

Bringing Web 2.0 to the
Enterprise: Leveraging Social
Computing Technologies for
ERP Applications

An Epicor White Paper

EPICOR®

Abstract

Today's business applications are not flexible enough to keep pace with the businesses they support. Users must figure out where to find information, located in isolated silos, that supports their tasks; the IT costs of keeping up with evolving business requirements remain high. Adding collaborative Web 2.0 technologies, such as enterprise search, presence, and mashups to business applications is increasingly seen as a way to address these challenges both for business users and IT alike. Yet while many business users are familiar with these technologies through personal use, they remain uncertain about how these new capabilities can support their business strategies. This white paper details how Web 2.0 technologies support business strategies by improving efficiency and productivity as well as harnessing knowledge through collaboration. They also reduce IT costs by simplifying integration and improving IT administration and maintenance.

Table of Contents

Today's Applications Are Too Inflexible to Keep Pace with Businesses	1
How Web 2.0 Technologies Improve Strategic Business Operations	2
Enhancing Collaboration	4
Ease of Use Extends the Reach of Enterprise Applications	5
Mashups Simplify Integration	6
Improved Administration	6
Benefits of Incorporating Web 2.0 into Enterprise Applications	7
Technology Requirements to Integrate Web 2.0 Technologies into Enterprise Applications	8
Improving Information Findability	9
SOA Simplifies Mashups	9
SOA-based Applications are Easy to Deploy, Manage, Upgrade, and Use	9
The Epicor 9 Solution	10
Conclusion	11
About Epicor	12

Today's Applications Are Too Inflexible to Keep Pace with Businesses

According to the analyst firm Forrester, most business applications are not flexible enough to keep pace with the businesses they support. Today's applications force users to figure out how to map isolated pools of information and functions to their tasks and processes. And they force IT professionals to spend too much of their budget to keep up with evolving business models and requirements.

Increasingly, software vendors and businesses are bringing Web 2.0 capabilities from the consumer realm to business applications to address these end user and IT challenges. The idea of bringing familiar Web 2.0 capabilities into the business world was first discussed in the spring of 2006 when Harvard Professor Andrew McAfee coined the term "Enterprise 2.0" to describe this phenomenon in an article that appeared in MIT Sloan Management Review entitled "Enterprise 2.0: The Dawn of Emergent Collaboration."¹ Since then, software vendors have been working to make this idea a reality by incorporating a range of Web 2.0 technologies such as enterprise search, Web-based collaboration, mashups and other concepts into business applications to improve efficiency, effectiveness and productivity. Unlike the consumer realm, businesses must control who sees critical business information. Therefore software vendors have been infusing these technologies with the security and management features found in traditional software applications.

While many business users are familiar with these technologies through personal use, they remain uncertain as to how these technologies can provide strategic benefits to their business. Indeed, according to the aiim Market IQ study, "Enterprise 2.0: Agile, Emergent, and Integrated,"² most organizations are not incorporating Web 2.0 technologies strategically. Forty-five percent of the surveyed organizations are predominantly deploying Web 2.0 technologies in an ad hoc manner. Only 26 percent of the organizations are taking a predominant and strategic approach to Web 2.0 technology deployment. The reason is that businesses are not entirely clear on how to incorporate these technologies into their strategic operations.

¹ <http://sloanreview.mit.edu/smr/issue/2006/spring/06/>

² <http://www.aiim.org/ResourceCenter/Research/marketiq.aspx>

How Web 2.0 Technologies Improve Strategic Business Operations

The value of Web 2.0 technologies is that they bring capabilities to business users that were not possible previously. These include enabling users to securely access structured and unstructured information across the enterprise in a single search; enhancing collaboration both internally and with partners, suppliers and customers; boosting the usability of business applications; improving the ability to customize and integrate applications; as well as simplifying application upgrades and maintenance. The strategic value of these capabilities depends on the organization's business strategy. For example, some organization will want to enhance customer service by empowering employees with the information they need to better address customer questions. Others will wish to bring new products to market faster by improving collaboration between the enterprise and its suppliers, customers and partners. And others will have different objectives.

The following describes the business challenges addressed by new Web 2.0 technologies address and ways that organizations can incorporate them to create powerful new business models.

Enterprise Search Makes Information Easier to Find

Information is of no use if it can't be found. Yet today, it is difficult for business users to find the information they need on the corporate Intranet. Less than half of the respondents to a recent survey by Forrester reported that it was easy for them to find what they're looking for on their Intranets.³ One reason is that different types of information—structured and unstructured text information—are stored in numerous siloed systems, including databases, content management systems, e-mail archives, and so on. Users need to know in advance where this information is located.

In addition, unstructured data is usually categorized by professionals and requires users to know the categorization structure in order to use it. Searches of unstructured data, moreover, commonly return large amounts of irrelevant information.

In contrast, consumer users have become adept at instantly retrieving highly relevant content on the Web using Google™-type search capabilities. A study by the Pew Internet & American Life Project found that 87 percent of Internet searchers report having successful search experiences most of the time.⁴

³ M. Morris, "How Do Users Feel About Technology?" Forrester Research, Apr. 8, 2005.
⁴ D. Fallows, "Search Engine Users," Pew Internet & American Life Project, January 2005.

Web 2.0 Improves Findability and Relevance of Information While Maintaining Security

Web 2.0 makes enterprise information more easily discoverable in a number of ways. It enables users to search for all types of data in a single search; it improves the relevance of results through a Google-inspired link structure and allows content categorization to arise organically through tag clouds; it augments returned search results with additional data, as well as updates users about new content automatically through real-simple syndication (RSS). At the same time, role-based security limits data access to authorized users.

- **Locating Information from Multiple Repositories** – Unlike today’s siloed searches that require users to know in advance where to find information, enterprise search capabilities allow users to perform a single search through all enterprise repositories, including file systems, databases, document repositories, websites as well as internal corporate and external libraries, journals, feeds and so on. Users can conduct these searches either from within enterprise applications or their standard Web browser, such as Microsoft® Internet Explorer®. With this type of comprehensive enterprise search functionality results are returned immediately and productivity is greatly improved.
- **Improving Relevance** – To reduce the amount of irrelevant content returned, Web 2.0 search capabilities use a Google-inspired link structure. This structure assumes that the more Web pages that link to a particular piece of content, the more relevant that content must be and places that content higher on the list of search results.

Another way that Web 2.0 search capabilities improve the relevance of returned results is through Tag Cloud capabilities. Rather than imposing an upfront categorization scheme, Tag Clouds enable users to categorize content by attaching simple one-word descriptions to it called tags. Often referred to as a folksonomy (a categorization scheme developed by folks), this categorization construct reflects the information structures and relationships that people actually use, rather than ones planned for them in advance.

- **Enhancing Search Results** – Once search results come back, Web 2.0 capabilities are available that allow users to specify how they want to see the information, whether in a list, a table, as raw data for use in a spreadsheet or some other format. This allows users to use search results more easily in their work processes.

Users can also obtain additional information related to (and that amplifies) the search result. For example, a search that brings back a customer record could also link to a mapping program so the user can see the customer’s location.

Users can also drill down to find additional information. For example, if a search locates a database record containing a customer order, the user might find how that order was shipped. As a result, users can browse to find information that they might not have thought to search for in advance.

- Keeping Up to Date with RSS – Even with powerful search tools delivering relevant content, an end user can easily feel overwhelmed with online content. New content is added so often that it can become a full time job just to check for updates on all sites of interest. Technology such as real simple syndication (RSS), which signals users when new content of interest appears, can solve this problem. Authors such as bloggers use RSS to generate a short notice each time they add new content. The notice usually consists of a headline that is also a link back to the full content. Software for users called “aggregators” periodically queries sites of interest for new notices, downloads them, puts them in order and displays their headlines. With RSS, users no longer have to surf constantly to check for changes. Instead, they simply consult their aggregators, click on headlines of interest, and are taken to the new content.
- Protecting Data Security – While enterprise search tools greatly simplify business users’ ability to find information, unlike a consumer environment, businesses do not typically wish to make all of the data on their systems available to all comers. For example, enterprises will want to keep payroll data away from prying eyes. Therefore, Web 2.0 search tools used for business provide user authentication and role-based access control to ensure that users access only information that the organization authorizes them to see.

Enhancing Collaboration

Organizations are increasingly looking to improve collaboration both internally and externally with customers, suppliers, and partners. Many organizations are adopting virtual workforces to address younger workers’ demands to work from home to improve flexibility and work/life balance. Other organizations are establishing virtual collaborative teams across the globe at the intra-corporate level to take advantage of extended enterprise models and outsourcing/offshoring.

However, today’s communication channels impede collaboration by making it difficult to locate colleagues in real time. In addition, users are unable to find knowledge generated during this collaboration for later reuse. When making phone calls, the chances of speaking to a human being are only 18 percent and people have to try 4.15 times on average to reach the party they want. While email makes it easier to get in touch with people, exchanging emails with co-workers can be inefficient. Emails also create multiple copies of messages or different versions of documents. And email systems provide no centralized place to search for a message or attachment. Instant Messaging (IM)/Chat makes it easy to discover who is available for collaboration at any given time and provides the technology to do so in real time, but it does not save the results of interactions. As a result, others in the organization do not benefit from the knowledge transferred.

Presence: Enabling Real-Time Collaboration and Knowledge Dissemination

Presence technology breaks down barriers to global collaboration. Presence allows users to see who else is available for collaboration right from their business applications. It includes technologies such as Instant Messaging for carrying out the collaboration. And it can keep records of the interaction, either by saving the contents of an IM conversation or a recording of a Voice over Internet Protocol (VoIP) conversation. As a result, interactions become highly leverageable since day-to-day interaction by users leaves behind discoverable information that reflect the ideas and work conducted within business processes.

For example, a user can see that an engineer is online and IM them to ask a question about a technical issue a customer is having with the company's product. When the engineer replies, the response is recorded and becomes searchable using enterprise search tools so other employees with the same question can instantly find the answer.

The following are just a few examples of how companies can benefit from improved collaboration:

- One major packaged goods vendor uses collaborative tools to connect employees to each other and to outsiders to bring smart new products to market faster.
- Software users can share tips and tricks.
- Developers can brainstorm ideas for the next release and ask customers to rate the priority or contribute enhancement suggestions
- In a large global organization, project team members around the world can share information, files and ideas without meeting face-to-face in a conference room.
- Companies can support ad hoc processes and problem solving. While prescribed policies and procedures will always have a place, workers on the ground often need to make on-the-spot decisions and develop their own solutions as problems occur. Collaborative environments can give workers access to the right information and talent to solve their problems.

Ease of Use Extends the Reach of Enterprise Applications

Business applications are typically much more difficult to use than their consumer Web 2.0 counterparts. That difficulty comes at a price. The Gallup organization estimates that the total cost of businesses not engaging employees through IT is \$380 billion in the U.S. alone.⁵ In addition, many enterprises wish to open their business applications to partners, suppliers, and customers to enable the extended enterprise. However, organizations are unable to benefit from doing so if applications are too difficult to use without training.

⁵ <http://www.informationweek.com/news/internet/web2.0/showArticle.jhtml?articleID=208403379>

As technologists build Web 2.0 capabilities, they're making sure their offerings are easy to use. With Web 2.0 tools, users can author, link, tag and so on with a Web browser, a few clicks and some typing without the need for HTML skills. Because these tools are so easy to use, people inside and outside the organization can use them without special training. As a result, people inside the organization become more efficient and productive while businesses can better open up their organizations' business systems via the extended enterprise to partners, suppliers, and customers to streamline supply and demand chain operations.

Mashups Simplify Integration

As organizations seek to respond more quickly to changing business requirements, IT has increasingly become a bottleneck. Many application development and integration projects that could meet a specific business need are never completed because IT lacks the necessary time and resources.

Mashups allow business users to perform rapid, low-cost integration themselves using customizable, agile user interfaces. They integrate or overlay "standalone" applications (which can be a component of an ERP system, such as order entry capabilities, or some other web service) and data sources into an aggregated offering. The new applications can be configured to display different but related content side by side or to co-mingle content in any manner.

For example, an organization could create a mashup between a CRM system and Microsoft Virtual Earth™ to mark on the map where successful sales have occurred so sales executives can see which regions are successful and which need a boost. Or they might combine this mapping technology with GPS technology to locate delivery trucks at any given time.

Because of these advantages, mashups are expected to grow rapidly. The Gartner Group expects 80 percent of enterprise applications to be mashups by 2010.⁶

Improved Administration

In the past, business applications have required complex upgrades both for servers and for individual user systems. Web 2.0 technologies allow IT organizations to keep this process in the background by performing remote updates on application and Web servers and rolling them out companywide via services or downloads. This reduces the time and cost of managing upgrades and maintenance day-to-day for users and IT.

⁶ <http://www.gartner.com/it/page.jsp?id=530109>

Benefits of Incorporating Web 2.0 into Enterprise Applications

By bringing Web 2.0 capabilities to enterprise applications, companies can improve productivity and collaboration while lowering IT costs.

- Improved efficiency and productivity – Using Web 2.0 technologies in business gives the enterprise the best of both worlds. Business users accustomed to traditional business applications can continue to use their existing applications. Those who grew up with the consumer web and social computing can use their accustomed interfaces. As a result, users gain the flexibility to work with business systems and information in the manner that makes them most productive. Better search capabilities enable users to find information they are authorized to access far more quickly and intuitively. Mashups improve both IT and end user productivity by allowing business users to build just the right applications to address business requirements faster and more easily.
- Harness knowledge through collaboration – Better collaboration empowers the business and extended enterprise to better harness information to more effectively solve business problems and improve productivity.
- Reduce costs – Organizations lower costs through the ability to maintain and administer applications on Web and Application servers, which end users access via the Web, rather than having to maintain and administer large numbers of individual desktop systems.

Technology Requirements to Integrate Web 2.0 Technologies into Enterprise Applications

With many software vendors claiming to incorporate Web 2.0 technologies into their business applications, what should an organization look for when evaluating these solutions? The majority of ERP applications today are built using decade-old client/server technology. However, only a business application built from the ground up on top of a service-oriented architecture (SOA) platform is able to seamlessly incorporate Web 2.0 capabilities into a business environment.

SOA is a flexible, standardized software architecture that supports the connection of various applications and the sharing of data. It unifies business processes by structuring large applications as an ad hoc collection of smaller modules called services. Services are unassociated units of functionality that do not have embedded calls to each other. Instead, they use protocols that describe how they can talk to each other. With this architecture, a business process expert can link and sequence services to create new business applications. Underlying and enabling this is metadata that describes the characteristics of these services and also the data that drives them. XML has been used extensively in SOA to create data that is that is exhaustively described. WSDL describes the services themselves and SOAL describes the communications protocols.

Many vendors today are transforming existing client/server ERPs into services by creating XML wrappers around them. This enables easier application to application and B2B connectivity. However, applications built natively on top of an SOA platform benefit from a more adaptable, process-based and real-time platform that's built for change. For example, SOA based applications have Business Process Management (BPM) capabilities at their core that allow businesspeople, rather than programmers to re-configure and model business rules and business processes at a business level without customization or change to source code.

Thus, a business application built from the ground up on an SOA platform is able to incorporate Web 2.0 capabilities such as enterprise search, mashups and is easier to deploy, manage, upgrade and use for the following reasons:

Improving Information Findability

An SOA simplifies the process of integrating all of an organization's data sources to enable search of all enterprise data in a single search, whether the data is structured content, such as an invoice or a purchase order stored in a database, or unstructured text stored in a wiki, blog, email, document repository or IM message. Services enable enterprise search by making each data silo accessible to any other service in a clearly formatted, machine-digestible format. This enables the enterprise search service to take data from any service that exposes data and present it, mix it with other data, and syndicate it just as the user needs.

SOA Simplifies Mashups

Services are designed specifically to offer functionality for reuse and for use in composite applications. Thus, SOA simplifies the process of enabling applications to offer core functionality as open services that can be composited or "mashed up" into new services and sites.

SOA-based Applications are Easy to Deploy, Manage, Upgrade, and Use

An SOA enables fully n-tiered applications. Since the client is abstracted from the application, the architecture enables the use of any smart client against the interface, including smart clients, Web browsers, PDAs and Web services (which are a specific type of service that reads and writes eXtensible Markup Language (XML) based on the business logic embedded in them and exchange XML using the Simple Object Access Protocol (SOAP). Because new applications or upgrades are deployed on the server and accessed over the Web via a client application or browser, applications are available 24 hours a day. Upgrades and improvements to services are non-disruptive and instantly available. Web browser-based interfaces are also designed for ease of use.

The Epicor 9 Solution

The current version, Epicor 9, is built upon the Epicor Internet Component Environment (ICE) 2.0 framework—a next-generation enterprise application which uses True SOA built on the Microsoft .NET Framework to create a truly adaptable enterprise suite of applications. Epicor ICE 2.0 melds SOA and collaborative Web 2.0 concepts, such as enterprise search, presence, and real-time communication, to provide maximum productivity with minimal overhead. Organizations can increase visibility into internal-and external-facing processes through a comprehensive, virtual view of their business. In addition, they can engage resources across a worldwide network in real time, sharing information and insight, making the pursuit of profit truly a team sport.

Epicor's end-to-end solution encompasses the following business areas:

- Financial Management
- Governance, Risk and Compliance Management
- Customer Relationship Management
- Sales Management
- Supply Chain Management
- Service Management
- Product Data Management
- Planning and Scheduling
- Production Management
- Master Data Management
- Human Capital Management
- Enterprise Performance Management

Epicor's technology will support virtually any operating system—from Windows to UNIX to Linux and will support access from virtually any client or device. Database independence ensures maximum choice and flexibility. Enterprises can deploy only the modules required, either in house or via on-demand software as a service (SaaS) deployments. Applications and business processes can be easily tailored to meet ever-changing business requirements in "layers" above the baseline code.

Epicor is designed with secure yet open access to business logic functionality. Information is available anywhere, at any time, on any device, in either a client- or browser-based interface or mobile device. Users get the functionality and accessibility they need, while the Epicor ICE 2.0 framework makes the underlying technologies invisible.

Conclusion

Built from the ground up on an SOA framework, Epicor 9 will fully integrate collaborative Web 2.0 technologies. Enterprise search capabilities make it easier for users to find relevant information wherever it is located on the Intranet or Internet. Collaborative Presence technologies allow organizations to harness knowledge and to work more effectively. Mashup technologies simplify integration to get the right applications into end users hands quickly. And web based technologies are easier for end users to use and for IT to maintain, administer and update enterprise applications. As a result, organizations using Epicor 9 can expect to improve efficiency and productivity, harness knowledge through collaboration, and reduce IT costs.

About Epicor

Epicor Software (NASDAQ: EPIC) is a global leader delivering business software solutions to the manufacturing, distribution, retail, hospitality and services industries. With 20,000 customers in more than 140 countries, Epicor provides integrated enterprise resource planning (ERP), customer relationship management (CRM), supply chain management (SCM) and enterprise retail software solutions that enable companies to drive increased efficiency and improve profitability, and also empower global enterprises to achieve even greater success.

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