How Web 2.0 Works
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Introduction to How Web 2.0 Works

Ask a dozen internet experts what the term Web 2.0 means, and you'll get a dozen different answers. Some say that Web 2.0 is a set of philosophies and practices that provide web users with a deep and rich experience. Others say it's a new collection of applications and technologies that make it easier for people to find information and connect with one another online. A few journalists maintain that the term doesn't mean anything at all -- it's just a marketing ploy used to hype social networking sites.

The O'Reilly Media Web site is a prime example of Web 2.0 at work.

Before we get into the debate about what Web 2.0 actually means, let's look at where the phrase originated. In 2004, publishing firm O'Reilly Media and tradeshow production company MediaLive International had a brainstorming session. The two companies planned a conference that addressed the state of the Web, its future and the emerging techniques that would help ensure its success on the Internet. Tim O'Reilly, founder and CEO of O'Reilly Media, wanted to make the point that despite the dot-com crash of 2000, the Web was sure to become an enormous revenue generator.

During this brainstorming session, O'Reilly Media publisher Dale Dougherty coined the phrase Web 2.0 to describe the new Web environment that emerged after the crash. While dozens of Internet companies had declared bankruptcy, a few hardy sites managed to survive. New web sites were appearing every day, and many of them used drastically different business models than the commercial sites that existed before the crash.

Still, no one had a clear definition of what Web 2.0 actually meant. If there really was a Web 2.0, did that mean there was also a Web 1.0? The use of "2.0" implied an improvement, or a new generation of Web sites, but there was no consensus on what made Web 2.0 different from Web 1.0.
In September 2005, Tim O'Reilly posted a blog entry that defined Web 2.0. The explanation spanned five pages of text and graphics illustrating O'Reilly’s take on what the term meant.

O'Reilly's philosophy of Web 2.0 included these ideas:

- Using the Web as an applications platform
- Democratizing the Web
- Employing new methods to distribute information

In this article, we'll explore each of these points. We'll also look at the debate about whether or not Web 2.0 actually has a practical meaning.

**Using the Web as a Platform**

In the blog entry that described his philosophy of Web 2.0, Tim O'Reilly wrote that before the dot-com bubble burst, Web companies like Netscape concentrated on providing a product. In Netscape's case, the product was a Web browser. These products would then serve as the foundation for a suite of applications and other products. O'Reilly's vision of a Web 2.0 company is one that provides a service rather than a product.

The example O'Reilly used in his blog entry was Google. He said that Google's value comes from several factors:

- It's a **multi-platform service**. You can access Google on a [PC](#) or Mac (using a Web browser) or on a mobile device like a [cell phone](#).
- It avoids the business model established by the software industry. You don't need to buy a particular software package to use the service.
- It includes a specialized database of information -- **search results** -- that seamlessly works with its [search engine](#) software. Without the database, the search application is worthless. On the other hand, without the search application, the database is too large to navigate.
Another important part of using the Web as a platform is designing what O'Reilly calls rich user experiences. These are applications and applets -- small programs that fit within a larger program or Web page -- to make Web surfing and accessing the Internet more enjoyable. For example, the service Twitter provides is based off of a very simple concept: Members can send a message to an entire network of friends using a simple interface. But Twitter also allows third-party developers to access part of the Twitter application programming interface (API). This access allows them to make new applications based off the basic features of Twitter. For example, Twitterific is a program for the Mac designed by a third-party developer called the Iconfactory. It integrates the Twitter service into a desktop application for users. While Twitter didn't develop Twitterific, it did give the Iconfactory the information it needed to create the application.

Other sites follow a similar philosophy. In 2007, the social networking site Facebook gave third-party developers access to its API. Before long, hundreds of new applications appeared, using Facebook as a platform. Facebook members can choose from dozens of applications to enhance their browsing experiences.

Keeping it Simple

While it's important for Web services to provide a good experience for users, it's also critical to avoid going overboard. Providing too many options or making a system too complicated for the average user can turn away potential customers. A complex system might appeal to a small core of enthusiastic users, but to have a large customer base, the service has to be both streamlined and uncomplicated. For instance, Web sites with a lot of flash animation, multimedia applications and interactive features might appeal to tech-savvy users with high-speed Internet connections. But, for the average visitor, the sites could come across as a lot of sound and fury, signifying nothing.
The service and access a Web site offers is an important part of Web 2.0's philosophy, and it's related to the idea of web democratization. In the next section, we'll look at how ordinary people are interacting with and changing the Internet.

**Democratization of the Web**

Web democratization refers to the way people access and contribute to the Internet. Many early Web pages were static, with no way for users to add to or interact with the information. In some ways, many companies thought of the Internet as an extension of television -- browsers would look passively at whatever content the Web provided. Other companies had different ideas, though. For example, Amazon allowed visitors to create accounts and submit book reviews. Anyone could play the role of a literary critic. Before long, other customers were using these reviews to help them decide what books to buy. Amazon's members were helping to shape the browsing experience.

The Amazon Web site represents some Web 2.0 concepts in features like its customer book reviews.

The Web 2.0 philosophy emphasizes the importance of people's interactions with the Internet. Everyone has an opportunity to contribute to the Web. And, by paying attention to what users are looking for and doing online, a company can provide better service and build customer loyalty. Some Web pages absolutely depend upon user contributions -- without them, there'd be no Web site. Wikis are a good example of this. Users can enter information, modify existing data or even delete entire sections in wikis. Ultimately, the people who visit the Web site determine what it contains and how it looks.

Tim O'Reilly wrote about the importance of **harnessing collective intelligence**. He stated that the Web sites that are shaped by user contributions will evolve into more superior destinations than other sites. He cited Wikipedia as the perfect example. O'Reilly felt that the community of informed users could monitor and maintain the site. However, since anyone can contribute information to Wikipedia, a person could submit incorrect information either by accident or on purpose. There's no way to guarantee the accuracy of the information, and you can't hold anyone responsible for submitting incorrect information.

Another element of Web democratization is the **tag**. Web tags are labels that allow users to associate information with particular topics. Many sites allow users to apply tags to information ranging from uploaded images to blog entries. Tags become important when people use search engines. Users can tag their information with search terms, and when another user enters a search term that matches the
tag, that information will be listed as a search result. Tagging data makes searching for information faster and more efficient. User-contributed tags are a part of **folksonomy**, a classification system on the Web.

The last piece of the democratization puzzle is **open source software**. An open source program is one in which the programmer allows anyone to look at the code he or she used to create the application. And you can do more than just look. Some may allow you to modify the code to make it more efficient or even to create a new program using the original code as a foundation. Ideally, an open source program will receive the best quality assurance testing available because anyone can examine and test it.

But democratization of the Web is just one part of Web 2.0’s philosophy. In the next section, we’ll look at how Web sites distribute information in a dynamic way.

**Distributing Information**

Before the dot-com crash, many **Web pages** featured pictures and text that the Web page administrators rarely updated. As **Web** editing software became more user-friendly, it became easier to make changes more often. Some companies continued to present information in a static, non-interactive way, but a few began to experiment with new ways of distributing information.

One new way was to use **Web syndication** formats like **Really Simple Syndication** (RSS). With RSS, users could subscribe to a Web page and receive updates whenever the administrator for that page made any changes. Some programmers designed applications that created RSS readers on PC or Mac desktops, which meant users could check on updates for their favorite Web sites without even opening a Web browser.

Another way of sharing information on the Web came as a surprise to many people: **blogs**. While people have created personal Web pages since the early days of the Web, the blog format is very different from the traditional personal Web page. For one thing, most blogs are organized chronologically, so it’s possible for a reader to see the most recent entry, then go back into archives and follow the blog’s progression from start to finish.

Blogs are a good way to get information out to readers fast. People read blogs, see things that interest them and write about it in their own blogs. Information begins to spread from one blogger to another. Marketing firms call this blog-to-blog method of transmitting information **viral marketing**. Many
companies are looking into ways to use viral marketing to their advantage -- it's both powerful advertising and inexpensive because the targeted audience does most of the work for you.

Web pages like blogs rely on the use of **permalinks**. Permalinks are **hypertext** links that connect to a specific blog entry. Without permalinks, discussing blog entries would become a tedious process. All links would lead the user to the main blog page, which may have been updated since the link was first created. Permalinks allow users to anchor a pathway to a specific blog entry. If you see a particularly fascinating discussion on a blog, you can use a permalink to guide your friends there to read up on the subject.

Another key concept to Web 2.0 is the incorporation of non-computer devices into the Internet. Many **cell phones** and **PDAs** now have some level of **Internet** connectivity, and Apple's **iTunes** application integrates smoothly with **iPods**. O'Reilly cites the expansion of Internet services beyond computers as another example of how the Web is evolving.

**Cast Your Pod to the Wind**

Podcasting has become a popular way to share information -- it combines the chronological structure of a blog, the subscription service of a Web syndication format and the option to incorporate a non-computer device to connect to the Web. Video blogs (vlogs) on **YouTube** and other video sites give people another way to share information.

In the next section, we'll look at how some members of the Web community dispute the need for the Web 2.0 term.

**The Web 2.0 Debate**

The term Web 2.0 has inspired a lot of discussion. Some disagree on exactly what the term means, and others argue that it doesn't mean anything at all. Here are some summaries of the main arguments:

- Tim Berners-Lee, the inventor of the **World Wide Web**, dismissed the Web 2.0 concept. He called Web 2.0 "a piece of jargon" and said "nobody even knows what it means" in an IBM developerWorks interview. Berners-Lee said the World Wide Web was always a way for people to connect with one another and that there was nothing new or revolutionary about the Web 2.0 philosophy [source: developerWorks].
- Russell Shaw, a **telecommunications** author, posted a **blog** entry in 2005 in which he said that the term was nothing more than a marketing slogan. He wrote that while the individual elements of Web 2.0 actually do exist, they can't be grouped together under a single term or concept. Shaw claimed that the concepts in Web 2.0 were too broad, and that many of its goals conflicted with each other.
- Jay Fienberg, an information architecture specialist, called Web 2.0 a "retrospective concept." He said that only a year after O'Reilly introduced the term, it had become a marketing gimmick. Fienberg pointed out that many popular technology businesses adopted the term to make their companies sound innovative. This in turn watered down any meaning the original name may have had [source: the iCite net].
- Internet essayist Paul Graham originally dismissed Web 2.0 as a buzz word but later recanted after O'Reilly published his take on what Web 2.0 means. Even then, Graham said the term originally had no meaning but became more defined as people looked deeper into the current
state of the Web. His perspective is that Web 2.0 refers to the best way to use the World Wide Web -- through real connections between users and higher levels of interactivity.

- Andrew Keen, an Internet critic, has a distinctively negative point of view about Web 2.0. He calls the phenomenon of self-publishing and blogging “digital narcissism” [source: Wall Street Journal]. Keen’s argument isn’t about whether or not Web 2.0 exists; it’s about whether or not Web 2.0 is even a good idea. He points out that while people are writing and uploading lots of information on the Web, no one is taking the time to read it all. As a result, institutions that are dedicated to creating quality content are suffering because everyone is too busy posting his or her opinions to search out good information.

There are hundreds of other blog entries that focus on Web 2.0, what it means and whether it’s really a step forward in the evolution of the Internet. It’s too early to say if the term will have staying power or if it will fade away as just another marketing slogan. For the time being, we’ll likely see its concepts put to use throughout the Internet.

Buzz, Buzz, Buzz!
Some people feel that Web 2.0 has so many meanings that it’s been reduced to a buzz word. A few Web 2.0 experts have shied away from the term and use phrases like social networking and Web democratization instead.

To learn more about Web 2.0 and related topics, follow the links on the next page.

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