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# **IBM WebSphere Commerce Suite 6.0**

Rich Ecommerce Services, Flexible Technologies,  
and Elegant Integration with External Applications

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July 31, 2008

## NETTING IT OUT

Many of your customers prefer doing business with you online. They go to your Web sites to learn about your products and services, to find products and/or services that address their needs, to configure and price the products and/or services that they'd like to buy, and to purchase those products and/or services. They also set up and manage accounts with you. When those customers are consumers, we call these activities B2C (business to consumer) ecommerce.

IBM WebSphere Commerce, introduced in 1996, is IBM's B2C (and B2B) ecommerce offering. Its current version is 6.0 Feature Pack 3. IBM WebSphere Commerce was and remains one of the leading software offerings for B2C ecommerce. IBM claims that 1,500 customer organizations have implemented the product. You can deploy it on-premise, hosted, or via SaaS subscription.

On the PSGroup Report Card for evaluating B2C ecommerce product and services, IBM WebSphere Commerce earns "exceeds requirement" grades in Web content, customer and product data, integration, and company viability. It needs improvement in search and analytic functionality.

Without qualification, we recommend that you consider IBM WebSphere Commerce as the software to run your B2C ecommerce site. Its packaged services and easily customizable technologies provide excellent support for the activities that your customers want to perform.

IBM provides a wealth of samples and examples that simplify and speed your implementation and packages an elegant, Web Services-based approach to integration that supports the complete customer cycle—from finding products to receiving them.

## IBM WEBSHERE COMMERCE

### An Ecommerce Market Leader Since 1997

IBM WebSphere Commerce is IBM's B2C ecommerce software offering. The product was introduced as Net.Commerce Server in 1996. Its current version, which was released in December 2007, is Version 6.0 Feature Pack 3. Across the 12 years that it has been available, IBM claims that more than 1,500 customer organizations have purchased and implemented WebSphere Commerce. We've been writing about it since 1998. WebSphere Commerce was and is one of the leading ecommerce applications in functionality, technology, and market penetration across both B2C and B2B implementations in many industry segments.

You can license and deploy WebSphere Commerce in three ways: on-premise via perpetual license from IBM, hosted via perpetual license from IBM, and on demand as Software as a Service (SaaS) via subscription license from IBM's partners. Most WebSphere Commerce customers have on-premise implementations. IBM began offering WebSphere Commerce SaaS deployment just this year. IBM expects to have eight to twelve SaaS implementations by the end of this year.

## Packaging and Pricing

IBM packages WebSphere Commerce in these three packages:

- WebSphere Commerce Express is positioned as an easy-to-install, affordable, yet complete ecommerce package for mid-market companies.
- WebSphere Commerce Professional is positioned as a comprehensive solution. To Express, Professional adds support for workspaces, the recommendations engine, marketing experiments, IBM Gift Center supporting gift registries, and IBM Sales Center for delivering assisted-service.
- WebSphere Commerce Enterprise is the high-end package. To Professional, it adds Extended Sites support as well as comprehensive B2B capabilities.

You can add premium search capabilities to any of the three WebSphere Commerce editions by purchasing and implementing IBM OmniFind Discovery Edition. The WebSphere Commerce catalog is supported as a source for OmniFind. So customers and agents can search to the level of product attributes.

For on-premise and hosted deployments, IBM sells WebSphere Commerce on a pricing model of Value Units (VU), where 100 Value Units equal one CPU. List price per 100 VUs, or, essentially, per CPU, is:

- WebSphere Commerce Professional: \$105,000
- WebSphere Commerce Express: \$21,200
- WebSphere Commerce Enterprise: \$164,000

For SaaS deployments, IBM licenses WebSphere Commerce to business partners who, in turn, offer the product to organizations like yours. The license

model is based on a percentage of aggregate, net online sales for the hosted sites.

In addition, IBM prices Sales Center and Commerce Developer separately on a per-user basis. Also priced separately is the IBM Gift Center, which is priced per group of 25 stores. Commerce Developer is the product's Java development toolset. It's built on IBM's Rational Developer toolset. You'll need it for many customization tasks.

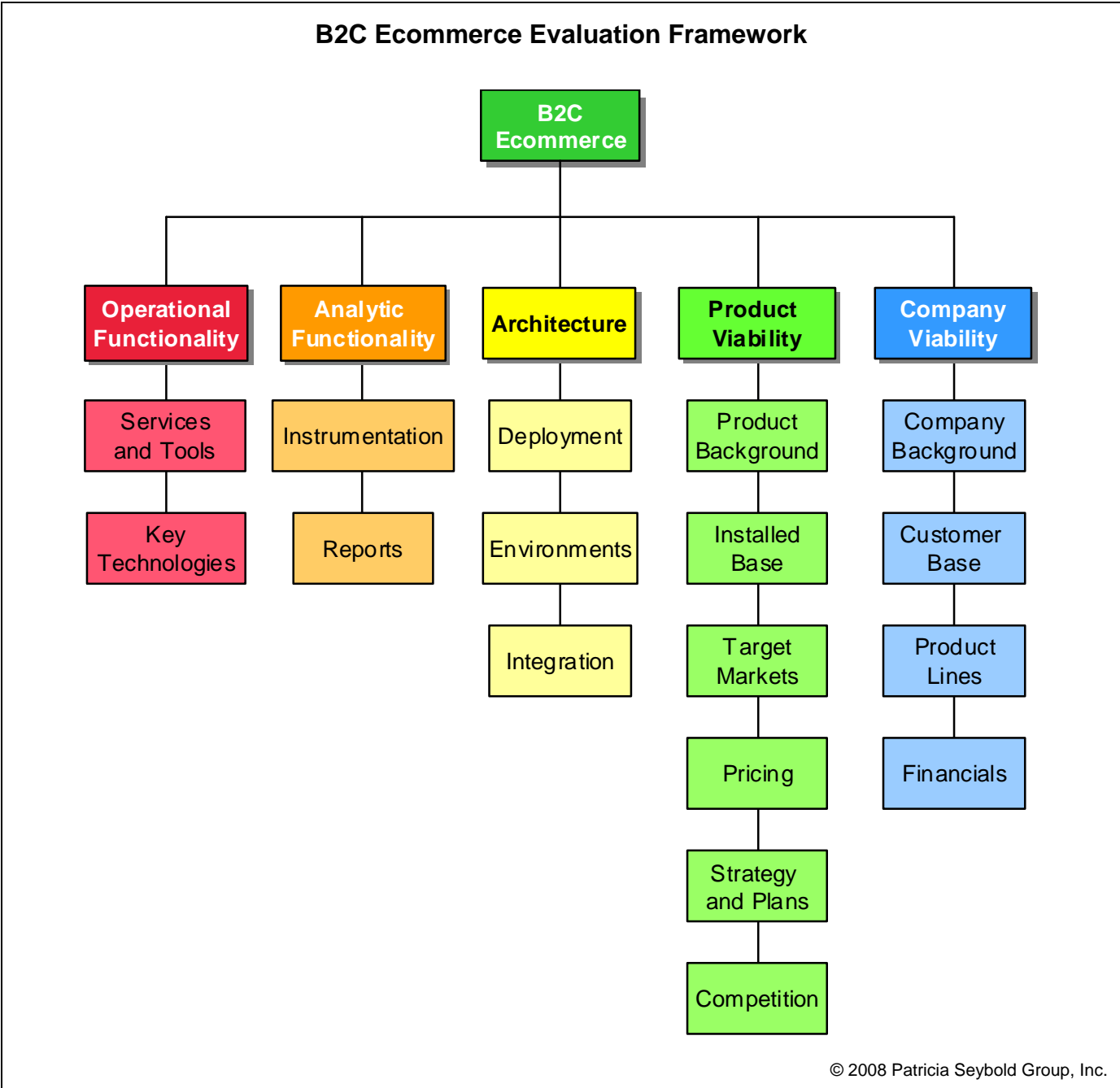
OmniFind Discovery Edition is also priced on the Value Units model. It lists for \$775 per VU, or \$77,500 per CPU.

## EVALUATING IBM WEBSHERE COMMERCE

In this report we evaluate IBM WebSphere Commerce against our framework for B2C ecommerce. The framework has evaluation criteria for:

- Operational functionality, which combines the technologies that you customize, configure, and implement and the packaged software services support customers' activities and your delivery of a branded ecommerce experience.
- Analytic functionality, which provides the capabilities to measure, analyze, and refine your ecommerce experience.
- Architecture, the ecommerce software's supported environments and some detail about its deployment options.
- Product viability, the factors for assessing the business risk in acquiring the ecommerce offering.
- Company viability, the factors for assessing the business risk in doing business with the ecommerce supplier.

We show these top level valuation criteria and their sub criteria in Illustration 1.



*Illustration 1. This illustration shows the evaluation criteria and sub-criteria of the PSGroup B2C Ecommerce Evaluation Framework.*

### The Customers.com Perspective

B2C ecommerce systems are sometimes described as your online marketing and sales applications. That’s not our perspective. We’re the customers.com company. We always have a customer perspective. We believe that if you make it

easy for your customers to do business with you... they will! The measures of all of the systems of your customer experience should be customer satisfaction, loyalty, and profitability.

## Customer Activities

Also, we don't describe our evaluation criteria in terms of your internal processes. Rather, we describe them in terms of the activities that customers perform across the lifecycle of their relationships with you. These are the activities in their Customer Sce-

narios—the sequences of activities that customers want to or need to perform in order to achieve their objectives in doing business with you. Table A lists those activities organized by phase of the customer lifecycle. The core of our evaluation of ecommerce systems is based on their capabilities to support them.

B2C Ecommerce Activities	
Lifecycle phase	Activity
Explore and select	<ul style="list-style-type: none"> <li>• Find products and services that address requirements, needs and wants.</li> <li>• Learn about products and services: features and functions, detailed specifications, warranties and support, prices, promotions, and discounts.</li> <li>• Learn about policies in doing business with you for shipment, payment, returns, and support.</li> <li>• Learn about customer service services, e.g., what's on the Web site.</li> <li>• Be aware of new products, product upgrades, and promotions.</li> <li>• Be aware of changes in order status, changes in business policies, and expirations.</li> <li>• Get case studies, reviews, and references on products and services.</li> <li>• Compare similar products and services.</li> <li>• Select and configure products and/or services.</li> <li>• Price products and/or services and/or get price quotes.</li> <li>• Determine the availability of products and/or services.</li> <li>• Find complementary products.</li> </ul>
Purchase	<ul style="list-style-type: none"> <li>• Checkout and pay for the products and services.</li> <li>• Select payment methods.</li> <li>• Select shipment method.</li> <li>• Specify shipping address(es).</li> <li>• Cancel orders and order items.</li> <li>• Return orders and order items.</li> <li>• Get status of orders, payments, shipments, and returns.</li> <li>• Get assisted-service to help with purchase activities.</li> </ul>
Manage/Maintain	<ul style="list-style-type: none"> <li>• Establish and manage accounts.</li> <li>• View payments and bills, orders and order histories, and returns.</li> <li>• Manage payments and bills, orders, and returns.</li> <li>• Replenish and/or renew product supplies, service entitlements, or service subscriptions.</li> </ul>

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*Table A. In this table, we list B2C ecommerce activities within their lifecycle phases.*

## Merchandising and Marketing

Customers' B2C ecommerce activities don't explicitly mention your activities to promote, cross-sell, and up-sell. However, these internal processes and activities influence how your customers perform their activities to:

- Find products and services
- Learn about products and services: features and functions, detailed specifications, warranties and support, prices, promotions, and discounts
- Find complementary products
- Be aware of new products, product upgrades, and promotions

Effective marketing and merchandising will influence which of your products and/or services that customers decide to find, learn about, select, and, ultimately, purchase. You measure marketing and merchandising by the revenues that they generate, how much of what you promote results in customers' purchases.

The capabilities to support customers' activities are the operational functionality of ecommerce systems. These capabilities are provided by a combination of services, tools, and technologies. The services and tools come ready to use by your customers. For example, every B2C ecommerce product has shopping cart and checkout service and product comparison and gift registry tools. The technologies require customization before they can become part of your ecommerce implementation.

## OPERATIONAL FUNCTIONALITY

Operational functionality is the support of your customers' activities on your ecommerce site. Our evaluation of operational functionality examines how and how well an ecommerce offering's services, tools, and technologies support the customer activities that we listed in Table A. We'll examine the key ecommerce technologies. Then we'll take a look at the services that the ecommerce offering packages by lifecycle phase: first explore and select, then purchase, and finally manage and maintain.

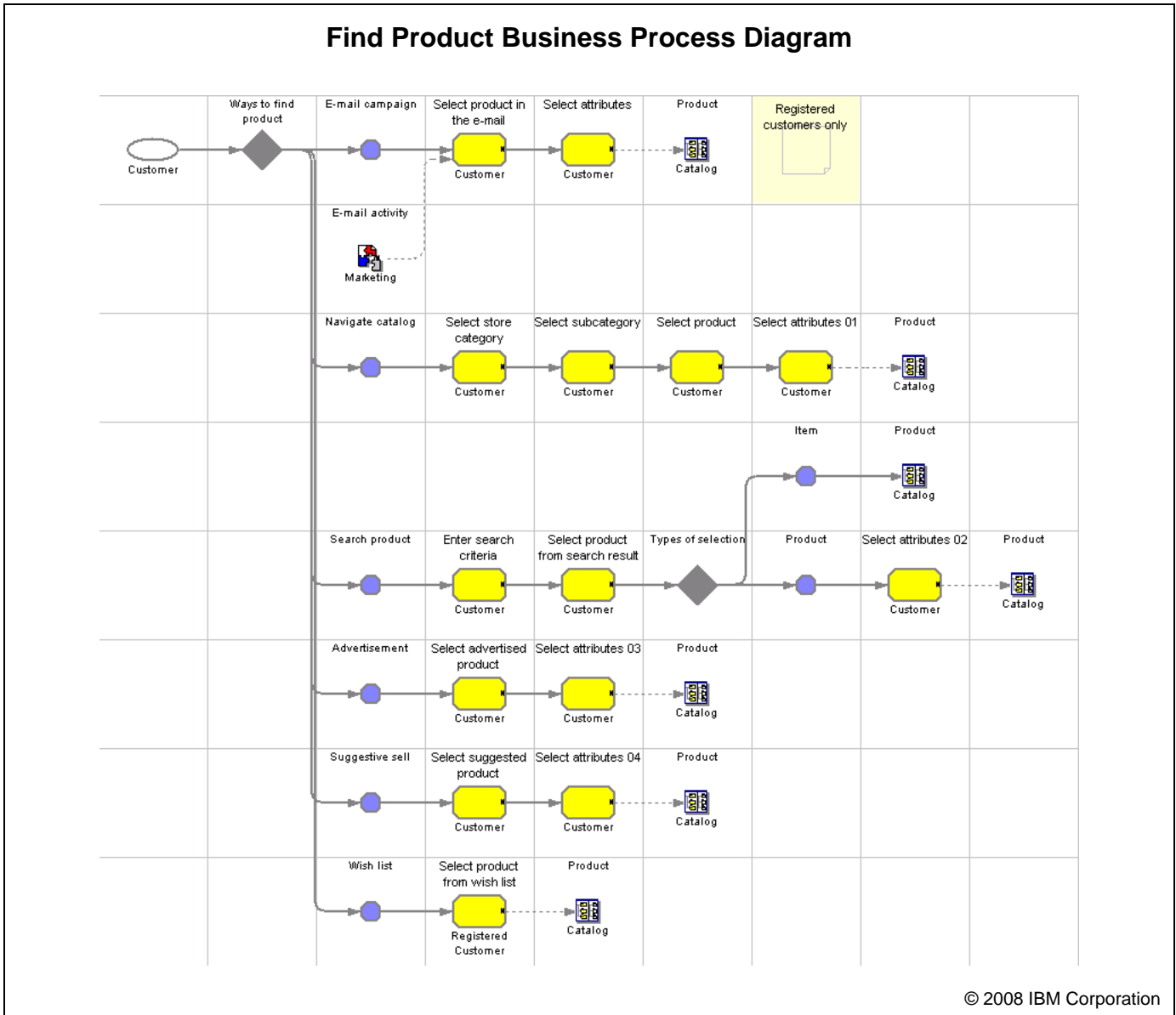
## Business Models and Starter Stores

Before we get to the key technologies in WebSphere Commerce, we'd like to discuss its approach to operational functionality. The approach helps you understand the work that you have to do to customize, configure, and deploy a WebSphere Commerce store and your work to manage it.

IBM organizes WebSphere Commerce resources, sample sites, and documentation by business model and business process. A business model represents a sample business situation in which the WebSphere Commerce product may be used. A business model describes a scenario in which various parties use WebSphere Commerce to achieve their needs. These are the packaged business models:

- Consumer direct is the B2C business model. It supports transactions involving products, services, or information directly between businesses and consumers.
- B2B direct is the business model that supports ecommerce transactions involving products and services between two businesses or parties.
- Hub is the business model used by the demand chain, the supply chain, and extended sites. A hub enables customers or partners to access products or services available from one or more partners or clients of the hub owner through the use of other stores on the site.
- Extended Sites is the business model that enables a selling organization to provide unique storefronts for different customer segments or showcase a number of branded storefronts. These extended sites share a single master catalog. Each store within a site has its own sales catalog, which is a subset of the master catalog (see Product Data), promotions, and presentation information. An extended site store can be a B2B direct or consumer direct store.

Each business model includes business processes for its administration, for its starter store, and for its deployment solution. Administrative processes are organized into process groups. Each process group contains the set of processes relevant to a particular component or to a clearly identifiable area within the



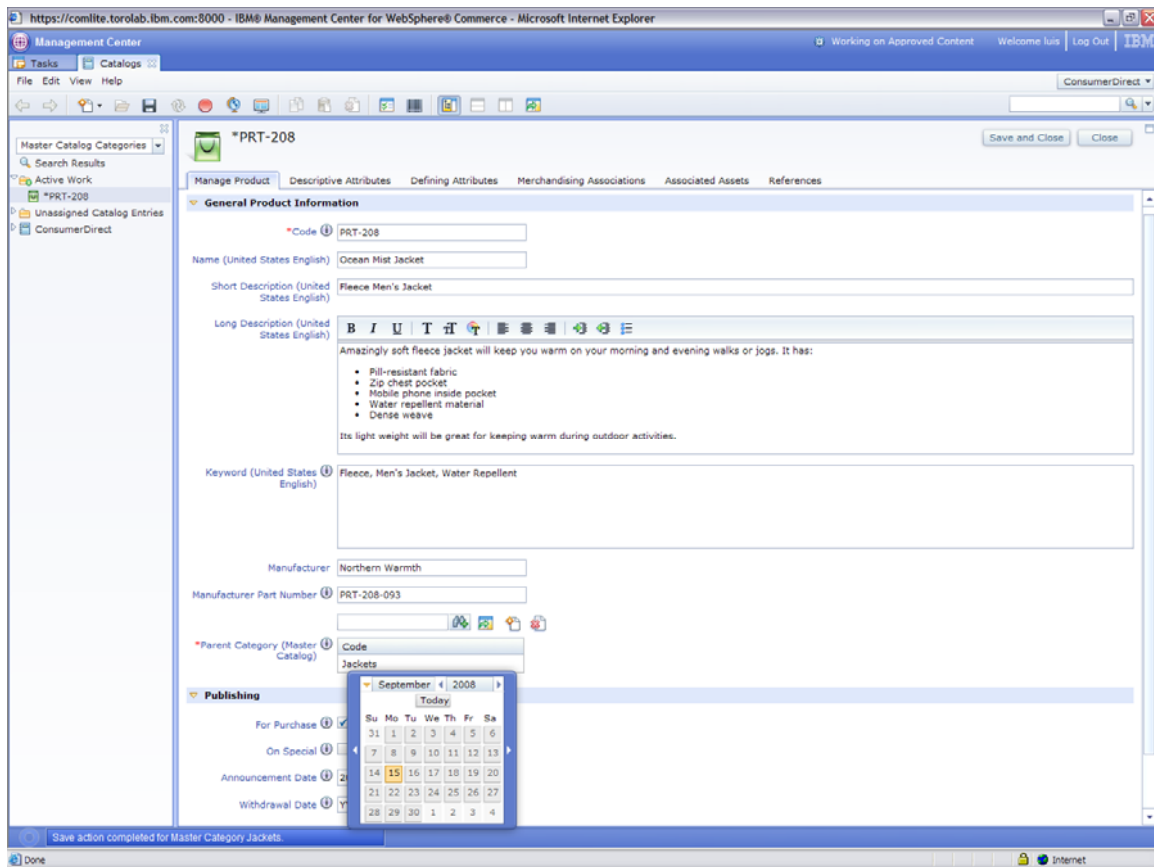
*Illustration 2. This Illustration shows the Find Product business process for a consumer direct starter store.*

business model, such as the catalog. Starter stores, which are complete, ecommerce sample sites, contain sample processes that would be followed by customers of the store. Use the processes described in starter stores as a guideline, or a starting point, for site development. A deployment solution describes the high-level view of how all the administrative processes and starter store processes fit within the business model. The business processes are documented with process diagrams that show the process's tasks, task sequence, and roles. The process

diagrams also present the objective, description, features, and potential customizations of the business process. The tasks are implemented by services that are packaged in WebSphere Commerce. Illustration 2 shows the Find Product business process for a consumer direct starter store.

Business models and business processes really help you understand the work that you'll need to do to customize, configure, deploy, and manage a WebSphere Commerce store. They'll also help you understand roles and staffing. We felt that the starter

## Management Center Workspace for Catalog Management



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*Illustration 3. This Illustration shows the UI workspace for managing the Catalog.*

store processes reflected customer activities very well. They helped us understand the capabilities of the product.

### Tools

Over the years of its product history, IBM has continually enhanced the tools in WebSphere Commerce that administrators, marketers, merchandisers, and product managers use to create and manage the assets and resources of a store. The latest generation of these tools is called Management Center, which was introduced within Feature Pack 3 of WebSphere Commerce 6.0 in December of 2007.

Management Center provides tools that let business users perform tasks to create, update, and main-

tain merchandising and marketing assets in stores using the consumer direct and B2B business models. More specifically, you can use Management Center in these three areas:

- Catalog
- Promotions
- Campaigns

Management Center's 2.0 Web UI adds to its usability. Illustration 3 shows the UI workspace for managing the Catalog.

For all of your other administrative, merchandising, and marketing tasks, you'll be using Commerce Accelerator, the previous generation of the tool in WebSphere Commerce. Commerce Accelerator is a



pretty good toolset. It was introduced in 2001 with version 5.1.

Two toolsets is one too many. They make WebSphere Commerce harder to learn, harder to deploy, and harder to manage. On the other hand, developing a comprehensive toolset for a product as broad and deep as WebSphere Commerce is a very large undertaking. IBM's incremental release approach gets the most important and most heavily used tools in the hands of those business users who need and want them sooner than a big bang release. It's an approach that also gives IBM feedback to refine the tools as it proceeds through their development. More modern, more usable tools for catalogs, promotions, and campaigns give you productivity benefits immediately, and the staff that uses them is likely separate from the staff that manages customers and orders.

### Key Technologies and Packaged Services

The operational functionality of an ecommerce offering is implemented by a combination of key technologies that you customize and/or configure, and by packaged services. These key technologies for ecommerce are:

- Web content
- Search
- Customization
- Personalization
- Notifications
- Data
- Integration

Your ecommerce implementation will involve your work to configure and/or customize these technologies and then to deploy them within your ecommerce site. Our evaluation considers the structure of the technologies and the work that you have to do to configure and customize them.

### Tools

You'll be using three sets of tools to perform the work to customize configure, deploy, and manage your WebSphere Commerce implementation:

- Management Center for promotions, marketing campaign, marketing and merchandising support

for Extended Sites, workspaces, marketing experiments, and product data

- WebSphere Commerce Accelerator for personalization, customer data, and B2B
- WebSphere Commerce Developer for Web content, customization, and integration

We discussed Management Center and Commerce Accelerator earlier in this report. WebSphere Commerce Developer is an Eclipse-based Java development environment that's built on top of Rational Application Developer, which is the core development environment from IBM. It helps you optimize and simplify Java 2 Platform Enterprise Edition (J2EE) and Web services development by offering best practices, templates, code generation, and the most comprehensive development environment in its class. Commerce Developer includes support for Java components, enterprise beans, servlets, JSP files, HTML, XML, and Web services.

## WEB CONTENT

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### The Ecommerce UI

You deliver your ecommerce experience to your customers through the presentation of Web content on their browsers. Typically, your ecommerce site will have these types of Web pages:

- Home page
- Landing pages
- Product category and product detail pages
- Shopping cart page
- Checkout page
- Account management pages

B2C ecommerce products should provide examples, templates, and/or reusable samples of these Web pages types. The products might even package or provide access to entire sample sites.

The Web pages that you create by customizing the samples or templates should be manageable within a Web content management system (WCMS), either something packaged as a feature of the B2C ecommerce product or an external system tightly

integrated with the product. It's a bonus if the integrated WCMS is the one that you already use.

**BRANDING, STYLE, LOOK AND FEEL.** Web content for ecommerce is not completely customer-centric. While the Web pages of your site must present access to the tools and services that enable customers to perform the ecommerce activities that we listed in Table A, they must also provide you the mechanisms through which to express and to differentiate your brand, your style, and your approach to look and feel—the things that make your online experience uniquely yours, the things that identify and differentiate you and your brand. In addition, ecommerce offerings should also provide you with the mechanisms to customize the delivery of your brand, style, and look and feel by customer segment, by customer locale or culture, or by product line, product category, or product sub-brand.

**EVALUATING WEB CONTENT.** Our evaluation of Web content technology considers these factors or sub-criteria:

- Approach
- Content model
- Metadata
- Content management services
- Globalization/localization
- Samples and templates
- Brand, style, look and feel

### Web Content in IBM WebSphere Commerce

In Table B, we describe how IBM WebSphere Commerce addresses our criteria for evaluating Web Content. Our analysis follows the Table.

Web Content in IBM WebSphere Commerce	
Criterion	Evaluation description
Approach	<p>IBM's approach to Web content in WebSphere Commerce has these characteristics:</p> <ul style="list-style-type: none"> <li>• Web pages are Java Server Pages (JSPs) that are implemented in JSP files.</li> <li>• JSPs deploy within standard Web pages using the Struts framework or within portal pages using IBM WebSphere Portal, IBM's portal framework. Both follow the Model-View-Controller design pattern.</li> <li>• Web developers use Java development tools to create and manage Web content.</li> <li>• Optionally, you can manage WebSphere Commerce Web content within IBM Web Content Management, a separately priced and packaged Web content management system.</li> </ul>
Content model	<p>The content model for IBM WebSphere Commerce is the Java Server Pages 2.0 specification.</p> <p>IBM uses JavaServer Pages Standard Tag Library (JSTL) 1.0 and adds these custom tags:</p> <ul style="list-style-type: none"> <li>• <code>&lt;wcbase:usebean&gt;</code> instantiates a WebSphere Commerce data bean and automatically populates it.</li> </ul>

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<b>Web Content in IBM WebSphere Commerce (continued)</b>	
<b>Criterion</b>	<b>Evaluation description</b>
Content model (continued)	<ul style="list-style-type: none"> <li>• &lt;wcf:getData&gt; retrieves data objects from a WebSphere Commerce service. The param tag and the contextData are sub-tags of the getData tag. <ul style="list-style-type: none"> <li>○ contextData is a sub-tag of getData that sets a business context data value for a WebSphere Commerce service request.</li> <li>○ param is a sub-tag of getData that adds a named parameter value to the parent tag.</li> </ul> </li> <li>• &lt;wcf:declareContext&gt; Web 2.0 adds the client-side context support to the current page. This tag is a Web 2.0 tag.</li> <li>• &lt;wcf:declareService&gt; adds client-side support for invoking a service request. This tag is a Web 2.0 tag.</li> <li>• &lt;wcf:declareRefreshController&gt; declares a refresh area controller which provides the JavaScript logic that listens to changes in the render context and the model. It refreshes the refresh areas registered to the controller. This tag is a Web 2.0 tag.</li> </ul> <p>Coremetrics, which implements analytic functionality for WebSphere Commerce, uses a set of custom tags to instrument customer behavior on Web pages.</p>
Metadata	<p>Web content managed in JSP files does not have metadata to facilitate its management other than file names.</p> <p>Web content managed within Web Content Management has a rich collection of metadata to facilitate its management.</p>
Content management services	<p>There are no content management services for Web content managed within JSP files.</p> <p>Web Content Management packaged a rich set of content management service.</p>
Globalization/localization	<p>The WebSphere Commerce product is translated into these 10 languages:</p> <ul style="list-style-type: none"> <li>• Brazilian Portuguese</li> <li>• French</li> <li>• German</li> <li>• Italian</li> <li>• Japanese</li> <li>• Korean</li> <li>• Simplified Chinese</li> <li>• Spanish</li> <li>• Traditional Chinese</li> <li>• United States English</li> </ul>

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<b>Web Content in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Criterion</b>	<b>Evaluation description</b>
Globalization/localization <i>(continued)</i>	<p>Translations include the text in software, Commerce Accelerator and Management Center, documentation, user interfaces, and product catalog images and text samples are included in the starter stores.</p> <p>You localize the text, labels, and messages of the Web content in your WebSphere Commerce stores using JSP property files or resource bundles. Property files contain text. Resource bundles store localizable content in a compiled format. Both let you create template-based Web pages that isolate all of the locale-specific content.</p> <p>You must also create and manage locale-specific content in your catalog, the textual descriptions of your products and categories as well as currencies and data formats. WebSphere Commerce will select and present the content corresponding to the locale of the customer's browser or the locale that the customer has explicitly selected from Web content that you present.</p>
Samples and templates	<p>WebSphere Commerce packages a large amount of predefined, reusable, sample Web Content. For example, Starter stores are complete implementations of each of the supported business models including all the Web pages you'll need to deploy them.</p> <p>WebSphere Commerce packages these sample JSP files:</p> <ul style="list-style-type: none"> <li>• Guided sell</li> <li>• Product comparison</li> <li>• Product exploration</li> <li>• Payments</li> </ul> <p>IBM also provides "JSP snippets" which are small modules of JSP code that you can insert into JSP files to perform function such as embedding an e-Marketing spot or displaying an advertisement.</p> <ul style="list-style-type: none"> <li>• Display customization terms and conditions</li> <li>• e-Marketing Spot</li> <li>• Store catalog display</li> <li>• Catalog attachments display</li> <li>• Promotions display</li> <li>• Promotion code form</li> <li>• 3-D Secure</li> </ul>

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Web Content in IBM WebSphere Commerce <i>(continued)</i>	
Criterion	Evaluation description
Samples and templates <i>(continued)</i>	<p>In addition, support for Web 2.0 UIs, which was delivered with Feature Pack 3 in December 2007, packaged Web pages that include Web 2.0 features. The pages are:</p> <ul style="list-style-type: none"> <li>• Product fast finder</li> <li>• Product quick view</li> <li>• Single page checkout</li> <li>• Drag and drop objects</li> <li>• Quick checkout</li> <li>• Interactive marketing spot</li> </ul>
Brand, style, look and feel	<p>Your developers can use JSP development techniques to make your WebSphere Commerce store consistent with your organization's brand, style, and look and feel.</p> <p>The Change Style Wizard let's you customize the look and feel of your WebSphere Commerce store in three ways through XML files that store look and feel characteristics:</p> <ul style="list-style-type: none"> <li>• Styles. Styles determine the look and feel of the store's headers, footers, and sidebars. Each style choice maps to a store directory containing the header, footer, and sidebar JSP pages implementing that style.</li> <li>• Colors. Colors determine the style-color combinations that can be used in the store.</li> <li>• Banners. Banners determine the color-banner combinations that can be used by the store.</li> </ul> <p>In Feature Pack 3, WebSphere Commerce introduced support for Web 2.0 UI features. You can customize these features to match your brand, style, and look and feel.</p>

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*Table B. We describe our evaluation of Web content technology in IBM WebSphere Commerce in this table.*

Web Content in IBM WebSphere Commerce is very good. JSP-based content built by developers without a Web content management system is typical of ecommerce offering. The strengths of Web content in WebSphere Commerce are the Web pages included in the starter stores, the many, many samples and examples, and the support for Web 2.0. Integration with WebSphere Web Content Management, IBM's WCMS, can be a bonus. In our evaluation, we find no significant limitations.

IBM WebSphere Commerce gives you lots of help in your work at branding, style, and look and feel. Web 2.0 support is very good, and the Change Style wizard will let administrators, marketers, and merchandisers share the work with your JSP developers.

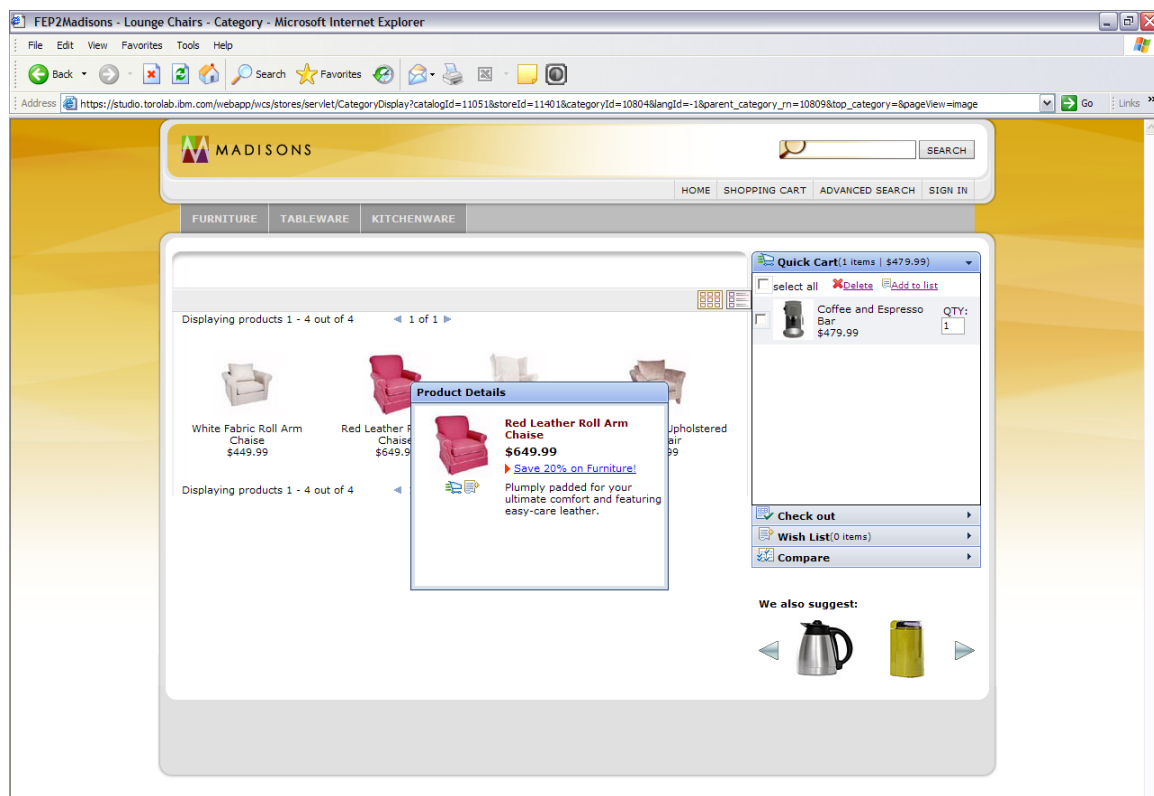
Support for Web 2.0 was added in Feature Pack 2. IBM has done a nice job in this area. We list the tasks supported by the Web 2.0 content in Table C.

<b>Tasks Supported by Web 2.0 Content in IBM WebSphere Commerce</b>	
<b>Tasks</b>	<b>Actions</b>
Add an item or package to the shopping cart	<p>Drag the item into the Quick Cart accordion. The shopping cart and quick cart are updated.</p> <p>A Dojo page view event and a shopping cart view event are both generated by the accordion widget and captured by the Coremetrics event listener.</p>
Narrow products down for easier selection	<p>Click Fast Finder to narrow down and compare products by price, brand, or feature. A Dojo element event is generated by the fast finder widget and captured by the Coremetrics event listener. The event is then relayed and captured by Coremetrics.</p>
Find out more information about a product	<p>Hover the mouse over the product image and a tool tip describing the product displays. If the mouse cursor is left in one spot for 3 seconds or longer, a Dojo product view event is generated by the tooltip widget and captured by the Coremetrics event listener. This event is then relayed and captured by Coremetrics.</p>
Browse products using the page controls	<p>The product list refreshes to the next (or previous) page of product results.</p> <p>A Dojo page view event is generated by the pager widget and captured by the Coremetrics event listener.</p>
Add an item from an e-Marketing Spot to the shopping cart	<p>Place the mouse over the scrollable area in the e-Marketing Spot to stop the scrolling, and drag the item from the e-Marketing Spot into the Quick Cart accordion.</p> <p>The shopping cart and quick cart are updated.</p> <p>A Dojo page view event and a shopping cart view event are both generated by the accordion widget and captured by the Coremetrics event listener.</p>
Add an item to the wish list	<p>Drag the item into the Wish List accordion.</p> <p>A Dojo page view event is generated by the accordion widget and captured by the Coremetrics event listener. This event is then relayed and captured by Coremetrics.</p>
Compare the attributes of products	<p>From the Fast Finder page, drag and drop the items to be compared into the Compare accordion.</p> <p>A Dojo page view event is generated by the accordion widget and captured by the Coremetrics event listener. This event is then relayed and captured by Coremetrics.</p>
Search for a product	<p>The search results page is shown. A page view event is sent when the page is initially loaded passing the search term and number of results.</p>

<b>Tasks Supported by Web 2.0 Content in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Tasks</b>	<b>Actions</b>
Search for a product using advanced search	The advanced search form page is shown. A page view event is sent when the page is initially loaded.
Update the shopping cart	<p>To delete an item, click on the item's checkbox in the Quick Cart accordion and click Delete.</p> <p>To move an item to the wish list, drag it from the shopping cart to the Wish List accordion.</p> <p>To change the product attributes of an item on the Shopping cart page, click the item and use the dropdowns that display.</p> <p>For each of these interactions, the accordion widget generates a Dojo page view event and a shopping cart view event that are captured by the Coremetrics event listener.</p>
Create multiple shipments	<p>Choose the number of shipments in the Select number of shipments field, and drag items from the Quick Cart into the appropriate shipping address accordion.</p> <p>Each time the number of shipments changes, a Dojo page view event is generated with the shipment number as a pagename, and a common shipment category. This event is captured by the Coremetrics event listener.</p>
Checkout using the saved quick checkout profile	Click the Check out accordion.
Checkout as a guest	Click Checkout and then Checkout as a guest user in the Check out accordion.
Remove an item from the shopping cart, or change the quantity of an item	<p>Enter a different value in the Qty (quantity) column for the item. Click Checkout at the bottom of the Shopping Cart page.</p> <p>A Dojo cart view event is generated and captured by the Coremetrics event listener.</p>
Change the number of payment methods	<p>Customers choose the number of payment methods in the Number of payment methods required field, and drag items from the Quick Cart into the appropriate payment method accordion.</p> <p>Each time the number of payments changes, a Dojo page view event is generated with the payment number as a pagename, and a common payment method category. This event is captured by the Coremetrics event listener.</p>
Checkout as a registered user using the standard checkout	Click Checkout at the bottom of the Shopping Cart page.

*Table C. Tasks supported by Web 2.0 content are listed and described in this table.*

## Finding Out More Information about a Product



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*Illustration 4. This illustration shows how IBM has used Web 2.0 technology to support the “find out more information about a product” task.*

From Table C, you can see that Web 2.0 content supports many customer activities in the explore, select, and purchase lifecycle phases. In addition, customer behavior is completely instrumented through Coremetrics events. As a result you'll be able to reuse the Web 2.0 content in your stores changing little except the JSP snippets that place the Web 2.0 widgets in your Web pages. Your migration to Web 2.0 should be pretty smooth. We like the support for “find out more information about a product” task. It's shown in Illustration 4.

Globalization/localization facilities are a little better than what we've come to expect for Java applications. Property files and resource bundles work pretty well for UI content localization by Java developers. Catalogs will be the source of significant, additional localization work for you. Typical of most

ecommerce offerings, catalogs have content that needs localization, too. The category, product, and SKU descriptions that are accessed and presented at the UI also require localization. For example, the detailed product information accessed via Web 2.0 widgets will require localization. Management Center has tools that help business users replicate, localize, and synchronize the descriptive content stored in catalogs, taking the burden off your developers. In addition, IBM does a very nice job of localizing the WebSphere Commerce product. Its implementation in 10 languages should support many markets.



## SEARCH

Customers find out about your company, your ecommerce site, your products, and your promotions using search and navigation technologies. They may want to search within your ecommerce site for similar products, they may want use Internet search to find you and your products, and they may want to browse the pages of your site or your product catalog.

B2C ecommerce products should include or integrate search capabilities that help customers find data and content in your ecommerce site including:

- Products
- Product descriptions and specifications
- Product categories
- Product attributes
- Policies

They should include tools for managing search sources, for managing search results, and for monitoring, measuring, and analyzing customers' use of search and of search processing.

**EVALUATING SEARCH.** Our evaluation of search technology considers these factors or sub-criteria:

- Approach
- Search sources
- Source management
- Metadata
- Search queries and analyses
- Results management

### Search in IBM WebSphere Commerce

In Table D, we describe how search in IBM WebSphere Commerce addresses our search evaluation criteria. Our analysis follows the table.

<b>Search in IBM WebSphere Commerce</b>	
<b>Criterion</b>	<b>Evaluation description</b>
Approach	<p>WebSphere Commerce uses IBM OmniFind Discovery Edition, one of IBM's general-purpose search engines, to deliver search and navigation capabilities to WebSphere Commerce customers and agents.</p> <p>WebSphere Commerce product catalogs are supported as OmniFind Discovery Edition search sources. OmniFind indexes them and enables their search to the level of product attributes.</p> <p>OmniFind also supports e-Site Concepts, the Web content that contains WebSphere Commerce promotions for extended sites, and e-Marketing Spots, the WebSphere Commerce Web content that contains promotions for B2C and B2B sites, by providing capabilities to define business rules to cross-sell, up-sell, and promote products.</p> <p>OmniFind includes dynamic navigation, natural language search queries, contextual understanding, stemming, spelling correction, and thesaurus/synonym support.</p> <p>OmniFind has a WYSIWYG toolset for managing the search experience, including tools for defining business rules to target product promotions and tools for rapid UI development.</p>

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<b>Search in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Criterion</b>	<b>Evaluation description</b>
Search sources	<ul style="list-style-type: none"> <li>• WebSphere Commerce Server catalogs</li> <li>• HTTP/HTML</li> <li>• Files</li> <li>• XML</li> <li>• Lotus Notes</li> <li>• Siebel</li> <li>• Interwoven TeamSite</li> </ul> <ul style="list-style-type: none"> <li>• DB2</li> <li>• Microsoft SQL Server</li> <li>• Oracle</li> <li>• MySQL</li> <li>• ODBC</li> <li>• JDBC</li> <li>• Custom</li> </ul>
Source management	All content sources can be specified and managed using the Management Console. Content can be acquired from a single source or from multiple sources. After acquiring the content, OmniFind Discovery Edition applies any metadata, knowledge, or grammar rules, and generates search indices.
Metadata	OmniFind Discovery Edition automatically discovers findability metadata from search sources during its indexing process. WebSphere Commerce catalog metadata are catalog, catalog group, and catalog entry attributes. Administrators can modify this metadata.
Search queries and analyses	<p>Search queries are text strings entered by customers or agents in natural language. Queries may include wildcards and Boolean operators.</p> <p>OmniFind Discovery Edition processes search queries in these three key stages:</p> <ul style="list-style-type: none"> <li>• Query Interpretation performs natural language analyses: <ul style="list-style-type: none"> <li>○ Tokenizing and stemming</li> <li>○ Spell checking</li> <li>○ Removing stopwords and other extraneous terms</li> <li>○ Adding synonyms</li> <li>○ Expanding wildcards</li> <li>○ Interpreting Boolean operators</li> </ul> </li> <li>• Response Retrieval access search sources and retrieves content that best matches the interpreted search query. Matching takes into account factors including quality of the search source, concepts and phrases actually contained in the result, and completeness of the result.</li> <li>• Response presentation delivers search results to the UI.</li> </ul>
Search results management	<p>Administrators use the OmniFind Discovery Edition Management Console to manage the presentation of search results to customers and agents. Options include:</p> <ul style="list-style-type: none"> <li>• Changing the order of results presented (Relevance is the default)</li> <li>• Categorization and navigation by facets</li> <li>• Level of detail</li> <li>• Sidebars</li> <li>• Voiceover</li> </ul>

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*Table D. We describe our evaluation of search technology in IBM WebSphere Commerce in this table.*

## OmniFind Discovery Edition Catalog Search Results

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Illustration 5. This illustration shows an example of a catalog search results page.

OmniFind Discovery Edition provides premium search capabilities improving search in WebSphere Commerce over the SQL-centric approach of “native” WebSphere Commerce. Strengths are the range of search sources, rich search query analyses, automatic metadata extraction, and results management—all of our evaluation criteria. For example, Illustration 5 shows an example of a catalog search results page. The products that best match the search query are shown in the middle of the page., Categorized results facets that customers can navigate to refine their queries and narrow results are shown on

the left. They’re automatically generated by OmniFind.

On the other hand, there are limitations in the area of integration between OmniFind Discovery Edition and WebSphere Commerce.

- OmniFind Discovery Edition Management Console is another toolset that your administrators have to implement, learn, and use to support search. Integration with WebSphere Commerce Management Center would be a better approach.

- OmniFind Discovery Edition instruments search activities quite well, but its instrumentation overlaps WebSphere Commerce instrumentation.
- OmniFind Discovery Edition produces a set of reports that are in addition to, and independent of, all the other WebSphere Commerce reports. Search is integral to your merchandising efforts. You need an integrated view of their results.

Support for OmniFind Discovery Edition in WebSphere Commerce was first introduced in September 2006 with version 6, Feature Pack 1. IBM plans to enhance OmniFind to improve its e-commerce capabilities. Improvements in the next release of OmniFind Discovery Edition, currently scheduled for 2H2008, focus on WebSphere Commerce. These improvements include support business rules that make it easier for marketers and merchandisers to up-sell, cross-sell, and promote within search results and tools for customizing the search query and search results UI.

These improvements do not address the limitations that we identified in the current release. OmniFind Discovery Edition is certainly a premium search engine, but it feels like IBM added support for WebSphere Commerce catalogs and then just made it available with WebSphere Commerce. We'd like to see tighter integration.

## CUSTOMIZATION

Customization is the specialization of B2C e-commerce resources to customer segments and product domains/categories, including:

- Ecommerce services
- Promotions
- Catalogs and products
- Prices
- Ordering and fulfillment
- Accounts

For example, you might have special prices for your "platinum" customers, or you might notify all customers who've purchased a product that you've discovered has a serious defect. Customizations are

planned, developed, tested, and deployed. You don't customize in real time.

B2C e-commerce products and services should allow customization of these e-commerce resources and should provide appropriate tools for doing the customizations and managing them.

**EVALUATING CUSTOMIZATION.** Our evaluation of customization examines the approach and facilities available within IBM WebSphere Commerce and its related products for customizing:

- Ecommerce services
- Promotions
- Catalogs and products
- Prices
- Ordering and fulfillment

## Customization in WebSphere Commerce

Customization in IBM WebSphere Commerce is very good. Overall, the product is very flexible. Your implementation of a WebSphere Commerce site is an exercise in customization and configuration. In addition, IBM provides excellent documentation on the functionality, processing, interfaces, and internal structure of all of the e-commerce resources that you should consider customizing and includes a wealth of samples and examples for every type of customization.

Most customizations requires programming skills, but, with the new Management Center, business users like marketers, product marketers, and merchandisers can customize many aspects of promotions, notifications, and product data.

Let's take a close look at each customization area.

## Customizing Ecommerce Services in WebSphere Commerce

WebSphere Commerce is built on a three-layer architectural model. The three layers are:

- Presentation
- Business logic
- Persistence

In Feature Pack 3 of WebSphere Commerce 6.0, IBM introduced a new internal structure, the Business Object Document (BOD) command framework. BODs are well-defined interfaces between the appli-

cation layers that decouple the implementation of the presentation layer, business logic layer, and persistence layer. From the business logic layer perspective, BODs are OAGIS (Open Application Group Integration Specification) messages that represent requests from the presentation layer to retrieve data or to execute services. The business logic layer uses BODs to encode these requests and to deliver responses to these requests to the presentation layer. The BOD command framework provides the capability to process these BOD requests and responses. In a little more detail, business logic in the BOD command framework is organized into service modules:

- A service module (also referred to as a component) is a collection of related business objects. The purpose of service modules is to provide services to get, change, or execute a business process on those business objects. For example, the Catalog service module is made up of the Catalog, CatalogGroup, and CatalogEntry business objects (the key object types in WebSphere Commerce catalogs).
- Service modules are deployed as EJB modules with the necessary J2EE deployment descriptors for Web Service enablement and are implemented as WebSphere Commerce commands.
- A service module could follow two types of implementations: 1) SOI implementation, which uses existing WebSphere Commerce data beans and controller commands and provides a service interface to the existing business logic of WebSphere Commerce, and 2) BOD/BOM (Business Object Module), which, unlike existing controller commands, uses a structured Java object for input. In this BOD/BOM model, a set of abstract commands have been implemented to take advantage of structured objects and to provide logic that follows the OAGIS request processing patterns. This model can reduce upgrade costs because all of the logic is isolated in one layer.

So, customizing e-commerce services in WebSphere Commerce involves understanding the interfaces and internals of SOI and BOD/BOM implementations and modifying or extending their components. The design of the BOD framework and

tools that IBM packages with it really help your developers perform customization work. The BOD programming model on which the BOD framework is built has four design patterns for service modules:

- Get, which retrieves and displays information from Web services.
- Change, which converts the BOD request into a set of name-value pairs and delegates to an existing WebSphere Commerce controller command.
- Process, which also converts the BOD request into a set of name-value pairs and delegates to an existing WebSphere Commerce controller command.
- Sync, which also converts the BOD request into a set of name-value pairs and delegates to an existing WebSphere Commerce controller command.

Developers use the Design Pattern Toolkit of Commerce Developer to generate template code for each of these design patterns from a design pattern definition file. Then they add the business-specific code of their customizations.

Wait a second here. You can see that the change, process, and sync design patterns are alike. That's because WebSphere Commerce architecture is in transition. Some of the internal structure has been reengineered to work with BODs, but much of it is still built on the command framework. Change, process, and sync provide a migration path from the old to the new. So, similarly to the migration from the Commerce Analyzer to the Management Center toolsets for business users, IBM is also migrating incrementally to a BOD internal structure from the previous command and command task structure. To customize services, you'll have to learn both structures. That's a bit more of a burden than having to learn two toolsets. You also run the risk of having your customizations of command framework services be obsoleted when the underlying commands are replaced by BOD services. Also, the BOD framework is quite different than the command framework. You might need some help from IBM in learning and using it to customize WebSphere Commerce services.

Newness aside, the BOD framework is clean and elegant. It's another demonstration of IBM leadership in Web Services and SOA. Note that IBM has been evolving the architecture of WebSphere Commerce continually. The application started as a CGI application. IBM rewrote it in Java and then reengineered the Java code into a modular Enterprise JavaBean structure on which the command framework is built. The BOD framework is the next step, and IBM is leading the way across the industry with this SOA approach.

### Customizing Promotions in WebSphere Commerce

WebSphere Commerce packages three types of Promotions and several default implementations of each of them. Note that promotions are based on the entities in WebSphere Commerce catalogs. Specifically, categories and catalog entries. Catalog entries are the items that you sell: products and SKUs. We'll describe and analyze WebSphere Commerce catalogs in more detail in "Product Data," later in this report.

The types and default implementations of promotions in WebSphere Commerce are:

- Product Level Promotions
  - Percentage off a catalog entry
  - Fixed amount off each SKU of a product
  - Percentage off each SKU of a product
  - Buy a catalog entry, get a different catalog entry free
  - Buy a catalog entry, get an additional catalog entry at a discount
  - Buy a catalog entry, get percentage discount off a different catalog entry

- Fixed amount off per catalog entry from a category
- Percentage off per catalog entry from a category
- Buy catalog entries from a category, get a catalog entry free
- Buy catalog entries from a category, get additional catalog entries from that category at a discount
- Order Level Promotions
  - Percentage off on order
  - Fixed amount off on order
  - Free gift on order
  - Fixed amount off subtotal of catalog entry X
  - Percentage off on subtotal of catalog entries from category X
  - Fixed amount off on subtotal of catalog entries from category X
- Shipping Promotions
  - Fixed cost shipping (includes free shipping)
  - Discounted shipping for an order using a selected ship mode
  - Discounted shipping for all items using a selected ship mode
  - Discounted shipping per item using a selected ship mode

Marketers, product marketers, and/or merchandisers use the tools of Management Center Commerce Accelerator to create Promotions based on the packaged types and default implementations listed above. For each, they specify the attributes listed and described in Table E.

<b>Evaluating Customization in IBM WebSphere Commerce</b>	
<b>Attribute</b>	<b>Description</b>
Key	The key, which comprises a store reference, a name, a version number, and a revision number, identifies a promotion.
Campaign	Optionally, a promotion can belong to a marketing campaign.
Description	A promotion can have multiple descriptions, each in a different language.
Priority	A promotion's priority helps the promotion engine sequence multiple promotions and helps determine whether a given promotion will be applied.
Exclusivity	A promotion can be non-exclusive or exclusive within its own group, or it can be globally exclusive.
Status	A promotion can be active, inactive, obsolete, suspended, or deleted.
Last update	The last time a promotion was updated. WebSphere Commerce manages this attribute.
Last update by	The ID of the last person who updated the promotion. WebSphere Commerce manages this attribute.
Redemption limits	A promotion can have three different redemption limits associated with it: <ul style="list-style-type: none"> <li>• Per Order Limit is the maximum number of times a promotion can be redeemed within a given order.</li> <li>• Per Shopper Limit is the maximum number of times a promotion can be redeemed by a registered customer.</li> <li>• Overall Limit is the maximum number of times a promotion can be redeemed overall.</li> </ul>
Schedule	A promotion's schedule is a start and end date, a list of week days on which a promotion is active, and a time period during the day during which a promotion is active.
Coupons	A promotion can be marked as targeted to customer segments, excluded from a customer segment, or marked as private. Marketers assign private promotions to individual customers.
Promotion code	Marketers can assign one or more promotion codes to a promotion and can require that customers specify the code in order to redeem the promotion.
Targeting condition	A promotion can be targeted to customer segments, excluded from customer segments, available to all customers, or available to individual customers.

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Evaluating Customization in IBM WebSphere Commerce <i>(continued)</i>	
Attribute	Description
Custom conditions	Custom conditions further qualify promotion targeting. If satisfied, the promotion is applied.
Purchase condition	A purchase condition defines the purchases a customer must make to qualify for a promotion. Purchase conditions have patterns and distributions. Together they provide support for volume discounts and tiered volume discounts.

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Table E. Attributes of promotions are listed and described in this table.

Business users (marketers, product marketers, and merchandisers) use the Management Center tools to create new Promotions. Creating Promotions involves specifying values for their attributes, selecting the purchase condition, dates the promotion will be valid, target customer segments, and then adding appropriate content for promotion display within Web content or in emails. As with all WebSphere Commerce content, your developers use Commerce Developers to create content for Promotions.

Business users can create new implementations of each Promotion type and of new Promotion types and new implementations of them. Product documentation describes the steps that developers should follow for customizing Promotions and provides samples and examples of the Promotions customization process. The steps are:

- Determine the purchase condition of the custom Promotion.
- Determine the reward of the custom Promotion.
- Specify the custom Promotion in XML.
- Extend Commerce Accelerator and/or Management Center to support the custom Promotion (so marketers, product marketers, and merchandisers can use it).

The design and specification of a custom Promotion' purchase condition and reward are tasks for marketers, product marketers, or merchandisers. Specification of custom Promotion XML is a task for XML developers, and IBM documentation includes a sample Promotion XML file that developers

can reuse. Extending Management Center to support new Promotion types and implementations is a task for developers, too. With the custom Promotion specified and Management Center extended, marketers, product marketers, and merchandisers can create and deploy instances of custom Promotions in your store.

#### CUSTOMIZING PROMOTIONS AT RUNTIME.

The Promotions Engine determines what Promotions get offered to customers. Its processing is performed in these stages:

- Build an *agenda* of the list of all the Promotions to be evaluated and of the Promotion policies for each Promotion in the list.
- Create a Promotion *context* for each item in the Promotion agenda.
- Determine the sequence for evaluating each item in the Promotion agenda.
- Evaluate each Promotion for its applicability and tentatively apply each applicable Promotion.
- Apply Promotion policies, rules that limit the application of Promotions, to each applicable Promotion. Promotion Policies use Redemption Limit, Targeting Condition, Custom Condition, and Purchase Condition attributes of Promotions. The Promotions Engine uses these default Promotion Policies:
  - A group level only policy that prevents any order items from being targeted or affected by a promotion more than once.



- A global level policy that enforces the exclusivity of promotions at the global level.
  - A group level policy that enforces the exclusivity of promotions at the group level.
  - A global level or group level policy that checks if the order total is less than or equal to zero after a promotion is applied.
  - A global level or group level policy that allows just one promotion governed by this policy to be applied to an order.
  - A global level or group level policy that allows just one promotion governed by this policy to be applied to an order. If this policy is registered with a group, only one promotion in the group can be applied to an order. If this policy is registered as a global policy, only one promotion can be applied regardless of group membership.
  - A global level or group level policy that enforces the redemption limits on a promotion.
- Apply Promotions that are applicable and that do not violate Promotion Policies.

Your developers can customize the processing of the Promotions Engine by modifying the default Promotions Policies or creating new policies, WebSphere Commerce documentation provides instructions and sample code.

**OUR TAKE ON CUSTOMIZING PROMOTIONS.** Promotions in WebSphere Commerce are extremely flexible. You can create custom implementations of predefined types, new types, and you can even customize the processing that evaluates, selects, and applies them. Customization work is a reasonable mix of tasks for developers along with tasks for marketers and merchandisers.

### Customizing Catalogs and Products in WebSphere Commerce

Your implementation of catalogs and the products that they contain is a customization process. By default, your IBM WebSphere Commerce store has a single, “Master” Catalog and any number of Sales Catalogs that contain a subset of the products in the

Master Catalog. We discuss the structure and content of catalogs in the section “Data,” below.

### Customizing Prices in WebSphere Commerce

For B2C ecommerce, WebSphere Commerce manages prices as Price attributes of Catalog Entries. See Data, below. Your options to customize prices are via product data customization, promotions, and business accounts. None is very appealing or practical.

You can create custom price fields in product data to contain segment or customer-specific prices. Then you have to customize all services and content that uses the standard Price attribute to use the appropriate customer Price attribute. That’s a big job, and it requires developer skills. Note that Management center and Commerce Accelerator will not “see” these prices.

Alternatively, you might create custom promotions to generate prices other than the Catalog Entry Price for customer segments or for individual customers. These promotions will generate prices one product at a time when customers request prices or when they add products to their shopping carts. Display of product data will bear the overhead of that price generation.

B2B business accounts are considerably more complex.

- Organizations have Business Accounts
- Organizations have contracts
- Contracts have price lists

You have to make consumers appear like organizations and consumer accounts look like business accounts. You also you have to create and manage contracts and price lists for customer who should receive alternative prices. At the same time, you have to insulate customers from organizations and contracts when they manage their accounts. The approach looks quite complex and potentially messy.

## Customizing Ordering and Fulfillment in WebSphere Commerce

The WebSphere Commerce Order Management System provides the services that support shopping carts, order capture, order fulfillment, inventory, and payment. Its services are organized into these order processing phases:

- Order capture provides functionality, such as sales quotes, shopping carts, and order submission. Order capture is performed within WebSphere Commerce.
- Order processing coordinates inventory allocation, payment processing, releasing the order to fulfillment, and tracking order status. Order processing is performed both in WebSphere Commerce and in external order management, inventory management, and fulfillment systems. WebSphere Commerce provides scenario-based integration with these external systems.
- Inventory services support four inventory processing approaches: Available to promise (ATP), non-ATP, no inventory, and external inventory. Inventory services are performed by external systems. WebSphere Commerce requests those services and reflects the status of their processing. WebSphere Commerce provides scenario-based integration with external inventory systems.

- Payment processing services support the use of payment plug-ins for offline or online payment processing. Payment services are performed by external systems. WebSphere Commerce requests those services and reflects the status of their processing.

IBM expects that you'll customize OMS and provides mechanisms to facilitate customization in these areas:

- Configuration of inventory processing
- Configuration of fulfillment processing
- Integration with external inventory management, order management, and/or fulfillment systems
- Integration with accounting systems/ERP systems

We discuss the integration technology and facilities in Integration, below. Integration with external systems uses Web Services and requires developer skills and development tools. On the other hand, product marketers and administrators can configure inventory processing and fulfillment processing. What it takes is described in Table F.

Customizing Ordering and Fulfillment in IBM WebSphere Commerce	
	Evaluation description
Products	<p>You configure fulfillment for products using the Product wizard and the Product notebook of Commerce Accelerator of the catalog management tool in Management Center. Configuration options are:</p> <ul style="list-style-type: none"> <li>• Track inventory</li> <li>• Allow backorders</li> <li>• Force backorders</li> <li>• Release the product separately</li> <li>• Specify that the product should not be returned.</li> </ul>

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Customizing Ordering and Fulfillment in IBM WebSphere Commerce <i>(continued)</i>	
	Evaluation description
Inventory	<p>WebSphere Commerce supports two inventory systems: Available to promise (ATP) and non-ATP. ATP inventory consists of on-hand inventory minus reserved inventory and inventory allocated for backorders.</p> <p>You specify which inventory management approach to take by setting a configuration flag in the Store database. More specifically, the INVENTORYSYSTEM column in the Store database has values -1, -2 or -3 depending on whether the store is using ATP, non-ATP or no-inventory respectively.</p> <p>If you use ATP inventory management, WebSphere Commerce provides the functionality of these services. Their names describe their functionality.</p> <ul style="list-style-type: none"> <li>• Allocate Inventory</li> <li>• Get Eligible Fulfillment Centers</li> <li>• Check Inventory Availability</li> <li>• Allocate Existing Inventory</li> <li>• Deallocate Existing Inventory</li> <li>• Allocate Expected Inventory</li> <li>• Deallocate Expected Inventory</li> <li>• Reserve Inventory</li> <li>• Adjust Inventory Reservation</li> <li>• Manage Inventory Cmd</li> <li>• Do Inventory Action Cmd</li> </ul>
Fulfillment	<p>WebSphere Commerce stores use fulfillment centers as both inventory warehouses and shipping and receiving centers. You specify the fulfillment centers used by your store using the Commerce Accelerator Store menu or within XML files that you insert into the Fulfillment Center table in the Store database. WebSphere Commerce provides a sample In its documentation.</p> <p>You configure fulfillment centers by setting values for these properties using Commerce Accelerator:</p> <ul style="list-style-type: none"> <li>• Maximum releases per pick batch. The maximum quantity of order releases contained in each pick batch when a pick batch is generated.</li> <li>• Minutes delayed. The delay in minutes from the time an order is released to fulfillment until one of its releases can be picked in batch.</li> <li>• Drop ship. Indicates whether the fulfillment center is a drop-ship fulfillment center.</li> </ul>

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*Table F. We describe how administrators and product marketers configure inventory and fulfillment processing in WebSphere Commerce in this Table.*

WebSphere Commerce takes a practical approach to ordering and fulfillment. It assumes, quite correctly, that external systems handle this processing and provides the mechanisms that let you support that processing and that integrate with those systems.

**PERSONALIZATION**

Personalization is the real-time specialization of Web content and promotions to customer segments, customer groups, and individual customers based on customer identity, behavior, and context. Personalization is accomplished through the execution and evaluation of rules and/or analytics that result in the selection, placement, and display of Web content.

B2C ecommerce products should support personalization and should provide the tools to develop, test, deploy, measure, and analyze personalization. The products should also provide guidelines and best

practices on the impact of personalization on system performance.

**EVALUATING PERSONALIZATION.** Our evaluation of personalization technology considers these factors or sub-criteria:

- Personalization approach
- Resources that can be personalized
- Rules and analytics
- Tools and management

**Personalization in IBM WebSphere Commerce**

In Table G, we describe how personalization in IBM WebSphere Commerce addresses our evaluation criteria. Our analysis follows the Table.

<b>Personalization in IBM WebSphere Commerce</b>	
<b>Criterion</b>	<b>Evaluation description</b>
Personalization approach	<p>IBM WebSphere Commerce has two personalization approaches, campaigns and recommendations:</p> <ul style="list-style-type: none"> <li>• Campaigns uses declarative rules on customer profile attributes, and customer context to select and present content or to deliver emails to the members of customer segments.</li> <li>• Recommendations uses collaborative filtering techniques to select and present content to the members of customer segments.</li> </ul>
Resources that can be personalized	<p>Campaigns personalize Web content, promotions, and email messages. Note that email activities send a single dynamic email message to multiple recipients. An activity is not sent as a single email with multiple target addresses, but rather as an email sent multiple times, once each to every selected target email address. The individual email generation allows the system to target the email content for each user.</p> <p>Recommendations personalize Web content.</p>
Rules and analytics	<p>Campaigns</p> <ul style="list-style-type: none"> <li>• A Campaign is an ordered sequence of Activities. An Activity displays Web content or delivers an email message. Each Activity has a Condition. Conditions are expressions on customer profile attributes and customer context. When WebSphere Commerce evaluates the Condition to be TRUE, the Activity is performed.</li> </ul>

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Personalization in IBM WebSphere Commerce <i>(continued)</i>	
Criterion	Evaluation description
Rules and analytics <i>(continued)</i>	Recommendations <ul style="list-style-type: none"> <li>• Collaborative filtering analytics use customer behavior data from their Web clickstreams, customer profile data, and rules to select and present Web content.</li> <li>• Mentor groups are communities of customers with similar behavior. They are created by the Clickstream Engine through analysis of customer behavior data.</li> <li>• The Clickstream Engine uses predefined rules to select content for members of Mentor groups.</li> </ul>
Tools and management	Campaigns <ul style="list-style-type: none"> <li>• Management Center</li> </ul> Recommendations <ul style="list-style-type: none"> <li>• LikeMinds toolset</li> </ul>

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*Table G. We describe how personalization technology in IBM WebSphere Commerce addresses our evaluation criteria in this table.*

Personalization in WebSphere Commerce is adequate. The two approaches are complementary and give you some flexibility is personalizing both content and promotions. As we'll discuss later in this report, Campaigns is also the product's notification mechanism.

We like the capability of Campaigns to support sequences of Web and email Activities based on customers' context and values of profile attributes. Sequences of Activities can represent the steps that customers want to or need to follow in order to reach a desired outcome—their Customer Scenarios.

Note that neither Campaigns nor Recommendations help you target to the level of customer segment. You won't be reaching markets of one with either of these approaches for targeting Web content, although Campaigns can target emails to markets of one.

## NOTIFICATIONS

The "Be aware of..." customer activities—

- Be aware of new products, product upgrades, and promotions
- Be aware of order status changes, policy changes, and expirations

—are expressions of customers' desires to be notified when changes in your business affect them.

B2C ecommerce systems should have mechanism that you can customize to let you make appropriate notifications. These mechanisms might be publish and subscribe eventing systems that support multi-channel notifications, for example. Whatever the mechanism, it should push the notifications to customers. It should never be the customer's responsibility to pull notifications from you.

**EVALUATING NOTIFICATIONS.** Our evaluation of notifications technology considers these factors or sub-criteria:

- Mechanisms

- Notification channels
- Tools and management

### Notifications in IBM WebSphere Commerce

We describe notifications in IBM WebSphere Commerce in Table H. Our analysis and evaluation follows the table.

Notifications in IBM WebSphere Commerce	
Criterion	Evaluation description
Mechanisms	The notifications mechanism of WebSphere Commerce is Campaigns. We described them in Personalization, above.
Notification channels	<ul style="list-style-type: none"> <li>• Email</li> <li>• Web</li> </ul>
Tools and management	<ul style="list-style-type: none"> <li>• Administrators use the Campaign Wizard in Management Center to create Campaigns that notify customers of changes in your business.</li> </ul>

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Table H. We describe our evaluation of B2C ecommerce notifications in this table.

It may be a stretch to consider Campaigns as the notification mechanisms in WebSphere Commerce, but it's the closest thing that we could find that addresses our requirements. Campaigns are designed to target content and promotions for marketing and merchandising, but the capability seems to adapt nicely to make customers aware of new products, product upgrades, and promotions as well as order status changes, policy changes, and expirations.

Campaigns target customer segments and, for email Activities, can personalize messages to individual customers within those segments. Your segments probably don't fit product, upgrade, or fix availability. So, you'll have to create new segments to fit notifications requirements, for example, all customers who have purchased "product x" since 2005. As we'll see in the next section of this report, it's pretty easy to create and manage segments. Segment definitions are stored separately from customer data, and customer data does not include segment membership.

What's missing in Campaigns for notifications is support for the events that would trigger them. WebSphere Commerce doesn't generate events for anything like the availability of new products or product upgrades. As a result, you'll have to recog-

nize the need to make notifications externally and trigger your notification Campaigns manually. That's a disadvantage but not a killer.

### DATA

Customer and product data are what make ecommerce systems go. After all, *customers* use ecommerce systems to find, to learn about, and to buy your *products*.

All B2C ecommerce systems have customer and product data, and all have predefined models for this data. The data models should be rich and flexible—rich enough to let you use them right out of the box but flexible enough to let you customize them to your needs.

### Customer Data in IBM WebSphere Commerce

The Member Subsystem provides a data model to define, organize, and manage information about users, groups, (B2B) customer organizations, and stores of an IBM WebSphere Commerce implementation. Users are your customers and your internal ecommerce staff of administrators, marketers, product marketers, merchandisers, and customer support

reps (CSRs). Groups organize customers for pricing and for segmentation.

Within the Member Subsystem, customers are Members, and they are Users. As Members, customers have roles, an address book, and member attributes. In addition, they belong to Member Groups. As

Users, customers have User Profiles and demographic attributes.

We list and describe the Member System entities attributes for customer data Table I. Our evaluation follows the table.

Customer Data in IBM WebSphere Commerce	
Entity	Description
Member	Member attributes <ul style="list-style-type: none"> <li>• Identifier</li> <li>• Type</li> <li>• Status</li> </ul> Customer roles <ul style="list-style-type: none"> <li>• Registered customer</li> <li>• Guest</li> </ul> Address book <ul style="list-style-type: none"> <li>• Contact address</li> <li>• Billing address</li> <li>• Shipping address</li> </ul>
User	User profile attributes <ul style="list-style-type: none"> <li>• User identifier</li> <li>• User ID</li> <li>• Password</li> <li>• Timestamp of password creation</li> <li>• Previous password</li> <li>• Photo</li> <li>• Description</li> <li>• Display name</li> <li>• Preferred communication</li> <li>• Preferred delivery method</li> <li>• Preferred measure</li> <li>• Taxpayer identifier</li> <li>• Language</li> </ul>

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Customer Data in IBM WebSphere Commerce <i>(continued)</i>	
Entity	Description
User <i>(continued)</i>	<p>Purchase information</p> <ul style="list-style-type: none"> <li>• Amount spent</li> <li>• Number of orders</li> <li>• Last purchase date</li> </ul> <p>User demographics attributes</p> <ul style="list-style-type: none"> <li>• Gender</li> <li>• Age</li> <li>• Income</li> <li>• Marital status</li> <li>• Income currency</li> <li>• Children</li> <li>• Household</li> <li>• Company name</li> <li>• Hobbies</li> <li>• Order before</li> <li>• Time zone</li> <li>• Interests</li> </ul> <p>Personalization attributes</p> <ul style="list-style-type: none"> <li>• Personalization ID</li> </ul>
Member Groups	<p>Customer segment attributes</p> <ul style="list-style-type: none"> <li>• City</li> <li>• State or province</li> <li>• Country or region</li> <li>• Zip or postal code</li> <li>• Telephone number</li> <li>• Email address</li> <li>• Gender</li> <li>• Age</li> <li>• Annual income</li> <li>• Marital status</li> </ul>

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Customer Data in IBM WebSphere Commerce <i>(continued)</i>	
Entity	Description
Member Groups <i>(continued)</i>	<ul style="list-style-type: none"> <li>• Number of children</li> <li>• Household size</li> <li>• Amount spent</li> <li>• Number of orders</li> <li>• Last purchase date</li> <li>• Last visit date</li> <li>• Registration status</li> <li>• Registration date</li> <li>• Last registration date</li> <li>• Last registration update</li> <li>• Interests</li> <li>• Company</li> <li>• Currency</li> <li>• Language</li> <li>• Job function</li> <li>• Preferred method of communication</li> </ul>

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*Table I. Attributes of Member data are listed in this table.*

Customer data in WebSphere Commerce is rich and flexible. Predefined attributes for customers in Member, Member Group, and User entities should give you just about anything you need to represent about your customers—their identity, behavior, context, demographics, segments, and preferences.

We say just about anything because WebSphere Commerce customer data does not have good support for households. A customer account can have a household attribute and an attribute for the number of individuals within a household. But there are no services that support households and no practical customization approach to implement them. You can support households as member groups within segments or support each household as an individual member group. That's a little impractical.

Customer data is easy to manage. Customers create their own profiles when they register for your

site or when they make their first purchase. You manage customer data using tools of Commerce Accelerator. Management center does not yet support the Member subsystem. However, your administrators can perform all the tasks required to manage all customer data through Commerce Accelerator. You don't have to manipulate the underlying tables in the WebSphere Commerce database.

Customer data is easy to customize. There are predefined but unused columns in each customer data entity. You name these columns and create the services that use them. If you need more columns than are predefined, your developers can extend the schemas to include them.

## Product Data in IBM WebSphere Commerce

Product data within IBM WebSphere Commerce is stored and managed in this set of predefined entity types:

- Catalog
- Catalog group
- Catalog entry

A WebSphere Commerce store has a single *Master Catalog* and any number of *Sales Catalogs*. The master catalog, or, simply, the Catalog, organizes information about all of the products and services that you offer in your online store and information about the categories and subcategories that your customers navigate to find the products and services that they'd like to buy. Sales Catalogs are subsets of the Catalog. You create them for merchandising purposes. They implement your assortments, and their implementation references Catalog data without replicating it. The Catalog and Sales Catalogs contain Catalog Groups and Catalog Entries.

WebSphere Commerce lets your administrators create your Master Catalog in any of these three ways:

- Create your Catalog data in XML files and load it into the database using the Commerce Accelerator loading utilities, or publish it as part of a store archive using the Publish wizard.
- Reuse and extend one of the Master Catalogs from the WebSphere Commerce starter stores as a guide for your Master Catalog.
- Create your Catalog in CSV format and import it into WebSphere Commerce.
- Create your Master Catalog data using the Management Center.

Catalog Groups are the categories in WebSphere Commerce catalogs. The Catalog and Sales Catalogs support flexible, multi-level hierarchies of Catalog Groups. A Catalog Group may belong to multiple Catalogs. Note that you can create a Catalog or a Sales Catalog with no Catalog Groups, just a flat array of Catalog Entries.

Catalog Entries represent your selectable and orderable products and services. WebSphere Commerce has these six types of Catalog Entries:

- **Product.** A Product acts as a template for a group of SKUs that share a set of attributes. You create a SKU from a Product by adding a set of attributes and attribute values. Each variation of the set of attribute/attribute values is a SKU.
- **SKU.** A SKU is an orderable unit of merchandise that has name, part number, and price.
- **Bundle.** A Bundle is a collection of products, SKUs, and Packages that you offer as a collection but sell as individual items. A Bundle lets customers buy multiple items with one click. When customers click to place a Bundle into their shopping carts, WebSphere Commerce decomposes the Bundle into its individual items (SKUs, products, and packages) through a process called SKU resolution. Once in the shopping cart, customers may modify item quantities or remove items.
- **Package.** A Package is a collection of Catalog Entries that you sell as a unit. A Package has a name, part number, and price. It's orderable in the manner of a SKU. For example, you might define a desktop computer Package called "home office computer" that has catalog entries for processing unit, hard drive, CD/DVD drive, keyboard, mouse, monitor, and multimedia equipment. Note that inventory for a Package is allocated and managed independently of the inventory of its component items. Selling a "home office computer" Package will not affect the inventory of the processing unit, hard drive, CD/DVD drive, keyboard, mouse, monitor, and multimedia equipment that it contains.
- **Static Kit.** A Static Kit is a group of products, SKUs, and Packages that you offer as a unit. The individual components of a Static Kit, the Static Kit's Products, SKUs, and Packages, cannot be modified and must be fulfilled together. A Static Kit will backorder if any of its components is unavailable. Unlike a Package, no inventory is allocated to a Static Kit. When a customer pur-

chases a Static Kit, WebSphere Commerce lowers the inventory of its component parts.

- **Dynamic Kit.** Dynamic Kits are configurable products. Customers create Dynamic Kits by selecting and configuring a group of Catalog Entries that they'd like to purchase as a unit. Selection and configuration of Dynamic Kits are controlled by an external product configurator. WebSphere Commerce supports those offered by Selectica and Tacton. WebSphere Commerce handles Dynamic Kits similarly to its handling of Packages. Like the components of a Package, the components of a dynamic kit must be purchased and fulfilled as a unit. However, customers may change the components of a dynamic kit by reconfiguring it using the external product configurator.

Catalog Entries have sets of attributes for creation, management, display, purchasing, inventory, and merchandising:

- Predefined, Catalog Entry Type-specific attributes to which you assign values when you create or modify Catalog Entries.

- Predefined, but unassigned, attributes that you name and use with customized functionality.
- Custom attributes that you add and use with customized functionality.
- Custom attributes, called Defining Attributes and Descriptive attributes, that you add to Catalog Entries. Defining Attributes are properties, such as color or size, that have a number of predefined values. They're essential and differentiating characteristics of a SKU or Package. WebSphere Commerce uses them in its SKU resolution process. Descriptive Attributes provide additional descriptions to the short and long description attributes of Catalog Entries. For example, some pieces of clothing should only be dry cleaned, never washed, and a descriptive attribute can specify this dry-clean-only condition.

In Table J, we list the predefined attributes of Catalog Entries.

Metadata for Catalog Entries in IBM WebSphere Commerce	
Attribute type	Attributes
General	<ul style="list-style-type: none"> <li>• Identifier</li> <li>• Owner</li> <li>• SKU/item</li> <li>• Type of catalog entry</li> <li>• Owner</li> <li>• Part number</li> <li>• Manufacturer's part number</li> <li>• Manufacturer's name</li> <li>• Mark for deletion</li> <li>• URL (for download)</li> <li>• Timestamp of last update</li> <li>• On special flag</li> <li>• On auction flag</li> <li>• Start date</li> <li>• End date</li> <li>• Availability date</li> <li>• Last order date</li> <li>• Discontinuance date</li> <li>• URL for download</li> <li>• SKU codes (for Bundles and Packages)</li> <li>• Price</li> </ul>

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Metadata for Catalog Entries in IBM WebSphere Commerce <i>(continued)</i>	
Attribute type	Attributes
Fulfillment	<p>Fulfillment attributes for SKUs, Packages, and Kits</p> <ul style="list-style-type: none"> <li>• Track inventory</li> <li>• Allow to back order</li> <li>• Force backorder</li> <li>• Release separately</li> <li>• Returnable</li> <li>• Creditable</li> <li>• Smallest amount that can be measured</li> <li>• Unit of measure</li> </ul>
Relationships	<p>Catalog entries also have attributes that specify the relationships between the instances of their types. These relationships are:</p> <ul style="list-style-type: none"> <li>• Product-SKU</li> <li>• Package-component</li> <li>• Bundle-component</li> <li>• Dynamic kit-component</li> </ul>
Merchandising associations	<ul style="list-style-type: none"> <li>• Cross-sell</li> <li>• Up-sell</li> <li>• Accessory</li> <li>• Replacement</li> <li>• Custom</li> </ul>

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*Table J. We list the predefined attributes of Catalog Entries in this table.*

Product managers, merchandisers, and administrators can use the tools of Management Center to manage product data. These tools guide your staff through the steps to assign values to predefined attributes, create Defining Attributes, and assign Attribute Values to them for each type of Catalog Entry. Note that part of the process to create Catalog Entries includes the assignment of values for these product availability attributes:

- Start date
- End date

- Availability date
- Last order date
- Discontinuance date

However, WebSphere Commerce does not package functionality that uses or supports them. You must specify and apply the services that support these product availability attributes.

Alternatively to Management Center and Commerce Accelerator, database developers can use RDBMS tools to manage product data directly in its RDBMS tables. WebSphere Commerce documenta-

tion publishes the data model for product data to help. The data model is quite complex, involving many tables and many relationships. Note that adding custom attributes other than Defining and Descriptive Attributes requires extending the data model, a task for database developers.

For globalization and localization, all descriptive attributes, image attributes, and price attributes are qualified by a language format column. The WebSphere Commerce Catalog data model supports a single, global Catalog. Part of creating Catalog Entries is specifying the languages that your Catalog supports and creating localized descriptions and images as the values for the Short Description and Long Description attributes. At run time, locale information is sent from the UI to determine which translation to retrieve from the database and display on the page.

WebSphere Commerce includes sample catalogs in each of its starter stores. The sample catalog in the consumer direct starter store includes:

- Housewares
- Men's and women's apparel
- Baby's and children's apparel

**OUR TAKE ON PRODUCT DATA.** Product data in IBM WebSphere Commerce is very rich and very flexible, a key strength of the offering. You should be able to represent any type of product that you offer in it. The best features are:

- Catalogs and Sales Catalogs
- The richness and flexibility of SKUs, bundles, packages, static kits, and dynamic kits
- The flexibility of the predefined Merchandising Associations
- Predefined columns for easy customization
- Support for creating and managing all aspects of product data within Management Center. You don't need development skills.

- Reusable samples in starter stores

On the other hand, there are a few minor limitations. We'd like to see the date attributes supported with services and even with events. For example, adding a new product might trigger an event that starts a notification Campaign. Versioning of Catalog Entries would help you in managing them.

## INTEGRATION

Integration with external systems is very important for two reasons. First, your ecommerce systems are likely not your systems of record for customer data, orders, or inventory. You must integrate your B2C ecommerce system with your systems of record in order to present accurate customer and inventory information to your customers, to complete your order processing and fulfillment processes, for example. Second, if you choose an on-demand, SaaS B2C ecommerce implementation, then all of your systems will be external to your B2C ecommerce system. Integration is essential to present accurate data and perform business processes.

B2C ecommerce systems should package integration facilities. Web Services integration is a good approach. Predefined Web Service interfaces within the B2C ecommerce system is a better approach.

**EVALUATING INTEGRATION.** Our evaluation of integration technology considers these factors or sub-criteria:

- Approach
- Interfaces
- High-level facilities
- Tools

## Integration in IBM WebSphere Commerce

In Table K, we describe our evaluation of WebSphere Commerce integration against these criteria. More detail and our analysis follow the table.

<b>Integration in IBM WebSphere Commerce</b>	
<b>Criterion</b>	<b>Evaluation description</b>
Approach	<p>IBM provides scenario-based Service Oriented Architecture (SOA) facilities called Service Oriented Integration (SOI) for WebSphere Commerce integration with external applications.</p> <p>IBM has developed an SOA maturity model that has four phases (see Table N, below). Phase 1 is termed implementing individual Web Services. Phase 2 is termed services-oriented integration of business functions. In phase 1, an application provides an ad hoc set of services to communicate individually with external applications. Phase 2 provides integration enabling scenarios. SOI decouples Web Services components to allow their reuse within many applications. Business Object Documents (BODs) that represent Web Services requests and responses are the mechanism that supports decoupling.</p> <p>For example, in a phase 1 approach, an inventory management application might provide an “UpdateInventory” service to let external applications change a product’s inventory. In phase 2, the inventory management application would provide a set of inventory management services that delegate responsibilities for changing inventory levels to an external system.</p> <p>WebSphere Commerce provides four SOI service modules. They’re logical groupings of BODs that facilitate integration with these WebSphere Commerce components:</p> <ul style="list-style-type: none"> <li>• Member Subsystem</li> <li>• Order Management System</li> <li>• Catalog System</li> <li>• Contract System (B2B)</li> </ul> <p>WebSphere Commerce 6.0 also supports two complete SOI scenarios:</p> <ul style="list-style-type: none"> <li>• Order management integration</li> <li>• ERP integration</li> </ul> <p>SOI implementation uses the loosely coupled Enterprise Service Bus (ESB) pattern is for communication, mediation, transformation, and integration with external systems. The ESB acts as an interpreter between WebSphere Commerce and external systems, translating messages into a format the receiving system understands. As a result, neither WebSphere Commerce nor external systems require modification for the integration.</p>

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Integration in IBM WebSphere Commerce <i>(continued)</i>	
Criterion	Evaluation description
Interfaces	<p>To consume Web Services on external systems, WebSphere Commerce task commands or services (JavaBeans that implement the application logic of WebSphere Commerce) call a client API that accesses the (Web Service) invocation service. The invocation service uses a configuration file to determine how to communicate with the remote Web Service component.</p> <p>WebSphere Commerce uses its messaging subsystem to invoke Web services on external systems. The client API will use a WebSphere Commerce message type, which will carry the Web Service request to its destination over the specified transport.</p> <p>WebSphere Commerce uses JMS, JCA, SOAP, and HTTP.</p>
High-level facilities	<p>Each Web Service within the four SOI modules is comprehensively documented. Documentation includes:</p> <ul style="list-style-type: none"> <li>• Request Business Object Document (BOD) specification</li> <li>• Sample request BOD</li> <li>• Response BOD specification</li> <li>• Sample response BOD</li> <li>• Usage</li> <li>• Exceptions</li> <li>• Customizations</li> </ul> <p>The SOI scenarios include this additional documentation:</p> <ul style="list-style-type: none"> <li>• Scenario descriptions and process diagrams</li> <li>• Message flows</li> <li>• Reference implementation sample for SAP and Sterling Commerce</li> <li>• Installation, configuration, and set-up instructions</li> </ul>
Tools	<p>Integration tasks are Java development tasks. Tools required are Java development tools. WebSphere Developer includes facilities to assist developers.</p>

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*Table K. We describe our evaluation of WebSphere Commerce integration in this table.*

WebSphere Commerce has excellent integration technology, another strength of the offering. The integration approach is elegant, taking Web Services to another level—literally another level in IBM's SOA maturity model. Web Services have simplified

integration through standardization, but they've proliferated, and you might be using dozens or even hundreds of them that do point-to-point, application-specific, function-specific integration. SOI begins to untangle the spaghetti of these pair-wise connections.

Props to IBM for moving integration technology forward.

WebSphere Commerce has a mix of phase 1 Web Services and phase 2 SOI integration. We'll focus our analysis and evaluation on the phase 2 technology. First, we'll examine the Web Services in the four SOI Service Modules. Then we'll take a look at the integration scenarios.

SOI will simplify your work to integrate WebSphere Commerce with external systems, and IBM has done a very good job of describing SOI and in providing facilities to make it more easily accessible to you.

### Web Services in WebSphere Commerce

The Web Services in WebSphere Commerce support all of the inbound activities that customers want to perform in the explore and select, the purchase, and the manage/maintain lifecycle phases. IBM organizes them by the subsystem that they support—Catalog, Order Management, Contract and Member (customer). That organization roughly corresponds to our lifecycle phases of explore/select, purchase, and manage/maintain. We list these Web Services and briefly describe their function in Table L.

IBM WebSphere Commerce Web Services	
Component	Web Services
Member subsystem	<p>The Member subsystem produces a set of Web Services that let an external application create, access, and update customer and customer organization accounts.</p> <ul style="list-style-type: none"> <li>• Get person finds a person by Unique ID or by distinguished name. This service also finds the person running the request.</li> <li>• Process person registers the person with the store.</li> <li>• Change person updates the person's information, adds address information, updates address information, or deletes address information.</li> <li>• Get organization searches for an organization by unique ID, or by distinguished name.</li> <li>• Process organization registers the organization.</li> <li>• Change organization updates the organization's information, adds address information, updates address information, or deletes address information.</li> </ul>
Catalog subsystem	<p>The Catalog subsystem produces Web Services that let an external application access and retrieve the content of a WebSphere Commerce Catalog. WebSphere Commerce Catalogs contain a hierarchy of categories that are called Catalog Groups, and the collections of products and services that you offer in your online store that are called Catalog Entries.</p> <p>Catalog Web Services</p> <ul style="list-style-type: none"> <li>• Get Catalog details by Catalog ID</li> <li>• Get Catalog details by Catalog Identifier</li> <li>• Get Master Catalog (returns details)</li> <li>• Get all Catalogs (returns details)</li> </ul>

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<b>IBM WebSphere Commerce Web Services</b> <i>(continued)</i>	
<b>Component</b>	<b>Web Services</b>
Catalog subsystem <i>(continued)</i>	<p>Catalog Group Web Services</p> <ul style="list-style-type: none"> <li>• Get Catalog Group details by Catalog Group ID</li> <li>• Get Catalog Group details by Catalog Group Identifier</li> <li>• Get Catalog Group Merchandising Associations by ID</li> <li>• Get Top (level) Catalog Groups</li> <li>• Get Catalog Group with children Catalog Groups</li> <li>• Get Catalog Group with children Catalog Entries</li> <li>• Get Catalog Group with all children</li> <li>• Get Catalog Groups for a parent Catalog group</li> </ul> <p>Catalog Entry Web Services</p> <ul style="list-style-type: none"> <li>• Get Catalog Entry details by ID</li> <li>• Get Catalog Entry Merchandising Associations by ID</li> <li>• Get Catalog Entry Merchandising Associations by Part Number</li> <li>• Get Catalog Entry Components by ID</li> <li>• Get Catalog Entry Components by Part Number</li> <li>• Get Catalog Entry summary by Part Number</li> <li>• Get Catalog Entry details by Part Number</li> <li>• Find Catalog Entries summary by Name</li> <li>• Find Catalog Entries details by Name</li> <li>• Find Catalog Entries summary by description</li> <li>• Get catalog Entries for a parent Catalog group</li> </ul>
Order Management subsystem	<p>The Order Management subsystem produces and consumes Web Services to capture and process orders and to perform inventory and payment processing to support integration scenarios between WebSphere Commerce and external order management systems.</p> <ul style="list-style-type: none"> <li>• Prepare an order</li> <li>• Submit an order</li> <li>• Cancel a shopping cart</li> <li>• Add items or products to the list of items that are in the shopping cart</li> <li>• Add a payment method to an order</li> <li>• Update order items</li> <li>• Update a payment instruction</li> <li>• Update shipping information such as the shipping mode and the requested ship date</li> </ul>

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IBM WebSphere Commerce Web Services <i>(continued)</i>	
Component	Web Services
Order Management subsystem <i>(continued)</i>	<ul style="list-style-type: none"> <li>• Delete one or more items from the shopping cart</li> <li>• Delete a payment instruction</li> <li>• Get the current shopping cart</li> <li>• Get order history</li> <li>• Get order information by order ID</li> <li>• Get usable payment information</li> <li>• Get usable shipping information</li> <li>• Get shopping carts</li> </ul>

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Table L. In this table, we list the customer, catalog, and order management Web Services of IBM WebSphere Commerce.

With these Web Services, external applications can access and execute the full range of ecommerce functionality and access key ecommerce data—products, orders, and accounts. This is important. For example, when the external application is a customer service application, customer service reps can perform ecommerce activities on behalf of customers, letting customers shop and buy through assisted-service channels. In fact, Sales Center, IBM’s assisted-service for ecommerce offering (we reviewed it this February<sup>1</sup>), accesses the functionality in WebSphere Commerce via these Web Services.

Web Services can’t support the “Be aware of…” outbound activities. Notification and offers that do support these activities will have to come from WebSphere Commerce or your campaign management or your notifications system.

### WebSphere Commerce Integration Scenarios

WebSphere Commerce includes the Web Services, the business process specifications, code sam-

<sup>1</sup> See “IBM Sales Center for WebSphere Commerce: Rich Operational and Analytic Functionality Lets You Deliver Effective Assisted-Service for Ecommerce,” <http://dx.doi.org/10.1571/pr02-21-08cc>.

ples, and complete documentation for supporting these two integration scenarios.

- **ORDER MANAGEMENT SYSTEM INTEGRATION.** In this scenario, you want to integrate WebSphere Commerce with an existing order management system or want to use a third-party order management system to process orders captured by WebSphere Commerce. The external order management system edits orders, manages inventory for them, and releases them to the fulfillment system.
- **ERP INTEGRATION.** This scenario focuses on adding ecommerce marketing and merchandising functionality to an ERP system. It enables ERP users such as customer service reps, inside sales people, or even customers to perform explore and select activities through WebSphere Commerce Catalog services. This scenario can support the ERP system as the system of record for product and customer information. The ERP scenario includes the Order Management scenario.

In Table M, we list and describe the Web Services used by these integration scenarios.

<b>Web Services in Order Management Integration Scenario</b>	
<b>Service</b>	<b>Description</b>
Web Services provided (inbound)	
Inventory cache update	Inventory cache update service updates the inventory cache in WebSphere Commerce when a store is configured to use an external system for inventory management.
Order preprocessing	Order preprocessing service validates an external order against contracts in WebSphere Commerce and calculates order prices, discounts, and shipping charges for an external order using settings in WebSphere Commerce.
Order status update	Order status update service updates the status of an order in WebSphere Commerce when a store is configured to use an external system for order processing and fulfillment.
Payment processing	Payment processing service processes online financial transactions such as payment authorizations and payment captures.
Synchronize organization	Synchronize organization service adds or updates an organization in WebSphere Commerce in order to synchronize WebSphere Commerce with an external master repository.
Synchronize person	Synchronize person service adds or updates a person in WebSphere Commerce in order to synchronize WebSphere Commerce with an external master repository.
Web Services consumed (outbound)	
Create organization	Create organization notifies an external system of the creation of a buyer organization.
Update organization	Update organization notifies an external system of a buyer organization update.
Get product availability	Get product availability retrieves the availability of a product from an external system.
Check order inventory	Check order inventory checks the inventory of an order on an external system.
Reserve order inventory	Reserve order inventory updates the inventory reservation of an order on an external system.
Cancel order inventory	Cancel order inventory cancels the inventory reservation of an order on an external system.
Transfer order	Transfer order transfers an order to an external system.
Get order	Get order retrieves the details of an order or list of orders from an external system.

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*Table M. The predefined Web Services produced and consumed by WebSphere Commerce are listed and described in this table.*

Remember that WebSphere Commerce does not include order processing, inventory management, and fulfillment services. Rather, you configure its resources to use the services of external applications through these integration facilities. Taking a look at the services in Table M, WebSphere Commerce leverages the services of external systems quite comprehensively. The integration scenarios are efficient and effective.

**SOA Innovation and Leadership**

IBM is an SOA innovator and leader in technology and practices. Its SOA maturity model demonstrates this innovation and leadership. Where competing products and most packaged applications support Web Services technologies and integration, this support corresponds to the ad hoc phase 1 ap-

proach—Web Services developed and deployed for point-to-point integration between two functions of two applications. This ad hoc Web Services approach certainly has advantages over legacy approaches that were built on proprietary technologies, but it also has the disadvantages of the spaghetti of individual, single connection, single purpose integrations that we remember of those legacy approaches. The scenario approach of phase 2 that is implemented in WebSphere Commerce creates a true distributed processing environment where applications really cooperate. It also appears to be more manageable than a spaghetti bowl of individual, ad-hoc connections.

IBM is on to something really good in the SOA maturity model. We show its phases in Table N. Support for phase 2 is new in 6.0.

SOA Maturity Model		
Phase	Name	Description
1	Implementing individual Web Services	Creating services from tasks contained in new or existing applications
2	Service-oriented integration of business functions	Integrating services across multiple applications inside and outside the enterprise for a business objective
3	Enterprise-wide IT transformation	An architected implementation enabling integration across business functions throughout an enterprise
4	On Demand business transformation	Transformation of existing business models or the deployment of new business models to SOA

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Table N. IBM SOA maturity model is described in this table.

**EXPLORE AND SELECT**

Activities in the explore and select lifecycle phases are the core of ecommerce. Here’s where your customers find and learn about the products that they’d like to buy. Here’s where they get their first impression of you. Here’s where they usually

land on your ecommerce site. Here’s where you do your marketing and merchandising.

In Table O, we list the activities in customers’ Explore and Select lifecycle phase and describe the services and tools in WebSphere Commerce that support them. Our analysis follows.

<b>Explore and Select Services and Tools in IBM WebSphere Commerce</b>	
<b>Activity</b>	<b>Services and tools</b>
Find products and services that address requirements, needs, and wants	<p>Customers can find products and service by navigating the WebSphere Commerce Catalog via navigation mechanisms that you place within Web content. WebSphere Commerce packages services that let customers:</p> <ul style="list-style-type: none"> <li>• Select category. When a customer selects a category, WebSphere Commerce retrieves and presents the Category's Web page.</li> <li>• Select subcategory. The customer clicks on a category link, and WebSphere Commerce presents the page that contains all of the category's subcategories and products.</li> </ul> <p>Customer can find products and service by searching for them in the Catalog. See Search, above. The Catalog Search service lets customers:</p> <ul style="list-style-type: none"> <li>• Find a product by name or part number.</li> <li>• Select attributes and specify attribute values to find products. WebSphere Commerce retrieves and presents the product page that matches the attributes and values.</li> <li>• Select a product from search results. Search results contain links to the matching products. When a customer clicks on one of the links, WebSphere Commerce displays the product page.</li> <li>• Select a registry from search result. WebSphere Commerce packages services that support gift registries. Gift givers can search for registries when they want to buy products for others.</li> </ul> <p>Customers can find products by using the shopping metaphors of WebSphere Commerce Product Advisor.</p> <ul style="list-style-type: none"> <li>• The Guided Selling metaphor helps customers who are not familiar with your products find products through a question and answer dialog that results in the presentation of products that best meet their needs. You create the content that asks questions, collects answers, and presents products. Guided selling packages a service that collects answers and presents questions from the dialogs that you create.</li> <li>• The Product Exploration metaphor lets customers who are familiar with your products and services find products by parametric searching on product attributes. You specify the product attributes on which customers can search. Customers select attributes from those that you've specified and qualify search by specifying attribute values. You create Web content that presents selectable attributes and displays search results.</li> </ul>

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<b>Explore and Select Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
<p>Learn about products and services: features and functions, detailed specifications, warranties and support, prices, promotions, and discounts</p>	<p>With WebSphere Commerce, customers learn about products and services, features and functions, detailed specifications, warranties and support, and prices by:</p> <ul style="list-style-type: none"> <li>• Searching and navigating your catalog as we described for the “find products and services that address requirements, needs, and wants” above.</li> <li>• WebSphere Commerce Catalogs contain four predefined description attributes that you can use to provide detail on products. You can present any or all of this information on individual product pages. In addition, you can create custom product attributes to provide even more details.</li> <li>• WebSphere Commerce Catalogs contain pages for categories, products, and SKUs. These pages are based on predefined, customizable templates. Packaged services display a product page, item page, or SKU page when customers click on a category link, product link, or SKU link, respectively, within search results or in navigational content.</li> <li>• Following the guided selling metaphor of Product Advisor, customers learn through a scripted question and answer dialog that can presents increasingly detailed information from your Catalogs. You create the question and answer dialog and the Catalog content.</li> <li>• Following the product exploration metaphor of Product Advisor, customers learn through parametric searching of catalog content.</li> </ul> <p>Customers learn about promotions and discounts in several ways:</p> <ul style="list-style-type: none"> <li>• Email campaigns can contain redeemable coupons, promotion codes, or click-through advertisements within the content of email messages.</li> <li>• E-marketing spots within WebSphere Commerce store content can present promotions via content or coupons on home pages, landing pages, category pages, and product pages.</li> <li>• Within the purchase process, customers learn about product and order discounts.</li> </ul>
<p>Learn about policies in doing business with you for shipment, payment, returns, and support</p>	<p>IBM WebSphere Commerce has no services or tools to help customers learn about policies in doing business with you. WebSphere Commerce does not have a knowledgebase or content repository. The WebSphere Catalog subsystem is not designed to contain policy information, and the packaged mechanisms for search and navigation are geared to find product content.</p> <p>Stretching a little, you may use the description attributes of categories and products in WebSphere Commerce Catalogs for information about your business policies and then present this information within category and product pages. We say stretching because you would have to replicate and manage this information across all categories and products.</p>

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<b>Explore and Select Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
Learn about customer service services, e.g., what's on the Web site	IBM WebSphere Commerce has no services or tools to help customers learn about customer service services. As above, WebSphere Commerce does not have a knowledgebase or content repository. The WebSphere Catalog subsystem is not designed to contain policy information, and the packaged mechanisms for search and navigation are geared to find product content.
Be aware of new products, product upgrades, and promotions	<p>Campaigns are a mechanism within WebSphere Commerce to make customers aware of new products, product upgrades, and promotions. Campaigns deliver their offers within email messages or through the e-marketing spots of store content. Campaigns that deliver Web content are targeted by customer segment. Campaigns that deliver emails can be targeted to individual customers.</p> <p>You can also use Recommendations (see Personalization) to make customers aware when they select a product or category that has new products, upgrades, or promotions.</p> <p>In addition, you can create content about new products and product upgrades and present it to customers within the home page, landing category pages, or product pages of your store.</p> <p>You might also add new products or product upgrades to appropriate lists of marketing associations in product data and present them within up-sell, cross-sell, or promotion content.</p>
Be aware of changes in order status, changes in business policies, and expirations	<p>WebSphere Commerce commands have rich functionality for finding and displaying orders and order status. Order information is accessible through customers' accounts. Customers can:</p> <ul style="list-style-type: none"> <li>• Select their current order</li> <li>• Select previously placed order</li> <li>• Select an order from the order summary table and view its details</li> <li>• Find order(s) by order number or customer logon ID</li> <li>• View orders and order status summary</li> <li>• View order and order status detail</li> <li>• View order details including status</li> <li>• View order history</li> </ul> <p>You can create Campaigns to make customers aware of changes in business policies and expirations.</p> <p>IBM WebSphere Commerce does not have services (or customizable functionality) around expirations.</p>

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<b>Explore and Select Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
Get case studies, reviews, and references on products and services	IBM WebSphere Commerce has no services or tools for creating and managing case studies, reviews, and references.
Compare similar products and services	The product comparison metaphor of Product Advisor lets customers compare products presented by the product exploration and guiding selling metaphors. You create content to present to customers to let them select product attributes for the comparison and content to display the resulting comparison. Product Advisor includes the service to retrieve products that meet the comparison criteria. You can present any attribute value as a link to a product page.
Select and configure products and/or services	<p>WebSphere Commerce packages functionality that lets customers:</p> <ul style="list-style-type: none"> <li>• Add a product to their wish lists. If no wish list exists, WebSphere Commerce creates one for them.</li> <li>• Select a product from a wish list.</li> <li>• Add a product or SKU to their shopping carts.</li> <li>• Add a SKU to their shopping carts by SKU number.</li> <li>• Change shopping cart item quantities.</li> <li>• Remove items from their shopping carts.</li> <li>• Save their shopping carts.</li> </ul> <p>Packages, Static Kits, and Dynamic Kits are WebSphere Commerce's configurable products. (See Product Data, above.) You create and manage Packages and Static Kits in your Catalogs using the tools of Commerce Accelerator or Management Center. Dynamic Kits require an external product configurator. Once customers place a Package or Static Kit into their shopping carts, they can configure the properties and quantities of the items that comprise them.</p>
Price products and/or services and/or get price quotes	<p>Within WebSphere Commerce's consumer direct business model, prices for products and services are stored within product data. More specifically, Catalog Entries for Products, SKUs, and Bundles contain a List Price Attribute. You can offer segment-specific prices via Promotions on Products or Orders.</p> <p>Note that price lists and price quotes are supported within the B2B business models of WebSphere Commerce, not within the consumer direct business model. While you can customize a consumer direct store to add support for price lists and quotes, your customization will be substantial and somewhat awkward. For example, price lists are associated with contracts, which belong to organizations. Consumers don't think of themselves as organizations or that their purchasing relationships with you as being represented in contracts.</p>

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<b>Explore and Select Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
Price products and/or services and/or get price quotes <i>(continued)</i>	<p>WebSphere Commerce packages auction functionality that lets customers determine prices. Merchandisers use tools in the Commerce Accelerator to create and manage auctions. They specify:</p> <ul style="list-style-type: none"> <li>• Auction type: open cry, sealed bid, Dutch</li> <li>• Name of the auctioned product</li> <li>• Quantity available</li> <li>• Reserve price, if specified</li> <li>• Deposit amount to be forfeited if the winner refuses to accept the auctioned items</li> <li>• Start date and time</li> <li>• Ending conditions</li> <li>• Bid rules on minimum bid price, quantity, and bid increment</li> <li>• Pricing mechanisms for the auction</li> </ul> <p>Packaged functionality lets customers participate in auctions.</p> <ul style="list-style-type: none"> <li>• Create the bid based on a customer's bid price, the desired quantity, willingness to accept a partial quantity, and billing and shipping information for the order.</li> <li>• Create an autobid for a specified auction based on an auction's initial bid price, the maximum bid limit, customer's desired quantity, willingness to accept a partial quantity, and billing and shipping information for the order. WebSphere Commerce monitors bid activity and updates autobids to maintain a winning status until the maximum bid limit is reached.</li> <li>• View all the bids submitted by all participants in an auction.</li> </ul>
Determine the availability of products and/or services	<p>Product data does not include attributes for product availability. Determining availability for customers involves integration with order management, inventory management, and/or fulfillment systems that manage inventory information. WebSphere Commerce packages Web Services that access availability information from external systems. We describe them in Integration, above.</p> <ul style="list-style-type: none"> <li>• Get product availability retrieves the availability of a product from an external system.</li> <li>• Check order inventory checks the inventory of an order on an external system.</li> <li>• Reserve order inventory updates the inventory reservation of an order on an external system.</li> <li>• Cancel order inventory cancels the inventory reservation of an order on an external system.</li> </ul>

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Explore and Select Services and Tools in IBM WebSphere Commerce <i>(continued)</i>	
Activity	Services and tools
Find complementary products	<p>Product data includes Merchandising Associations on Catalog Groups and Catalog Entries. Predefined Merchandising Associations are:</p> <ul style="list-style-type: none"> <li>• Cross-sell</li> <li>• Up-sell</li> <li>• Accessory</li> <li>• Replacement</li> <li>• Custom</li> </ul> <p>In addition, merchandisers can specify custom Merchandising Associations.</p> <p>For each merchandising association there is a <i>source</i> catalog entry and a <i>target</i> catalog entry. A source catalog entry can have multiple associations of each type. Merchandisers determine the usage of these relationships and populate them appropriately.</p> <p>IBM WebSphere Commerce does not have a “find complementary products” service, but merchandisers can help customers perform this activity by presenting related products on category and product pages, on landing pages, and within search results. That presentation will require the development of content and commands for related products.</p>

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*Table O. In this Table, we list B2C ecommerce activities within the explore and select lifecycle phases and describe the services and tools in IBM WebSphere Commerce that support the activities.*

IBM WebSphere Commerce offers good support for customers’ activities in the explore and select lifecycle phases. Every activity that should be supported by an ecommerce system is supported pretty well, but more so by customizable technologies than by packaged services. Campaigns makes support for the “Be aware of...” activities very good. Integration makes it easy for customers to “Determine availability.” Excellent product data is the key to “...configure products.” Kits are the key. Rich and flexible Merchandising Associations in product data is also the key to “Find complementary products.”

As with any ecommerce software product, your job in supporting these activities will be developing the content that these services access and present to you customers. Content development is always a significant part of ecommerce implementation. Note, though, that you’ll be able to reuse the samples and

templates of the consumer direct starter store site to reduce the Web content development load.

WebSphere Commerce is missing support for the knowledge-based activities such as:

- Learn about policies in doing business with you for shipment, payment, returns, and support.
- Learn about customer service services, e.g., what’s on the Web site.
- Get case studies, reviews, and references on products and services.

That’s not a limitation of the product, but IBM does not offer a knowledge management product and has no partnerships with KM suppliers. So you’re on your own to purchase or custom-build services to support these activities and then to integrate them with WebSphere Commerce.

A couple of comments about Product Advisor. IBM introduced Product Advisor years ago with WebSphere Commerce 5.0. In its metaphors, this feature packages very useful capabilities that can help you support the styles more types of customers perform in explore and select activities. For example, if you offer complex products and services or a broad range of similar products and services, then the guiding selling metaphor can help your customers through the process of finding the one that best meets their requirements. Product Advisor provides the processing framework. You develop the content for a Q&A dialog that fits into the process.

If your products and services have multiple, selectable features, then the parametric search capabilities of the product exploration can help customers find the ones that have the features they need.

Product Advisor works with tables that you add to the standard WebSphere Commerce Catalog or with a Catalog “search space” to boost Product Advisor performance for each category that supports the metaphors. You should always be sensitive to the performance of your ecommerce site, but a separate catalog to support parametric searching is a little extreme. A better approach is more powerful and more flexible search—exactly the search provided by OmniFind Discovery Edition. Its support for searching WebSphere Commerce catalogs to the

level of product attributes gives you a simpler approach to Product Exploration than Product Advisor.

Product comparison is Product Advisor’s most important metaphor. It’s the only packaged service in WebSphere Commerce that supports this very common customer activity. The natural step that customers take after completing the steps of the guided selling or the product exploration metaphor is to compare the products that they’ve found. The product comparison metaphor simplifies your work to support comparison.

Merchandisers have many options to help customers find related products. IBM WebSphere Commerce offers almost too much flexibility in this area. Using the static lists of related products in product data is a good start. Progressing to dynamic lists can be a good next step. Category groups, product groups, and category and product affinities can take merchandising even further. You should use analytic techniques to understand which complementary products best to manage in these lists.

**Purchase**

In Table P, we list the activities in customers’ Purchase lifecycle phases and describe the services and tools in IBM WebSphere Commerce that support them. Our analysis follows.

<b>Purchase Services and Tools in IBM WebSphere Commerce</b>	
<b>Activity</b>	<b>Services and tools</b>
Checkout and pay	<p>Registered customers may select Regular or Quick Checkout processes. Non-registered customers use Regular Checkout. Quick Checkout uses payment, billing, and shipping information from customer profiles. Regular Checkout lets customers specify payment, billing, and shipping information for the order.</p> <p>The order preparation service calculates product prices, adjustments, shipping charges, and tax charges.</p> <p>After order preparation, WebSphere Commerce creates and presents an order summary to the customer.</p> <p>The customer views the summary of an order and submits it to create an order.</p>

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<b>Purchase Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
Select payment methods	<p>Customers select coupons to redeem against the order total.</p> <p>Customers provide promotion codes to receive promotions on their orders.</p> <p>Customers specify payment methods for their orders. Multiple payment methods are supported for each order. WebSphere Commerce packages services that support these payment methods:</p> <ul style="list-style-type: none"> <li>• Credit card (American Express, MasterCard, Visa)</li> <li>• Gift certificates</li> <li>• BillMeLater (Offline transaction, customer is billed)</li> <li>• Check (Electronic check or automated clearing house [ACH] transaction)</li> <li>• COD</li> <li>• LOC (Line of credit)</li> <li>• PayLater (Offline transaction, for example, the customer provides payment information later by fax)</li> </ul> <p>Customers specify payment information for the payment methods that they have selected.</p> <p>Customers specify a billing address for their orders.</p>
Select shipment methods	<p>For Regular Checkout, customers may select a single shipping method for an order or a shipping method for each item in an order.</p> <p>For Quick Checkout, WebSphere Commerce retrieves a single shipping method for the entire order from the registered customer's profile.</p>
Specify shipping addresses	<p>For Regular Checkout, customers can specify a shipping address for an order or for each order item.</p> <p>For Quick Checkout, WebSphere Commerce retrieves a single shipping address for the entire order from the registered customer's profile.</p>
Cancel orders and order items	<p>Customers can cancel orders after they have been submitted but before they reach fulfillment. Customers can cancel only complete orders. They cannot cancel order items.</p>
Return orders and order items	<p>WebSphere Commerce does not package services that let customers return orders and order items. The product assumes that customers request returns and refunds via assisted-service channels. IBM Sales Center, an assisted-service for ecommerce product, allows your customer service reps (CSRs) to return orders on behalf of customers. Sales Center is tightly integrated with WebSphere Commerce. It shares the customer and order data of WebSphere Commerce.</p>

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<b>Purchase Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
Get status of orders	<p>WebSphere Commerce packages a large set of services that let customers view their orders and get order status.</p> <ul style="list-style-type: none"> <li>• Customers can opt to receive a confirming email when their orders are successfully processed.</li> <li>• Customers can find orders by order number or customer logon ID.</li> <li>• Customers can view a table that contains a brief summary of the status of each of their orders.</li> <li>• Customers can view a summary of their order histories and can select an order from within the summary to view its details. For the selected order, WebSphere Commerce displays a Web page containing detailed order status information and the complete list of purchased products.</li> <li>• Customers can choose any order in the summary table and view the details.</li> </ul> <p>Note that an order in WebSphere Commerce can be in any one of the following states:</p> <ul style="list-style-type: none"> <li>• Pending. The order has been started, but it has not yet been submitted for processing.</li> <li>• Pending payment authorization. The order has been submitted and is being processed, but it has not yet been fulfilled.</li> <li>• Edit. The order is being edited.</li> <li>• Shipped. All order items in the order have been shipped.</li> <li>• Cancelled. The order has been cancelled.</li> </ul>
Get status of payments	<p>Within its consumer direct business model, payment approval is required before a customer order is submitted. Customers payment methods are approved and authorized in real time during checkout. Customers may specify alternate payment methods for payment methods that were not approved.</p>
Get status of shipments	<p>WebSphere Commerce does not manage shipping status. The product assumes that shipping status is managed within external fulfillment systems. You can use packaged Web Services to retrieve shipping status and present it to customers. Specifically, the order status update service is an inbound Web service responsible for updating the shipping status of an order in WebSphere Commerce. You can modify the presentation of order status to include shipping status within order summaries or order details. Modifications require customization of WebSphere Commerce services and content.</p>
Get status of returns	<p>WebSphere Commerce does not have services that let customers get the status of their returns. Returns and refunds processing are assisted-service tasks. IBM Sales Center lets your agents authorize and manage returns and process refunds on behalf of your customers.</p>

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Purchase Services and Tools in IBM WebSphere Commerce (continued)	
Activity	Services and tools
Get assisted-service	IBM WebSphere Commerce does not package services that let customers escalate to assisted-service. However, IBM WebSphere Sales Center is a separately priced product that provides an agent/CSR interface to IBM WebSphere Commerce functionality and data. Customers can call your contact center to receive assisted support from your agents who use CSC.

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Table P. In this table, we list B2C ecommerce activities within the purchase lifecycle phase and describe the services and tools in IBM WebSphere Commerce that support the activities.

IBM WebSphere Commerce has services and tools that provide good support for the purchase lifecycle phase. The broad range of supported payment methods can make it easy for your customers to do business with you. They'll like multiple payment methods and multiple shipping addresses to the level of individual order item, too. Support for canceling orders before they reach fulfillment is very useful, but not being able to cancel individual order items is a limitation.

Lack of support for returns is not an issue. We don't expect ecommerce products to allow customers to process returns, but these systems should allow customers to make return requests and to get the status of those requests as you process them. IBM Sales Center WebSphere Commerce is an assisted-service for ecommerce product that lets your agents take, approve, and process customers requests for returns and refunds. We evaluated Sales Center this

February (<http://dx.doi.org/10.1571/pr02-21-08cc>). Sales Center uses WebSphere Commerce data and leverages its services, letting your agents share your customers' ecommerce context.

IBM WebSphere Commerce does not package the capability to let customers request assisted-service. You'd likely offer assisted-service within your ecommerce content, and you might trigger the invitation when the guided selling metaphor reaches a dead end or Catalog search returns no products, for example.

**Manage and Maintain**

In Table Q, we list the activities in customers' Manage and Maintain lifecycle phase and describe the services and tools in IBM WebSphere Commerce that support them. Our analysis follows.

Maintain Services and Tools in IBM WebSphere Commerce	
Activity	Services and tools
Establish and manage accounts	Customers are registered or non-registered. Customers must be registered in order to submit orders. The registration process involves filling out and submitting a Web form that contains this customer data: <ul style="list-style-type: none"> <li>• Logon</li> <li>• Password</li> <li>• Email address</li> <li>• Name</li> </ul>

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<b>Maintain Services and Tools in IBM WebSphere Commerce</b> <i>(continued)</i>	
<b>Activity</b>	<b>Services and tools</b>
Establish and manage accounts <i>(continued)</i>	<ul style="list-style-type: none"> <li>• Challenge question/answer (optional)</li> <li>• Preferred currency/language (optional)</li> <li>• Address</li> <li>• Contact information (optional)</li> </ul> <p>WebSphere Commerce packaged services that let customers:</p> <ul style="list-style-type: none"> <li>• Reset/change password</li> <li>• Create an address book</li> <li>• Create/delete/modify/update an address in the address book</li> <li>• Enter account registration information</li> <li>• Submit account registration form</li> <li>• Update customer profile information</li> <li>• Update personal information</li> <li>• Create/modify/update quick checkout profile</li> </ul>
View orders and order histories	<p>WebSphere Commerce packages services that let customers view their orders and order histories.</p> <ul style="list-style-type: none"> <li>• Customers can find orders by: <ul style="list-style-type: none"> <li>○ Order number</li> <li>○ Order creation date range</li> <li>○ Order modification date range</li> <li>○ Customer logon ID</li> <li>○ First name</li> <li>○ Last name</li> <li>○ Address</li> <li>○ Phone number</li> <li>○ E-mail address</li> <li>○ ZIP/postal code</li> </ul> </li> <li>• Customers can view a table that contains a brief summary of the status of each of their orders.</li> <li>• Customers can view a summary of their order histories and can select an order from within the summary to view its details. For the selected order, WebSphere Commerce displays a Web page containing detailed order status information and the complete list of purchased products.</li> <li>• Customers can choose any order in the summary table and view the details.</li> </ul>

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Maintain Services and Tools in IBM WebSphere Commerce <i>(continued)</i>	
Activity	Services and tools
View returns	WebSphere Commerce does not have services that let customers get the status of their returns. Returns and refunds processing are assisted-service tasks. IBM Sales Center lets your agents authorize and manage returns and process refunds on behalf of your customers.
Manage payments and bills, orders, and returns	<p>The consumer direct business model supports online payment methods such as credit cards, and offline payment method such as Cash on Delivery or Bill-Me-Later. Customers can manage offline payment methods through their accounts.</p> <p>WebSphere Commerce packages these services that let customers manage their orders.</p> <ul style="list-style-type: none"> <li>• Customers can find orders by order number or customer logon ID.</li> <li>• Customers can view a table that contains a brief summary of the status of each of their orders.</li> <li>• Customers can select an order from within the summary to view its details. For the selected order, WebSphere Commerce displays a Web page containing detailed order status information and the complete list of purchased products.</li> </ul> <p>WebSphere Commerce does not have services that let customers manage their returns. Returns and refunds processing are assisted-service tasks. IBM Sales Center lets your agents authorize and manage returns and process refunds on behalf of your customers.</p>
Replenish/renew orders, supplies, service entitlements, and subscriptions	<p>Customers can create scheduled orders. They specify when they want the first of the scheduled orders to occur and how often they would like the order to repeat.</p> <p>Customers can create a shopping cart from an order. WebSphere Commerce provides a "Re-order" link within the presentation of order details.</p> <p>Orders in IBM WebSphere Commerce comprise items from Catalogs. If you include service entitlements, subscriptions, and supplies in your Catalogs, then customers can renew and replenish orders for those items.</p>

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*Table Q. In this table, we list B2C ecommerce activities within the manage and maintain lifecycle phase and describe the services and tools in IBM WebSphere Commerce that support the activities.*

IBM WebSphere Commerce offers good support for customers’ activities in the manage and maintain lifecycle phase—nothing extraordinary from positive or negative perspectives. The best support is for activities to find and view orders and to replenish/renew orders. WebSphere Commerce’s services to create scheduled orders, to create a shopping cart from an order, and to reorder make it easy for customers to do additional business with you. The crea-

tion of a shopping cart from an order is a clever and useful service.

While we understand that agents should authorize and process returns, customers would like the ability to view the status of their returns, not to have to call or chat with your agents to get it. WebSphere Commerce manages information about returns and their statuses, so giving customers the capability to view the info should be pretty easy.



## ANALYTIC FUNCTIONALITY

It's critical to measure, monitor, and analyze the ecommerce activities that your customers perform. You use the results of this analysis to refine your B2C ecommerce experience. B2C ecommerce products must support this operations-analysis-refinement loop. For example, you should monitor and measure shopping cart abandonment so that you can understand why customers don't complete their purchasing processes.

We evaluate these two factors for analysis capabilities:

- Instrumentation—collecting, logging, and organizing information for analysis.

- Reports—analyzing instrumented information through its selection, formatting, and presentation.

Ideally, a B2C ecommerce product should instrument all customers' activities on your ecommerce site. Reports should analyze all instrumented data for all customers, customer groups, or individual customers and households for a specifiable period of time.

### Analytic Functionality in IBM WebSphere Commerce

In Table R, we describe how analytic functionality in IBM WebSphere Commerce addresses our evaluation criteria. Our analysis follows the Table.

Analytic Functionality in IBM WebSphere Commerce	
Activity	Services and tools
Instrumentation	<p>WebSphere Commerce is instrumented by these four events that are triggered by the actions of its users at the UI.</p> <ul style="list-style-type: none"> <li>• Page view</li> <li>• Product view</li> <li>• Cart view</li> <li>• Element view (of a Web 2.0 component)</li> </ul> <p>You can configure this instrumentation by enabling and disabling individual events. You can also add additional custom events. Event configuration and customization are coding tasks.</p> <p>OmniFind Discovery Edition is instrumented by logging search queries and system responses.</p>
Reports	<p>WebSphere Commerce has three sources of reports:</p> <ul style="list-style-type: none"> <li>• Commerce Accelerator Operational reports</li> <li>• Coremetrics reports</li> <li>• OmniFind Discovery Edition reports</li> </ul>

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<b>Analytic Functionality in IBM WebSphere Commerce (continued)</b>			
<b>Activity</b>	<b>Services and tools</b>		
<p>Reports (continued)</p>	<p>Commerce Accelerator Operational reports are organized into groups by subject.</p> <table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top; width: 50%;"> <p>Customer reports</p> <ul style="list-style-type: none"> <li>• Registration reports</li> <li>• Business Audit report</li> </ul> <p>Store reports</p> <ul style="list-style-type: none"> <li>• Storefront Usage report</li> <li>• Store Performance Evaluation report</li> </ul> <p>Returns reports</p> <ul style="list-style-type: none"> <li>• Outstanding Returns report</li> <li>• Return Receipts Not Disposed report</li> <li>• Returns with Partial Receipts report</li> <li>• Returns report</li> </ul> </td> <td style="vertical-align: top; width: 50%;"> <p>Inventory reports</p> <ul style="list-style-type: none"> <li>• Inventory Receipts by Product report</li> <li>• Inventory Receipts through Expected Inventory Records report</li> <li>• Inventory Status report</li> <li>• Open Expected Inventory Records report</li> <li>• Overdue Backorders report</li> <li>• Inventory Adjustments report</li> </ul> <p>Order reports</p> <ul style="list-style-type: none"> <li>• Order Summary report</li> <li>• Products on Backorder report</li> <li>• Shipping Exceptions report</li> <li>• Manifested orders report</li> <li>• Future orders report</li> <li>• Blocked orders report</li> </ul> </td> </tr> </table> <p>OmniFind Discovery Edition provides two kinds of reports: Insight Reports and Interactive Analytics.</p> <ul style="list-style-type: none"> <li>• Insight Reports are static HTML reports including Usage Summary Reports, Usage Intelligence Reports, Content and Knowledge Gap Reports, and an Exposure of Buried Content Report. Reports can be generated for daily, weekly, monthly, and annual periods, or for a specified date range. All reports include both numeric count and the percentage of all user requests in the chosen time period. By default, the top 20 results are produced for each report. However, this number can be set to any number you want.</li> <li>• Interactive Analytics produces reports that support drill down to individual queries and results. Search administrators can view and customize reports based on user interactions, tuning and content utilization, and system performance. Interactive Analytics also includes a tool for defining and generating custom reports.</li> </ul>	<p>Customer reports</p> <ul style="list-style-type: none"> <li>• Registration reports</li> <li>• Business Audit report</li> </ul> <p>Store reports</p> <ul style="list-style-type: none"> <li>• Storefront Usage report</li> <li>• Store Performance Evaluation report</li> </ul> <p>Returns reports</p> <ul style="list-style-type: none"> <li>• Outstanding Returns report</li> <li>• Return Receipts Not Disposed report</li> <li>• Returns with Partial Receipts report</li> <li>• Returns report</li> </ul>	<p>Inventory reports</p> <ul style="list-style-type: none"> <li>• Inventory Receipts by Product report</li> <li>• Inventory Receipts through Expected Inventory Records report</li> <li>• Inventory Status report</li> <li>• Open Expected Inventory Records report</li> <li>• Overdue Backorders report</li> <li>• Inventory Adjustments report</li> </ul> <p>Order reports</p> <ul style="list-style-type: none"> <li>• Order Summary report</li> <li>• Products on Backorder report</li> <li>• Shipping Exceptions report</li> <li>• Manifested orders report</li> <li>• Future orders report</li> <li>• Blocked orders report</li> </ul>
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Analytic Functionality in IBM WebSphere Commerce <i>(continued)</i>	
Activity	Services and tools
Reports <i>(continued)</i>	Coremetrics for WebSphere Commerce Web analytics has these reports: <ul style="list-style-type: none"> <li>• Marketing Experimentation</li> <li>• Campaigns</li> <li>• Promotions</li> <li>• E-Marketing Spots</li> <li>• Extended Sites</li> <li>• Web 2.0 Store</li> <li>• Gift Center</li> <li>• Sales Center</li> </ul>

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*Table R. We describe how WebSphere Commerce addresses our evaluation criteria for analytic functionality in this table.*

Note that we've presented just the reports that support the consumer direct business model in Table R. WebSphere Commerce has many B2B reports that we didn't show.

Analytic functionality in WebSphere Commerce is mixed. On one hand, the product is instrumented comprehensively. For WebSphere Commerce, the four events collect data on every aspect of customer behavior for ecommerce activities. For OmniFind Discovery Edition, all search queries and system responses are collected. In addition, across Commerce Accelerator, Coremetrics, and OmniFind Discovery Edition, you have a wealth of reports to analyze.

On the other hand, instrumentation and reporting are not well integrated among WebSphere Commerce, Coremetrics, and OmniFind components. Logs and reports are quite separate, making it difficult to get a complete view of customer behavior, store performance, or marketing and merchandising effectiveness. Also, most of the reports present information about your internal processes—inventory, orders, and returns for Operational reports, marketing and merchandising performance for the Coremetrics reports, and search performance and effectiveness for the OmniFind report.

There are only five reports about your customers and the activities that they perform on your WebSphere Commerce site.

- Business Audit Operational report lets you see the commands that were processed for users during a specified time period.
- Registration Operational reports provide information about registered customers within a specified time period.
- Storefront Usage Operational report presents key data about orders, customers, and visits.
- User Actions OmniFind Insight report presents the actions that users take to find answers. For example, this report indicates how many times users are restarting their search.
- Customer Intelligence is a set of three OmniFind Interactive Analytic reports. The queries report presents the most frequently-occurring queries received by the system. The constraints report presents the top constraints (conditions to limit results) that users imposed on queries. The terms report presents top concepts that occur most often in queries.

**ARCHITECTURE**

Architecture defines how B2C ecommerce products are deployed, what environments they support, and how they integrate with external systems and data. Architecture is a very important evaluation factor. It determines how easily they can be implemented and integrated into your cross-channel, cross-lifecycle customer experience.

We’ve examined much of the architecture already in our sections about key technologies for

Web content, data, and integration. The remaining evaluation criteria within architecture are deployment options and environments.

**IBM WebSphere Commerce Architecture**

In Table S, we describe how the architecture of IBM WebSphere Commerce addresses our evaluation criteria. Our analysis follows the Table.

IBM WebSphere Commerce Architecture Evaluation				
Criterion	Evaluation			
Deployment	IBM offers three deployment options for IBM WebSphere Commerce: <ul style="list-style-type: none"> <li>• On-premise</li> <li>• Hosted via IBM Business Hosting Services and partners</li> <li>• SaaS via partners</li> </ul>			
Environments	Clients <ul style="list-style-type: none"> <li>• Firefox</li> <li>• IE</li> <li>• Mozilla</li> <li>• Netscape</li> <li>• Opera</li> </ul> Commerce Accelerator <ul style="list-style-type: none"> <li>• IE</li> </ul> Management Center <ul style="list-style-type: none"> <li>• Firefox</li> <li>• IE</li> </ul> Mobile clients <ul style="list-style-type: none"> <li>• WebSphere Commerce provides no direct support for mobile devices. Mobile device support is delivered by mobile gateway providers.</li> </ul>	Server operating systems <ul style="list-style-type: none"> <li>• IBM AIX</li> <li>• IBM OS/400</li> <li>• Microsoft Windows</li> <li>• Redhat Linux</li> <li>• SuSe Linux</li> <li>• Sun Solaris</li> </ul>	Web infrastructures <ul style="list-style-type: none"> <li>• IBM WebSphere</li> </ul>	WebSphere Commerce Databases <ul style="list-style-type: none"> <li>• IBM DB2</li> <li>• Oracle Server</li> <li>• Cloudscape (developments)</li> </ul>

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*Table S. We describe how IBM WebSphere Commerce addresses our evaluation criteria for architecture in this Table.*

We're pretty impressed with the range of environments that WebSphere Commerce supports. It's no surprise that WebSphere is the only supported infrastructure, but server operating system support is quite good, and WebSphere Commerce has always supported Oracle Server (and never supported SQL Server). Client support is improving. Remember that Commerce Accelerator, which supports only IE, is being replaced by Management Center, which supports IE and Firefox. IBM is taking a practical approach to mobile device support by relying on mobile gateway providers. Mobile devices are in a period of rapid change. They are becoming more PC-like with support for standard browsers. It doesn't make sense for an ecommerce supplier to invest in support for them.

## PRODUCT VIABILITY

You want to purchase an ecommerce product that is well proven and widely used for your type of business. You also want a product that you can implement within a budget and schedule, and a product that will continue to be able to address your requirements in future versions. In other words, you want a viable product.

As we do in all of our evaluations of software products, we consider the business aspects of ecommerce products in the product viability section of our framework. A product's viability is much easier to

evaluate than its operational functionality, channel support, analytic functionality, or architecture, but the factors that contribute to product viability can be real deal breakers. For example, a product may be targeted for industry segments other than the ones in which you do business. A product may be brand new with no reference customers in companies similar to yours. Or the product's price might break your budget.

We've identified six factors in evaluating product viability. They are:

- Product background (version history, introduction, development approach)
- Installed base
- Target market(s)
- Pricing
- Product plans
- Competition

### IBM WebSphere Commerce Product Viability

In Table T, we describe the product viability of IBM WebSphere Commerce. Our analysis follows.

IBM WebSphere Commerce Product Viability		
Factor	Description	
Version history	Version	Date
	WebSphere Commerce Version 6.0 Feature Pack 3	December 2007
	WebSphere Commerce Version 6.0 Feature Pack 2	April 2007
	WebSphere Commerce Version 6.0 Feature Pack 1	September 2006
	WebSphere Commerce Version 6.0	April 2006
	WebSphere Commerce Version 5.0	January 2001

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<b>IBM WebSphere Commerce Product Viability</b> <i>(continued)</i>	
<b>Factor</b>	<b>Description</b>
Product introduction	Net.Commerce Version 1 November 1996
Release cycle	<p>IBM has major and minor release cycles for WebSphere Commerce.</p> <ul style="list-style-type: none"> <li>• Two to three year major release cycle for new Versions</li> <li>• Six to eight month minor release cycle for Feature Packs</li> </ul>
Development approach	<p>IBM WebSphere Commerce and OmniFind Discovery Edition are designed and developed primarily by IBM's internal R&amp;D staff.</p> <p>IBM uses a number of Open Source components in WebSphere Commerce. These include Java, Web 2.0, Web Services, and XML components, as well as the Eclipse SDK.</p> <p>OmniFind Discovery Edition includes OLAP technology from Microstrategy for its Interactive Analytics reports.</p>
Installed base	IBM claims that approximately 1500 customers have implemented IBM WebSphere Commerce across its 12-year history with 90 new customers purchasing a WebSphere Commerce product in 2007.
Target markets	<p>IBM has a broad target market for WebSphere Commerce. It includes companies of all sizes that do B2B and B2C ecommerce. IBM has been successful selling WebSphere Commerce in the following industry segments, but the product includes no industry-specific technology or functionality.</p> <ul style="list-style-type: none"> <li>• Automotive</li> <li>• Chemical &amp; Petroleum</li> <li>• Consumer Products</li> <li>• Education</li> <li>• Electronics</li> <li>• Government</li> <li>• Health &amp; Life Sciences</li> <li>• Industrial</li> <li>• Media &amp; Entertainment</li> <li>• Retail</li> <li>• Telecommunications</li> <li>• Travel &amp; Transportation</li> <li>• Wholesale Distribution &amp; Services</li> </ul>
Deployment options	<ul style="list-style-type: none"> <li>• On-premise</li> <li>• Hosted by IBM e-Business Hosting Services or by IBM partners</li> <li>• SaaS via IBM partners</li> </ul>

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IBM WebSphere Commerce Product Viability <i>(continued)</i>	
Factor	Description
Price	<p>For on-premise and hosted deployments, IBM sells WebSphere Commerce on a pricing model of Value Units (VU), where 100 Value Units equal one CPU.</p> <p>The minimum price for WebSphere Commerce is \$21,200 per 100 VUs, including first year maintenance. List price for all WebSphere Commerce offerings per 100 VUs, including first year maintenance, is as follows:</p> <ul style="list-style-type: none"> <li>• WebSphere Commerce Enterprise: \$164,000</li> <li>• WebSphere Commerce Professional: \$105,000</li> <li>• WebSphere Commerce Express: \$21,200</li> <li>• Omni Find Discovery Edition: \$77,500</li> <li>• WebSphere Commerce Gift Center: \$16,000 per 100 VU plus \$13,300 per pack of 25 physical retail stores</li> <li>• WebSphere Commerce Sales Center: \$17,500 per 10 authorized users</li> <li>• WebSphere Commerce Enterprise Developer: \$32,900 per authorized user</li> <li>• WebSphere Commerce Professional Developer: \$19,700 per authorized user</li> <li>• WebSphere Commerce Express Developer \$3,720 per authorized user</li> </ul> <p>For SaaS deployments, IBM licenses WebSphere Commerce to business partners who, in turn, offer the product to organizations like yours. The license model is based on a percentage of aggregate, net online sales for the hosted sites.</p>
Plans	<p>Given the WebSphere Commerce release cycle, we believe that IBM will deliver Feature Pack 4 sometime during 2H2008 and a new major version sometime in 2009.</p> <p>Within Feature Pack 4, we expect that IBM will continue the migration of WebSphere Commerce architecture to the BOD model and the migration of WebSphere Commerce administrative, marketing, and merchandising tools to Management Center.</p> <p>IBM is keeping quiet about the next major version of WebSphere Commerce. The company claims that it has not yet finalized the feature set, but you get a hint of what to expect through IBM product strategy, below.</p> <p>Long term, IBM's strategic product vision for WebSphere Commerce is as the market-leading Customer Interaction Platform, a platform that enables companies to deliver consistent, cross-channel customer-centric experiences. Future versions will:</p> <ul style="list-style-type: none"> <li>• Continue to support "Customer Centric Commerce"</li> <li>• Embrace the latest technologies to enable sellers to revolutionize the customer experience across all channels</li> <li>• Extending cross-channel support to include mobile ecommerce, POS, and Kiosk</li> <li>• Support a wide range of B2B, B2C, and Multi-Channel Retailing business models</li> </ul>

IBM WebSphere Commerce Product Viability <i>(continued)</i>	
Factor	Description
Competition	ATG Commerce Suite, IBM ecommerce, Escalate e-WebSphere Commerce, and GSI e-WebSphere Commerce platform are the key competitors to IBM WebSphere Commerce. ATG Commerce Suite is the closest competitor. ATG and IBM have been ecommerce competitors since 1997.

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*Table T. Product viability factors for IBM WebSphere Commerce are listed and described in this table.*

WebSphere Commerce is absolutely a viable product. It has a long and successful history, a large and growing customer base, and a reasonably regular release cycle that improves technology and functionality continuously. WebSphere Commerce has come a long way from its CGI origins as Net.Commerce in 1996. It's a modern product built on an elegant SOA architecture of current technologies.

Our only viability concern is with the mix of toolsets and architectures in the current release and feature pack. We've made this point previously in this report.

New in WebSphere Commerce is the SaaS deployment option. IBM has offloaded support for SaaS to its internal hosting organization and its business partners. It's so new that IBM did not provide references and stated that the deployment option has essential no installed base yet, although eight to twelve deployments are expected by the end of 2008. We're anxious to see how WebSphere Commerce does with SaaS. Its SOA and short feature pack release cycle should help make it competitive.

Price-wise, WebSphere Commerce has always been competitive. IBM states that no customer pays the list prices shown in Table T. Also, expect to spend about twice your license fees for on-premise deployment of professional services to implement your ecommerce site. That's more than the services needed for competing offerings. IBM explains that most WebSphere Commerce customers require significant professional services to support the integration of their ecommerce systems with external applications both at the storefront with applications such as Endeca, ODE, Taxware, Scene 7, a configurator, Fedex/UPS, and CyberSource (fraud), as well

as with back-end ERP, order management, and fulfillment systems.

## COMPANY VIABILITY

You want to purchase a viable product or add-on feature from a viable company. A viable company is a going concern with increasing revenue, profits, numbers of customers, and numbers of products.

We consider the business aspects of the supplier company of ecommerce products in the company viability section. Company viability is a little more difficult to examine than product viability because it's more subjective and it's more difficult to obtain source information. For example, what is the effect of a company's age on its viability? Also, because private companies are not required to disclose their financials, it's virtually impossible to assess financial health.

We've identified four factors for examining company viability. They are:

- Company background
- Product lines
- Customer base
- Financials

## IBM Company Viability

IBM is absolutely a viable company. So much so that we do not examine and analyze company viability factors for it.

## THE BOTTOM LINE

Without qualification, we recommend that you consider IBM WebSphere Commerce as the software to run your B2C ecommerce site. Its packaged



services and easily customizable technologies provide excellent support for the activities that your customers want to perform. IBM provides a wealth of samples and examples that simplify and speed your implementation and packages an elegant, Web Services-based approach to integration that supports the complete customer cycle—from finding products to receiving them.

Also, IBM can help you deliver cross-channel ecommerce. IBM Sales Center, an assisted-service offering, will let your customer service reps help your customers perform ecommerce activities, sharing the functionality and data and the customer ex-

perience that you implement for IBM WebSphere Commerce.

IBM WebSphere Commerce can be an offering for every organization. Its three packages and three deployment options can make it attractive to organizations of all sizes in every B2C industry segment. Its Management Center toolset lets business users perform many customization, implementation, and support tasks. It's not a package that you have to turn over to Java developers to build and deploy your site.

In Table U, we summarize our evaluation and analysis in the PSGroup Report Card on IBM WebSphere Commerce.

<b>PSGroup Report Card on IBM WebSphere Commerce</b>			
<b>Evaluation Criteria</b>	<b>Evaluation</b>	<b>Key Strengths</b>	<b>Key Limitations</b>
Web content	Exceeds requirements	<ul style="list-style-type: none"> <li>• Reusable Web pages are included in the starter stores.</li> <li>• Many, many samples and examples</li> <li>• Support for Web 2.0</li> </ul>	
Search	Needs improvement		OmniFind provides excellent search capabilities but integration with WebSphere Commerce is limited.
Customization	Exceeds requirements	WebSphere Commerce is very flexible. IBM provides excellent documentation and many reusable samples.	
Personalization	Meets requirements		
Notifications	Meets requirements		

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PSGroup Report Card on IBM WebSphere Commerce <i>(continued)</i>			
Evaluation Criteria	Evaluation	Key Strengths	Key Limitations
Data	Exceeds requirements	<p>Customer and product data are rich and flexible.</p> <ul style="list-style-type: none"> <li>Member, Member Group, and User entities represent customers comprehensively</li> <li>Catalogs and Sales Catalogs, SKUs, bundles, packages, static kits, and dynamic kits represent products comprehensively</li> <li>Many reusable samples</li> </ul>	Customer data in customer data does not support households.
Integration	Exceeds requirements	Elegant approach to integration—Service Oriented Integration, SOI.	
Explore and select services	Meets requirements		
Purchase services	Meets requirements		
Maintain services	Meets requirements		
Analytic functionality	Needs improvement		Independent but overlapping instrumentation and reports among WebSphere Commerce, Coremetrics, and OmniFind. Limited reporting on customer behavior.
Architecture	Meets requirements		
Product viability	Meets requirements		
Company viability	Exceeds requirements	IBM is absolutely a going concern.	

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*Table U. The PSGroup Report Card on IBM WebSphere Commerce summarizes our analysis and evaluation along the major criteria of our framework for customer service.*

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**MITCHELL I. KRAMER** is a Senior Vice President and Senior Consultant at the Patricia Seybold Group. Kramer currently focuses on customer relationship management technology, architecture, and analytic applications as well as the computing infrastructure and information technologies that support this customer-centric domain. Kramer applies his experience and expertise to help customers evaluate, compare, and select CRM products and develop approaches toward successful implementation. Product vendors continue to leverage Kramer's skills and insights to develop product requirements, to better understand the competitive environment, and to assist in planning and delivering marketing programs.

Kramer draws on his extensive primary and secondary market research in the architecture, design, evaluation, and selection of enterprise-wide distributed computing infrastructures. In consulting engagements, Kramer often uses the technology frameworks he's developed with corporate IT organizations to help them with architecture and product selection decisions. He frequently works with companies to help them determine product requirements, market and product positioning, competitive analysis, and customer satisfaction. Kramer has successfully managed company launches, product introductions, and business and product repositioning. He has also developed and documented business plans for raising capital and for mergers and acquisitions.



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The CEO and founder, Patricia Seybold, is the *New York Times* best-selling author of *Customers.com* and *The Customer Revolution*. Patty's latest book, *Outside Innovation*, is [now available](#).

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