

Enterprise Web 2.0, Part 1: Web 2.0 -- Catching a wave of business innovation

Skill Level: Introductory

[Rick Robinson \(rick_robinson@uk.ibm.com\)](mailto:rick_robinson@uk.ibm.com)

Web 2.0 Advocate, IBM Hursley Software Development Lab
IBM

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Web 2.0 is at the center of a wave of excitement concerning how enterprises—commercial or public organisations—are trying to exploit the current generation of Internet technologies. This four-part article [series](#) examines aspects of Web 2.0 relevant to the enterprise. In this first installment, take a look at the business and technical drivers behind Web 2.0, the challenges and opportunities Web 2.0 presents to enterprises, and the relationship between Web 2.0 and Service-Oriented Architecture (SOA).

Introduction

Web 2.0 represents a new wave in business innovation, exploiting the ongoing maturation of the Internet as a new medium for communication and commerce. Whilst Web 2.0 isn't a new trend, having existed since at least 2003 (see "How to Succeed in 2007" in the [Resources](#) section), its adoption by business is at a relatively early stage, and its overall significance is still hotly contested.

This four-part [series](#) focuses on what has become known as *Enterprise 2.0*—the relevance and exploitation of Web 2.0 ideas and technologies by commercial and public-sector organisations (see "The state of Enterprise 2.0" and "The 10 top challenges facing enterprise mashups" in [Resources](#) for more background on Enterprise 2.0):

- **Part 1** examines the business and technical drivers behind Web 2.0, the challenges and opportunities Web 2.0 presents to enterprises, and the relationship between Web 2.0 and SOA.

- **Part 2** covers the major solution types emerging through which enterprises can exploit Web 2.0.
- **Part 3** presents a collection of industry and business scenarios in which those solutions can be deployed, and explains the value that can be realised by doing so.
- **Part 4** is a more technical article focusing on the options for exposing the content and functions of core information and transaction systems such as IBM® CICS®, IBM Information Management System (IMS)[™] and IBM DB2® in Web 2.0 solutions.

Related content

- [IBM Web 2.0 home page](#)
- [Download the IBM Mashup Starter Kit](#)
- [Social computing: Maximizing the power of Web 2.0](#)
- [developerWorks Interviews: Taking Web 2.0 into the enterprise](#)
- [Using Web 2.0 architecture for a more flexible enterprise](#)

Two general interpretations of what Web 2.0 means are widely accepted, both attributed to Tim O'Reilly. The more detailed of these interpretations analyses Web 2.0 into a set of patterns through which technology is currently being used to create and support business models using Internet technologies (see "What is Web 2.0?" in [Resources](#)). The more general second interpretation provides a useful insight into the real nature of Web 2.0. Put simply, following the dot-com bust, we're seeing renewed interest in the use of maturing Internet technologies to create new ways to communicate and do business.

A tipping point

The current interest in Web 2.0 has arisen because of a culmination of economic and technology trends. Taken together, these trends make the social and technical characteristics of the current generation of Internet technologies a fertile source of business innovation. The trends include:

- **An increasing focus throughout organisations, and not just at a leadership level, on innovative ways to improve performance** as it becomes increasingly hard to achieve improvements in organisational performance through cost control or mergers and acquisitions (see the IBM CEO Innovation Survey in [Resources](#)).
- **The continuous global explosion of reach and participation in collaborative, pervasive, richly featured communication**

technologies. Over 1 billion people are now online, nearly 300 million through a broadband connection (see the Internet World statistics link in [Resources](#)). Studies show that a striking number of them contribute content and interact with each other socially and economically in expanding networks rather than using the Web simply to shop or access information (see the Internet World statistics link and "The Internet's Growing Role in Life's Major Moments" in [Resources](#)).

- **Generational changes in attitudes to technology and the media of choice for communication, consumption, and work.** The Internet isn't new to younger generations, who have grown up with it and are comfortable using it for social interaction, commerce, and work (see "Generations Online" in [Resources](#)).
- **Increasing capabilities and falling costs for the manufacture of personalised or customised products.** The era of mass production is evolving into the era of mass personalisation ("Mass Customization: The New Frontier in Business Competition," B. Joseph Pine II, Harvard Business School Press; New Ed edition, 1 May 1999). Anything from clothes to devices to automobiles can be customised or personalised at or about its normal price point, rather than requiring expensive bespoke design or production at a premium (see [Resources](#) for examples).
- **A continuous process of business optimisation resulting in transformation and outsourcing.** Ongoing competition in the global marketplace through successive economic cycles has forced organisations to focus continuously on business optimisation. This includes the integration of the computing systems that support business operations and their increasing exposure within and beyond the enterprise boundary through SOA.

Web 2.0 technologies

Promoting participation: blogs, wikis, and social computing

Since the dot-com bust around 2001, our use of Internet technology has matured, resulting in the evolution of a new communications medium in which people of any generation and from any culture can participate.

For instance, personal profiles, blogs, and wikis provide simple tools that allow people to communicate without understanding underlying Web and browser technologies. Using them, people can share their interests and expertise, and create collaborative content.

By using social bookmarking, people share their links to content and services, making it easier for others to find them. By tagging and rating these links, the

content of the Web is categorised and rated according to the interests of consumers. All of this has resulted in a richer, better-connected Internet in which individuals can meet and communicate with each other on topics of common interest more easily than through any previous medium. [IBM Lotus® Connections](#) and [IBM Lotus Quickr™](#) provide collaboration software incorporating these features.

Promoting syndication and reuse: services, feeds, and widgets

Supporting the applications described in the previous section is a set of technologies that have emerged over the last decade or so. *Syndicated news feeds*—simple streams of stories and information formatted in XML according to the RSS or Atom protocols—are now widespread and enable aggregator sites to carry a vast array of content and let individuals create their own aggregations.

Check out the [Ajax Resource Center](#), your one-stop shop for information on the Ajax programming model, including articles and tutorials, discussion forums, blogs, wikis, events, and news. If it's happening, it's covered here.

Feeds are an example of services created according to *RESTful principles*, a set of design and implementation prescriptions that aim to result in the creation of services that are as scalable and easy to use as the Internet as a whole (REST stands for Representational State Transfer). Many Web sites make their content and functionality available as RESTful services so that they can be incorporated into other Web applications. At the same time, open standards and SOA advancements have made many services and information sources available through robust, secure Web services.

Finally, technologies such as Asynchronous JavaScript + XML (Ajax) provide more richly featured, responsive user interfaces in a browser. The [IBM WebSphere® Application Server Feature Pack for Web 2.0](#) and the [IBM WebSphere MQ Bridge for HTTP](#) both provide features to enable the creation of REST services, feeds, and Ajax user interfaces. The Project Zero community development project (see [Resources](#) for a link) is also exploring the capabilities of a lightweight application environment to deliver Web 2.0 solutions using an approach based on scripting languages.

Promoting agility: situational applications and mashups

Mashup applications put great application construction power in the hands of end users to combine function and content from many sources into new applications at low costs. Frequently, such applications mix operational data with news and events, financial information, or weather. People use mashups to combine external services and information with their own data, such as their holiday plans or the customer with whom they're dealing, in an application that brings together all the information and function they need in one place.

Social computing allows people to share mashups—or the individual feeds and widgets from which they're constructed—with others, bringing this power quickly to the hands of large audiences.

You can [download](#) or [access](#) IBM's Mashup Starter Kit on alphaWorks. For more information on situational applications, check out the developerWorks article series [Mashups -- The evolution of SOA](#).

Web 2.0 releases the value of SOA

From their earliest days, Web services and SOA concepts have promised a new world of composite applications, simply wired together from existing services presented through the Internet. The progress made in applying these technologies and architectures since their inceptions is now bearing fruit with the emergence of Web 2.0.

Whilst not always considered part of the mainstream SOA movement, RESTful services and feeds based on protocols like RSS and Atom have always served as good examples of well-defined SOA services outside the world of Web services. Their widespread availability, in addition to Web services, makes syndication and situational applications possible. So whilst Web 2.0 is a broad theme, it very much includes the concept of composite applications created by combining services, feeds, and widgets enabled through SOA. Correspondingly, the concepts and patterns of Web 2.0 can be used to unlock new value by organisations that have invested in SOA. Part 2 of this series shows examples of this exploitation.

A new world for business

The culmination of technology and business trends drive a number of consequences:

The distribution of all forms of content that can be digitised is undergoing revolutionary change.

The cost of distributing content to a potentially vast global audience has collapsed as content—for example, the written word, film and video, music, numerical data, and pictures—is digitised. As a result, the number of providers of digital content is exploding, and the proportion of content that's accessed through regular *push* channels—print and broadcast, for example—is falling rapidly as consumers access exactly what they want, when they want it, online.

The influence on consumers of traditional approaches to marketing, advertising, and branding is falling.

At the same time that mass-audience broadcasts are becoming less effective for advertisers, individuals across the globe are increasingly able to share their interests

or concerns, to benefit from the experiences of their peers, or to access expert knowledge. Consumer-created reviews and content are now influential on spending patterns and compete for attention with marketing through traditional channels.

Traditional businesses are targeting The Long Tail niche markets for growth and finding themselves in competition with niche providers.

As the cost of customising, personalising, distributing, and accessing products, content, and services falls, it's becoming possible to penetrate niche markets that previously couldn't be serviced, were the exclusive domain of niche providers, or didn't exist. The exploitation of these markets is described by the idea of The Long Tail economics, as they represent the vast number of markets that consist of small numbers of customers, perhaps distributed geographically around the world. They are uneconomic to serve through traditional business models, but can be made accessible through the low-cost models enabled by Web 2.0 technologies. Their importance is increased by the saturation of traditional markets that has occurred in recent years through the sustained focus on business optimisation in them. At the extreme of this scale is the phenomenon of peer-to-peer economic activity, where through the use of Internet-enabled brokers and mediators, individuals can leverage the communications, transactional, assurance, and distribution capabilities that have traditionally been the preserve of large corporations, to do business with each other directly.

New end-user applications need to be delivered more rapidly than ever before, either to increase organisational agility or to deliver new products and services to market.

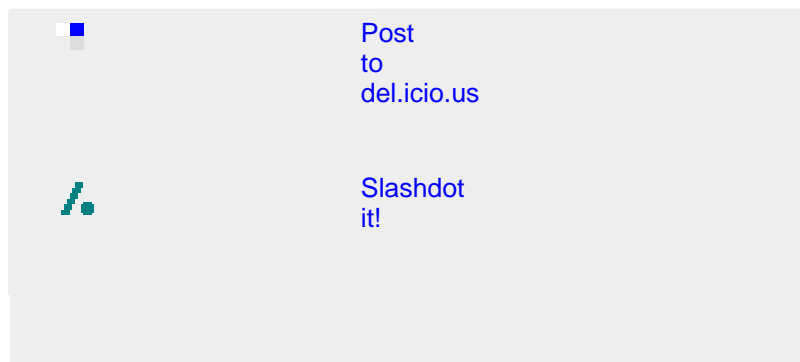
In some sectors, the commercially competitive life of products has reduced to the point where it's shorter than the average application deployment life cycle. So unless application delivery can be speeded up beyond traditional limits, markets become commoditised before they can be reached. In other sectors, the need to rapidly respond to new situations or competitive threats means that business analysts, competitive experts, or operational decision makers need a new type of rapidly assembled data- or content-driven application to enable them to respond. For these, and other reasons, organisations are exploring the deployment and use of situational applications and enterprise mashups—effectively, The Long Tail of business solutions.

Summary

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Web 2.0 is a mix of new approaches to interacting with customers, new Internet-centric business opportunities, and supporting technologies that let individuals connect and interact with each other more easily. In one sense it represents the emergence of new possibilities enabled by the widespread adoption of SOA principles and technologies. Web 2.0 offers business opportunities, but brings challenges in how corporations embrace community, approach the sharing and protection of proprietary information, and identify and exploit The Long Tails in their marketplace. Subsequent articles in this [series](#) explore the opportunities, challenges, patterns, and technologies of Web 2.0 in more detail.

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Resources

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- [Learn more about Lotus Connections](#) and [Lotus Quickr](#).
- Learn more about [IBM WebSphere® Application Server Feature Pack for Web 2.0](#) and the [IBM WebSphere MQ Bridge for HTTP](#).
- Check out the [Tim O'Reilly interview](#) in "How to Succeed in 2007" by Business 2.0.
- Read "[What is Web 2.0?](#)" by Tim O'Reilly, 30 September 2005.
- Check out the [2006 IBM CEO Innovation Survey](#) [PDF].
- Find out more about the [Internet World statistics](#).
- Read "[The Internet's Growing Role in Life's Major Moments](#)" and "[Generations Online](#)" on the Pew Internet and American Life Project Web site.
- See examples of online businesses using Web 2.0 concepts to offer personalized [clothing](#), [devices](#), and [automobiles](#).
- Visit the [IBM Web 2.0 home page](#).
- Download the [IBM Mashup Starter Kit](#).
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- Get more information about mashups in the developerWorks series [Mashups -- The evolution of SOA](#) .
- Learn more about [Project Zero](#).
- Read "[The state of Enterprise 2.0](#)" by Dion Hinchcliffe.
- Read "[The 10 top challenges facing enterprise mashups](#)" by Dion Hinchcliffe.
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About the author

Rick Robinson

Rick Robinson is an IT architect in IBM's Emerging Technologies team where he works with customers and with IBM's product development teams to help them understand and exploit the evolving business and technological impact of Web 2.0. Prior to this appointment, Rick led the SOA and BPM Architecture Practise for IBM Software Services in Europe. Rick is recognised worldwide in IBM as an expert in SOA and Web 2.0, and his work has involved technology strategy, business development, solution architecture, organisational change, engagement management, and technical sales.

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