involved in searching for required information.

The bottom line is that users are typically unable to locate the pertinent information they need in order to make timely business decisions. Unfortunately, this inability to find the information needed, when it is needed, comes at a time when the agility to make fast, informed decisions is increasingly critical to the enterprise’s survival and prosperity.

Today’s plugged-in business professionals are desperate to ease the burden of digital sprawl as it increasingly pollutes their work life. They need to find the information they need, when they need it, and in the context necessary to make decisions. The portal that meets these needs will be able to contextualize and focus information from internal and external sources as well as from data-driven, semi-structured, and unstructured application systems.

In a few words, the goal is to move beyond today’s frustrating separation between what you need to see for your job—news, periodical content, internal documents and messages—and what you need to do for your job—ask questions, make decisions, take action.

## Raising the Bar for Content Quality

Delphi Group research among portal implementers indicates that the most frequently mentioned limitations of today’s portal sites involve the lack of

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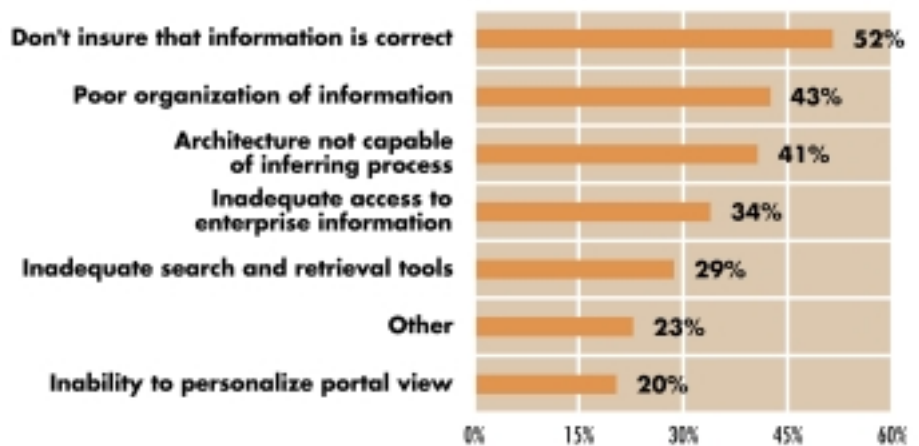
accuracy and the poor organization of information. Over 50% of portal survey respondents identified problems with information correctness, while over 40% identified poor organization of information. For the next generation of portal interactions, major new initiatives must be put in place to overhaul content-oriented business processes from creation through consumption.

Today’s business professional needs help in ordering the relative chaos existing in their organization’s systems environment. From an ever-increasing variety of sources both internal and external to the organization, to the structured information answering the question “what,” and the unstructured information answering questions about “why,” the current generation of information applications is unable to help business professionals connect the dots across data sources and leverage that insight in improved performance.

### The Role of Classification

The first step in organizing and managing the data existing across the many repositories within an organization is creating an information hierarchy, like a database schema, to provide an organized

### Limitations of Portal Interfaces



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### **The Foundation: Unified Indexing**

*The foundation for this new level of integration is the ability to create and maintain a unified indexing mechanism for three levels of integration:*

- **aggregating a knowledge store of syndicated content**
- **incorporating internally developed content into the portal framework**
- **integrating enterprise data or applications**

*In the first level of integration, portals collect syndicated content from multiple business and professional sources — from newsfeeds through professional and industry trade press to scholarly professional journals. Content aggregators typically combine thousands of titles of professional information, news, and other syndicated, externally published sources. Corporate applications and intranet content provide an equally rich set of resources.*

*The value of this level of integration lies in removing two time-consuming tasks from the knowledge worker: the need to manipulate access protocols, e-commerce transactions, and proprietary user interfaces among multiple individual services; and the need to execute multiple browse or search operations and then manually re-integrate components of value (assuming they can be found).*

*On the second level of integration, technology*

*suppliers must offer significant facilities for integrating internally developed documents and other content with externally published content onto the same dashboard within the portal window. Up until the arrival of the InfoService offerings, the typical situation has often been just the reverse: technology is used explicitly, for commercial purposes, to restrict the use of external content, and proprietary formats and repository designs prevent any smooth flow of internal and external content in the same decision environment or work task.*

*The third level of integration involves the mechanism for extending the content and information indexing processes out to enterprise applications, business intelligence sources, and in fact to any e-business activity or commerce transaction stream of relevance to the professional using the portal.*

*As we move steadily toward tomorrow's XML-enabled application environment, the ability to link component information and improve the delivered context in portal dashboard views will improve dramatically. At the current state of the art of today's technology, however, providing an effective decision context for roles and individuals at the portal interface will continue to challenge general purpose applications. The new infoservices offer the best foundation short of custom implementations of specialized tools for implementing such context-building views into a personalized portal.*

framework for perceiving, thinking about, and navigating the information. Productivity comes from seeing connections, evaluating importance, recognizing context, and understanding the implications and correlations of data and information. When search results present retrieved documents organized into these classification structures, users can browse collections or repositories to locate documents and data, spending less time looking for information and more time acting on it.

Think of taxonomies as computer-generated card catalogs that allow you to locate, retrieve, and cross-reference information in your digital libraries. Where structured business intelligence technologies brought “drill down” and pivot tables to numeric and transaction data, classification technologies form the groundwork for exploration of unstructured information. A taxonomy or classification schema helps delineate the conceptual relationships that exist within and between various topics contained in the variety of unstructured data from various enterprise sources.

Taxonomy or classification software correlates and groups unstructured information from diverse sources, understanding the concepts and ideas that group like documents together and separate unlike documents. A taxonomy is a systematic classification of a conceptual space. Unlike fundamentally rigid scientific taxonomies, the classification scheme for digital information is personal and subjective, sometimes even arbitrary. The classification tools adapted by organizations must support this flexibility.

An evaluation of generic user interfaces used to present search results found that combining search results with an easy-to-navigate topic hierarchy (like those developed using taxonomy tools) makes information discovery more efficient, enabling users to find information up to 50% faster, and the Yahoo!-Inktomi alliance provides this combination. The ability to select information and order it proximally is essential to high value knowledge work and this process has become a central business challenge.

The Inktomi Classifier combines the power of an automatic classification tool with the critical

capability of human oversight. The tool offers visibility into every stage of the categorization process, from taxonomy creation to content population, to access and display management, providing information managers complete control with the ability to accept, reject, or modify results. It supports the flexibility required for classification in multiple contexts. Inktomi is able to offer both an efficient search capability and the ability to arrange information into an intuitive browsable taxonomy.

**Coping With Disparate Sources of Information**

Just as important as classification is the issue of retrieval across all of the information sources available to a typical organization. The keyword-based search tools commonly deployed in first generation portals, for example, usually deliver excessive quantity, poor quality, and inaccurate results. In the absence of sophisticated source integration and profiling, the user’s manual filtering may work to eliminate or overlook important sources of information. Inktomi’s capability to index multiple information repositories, including both structured and unstructured sources, is a necessary component of any solution seeking to address the disparate sources of information available.

**Searching on a poorly organized intranet or portal is a huge time waster. Countless decisions are made every day based on low-quality information because employees often can't find the data that they need on the intranet or portal.**

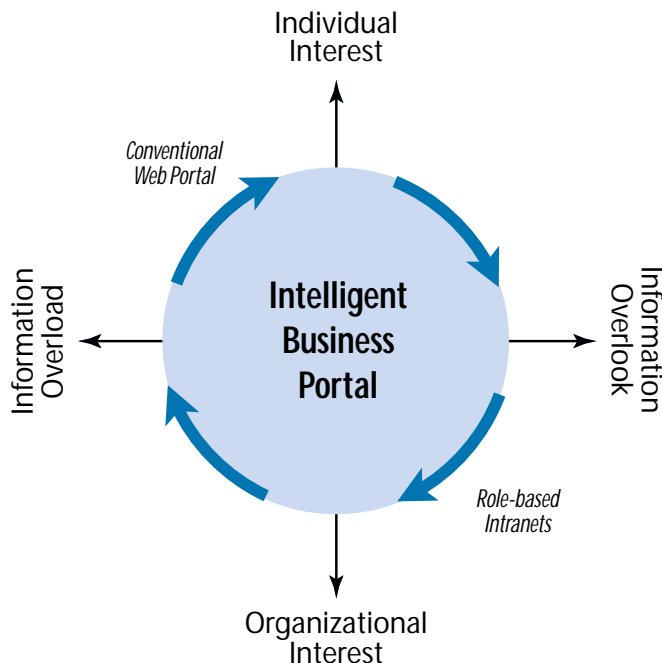
Another problem with information delivery in the first generation portal, from a practical perspective, is the issue of limited real estate. Early portal platforms sought to address user requirements for multiple public and premium sources by providing increasing numbers of “hooks” to popular information sources. The problem with such “portlet” integration, is that each individual information channel needs to be displayed in its own frame in the portal interface. When the numbers of information feeds rises above a very few (and many professionals routinely access dozens of individual feeds), there are simply too many portlets to “fit” into the real estate of the portal window.

One way to eliminate this problem is by aggregating various content sources and integrating them into a single content module before delivery to the portal. An example of such a solution is the Yahoo! headline news module which aggregates and integrates the user’s choice of 400 different content sources into one module with a predetermined number of headlines prior to delivery to the portal.

The cumulative price of inefficiency resulting from disparate sources of information is that knowledge workers typically spend an average of 30% of their time searching for the online information they need. This represents an unacceptably high annualized cost when multiplied across the professional workforce in a large-scale organization. Usability guru, Jakob Nielsen, estimates that poor classification costs a 10,000 user organization \$10 million annually.

An important portion of the hurdle for all new software applications is overcoming fear of the unknown on the part of its user constituencies. In studies of Yahoo! enterprise portal implementations, portal teams reported that the widespread private

**Strategic Information Delivery**



experiences their audiences had with the Yahoo! look-and-feel and operating style helped bring a sense of familiarity to prospective users, lowering the sense of risk associated with learning a new interface. For both internal professional and external customer audiences, the anticipation of familiarity helped reduce the natural resistance to change and the fear of “another new system to learn.”

The information management tools required to combat these problems are ones capable of addressing structured and unstructured information residing in disparate repositories both inside and outside the corporation. These tools must adjust to the perspective of the user, providing content in context.

### **Creating Information Context**

To deliver information to decision makers, we must at a minimum provide relevance and context in addition to data. In any given situation, only a limited number of the available data points are relevant. The first step in extracting information from data is sorting the relevant from the irrelevant. The next step is establishing context.

Context is the “multitude of important relationships that govern the interaction of one data point with another.” Context is essential because decision makers are keenly interested in cause and effect, and where data points fit in relation to one another. It is context that provides meaning.

Richard Saul Wurman, the man who coined the term “information anxiety,” explains context as *a frame of reference*. “I believe there is a god of understanding out there, and the god of understanding is not served by just the facts. Facts in themselves make no sense without a frame of reference. They can be understood only when they relate to an idea.”

The task of the InfoService portal is to provide a personalized workspace that creates a context and an action point integrating our most relevant sources of information and the underlying connections that make this information valuable to us. It creates a productivity breakthrough by delivering this workspace through a single point of access. This is the vision to which the Yahoo!-Inktomi alliance aspires.

### **Business Value of Yahoo! Enterprise Portal Projects**

*The results from a specific return on investment perspective ranged as widely as the portfolio of business objectives the firms choose to attack. The major themes are grounded on the value advantages of Web operations in the areas of service/self-service and of intelligent electronic process linkage. Each of the portal projects studied were impacting traditional cost structures in ways that fall directly to the bottom line; many were impacting top line performance.*

*The following list provides examples of the kinds of numbers achieved by the Yahoo! enterprise portal implementers:*

- **\$9 million single year ROI at Honeywell**
- **100%+ increase in customer Web interactions for health services at CIGNA**
- **100%+ increase in customer Web interactions for retirement services at CIGNA**
- **25,000 McDonalds restaurants linked for the first time with locally personalized portals**
- **Over 50 unique HR applications unified into single portal access interface at Honeywell**
- **1.3M-3.75M member target audience for self-service economies at CIGNA**
- **30% reduction in travel-related overhead costs at Honeywell**
- **Elimination of tens of thousands of intranet sites and associated costs at all firms**

### **Personalization**

The practical complexities of the new breed of portal can be reduced to a central challenge: to provide an interactive rich content interchange that streamlines business professionals’ ability to get their jobs done. The preeminent challenge for today’s portal implementation is to build an electronic work environment that allows an organization to create an effective context for all its stakeholders. Significantly, this goes beyond offering new ways to present work and addresses actual simplification. Busy professionals need to consume information that is preprocessed to match their job environment, their interests, and their current decision support requirements in order to achieve the goals of the enterprise in the digital economy.

Personalization allows the online professional a degree of freedom to individualize both the presentation and informational content of their online working desktop. Business professionals need utilities that allow them to specify the particular collection of information streams, application content, and business processes that mirror their job function(s) and professional (or personal) interest(s). The net payoff of the InfoService mechanism is a rich, flexible vehicle for delivering knowledge control panels. Role-based personalized content feeds provide a unique ability to locate relevant information while combating digital sprawl.

The “secret sauce” for this organizing and personalizing function lies in techniques of scanning, classification, filtering, and personalized delivery long practiced by library scientists, but generally little known to portal developers or line-of-business managers. This combination of technical and info-analytic skills enables state-of-the-art personalized portal interfaces. It is this rapidly emerging service requirement that lies at the center of the target zone for the new, portal-delivered InfoService products from premium content publishers and aggregators such as Yahoo!

### Active Content

The transformation wrought by the availability of InfoService portals will replace the rather passive, even defensive, information service and content repository strategies of yesterday. Tomorrow’s intelligent portals will be powered by truly active content systems that address a full range of requirements on the part of users. Active content technology will be object-based, standards-supporting, source-agnostic, framework deployed, and media rich.

The objective of active content is not to provide “bulletin board”-style awareness, but to leverage knowledge into decision points, enhance awareness in a problem field, provide the opportunity for serendipitous discovery, and foster intelligent service and customer-facing innovation. Active content is action oriented—it provides the

user with information that can be turned into a decision or action.

The availability of active content implies a transformation of the online user environment from click-and-wait to arrive-and-interact. In this respect, InfoService portals will offer new modalities of interactivity in both the graphical design of portal views and the physical manipulation of information components. Decision spaces and business processes will begin to merge in business portals that will more closely resemble today’s video games than the Windows environment most currently take for granted.

The InfoService portal is about providing an instantly accessible, rich content collection that is authoritative as well as comprehensive. At the same time, the portal software facilities must distill the value resident in the content to match a particular individual’s business circumstances. And every business circumstance will dictate its own dynamics, making corresponding demands on content and decision resources.

### The Portal Content Broker

Delphi calls the core functionality necessary to effect the transformation to a function-centered desktop the Portal Content Broker—a core facility for creating electronic workspaces that integrates the right combination of information streams, feedback mechanisms, visualization tools, and process controls to deliver an intuitive digital “dashboard” for business professionals in their operating areas of expertise. The most important element of this digital dashboard is the ability to aggregate and deliver a set of dials or control points that match the business decision environment of the professional knowledge worker. Quite simply, the Portal Content Broker manages the intersection between the information preferences of portal users and the multiple sources of content, applications, and process objects accessible on the business Web.

It is important to clarify that the Portal Content Broker is a Concept Model, not any specific piece of technology. The combination of technologies that

enable the concept allow organizations to create portal content brokers which begin to replace or minimize many of the time-consuming processes used today to stage and carry out professional information work.

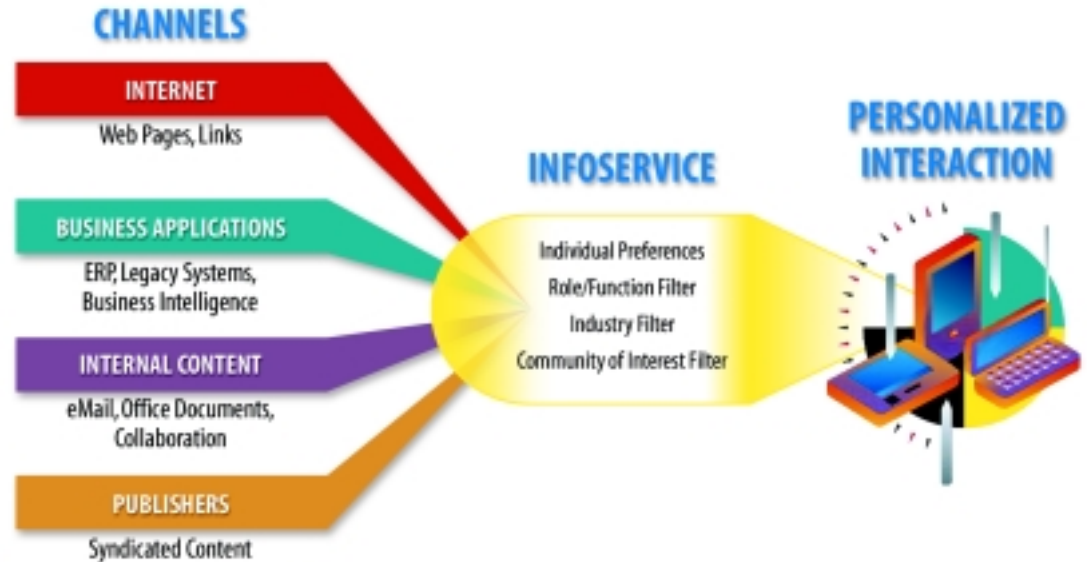
By tailoring digital info-views to specific business requirements, effective Portal

Content Broker facilities promise to deliver a personalized and highly configurable view of an individual's work "habitat," addressing the current challenges of finding relevant information and improving professional productivity. The leverage points for delivering portal value are patterns of information use built around professional and business priorities. The InfoService portals enabled by the Yahoo!-Inktomi alliance provide a good example of the Portal Content Broker in action.

### The InfoService Vision

The practical complexities of the new breed of portal fortunately reduce down to a central challenge: to provide an interactive rich content interchange that streamlines business users' ability to get their jobs done. It is the element of context and the delivery of personalization, which can be supplied through next generation portal environments that are the most essential capabilities for managing the burdens of information complexity and overload.

The Yahoo!-Inktomi alliance offers a new kind of inside-the-firewall InfoService facility to address these issues by combining into one offer: expertise in Web interaction, content structure, personalization, Web-delivered content feeds, and flexible, automated classification and retrieval



technologies across application and content boundaries. The result is a new kind of solution for provisioning content to this next generation of enterprise class portals.

The goal of the InfoService portal is to build a personalized electronic environment to support business interactions. The end product is an individualized "appliance" whose mission is to launch a business workspace that delivers information in context as well as focused decision and action tools. It integrates the most relevant sources of information and the underlying connections that make this information valuable, filters the information through personalized filters and delivers the results into a single-point-of-access for personalized interaction. InfoService provides one-stop brokering for important info-sources outside and inside the organization; organizing capabilities to rationalize external with internal content channels, and personalization, profiling, and filtering approaches to deliver the information that makes a difference.

The Yahoo!-Inktomi alliance provides a glimpse into the InfoService engines which will characterize these new InfoService portals—the personalized Web content device(s) that will set new paradigms for the delivery and use of professional information in the enterprise.

## End Note

The mandate for a new generation of portals is to anticipate the range of business professionals' information needs and to present personalized channels of focused content across the full range of relevant information sources. The Yahoo!-Inktomi alliance combines Yahoo!'s distinctive approach to personalization, a dashboard for different applications, and premium content with Inktomi's search capabilities and the ability to perform indexing and classification across multiple internal repositories, providing significant utility unavailable in first generation portal technologies.

This new generation of portals is actually an info-appliance integrating external premium content and internally-developed content into a personalized decision portal for knowledge work. One of the breakthrough developments of this new breed of portal is the ability to help define, support, and augment the day-to-day functions of professional knowledge workers through information and application context built into the portal itself. This capability allows organizations to create portals which begin to replace or minimize many of the time-consuming manual processes used today, in essence streamlining the execution of information-centric business processes. The payoff of leveraging this range of information resources is the ability to support a new effectiveness in the work life of all enterprise stakeholders.

For any organization to survive in today's content rich, integrated environments developing deep competence in the processes and technologies of handling online content is a first requirement. It is the element of context and the delivery of personalization, which can be supplied through next generation portal environments such as the InfoServices portal solution from the Yahoo!-Inktomi alliance that are the most essential capabilities for managing the burdens of information complexity and overload. ❁

