

Using Wikis in a Corporate Context

Dr. Espen Andersen (self@espen.com)
Associate Professor of Strategy
Norwegian School of Management BI
European Research Director
The Concours Group

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Abstract

This paper investigates the technology of Wikis and their current and possible future role within a corporate context. It argues that the phenomenon of Wikis should be understood as not one, but two concepts: A simple and intuitive technology which allows its users to generate documentation and support knowledge-based processes easily and deeply; and a management philosophy that manages knowledge creation through evolution of norms and values rather than directives and incentives. Managers seeking to make effective use of collaborative tools can benefit as much from adopting the Wiki's management philosophy as by adopting the technology – but need to make sure that Wikis are used for what they are best for.

Introduction

*They're Web sites anyone can edit – and they
could transform Corporate America
Hof, 2004*

Every new collaborative technology, from cue cards via email to real-time meeting support systems, holds the promise of revolution. Collaboration remains both opaque and hard, and technology will not make it easy or painless. Wiki (along with its cousin the weblog) is, at the bottom, just another collaborative technology. It does, however, distinguish itself by its simplicity and by the fact that it has evolved through collaboration itself. Like many intuitive technologies, such as spreadsheets, it can be hard to distinguish between the technology and its instantiation.

The word “wiki” means “quick” in Hawaiian. On the World Wide Web, it is used both to mean a web site or collection of web pages that are communally written, and the underlying technology that facilitates the web site's creation. The technology was invented by Ward Cunningham, a programmer and software architect based in Portland, Oregon. However, most people know wiki technology from the Wikipedia (www.wikipedia.org), a phenomenally successful on-line encyclopedia.

Central to the concept of wikis are certain aspects of the technology

- A simple design which allows for quick and easy creation of web pages, by making each page editable in an HTML-based editor
- Simple rules for linking pages: You link to another page within the Wiki simply by writing the name you want in a certain fashion (normally by enclosing it in [[square brackets]]). If the page exists, it becomes a live link. If not, clicking on the link will take you to the editor to create a new page.
- Saving of all old version of pages, so that errors can be corrected simply by going to a prior, correct version.
- Tracking of who have edited what, for each version.

.....and certain aspects of management philosophy:

- most common is that *anyone* can edit *anything* – that is, if a reader of a page spots an error or wants to extend it (or create a new page), he or she can do that directly, simply by clicking a button
- that overall direction of the content and style of the Wiki is set by the readers in common, and that leadership is taken by those with time, energy, expertise or charismatic fiat

Understanding Wikis: Exploring the Wikipedia

The concept of Wikis is new and still rapidly evolving– there is considerable innovation going on both in the underlying technology and in the user interface, in addition to the technology being combined with other collaborative or publishing technologies. For someone new to wikis, the easiest way to understand what the technology can do is to study and active wiki site – and none is more active than Wikipedia.

Wikipedia is an on-line, collaboratively written, multi-language, free collection of encyclopedias, at the web address www.wikipedia.org. The Wikipedia was started in 2001 by “Jimbo” Wales, a software developer, who first started a more traditional online encyclopedia called Nupedia. The Nupedia was slow to take off, largely because of the difficulty in recruiting a formally qualified editorial board, and the Wikipedia was started as a way to collect information for later validation by the Nupedia editorial board. Eventually, Wikipedia went from informal staging ground to full-fledged encyclopedia – and now (October 2004) has about 10,000 authors and almost 400,000 articles in its largest, English version. If all versions are counted, the number of articles is more than one million. During this time, both the Wikipedia and the underlying wiki implementation – MediaWiki - have evolved dramatically in interface and underlying structure and functionality.

Meeting the Wikipedia - the front page

A visitor to the Wikipedia will first see the front page, which is divided between navigational features, such as searching, pages describing the most recent changes, or a popular link called “random page”. Along the top of the page is information relevant to the individual user – who can be logged in, or anonymous (of course, if anonymous, many of the links, such as “My Contributions” and “My Watchlist”, disappears). There is a welcome message that links to various explanations and introductions of the Wikipedia, and a section that shows content that is changed on a

daily basis, such as a “featured article” as well as links to entries that are relevant to current events.



The main page also continues (below the fold, so to speak, i.e., under the first screen) with a structural overview of the encyclopedia, and links to other, non-English versions.

Lesson: The design and structure of the Wikipedia main page is the result of much experimentation by many users, and carries many lessons for those wishing to use a Wiki in a corporate setting: It is very important to quickly provide an overview of the structure, content, and culture of the collaborative space, as well as mechanisms both for getting involved and for tracking the results of one’s own and other participants’ involvement. For a collaborative technology to work, it must be relevant, overviewable, encourage personal involvement and further a group culture. The Wikipedia front page shows just that, and also gives some pointers to what can be automated in the technology itself, and what (such as the choice of particular content) requires human intervention and judgment.

The individual entry

Diving further into the Wikipedia, we can look one particular entry, such as the entry for King Louis IV of France:

Espen my talk preferences my watchlist my contributions log out

article discussion **edit this page** history move watch

Louis XIV of France

From Wikipedia, the free encyclopedia.

Louis XIV (Louis-Dieudonné) (6 September 1638–1 September 1715) reigned as [King of France](#) and [King of Navarre](#) from 14 May 1643 until his death. He was a minor when he inherited the Crown; he did not actually assume personal control of the government until the death of his chief minister, [Jules Cardinal Mazarin](#), in 1661. Louis, who is known as "The Sun King" (French: *Le Roi Soleil*) and as "Louis the Great" (French: *Louis le Grand*), ruled France for seventy-two years— a longer reign than any other French or other major European monarch.

Louis attempted to increase the power of France in Europe, fighting four major wars—the [War of Devolution](#), the [Dutch War](#), the [War of the Grand Alliance](#) and the [War of the Spanish Succession](#). He worked successfully to create an [absolutist](#) and centralised state; he is often cited as an example of an [enlightened despot](#). He is supposed to have once remarked, "*L'état, c'est moi!*" (I am the state!), but this quotation is most likely apocryphal.



Louis XIV
King of France and Navarre

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The tabs at the top of the article show the three core features of Wikis:

- The *edit this page* tab, meaning that anyone can rewrite the page if they want to.
- The *discussion* feature, which leads to a page where authors can discuss what should go into the article, give source references and seek information from other authors. (This feature is implemented in different ways for different Wikis – rather than having separate pages, some, like EditMe, have comment sections, displayed below the article, where users can comment on the page without rewriting its contents.)
- The *history* page, which tracks the changes to the page and the authors that have contributed to it. Version tracking is a key feature of wikis, and one of the main ways to control the quality and evolution of wiki content.

If we go to the history page, we will see something like this:

From Wikipedia, the free encyclopedia.
Revision history

View (previous 200) (next 200) (20 | 50 | 100 | 250 | 500).

Legend: (cur) = difference with current version, (last) = difference with preceding version, **m** = minor edit

Compare selected versions

Version	Date	Editor	Summary
(cur) (last)	05:40, 30 Oct 2004	Silsor	(revert)
(cur) (last)	05:39, 30 Oct 2004	Silsor	m (Reverted edits by 138.23.57.6 to last version by 68.7.55.54)
(cur) (last)	05:39, 30 Oct 2004		138.23.57.6
(cur) (last)	05:37, 30 Oct 2004		68.7.55.54
(cur) (last)	05:37, 30 Oct 2004		68.7.55.54 (Height of power)
(cur) (last)	05:36, 30 Oct 2004		138.23.57.6 (The Low Countries)
(cur) (last)	05:34, 30 Oct 2004		138.23.57.6 (Early years)
(cur) (last)	05:34, 30 Oct 2004		138.23.57.6 (Early reign)
(cur) (last)	04:08, 30 Oct 2004	Glasperlenspiel	m (Early reign)
(cur) (last)	02:46, 30 Oct 2004		66.92.29.136 (In French: Le Roi Soleil)
(cur) (last)	05:29, 29 Oct 2004		68.67.181.45 (Early years)
(cur) (last)	03:37, 26 Oct 2004	NDStagliano	
(cur) (last)	02:02, 26 Oct 2004	Lord Emsworth	m (Reverted edits by 67.85.216.130 to last version by Lord Emsworth)
(cur) (last)	00:09, 26 Oct 2004		67.85.216.130 (Height of power)
(cur) (last)	22:15, 22 Oct 2004	Lord Emsworth	m (Reverted edits by 207.75.56.42 to last version by

As we can see, this page has been heavily edited, by both anonymous writers (identified only by their IP addresses) and people who have logged in and registered themselves (such as NDStagliano and Silsor). Note also that some edits are reversions, where someone (Silsor, for instance) has decided that the edits done by one user were detrimental to the article and has reverted to an earlier edition.

Version tracking and the ability to reverse edits are key features of wikis, but the ability to revert someone else's edits is probably less important in a corporate setting than within the anonymity of the Wikipedia. In a corporate setting, the ability to track versions allows for tracking who contributes to the common content to a larger degree than with most other collaborative and content management software. The tracking is visible to all, meaning that everyone can see who contributes. This has important implications for how to manage and encourage participants' engagement with the wiki, allowing for both formal and normative reward structures.

Editing an article

The central concept of the wiki technology is that most things are editable by most participants. If a user chooses to edit a part of the Louis XIV page, he or she would see the source text of the page, which might look something like this:

[article](#)
[discussion](#)
[edit this page](#)
[history](#)
[move](#)
[watch](#)

Editing Louis XIV of France (section)

From Wikipedia, the free encyclopedia.

```

==Early reign==
Officially, Louis's mother ceased to be Regent when Louis turned thirteen in 1651. Louis XIV, however, continued to allow Cardinal Mazarin to control the affairs of state. Cardinal Mazarin died in 1661, and was due to be replaced by [[Nicolas Fouquet|Nicolas Fouquet, Marquis de Belle-Isle]], the Superintendent of Finance. Instead, he was removed and imprisoned on account of his failure to properly manage the nation's finances. Louis announced that he would not appoint a new chief minister; instead he would govern the realm by himself. His most trusted advisors were members of the ''conseil d'en haut'' (High Council); the most influential ministers were [[Jean-Baptiste Colbert]] (for internal affairs), [[Hugues de Lionne]] (for foreign affairs) and [[François-Michel le Tellier, Marquis de Louvois]] (for war). Louis excluded the higher nobility from the ''conseil'', leading the aristocratic diarist [[Louis de Rouvroy, Duc de Saint-Simon]] to refer to the reign as the "reign of the lowborn bourgeoisie."

```

If saved, this portion of the page would look like this:

Early reign

[\[edit\]](#)

Officially, Louis's mother ceased to be Regent when Louis turned thirteen in 1651. Louis XIV, however, continued to allow Cardinal Mazarin to control the affairs of state. Cardinal Mazarin died in 1661, and was due to be replaced by [Nicolas Fouquet, Marquis de Belle-Isle](#), the Superintendent of Finance. Instead, he was removed and imprisoned on account of his failure to properly manage the nation's finances. Louis announced that he would not appoint a new chief minister; instead he would govern the realm by himself. His most trusted advisors were members of the *conseil d'en haut* (High Council); the most influential ministers were [Jean-Baptiste Colbert](#) (for internal affairs), [Hugues de Lionne](#) (for foreign affairs) and [François-Michel le Tellier, Marquis de Louvois](#) (for war). Louis excluded the higher nobility from the *conseil*, leading the aristocratic diarist [Louis de Rouvroy, Duc de Saint-Simon](#) to refer to the reign as the "reign of the lowborn bourgeoisie."

The source text illustrates the ease with which pages are referenced and created in a wiki: Any word or set of words can be turned into a link by surrounding them with `[[double brackets]]`. (Some Wiki implementations also require that the words within the brackets be CamelCased, i.e., all spaces removed and each word capitalized.) If a page already exists (such as the one for “Jean-Baptiste Colbert” in the example), it shows up as a link to that page. If not (such as the one for “Hugues de Lionne” above) it will still show up as a link, but in a different color, typeface or bracketing to indicate that the page does not yet exist. If a user clicks on a page that does not yet exist, an edit window will open, allowing and encouraging the user to create the missing page.

The edit example above illustrates another core concept of wikis: The simplicity of editing. Though complex formatting, pictures and advanced structuring is possible in most Wiki implementations, much can be accomplished by simply entering text, bracketing anything that the user thinks should or could be further detailed in its own page. This feature allows for the rapid creation of complex and interlinked content – the users do not need to worry about whether a page exists or not, and can safely write what they want, save it mid-way, and other users can pick it up and continue from there.

Tracking individual involvement and articulating goals

Like all collaborative endeavors, a wiki will not work unless the participants feel engaged in the process, understand the common goal, and feel empowered by the technology. Wiki technology has features for users both to define themselves and track their own involvement (as part of the technology), but also features that allow

for meta-content to be created (normally as part of the use of the technology, not as a feature in itself). In the Wikipedia, each user can create their own home page or set of home pages describing themselves to the other participants. They can see a list of all articles they have worked on, and quickly create a “track list” of pages they are interested in following. There is also a “recent changes” page that lists all changes to the Wikipedia in reverse chronological order.

Meta-content is created by a number of pages that address needs of the community of authors and readers, such as written statements of what the goal of the wiki is, pages that explain how to edit pages (both in terms of syntax and content) for novice users, discussion pages for content, cultural statements such as definitions of what constitutes a good or less good contribution, pages that point out areas or single entries that needs improvement, and a large number of pages that contribute to the culture in general, such as pages containing jokes or listings of particularly good or stupid statements from other pages.

What we cannot learn from Wikipedia

Wikipedia is by far the most active wiki in the world, but it should be noted that a number of features both of its technology and its culture do not apply in a corporate setting. Since the Wikipedia is open to all and anonymity is allowed, it has evolved an interesting and quite unique culture of distributed content management, with thousands of readers and writers tracking the “Recent Changes” page to check for edits that violate the Wikipedia’s intended purpose. Vandalism (people destroying pages) can be a problem, and is dealt with by the reverse edit feature and by shutting out IP addresses or users that repeatedly sabotage the system. Recently, Wikipedia has also begun to suffer from spamming – people inserting links to commercial or false websites in order to drive traffic or inflated rankings on search engines. The problem of policing an open site is an interesting and unique feature of the Wikipedia, but is largely irrelevant in a corporate setting and should therefore not be considered when making decisions about whether to use the technology.

Secondly, by virtue of its size and sophistication, the Wikipedia has evolved a number of features that are not commonly found in Wiki implementations for smaller groups. For instance, the Wikipedia has many long pages, and so has facilities for letting the user edit only a part of an article rather than the whole article. There are a number of categorization schemes, lots of productivity features such as automatic text insertions and conversion scripts, user features such as “Random Page”, and so on. A number of these features will eventually make their way into wikis intended for small group use, too, but for now it probably is a good idea for someone wanting to use wikis in a corporate setting to keep it as simple as possible.

Thirdly, the Wikipedia has, by nature of its open access policies and organizationally distributed contributors, lots of discussion around what the purpose and nature of the web site should be. The central meme that most writers and all administrators try to conform to is *NPOV*, or Neutral Point of View, meaning that all entries should be unbiased and only contain content that the authors can agree upon as facts. The concept has been honed through many discussions, is well defined on its own page, and used to evaluate whether a page is good or not, with comments like “edited for non-NPOV” frequently used to describe changes. (Some analysts have pointed out that while the Wikipedia writers try to be as objective as possible, there are

considerable biases reflecting the demographics of the writers, who tend to be younger, more educated (with a slant towards technology and math) than the general population. Other central concepts include the absence of copyright for Wikipedia's content – anything writing in Wikipedia is considered public domain. Consequently, much time is spent making sure that material, especially images, is either must be original (written by Wikipedia readers) or that copyright has been explicitly removed by the copyright holder. Both of these discussions – purpose and ownership of content – will come up in a corporate setting, and should be kept in mind when implementing a wiki. However, in most organizations they are dealt with outside the wiki itself – though it is probably a good idea not to discourage discussions, should they come up.

Uses of Wikis

The Wikipedia is the world champion of Wiki use – creating a full-scale encyclopedia through decentralized writing and editing. (Incidentally, one of the most respected reference works ever, The Oxford New English Dictionary, was created much the same way, with volunteers searching for etymology and quotations of English words, sending in their contributions on paper slips, called stubs (Winchester, 1998.) Other uses of wikis tend to be less ambitious.

Wikis are tools for “jointly authoring a hyperdocument” (Socialtext, 2004), or, everyday language, tools for managing collections of written ideas under a common theme. The first Wiki technology was created to develop and manage something called the Portland Pattern Repository (c2.com/ppr/), “an online journal for patterns about programs and the de facto home of the extreme programming discipline.” (Extreme programming is a systems development philosophy emphasizing testing, structured work, and teamwork.) A pattern in this setting is a description of a certain way of doing something – say, a way to organize documentation or program a certain function. This meaning of the “pattern” comes from Christopher Alexander's book *A Pattern Language* (1977), which described 253 principles of design (called patterns) for town planners and building architects. Each pattern was simple (for instance: “Verandas should be more than six feet, otherwise they won't be used” or “Design rooms, if possible, with natural light from two different directions”) but by linking the patterns together (“this pattern works particularly well with that pattern”) the book describes a coherent architectural philosophy emphasizing flexibility, user control and humanity.

The content of the Portland Pattern Repository consisted of ideas that had something in common, which evolved based on experience, and require that they be both linked together and mutually adjusted to form a coherent whole. The “open” wikis found in general have many casual users, and then a few users that, through a process of self-selection, take it upon themselves to take responsibility for more than their share – to rework information structures, standardize formatting, and look for information in those areas of the whole where there are holes.

In corporations, most wikis seem to be used differently – by small teams, frequently geographically widely distributed, who need to create multi-linked documentation about complex topics that involve judgment in the descriptions. Since writing in a wiki is self-directed and requires organizational skills, the groups using have so far tended to be highly skilled both in expression and in computer use – systems

developers, architects, copy-writers, journalists and other who habitually express themselves in writing.

Stata labs, a software development company, is a case in point. The company has developed an email client which provides advanced searching capabilities, and used the Socialtext wiki software to manage the development of its projects (See www.socialtext.com/customers/customerstata). The software is used to develop product specifications, and provides a “group memory” which has, the company claims, significantly reduced development time and increased the quality of the specifications.

Other cases of wiki use include a number of individuals that created their own wikis, such as the well known blogger and venture capitalist Joi Ito (joi.it.com), who uses his wiki (joiwiki.ito.com) to write papers, share his travel schedule, and provide a space to discuss and collaborate with friends and collaborators. The author and technology thinker Neal Stephenson has created a wiki called the Metaweb (www.metaweb.com) for his book *Quicksilver* (2003), the first of a trilogy called *The Baroque Cycle*. The trilogy is long (close to 3,000 pages) and involves many historical and fictional characters. Stephenson uses his wiki to stay in touch with his readers, track errors, and give background and explanations for his very complex and deeply researched books.

There are, of course, a number of wikis used to address needs of specific groups of people that may help each other, such as the German-language wikis Gründerwiki (<http://www.wikiservice.at/gruender/wiki.cgi?StartSeite>) which provides tips and a support structure for would-be entrepreneurs; or Jurawiki (<http://www.jurawiki.de>), created by and for people interested in law.

For external company use, wikis are yet a very new technology, with most uses in technically competent groups of people discussing complex and technical subjects (c2.com/cgi/wiki?CorporateWikis). Some companies have created wikis for customers, but one can question whether the technology in itself adds anything – that is, whether not a blog or other technology would serve equally well. When they are active, they tend to be created devout customers or hobbyists, such as a wiki devoted to the sailboat designs of Carl Alberg (<http://www.alberg30.org/collaborate/>).

A common reason for using wikis rather than blogging technology seems to be the need to let the participants in the wiki get involved not just in its content, but also in the setting up of its structure. For internal company uses, the technology may be held back a little by difficulties in converting an interlinked set of web pages into a linear document – which tends to be the desired, measurable end result for many knowledge gathering projects. Over time, this obstacle to use should disappear, as wiki software evolves to include conversion to more traditional document formats and more and more technical documentation is provided only online.

Wiki culture and culture management

After talking myself warm about how wikis erase the difference between knowledge producers and knowledge consumers [...] [a person in the audience] remarked “I went looking for [teaching] material in the

Wikipedia, but couldn't find what I was looking for. I didn't think it was very good.

Newth, 2004

Investigations into the quality of the Wikipedia has found that while vandalism and “normal” errors were fixed extremely fast (see researchweb.watson.ibm.com/history/gallery.htm for a particularly convincing graphical illustration), more subtle errors can go unnoticed over a long time (Felten, 2004; Waldman, 2004.)

A recent newspaper story (Aftenposten, 2004) about Wikipedia asked a number of topic experts what they thought of the quality of the online encyclopedia. The experts each came up with a few items to look up in Wikipedia, comparing it to traditional encyclopedias and their own knowledge. The verdict was almost unanimous – Wikipedia was “surprisingly good”. The experts found some errors and expressed some concern over the legitimacy of knowledge written by largely anonymous volunteers.

However, despite finding some rather obvious errors – wrong dates, for instance – none of the experts interviewed considered fixing the errors they found, even if doing so would be just a question of clicking “Edit”, fix the error, and then save. In fact, fixing the error is often less hassle than complaining about it – yet people tend to say they don't have enough time to fix even simple errors.

This problem is endemic to corporate groupware use, but becomes very visible in wikis, where every edit is saved and anybody can edit anything. Wikis are powerful in terms of their simple technology – but they will not work without a corresponding culture of “ruthless editing”, of constant involvement, and a clear understanding of the goal the participants are working towards. While the problem of vandals or hijacking of entries by people with an axe to grind may crop up in a corporate setting, it can be dealt with by removing anonymity and referring to corporate policy. Participants in a corporate wiki do not come in straight from the street – they participate in the wiki as part of a technical and social context.

Wikis and technology architecture

Implementing a Wiki is very easy. Those who want to run their own version can download software over the Internet – either commercial software, open source, or even public domain – install it on a server with Internet access, and get going. Those who don't want to even do that, can go to a simple hosted service such as Editme (www.editme.com) or to a more advanced service such as Socialtext (www.socialtext.com).

However, while installing or starting a wiki independently of other software the corporation has may be easy, the experience for the user and the maintenance hassle for the CIO will be much less if Wikis are offered as part of a larger architecture, with the interoperability and (at least if it is hosted locally) quality of service that follows the standards the corporation usually want to follow.

Wikis are part of a set of new technologies which has been used extensively on the Internet for a few years, and now slowly are making their way into corporations. Sometimes grouped under the loose term “web services”, these tools provide powerful information management capabilities via a standard browser, and blur the distinction between company-owned and generally provided software. They include:

- **Search tools.** One example here is internal use of Google and other search technology, accomplished by adding some snippets of code downloaded from Google.com into standard HTML pages.
- **Self-publication tools.** These are tools that allow easy creation and updating of web pages. Blogs (short for “web log”), a technology allowing easy updating of personal or group web pages, normally formatted into diary-like web pages with postings in reverse chronological order. Blogging is one of the fastest growing uses of the Internet – more than 3 million blogs have been established as of Fall 2004.
- Tools for **free-form organization and sharing of personal information**, such as various forms of PIMs (Personal Information Managers) and other email, calendaring and note-taking software, frequently with group functionality and service delivery over the Internet. Google’s Gmail (gmail.google.com) and GE’s Imagination Cubed (www.imagination2.com) are examples of web-provided services.
- New standards for **within-group distribution of content**, such as RSS feeds, RSS readers, and Trackbacks (a technology invented by the blog software company Movable Type (www.movabletype.org) that allows bloggers to track who links to their pages).
- Services that provide **personal IT services over the web**. Examples here are the backup services of online providers such as www.backup.com or www.connected.com.

These tools are gradually coming together – combinations of blogs and wikis, called *blikis*, are already being developed – and allow individual users in a widely distributed to self-configure their personal information environment. Together they provide services that the more traditional but less intuitive groupware applications, such as Lotus Notes, cannot do, for all their workflow and synchronization capabilities. Their chief distinction from previous tools of group interaction is that they are not based on a non-technical metaphor – the way email is an automation of corporate memos and the internal mail-room. They are examples of truly new ways of exchanging information and creating content and context for human interaction.

The technologically astute CIO or business manager will, of course, recognize that wiki functionality eventually will evolve to become a standard option for organizing personal and group information – the way most word processors and editors today have interfaces and formatting tools that support HTML creation. Microsoft, as the dominant vendor of productivity software today, has already created a Wiki application, and, rather atypically, has been made freely available under a Creative Commons license.

However, it may not be prudent to wait too long – the users may run away with the technology in the meantime, downloading and installing software or signing up with

online services on their company credit cards. And providing this new functionality in coordinated fashion contributes deeply to the user experience.

Disney Corporation has been noted as a company that uses Wiki technology as part of an information sharing strategy with new, flexible tools (Pusateri, 2004). The company uses wiki technology for internal discussion and idea generation, as well as documentation. It also uses internal blogs, which generate RSS feeds. The RSS feeds are picked up by the RSS reader Newsgator, which is integrated as a plug-in into Microsoft Outlook. The upshot is that people interact through tools that seem very much like their normal email client, but which handles the many-to-many and incremental content management necessary for a complicated collaboration over time. If it is to work, it has to be a natural part of the toolset the user knows and understands, and the incremental value of the new tool must be visible to the user directly. In the case of RSS feeds and RSS readers, they are popular because they are almost free of spam (unsolicited and/or commercial email.)

A further technical issue is that as the wiki grows, there is an increased need for automated tools to keep track of it doing things like searching for orphaned pages, setting up redirects for duplicated items, doing mass changes and re-categorization by robots, search on meta-data as well as straight context, and provide cleanup and managed discussion spaces. Most wikis lack these capabilities at this point – Mediawiki, the wiki implementation that Wikipedia runs on, is a notable example.

Given the state and the nature of the technology, it may be prudent for IT management to have a tool smith on hand, to develop the wiki technology to follow the needs and behavior of the wiki participants. This has the further advantage of underscoring the feeling of ownership of the wiki – both the technology and the contents.

Managing the Wiki

Managing a wiki is all about turning readers into editors, of underscoring that if you see an error or an omission, you should fix it, and fast. There are strong network effects both in terms of numbers and quality of participants. In my opinion, wikis should be managed to take advantage of these attributes rather than try to fight them. So, the prudent wiki managers should

- understand the importance of momentum, and make sure that energy and resources should be channeled to encourage wiki contributions
- carefully evaluate one's own involvement. There is a fine line between too much and too little here: Too much involvement by a manager can lead to posturing from the other participants, who will contribute to get brownie points rather than to get value out of the wiki. Too little involvement will quickly send the message that the wiki is not important and hence not worth spending time on.
- think carefully about incentive systems, and try to make them normative (praise, citations, peer respect, influence) rather than instrumental (pay, promotion, other forms of tangible rewards) as much as possible. The best situation arises if continued and strong contribution to the wiki both is visible to others and a reward in itself to the contributor.
- encourage risk-taking: While public wikis have to struggle to establish a common culture, corporate wikis have to struggle to overcome the established

culture, especially the one of awaiting management approval before changing anything.

- establish joint ownership of content. In Wikipedia this is expressed as removal of all copyright – in a company, this has to be established in a similar form. The best way to do this is to make valuable contributions yourself.

Some companies have abandoned wikis because the users did not want to invest the time necessary to learn to edit them (Jesdanun, 2004). Often, management itself may be the biggest obstacle. For example, in a recent discussion with a large organization with considerable technical complexity and a high need of practical, helpful documentation, this author suggested setting up a wiki. The documentation could then be written by the people out in the field – of course after seeding the wiki with the standard operating procedures. This would enable the operators out there to add practical advice to standard procedures, as well as giving them both the means to and the rewards for keeping technically up to date. The response from management was very negative – in no way would they accept that the person using the equipment in question every day would have new knowledge to contribute or the ability to articulate it.

Jonas Söderström, Swedish human-computer interface expert, sees weblogs as a bottom-up tool for creating intranets (2004). Much of what he says also applies to wikis. As with blogs, they:

- are personally driven
- ties knowledge socially to individuals
- has explicit and “soft” valuation and validation of knowledge
- can support networked work patterns
- make individuals’ good work visible in the organization
- available at a fraction of the cost of traditional groupware

This makes a good case for Wikis, but there are costs as well. Wikis have, so far, been associated with groups of experts and/or enthusiasts freely sharing what they contribute. While this may seem easy to do once it is up and running, gaining momentum requires much dedication and energy. In particular, it is important to have dedicated, self-chosen moderators.

Wikis consume moderator energy prodigiously. Peter G. Neumann, Principal Scientist with SRI International, has managed an on-line collaboratively written newsletter, The RISKS Digest, since 1984. He underscores that moderators have to be self-selected and opinionated (Andersen, 1998):

The bottom line is that moderating a newsgroup wisely takes serious dedication to, familiarity with, and commitment to the subject matter and willingness to put oneself into an intrinsically sensitive position. It does not work well if someone is arbitrarily assigned to the task.

In this Wikis resemble traditional groupware tools, but because of the technology’s simplicity and the fact that structure is provided by a process of categorization and re-categorization, the importance of having a moderator (or a group of moderators) that have opinions on content as well as procedure increases. As with open source

software, a wiki may work well for structured information that needs corrections and minor edits, and will need a core group of very active people to make strides in innovative content or categorization. It may work less well for development of new content or new structures, unless the group doing it already is tightly knit professionally (and, perhaps, also socially).

As information technology is getting more and more commoditized, both in its production and its interoperability, it can lead to new jumps in productivity, as companies learn to use the technology to further specialization of work without sacrificing flexibility and interconnection (Hagel & Brown, 2001; Brown et al, 2002). The technology is no longer a rigorous specification of how a process should be done – it can be, of course, but by choice rather than necessity. Instead, the technology is free-form and the coordination is done via values and norms, as well as visibility of who contributors are and what they are doing.

Wikis are perhaps the best example of the new tools available to managers. They are still evolving, but less for their technical incompleteness than because they are more evolvable than what we previously have had. In a corporate context, wikis should be used for tasks that involve teamwork, complexity, and deliberation. They are hard to manage, but very useful when they work. Properly used, they can free up collaboration and increase employee engagement. Improperly used, they are not worse or better than any other collaborative technology out there.

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Espen Andersen is Associate Professor of Strategy with the Norwegian School of Management BI, Norway, and European Research Director with The Concours Group, an international research and consulting company. His web site is www.espen.com.

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