# Business Information Review

**Web 2.0 and Business: A pointer to the intranets of the future?**
Luke Tredinnick

The online version of this article can be found at:

Published by:
**$SAGE Publications**

**Additional services and information for *Business Information Review* can be found at:**

**Email Alerts:** http://bir.sagepub.com/cgi/alerts

**Subscriptions:** http://bir.sagepub.com/subscriptions

**Reprints:** http://www.sagepub.com/journalsReprints.nav

**Permissions:** http://www.sagepub.com/journalsPermissions.nav

BIR

# Web 2.0 and Business

## A pointer to the intranets of the future?

**Luke Tredinnick**
*London Metropolitan University, UK*

*'The managed intranet reflects not the ideal of the learning organization, but a picture of an organization that thinks it always knows best.'*

## Abstract

Explores the application of Web 2.0 technologies to business intranets, and their potential use in managing and developing business information and knowledge assets. Considers how Web 2.0 approaches on the public web are subtly reshaping the relationship between users and information. Argues that Web 2.0 is not a technological innovation, but is changing the understanding of the status of information, knowledge and the role of the user in information applications. Suggests that, as information proliferates, control is being gradually ceded to users, opening up the possibility of a new, more democratic, and more evaluative phase in the exploitation of information within organizations.

**Keywords:** blog, business model, corporate culture, folksonomy, Intranet 2.0, information management, knowledge management, RSS feed, risks, social media, Web 2.0, wiki

**Luke Tredinnick** is a Senior Lecturer in Information Management at London Metropolitan University and Course Director for the MSc in Digital Information Management. He teaches in the areas of knowledge management and the socio-cultural aspects of technology. Before joining London Metropolitan, he worked as a systems librarian for a large financial services firm in London, responsible for intranet content management and digital resource management. He is the author of *Why Intranets Fail (and How to Fix Them)* published by Chandos in 2004, *Digital Information Contexts*, and *Digital Information Culture*, due for publication in 2006 and 2007 respectively.

## Introduction

Over the past eighteen months, Web 2.0 has come to dominate the discourse surrounding the World Wide Web and networked information applications. With its promise of a more powerful, more engaging, and more interactive user experience, Web 2.0 seems poised to revolutionize the way in which we interact with information resources. In the process, it may even help bring about the long-heralded Semantic Web. But the enthusiasm accompanying Web 2.0 comes at the tail end of a long line of similarly proclaimed watersheds in the development of the web, and information applications that have failed to live up to the hype. Furthermore, the collection of technologies and services bundled together under its heading do not immediately seem to share too much in common. Is there anything we can learn from Web 2.0 for the

development of business intranets over the next five or ten years, or is it just another dot.com fad with little new to offer?

This paper explores the application of Web 2.0 technologies to business intranets, and their potential use in managing and developing business information and knowledge assets. It will examine the state of Web 2.0 approaches on the public web, and how they are subtly reshaping the relationship between users and information. It will be argued that Web 2.0 is not characterized by technological innovation *per se*, but by a shifting understanding of status of information, knowledge and the role of the user in respect of information applications. As information proliferates, control is being gradually ceded to users. This suggests a new, more democratic, and more evaluative phase in the exploitation of information within organizations.

# What is Web 2.0?

The term 'Web 2.0' has been in circulation for a number of years. It exploits computing conventions for differentiating software releases through decimal notation indicating major and minor software upgrades. Web 2.0 has therefore been used largely metaphorically to suggest a major software upgrade to the World Wide Web.

Most of the recent popularization of the term derives from a widely influential article by the information evangelist Tim O'Reilly. In a series of seminars, O'Reilly set out to define Web 2.0, exploring the characteristics of information systems and information services business models that appeared on face value to be changing the way in which users are interacting with information resources. O'Reilly (2005) presented Web 2.0 as a second stage in the development of the web, superseding the predominantly publishing model of many web-based information applications and services. With it, information services are to become more dynamic, and more sensitive to user action.

O'Reilly's delineation of Web 2.0 is in many ways quite nebulous, outlining characteristic themes of Web 2.0 approaches to information services, rather than specific technologies. His famous meme-map sets out the ethos of Web 2.0 services, including such ideas as 'hackability', 'the perpetual beta' and exploiting 'long tail'. Web 2.0 is presented as a process of ceding control over applications to users, enabling users to extract information and data and reuse that information and data in a flexible way, and enabling them in the process

perhaps even to change the structure of the information system itself. It is characterised by 'play', the call to 'trust your users' and the exploitation of emergent characteristics to organize information. These themes capture much of the essence of Web 2.0 but create a picture that is frustratingly short on detail.

Paul Miller (2005) has also outlined the qualities intrinsic to the Web 2.0 programme. These include the freeing of data, to allow it to be manipulated in ways unconnected to the purpose for which it was gathered, the building of virtual applications that draw information and functionality from different sources, and the growing importance of user participation. For Miller, Web 2.0 is about the development of modular information services, where developers and users are able to build applications from interoperable modules. Most famously, Web 2.0 allows the exploitation of the long tail. As Bradford's (1934) law articulated, in any collection a few items are used a lot, more items are used a little, and most items are used hardly at all. This creates a 'long tail' of information that is little used, and difficult to locate. Digital technologies allow that long tail to be made more accessible.

The easiest way to get a grasp on Web 2.0 is to explore some of the applications and technologies with which it has been associated. There are three facets to this change: the particular information applications with which Web 2.0 is associated, such as wikis and blogs; new ways of managing information, such as social bookmarking and folksonomies, and new business models for providing information services.

# Web 2.0 technologies

In the first place there are particular kinds of information and communications applications, such as the wiki, the blog, and RSS, and peer-to-peer networks. These applications generally put more power in the hands of users to select, filter, publish, and edit information and participate in the creation of information resources. They also frequently involve a de-contextualization of information that is at least in part antipathetic to the traditional practices of the information publishing industry.

## *Blogs*

The blog, or weblog, is perhaps the oldest of these applications. Blogs first appeared in the mid 1990s as a

simplified way of publishing to the web, obviating the need for dedicated web-publishing software, and replacing it with a combination of web-forms for inputting information and templates for displaying it. First used as online diaries, as blogs developed they increasingly became utilized as a more general information tool.

Two aspects of the blog are of particular interest. Firstly, the greater ease of web publishing that they have introduced. The blog has been heralded as a fundamentally democratic medium allowing almost everyone with only a little technological savvy to participate in the discursive space of the Internet. The second is the collection of tools that have grown up around the blog to make the blogging process easier. In particular, tools to 'blog' web content – incorporate a summary of a particular webpage or article automatically into a blog including a hyperlink back to the point of origin – have been important to the way blogs have developed.

This has meant that blogs have become not just a cheap and easy way of publishing to the web; they have also become ways of aggregating web content for particular ends. This aggregation involves the reuse of information, and the stripping out of much of the design and navigation architecture that secures the original context of that information. This is more than just republication; it is also a transformation of the original web publishing model into a more participatory form.

## Wikis

This emphasis on participation is even more evident in the wiki. Wikis, like the blog, are a simplified means of publishing to the web that again dispense with the need for dedicated web-publishing software. They rely on server-side processing to convert content into HTML, usually on-the-fly. Unlike the blog, the wiki supports the creation of full-scale websites with its combination of templates, authoring tools and audit trails. They therefore might be seen as an alternative to commercial content-management systems.

But the wiki is more than just a piece of software to support web development. The wiki takes the ethos of the open-source software movement with its realization of the benefits of collaborative software development, and applies it to information resource management and development. At its heart, the wiki is a tool to enable collaborative authoring. That means that the power to edit and update information is ceded to users. Wikis allow users to edit the pages that they browse. The

veracity of the information that results from the mediated collaboration of dozens or hundreds of contributors depends upon the emergence of a degree of consensus through the interactions of users. This might seem like a recipe for disaster; however public wikis such as Wikipedia have demonstrated how this approach to creating and managing information resources can result in credible and stable content.

## RSS

Where participation is central to the wiki, decontextualization is central to RSS. RSS is a suite of web-content syndication protocols, the most widespread of which is Really Simple Syndication. RSS is a way of syndicating web content through the use of content feeds, which consist of XML marked-up files. RSS feeds usually combine either the lead paragraph, or a summary of an article published on the web or on a blog, and a hyperlink back to its source. Combined with the RSS reader, or aggregator, RSS provides a means for users to keep track of updates posted across the web. Central to RSS in combination with the RSS feed reader is the possibility of aggregating content from many different websites into a single user-space. The kinds of clues that help us to authenticate information, such as the corporate logos of news providers and information aggregators, are largely stripped from the information as it is presented in the RSS feed reader. News from many different sources is presented side-by-side as broadly equivalent. As a result, more emphasis is placed on the user to evaluate the authority of information.

# Web 2.0 technologies

Web 2.0 is also associated with new approaches to managing the organization of information and retrieval, such as folksonomies and social bookmarking. Such approaches seek to build information structures from the contributions of interactions of uses. The term folksonomy was coined by Thomas Vander Wal to describe the emergent classification structures that arise as users 'tag' information for their own ends. Folksonomy depends on two components: automated indexing technologies, particularly the use of cluster analysis, and the aggregation of user expertise captured in descriptive tags (known as social bookmarking or social tagging). Folksonomies therefore draw on the expertise of discursive communities to aid in the

classification of information and knowledge. Unlike hypertext, which explicitly relies on the associations people make between disparate pieces of information, folksonomies rely on the similarities between the ways in which people describe disparate pieces of information. The cyberpunk author and *Wired* columnist Bruce Sterling described it as follows:

> It offers dirt-cheap, machine-assisted herd behavior; common wisdom squared; a stampede toward the water holes of semantics (2005).

Behind this is the same faith in the emergence of order through the aggregation of many individual decisions made by many individual users that can be seen in the wiki. Another related approach is to use user ratings to rank search results, postings or listings. Content aggregations services such as price comparison sites allow users to rate information. Information bubbles to the top of results lists depending on the evaluative judgements of the entire user group.

# Web 2.0 Business models

On top of these technological approaches come emergent forms of business model, such as social network sites, information aggregators of various kinds including price comparison services, the exploitation of user-contributed content to add value to commercial services, the integration of different service providers into one-stop-shops for certain commercial services, mashups, and the use of user data to target and personalize service provision. Web 2.0 has been associated with some of the most innovative and successful companies in the web sector, such as Google, Amazon and Flickr. These companies use the fact that, as information proliferates on the web, one way to create a market differential is to draw on the expertise of your own user community.

# The shifting status of knowledge and information

It is tempting to see Web 2.0 as just another internet fad, containing little of substance, and contributing little to existing information management practices. Just as with the Semantic Web before it, the enthusiastic promotion of Web 2.0 technologies can be mistaken for nothing other than glossy presentation and technochic over substance. Indeed, the core components of

Web 2.0 are not in themselves particularly novel, relying on a combination of long-established approaches including mark-up, cluster analysis, and rudimentary user-feedback mechanisms used in clever ways. Scepticism about the value of Web 2.0 has been widely articulated. Russell Shaw (2005) has written 'The problem I have with this 'Web 2.0' slogan is that it is a contrivance, meant to imply a unified movement or wave toward a better web.' He argues that Web 2.0 is a cluster of technologies that share little in common, and the concept of Web 2.0 little more than a means of marketing certain services. In a similar vein, John Dvorak (2006) has written that 'Web 2.0 is the latest moniker in an endless effort to reignite the dot-com mania of the late 1990s.'

However, to dismiss Web 2.0 too quickly is to overlook one important area in which its approach does substantially differ from traditional information management practices, and in which Web 2.0 can perhaps make its most valuable contribution. The disjuncture between the claims for Web 2.0 and many observations about its actual achievements can be characterized as collision of two incompatible worldviews. Behind Web 2.0 is the echo of computing counterculture, with its interest in artificial intelligence, self-organizing systems and emergent complexity with its veiled libertarianism, that lies behind the original web, shareware and open-source software development. Taylor (2001) has argued that the creators of the computing revolution were the Woodstock generation, and in cyberculture are the vestiges of 1960s counterculture, but transformed into an uncompromising individualism with a community context. This worldview has seeped into the understanding of information and knowledge out of which Web 2.0 technologies are constructed.

## *Who owns knowledge?*

The most acclaimed aspect of Web 2.0 is its participatory nature. The technologies involved place a greater emphasis on the contributions of users in creating and organizing information than traditional information organization and retrieval approaches. But behind this simple focus on user-participation is something more significant for our understanding of the potential application of these technologies. The most significant feature of Web 2.0 is the way in which it subtly inverts the traditional conception of information and knowledge that has dominated the library and information profession since its inception.

Traditional approaches have tended to see information and knowledge as something existing independent of the user, which can be accessed, stored, classified and managed by reference to its objective characteristics. For example, the attempt to impose standardized classification schemes on information collections seeks to treat those collections as objectively classifiable. Similarly, knowledge within information management and knowledge management practices tends to be regarded as independent of cognition, as if you could open up someone's head, scoop out the knowledge, and reproduce it in a database. The concepts of tacit and explicit knowledge themselves suggest that the transformation of knowledge into information is simply a matter of codification. Knowledge from this perspective becomes independent of the individuals who possess it, and therefore something that can be interrogated, and accurately recorded, outside of the context in which it was originally formed. Thus much of knowledge management practice has focused on codifying knowledge to open up tacit resources.

This traditional outlook on the status of information and knowledge has filtered into the way in which we regard digital information systems, and in particular web technologies such as intranets. With intranets, the creation and dissemination of information is separated from its use, and remains semi-autonomous of that use. Web pages and resources are created first, and then put out into the field of play. There usually remains a discrete ownership of individual sites, pages or resources by individuals or groups, to whom is ceded the responsibility and authority to maintain those resources. Intranet content becomes an expression of the organization's expertise and knowledge, but because it is filtered through the intranet's management processes, it is unable to tap into the knowledge and expertise that emerges when people actually work on problems, create solutions, and work collaboratively, contributing their skills, experience and ideas. Information becomes something that exists independently of the people who make up an organization. It becomes the organization's formal understanding of its own expertise filtered through management structures, rather than the expertise that emerges through day-to-day working practice. Information resources always precede use, and are therefore always a step behind need. The managed intranet reflects not the ideal of the learning organization, but a picture of an organization that thinks *it* always knows best.

Web 2.0 by contrast treats information and knowledge as things constructed in social interaction, and

in the interaction between users and information systems. For example, folksonomy classification schemes do not exist before the information collections to which they apply, but are constructed from the interaction of users with those collections. The web pages of a wiki are not prepared in advance of their use, but are created by users themselves out of the needs that arise in their use of that information. The key to Web 2.0 is harnessing the ways in which users use information to add value to information (either through direct or indirect user-participation) in creating the information sources that they use. In other words, Web 2.0 reflects collective use over time, rather than reflecting an organization's preferred view of itself. Web 2.0 is built out of real use and need, not idealized use and need.

The benefit of Web 2.0 technologies for corporate intranets is therefore in their ability to capitalize on the knowledge and information within an organization, and recognize its socially contingent status. Web 2.0 has the advantage of adaptability to the business environment, and responsiveness to changing business information needs. It offers a way for businesses to demonstrate what they so often claim: that their employees are the most critical component in their success. Web 2.0 offers the possibility of building intranets entirely from the contributions and user behaviour of intranet users.

# Web 2.0 and Intranet 2.0

What is interesting about Web 2.0, in relation to business intranets and knowledge management programmes, is that it reflects a wider interest in harnessing the individual expertise of users. Web 2.0 seems to share the aspirations of knowledge management. It is unsurprising then that many of these technologies are finding use in business information applications. Lee et al (2006) have explored the use of blogging by fortune 500 companies and their employees. Appropriately, Wikipedia claims 'today some companies use wikis as their only collaborative software and as a replacement for static intranets. There is arguably greater use of wikis behind firewalls than on the public Internet.' (Wikipedia, 2006). Many business intranets were created with the specific intention of opening up knowledge and information resources, and encouraging users to share their knowledge and expertise. However, there is a sense in which, with Web 2.0 technologies, we have been here before.

The first ten years of intranet development were associated with a lack of information organization, and a lack of control over the creation, dissemination and use of information available on intranets. Far from simple naivety, this reflected the culture of the early web, from which Web 2.0 also draws its inspiration. The IT departments from which early intranets most frequently originated held a faith in the self-organizing nature of web resources. Order was meant to emerge from the many individual contributions to the resource. However, for most intranets that structural order simply failed to emerge. As has been noted widely, intranet developers were largely forced to relearn the basic skills of the information profession. From this emerged a discourse on the best ways to manage intranets, and most developed business intranets are now tightly managed using a mixture of centralized processes and decentralized intranet authorship.

It is perhaps ironic, then, that after this long battle for control over information on intranets, it should be suggested that a return to the apparently failed model of organization emerging from anarchy may be an appropriate model for intranets of the future. Stepping away from the centralizing tendencies of intranet management to put a greater emphasis on the role of the individual user in contributing to a shared knowledge resource may seem perhaps a step backwards.

## Failed vs controlled anarchy

But what is different about the failed anarchy of early intranets and the controlled anarchy of Web 2.0 is the means by which the participation of users is achieved. The ethos of Web 2.0 largely reflects Berners-Lee's original aspiration of the web (cf. Berners-Lee, 1999). Berners-Lee did not originally differentiate between the use of information, and the creation of information; the same software was to be used to browse the web, and to create web pages. Nor did he distinguish between internal business resources and the external web; both were to be a part of the wider information resource. However, as the web developed, these different functions diverged, use and publication of information became very different processes, and intranets were separated off from the public web.

The expected emergence of order on intranets therefore did not occur because predominantly web technologies mirrored a publishing model of information creation and dissemination. Although responsibility

for intranet content was often ceded to individuals and departments, a distinction was maintained between context creators and end-users. The end-user remained on the whole distanced from the intranet production process. The intranet was no more a socially constructed information tool than the paper procedures manual. It remained a tool fort filtering information down through the organization. Intranet management therefore became about imposing procedures to coordinate the efforts of individual content creators.

Web 2.0 technologies therefore in part represent a return to an older model for the public web and intranets, but a return that has learnt from the failure of the older technologies. Intrinsic to the use of Web 2.0 technologies to build business intranets is a shift in the basis of trust and the authentication of information resources, and this is perhaps the biggest challenge for the use of these technologies within the business intranet setting. Unlike the failed model of intranet anarchy, Web 2.0 technologies put into the hands of users power not only over the information resources for which they are responsible, but over the whole intranet.

Web 2.0 technologies generally disconnect content and design, thus freeing up the content creation process from concerns about consistency in design and navigation. Web 2.0 technologies also allow a far greater degree of collaboration in the creation of content. This makes possible the idea of Intranet 2.0, an intranet where only the visual design is determined in advance, and the content and structure is provided wholly by users. Of most obvious interest in this is the wiki as a means of allowing users to create intranets from the bottom up, but folksonomies, RSS and blogs all have a role to play. The information on an intranet built from the bottom up in this manner would be authenticated not through formal content management processes, but through the self-regulation of the wider user group. What is most attractive about this is its potential to open up the full knowledge assets and expertise of the organization; to really make the users the most important part of creating a successful intranet.

## Not quite the risks you expect

This kind of user-built intranet brings with it many risks, most of which are associated with the basis on which information is authenticated. Allowing users to create intranet content largely free from managerial

control brings with it evident problems. Chief amongst these are perhaps the risks of bad information being used as the basis on which critical decisions are made. The idea of empowering users in this way is perhaps the biggest impediment to implementing Web 2.0 technologies successfully in the business intranet environment, but is also an essential first step.

But there is also another kind of risk: a calamitous failure in user participation. I have noted elsewhere (2004) that technology cannot by itself change organizational culture, and the kind of participation on which wikis, blogs and folksonomies rely depends upon an existing corporate culture in which individuals feel free from possible repercussions for the information they contribute. Just as critically, recent research suggest there is a 1:100 ratio of content contributors to users on participatory websites (*Guardian*, 2006), and this kind of figure would spell disaster for most organizations trying to introduce such technology. Clearly, the successful implementation of the user-built intranet would be dependent on the kind of organizational culture in which participation with Web 2.0 could be made a norm, not an exception.

So the user-built intranet is unlikely to suit many businesses. However, it does offer an exciting way of integrating intranet and knowledge management programmes in such a way as to really capitalize on the knowledge assets of the business, and to allow information resources to be created out of the social fabric of the business. The kinds of businesses which this approach is likely to suit are those where the organizational culture ties in with the benefits of Web 2.0 technology. For dynamic, fast changing business environments, where information plays a vital role and there are high levels of information literacy, where there exists a high rate of change in the competitive environment, and a very high degree of innovation, Web 2.0 technologies may offer real benefits. The use of such technologies may allow the intranet to better pre-empt information needs, and to better capitalize on the existing expertise within the organization. It may be in the technology sector itself that the user-built intranet will emerge. But as technology begins to change the business environment more generally, the approach of Web 2.0 may be a pointer to intranets of the future.

## References

Berners-Lee, Tim (1999) *Weaving the Web: The Past, Present and Future of the World Wide Web by its Creator*. London: Orion Business Press.

Bradford, S. C. (1934) 'Sources of Information on Specific Subjects', *Engineering* 137: 85–6.

Dvorak, John C. (2006) 'Web 2.0 baloney'. Available at www.pcmag.com/article2/0,1895,1931858,00.asp. (Accessed 7 August 2006.)

'What is the 1% Rule?' Guardian Technology Supplement 20 July 2006.

Lee, Sang, Hwang, Taewon and Lee, Hong-Hee (2006) 'Corporate blogging strategies of the Fortune 500 companies', *Management Decisions* 44(3): 316–34.

Miller, Paul (2005) 'Web 2.0: Building the New Library'. Ariadne 45. www.ariadne.ac.uk/issue45/miller/intro.html

O'Reilly, Tim (2005) 'What is Web 2.0?' www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-Web-20.html?page=1

Shaw, Russell (2005) 'Web 2.0? It doesn't exist'. Available at: http://blogs.zdnet.com/ip-telephony/?p=805. (Accessed 7 August 2006.)

Sterling, Bruce (2005) 'Order out of Chaos'. *Wired* 13(04) April 2005.

Taylor, Mark (2001) *The Moment of Complexity: Emerging Network Culture*, Chicago and London: The University of Chicago Press.

Tredinnick, Luke (2004) *Why Intranets Fail (And How to Fix Them)*. Oxford: Chandos Publishing.

Wikipedia (2006) 'Wiki'. Available at: http://en.wikipedia.org/wiki/Wiki. (Accessed 3 August 2006.)