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Positioning Bond University within Web 2.0

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Published: 12/03/2007

Document Version:
Publisher's PDF, also known as Version of record

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Recommended citation(APA):
Hopkins, P. J., & Rees, M. J. (2007). *Creating a branded information environment with social media systems: Positioning Bond University within Web 2.0*. Bond University.

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12-3-2007

Creating a Branded Information Environment with Social Media : positioning Bond University within Web 2.0

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Recommended Citation

Hopkins, Peta J. and Rees, Michael J., "Creating a Branded Information Environment with Social Media : positioning Bond University within Web 2.0" (2007). *Library Services and IT Services papers*. Paper 16.

http://epublications.bond.edu.au/library_pubs/16

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Creating a Branded Information Environment with Social Media Systems

Positioning Bond University within Web 2.0

by

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and

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This report was inspired by the authors' personal experience of using social media systems over the last two years. During that time both authors have used a range of public, private and hosted social media systems for their professional activities and well as for personal use. They and other colleagues mentioned here are convinced that a unified approach to social media systems can benefit the communications processes within our institution and our interaction with our important existing and potential clients, the students and alumni.

December 2007

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Executive Summary

Bond has a planning and implementation mechanism in place for traditional information systems. In the last 2-3 years new strains of information system have emerged under the Web 2.0 banner and more accurately called *social media systems*. Such systems were initially targeted at the global consumer market but are now starting to have a profound effect on the internal and external communications of enterprises both large and small allowing them to extend a *branded information environment*.

In this report the authors give an overview of the main types of emergent social media systems and their characteristics. Both authors have been using social media systems for personal and professional activities for some time, and chronicle the uses known to them of other colleagues and students within and without the Bond environment.

Some of the significant features of social media systems that distinguish them from traditional information systems are:

- Easy to use - staff members require little if any training
- Low cost in terms of server hosting, software acquisition and maintenance
- Highly interactive - community members and guest visitors able to comment, vote, rate and tag content on the sites; this fosters online community
- User generated content - word-processor like tools make content creation very straightforward without any knowledge of web page formats
- Multimedia content hosting - straightforward upload of images, audio and video content
- Integration of data services - so-called mashups bring together multiple data sources in web page widgets, often generated without programming expertise

A number of social media systems are described in some detail together with how they are already being used for productivity gains within the Bond environment. The different social media types are:

- Blogs and podcasts
- Wikis and other collaborative spaces
- Social bookmarking and social citations
- Social networks
- Instant messaging and chat
- User generated content
- Virtual social environments

Throughout the discussion a list of indicative hyperlinks are provided so that the reader can experience the social media systems being described.

The authors urge those managing our information systems to consider the place for social media systems at Bond. These systems are already being deployed by a wide range of organisations and their case study experience to date is summarised. Virtually all case studies and early deployment experiments of social media systems by other enterprises report positive outcomes. Bond can learn a valuable lesson from these sources.

Recommendations for the Way Forward

This paper concludes with an outline of a staged action plan that might be adopted to evaluate the effectiveness of social media in a sandpit environment to allow staff to experiment with this powerful medium. The key points are:

- Establish a Social Media Working Group
- Survey staff and students and pick 5-6 pilot projects with simple KPIs
- Use low cost external hosting with customised Bond brand
- Deploy pilot projects for one semester
- Report on outcomes

This action plan is expected extend over two semesters in total. Depending on outcomes it is likely that social media systems will become a significant part of the information system mix within our institution.

Abstract

In line with many organisations Bond has processes to acquire, deploy and maintain traditional information systems to support the operations of the core businesses. Yet the last five years have seen the emergence of a new class of information systems that provide considerable potential to improve communications between staff within Bond and with existing and prospective students. These new systems are referred to by various titles but are increasingly known under the umbrella of social media systems. Examples of such systems are blogs, wikis, social bookmark repositories, content management systems and virtual environments.

A body of evidence is emerging that the deployment and use of social media systems is having a range of beneficial impacts on business processes in a wide range of enterprises. Case studies are available from businesses large and small, and in several different sectors, that highlight the benefits of social media systems and give guidance on how to select and deploy them.

This report introduces the different types of social media systems and their characteristics. The authors were moved to produce this report after using social media systems for their work at Bond and personally over the last year or two. During this time it has become apparent that a number of experimental uses of social media systems exist. Both staff and students are involved in pockets of social media system trials. Those trials known to the authors are presented in detail.

It is the authors' contention that a properly planned and managed introduction of social media systems at Bond, alongside our existing traditional information systems, can enhance the Bond brand. A mix of social media systems can operate as a branded information environment to add further support to staff communications, teaching and learning, and external marketing. This report concludes with recommendations on a staged social media deployment plan to achieve the branded information environment.

Introduction

Over the last one or two decades the information systems deployed within enterprises both large and small have matured to a point where the basic information needs are met. Such traditional information systems continue to evolve in terms of their integration and efficiency. The information flows amongst staff and customers for the major business functions are largely understood. Chief information officers, while planning continuous improvement, can choose from a wide variety of off-the-shelf information systems or a similar set of hosted information services and both types can be customised in-house or with the aid of consultants.

Some typical examples of business functions that are well served by a wide range of competing information systems based in-house are:

- payroll and common financial services
- human resource management
- customer relationship management
- content management systems
- manufacturing and ordering systems
- intranet and Internet web sites
- ecommerce web sites
- traditional library management systems

The Bond suite of information systems is typical:

Information System Type	Systems at Bond
Corporate	Finance One - Corporate financials Student One, Goldmine - Customer management CHRIS, Talent2 - HR Aleph library management system, Ezproxy (off-campus authentication), Digital Commons (institutional repository), Serials Solutions (e-resource management, access and discovery system journals) - Library services Blackboard, TurnItIn - Learning management Syllabus+ - Registrar Altiris, Resources Register - Assets
Infrastructure	Blackberry Web site Internet access and email Point-of-Sale
Internal	Local systems in organisational units

It is still the case that the best-of-breed systems in these categories will be sourced from a range of software manufacturers despite examples of very large software companies that attempt to span all the major business functions within a single software suite. Harmonising the information flows between the installed bases of information systems within a single enterprise, and between suppliers and customers organisations, remains a major integration problem. Indeed this has seen the growth of specialised 'glue' systems to ease the integration problems.

Bond is continuing to develop such an in-house metadata repository that allows data from one information system to be transformed into a different format understood by the destination information system. This repository also acts as a central data standard that all data must meet as it passes through the enterprise. The repository allows systems from different suppliers, using different data storage formats and running on very different operating system and hardware platforms, to work together successfully.

Of course, network services are the medium for the actual data flow between disparate information systems. Van Dijk [2006, p. 85] proposes four categories of network services:

- telecommunication and data communication services: the base network protocol stacks including the Internet supported by all operating systems and associated security and backup mechanisms
- transaction services: the full spectrum of financial services from banks and investment companies through to payment transmission, reservations, orders and payroll
- communication services: the range of exchange facilities for speech, text and audio-visual media that result in services like VOIP, Internet access, email, instant messaging and videoconferencing
- substantial information services: included here are search engines, online data storage/backup, specialist databases in a variety of topic areas, electronic libraries and audio-visual media distribution

The in-house information systems listed above all rely on base communication services (network service category 1) and some or all of the other network services. The network underpins the entire information service structure.

Information systems present within an enterprise are for the most part introspective. That is they store, analyse and report on data generated and retained within the enterprise. Their primary focus is to store and maintain islands of operational data that support the business and service functions of the organisation. Some systems such as the main web site are outward

facing and are intended to interact with existing and potential customers and, occasionally, other organisations that consume the information extracted from the web site. As is usual the main web site is balanced by the intranet web sites that by design are inward facing.

The internal systems share a number of major characteristics:

- a dedicated small group of staff administers and has direct access to each system, the system management group
- the various system management groups are typically disjointed with an individual staff member being assigned to a single management group or none at all
- each system is an island of data
- special training is needed to be a proficient member of a system management group, with little overlap in the training skills

Such is the typical state of the information systems within an organisation.

Over the last five years and more on the global stage the explosive growth of the web has continued, but the nature of the interaction with web users has seen a dramatic change. Instead of static pages tracked by search engines, the read/write web phenomenon is rapidly progressing. The many thousands of interactive web sites have become information systems in their own right—in other words web applications. The web page displayed in a browser has become the universal user interface quickly learned by any individual. Common data formats allow a significant degree of data portability between sites, each site acting as an information system. A single user belongs easily to many communities, the old system management groups. All interactive web sites are equally accessible and authentication mechanisms alone determine the user population of each site. Single sign-on mechanisms threaten to reduce this chore even further. The information universe has changed.

This new information universe is being called Web 2.0 but that is becoming a catch-all term. This report refers to the new read/write web sites as social media systems to emphasise the sense of user community and overlap of purpose. By belonging to many communities an individual can participate in many enterprises or organisations, even though the community is a virtual one. Many new and exciting types of participation and fulfilment are possible with social media systems. Examples are described in detail below.

It is becoming clear that physical enterprises, currently running only internal information systems, can benefit from deploying social media systems. The enterprise brand can be strengthened and made more visible with social media systems deployed in concert with the internal information systems. Later sections outline the largely ad hoc growth of social media systems within Bond and explain how a unified branding might be achieved. The mechanisms, processes, policies and strategies for a branded information environment are described and possible strategies discussed.

Emergent Social Information Systems

Over the last 2-3 years there has been an explosion in the growth of web services offering a suite of technologies that are changing the way web users interact. These services are often free or very low cost and provide the user with a new power to create, publish and promote their own content. The terms *Web 2.0* and *read-write web* attempt to capture the essence of these developments. Web 2.0 indicates that the web has undergone a radical change from one version to another. *Read-write web* acknowledges that the web is not just about reading anymore, it is about creating content. *Write* should be interpreted loosely to include content creation in images, video and audio as well as text.

Cass (2007, pp. 207-208) summarises social media as making "it easy to find people with the same interests by providing links to groups and communities or enable people to catalog content through tagging". He states that the strategy of social media allows people to contribute content, describe content, find content, build community, start and continue conversations.

The University's [ICT strategic framework](#) (p.8) refers to blogs and wikis as desirable collaborative/learning tools. Strategic priority 3 on collaborative learning environments is described in the ICT strategic framework. "New learning tools and learning spaces are needed to bring together people with common interests and to foster collaboration between students,

between instructors, as well as among students, instructors and other learning partners. Currently the physical and technological infrastructure of classrooms on campus is poorly equipped to support collaborative learning. Instructors do not have the tools to foster collaborative learning outside of class. Student expectations are shaped by sophisticated social networking environments to which they are accustomed." Two of the specific goals identified are to "create an enterprise-level collaborative learning environment that supports multilevel collaborations between students, instructors and other academic partners" and "Track, assess, integrate and support emerging collaborative and sharing technologies to enhance the collaborative learning environment." Future actions identified to meet these goals include evaluation and increased use of blogs for collaborative learning and networking and a blog server for the University.

There are some great ideas and projects already underway that could benefit the university if they were hosted under a branded environment. But at present they are scattered on the web. Some members of the Bond community are using various blog platforms and wikis outside of the Bond network. Descriptions of current projects and initiatives using social software are described in the boxes below each section.

Blogs and Podcasts

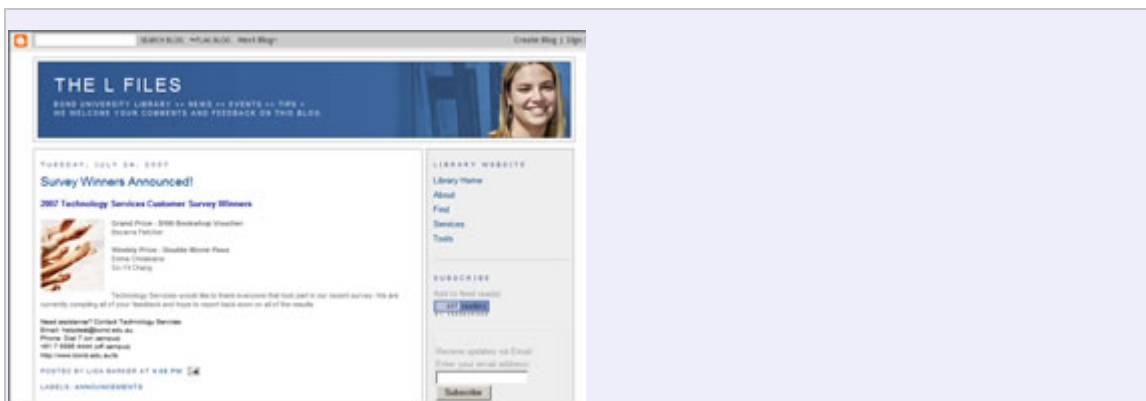
The first weblogs or blogs started many years ago, but were limited to those with technical skills to manage their own web sites. In recent years the blogosphere (community of blog writers) has expanded dramatically with the availability of free or low cost, click-to-publish blogging tools. Self-publishing is now on a whole new scale. Blogs vary dramatically in style and content, ranging from very personal anonymous diaries, through reflective journals, professional journals, political commentary and news services to slick corporate promotional sites. The simple technologies behind blogs have enabled some very creative uses to be deployed including databases of recipes and online dictionaries. A range of blogging applications have also been developed to allow bloggers to publish from their mobile phones, from within a Word document, via email, and with a right-click of the mouse from their web browser. It has never been so easy for an individual to share a message with such a huge potential audience.

Blogs are typically text-based content, but images, audio and video are being incorporated more frequently. In addition to a regular website presence, blog content is typically published as an RSS feed also. This enables the content to be syndicated and re-used in a variety of ways. It is also the mechanism that enables podcasting. A *podcast* is a media file, or a series of files, that is distributed over the Internet using RSS feeds for playback on personal computers and personal media players including the eponymous iPod. Using a blog is an easy way to provide a podcast.

Library Blogs

[The L files](#) [HREF1] was the first blog established by the Library. It was launched in May 2006 to disseminate news about services offered by the Library, along with tips and tricks for using library resources. Several library staff members contribute to the blog using guidelines drafted to encourage an informal, yet informative, news service to the University community. Publishing articles to the blog has become a standard procedure for the Library's marketing team to complement email announcements, signage (print & digital) and presentations. One of the aims of the L files was to foster a sense of community focussed on the Library. Although it is difficult to measure how successfully this objective has been achieved, the blog has generated considerable commenting on at least a couple of articles about the Law Library. (link to Homer story and noise in the Library for examples) Headlines from the L files are syndicated to the Library's homepage. Being able to keep the homepage regularly updated with new content, without requiring intervention from staff with website access was considered to be an important function of the blog, and it has been very successful in this objective with the latest 4 headlines displayed and updated on the homepage within an hour or so from being published.

Platform: Blogger (hosted at Blogspot.com, a Google service)



[Bond's Research Repository: e-publications@ bond news and views](#) [HREF2] is the Library's second blog. This one was established to provide a communication channel for sharing information about the project to establish an institutional repository, e-publications@ Bond. Although readership on campus is thought to be quite small, it has been useful as an archive of news about the project demonstrating when milestones were achieved. As blogs appear to be well-indexed by search engines, using a blog to document a project is also a way to help generate traffic back to the main site.

Platform: Wordpress (hosted at wordpress.com)

Feeds from both of these blogs are syndicated to the Library intranet, in a single channel to help Library staff keep up to date.

The Library has also been involved in a project with the Business Faculty to develop a resource academics can use to identify journals relevant to teaching and learning in their discipline for publishing or research purposes. The project has been implemented on the website in a series of html pages, although using a Wordpress blog was discussed as a possible solution. This proposal would make use of the mysql database that underlies Wordpress blogs, along with some Wordpress plugins to customise the blog. It was envisioned that plugins to generate an a-z index, to sort entries by title instead of date and to provide a search interface would provide an easy to use, customisable database without the need for intensive web development. This option has not been developed as yet, as access and support for a Wordpress blog on campus was not attainable at the time.

[Teaching and learning journals](#) [HREF3]

Law Blog

In 2007 Joel Butler, Teaching Fellow in the Law Faculty prepared a discussion paper for the faculty to explore the possibility of establishing a blawg (law blog). Joel reports that the proposal did not move forward due to various reasons. It seems that at the time there was little understanding within the faculty of the potential value of a blog and concerns that there would be too much work involved in content creation, and an expectation that the content would need to be of a highly academic quality.

It was envisioned that the law blog would be hosted on a free, external blog service if it were to go ahead.

Marketing

In 2006 there were some exploratory discussions between Sarah Harris (Internet Marketing Manager), the Library and Teaching & Learning Services about a blog server. Marketing at that time envisaged the use blogs for students to write about their experience as Bond students to attract prospective students to the University. Forums were used instead, as the only blog server available on campus was designated as a trial for teaching and learning purposes.

Personal Blogs by Bond Staff and Students

There are a number of students and staff writing blogs on various platforms and hosted by a wide variety of services. These range from professional to personal and vary widely in content and purpose.

A [List](#) of "blogging Bondies" [HREF4].

Wordpress Blog Server

One of the authors, Michael Rees, began using blogs for part of a course assessment during the final semester in 2005. Masters students were offered the choice of keeping a blog as part of their additional assessment in the Advanced Website Development subject. Five students accepted and maintained a blog using a public blog service of their choice about their studies and life experiences. Three of these students maintained their blog for an additional 12 months or more.

As a complement to the iLearn LMS a blog server called iLearn-blogs was installed running the Wordpress blogging engine. Michael Rees used this service to incorporate a blogging assessment for all students in two subjects during the final semester of 2006. About 40 students participated. They were set to write one blog entry per week on an aspect of the subject they were studying and were free to choose their own topic for another entry each week. 5% of the marks for subject were allocated to this blogging activity. Various operational reasons caused the termination of the Wordpress Blog Server.

Michael Rees continued to refine his use blogging for assessment in his subjects in 2007 making use of public blogging services, primarily [Edublogs](#) [HREF5]. The preliminary results of this further work are reported in a [blog entry](#) at Impressions Scholarcast [HREF6].

Blackboard Plugin

CampusPack, a product of Learning Objects is a plugin for Blackboard that has recently been installed in iLearn@Bond. Preliminary testing of CampusPack was undertaken by members of the Web-based Learning Subcommittee. The CampusPack plugin provides blogs and wikis within the locked-down environment of a learning management system. The blogging functionality was introduced to the academic community at Bond in a workshop offered by Teaching & Learning Services. The aim of the workshop was to engender discussion about how blogs might be used to facilitate learning. There are plans to set up a blog for attendees at the workshop to which they can contribute and gain some experience while discussing how they might use the functionality within their subject sites. Blogs within the iLearn@Bond environment will not be openly accessible beyond the University community, and are most likely to be used with subject-based content and student learning purposes.

SharePoint Blogs

The Teams Server (see below) runs the SharePoint content management system, and one of the types of SharePoint web sites that can be created is the blog. The blog web sites provide the basic blog features of entry creation/editing, commenting, searching and RSS feeds. Provided the SharePoint blog site is given anonymous access it can be read with standard RSS reader software, either web-based or running as a standalone application. SharePoint blogs are particularly well supported by the Windows Live Writer, a blog entry editor.

Wikis and other collaborative spaces

Kajewski (2007, p. 422) describes wikis thus, "A wiki, originating from the Hawaiian term for quick, is an open shared space for collaborative content contribution and editing. Contribution to a wiki requires no HTML or programming knowledge. Unlike protected web pages, any information added to a wiki can be changed or deleted by "anyone". Anyone with a web browser can insert new pages, include new content to existing pages, or delete existing information. Previous versions of pages are saved for easy recovery from errors." As wiki engines are developing it is more common to see quite well-developed authority and permissions functionality being provided to define the roles of wiki users.

Google Docs & Spreadsheets describes itself as "a free web-based word processing and spreadsheet program that keeps documents current and lets the people you choose update files from their own computers. You can, for example, coordinate your student group's homework assignments, access your family to-do list from work or home, or collaborate with remote colleagues on a new business plan," (Google Docs 2007). Users of the service only need a web browser to collaborate on word processing and spreadsheet files. In August, the Chronicle of Higher Education, Wired Campus (18 Aug 2007), reported that a number of American universities had recently signed up for Google Apps for Education. The service offers email, word-processing and spreadsheets applications. The 'portability' of the applications and

the life-long email address were cited as attractive features. Microsoft is also offering a similar service with Windows Live @ Edu.

Peanut Butter Wiki

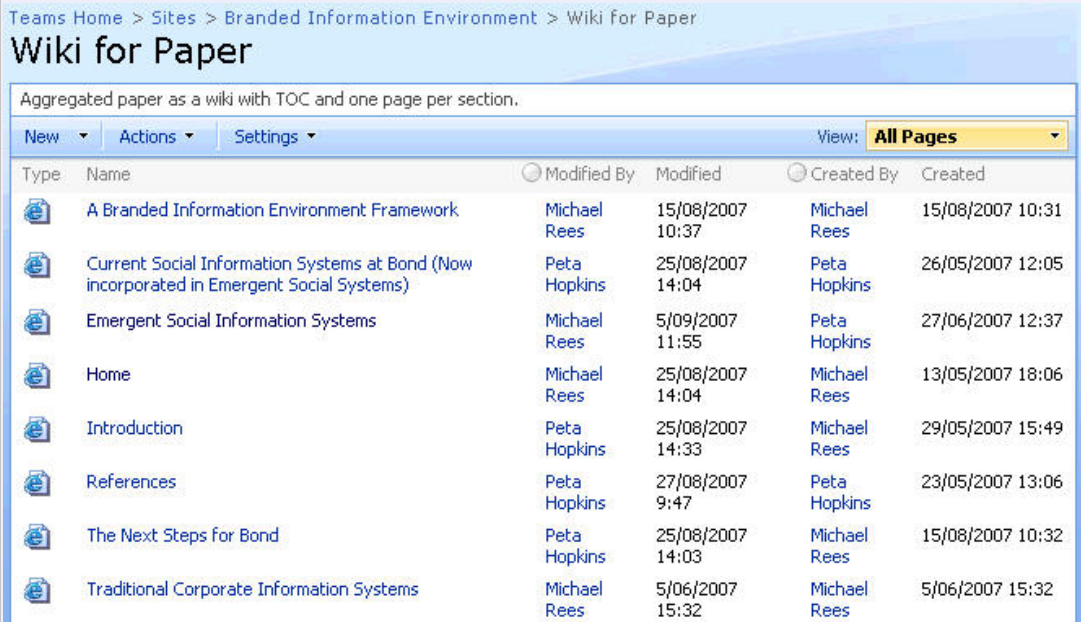
[pbwiki](#) [HREF7] was used by the Library, Technology Services and Teaching & Learning Services to discuss blog requirements in 2006.

Wetpaint

[Wetpaint](#) [HREF8] was used by a Library team to explore and learn about wikis and plan a staff development activity. This has since moved to the Teams Server (see below). Wetpaint is also used by Charles Sturt University Library to provide a collaborative resource where students and staff can contribute content alongside librarians. [CSU Library Wiki](#) [HREF9]

SharePoint Wikis

The School of IT has set up the [Teams Server](#) [HREF10] to run the Microsoft Office SharePoint Server (MOSS). This server builds upon Windows SharePoint Services (WSS) which provides the base content management facilities for document libraries, announcements, forums, lists of links, tasks and appointments, surveys, web pages and complete web sites. One type of WSS document library is the wiki page library. This document was originally prepared by the authors as a series of wiki pages on Teams.



The screenshot shows a SharePoint Wiki for Paper interface. At the top, there is a breadcrumb trail: "Teams Home > Sites > Branded Information Environment > Wiki for Paper". Below this is the title "Wiki for Paper" and a subtitle "Aggregated paper as a wiki with TOC and one page per section." The interface includes a navigation bar with "New", "Actions", and "Settings" menus, and a "View: All Pages" dropdown. The main content area is a table listing pages with columns for Type, Name, Modified By, Modified, Created By, and Created.

Type	Name	Modified By	Modified	Created By	Created
	A Branded Information Environment Framework	Michael Rees	15/08/2007 10:37	Michael Rees	15/08/2007 10:31
	Current Social Information Systems at Bond (Now incorporated in Emergent Social Systems)	Peta Hopkins	25/08/2007 14:04	Peta Hopkins	26/05/2007 12:05
	Emergent Social Information Systems	Michael Rees	5/09/2007 11:55	Peta Hopkins	27/06/2007 12:37
	Home	Michael Rees	25/08/2007 14:04	Michael Rees	13/05/2007 18:06
	Introduction	Peta Hopkins	25/08/2007 14:33	Michael Rees	29/05/2007 15:49
	References	Peta Hopkins	27/08/2007 9:47	Peta Hopkins	23/05/2007 13:06
	The Next Steps for Bond	Peta Hopkins	25/08/2007 14:03	Michael Rees	15/08/2007 10:32
	Traditional Corporate Information Systems	Michael Rees	5/06/2007 15:32	Michael Rees	5/06/2007 15:32

Social Bookmarking and Social Citations

Bryant (2007, p.12) describes social bookmarking as "an extremely easy and effective way of sharing and filtering interesting links based on social networks". They allow users to subscribe to bookmarks of others in their network or group, or to a keyword assigned to bookmarks by others. Assigning keywords to bookmarks (and other information entities) has become known as "tagging" and provides an alternative method of categorising information based on an emerging taxonomy created by the members of the online community. This is often referred to as a folksonomy.

Bookmarking sites range from the popular ([del.icio.us](#) [HREF11]) to the scholarly ([Connotea](#) [HREF12]). Del.icio.us is one of the best known and loved. These services give users a free, always-on place to store their favourite web sites or online articles. Connotea is a scholarly bookmarking site offered for free by Nature Publishing. Nature provides a free, hosted site, but the application itself is freely available for installation in a local instance. Connotea's features include the ability to import and export bookmarks for reference managers such as Endnote, and provides an expanded form to fully describe bibliographical data about the

bookmark, making it ideal for storing links to e-journal articles. It also caters for digital object identifiers, integration with some databases such as PubMed for quick capture of bookmarks and offers the user a quick link to their own institution's openURL resolver to track down full-text access within the institution's subscription databases. With this enhanced functionality, Connotea could be described more accurately as a social citation service rather than just a bookmarking service.

Blackboard also provides a social bookmarking service that can be integrated within a Blackboard environment. [BB Scholar](#) [HREF13] is more like Del.icio.us than Connotea. Scholar is available to public users as well as users from licensed BB sites.

Del.icio.us

[Del.icio.us](#) was one of the first and now the most successful site for building an online, shared hyperlink repository - a social bookmarking service. One of its keys to its success is that each link can be tagged (categorised) with keywords of the user's choosing. One of the authors, Michael Rees, adopted del.icio.us as his central link database in January 2005 and the collection has grown to about 850 links. del.icio.us automatically records the page title with each link but it soon became apparent that entering a short descriptive text with each link was also very useful to act as the link summary and aid in searching.

Michael Rees exploited del.icio.us to store and distribute links to educational materials in a number of his IT subjects. The links were entered in a personal del.icio.us account in the normal way and tagged with a variation of the course code. For example, the links for INFT232 Advanced Web Site Development in semester 053 were tagged with INFT232. The URL for accessing this list of links is simply <http://del.icio.us/mrees/INFT232>. This link can be posted on an iLearn site used by the students. Subsequently new links can be added, existing links modified, and older links deleted, yet the URL remains constant as del.icio.us dynamically generates the most recent list. A sample of the output is:



The screenshot shows a web browser window displaying a del.icio.us profile page. At the top left is the del.icio.us logo, followed by the text 'del.icio.us / mrees / inf232'. Below this is a navigation bar with the text 'mrees's items tagged inf232 → view all, popular'. The main content area shows a list of links with navigation options '« earlier | later »' and 'page 1 of 2'. The first link is 'Stopdesign | Throwing Tables Out the Window' with a 'save this' link. The second link is 'CSS Layouts - saila.com' with a 'save this' link. The third link is 'Tables or CSS: Choosing a layout | evolt.org' with a 'save this' link. The fourth link is 'Open Directory - Computers: Data Formats: Style Sheets: CSS: Examples: Layout' with a 'save this' link. The fifth link is 'Max DesignColored boxes - one method of building full CSS layouts' with a 'save this' link. Each link includes a brief description and a 'saved by' count.

del.icio.us / mrees / inf232

mrees's items tagged **inf232** → view **all**, **popular**

« earlier | later » page 1 of 2

[Stopdesign | Throwing Tables Out the Window](#) [save this](#)
With the CSS waters thoroughly tested by many sites that have taken the plunge, it's time for us to start cheering from the water below, coaxing and encouraging those who haven't yet jumped in, to make that jump. There's no longer any reason to use
to [css howto layout tables tips inf232](#) ... **saved by 458 other people** ... on sept 23, 2005

[CSS Layouts - saila.com](#) [save this](#)
A tableless, CSS-based, liquid, three-column layout
to [columns css layout web tutorial inf232](#) ... **saved by 285 other people** ... on sept 20, 2005

[Tables or CSS: Choosing a layout | evolt.org](#) [save this](#)
Discussion of the benefits of using CSS layout.
to [css layout inf232 tables](#) ... **saved by 1 other person** ... on sept 19, 2005

[Open Directory - Computers: Data Formats: Style Sheets: CSS: Examples: Layout](#) [save this](#)
dmoz CSS Layout Directory
to [css layout web inf232](#) ... **saved by 27 other people** ... on sept 16, 2005

[Max DesignColored boxes - one method of building full CSS layouts](#) [save this](#)
This article explains one method of building a full CSS layout from start to finish. The method, based on positioning colored boxes and testing across a range of browsers, can be used to build a wide range of full-CSS layouts.
to [css layout columns howto inf232 web](#) ... on sept 16, 2005

Connotea

One of the authors, Peta Hopkins, uses [Connotea](#) to track professional reading, and to collaborate with colleagues at other institutions in building a set of useful readings on library and information science topics. A group has been established called [LINT](#) [HREF14], which aggregates the members' individual libraries. In addition a tag is used by the group to share bookmarked readings in their individual libraries that are of particular interest to that group.

Connotea provides some competition for EndNote. While it does not integrate with word processing applications like Endnote it does store citations in a similar way, but they can be accessed from anywhere with Internet access, unlike the Endnote desktop application. Endnote Web does offer a web version, but the experience of the authors is that the sharing capability of EndNote Web is a long way behind the collaborative features of Connotea. Connotea provides import and export functionality for Endnote users. The author's favourite feature of Connotea is the ability to define an institutional openURL resolver so as to easily track down possible sources of full-text articles with a single click, instead of having to open an additional web browser and search for citations.

The screenshot shows the Connotea web interface. The main content area displays a list of bookmarks matching a tag, with details for each entry including the title, author, and date. The interface includes a search bar at the top, a navigation menu, and a sidebar with various tools and options. Annotations with blue arrows point to specific features:

- Web feeds for subscribing to tags, or other users' bookmarks:** Points to the search bar and the 'Find results' button.
- Import and Export for EndNote and other reference managers:** Points to the 'EXPORT LIST' button.
- Links to people who have used the same tag:** Points to the 'Users who used list:' section on the left.
- Integration with institution's full text finder:** Points to the 'Full text' links in the bookmark entries.

Social Networks

[MySpace](#) [HREF15] and [Facebook](#) [HREF16] are the big names in social network sites at present. Account holders share information about themselves on profile pages, identify who their "friends" or contacts are and can share photographs and video they have made or like. Social network sites also typically offer other features such as special interest groups, discussion forums and messaging.

More specialised social networking sites have emerged based around a common interest. Librarything, for example is a social network site revolving around the books that users own. In a short time it has amassed a huge quantity of data about books and leverages that data to provide recommendations based on the number of people who have books in common, and on tags used to describe those books. Users can choose to be private members of the network and work with a narrower purpose of just managing their personal libraries, while others may elect to join groups and send messages to others.

Other types of sites leveraging the social data they collect include rating and recommendation sites such as Ratemyprofessors.com and Stumbleupon. The first has a title that clearly identifies its purpose to enable students to rate their lecturers. Stumbleupon describes itself "Connect with friends and share your discoveries, meet people that have similar interests, and check out what other people are discovering". Based on the users' interests, other sites and media are recommended to them.

Facebook

Facebook is social networking website with a focus on universities and colleges. According to Wikipedia (2007), when it was first launched in 2004, Facebook was restricted to students of Harvard. Users can select to join one or more networks. Networks are based on regions, place of employment, or educational institution. In the Bond network, there are over 2500 members, almost entirely students with only one member of staff affiliated with the network. Within the Bond network, members can establish groups based on common interests. Groups include "Bond Main Library 4th floor lovers", "Bond Main Library the Social Cafe" and "Dons Tavern" among others. The Don's Tavern group was reported in Bond Briefs to have "boosted enthusiasm" for the tavern.

A 'corporate' use of Facebook is demonstrated in the recent establishment of a group for "Campus life at Bond - 073". This group is administered by a staff member in Student Services and is described as "Everything you need to know about Campus Life at Bond University - Here on this site!"

Statistics for networks within Facebook are based on the information that users share about themselves including their favourite music, books and television shows, and political and religious views.



Instant Messaging and Chat

IM (instant messaging) and chat were around long before web 2.0 became a catchphrase. However, they are worth acknowledging here as social tools that are emerging as important business communication methods and in their own way have been revolutionized by recent developments in web services. In particular, the ability to embed IM/chat interfaces on web pages for guest users, and the advent of multi-platform web services like Meebo [HREF17] have freed the user from desktop applications. You can now use IM and your buddy list from any internet-ready computer. Meebo offers a single sign-in to manage multiple IM services including MSN, Yahoo, Google Talk and Jabber. Chat rooms can be easily managed for group conversations while the room's administrators can integrate media and web links for all to view. In Meebo a snapshot of the web page will even be displayed as well as the link.

The synchronous nature of chat offers some benefits over email when there is a need for quick responses and the more formal style of business email can be dropped. It is very useful where URLs can be dropped into the chat and appear as live links. It is much cheaper than long-distance telephone calls, providing an affordable method for quick response interactions over long distances. Skype also offers chat in addition to its voice over IP telephone service.

IM and Chat

Information Services is currently working on a proposal for a trial of Chat and/or instant messaging to enhance both the AskALibrarian and Technology Services HelpDesk.

User-Generated Content

Wikis can be thought of as a semi-structured repository of content that appear as collections of inter-connected web pages. Content management systems (CMS) are a less flexible but tightly structured approach to storing content. Like a wiki a CMS can allow most users to generate and contribute content but more usually via a set of documents created outside the CMS context. Usually document submission involves a defined workflow with approval processes. The CMS will index the contents of each document and allow intelligent searching by content. In addition most CMS allow the direct creation of content within the system using editing techniques similar to wikis.

Drupal

The School of Information Technology is currently in the process of deploying a CMS based on the open source [Drupal](#) [HREF18] software package. In this case the site at <http://www.sit.bond.edu.au> will act as a specialised web site for the School. All members of the School teaching staff are populating the CMS with information such as detailed degree programme and subject data, event, biographic details, research interests and project overviews.

While wikis are collaborative content spaces for user generated content, there are other services focussing on individual's content, but employing the social networking features to expand the audience beyond the wikis members. Big names here are [Flickr](#) [HREF19] for photographs and other still-images and [YouTube](#) [HREF20] for video. Tagging images allows users to explore other members' content via keywords. Both sites cater for groups with a common interest to connect on a special interest. Users can also comment on the content, share with friends and see how many times an image or video has been viewed. YouTube also allows viewers to rate the content.

The authors are unaware of any existing projects or initiatives at Bond making use of these particular tools, although there are assessment items in education courses requiring students to build small websites known as webquests that could potentially be created in a wiki to manage user-created content.

Virtual social environments

According to the Horizon Project's Virtual World's Impact on Education (2007) "Every university should have a campus in Second Life". Virtual worlds offer a range of benefits including cheap, low-risk options for conducting experiments, carrying out medical operations and simulations of other dangerous procedures, and gathering groups of geographically remote participants in one "place". It might be argued that the best investment in virtual worlds is not to reproduce an institution in a virtual world, but to contribute resources to new places, services and events in the virtual world that are of most benefit to the institution's community. In any case, virtual worlds offer new opportunities and challenges for educators to take up.

Virtual worlds such as [Second Life](#) [HREF21] and [Active Worlds](#) [HREF22] allow the users to determine their activities and roles in the world to a much greater degree than in a game environment. They are not tied to the structure of a game - the chief objective is to interact with the society and contribute to the culture within the world.



Illustrations showing the avatar of one of the authors exploring an education precinct in Second Life.

The Faculty of Humanities & Social Sciences has indicated that a small number of staff have just started investigating Second Life as an education tool.

Common features of emergent social information systems

There are a number of features that characterise social information systems. While some of these have been mentioned in the preceding sections it is worth recapping the major features.

One of the most common features is the use of tagging. Tagging allows authors, and in some cases readers to add a descriptive keyword or phrase to describe the content. Tags can then be used to organise and navigate content. The expression folksonomy has arisen to describe the taxonomy that evolves organically from a community of users tagging content on a topic or site. One of the common ways that tags are displayed is in a tag cloud. Tags (or at least the most popular ones) are displayed on a page using styling to denote the number of times a tag has been used, or how many times a tag has been clicked, or how old a tag is. The most common tag clouds show the number of times a tag has been assigned. The larger, brighter or bolder the word, the more commonly it has been assigned.

Recommendations for Bond University

To adopt social media systems in the enterprise requires a good business case and some sound reasons for adoption. The case for social media in an organisation is described followed by advice from other organisations that were early adopters. Following this advice, a recommended action plan for Bond is suggested.

The Case for Social Media in the Enterprise

The authors have been using public sites and a small number of Bond-based social media systems during the last two years or so. In that time additional uses of social media by other Bond staff and students have come to light. That some staff are already deploying social media systems for their work appears to lend support for using such systems within the enterprise for productive purposes.

Bond will not be alone in this. A recently published report (Manchester, 2007) entitled "How to use social media to engage employees" provides detailed analysis from surveys to which more than 2,100 corporate communicators responded. This report provides detailed figures on social media trends within organisations and is a rich source of case studies of named companies some of which are of direct relevance to Bond. Those findings from the report that the authors believe can improve internal and external communications at Bond are summarised here.

When considering the use of social media for internal communications the Melcrum survey showed the top three benefits were:

- Improved employee engagement (71% of respondents)
- Improved internal collaboration (59%)
- Aid to internal communities' development (51%)

Close behind these came the ability to create a two-way dialogue with senior executives.

In another significant recent document (Cook & Hopkins, 2007) the authors remind us of a quote from The Cluetrain Manifesto (Levine et al, 2001):

Markets are conversations. Markets consist of human beings, not demographic sectors.

Conversations among human beings sound human. They are conducted in a human voice.

The Internet is enabling conversations among human beings that were simply not possible in the era of mass media.

While these comments were applied to businesses and their customers, the same can be applied internally to an enterprise and its staff. Cook and Hopkins apply the Cluetrain Manifesto sentiment in a general way and make reference to the social media technology already described:

The traditional means of communicating with audiences – such as employees, customers, investment communities – have relied heavily on print-based documents, email or static internet websites. Today, these methods are rapidly giving way to a new generation of internet-based tools that allow for far greater levels of two-way interaction, discussion and conversation.

Cook and Hopkins go on to put forward a significant concept:

Communicating [with social media] can become seamlessly integrated with your 'regular' workload. Everyone can communicate - not just the corporate communications team!

The authors go on to explain the different social media software tools as has been described in detail in earlier sections. They provide a number of example uses of blogs, podcasts and wikis in Australian companies and some US academic institutions.

Advice for Corporate Social Media Adoption

The corporate communicators surveys mentioned previously (Manchester, 2007) give impetus to why every company should be considering whether to adopt social media. However, when asked if they knew how to use social media as part of an integrated communication strategy only 28% agreed, while 41% disagreed and 31% were not sure.

From the feedback of those corporate communicators who had introduced social media Manchester (2007) formulated the following main issues to be addressed when adopting a social media strategy:

1. Assess your organisation's cultural readiness
2. Focus on people, not the technology
3. Think about the business purpose of the tools
4. Make sure the difference between traditional and social media is understood
5. Prepare to relinquish control and share the process
6. Be experimental and involve employees
7. Clarify what employees can and can't do
8. Take a hands-off approach to marketing the tools - don't push staff too hard to adopt
9. Integrate social media tools into existing systems
10. Don't obsess about the numbers of participants and usage

Since not all organisations are democratic but rather have rigid command-and-control, top-down management the first issue is important. The authors like to feel that Bond, while having a defined structure, allows a degree of flexibility in operational management and in delivery of service to students, especially amongst the academic staff. From the evidence above some staff are already adopting social media tools for some tasks giving the impression that Bond is 'culturally ready' in this respect.

Similarly the advice to focus on people rather technology is important but again the beginnings of adoption at Bond already outlined suggest that staff have overcome the technology fixation and have self-selected a range of social media tools. This trend to self-select can only continue in the absence of a coordinated option. The risk of doing nothing is university output being fragmented and scattered, with little integration.

While individuals who are already using social media tools have obviously considered their purpose for service provision at an individual level there are only limited examples of the purpose being defined for larger groups and other organisational units. At this level the authors believe it is necessary for the institution as a whole to begin the thought process, and identify potential social media use for selected business purposes.

Issues 4 and 5 again require consideration at the top level as they go to the heart of understanding of the new power and influence of social media and its effects on the enterprise. These last issues lead on to issue 7 where the organisation encapsulates its attitude to social media in a set of guidelines and policies that describe the limits of employee activity in the social media space. Making the policies clear without stifling communication flexibility is regarded as difficult and needs to be approached with a light hand and significant employee input.

Issues 6, 8, 9 and 10 speak to a way forward via an action plan and the authors put forward suggestions in the following sections.

Action Plan

The authors contend that there is little doubt that Bond can benefit from the adoption of social media for both internal and external communications needs. It is only the extent and timescale that must be decided, and the shape of the context and operational rules must be formulated. Social media tools can be used to establish a branded information environment (BIE) (Hopkins, P. 2007 and Matthews, 2007) in which staff and students participate. External customers, student clients and the public should perceive this BIE as an integrated whole meshing with existing legacy information systems.

To achieve a BIE the authors put forward this action plan that defines the early plan stages. The ideas are based on a mixture of suggestions from the literature and the personal experiences of the authors to date. It is also assumed that a small Social Media Working Party (SMWP) be constituted to carry out the tasks outlined.

Stage 0: Survey of Existing Social Media Use

In earlier sections the authors identified uses of social media known to them amongst colleagues and students. It is suggested that a survey of all staff and the student council be conducted to ascertain the full extent of social media use currently within our institution. The results of the survey will enable the ranking of the different social media systems in terms of actual use and identify individuals and groups that might participate in pilot projects and the work those pilots will undertake.

This survey will address issues 1, 2 and 3 in the advice list. The desired outputs of this stage are:

- An online survey of existing social media use
- Consolidated survey results highlighting common patterns of social media use and their place in the enterprise

Estimated timescale: 3 weeks

Stage 1: Survey Analysis and Pilot Project Formulation - Start Small and Evolve

It is likely the survey will discover more use of blogging, wikis and specialised CRM web sites. The vast majority of staff and students will be using freely available social media web sites and the tools available within the sites.

An early question that will arise concerns the information systems infrastructure that will be needed to bring the use of social media under the auspices of the single, enterprise-wide Bond BIE. Also, for some staff already using social media there needs to be a migration path to bring the content created to date from the public into the central BIE. Fortunately there is a wide choice of open source social media software from which to choose and a number of options in terms of the physical hardware and support staffing required. Indeed the software and hardware selection may not be straightforward.

At present there are three options for a Bond BIE social media infrastructure:

- social media software hosted on a dedicated or shared server machine at a third party data centre
- customised zero cost or low cost public sites already used by some staff
- dedicated server hardware located in-house using TS support services

The authors favour the first option, at least for the pilot stage, as the provision of hardware and its support are the responsibility of the hoster, the software choice is in Bond's hands, very few Bond staff need be involved in software customisation, and considerable customisation is possible from the IP address to our official sites images and colour scheme. A downside is the annual cost estimated to be close to \$1,000.

Successful use of social media web sites also relies on a careful choice of effective reading and editing tools. In parallel with the choice of social media server software the SMWG must choose:

- an RSS feed aggregator and reading tool
- a blog entry editor (while blogging platforms do provide their own editor, using a specialised application can streamline the blogging process)

The factors that must be taken into account include:

- An Outlook plugin that may promote take-up and use of RSS feeds for blogs, news items and events
- Network or web-based tools would provide better access for those using multiple workstations (especially students)
- On-campus/off-campus access to the RSS aggregator and access to feeds requiring authentication.

For example, some e-resources in library subscriptions are starting to offer RSS feeds, but there are implications for web-based and unauthenticated access to such feeds. The University may also want to provide feeds that should only be accessible to authenticated

Bond users. A mechanism to allow the creation and distribution of collections of RSS feeds both personal and feeds sanctioned by the institution, should be provided.

A list of pilot projects will need to be drawn up taking into account issue 4 which highlights the differences between traditional and social media. Projects must dovetail with the existing and planned uses of internal and external media communications. These projects are likely to consist of inward-facing and outward-facing blogs, and possibly a corporate wiki with defined content areas and focus. Once projects are agreed it will be necessary for existing information publishers to acknowledge that the publishing model has changed as the users of the blogs and wikis contribute to the information output of the institution as postulated in issue 5. Possibly there will be up to 5 or 6 pilots that should take into account:

- Cross-organisational unit blogging such as staff/student blogging for T&L, and outreach blogs for the alumni, community, and recruitment
- Synergies with Intranet use and publishing
- Organisational wikis for knowledge management in research projects general project management and working groups
- Interaction with student communities: Facebook, MySpace
- The need to experiment as highlighted by issue 6

The next step will be to draft the early versions of a social media systems usage policy that clearly expresses the desired corporate outcomes and starts to draw a boundary around acceptable behaviour as regards the generation of social media content. Advice from the corporate communicators in the Manchester (2007) report will be invaluable in the policy drafting process. In regard to issue 7 a diverse cross-section of staff should be involved in the drafting process. In terms of the policy it will be important to allow a maximum of flexibility for individual staff and student contributors while at the same time being cognisant of corporate goals so as not to stifle social media use.

The desired outputs of this stage are:

- Chosen social media software hosted by a third party with appropriate internal/external network access
- Recommended blog editing and reading software tools
- A draft Bond Social Media Usage Policy
- A list of up to 6 diverse pilot projects with participants identified and success factors outlined
- An information seminar outlining the pilot projects and their aims

Estimated timescale: 6 weeks

Stage 2: Pilot Project Operation

Each pilot project will need to incorporate some simple success measures so that the outcome of each pilot may be judged. Examples of measures might be:

- Chosen pilot group members average or exceed a nominated number of interactions per week
- The amount of user-generated content within a project deemed to cover relevant topics
- Simple survey results of pilot group users at the end of the pilot period

Most social software systems keep internal logs of usage and information flow. Simple measures of interaction frequency and rate of content generation can be extracted automatically from these logs

Estimated timescale: 1 semester

Stage 3: Pilot Project Evaluation

The SMWP will need some time to collate and analyse the data collected from the pilot projects. It is expected some preliminary analysis can be undertaken by the members of the

projects themselves, with the SMWP collecting the information into a consistent format for a final report. There is considerable scope to make use of the social media tools themselves in presenting the final outcomes.

For example some projects will have maintained blogs as part of the project. Another reporting blog should be kept by the SMWP itself during the pilot period. It is expected that at least one pilot project will involve the use of a wiki which can be offered up in evidence. Again the final 'report' can take the form of a wiki with all results available in electronic form for subsequent further analysis.

Estimated timescale: 6 weeks

Thus the social media systems pilot is expected to take about 25-30 weeks or two semesters in total.

Conclusions

Many organisations are adopting or intending to adopt social media systems and expect to gain improved employee engagement, internal communications and the formation of internal and external communities for more effective business. There is every reason to expect Bond can also benefit in these ways. Moreover several effective ad hoc uses of social media systems within Bond are already underway and the staff involved are already convinced of beneficial outcomes.

Social media systems are inexpensive and can be deployed quickly in an externally hosted environment without technical service staff involvement, and can run alongside existing information systems, at least during the initial pilot period.

An outline of a recommended social media systems pilot for Bond has been outlined with an expected duration of 30 weeks. The authors urge the managers of the Information portfolio at Bond to consider initiating a social media systems pilot in the near future.

References

Bond University (2006). ICT strategic framework. http://www.staff.bond.edu.au/information-services/documents/ICT_Strategic_Framework.pdf

Bryant, L. (2007). Emerging trends in social software for education. In Emerging technologies for learning (Vol. 2, pp. 9-18). Coventry: British Educational Communications and Technology Agency. http://partners.becta.org.uk/page_documents/research/emerging_technologies07_chapter1.pdf

Cook, T., & Hopkins, L. (2007). Social media, or how I learned to stop worrying and love communication, an introduction to the power of web 2.0 (2 ed.). <http://trevorcook.typepad.com/weblog/files/CookHopkins-SocialMediaWhitePaper-2007.pdf>

Facebook(2007). Wikipedia. <http://en.wikipedia.org/wiki/Facebook>

Google Docs (2007) Home page. <http://docs.google.com>. Retrieved 16 September 2007

Hopkins, P. (2007). Branded environment - campus collaboration. Inn0vate, 2007. Retrieved 23 May 2007, from <http://inn0vate.blogspot.com/2007/03/branded-environment-campus.html>

Levine, R. (2001). The cluetrain manifesto : the end of business as usual. Cambridge, Mass.: Perseus Bks. <http://www.cluetrain.com/book/index.html>

Manchester, A. (2007). How to use social media to engage employees : strategies to improve communication and collaboration: Melcrum Publishing.

Mathews, B. (2007). More on the branded environment concept. The Ubiquitous Librarian, March 06. Retrieved 23 May 2007, from http://theubiquitouslibrarian.typepad.com/the_ubiquitous_librarian/2007/03/more_on_the_bra.html

Microsoft and Google Battle for Campus e-mail(2007). The Wired Campus - Chronicle of Higher Education, from <http://chronicle.com/wiredcampus/article/2314/microsoft-and-google-battle-for-campus-e-mail>

Sneyd, C. (2007, May 23, 2007). Don's brings sexy back. Bond briefs,
van Dijk, J. A. G. M. (2006). The network society (2nd ed. ed.). London: SAGE Publications.

Hypertext References

HREF1

<http://bulibrary.blogspot.com>

HREF2

<http://epublications.wordpress.com>

HREF3

http://www.bond.edu.au/about/faculties/bus/teaching-learning/teaching_learning_listings.html

HREF4

<http://www.opmlworkstation.com/browse/bonduniversity/>

HREF5

<http://www.edublogs.com>

HREF6

<http://mrees.wordpress.com/2007/09/04/student-blogging-in-072/>

HREF7

<http://www.pbwiki.com>

HREF8

<http://www.wetpaint.com>

HREF9

<http://csulibrary.wetpaint.com>

HREF10

<http://teams.it.bond.edu.au>

HREF11

<http://del.icio.us>

HREF12

<http://www.connotea.org>

HREF13

<http://www.scholar.com/>

HREF14

<http://www.connotea.org/group/LINT>

HREF15

<http://www.myspace.com>

HREF16

<http://www.facebook.com>

HREF17

<http://www.meebo.com>

HREF18

<http://drupal.org/>

HREF19

<http://www.flickr.com>

HREF20

<http://drupal.org/>

HREF21

<http://secondlife.com/businesseducation/education.php>

HREF22

<http://www.activeworlds.com/edu/index.asp>

HREF23

<http://epublications.bond.edu.au/tls/4/>