Learning Personalization and Discovery

The right learning for the right person at the right time

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Executive Summary
IBM invests heavily in training and development to enable IBMers to do their jobs. The company’s “Learning Catalog” contains more than 47,000 different activities. Its intranet contains more than 10 million pages.

Managing so much content requires efficient governance and intelligent technology -- not just for organizing it but also making it “findable” by IBMers and personalized for the individual user.

IBM’s Center for Learning and Development is addressing this challenge with a capability called "Learning Personalization and Discovery." The Center is creating and promoting the adoption of applications, services and logic for finding, personalizing and delivering relevant learning to IBMers based on who they are and what they are trying to accomplish.

This work is an important component of bringing learning closer to the work. It addresses challenges faced by many large companies and governments.

This article…:

- Details why personalization and discovery is important
- Explains our focus areas
- Shares our capabilities and innovations -- including how you can take advantage of them
We are living in the information explosion
We are awash in information from emails, Web sites, instant messages, blogs, wikis, digital images, text messaging, Podcasts, and more. Too many things vie for our attention, and we have too many choices to make.

According to the International Data Corporation publication, “The Diverse and Exploding Digital Universe”, the growth of information verges on a “digital explosion.” The IDC estimates that in 2007 we will have stored 281 exabytes (281 billion gigabytes) of information! And by 2011, that number will be 10 times the amount stored in 2006!

Time magazine voted “You” the person of the year for 2006, indicating that consumers are becoming producers of content via blogs, podcasts, video, social networks and wikis. Technorati estimated in March 2007 that the number of blogs topped 72 million. In other published reports, Yahoo reported 20 billion indexed Internet pages. That equates to a stack of copy paper that would stretch from Boston to Atlanta (1,100 miles).

What about IBM and w3?
Our intranet is certainly large enough to confuse IBMers!

Our w3 is comprised of 10 million Web pages, not including thousands of Lotus Notes applications that are not yet searchable. Ninety-seven percent of IBMers agree that search is a critical tool for getting their jobs done (w3 quarterly survey 2006). Yet IBMers struggle to find results they seek. There are 50,000 to 60,000 w3 searches every day, making w3 search the third most-used IBM application (after w3.ibm.com and BluePages). Search is also being improved with features to increase relevancy, such as page tagging and suggested matches.

According to IDC, the average knowledge worker spends 20-25% of his time trying to find information. Any improvements we can make to information discovery can improve our productivity and our bottom line.

Learning is challenged with content growth that goes beyond traditional classroom and online courseware. We have thousands of content items that are created either by IBMers or by trusted learning sources, such as Skillsoft, Red Books, DeveloperWorks, and Harvard Business School Publishing.
The following breakdown shows learning types available to IBMers from our trusted learning sources. These 47,000 learning activities are based on our Learning search index plus Web Lectures:

47,000 learning activities may not be as large a number as our 10,000,000 w3 pages, but to many it is still too many choices!

Our Focus Areas
To help IBMers find learning faster and more effectively, Learning Personalization and Discovery focuses on:

1. Improving learning search
We need a way to effectively search our collection of 47,000 learning activities.

We also want to make sure that our activities are well integrated with w3 search. w3 search is a core part of working for many IBMers, so it is in everyone’s interest that relevant learning be able to be surfaced at the moment of need.

2. Providing personalization to promote the right learning in the right context
We use a variety of applications and services to personalize learning to particular populations. All of these are reusable in learning programs and communication campaigns. Read on to learn more Learning@IBM Explorer, the Learning Registry, the Find Learning page, the Find Learning by Location page, Edvisor, SmartTips, and EXCaliber.
Focus area 1. Improving Learning Search

We have deployed a new Learning Search which provides more accurate results to IBMers -- and displays our learning content in w3 search results.

Learners receive more comprehensive results, and learning professionals also have more ability to control what appears in the results list.

Our focus on learning searches is working. We average 440,000 searches a month, and in April 2008 we reached a high of 507,000 searches.

This volume reinforces search as a key behavior we must continue to support. Key improvements include:

- Integrating learning into w3 search results
- Controlling search sources via the Learning Registry
- Understanding what IBMers search for by inspecting common search queries
- Working with Portfolio Management to archive obsolete content
- Improving the user experience with suggested matches, more descriptive results and more filtering / sorting.
- Continued improvement based on feedback
Integrating learning into w3 search results
Through a partnership with the w3 search team, we are able to surface learning results on w3 search in addition to the traditional learning-only search. This integration is critical in placing learning closer to work.

For example, suppose you are calling a customer and want to know retail trends. Searching on “retail industry trends” displays learning performance support material:

This integration drives usage to our content. In April 2008, IBMers deep-linked from w3 search to course abstracts within Learning@IBM more than 8,700 times!

Controlling search sources via Learning Registry
A new, federated search provides the ability for learning searches to contain both formal and informal learning activities.

This federated search can import data from trusted learning sources such as:
- Learning@IBM
- Popular / new Books24x7 titles
- QuickViews
- Learning Suites
- DeveloperWork tutorials
- Popular Pass-It-On plans
- Redbooks

Any changes in the trusted source are automatically updated into an application called the “Learning Registry” and shared with both the learning and w3 search tools.
How it works
The Learning Registry creates an XML (structured data) file for each piece of learning content. This XML contains topic titles, descriptions, URL, keywords, as well as a last modified date. The Registry then places these files in a Web folder which IBM’s “OmniFind” search spider crawls and indexes on a regular basis.

The Learning Registry allows control of what is searchable. This provides flexibility to quickly and inexpensively add new trusted learning content as business needs require.
Understanding what IBMers are searching for

Influenced by Peter Morville’s book on the importance of “findability” on the Internet, we created ways to understand what IBMers search for and to improve results based on IBMers’ interests. Using Web analytics, we automatically create monthly reports by job role, business units, and region:

We have also published tips to help learning developers improve the search “hit rate” for content they create.
Partnering with Portfolio Management to archive obsolete content

But improving search is not only about technology. We have partnered with Learning’s Portfolio Management team to review and archive obsolete content in our Learning@IBM learning catalog.

To make this process more efficient, we created a business rule that recommended archiving any course that was more than one year old, had less than 10 enrollees, and not scheduled.

This rule was able to identify the 10% of our catalog most in need of archiving – and made it more likely that future learning searches would return only up-to-date content.

Improving the learner experience with suggested matches, descriptive results and more filtering / sorting

Our new search interface helps IBMers make more appropriate choices. For example, a search on "PBC" shows two popular suggested matches with a "clean" description, plus other relevant choices. IBMers now experience less "noise" with more indicators to find what they need:
Continued improvement based on feedback
Our team monitors our effectiveness based on a feedback widget we have placed on the learning search results page:

We average approximately 2,200 feedback comments per month and it keeps our focus on key issues.

For example, this mechanism allowed us to find a “modify country” bug. After it was fixed, our satisfaction level jumped 6% within a week!

We also created a better way to “find offerings by location” to address another common feedback topic.

Other improvements driven by feedback include:

- Better search tips and FAQs
- Mapping Global Campus course numbers to our new Learning Activity IDs
- Improving the requirement prioritization for our next release

Mockup of our next release
We plan to add indicators of relevancy by displaying enrollment numbers, applicable fees, duration and schedule status. These ideas came directly from IBMers and stakeholders:
Focus area 2. Providing personalization to promote the right learning and expertise.

This section describes our personalization capabilities from Learning@IBM Explorer, the Learning Registry, the Find Learning page, the Find Learning by Location page, Edvisor, SmartTips, and EXCaliber.

Learning@IBM Explorer – a personalized “hello!”

Learning@IBM Explorer is the entry point to learning and career development at IBM. It contains three key sections:

1. Career development guidance
2. Find learning
3. Manage learning

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This helps decrease the time required to find learning and allows learners to discover, organize and integrate their career development in one place.

Learning recommendations personalized via the Learning Registry had 94,500 unique visitors in April 2008.
The Learning Registry makes it happen
We created the Learning registry in order to personalize learning recommendations to IBMers anywhere on w3. It gives us a way to define, manage and publish these recommendations to other learning sites for specific target audiences and page contexts.

The Learning Registry:

- Filters learning based on an IBMer’s w3 profile. This helps employees easily find learning opportunities based on who they are.
- Is context sensitive. It not only includes the ability to surface learning based on who you are (i.e., user profile attributes), but also based on where you are (i.e., your page context).

An example:
Most content on the Know Your Industry site is personalized via the Registry:

How it works
Experts make recommendations in the registry, which then syndicate to sites that request the channels.

Web sites personalizing with registry…
… include Learning@IBM Explorer, Seller’s Workplace, LEADing@IBM, Know Your Industry, Manager portal, Collaboration Central, Innovation and On Demand Education, Sales Learning, and the Learning Developer Zone!
New Find Learning Section (In development)

IBMers felt the need for a more customized Find Learning page. One project manager said, “Can I see some popular learning activities for my job role?”

Using our analytics, we created Web widgets to improve the learner experience. Widgets include:

- Books24x7 titles mapped to interests
- Learning@IBM Popular Enrollments by Job Category
- Top learning searches by Job Category

Combining these widgets and our syndication technology, we created a personalized page for over 21 primary job categories. Now the page is tailored for that “project manager” when she returns to this page!

This web page is heavily used, with 48,000 unique visitors in April 2008:
Find Learning by Location

IBMers using Learning search continually asked us to help them find offerings by location:

“I am trying to search classrooms in Boulder. How would I do that?”

So, we developed a pick list for location:

Our page automatically pre-selects the country based on the learner’s ODW profile, making it easy to:

• Find offering by location
• Sort by column heading
• Enroll by deep linking to scheduled sections within Learning@IBM

We asked those who provided feedback to test this improvement:

• “Excellent! This page is exactly what I was looking for. This feature is critical for me to find classes in my area - thank you so much for implementing it. I'm guessing it will save me an hour or so each time I use the site (before I had to find classes I was interested in, then search to see if they were near me).”

We launched to US and Canadian employees from the "Important updates" box on the Find Learning Page on Learning@IBM Explorer. Now we are monitoring feedback from IBMers and are planning a global launch.
Edvisor provides deeper personalization
Edvisor is a reusable-learning tool for large scale learning programs that require personalization or programs requiring a learning blend. It goes beyond profile-based personalization. It selects, links to, and tracks learning activities based on a learner's needs and the program's design. An interview sequence of branching questions and assessments creates personalized recommendations.

Edvisor can create an unlimited number of customized learning plans. This is possible without any programming skills by the designer. It has been effective in increasing learner engagement on large-scale learning programs such as LEADING@IBM, Global Sales School, and Your IBM.

Key capabilities include:

Learner engagement: A variety of automatic notification e-mail options helps administrators stay in touch with learners with minimal effort.

Social engagement: A learner can stay more connected with features like “find a buddy,” “ask an expert,” and “lab mates.”

Learning programs using Edvisor:

- Facilitator Zone Learning Plan
- Your IBM Edvisor
- Manager Feedback Program
- Leading@IBM
- Global Sales School

This year we have had **13,800** Edvisor learning plans created so far!
SmartTips… a new way to embed context on a page

SmartTips allow us to move learning moments closer to work. SmartTips allow a large amount of contextual information to be added unobtrusively to any Web page.

They display embedded definitions, learning, examples, and links when a reader hovers over a key phrase within a Web page.

How it works:
A JavaScript file scans a Web page for key phrases and inserts the appropriate content and link on the first match.

Currently, SmartTips are being used on the following Web sites:
- Global Sales School
- Project Executive Portal
- Learning@IBM Explorer
- GTS QuickViews | Mentoring web site
- Agile web site
Embedding expertise with EXCaliber

Have you ever visited a Web page or used an application and wanted instant contextual expertise? Who do you ask? Is that expert available right now?

EXCaliber answers these questions by instantly connecting visitors with available experts.

Experts appreciate how EXCaliber safeguards their time, giving them control over both their availability and the number of simultaneous chats they can have in progress.

EXCaliber allows visitors to rate the quality of their interaction with the expert. Optionally, and with permission, the expert can choose to save the “chat” for potential use as a Frequently Asked Question (FAQ). By re-using answers as FAQs, experts may find they are contacted less frequently as more users are able to get the answers they need when they need them by browsing the FAQs list.

EXCaliber is currently used on over 55 Web sites. Some examples include:

- Learning Developer Zone – Get Learning Design Help
- Human Ability and Accessibility Centre
- Facilitator Zone
- Open Source Wiki
- Exploring Mentoring
- My Learning@IBM Chat Help - Learning Support
- Sales Learning Facebook
- Learning Suites: Ask an Expert Node
- Collaboration Central
Conclusion
This provides an overview of what the Learning Personalization and Discovery team is doing to help recommend and find effective learning by:

- Improving Learning Search
- Improving personalization and expert guidance
- Using analytics and feedback

For more resources, please visit the Learning Personalization and Capability Web page.

Our team is also ready to help you take advantage of these capabilities on your next project. Just contact any of the individuals below:

- **Nabeel Ahmad**
  CAL Intern. Pursuing doctorate at Columbia

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