

## WEB 2.0 IN THE BUSINESS ENVIRONMENT: THE NEW INTRANET OR A PASSING HYPE?

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### Abstract

*There is much talk about the Web 2.0 in the trade press but it is still very difficult to precisely define what it is. Is it yet another technology buzz word or does the concept capture something genuinely new? In this paper we review the literature and examine the main arguments for and against Web 2.0 as a useful concept. From a supportive/obstructive and active/passive management perspective we devise four possible scenarios for Web 2.0 and the enterprise. Based on traditional intranet management principles we discuss whether or not these ideas can successfully be applied to intranets. We argue that although the Web 2.0 concept does contain a core of attitudes, ideas, and services that mark a shift in the way we interact over the Web, the edges are too difficult to define. Hence, Web 2.0 may be an empirical phenomenon that people talk about but as an analytical concept it has little to offer. Still, the technologies associated with Web 2.0 have made their entrance in the corporate world, and commentators already speak of intranet 2.0 or Enterprise 2.0. We conclude that more research on intranet 2.0 or Enterprise 2.0 is needed in order to guide tomorrow's managers.*

*Keywords: Web 2.0, social media, intranet 2.0, enterprise 2.0*

## 1 INTRODUCTION

There has been a tremendous buzz in trade press and academic journals alike surrounding the concept of Web 2.0 over the last few years: A Google search for the phrase "Web 2.0" in March 2008 returns over 70 million hits. Still, a clear definition of the phenomenon is lacking. The very name with its decimal point notation suggests a discrete and designed evolution of the Web to a new "version", which, as Millard and Ross (2006) point out, is misleading. The World Wide Web is not a homogeneous piece of technology that can be upgraded. If nothing is replaced, and the term is to be understood metaphorically, what does "2.0" then imply? Indeed, there is an ongoing debate whether Web 2.0 has a substantial meaning or if it is just yet another buzz word. The sceptics argue that the term actually has no meaning other than to convey a sense of novelty for a set of otherwise unrelated technologies in order to attract risk capitalists, whilst supporters claim that the term connotes a novel and more collaborative way of thinking about and interacting with the Web, and thus is something new.

One of this paper's objectives is to review the literature and examine how Web 2.0 is characterised. Although there are plenty of academic papers dealing with the various technical building blocks of Web 2.0, e.g., blogs, wikis and social tagging, there is not much research about the core of the concept. In this paper I shall argue that although Web 2.0 appears to contain a core of attitudes, ideas, and services that mark a shift in the way we interact over the Web, the edges are too difficult to define and blends in with the societal changes at large that has been going on since the end of the industrial age. Hence, Web 2.0 may be an empirical phenomenon that people talk about but as an analytical concept it has (yet) little to offer.

A second objective for this paper is to see if and how Web 2.0 ideas may be applied to internal business settings. Although the dispute of what Web 2.0 is remains to be settled, some commentators have already tried to bring the Web 2.0 concept into the corporate world as intranet 2.0 (Tredinnick, 2006) or Enterprise 2.0 (McAfee, 2006). By presenting four hypothetical managerial scenarios for Web 2.0 and the enterprise, we shall look at these suggestions and analyse whether or not (some of) these ideas can be applied inside organisations.

This is a theoretical paper based on a literature review of the Web 2.0, Enterprise 2.0 and intranet 2.0 concepts and analysed in the light of the author's previous research on intranets and intranet management. The paper is laid out as follows; in the next section we look at how Web 2.0 is described and discussed in the press and what we as IS researchers may learn from this. Section 3 presents a summary of the technological and cultural patterns the review has revealed. In section 4, we bring Web 2.0 concepts into the corporate realm, and by introducing four scenarios based on different managerial approaches we discuss threats and opportunities. The paper concludes with some pointers to future research areas in section 5.

## 2 WHAT IS WEB 2.0?

It lies in the nature of a fuzzy concept such as Web 2.0 that a literature review never can be exhaustive; there is no way of knowing exactly what to include or exclude. Using Google scholar to search for "web 2.0" brings up plenty of non-academic texts, partly due to shortage of academic work on this topic. Such more popular texts have been used in this in this paper (particularly so in this section), even though peer-reviewed academic work has been favoured when available.

In their December 2006 issue, Time magazine listed Time's Person of the Year for 2006 and it was... You. By putting a mirror on their front page, Time magazine's message was that the explosion of productivity and innovation that they saw on the Web was the result not of a few solitary geniuses but of the millions of ordinary people who would spend their after work hours sharing ideas, uploading

photos and video snippets, contributing to online encyclopaedias, and collaborating socially in ways previously unseen on the Web. You – the ordinary fellow, not the traditional content providers – are transforming the information age and Web 2.0 is the tool that makes it possible, according to Time magazine's managing editor (Stengel, 2006).

However, Web 2.0 is no "tool" and no discrete piece of technology that can be upgraded or replaced over night. The term 'Web 2.0' was coined by technology commentator Tim O'Reilly who has tried to define it as follows:

"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 advantages 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" (O'Reilly, 2005).

It can be argued that this "definition" is too vague or too broad to be useful. Tredinnick (2006) notes that although O'Reilly's words connote some of the essence of Web 2.0, they are also "frustratingly short on details" and not everyone is convinced that the Web 2.0 concept has something to offer. Some of the critique of Web 2.0 comes from commentators who have problems seeing something fundamentally new about the concept. Enterprise computing journalist Russell Shaw says:

"Web 2.0 is a marketing slogan. 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; a coordinated, standards-based, like-minded rebirth, reconstruction, renaissance, resurrection, whatever you want to call it. Many of these changes are incremental, and only related to each other in the broadest, most general sense" (Shaw, 2005).

Let us return to the Web's originator Tim Berners-Lee. What did he intend the Web to be in the first place and what is his take on Web 2.0? In an interview between IBM developerWorks's podcast editor Scott Laningham and Berners-Lee, Laningham asked whether Berners-Lee agreed with the description that Web 1.0 is about connecting computers while Web 2.0 is about connecting people. Berners-Lee replied:

"Totally not. Web 1.0 was all about connecting people. It was an interactive space, and I think Web 2.0 is, of course, a piece of jargon, nobody even knows what it means. If Web 2.0 for you is blogs and wikis, then that is people to people. But that was what the Web was supposed to be all along" (IBM developerWorks, 2006).

The Web was meant to allow users easily to share information across time and space, and Berners-Lee originally wanted it to be "a pool of human knowledge, which would allow collaborators in remote sites to share their ideas..." (Berners-Lee *et al.*, 1994, p. 76). So, maybe the Web was *supposed* to be interactive but the Web we saw in the 90-ies was far from interactive. Instead, the Web was *de facto* a read-only medium (Miles-Board & Carr, 2003), dominated by (semi)static Web pages that were browsed by users independently of one another. The pages typically disseminated information as the result of a rigorous editing process where the site owner decided what should be published with little or no interest in the readers' needs. This is something Berners-Lee acknowledges and he blames it on not having editing capabilities built into the browsers. Not being able to directly edit what they saw, only a small minority participated in the publishing process while most users were just reading existing texts. Without editing capabilities, people could not effectively collaborate (Berners-Lee, 2000).

Web 2.0 supersedes the above described "publication model" (Tredinnick, 2006). Millard and Ross (2006) note that Web 2.0 seems to have "purposely rejected some of the old aspirations [of the early hypertext pioneers] [...] in favour of a more flexible, lightweight and responsive approach" (p.30).

What we are currently seeing on the Web is how easy-to-use editing tools (e.g. blogs) are made available, making Berners-Lee's original ideas come closer to being realised.

In addition, one must not forget that much of what we witness on "Web 2.0 sites" today would not have been possible without the growth in broadband access that has occurred in the last few years. According to OECD statistics<sup>1</sup>, the number of households with broadband access increased with 460% from 2003 to 2006. The fact that Web 2.0 depend on high interactions amongst a large pool of users explains partly why we did not see a MySpace or a YouTube while we were using dial-up lines.

However, Web 2.0 is not merely about adding new technology. In fact, many of the components of Web 2.0 are not even particularly new, as Tredinnick (2006) notes. Web 2.0 is rather a more clever way of combining established approaches such as mark-up, clustering, and user-feedback mechanisms. In addition, many commentators point to the fact that though these components have paved the way for Web 2.0, the concept is not about technology *per se*, but about a shifting understanding of the user's role (Tredinnick, 2006; Anderson, 2007). According to Anderson (2007), Web 2.0 "[...] is actually a series of [...] ideas or drivers that are changing the way some people interact" (p.52). These ideas, Anderson continues, are not necessarily the preserve of Web 2.0, but are direct or indirect reflections of the power of the network.

To summarise, Web 2.0 seems to have established itself as a concept amongst ordinary people and as such one can talk about it and assume that people will understand what one refers to *in a broad sense*. However, the concept remains extremely fluid and offers very little theoretical value to those who wish to approach it conceptually. Researchers are therefore suggested to seek theoretical support in related fields such as social media, communication, psychology, sociology, or perhaps organisational science if they want to understand how Web 2.0 is being *used*. There is also a need for IS researchers to pay attention to this growing phenomenon and create IS-specific theories since these types of systems may require new and different design rationales. It is important to understand what unique qualities underpin this set of technology so we do not (again) reduce Web 2.0 to a black box as has so often before been the case (see Orlikowski & Iacono, 2001). Meanwhile, it seems Web 2.0 can be understood as an innovative mix of technologies and attitudes, and we shall now look at how these technologies and attitudes can be described.

### **3 TECHNOLOGIES AND ATTITUDES IN A 2.0 ERA**

In order to change the Web from a publishing model to something more collaborative, new technologies and new attitudes have to be applied in tandem. Under Technologies below, I shall cover three different but interrelated areas that have been identified when analysing the literature; *authoring* capabilities, *structuring* capabilities, and *awareness* capabilities.

#### **3.1 Technologies**

A keyword for Web 2.0 is 'participation' and in order to fully participate, users need the ability to express their views. Hence, easy to use *authoring* tools are required. Two of the perhaps trendiest authoring applications on the Web at present are blogs and wikis. According to the Economist, the term "Weblog" was coined by Jorn Barger in 1997 (Economist, 2006). Today's blogs stem from the online diary, where people would keep a running account of their personal lives and the first versions were merely manually updated portions of ordinary websites. Tredinnick (2006) points to two aspects of blogging as particularly interesting. Firstly, blogging has significantly lowered the level of skill required to express oneself on the Web. The evolution of dedicated blogging tools made blogging feasible to the large population of non-technical Web users and these tools facilitated the production

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<sup>1</sup> [http://www.oecd.org/document/54/0,3343,en\\_2649\\_33703\\_38690102\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/54/0,3343,en_2649_33703_38690102_1_1_1_1,00.html)

and maintenance of website entries written in chronological order and displayed in reverse chronological order. Secondly, the blogging tools have also made it possible to incorporate links to or summaries of other blog entries in one's own blog, thus making the blog a way of "aggregating Web content for particular ends" (p. 230).

Another authoring tool that has made Web publishing not only easier but also enabled a collaborative approach to content creation is the wiki. According to Stenmark (2005a), the concept of wiki, which comes from the Hawaiian word for fast (wiki-wiki), was developed by Ward Cunningham in 1994. Cunningham wanted to create a meeting place where people could interact and discuss, and his design objective was to keep the technology as simple as possible and to allow full collaboration, i.e., all users should have access to and ability to change and update the content. Thus, there should be no distinction between readers and writers (Stenmark 2005a). Explaining the differences between wikis and blogs, Cunningham states in a PC Magazine interview: "A blog tends to reflect the biases and opinions of an author, while a wiki is more like an open cocktail party. In a wiki you try to speak without a strong voice, seeking consensus to create something permanent, while on a blog you're developing your own voice and it's very much about your voice" (Rupley, 2003). McAfee (2006) adds that blogs are cumulative, i.e., posts and responses accumulate over time, while wikis are iterative, i.e., people undo and redo each other's work. The latter could be expected to result in unproductive flaming, at least for controversial topics, and a good deal of "edit wars" do occur, but over time, disagreements seem to settle due to the medium's "self-healing capabilities" (Viégas *et al.*, 2004, p.8). Blogs and wikis have been instrumental in the transformation of the Web from the traditional (but unintended) publishing model into a more participatory form (Tredinnick, 2006), which is much closer to Berners-Lee's original idea.

There are also the *structuring* tools. Weinberger (2005) notes that the very idea that to know a field is to be able to see its structure is deeply permeated into Western culture. There has always been an urge amongst scientists to tidy up and structure their knowledge about the world, which becomes evident in the work of natural scientists such as Carl Linnaeus. Linnaeus, who laid the foundations for the modern scheme of nomenclature, is also known as the "father of modern taxonomy".

On the Web, this desire to structure content first manifested itself as metadata, i.e., data about the Web page stored as HTML elements in the header section of the page. Typically, metadata consisted of a set of arbitrary selected keywords intended to describe or classify the content of the page. In the mid 1990s, the Dublin Core Metadata Initiative (DCMI) started as a workshop where librarians tried to establish a standard for cross-domain information resource description. Despite this long and hard work, only a fraction of the Web has been tagged with metadata.

One of the most important critiques against tagging is that it is the author – not the reader – who gets to tag (Weinberger 2005). This has several implications. For one thing, it means that the author has to provide additional work in order for someone else – the reader – to benefit. Grudin (1987) explained long ago why this is unlikely to happen. This approach also means that the author gets to decide how the information is best used. This approach is fully inline with the early publishing model of the Web. A second, and related, issue is that tags are to be selected from a taxonomy, i.e., an ordered and often hierarchical structure of predefined tags. Again, these taxonomies are often built in advance by professionals such as librarians or Web architects, and they typically exist independently of the intended users or their particular needs (Tredinnick, 2006).

Web 2.0 instead relies more on folksonomies, i.e., bottom-up built structures created by the ordinary people who *use* the information. An example of this is Deli.cio.us<sup>2</sup>, a social bookmarking service that allows users to store their bookmarks online for easy access from multiple computers. Pages are tagged for easy retrieval, but the tags are not required to belong to a set of predefined categories. Instead, tags are *suggested* to the user, based on how *other users* have chosen to tag the same page. A

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<sup>2</sup> <http://deli.cio.us>

folksonomy is therefore highly social, democratic and inclusive, starting not from pre-defined structures but emerging when actual needs arise, without users having to wait for information architects to reach consensus (Tredinnick, 2006; Weinberger, 2005). This is also true for wikis, where the users are allowed to design not only the content but also the structure of the website.

Due to their bottom-up approach, folksonomies are unstable and cannot be assumed to exist in the same form in the future. This is a strength, since they are able to depict a living reality, but also a weakness, since you never know if the labour you put in will be useful in the future. Advocates of controlled vocabularies and formal taxonomies argue that folksonomies are characterised by exactly the flaws that formal systems are designed to eliminate (Kamel Boulos and Wheeler, 2007), and some commentators suggest a combined approach where taxonomies and folksonomies are used in conjunction (Barsky and Purdon, 2007).

Finally there are the *awareness* tools. When millions of users add information and interact over the same medium, it becomes impossible to know when and where something useful is happening without the help of technology. Gilroy and Ives (2006) claim that what makes Web 2.0 possible by underpinning most other applications is the family of Web feed formats known as RSS. Exactly how the RSS acronym should be read has varied over the years but nowadays it is often said to mean Really Simple Syndication. Syndication, in mass media, means to publish a news feature in multiple channels simultaneously. RSS is a way to syndicate XML marked-up Web content to make it possible for users to keep up with their favourite Web sites without having to check them manually. This is particularly useful for sites where the content changes quickly such as news sites and blogs (McAfee, 2006; Tredinnick, 2006; Kamel Boulos and Wheeler, 2007). RSS can also be said to free the content from its original Web site. By aggregating feeds from different sources, users can collect all things related to their favourite topic and build dynamic Web pages showing at any particular moment what Kamel Boulos and Wheeler call the "collective mind".

Deli.cio.us, the bookmark feature mentioned above, helps increase awareness due to its social nature. It would not have been a Web 2.0 feature had it not been for the fact that all bookmarks and all tags are shared amongst all deli.cio.us users. By displaying the most recent tags and the most popular tags, the user gets an increased awareness of what is going on. In addition, once a link to a webpage has been saved, the user can immediately see other people bookmarking the same page, and can browse their sets of bookmarks, and thereby find additional information that, since it has been valued by a peer, is likely to be very relevant. Being alerted about new and relevant content on the Web is indeed useful but another important aspect of the Web 2.0 concept is being aware of one's peers and their activities, since Web 2.0 in particular is about interactions between users (Kamel Boulos & Wheeler, 2007). Deli.cio.us makes users aware of peers with similar interests since everyone can see who else is interested in a particular tag or has bookmarked a particular page.

### 3.2 Attitudes

When it comes to attitudes, at least two different themes can be identified in the literature; attitude towards information ownership and attitude towards productivity/creativity tradeoffs. These themes are now discussed in turn

The first attitude deals with *information ownership*. Organisations have traditionally seen information dissemination as a managerial responsibility. Following a thorough review of the academic management literature, Ciborra concludes that one of the basic tenets is the centrality of control. As a result thereof, the literature unanimously and unreflectively argues in favour of aligned, rigid, and highly standardised structures, tightly administered by top management (Ciborra, 2000). Building on Ciborra's work, Stenmark (2006) has argued that this is due to the formative context in which industrial organisations are stuck. The common assumption in such organisations is that information assets need to be tightly and centrally managed in order to be useful, Stenmark concludes. In organisations subscribing to such beliefs, it becomes obvious that information must be owned and maintained by an information elite. Unfortunately, this elite has little to do with the mundane work

tasks of ordinary employees, and Tredinnick (2006) notes that information is created and disseminated separated from its use. The information lives in a parallel university and "*exists independently of the people who make up the organisation*" (Tredinnick, 2006, p.232, my emphasis). The organisation *knows* what information the members need and decides when and how they should have access to it. Information is power and resides with management.

Social media are based on entirely different norms; it builds on trust in people's ability to self-governance. Rather than being seen as objective pieces of bits and bytes that can be created and arranged beforehand, information is constructed in social interaction by the very people that are using it (Tredinnick, 2006). McAfee (2006) stresses that blogs and wikis start with blank pages, and in folksonomies such as deli.cio.us, categories are not created until they are required by someone. Thus, information is created by – and therefore owned by – the users. In this way, Web 2.0 applications do not reflect an idealised view of the organisation but become pragmatic and useful descriptions of reality. Organisations wanting to incorporate Web 2.0 must be willing to embrace the idea that information ownership should be distributed amongst *all* employees.

The second set of attitudes deals with *productivity vs. creativity*. The quest for higher productivity is what has propelled much of the IS/IT investments since the 60ies. Information systems were used to automate first the production and thereafter the office. Early adopters were able to increase productivity and thus gain advantages vis-à-vis their competition. As Carr (2003) argues, this has changed. IT has now become so permeated in organisational operations that it no longer provides a competitive advantage just by existing. In a comment to Carr's article, Brown and Hagel (2003) argue that "[c]ompanies that mechanically insert IT into their businesses without changing their practices for exploiting the new capabilities will only destroy IT's economic value."

Today, productivity is no longer the driving business force – creativity is. It has been argued for more than ten years that the competitiveness of an organisation depends not so much on its ability to exploit old concepts but on its ability to continuously adapt to new environments, develop new products, and create innovative ideas (Kay, 1993). Web 2.0 provides benefits for companies operating in dynamic and fast changing business environments where information has to be updated and information needs cannot be decided beforehand (Tredinnick, 2006). But how would my company be productive if my employees spend their days chatting, a manager might ask. Web 2.0 is not likely to be the first technology to raise this question. The introduction of telephones, email and the Web (1.0) probably generated similar concerns. When a new technology is introduced it seems natural to play with it for a while to figure it out. Such playing should not be seen as counter-productive but as a way to learn. For example, examining workplace use of web for "recreational" purposes, Oravec (2002) noted that using online recreation and play constructively, i.e., limited in content and time so as not to interfere with the organisation's goals, could enhance workplaces and even make them more productive. We do not yet know whether web 2.0 technologies should be seen a creativity rather than productivity enhancing tools or whether creativity should be seen as the new productivity.

The technologies and the attitudes discussed above are applicable not only to the Internet and applications on the public web, but are meaningful also on intranets. In the next section, we shall see what web 2.0 means in a corporate environment.

## **4 SOCIAL MEDIA IN CORPORATIONS**

Using Google scholar to search for "enterprise 2.0" and "intranet 2.0" a much shorter lists presents itself. Two papers in particular, those by Tredinnick (2006) and McAfee (2006), which are both highly relevant and relatively recent, have been used to back-link (i.e., who do they refer to) and forward-link (i.e., who refer to them) recursively to identify other related and relevant papers.

Technology commentators Gilroy and Ives (2006) write:

"The Internet is evolving from a channel for content distribution to a platform for collaboration, sharing and innovation – the so-called 'Web 2.0'. And where the Internet goes, your intranet will surely follow" (p.66).

There are many reasons to question this prediction. Although intranets are made up by the same technology as is the public Web, there are and have always been large differences in how these technologies have been put to use (Fagin *et al.*, 2003; Stenmark, 2005a; b; 2006), and it is argued that this is due to the differences in attitudes and cultures that exist between the corporate world and the society at large. What works on the Web may fail miserably on the intranet and vice versa. The public Web has always been bottom-up-driven and information ownership has always resided with the individual actors in a democratic way. A company, in contrast, is no democracy and information ownership has traditionally taken a top-down form. Similarly, when it comes to the balance between control and autonomy, management literature on intranets have always preached the need for control, whereas the public Web has nurtured a high degree of autonomy. Stenmark (2006) has argued that intranet policies are shaped by a formative context that in turn is inherited from the industrial age. In such a context, intranets are not likely to simply follow the development of the public Web.

Many things may happen when and if social media are introduced in a corporate setting. Looking at it from a management perspective, we can see that management can either be supportive or obstructive to Web 2.0 ideas. In addition, their support or opposition can either be active or passive. We can use these two dichotomies to form four possible future scenarios as in Figure 1.

	Passive management	Active management
Supportive management	Scenario #1: Management is unaware of or uninterested in the use of Web 2.0 applications and has no strategy for organisational use. Use is implicitly allowed but not actively encouraged.	Scenario #2: Management is positive towards the use of Web 2.0 applications and decides to actively promote it and to foster a corporate attitude of participation.
Obstructive management	Scenario #3: Management does not believe in Web 2.0 applications and do not want it to be used within the organisation but takes no measures to actively obstruct it.	Scenario #4: Management is negative towards Web 2.0 applications and actively devices policies and regulation to prevent such applications from being used.

Figure 1. Four different scenarios for Web 2.0 technologies being introduced in corporate environments.

In scenario #1, management is passively supportive of the Web 2.0 concept. This typically means that they do not mind if Web 2.0 applications are brought in or they may not care. Since Web 2.0 in much is a grassroots movement (Maximilien & Ranabahu, 2007), it is likely to enter the organisation via individual members and slowly gain momentum. Without management support the process may take longer than in scenario 2, but once the benefits will start to surface, management may become more active.



In scenario #2, management is actively supportive, which means that they typically walk the talk and use the technology themselves to interact with the employees via blogs and RSS feeds. Some executives even extend their blogging to include external readers, e.g., Sun Microsystems' CEO Jonathan Schwartz (<http://blogs.sun.com/jonathan>). Such behaviour usually propels the uptake and usage of a new technology (Stenmark, 2000).

In scenario #3, management is passively obstructive and do not believe in Web 2.0 in the enterprise. However, since they do not explicitly forbid or police its usage, Web 2.0 applications are likely to pop up locally and grow from small scale hobby projects to business-wide applications, as in Scenario #1. Eventually, management may even be converted into believers.

Scenario #4 is the only scenario where the Web 2.0 concept is unlikely to catch on. Companies in this setting could be those who are required by law to maintain traceability and version control and where distributed information ownership would damage the organisation. There could also be companies where management feel uneasy with or even threatened by the idea of giving up control. After all, management has since long had a preoccupation with control (Ciborra, 2000). Discouraging social media just because one does not understand them can backfire and organisations seeing themselves in Scenario #4 should be aware that many young adults are highly unlikely to accept an employment in a company with such attitudes. Whether or not this will be a problem – for the youngsters or for the company – is too soon to say.

Still – despite the fact that intranets and the public Web are different – social media *has* made its entrance into corporate world. Siemens, for example, allows their employees to share whatever information or knowledge they may have via RSS feeds in ways they themselves see fit. The only centralisation provided is the list of all available feeds that the company provides (Gilroy & Ives, 2006). Also IBM appears to be a heavy user of Web 2.0 type of applications, and would fit in Scenario #2 above. The Wall Street Journal reports that approximately 26,000 IBM workers have registered blogs on the corporate intranet (Bulkeley, 2007), and although it remains unclear how many of these are active users, the numbers are impressive. According to the same source, there are more than 20,000 wikis with more than 100,000 users, and a social network application called BluePages, which lists 400,000 user-controlled employee profiles. IBM also has a deli.cio.us-kind of social bookmarking application called Dogear (Millen *et al.*, 2006). This application allows IBM employees to share bookmarks, be updated on significant new content being added, and provide awareness of the identity of other employees with similar interests.

When a big player such as IBM does something, other actors pay attention. Being a leading vendor in the corporate world, one can expect IBM's interest in and use of Web 2.0 applications to have an impact on the business environment of tomorrow. Not only is IBM using Web 2.0 applications themselves, they are also marketing them as part of their Lotus Connections offer. IBM's package includes profiles, where employees post information about their expertise and interests; communities, formed and managed by people with common interests; activities, used to manage group projects; social bookmarking, where people share documents and links with others; and blogs, where people post ongoing commentaries (Hamm, 2007).

As examples such as Siemens and IBM start to appear more frequently in the trade press, managerial attitudes may start to shift. In addition, today's organisations are being transformed from below as new employees are being hired. The young generation about to enter the corporate world has been brought up with the public Web. They have different attitudes towards technology in general and the Web in particular. They do not merely read static Web pages; they participate in chats and discussion lists, they post photos and comments, they share files and music. It seems plausible that they will bring this behaviour along to their first jobs, and this will have an impact on the corporate information environment.

Managerial attitudes apart, there are other aspects of organisational life that may hinder Web 2.0 ideas from catching on also for organisations in the first three scenarios. One of the greatest risks is the reluctance amongst organisational members to participate and contribute with information

(Tredinnick, 2006). Such an attitude does not install with the technology but has to be in place for technology to become integrated. Although blogging is growing rapidly, most Internet users today are *not* bloggers or taggers; they simply use the resources without contributing. We should not assume that this should be different on the intranets (McAfee, 2006). Hence, an organisation where a culture on par with the tenets underpinning Web 2.0 naturally exists is more likely to benefit from an employee-driven Enterprise 2.0 intranet (Tredinnick 2006). From the employees' point of view, another 2x2 matrix could be constructed, where one axis could be the willingness amongst ordinary members to share information with one another and the other could be the institutionalised incentives for sharing or hoarding information.

There are also *alleged* threats or risks that when examined more closely turn out either not to be very dangerous or not particularly related to social media. One issue often brought up by management is the inability to guarantee the quality of the information when Web 2.0 technology is used. Bowles (2006), who lists the "Top 10 Management Fears About Enterprise Web 2.0", identifies the difficulty to monitor the system to make certain that what individuals are saying and sharing reflects company policy as a common worry amongst managers. In practice, this appears not to be so problematic. At IBM, for example, any employee can set up a blog, a wiki, or a podcast *but no one is allowed to do so anonymously*. Being forced to reveal one's identity, minimises inappropriate online behaviour and may a necessary feature to establish trust (Bulkeley; 2007). Employees are always held responsible for what they say or do; this does not change with Web 2.0. Time magazine editor-in-chief said that "[t]he new media age of Web 2.0 is threatening only if you believe that an excess of democracy is the road to anarchy" (Stengel, 2006, p. 4).

Another type of threat often involved when introducing new IT in general is that of failure and the big cost often associated with failing IT projects (Keil et al., 1994). This appears to be less problematic with Web 2.0 technologies, since one of the features of the technology is that it can easily and at low cost be tested. Organisations can play with the technology since they "succeed or fail quickly – and therefore cheaply" as head of communication services at BT Ross Chestney puts it (Melcrum, 2007, p.12). Unlike most traditional software platforms, a success factor for Web 2.0 seems to be to just leave it to the users to develop as they see fit. IBM concludes that big internal campaigns and push models are *not* they way forward when it comes to introducing social media; a hands-off approach is much more likely to be useful (Melcrum, 2007). It is difficult to tell from the descriptions in the literature, but it seems the organisations where Web 2.0 applications have been successfully up-taken have followed IBM's advice and *not* initiated big Web 2.0 upgrade projects. Instead, small scale applications have been introduced and shown successful and thus been allowed to grow. The intranet 2.0 or the Enterprise 2.0 does thus not have to *replace* the old intranet. Although different in structure and approach, the new applications can be added to and integrated with channels already in place, slowly transforming the intranet towards a 2.0-state (McAfee, 2006). Many commentators thus advocate an evolutionary rather than revolutionary approach to Web 2.0.

## 5 CONCLUDING DISCUSSION

Although several commentators dismiss Web 2.0 as yet another buzz word, the concept has established itself in people's minds and thus become a pragmatic reality. As a theoretical concept, though, Web 2.0 has yet little to offer. IS researchers wanting to study web 2.0 should identify the characteristics underpinning this phenomenon and not treat IT as a black box.

Whether or not Web 2.0 makes its way into the corporate domain and whether or not such an entry will have any profound impact remains to be seen. Organisations may welcome a change towards a more participatory process or they may oppose it, and these two strategies may be pursued actively or passively, thus resulting in four possible scenarios. Three of these may (eventually) lead to Web 2.0 technologies being incorporated in the intranet and one – where management actively opposes such a shift – will result in the preservation of the old. As Tredinnick (2006) observes, we may be witnessing two colliding worldviews, where the Web 2.0 "inverts the traditional conception of information and

knowledge that has dominated the library and information profession since its inception" (p. 231). Intranets have traditionally been filled with information which has had little or nothing to do with the employees' actual needs. Instead, intranet content is typically the result of a centralised process whereby a small group of specialists are assigned the responsibility of updating. It is still too early to say whether Web 2.0 can change this.

Stenmark (2006) has showed that corporate employees demand a frequently updated intranet, but the distributed nature that is inscribed in Web technology is partly put out of play by stiff editing policies. Web 2.0 technology can lower the threshold for participation but it will not affect the policies in place – these have to be replaced separately. The literature on intranet management almost unanimously and unreflectively argues in favour of aligned, rigid, and highly standardised information infrastructures tightly administered by top management. This is at odds with social media and Web 2.0 and a new generation of literature is needed to guide the manager 2.0. More research on the outcome of intranet 2.0 or Enterprise 2.0 is thus called for.

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