

Patricia Seybold Group

Trusted Advisors to Customer-Centric Executives

How Findability Can Drive Business Growth

IBM WebSphere Content Discovery Server and the IBM Content Discovery Foundation

By Susan E. Aldrich Sr. VP and Sr. Consultant, Patricia Seybold Group

Prepared for IBM

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NETTING IT OUT

Over the past 10 years of e-commerce (an e-business market segment) and customer experience research, we've seen that search technology and tools are critical to buyers who are evaluating products and customers who are using products. Search technology is vitally important to ensure that customers find the information they need to make a decision and achieve success with their purchase. Every time your site's search leaves a customer staring at long and unorganized search results, you have frustrated your customer, your merchandisers, your sales team, and your contact center staff. Every time a customer can't get the answer she needs, you've either lost a revenue opportunity, damaged a relationship, incurred a contact center cost—or all three.

Most executives we talk with know that the customer experience, and the information driving it, needs to be more consistent across channels. Not as many understand that the same consistency should also be delivered across the customer lifecycle. Fewer still have been successful at turning a customer support question into sales of alternative products, replacement parts, or support services—primarily because customer support and e-commerce are siloed systems with different goals, staff, and tools.

Advanced search technology is the underpinning for delivering a terrific customer experience and can be the catalyst for unifying your customer experience across channels and across the customer lifecycle. IBM offers a range of tools, technologies, and applications for search, unified by an open architecture and offered as adaptable services.

WebSphere Content Discovery Server is the IBM offering best suited to addressing this market need when measured by Patricia Seybold Group's search solution evaluation frameworks.

What Terrific Search Does for the Business

Brings Money

Terrific search can directly impact your firm's ability to generate revenues by quickly and efficiently connecting customers with the products they need. Campmor, a retailer of outdoor apparel and equipment, achieved a 64 percent increase in online revenue in the first six months after implementing WebSphere Content Discovery Server. Many other IBM customers report a significant increase in order size when their customers use search. At Campmor, the increase is 14 percent.

Saves Money

Terrific search can also significantly reduce cost to serve. Using WebSphere Content Discovery Server, Cloudmark, a growing software company, is able to automatically resolve 40 percent of its email support inquiries without live assistance. At cost-peranswer in the range of \$10 to \$40, deflecting emails and phone calls has a big impact on the bottom line. For a growing business, effective self-service also enables rapid scalability that couldn't be achieved by hiring support staff.

Since so many customers prefer self-service, it's not surprising that Cloudmark's self-service effectiveness also caused a customer retention increase of 15 percent.

Improves Strategic and Tactical Decisions

We've all experienced the dilemma of making a decision based on sketchy information. It's all the more frustrating when we know that information we need exists, but we can't get at it in time. Search technology can support our own ad hoc exploration of our corporate databases. It can combine multiple data sources, such as open orders, customer profiles, sales forecasts, and incident reports. Search can offer us navigation choices that let us dynamically filter the set of data we're looking at. It is perfect for the "how many of these also have that" type of question that arises when we realize there are problems shipping a product that customers rely on, or that competitors are making strides with customers in specific circumstances. Using a Web search box and dynamic navigation to analyze databases is a relatively new but very strong trend, and offers an equally strong opportunity to improve the decision process. Every company should be investigating this technology.

Solution Requirements for Terrific Search

What Customers Need

During the product selection process, as well as post-sale, customers want direct access to answers via the Web. Ideally, seekers should be able to ask any question using their own terminology; control navigation, sorting, and filtering of results; be offered suggestions and clarifications; and find enough information to reach a successful conclusion. They should be offered a variety of approaches, including parametric search, specialized product finders, and resolution flows. If no useful answer is offered, seekers want requests escalated automatically.

What Merchandisers Need

Terrific product selection search does not exist in a vacuum. It relies on wise decisions from merchandising staff who develop promotions, make offers that help customers succeed in buying everything they need, watch over the success of customer searches, and make improvements.

Merchandisers need search technology that gives them direct control of the buyer experience, unimpeded by calls to IT for help. They need a console that allows finetuning of relevance ranking by category; that makes it easy to define offers associated with they buyer's context and profile; that makes it easy to set up and manage promotions for future time periods; and makes it easy to test changes and assess promotion effectiveness.

What the Contact Center Needs

Customers frustrated looking for answers on the Web quickly escalate to phone- or email-based support via the contact center. This is an opportunity for a business to satisfy the customer and thus deepen the relationship; it may also be a golden opportunity to sell a more suitable product or some services that will enable the customer to be more successful.

Ideally, the contact center agents should have access to the information that customers have viewed as well as additional internally-available information and relevant offers. Access must be swift and complete, especially if the customer is on the phone waiting. This is no time to be wading through pages of irrelevant results, or rapidly scanning 100-page tomes looking for the critical paragraph. The search results should present extracts that are relevant to the search rather than an abstract describing the document. If the contact is via email, the customer's context should be incorporated in the email, including both customer profile and session information. Internal and public information must be consistent: the absolute worst situation is having a customer support representative contradict information that the customer has already viewed on the Web site.

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That takes care of resolving the customer's problem, but not the contact center's problem: Why wasn't customer self-service successful? Reporting that indicates customer questions returning poor or no results, as well as an analysis of gaps in the information collection, will help the contact center improve effectiveness.

What Executives with Customer Experience Responsibility Need

The top of the requirements list for executives is a governance structure for findability that explicitly assigns responsibilities for the quality of information collections, the ease of finding information within and across collections, and the satisfaction of key customer and partner segments.

To support governance, executives need tools that help them monitor and manage the quality of customer experience. They need reporting on the effectiveness of search and navigation in getting customers the information they need; the effectiveness of promotions; and changes in traffic patterns, conversion rates, and call deflection rates.

Another common goal is delivering a consistent experience across the customer's lifecycle. A key contributor to achieving that consistency is having a common search technology used for marketing, product selection, and customer service. The teams supporting the information delivery across the lifecycle, who work for multiple organizations with different measurements, rules, practices, and goals, need to be able to work independently and collaboratively to improve the quality of customer experience.

In order to successfully plan a search implementation, executives need proven solutions with short payback periods.

What IT Needs

First and foremost, IT has to manage technology, and in the search realm, this means it needs an operational management profile that supports distributed environment, central control, and integration with network management.

To maintain IT's effectiveness, the search solution must enable information owners to manage the search experience, including changes to dictionary, thesaurus, taxonomy, and rules.

To achieve quick payback for the technology investment and to minimize implementation timeline, the search solution must be services-based, have strong APIs, packaged connectors to enterprise repositories, automated classification and attribute extraction, and capabilities for cleaning up product information without impacting the format of the source data.

Patricia Seybold Group Search Evaluation Framework

Over the years working with our clients, we've arrived at a framework for evaluating search technology.

Our framework, which is summarized in Table A, has four technical categories:

- Seeker Control over Experience. Seeker control criteria address the forms that a
 query can take and how the results are organized and presented, including capabilities
 that ensure that the user is neither overwhelmed with choices nor presented with no
 results or guidance.
- Seeker Experience Management. The key search management activities center on tuning search results to improve the Quality of Customer Experience MQCE) and to enhance profitability by boosting revenues and trimming costs. The key merchandiser and customer support activities and goals that a search engine supports are: promoting featured and/or high-value items; defining and tuning offers, including upsells, down-sells, and cross-sells; tracking effectiveness of self-service resolution; and tuning search results to improve the Quality of Customer Experience (QCE) and to increase revenues and profitability.
- Design and Development. Information owners and IT team up to refine the linguistic information and the product data structures that will support great selfsupport search and navigation, including the dictionary (also called the thesaurus), attributes, categories, and rules.
- **Architecture.** The search engine architecture determines how the search solution will fit into the existing environment, how it will be managed, how it scales, and how it will incorporate all the relevant data sources a company currently has.

Search Solution Requirements							
Seeker Experience	Seeker Experience Management	Design	Architecture				
Natural language, parametric, SKU, federated search; Dynamic navigation	 Reporting on search results, including most popular and least successful Analysis of additional content required 	Automatically generate metadata from source	generate metadata from source	Implemented as callable services Scalability for #			
Question analysis	Analysis of promotion effectiveness	and content • Automatic	users, # documents, and # queries per				
Sort and filter results	Merchandiser interfaces for defining promotions, cross-sells, up-sells	identification of concepts	second • Role-based, sub-				
Search sharingNative language supported	Multivariate testing to evaluate offers Interfaces merchandisers and customer support staff can use to tune	Automated classification based on rules or algorithms	document-level security • APIs and				
	results, including adjustments to attribute weights per category, item boosting, and editing synonyms	(learning) Supports multiple taxonomies	reference implementations for COM, .NET, and Java				
	Support for multiple users of the seeker management console	Retains seeker context for use by	Operational monitoring and				
	Automated handling of spelling correction and duplicate results	other applications • Crawls and	management console				
	Personalization: rules-based selection of results, navigation, and offers based physic identity	indexes all file types and sources	Alert forwarding				
	on buyer identity		All human interfaces are browser based				

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Table A. There are four technical categories in our search solution evaluation framework, each with several evaluation criteria, represented by columns in this table.

IBM Solutions for Search

IBM offers more than one search technology, as well as a conceptual framework for search and an underlying open architecture for search. There is a compelling reason for this apparent duplication of effort. Search is a complex problem that must be addressed by a number of elements. The search problem space spans tools, platforms, applications, and industries. Virtually every business application ever written can benefit from strong search technology, and industry terminology and assumptions must be incorporated into

the search solution. Search-related tools cover all aspects of content management, XML processing, Web services, classification, entity extraction, data and text mining, analytics, Internet search, advertising, mobile search, location and geographic search, and many more technologies.

The key tenets of IBM's broad search strategy are as follows:

Information on Demand and Information as a Service. We've been promoting this vision for more than a decade: if information can be delivered as a service, IT will never be in the way of company strategy. The value of information assets increases significantly as organizations become more adept at applying information in new ways. See Illustration 1. Valuable data is stored in transactional systems, when it should be accessible to new applications, easily combined with related information from other systems or repositories, and consistently simple for programmers and users to select. By shifting information from a storage-oriented asset that must be dragged into action, to a service that is constantly delivered, a company becomes more adaptable, more innovative, and more competitive. IBM shares this vision, and its strategy for delivering information on demand is fundamental to all of its solutions and services initiatives.

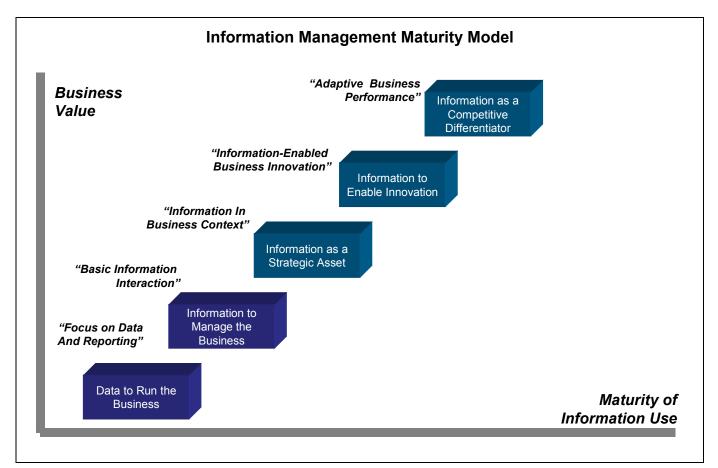


Illustration 1. In IBM's vision, as companies' use of information matures, the value of the information increases and ultimately drives strategy and innovation.

Search and its associated classification and management capabilities need to be accessible to all applications and platforms in the company. IBM's search solutions are service based, enabling IBM's customers to implement adaptable solutions based on service-oriented architectures.

Conceptual Framework: Content Discovery Foundation. IBM's attention to the complexity of search, and the need to streamline the business processes around search, is reflected in its conceptual framework which is referred to as the Content Discovery Foundation. Content discovery is represented by three products: WebSphere Content Discovery Server, WebSphere Information Integrator OmniFind Edition, and WebSphere Information Integrator Content Edition.

The WebSphere Content Discovery Server is an offering that enables organizations to rapidly develop search applications that provide a robust end-user experience and level of line of business control that allows organizations to increase revenue, reduce support costs, and make better business decisions. It also offers seamless integration with WebSphere Information Integrator OmniFind and Content Edition. This integration allows organizations to easily apply search and discovery services to myriad existing content repositories across an enterprise.

WebSphere Content Discovery Server and Applications. WebSphere Content Discovery Server can be deployed standalone or tightly integrated with other applications to enhance the quality of the end-user experience.

For example, WebSphere Content Discovery Server is integrated with IBM WebSphere Commerce to extend the basic search capabilities of the e-commerce platform with advanced capabilities required to optimize online conversion rates and order size. This is the first of many WebSphere integrations planned: other IBM offerings that can benefit from advanced search include IBM's business intelligence, portal, collaboration, and business applications.

Key solutions powered by the WebSphere Content Discovery Server include:

- WebSphere Content Discovery for Commerce
- WebSphere Content Discovery for Self Service
- WebSphere Content Discovery for Online Support
- WebSphere Content Discovery for Case Resolution
- WebSphere Content Discovery for Contact Centers

WebSphere Content Discovery Server

WebSphere Content Discovery Server is IBM's strongest solution as compared to our solution evaluation criteria, delivering all of the capabilities highlighted in our evaluation framework. A/B testing is supported only via integration with WebSphere Commerce. This strong showing against our search solution requirements makes WebSphere Content Discovery Server a great starting place for improving customer experience. See Table B.

WebSphere Content Discovery Server Strengths						
Seeker Experience	Seeker Experience Management	Design	Architecture			
 Breadth of search types supported Managed escalation driven by business rules Search sharing interfaces 	 Ranking algorithm incorporates implicit and explicit seeker feedback Merchandiser console designed for teams, with reporting, testing, and workflow; highly-granular controls over results ranking and offers Interfaces merchandisers and customer support staff can use to tune results, including attribute weights per category, boosting, and changes to synonyms Reporting analyzes rules impact as well as search results, content, and promotions Automatic creation of spelling dictionary Personalization of results also factors in seeker's current context 	 Automation of metadata extraction and generation, using a broad range of triggers Automatic identification of concepts and support for advanced relationships among concepts Automated classification to multiple taxonomies using rules or algorithms (learning) Ten industry- and application-specific ontologies are available Retains seeker context for use by other applications Crawls and indexes all file types and sources, with real-time update 	 Implemented as callable services Large-scale sites, including one driving a million queries per day Role-based, sub-document-level security, via indexing, via Java security API, or via post-retrieval processing APIs and reference implementations for COM, .NET, and Java; APIs enable integration at multiple levels, using or altering rendering services, using straight XML results, or using JSP or ASP Operational monitoring and management console supporting alert forwarding to network management system All human interfaces are browser based 			

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Table B. WebSphere Content Discovery Server addresses our requirements for search.

WebSphere Content Discovery Server key strengths are as follows:

Search Precision and Recall. Advanced natural language capabilities, support for personalization rules, attention to seeker context, analysis of aggregate usage of documents, and support for a broad range of search approaches enable WebSphere Content Discovery Server to deliver high-quality search results. We believe advanced natural language processing is critical to the seeker experience. It identifies parts of speech and mines, classifies and matches concepts, and enables search results to be grouped semantically to help the seeker understand how his question relates to the contents of the information collection.

Merchandising and Information Manager Console. The console supports all of the tasks necessary for tuning the search experience: reports, analysis, offers, business rules, vocabulary, testing, and content editing. Reporting identifies knowledgebase content gaps, most frequent searches, quality of answers, and frequency of offers. The search management tasks, and the information supporting the tasks, are presented via wizards and forms that avoid technical jargon and create rules that are easy to read. Rules can be triggered by a broad range of events and circumstances, including triggers customized by the enterprise. WebSphere Content Discovery Server has strong rules management as well as workflow guidance for publishing new rules and other changes according to company practice. Previous versions can be re-activated with a single click.

Contact Deflection or Self-Service Effectiveness. WebSphere Content Discovery Server supports a number of strategies for satisfying the seeker. In addition to search based on keyword, concept, parameter, and range search for numerics and dates, WebSphere Content Discovery Server also supports managed escalation and contact deflection. Managed escalation uses rules to identify when and how to guide a seeker to resolution of his question, including a dialog for collecting information, a trigger to the contact center to reach out to the customer, or a suggestion to send an email. Contact deflection is triggered by the email form, which is partially populated based on seeker activity and identity. The seeker is prompted to describe his question in more detail. This rich problem description is used to immediately select and present the best answers available. If the seeker is not satisfied, he clicks to send the email. At Cloudmark, roughly 40 percent of emails are deflected in this fashion.

Rapid Deployment and Payback. The services-based architecture, APIs for multiple languages, automation of metadata extraction and classification, and packaged connectors for a range of content and data sources, support swift deployment. Best practices guidance provided by documentation, training, and professional services helps customers quickly achieve a quality seeker experience and pay back the investment.

Extensibility. WebSphere Content Discovery Server scales to large numbers of documents, users, and queries. It also scales in terms of platforms, content types, and applications. IBM offers five customer service applications, a brand monitoring application, and an e-commerce search application. In addition, integration components speed deployment of WebSphere Content Discovery Server as a replacement for the basic

search embedded in WebSphere Commerce, providing pre-built schema and templates for the WebSphere Commerce product catalog.

Success Stories and Best Practices

Campmor

Campmor, Inc. is an online catalog and store retailer of outdoor equipment, with about 20,000 SKUs. Its first foray into e-commerce, in 1997, delivered great results for the first few years. In about 2002, repeat visits from customers began to decline, and conversion rates had stopped growing. Analysis of traffic made it clear that something was wrong with search: customers were abandoning the site right after product search.

A new search technology for the site needed to make it easy for customers to zero in on the features they needed, trimming lists of search results to the few that would meet their needs. Campmor felt that the search replacement should provide not only great support for finding and selecting products, but should also serve as a platform for customer service.

In 2004, Campmor implemented WebSphere Content Discovery Server technology. The effect was startling: "Campmor increased revenue derived from online searches by 64% in the first six months after implementing WebSphere Content Discovery for Commerce. The click-through rate has risen from 16% to 25%, and the average order size for search orders is 14% higher than orders which are not initiated by a search—a 9% increase since implementation," according to Erich Eyler, CTO of Campmor.

National Semiconductor

One enduring lesson from National Semiconductor is that paying constant attention to search brings big returns. Phil Gibson, VP of marketing, reviews search activity every day. He finds searches that can be greatly improved by simple changes, information that needs to be added—and occasionally the name of a competitor's new product which he will ensure is associated with National's best equivalent offering. His aim is to get his customers, overwhelmingly design engineers, successful within two clicks. That's a lofty goal, but today 77 percent of visitors make only a single query, having satisfied their goals.

Search at National can be initiated by typing words in a search box, clicking a component of a design diagram, or by selecting parameters describing the desired chip. Because the search metaphors are so effective, two thirds of the world's design engineers visit National every month.

In 2004, National had more than a dozen search technologies on its site, some built to drive specialized product selectors, others having tagged along with applications

available offered on the site. In order to reduce operational cost and to improve seeker experience, National began replacing the myriad search tools with WebSphere Content Discovery Server. Today, National has eliminated all but one of the search tools, and WebSphere Content Discovery Server is handling in the neighborhood of 20,000 searches a day.

IBM Workplace for Customer Support

IBM Workplace for Customer Support provides online customer self-service for managing and resolving issues with Lotus brand products. Customers using IBM's Lotus brands have widely varying environments, and represent very different skill sets and roles. There are people staffing a company's internal help desk, there are developers building applications that use Lotus technologies, there are IT operations specialists, as well as end users of Lotus-brand applications. IBM's information spans technical documentation, problem reports, tips and techniques, seminars, announcements and training. Under the circumstances, designing a customer support experience that makes the right information immediately available is a big challenge.

In the past, customers were frustrated with online self-support because so much information was delivered and it was hard to weed out the useful information and home in on the answers. As Rachel Turnbow, project manager for IBM Workplace for Customer Support, describes it, "One of the challenges that we faced was simplifying the answer process for them. We had an original goal of getting them to the information they needed in three clicks or less and also of leveraging the information that we already knew about their infrastructure so that they didn't have to sort through extraneous information." Her team was convinced that if they could unify all types of content with a single search, and use customer identity to narrow the choice of content, this goal would be achievable.

The team implemented customized customer portals, specific to company, organization, role and individual, with interfaces and information filters appropriate to each user. WebSphere Content Discovery Server provides the technology that automatically makes those refinements based on the identity of the customer. WebSphere Content Discovery Server filtering capabilities deliver only the information relevant to the product/version/release combination each customer is using, and also strips out information that would be inappropriate to an individual's role. For example, end users don't want to see information intended for programmers, and internal support people want to manage their own cases, not cases logged by staff in another geography.

"Our intent was to revitalize customers' interest in using online support, and their feedback proves that we exceeded their expectations. This would not have been possible without IBM WebSphere Content Discovery software," concluded Turnbow.

The portal pages and portlets are driven throughout by WebSphere Content Discovery Server. Its indexing, concept extraction, filtering, and retrieval services populate the "For Your Attention," "What's New," "This Week's Hot Issues," "Monitor Problems," "Upgrade Central," "TechNotes," and other portlets that deliver information within the

portal pages. The content that is presented is selected and sequenced based on business rules that govern the order of the results and the selection, or filtering, of the results. See Illustration 2.

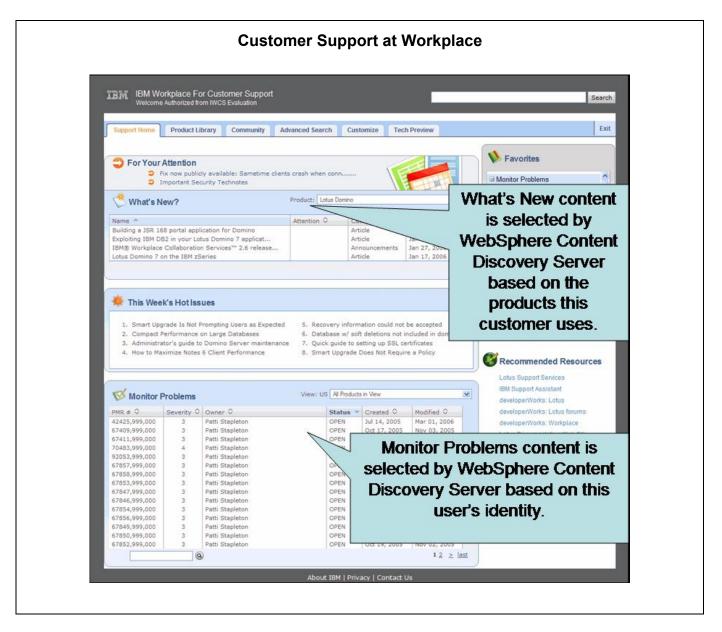


Illustration 2. Administrators and other users of Lotus brand solutions get customized information delivered to their own portal pages. In this example, the portlets present information about specific product/version/releases of Lotus brand products that are used by this customer.

Strategic Examples

The success stories at Campmor, National, and IBM Workplace describe where the leaders are today, and how they got there using search technology and applications. In order to expand our thinking about what terrific search can do in our own organizations, we should consider where trends are taking us.

First, there is more in your information collection than you know, and digging it out can improve operational and strategic decisions. For example, by using text analytics to mine call center records, you can identify negative trends in product quality, early response to a new product, and customer reaction to your policies or competitors' practices. With this information, you are not only aware of the situation but have insight on how to react.

Second, search provides technology to marry databases, or connect data with documents. We have watched companies struggle with integrating customer information for more than a decade, and the problem is far from solved. Search would give employees a stunningly simple way to pull together the information they need in order to support their customers' needs.

This same capability can be used in the customer self-service arena, for example, to query transactional systems to find which order contained the line item for 50 boxes of pens, or for that matter, what brand of pens was last purchased. Of course, this information can be retrieved by pre-programmed database queries, but using search gives the seeker control over what questions can be asked.

Finally, the business trend toward delivering a consistent experience across the customer lifecycle meets its enabler in search, especially search that can be specialized with the addition of ontologies and text analyzers. A solution like WebSphere Content Discovery Server enables one platform to serve as a product finder, a query tool for transaction history, a customer profile aggregator, and a customer support knowledgebase tool. By supporting all of these uses, search becomes the technology base for what we think is the next frontier of the customer experience: a customer's support request can be answered with recommendations for a more appropriate product, a repair part, or maintenance services; and a simple click can purchase the solution.

Conclusion

We have three suggestions for your journey to terrific search.

Think Globally. As you work through the selection process, we urge you to retain the big picture of search for your company. New technology will fix your immediate search pains, so look past those pains and think about the seeker experience across the lifecycle, the value of federating customer information from dozens of unrelated sources, and the impact on decisions of using search to explore enterprise data. Create a requirements statement that incorporates this broader vision.

Act Locally. Choose a solution that allows you to implement a portion of that vision, quickly gaining results, experience, organizational buy-in, and payback.

Get a Head Start. Requirements are unique to every company, and to every organization within a company. Patricia Seybold Group's no-charge search evaluation frameworks offer a comprehensive head start in your requirements-gathering activity.

Resources:

- Patricia Seybold Group National Semiconductor Case Study (http://www.psgroup.com/detail.aspx?ID=232)
- Patricia Seybold Group Product Search Evaluation Framework (http://www.psgroup.com/detail.aspx?ID=235)
- Patricia Seybold Group Self-Service Evaluation Framework (http://www.psgroup.com/detail.aspx?ID=69)
- Knowledge Navigator Video: www.watchit.com/IBMknopen/?c_acronym=IUIP&bw=WM300
- Content Discovery Demos: http://www-306.ibm.com/software/data/discovery/content/