

# Exploring Web 2.0 and Libraries

## What Is Web 2.0?

Web 2.0 is the next incarnation of the World Wide Web, where digital tools allow users to create, change, and publish dynamic content of all kinds. Other Web 2.0 tools syndicate and aggregate this content. We will all be publishers and creators of our own information and entertainment channels with these applications.” (Michael Stephens, “Web 2.0 for Librarians,” ALA TechSource Blog, [www.techsource.ala.org/blog/2005/09/web-20-for-librarians.html](http://www.techsource.ala.org/blog/2005/09/web-20-for-librarians.html))

## Blogs

I first heard about weblogs—which are more commonly referred to by the abbreviated moniker *blog*—at the 2002 *Computers in Libraries* Conference. In 2003, while working at the St. Joseph County Public Library (SJCPL) in Indiana, I created the SJCPL Book Blog, as well as the Sights & Sounds Blog. At the same time, I began a personal blog and discovered RSS and IM technology. On May 10, 2004, I uploaded my first picture to Flickr ([www.flickr.com/photos/michaelsphotos/31252](http://www.flickr.com/photos/michaelsphotos/31252)) of my Labradors Jake and Charlie.

In late 2004, I came across the term *Web 2.0* for the first time on a blog, whose author was reporting from something called the “Web 2.0 Conference.” For some time I had been using and thinking about these Web applications for libraries—including RSS, blogs, wikis, tagging, bookmarking—all fell under the Web 2.0 meme.

Tim O’Reilly, founder and CEO of O’Reilly Media, Inc., defines the term:

Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advan-

tages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an “architecture of participation,” and going beyond the page metaphor of Web 1.0 to deliver rich user experiences.<sup>1</sup>

### “Web 2.0 for Librarians”

[www.techsource.ala.org/blog/2005/09/web-20-for-librarians.html](http://www.techsource.ala.org/blog/2005/09/web-20-for-librarians.html)

### Michael Stephens’s First Flickr Upload

[www.flickr.com/photos/michaelsphotos/31252](http://www.flickr.com/photos/michaelsphotos/31252)

### ALA TechSource Blog Posts by Michael Stephens

[www.techsource.ala.org/blog/Michael/Stephens/100004](http://www.techsource.ala.org/blog/Michael/Stephens/100004)

In “What Is Web 2.0?” O’Reilly goes on to discuss the differences between Web 1.0 sites and those that fall under the banner of Web 2.0 sites.<sup>2</sup> Figure 1—reproduced from Tim O’Reilly’s September 30, 2005, Web article—illustrates this point.

For example, the photo gallery Web site Ofoto ([www.ofoto.com](http://www.ofoto.com)), which is now owned by Kodak, identified in Figure 1 as “Web 1.0,” was very much a one-way, share-photo-galleries-with-friends site. Flickr ([www.flickr.com](http://www.flickr.com)), by contrast, features many more interactive features, such as allowing users to leave comments, tag images to describe the content of their uploaded images, and take

advantage of RSS feeds, which tells Flickr users that something new has been uploaded or posted to a Flickr site. I characterize sites such as Flickr as venues for self-expression and making connections—in other words, Flickr and similarly designed sites constitute communities comprised of distinct members contributing to a collective effort or project.

### “Web 2.0: Compact Definition?”

[http://radar.oreilly.com/archives/2005/10/web\\_20\\_compact\\_definition.html](http://radar.oreilly.com/archives/2005/10/web_20_compact_definition.html)

### “What Is Web 2.0? Design Patterns and Business Models for the Next Generation of Software”

[www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html](http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html)

### Wikipedia’s “Web 2.0” Definition

[http://en.wikipedia.org/wiki/Web\\_2.0](http://en.wikipedia.org/wiki/Web_2.0)

### Wikipedia’s Definition of “Tags” (in relation to Web 2.0)

<http://en.wikipedia.org/wiki/Tags>

### Wikipedia’s Definition of “Podcasts”

<http://en.wikipedia.org/wiki/Podcasts>

### Ruby on Rails

[www.rubyonrails.com](http://www.rubyonrails.com)

Wikipedia, however, offers a caveat: the definition is ever changing: “To some extent Web 2.0 is a buzzword, incorporating whatever is newly popular on the Web (such as *tags* and *podcasts*), and its meaning is still in flux.” The entry does, however, pull together O’Reilly’s thoughts (as well as those of other notable thinkers), including this breakdown of what Web 2.0 tools can include:

- The transition of Web sites from isolated information silos to sources of content and functionality, thus becoming a computing platform serving Web applications to end users
- A social phenomenon referring to an approach to creating and distributing Web content itself, characterized by open communication, decentralization of authority, freedom to share and reuse, and “the market as a conversation”
- A more organized and categorized content, with a far more developed, deeplinking Web architecture
- A shift in economic value of the Web, possibly surpassing that of the dot-com boom of the late 1990s
- A marketing term to differentiate new Web businesses from those of the dot-com boom, which due to the bust now seem discredited
- The resurgence of excitement around the possibilities of innovative Web applications and services that gained a lot of momentum around mid-2005<sup>3</sup>

## Wikipedia on Web 2.0

Wikipedia’s entry for Web 2.0 has a vast and rich history of changes, corrections, improvements, and reversals. Wikipedia’s collective voice—reflecting that of the myriad voices of its authors—define Web 2.0 as “a second generation of services available on the World Wide Web that lets people collaborate and share information online.” Comprised of some new applications and back-end programming wizardry (such as AJAX—Asynchronous JavaScript and XML—and “Ruby on Rails” [www.rubyonrails.com]), Web 2.0 applications include blogs, wikis, social-interaction sites such as the image-sharing community Flickr, and bookmarking sites such as Delicious (<http://del.icio.us>). (A list of more than nine hundred Web 2.0 companies is available at [www.econsultant.com/web2/index.html](http://www.econsultant.com/web2/index.html).)

Web 1.0		Web 2.0
DoubleClick	->	Google AdSense
Ofoto	->	Flickr
Akamai	->	BitTorrent
mp3.com	->	Napster
Britannica Online	->	Wikipedia
personal websites	->	blogging
evite	->	upcoming.org and EVDB
domain name speculation	->	search engine optimization
page views	->	cost per click
screen scraping	->	web services
publishing	->	participation
content management systems	->	wikis
directories (taxonomy)	->	tagging (“folksonomy”)
stickiness	->	syndication

**Figure 1:** Web 1.0 vs. Web. 2.0 (Image courtesy of O’Reilly Media, June 2006)

## It’s Built upon Trust

Paul Miller, Technology Evangelist for the U.K.-based ILS vendor TALIS company, explored Web 2.0 and libraries in an article for the online journal *Ariadne*. In “Web 2.0: Building the New Library,” he presents his own principles of Web 2.0 and addresses how these changes might impact libraries.<sup>4</sup> His principles include:

- Web 2.0 is about **communication** and **facilitating community**.
- Web 2.0 is about **remix**.

- Web 2.0 is **smart**.
- Web 2.0 opens up the **Long Tail**.
- Web 2.0 is built upon **trust**.

## Web 2.0 Hits the Mainstream

Jenny Levine, “The Shifted Librarian” ([www.theshiftedlibrarian.com](http://www.theshiftedlibrarian.com)), and I have been touring the country for the last few months presenting the workshop, “Conversation, Community, Connections, and Collaboration: Practical, New Technologies for User-Centered Services—or the Social Software and Libraries Roadshow.” In a section called “Becoming a Trendspotter,” we discuss keeping tabs on what’s happening outside our libraries in mainstream culture. When new technology or new trends hit the mainstream press—*Time*, *Newsweek*, or *USA Today*, among others—is it already too late for librarians to be taking notice and thinking about how such technologies could impact library services?

Still, we were extremely excited about a recent *Newsweek* cover story (“The New Wisdom of the Web”) that touted the insurgence of the new World Wide Web—a new Web made up of social connections and interactions centered around music, images, or other content—a place overflowing with self-expression!<sup>5</sup> Authors Steven Levy and Brad Stone interview numerous key players about this new Web, including various entrepreneurs who seek to capitalize on the movement:

The generic term for this movement, especially among the hundreds of new companies jamming the waiting rooms of venture-capital offices, is Web 2.0, but that’s misleading—some supposedly Web 1.0 companies like eBay and Google have been clueful about this all along. A more fitting description comes from Mary Hodder, the CEO of a social-video-sharing start-up called *Dabble*. “This is the live Web,” she says.

### “The New Wisdom of the Web”

[www.msnbc.msn.com/id/12015774/site/newsweek](http://www.msnbc.msn.com/id/12015774/site/newsweek)

### Online NW: Keynote Speaker Paul Bausch

<http://litablog.org/2006/02/16/online-nw-keynote-speaker-paul-bausch>

Paul Bausch, co-creator and developer of Blogger, a free blog-hosting service, recently keynoted the annual “Northwest Online” meeting, a conference aimed at library technologists in the Pacific Northwest. He described three defining aspects of Web 2.0: openness, decentralization, and participation.<sup>6</sup> What Web 2.0 tools offer is a way

to be open, to share content on various Web sites, and to engage others in building resources.

David Warlick builds on Bausch’s ideas by describing the flow of information within this new platform:

Traditionally, information flowed in one or two directions. Through the new Web, content flows in a variety of directions that depend on the behavior of those who produce the information and those who use it. Through Web 2.0 new information constructs are possible—interactive and community contributed documents that tie in with dynamic and independent digital libraries of web resources, and the more formally published ideas of thinkers and journalists in the field—and none of these people need know each other.<sup>7</sup>

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There’s a comparable quiet revolution underway right now, one that is likely to fundamentally transform the way we use the Web in the coming years . . . the result is the equivalent of a massive software upgrade for the entire Web, what some commentators have taken to calling Web 2.0. Essentially, the Web is shifting from an international library of interlinked pages to an information ecosystem, where data circulate like nutrients in a rain forest.

Steve Johnson, “Web 2.0 Arrives,” *Discover*, [www.discover.com/issues/oct-05/departments/emerging-technology](http://www.discover.com/issues/oct-05/departments/emerging-technology)

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Web 2.0 affords connections among people, people who can create content—ideas, thoughts, and full-blown theories—can connect with those who may respond, augment, and redistribute that content in new ways. Other names for Web 2.0 include the “Two-Way Web,” the “Read/Write Web,” and the “Participatory Web”—all pointing to the fact that this incarnation of the Web is *not* made up of static pages and one-way interaction.

The August 2005 issue of the Massachusetts Institute of Technology’s *Technology Review* focused on social software. The editors presented their take on social tools, the magazine, and the future:

The spread of cheap laptops, handheld devices, affordable Internet access, Wi-Fi, and a dozen other consumer technologies have led to a wonderful explosion of new social applications for them. But here’s the really interesting thing: most of these social technologies have simple editing and programming tools that let ordinary folks do in-

novative things that risk-averse corporations and government agencies would be hesitant to try. We suspect that *Technology Review* will be writing about the impact of new technologies on society much more frequently. Besides, social technologies are more fun.<sup>8</sup>

## Commonalities of Web 2.0

Librarian and blog author David King, current acting IT Director at the Kansas City (Missouri) Public Library, has also been teaching Web 2.0 classes. In a recent post (“Another Web 2.0 Class Tomorrow”) on his blog, he noted he was changing the course to define some of the commonalities of social software.<sup>9</sup> This post provides a useful starting point as well. Many of the tools—such as RSS feeds, comments, tags—discussed here have similar features. For an overview of the tools and the commonalities among them, see the Glossary of Web 2.0 terms (beginning on page 13).

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I feel this way about libraries, too. We’ve figured out the hardware issues, and I don’t anticipate we’re going to face any major, unforeseen challenges in this area over the next decade (more cell phones, more smartphones, more wireless, faster computers, we get it). The key is no longer the hardware, but the software, and in particular, what people do with the software. This year was a pretty good indication of where all of this is headed, and I truly believe we’ll look back on this time as a pivotal one when this new software put us on a different path.

Jenny Levine, Post on the ALA TechSource Blog, [www.techsource.ala.org/blog/2005/11/libraries-as-social-machines.html](http://www.techsource.ala.org/blog/2005/11/libraries-as-social-machines.html)

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## Web 2.0 & Libraries

Equally fascinating is the work of Wade Roush. In *Technology Review*, he highlights the move to social interaction online via new technologies. Roush labels this movement “continuous computing.” The three aspects of the definition include:

1. the digital devices people carry, such as laptops, media players, and camera phones;
2. the wireline and wireless networks that serve people’s locations as they travel about;

3. the Internet and its growing collection of Web-based tools for finding information and communicating and collaborating with other people.<sup>10</sup>

Now it’s time to focus on what continuous computing has brought to our users, our libraries, and our profession. Are we technologically and culturally ready for these users of iPods, laptops, and smartphones? Is, for instance, Wi-Fi ubiquitous within library buildings?

Many librarians and library paraprofessionals have witnessed examples of iPods and other devices in use in libraries. Many libraries offer or are considering offering wireless Internet access; indeed, Marshall Breeding’s “Wireless Networks in Libraries” (*Library Technology Reports*, 41, no. 5, Sep/Oct 2005) tackled the issue of Wi-Fi for libraries. But how are libraries—and librarians—participating in the social Web?

I’m building on a theme here: Web 2.0 definitions and discussions focus on such concepts as openness, connectedness, participation, and ease of use. It makes sense, then, that discussions of Web 2.0 lead to the application of “2.0” thinking to library services. Some libraries are even at the cutting edge—offering Web 2.0 services for their users. How can we, as library professionals and promoters, make sense of it all? How can we incorporate new technologies into our own library services? What are the benefits? How do the principles of social software look when applied to libraries? The following list provides a few considerations:

- **Openness**—A willingness to share information and content, also known as transparency; planning is discussed and user participation is welcomed. Libraries use blogs to create conversations.
- **Ease of use**—Systems are intuitive and users can easily learn to manipulate them. Libraries use instant messaging (IM) to perform virtual reference instead of difficult-to-use proprietary platforms.
- **Innovation**—Disruptive thinking and evolutionary systems promote new systems and new ways of delivering our services. Libraries will create subject-based wikis, in which users can suggest resources and ask questions.
- **Social Interaction**—People can have conversations and create together. A blog with the comments feature enabled allows library users to discuss plans and programs.
- **Creation of Content**—New information is created via collaboration. A library creates a podcast that features the teen-advisory group discussing their favorite games.
- **Sharing**—Content is freely available for use and reuse. By using RSS, a library syndicates content from various sources to other Web pages within its community.

- **Decentralization**—Content is reused, “mashed up,” and new systems are born. A librarian creates a Google map mash up of the routes of library-delivery vehicles.
- **Participation**—Everyone has a hand in the creation of conversations and content. Ideas flow freely. The library begins a planning wiki for its strategic plan, inviting all staff and all users to participate in the vision for the future.
- **Trust**—Many systems must be based on trust: trust between library staff and trust with library users for participation and collaboration. Librarians release control of their data.

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The whole 2.0 thing in general seems to be about using the hive mind and the affordances of technology to synthesize newer, better and more useful systems that then become available for everyone. Libraries have historically been places to receive information but with some rare exceptions, less places to contribute information. Blogs and wikis and tag clouds, all the stuff we prattle on about are good for reading or reading about, but they really shine through use.

Jessamyn West, Librarian.net, [www.librarian.net/stax/1571](http://www.librarian.net/stax/1571)

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One benefit is that library users are already using the tools—they are posting to blogs; they chat via IM; they are podcasting; they are tagging user-created content and creating folksonomies. (More information about folksonomies is available at Wikipedia. Briefly, a folksonomy, according to Wikipedia in early June 2006, is “a collaboratively generated, open-ended labeling system that enables Internet users to categorize content such as Web pages, online photographs, and Web links. The freely chosen labels—called tags—help to improve [a] search engine’s effectiveness because content is categorized using a familiar, accessible, and shared vocabulary. The labeling process is called tagging. Two widely cited examples of Web sites using folksonomic tagging are Flickr and Del.icio.us.”)<sup>11</sup> Everyday folks—our library users—are using these tools for their own entertainment and education. Individuals are creating their very own content and publishing it online using these various tools. Some of these technologies may be useful for your library, and others may not. All of them, however, merit some time spent investigating or experimenting to understand how the tools might fit into library services. Some may be a perfect fit for certain libraries, and for many, this exploration may lead to sev-

eral “Ah-Ha!” moments for librarians as they read about these tools.

Are you overwhelmed with talk of Web 2.0 and new technologies in libraries? A first step could be reading and pondering this issue of *LTR*, which covers some of the popular tools that some libraries and librarians have discovered to improve services to users or to create brand new services that reach users in new ways. *This is important!* On the ALA TechSource Blog, I’ve presented various Web 2.0 topics, published some of my lengthy discussions with other librarians and library-related experts about Library 2.0, and I have urged librarians to have conversations about what the social Web means for libraries. No matter what you call it, it’s time to examine this new technological landscape.

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And finally, we are seeing a great upsurge in social networking services, where a flat connective tissue based on blogs, wikis, IM (Instant Messaging) and other tools create social and communication spaces in which new services are being built.

Lorcan Dempsey, “The Digital Library Environment: Ten Years After,” *Ariadne*, February 2006, [www.ariadne.ac.uk/issue46/dempsey](http://www.ariadne.ac.uk/issue46/dempsey)

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In “Web 2.0: Building the New Library,” Paul Miller states, “Libraries should be seizing every opportunity to challenge these perceptions, and to push their genuinely valuable content, services and expertise out to places where people might stand to benefit from them; places where a user would rarely consider drawing upon a library for support.”<sup>12</sup>

### Next-Generation Librarian (On Librarian 2.0)

Stephen Abram, library futurist and vice president of innovation at SirsiDynix, describes the attributes of the next-generation librarian in his SirsiDynix *OneSource* article, “Web 2.0, Library 2.0, and Librarian 2.0: Preparing for the 2.0 World.” Abram writes, “Librarian 2.0 is the guru of the information age.”<sup>13</sup> He states that Librarian 2.0 strives to:

- Understand the power of the Web 2.0 opportunities;
- Learn the major tools of Web 2.0 and Library 2.0;
- Connect users to expert discussions, conversations, and communities of practice and participates there as well;
- Use and develop advanced social networks to enterprise advantage;
- Connect with everyone using their communica-

tion modes of choice—telephone, Skype, IM, SMS (short message system), texting, e-mail, virtual reference, etc.;

- Encourage user-driven metadata and user-developed content and commentary; and
- Understand the wisdom of crowds and the emerging roles and impacts of the blogosphere, Web syndication, and wikisphere.

He concludes with a charge to the profession:

It is essential that we start preparing to become Librarian 2.0 now. The Web 2.0 movement is laying the groundwork for exponential business growth and another major shift in the way our users live, work, and play. We have the ability, insight, and knowledge to influence the creation of this new dynamic—and guarantee the future of our profession. Librarian 2.0—now.

Combine this with the handful of library-job descriptions that appeared in early 2006 ([www.ala.org/ala/acrlbucket/candrlnews/caropps/february2006/NextGenerationLibrarian.htm](http://www.ala.org/ala/acrlbucket/candrlnews/caropps/february2006/NextGenerationLibrarian.htm)). Wayne State University advertised for a “NextGen Librarian,” asking that applicants come in the door already familiar with social software and ready to train other librarians to use the technologies as well:

This is a newly created position that will provide leadership and vision for “transformative technologies” in the provision of library resources and services. Reporting to the Director of Public Services the incumbent: creates communication venues and distributes content via digital tools such as blogs and wikis for the library system Web site; develops and delivers library instruction through podcasts and multimedia webcasts; promotes community via new technologies within the library and virtually via IM and other emerging communication mechanisms; enhances the WSU Library System Web presence with current content and methods for distribution such as RSS; investigates and implements new technologies that may enhance the Library System’s Web presence; provides training and support for other librarians on new technologies; maintains currency in information technology, librarianship, and instructional design; collaborates with other librarians to develop shared resources in support of the Libraries’ mission and strategic directions; collaborates with other librarians to perform outreach and communicate information about the Libraries’ online resources and services to clients; participate positively as a member of working groups and teams to develop/implement policies

and procedures, facilitate decision-making, resolve problems, implement assigned projects, improve customer service and ensure smooth delivery of services; communicates effectively and positively with unit management, with colleagues in other units and with colleagues within the unit to provide effective and efficient services that meet customer needs and promote a positive team environment; generates funding through grant and foundation proposals; and performs other duties typically assigned to librarians in Public Services (virtual reference, instruction, etc).<sup>14</sup>

Other libraries have followed suit, incorporating these technologies into job duties. It’s important to remember that other new technology skills—CD-ROM use, HTML, LAN configuration, and Internet instruction come to mind—were rather striking as well when they were introduced into libraries and library-job descriptions. So, although this shift to new duties and skills may just be part of an ongoing movement toward what is new and “hot,” if you will, it is still a very notable shift to openness, conversation, and participation.

The best thing any librarian can do is to learn more about these tools and how they figure into our professional lives and our libraries. Learning to learn and taking time to play with such tools as Web 2.0 social software lay the groundwork for embracing the next big technological innovations.

## A Web 2.0 Glossary of Selected Terms

**AJAX:** An acronym for Asynchronous JavaScript and XML; a building block of Web 2.0 Web sites that imbeds features into the pages. Flickr makes extensive use of AJAX.

**API:** Application Programming Interface; the means in which various platforms and databases can interact. “An API is a published specification that describes how other software programs can access the functions of an automated service.” (<http://looselycoupled.com/glossary/API>)

**Blogosphere:** The online world of Weblogs, more commonly referred to as *blogs*.

**Commenting:** Commenting in blogs allows readers to type responses to the original posts and publish them to the blog. A conversation among blog authors and readers who comment potentially follows.

**Folksonomy:** Signifies a set of keywords or tags assigned not by librarians or knowledge workers but by everyday people, tagging their own content online.

**The Long Tail:** The idea, coined by Chris Anderson in *Wired*, that niche markets outweigh the biggest bestseller. Anderson writes: “The theory of the Long Tail is that our culture and economy is increasingly shifting away from a focus on a relatively small number of ‘hits’ (mainstream products and markets) at the head of the demand curve and toward a huge number of niches in the tail. As the costs of production and distribution fall, especially online, there is now less need to lump products and consumers into one-size-fits-all containers.” (For more, see <http://longtail.typepad.com>.)

**Mash Ups:** Remixing and reusing content to make something new, such as a mash up of Google maps and library locations, programmed via APIs.

**Tag Cloud:** A graphical representation of tags and the number of uses of each tag for a blog, Flickr site, or other Web 2.0 interface. Wikipedia defines it this way: “A Tag Cloud is a text-based depiction of tags across a body of content to show frequency of tag usage and enable topic browsing. In general, the more commonly used tags are displayed with a larger font or stronger emphasis. Each term in the tag cloud is a link to the collection of items that have that tag.” ([http://en.wikipedia.org/wiki/Tag\\_cloud](http://en.wikipedia.org/wiki/Tag_cloud)) See chapter 6 (on Flickr) for an illustration.

**Tagging:** Assigning keywords or subject to a blog post, Flickr image, etc. Amazon and the Internet Movie Database now use tags.

## More Resources on Web 2.0

Steve Johnson, “Web 2.0 Arrives,” *Discover*, [www.discover.com/issues/oct-05/departments/emerging-technology/](http://www.discover.com/issues/oct-05/departments/emerging-technology/)

Dion Hinchcliffe, Web 2.0 Blog, <http://web2.wsj2.com>

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Daniel Terdiman, “Folksonomies Tap People Power,” *Wired* (February 1, 2005), [www.wired.com/news/technology/0,1282,66456,00.html](http://www.wired.com/news/technology/0,1282,66456,00.html)

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