Abstract

This tutorial will provide the reader with a more in-depth understanding of the technologies associated with Web 2.0. MBA students from the Robins School at the University of Richmond are recognized for their overall contributions to this tutorial and to the particular sections indicated.

WEBSLOGS (BLOGS)

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History of Weblogs (Blogs)

Back in the earliest days of the Internet, weblogs (World Wide Web logs or journals, also referred to as blogs) were simply lists of Web links that afforded early Internet users easy access and navigation to new Web sites. In 1992, Internet pioneer Tim Berners-Lee actually developed and maintained the first-ever weblog known as the What’s New Page, available at http://www.unc.edu/~zuiker/blogging101 (Zuiker, 2004). As the World Wide Web continued to expand, blogs evolved as Web page authors began to filter content to their particular points of interest. In 1994, Justin Hall created Justin’s Home Page (http://www.links.net/vita/web/original.html), which is generally considered one of the first filtered blogs (Zuiker). By late 1997, blogs began to resemble their current format in that posts were now dated, filtered, and personalized. In the minds of many blog creators, the interactivity of their Web sites distinguished them from the more standard Web pages that only allowed users one dimensional access to content. The early 1990s evolution of blogs led Jorn Barger to coin the term weblog as a description of the postings to his Robot Wisdom Web site (http://www.robotwisdom.com/#top; Blood, 2000). Weblog, or blog for short, is now the universally accepted name for all Web sites that feature postings displayed in reverse chronological order.

While blogs experienced significant content refinement in the 1990s, growth was relatively
modest; there were only 23 known blogs in existence at the beginning of 1999 (Blood, 2000). Contrast this to 2006, in which there were an estimated 50 million blogs, with new blogs coming online every second (Tapscott & Williams, 2006). This explosive growth can be attributed to two main factors: the debut of free blog-creation Web sites and users’ desire for more interactive, unfiltered content. In July 1999, the launch of Pitas allowed bloggers a free and easy way to design a weblog (Blood). Shortly after the launch of Pitas, Blogger was created, and the steady growth of blogs exploded with hundreds of blogs popping up seemingly overnight (Blood).

While the ease of use of these free tools undoubtedly played a huge role in blog development, the growth explosion of blogs cannot be fully explained by functionality improvements alone. Users’ desire for unfiltered, peer-posted media content supported the tremendous growth of blogs in areas such as politics, sports, and entertainment. Aliza Risdahl (2007), author of the book Ecommerce, believes that the explosive growth of blogs at the turn of the century can be attributed in part to users’ desire to post articles and opinions concerning the latest news on the 2000 presidential election and the Iraq war. One significant event that contributed to the legitimacy of blogs as a reliable source for news and current events was the Monica Lewinsky scandal. Internet blogger Matt Drudge was the first to break the story that President Bill Clinton was reportedly having an affair with White House intern Monica Lewinsky (Whitworth, 2008). The tremendous growth of blogs in the early 21st century seems to support the view of TakingITGlobal (http://www.takingitglobal.org) founder Michael Furdyk when he states, “Our generation really doesn’t trust the media and advertising as much as we trust peer to peer opinion and social networks” (Tapscott & Williams, 2006).

Over just 15 years, blogs have evolved from a few Internet sites containing Web links to a network of over 50 million sites that allow users to gather information and post opinions on any and all subjects. Current trends seem to indicate that more and more news and entertainment will come from peer sources, such as blogs, rather than traditional sources such as newspapers and television. While the history of blog growth has been profound, the ease of blog creation and users’ clear desire for more peer-created and interactive content indicates that blogs will become more and more prevalent.

Current Trends

Blogs are used in a wide variety of applications throughout everyday life. Blogs can be used to connect and correspond with friends and colleagues on sites like MySpace (http://www.myspace.com); keep up to date and discuss the latest sports, business, and political news on Technorati (http://technorati.com); or communicate about work-related happenings and business issues with senior executives and coworkers in a corporate or business setting. While all of these applications have become increasingly prevalent in recent years, sites such as MySpace and Technorati have enjoyed more relative growth and adoption than corporate blogs. Consider the following: In 2006, MySpace had 80 million members and experienced year-over-year site growth of 752% (Granneman, 2006). While growth was not quite as spectacular at Technorati, it was still significant; quarter-on-quarter site traffic increased by roughly 150% during the first half of 2007 (Sifrey, 2007). This is in stark contrast to the growth of the corporate blog, as only 6% of Fortune 500 companies reported that they kept and maintained a blog in 2006 (Nail, 2006). In order to explain the reasons behind these growth statistics, it is necessary to explore these major trend differences from a demographic and perceived-value perspective.

According to Tapscott and Williams (2006), young people born between 1977 and 1996 choose to interact online as content creators. These so-
called “N-Geners” believe that blogs and social networking sites are valuable because they allow individuals to communicate using “unfiltered self-expression” (Tapscott & Williams, pp. 52-53). While critics argue that all of these blog choices and opinions lead to oversaturation in the market, young people seem to like the amount of choices and interactivity that the current blogosphere provides. With roughly 73% of bloggers under 30 years old, statistics from the Communication Initiative Network (2006) seem to support this claim.

Unlike young Internet bloggers, most corporations simply cannot express how their internal blogs add value. Research compiled at the Porter Novelli Institute reveals that 63% of corporate respondents started their company blog with no specific need or purpose in mind. Not surprisingly, corporate respondents reported a low level of usage on their blogs as 71% stated they were not pleased with the number of postings (Reicherter & Nail, 2006).

In an effort to assist corporations in unlocking the value of blogs, Gartner researchers have offered three main suggestions. First, identify a point of focus for the blog and then work to understand the current bloggers and etiquette within the particular environment. Second, keep expectations at a reasonable level. While blogging can act as a low-cost supplement to other forms of communication, it is not a replacement. Finally, keep in mind that creating and maintaining an effective blog does require a fair amount of skill and effort. Be realistic about your company’s abilities, and if necessary, do not hesitate to outsource initial blog hosting efforts (Valdes, Austin, & Drakos, 2007).

While current trends indicate that blogs are growing much more rapidly in the social networking and media sphere, corporate blogs will not lag behind forever. As N-Geners continue to age and advance in their careers, their preference and familiarity with personal blogging will lead to a natural extension into their work life. In addition, blogs are less costly and easier to use than many other communication tools. Because of this, corporations will continue to unlock the value of blogs by developing a more focused approach, managing expectations, and gaining expertise. Current growth trends and adoption by young users indicate that blogs will continue to be more and more accepted as an effective, low-cost communication tool.

**Business Applications**

Although the concept of blogging is considered a recent trend in communications and social networking, many firms have begun researching, investing in, and implementing blogging capabilities in order to effectively communicate with their stakeholders. Blogs enable the “voice” of a company’s leadership, its brands, or its interests to be accessible to a wide and varied audience. In general, three distinct types of blogs have been found to be most pervasive in practical application: internal blogs, external blogs, and interest-driven blogs.

Internal blogs are those that have been created through internal development practices in an effort to conjoin disparate employee bases around concepts, work streams and processes, or idea generation. According to Mann (2006), firms have recently begun assessing an internal blog posting capability through three approaches: universal, targeted people, and targeted project. Universal internal blogs are created by the firm, are inwardly facing to the employee base, and ask the universe of employees to contribute to the internal blog process (Mann). Examples of this may include the encouragement of nonbusiness-activities blogs or rumor-mill blogs. Any employee may contribute to the blog, while additional employees assist in answering the outstanding questions presented via the blog.

Targeted-people and targeted-project internal blogs are similar to each other in that only a select few individuals may initiate and contribute to
the blog. Targeted-People blogs can be typically seen through a firm’s senior management espousing company values, mission, and mission goals (Mann, 2006). For example, Pfizer, Inc. conducts an internal blog in an effort to pool its internal communication policy, offering the latest company news, changes to its policies, or direction from the top. Employees may contribute to the blog, but may not initiate new blogs.

Targeted-project blogs tend to be similar to targeted-people blogs, but focus on specific elements of the firm’s current business environment (Mann, 2006). Examples of this may include the construction of a new building, the status of a new R&D (research and development) project, or the implementation of enterprise-wide software. These types of blogs allow employees to ask questions and receive answers related to projects, thus raising the level of common knowledge amongst the employee base.

Mann (2006) insists that highly successful internal blogs, such as learning diaries, rumor-mill blogs, and job blogs, promote the general well-being of the employee base. These blogs elevate understanding of particular topics, diffuse rumors, and enhance human resource capabilities that drive comprehension of job roles and accountabilities (Mann). Prentice (2007), however, indicates that employees may still be hesitant to contribute in a forthcoming manner due to personal intellectual property. Employees’ desire to ask questions or to “stick their necks out” through the blog may be restricted as employees may feel that their postings could reveal too much information about their capabilities or their worth.

The United States Government’s Disaster Management Techniques are an example of a practical business application for internal blogs. Vining (2007) identified that blogs can assist disaster management officials in assessing damage and fatality counts. The previous process for collating this information was through a standard paper-based process. Reports were manually handwritten and sent in to a central processing office, where officials gathered, analyzed, and developed holistic assessments based upon these reports. Using blogs, disaster management officials are now able to quickly post their accounts of the disaster, provide up-to-date assessments of the information, and quickly turn around critical direction to officials who are at the disaster. These blogs’ speed, accuracy from first-hand accounts, and chronology provide a much more efficient mechanism for delivering information internally to the disaster management officials.

External blogs are those that outwardly face the general Web community. These blogs are developed by a firm in an effort to both inform and persuade stakeholders regarding company values and brands. Southwest Airlines maintains an outwardly facing blog that provides a sense of community to its users (Southwest Airlines Blog Website, 2008). A recent blog (dated February 17, 2008) was written by Southwest’s public relations (PR) coordinator, and refers to Valentine’s Day travel. Through this blog, the firm’s PR coordinator presented a contest to the blog community to share its thoughts about Valentine’s Day travel. The best written blog, as voted by the blog community, would win a prize. Clearly, this external-facing blog from Southwest provides a sense of community for those that fly the airline, while engaging the customer and providing a sense of closeness to the brand.

Similarly, Glenfiddich (“Glenfiddich Runs Blog as Part of Online Consumer Loyalty Club,” 2006) developed a whisky blog to augment the online presence of the brand. Participants in the blog have exclusive access to specific loyalty-club promotions and are educated about whisky. Targeted to whisky connoisseurs, the blog provides information about whisky-related events with the hope of attracting new customers and rewarding current drinkers. Through this development, Glenfiddich was able to compile a database of over 100,000 drinkers to augment its online marketing efforts.
Outwardly facing blogs that provide information and promotional content may be the most practical use for firms trying to build and/or retain their brand identities. Pinedo and Tanenbaum (2007) discovered that some firms are attempting to communicate critical industry information through blogs. In 2007, Sun Microsystems sent the SEC a blog posting that raised a question regarding the “broadness” of the blogosphere (Pinedo & Tanenbaum). In general, Sun Microsystems wanted to determine whether it could disseminate its company information via its blog while still complying with the SEC regulation FD disclosure requirements (selective disclosure and insider trading). The SEC would not comment whether the blog would be sufficient, but, surprisingly, the SEC responded to the blog via the blog. Clearly, as blogs gain additional attention and become more widely accepted and available, additional SEC regulations and considerations may weigh upon the blogosphere.

The third practical business application of blogs is for special-interest groups. Most often, these blogs represent political, social, or ethnic groups that seek to persuade individuals to see their perspective or persuade government officials to adjust their views or votes. Groups such as RedState.com or BarackObama.com provide blog space for interested parties to view political positions. These special-interest groups often carry large audiences. Mooney (2008) points out that other general blog sites, such as Boing Boing, have audience sizes that are beginning to rival major media outlets. In fact, Boing Boing has a quarter of the registered audience of the New York Times online. Technorati compiled a top-100 listing of the most linked information sources, 22 of which are blog sites.

Educational Applications

Educational applications for blogs are less intensive from a control standpoint, but have the most potential upside for learning value. The University of Houston Clear-Lake (2008) posted a Web site that provides educators with facts about blogs, how blogs can be introduced into a learning environment, and how other major educators are capitalizing upon blog capabilities. The site indicates that the major uses of educational blogs include, but are not limited to, the following: content-related blogs, instructional tips for students, course announcements and readings, reflective-writing journals, assignment submission, dialogue for group work, and sharing of course-related documents. Likewise, the commonly used Blackboard system contains a discussion forum for each class. This discussion forum is similar to that of a blog in that students of the class may leave remarks, ask questions, or find answers related to the classroom materials.

If a firm or an educational institution decides to implement an inwardly or outwardly facing blog, the entity is still faced with a major dilemma: control. When the blog space is open, the free form or freelance mechanism for autonomous monologue is inevitable. The control over this form of speech is loose at best. Lundy, Drakos, and Mann (2007) suggest that the firm or institution develop a corporate blogging policy. Such a policy limits risk to the enterprise and, accordingly, should be a subset of an overall communications plan, on which employees should be trained. By putting a blogging policy in place, the firm or institution can highlight the rules of engagement for blogging: what to say, what not to say, grammar choice, and interpretation rules. The firm or institution should minimize the risk of leaking company-sensitive materials or trade secrets while encouraging productivity through blogging, rather than the “blogging down” of the blogosphere.

How to Blog

A main growth driver for blogs over the past several years has been the ease of creation and accessibility of blogs to everyone. Sites such as http://www.blogger.com, http://www.wordpress.
com, and http://www.blogdrive.com enable users to set up a blog in a matter of minutes. Each of these sites takes users through a simple setup process in which the name, format, intended audience (i.e., public or private), and background configuration of the blog are established (Derouin et al., 2008). After several easy steps, bloggers are free to post entries and begin communicating with the world. Some of these Web sites offer free templates and blogging capabilities while others charge a fee for more add-ons and high-tech capabilities. Therefore, whether the blogger is a computer-savvy business person looking to establish a communication link with other like-minded people or a grandmother looking for a better line of communication with her grandson, there is a blog template available that will satisfy those needs.

It is not as easy to maintain an interesting blog as it is to create one. Blogs are designed as a communication tool: a modern-day digital conversation between people across the globe (Mastio, 2007). So the question becomes less about computer savvy and more about communication skills. Anyone can start a blog, but it takes some effort to maintain a successful, engaging blog. For starters, a blogger should “blog about what [she or he] know[s]” (Neal, 2005). Possessing a high level of interest in the subject matter will encourage the blogger to invest time and energy in the conversation (Neal). Successful bloggers such as Matt Drudge of http://www.drudgereport.com and Perez Hilton of http://www.perezhilton.com display a genuine interest and passion for their subject matter, be it politics or celebrities. Hill (2006) recommends writing blogs as if every reader is a paying subscriber and it is the author’s job to convince readers to renew their subscriptions. This mindset will compel the author to maintain focus and passion about the blog and its success.

Further, honesty is a key criterion for any interesting conversation. Whether the blogger is a CEO relating a strategic vision to employees or a political guru looking to influence voters, honest communication is necessary to fully engage people in meaningful dialogue (Neal, 2005). Finally, bloggers should continue to explore ways to expand their blogs with knowledge from other resources. Content for blogs may spring from a variety of outlets, so bloggers must be aware of this and maintain a keen focus for additional information (Neal). Developing a successful blog may seem difficult but, in reality, it is as easy as engaging in an honest, dynamic conversation about an area of interest.

**Conclusion and Future Trends**

Weblogs have forever changed the manner with which people and businesses communicate. In a few short years, the growth of weblogs has signified the benefits of mass collaboration. People want to hear and be heard; they want pertinent, honest information; they require up-to-the-second data; and they want it their way. Blogs can provide all of these benefits and will continue to evolve with the growing demand of global communication.

The future of blogging, and mass collaboration in general, is bright. People will continue to search for ways to customize experiences and information. Highly engaged, Internet-savvy people will look to customize the educational, technological, and business resources they use both at home and at work. Businesses and individuals alike will strive to maintain a constant conversation with people around the globe in order to harness the collective knowledge made available by technology such as weblogs.

Individuals will continue to utilize blogs in order to gain new perspectives and collaborate with like-minded people. People will use IT enhancements and blogs as a means to redefine the marketplace and work environment (Morello & Burton, 2006). As underserved markets such as India and China become more developed, an entire new generation of computer users will
emerge and offer bloggers an even larger base from which to gain perspective.

Businesses will utilize blogs to profit from the collective knowledge of the masses rather than simply issuing directives to the masses. As explained by Tapscott and Williams (2006), blogs can serve as means for businesses to “integrate the talents of dispersed individuals.” In the years to come, successful businesses will discover ways to benefit from the highly individualized employee (Morello & Burton, 2006) and will realize that the individual, not the manager, will determine the work environment (Morello, 2007). Investors will want direct access to the CEO, CIO, and CFO through blogs. Frequent communication will be the norm, not the exception, as the public demands more dialogue with employers, and weblogs will certainly play an important role in connecting businesses with individuals.

REFERENCES


PODCASTS AND VIDEOCASTS

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Introduction and History of Podcasts

Podcasts are a relatively new technological phenomenon that has had a huge impact on audio, video, and print media for the public. Podcasts are digital audio recordings, with or without video, that are able to be automatically downloaded using specific software to the users’ files (McBride & Wingfield, 2005). This is distinguished from an ordinary audio file that is posted on the Internet and clicked on once or saved manually by the user (McBride & Wingfield). Podcasts were introduced as a cross between a blog and an audio file. A blog is a form of communication in which the creator can post any type of information, from personal anecdotes to current news, for all World Wide Web users to read (Morris & Terra, 2006). A podcast essentially adds an audio file to a blog, which then can be downloaded to a user’s PC and then to an MP3 player (Morris & Terra). Podcasts are available to anyone with a computer and the Internet, and can be easily created by following simple steps. They provide greater convenience to consumers and will continue to be used more as the trend for interactive experiences increase in today’s society.

Podcasts have an interesting and collaborative history, beginning with a Boston-area television
and radio personality, Christopher Lydon (Doyle, 2005). Lydon created a radio program for Boston University called *The Connection*. This program triggered the growth of the operation from US$5 million to US$25 million. After being fired from the radio station because he was unable to manage the rights to his content, Lydon was asked by Dave Winer to write a blog for the first BloggerCon at Harvard in 2003. Lydon was more interested in his voice talent, so Winer compromised and had Lydon record rather than write. This was the first attempt to make an audio blog. Lydon continued, 1 year before the 2004 presidential election, to audio blog in an attempt to stir up additional blogging for the election (Doyle). This audio blog was the first step in the creation of the podcast.

In order to have the audio files automatically updated, the audio blogs needed to be connected with an RSS (really simple syndication) feed. Dave Winer and Adam Curry, previously an MTV host, wrote a software program that would automatically download new files that have been uploaded to a Web site (Haygood, 2007). This advanced podcasting from its audio-blog origin. As new material was downloaded by the creator to a Web site, the RSS feed would pick it up and automatically download it to the personal computer. From here, the user could download the podcast onto an MP3 player and listen. The term *podcasting* was coined in September 2004 (Haygood).

The popularity of podcasts has continued to increase as more individuals and companies become familiar with this new technology and the benefits. There were 4.8 million podcast downloads in 2005, increasing from only 820,000 podcast downloads in 2004 (Haygood, 2007). Additionally, podcast awareness grew from 22% of Americans in 2006 to 37% in 2007 (Haygood). With a relatively low percentage of Americans who know what podcasts are, there is considerable room for growth. Podcasts can easily be subscribed to from iTunes, through Apple, or through individual Web sites that offer podcasts. In addition to the ease of use and creation of podcasts, they are usually free to download. Podcasts have the potential to impact each individual user in a unique way. The development of podcasts in the years to come will be interesting to follow.

**Current Trends**

There are several current podcasting trends that vary for individual users vs. corporate users. Even though there is a relatively small percentage of the American population who know what a podcast is, there are several trends in force. Generally, podcasts are created for one of four kinds of purposes: (a) personal, (b) art, (c) informative or educational, and (d) performance (Felix & Stolarz, 2006). Videos can be added to the podcast in order to make it a videocast that appeals to the eyes and ears of the listener or watcher. Podcasts are very convenient (McBride & Wingfield, 2005). One can listen to a podcast in a car, on a walk, or at a computer. In addition, podcasts are easy to find on the Internet, covering a variety of topics and interests for all listeners of all ages. The podcast topics can range from learning Spanish to a personal travel journal account. They are also easy to create without the use of expensive equipment. The opportunities and cost-saving benefits of podcasts are left to the imagination of the individual and corporate users.

Personal podcasts are left up to each individual designer or author of the information and what one wishes to share on the World Wide Web. These podcasts can usually be placed in one of the following categories: diary podcasts, documentary work, media fact checking, informational, educational, religious, or entertainment (McBride & Wingfield, 2005). Podcasts have the ability to truly be personalized by an individual.

Corporate trends for podcasts include informing employees, boards and shareholders, and consumers. Podcasts are an inexpensive yet high-impact form of audio content that can be utilized by corporations large and small to train and give information to their employees (Latham
Employees are able to retain more information by listening to this type of media and then being able to listen again when necessary (Latham & Lundy). Another advantage to using this type of application for employees is that podcasts are available on many different portable devices, which enables the user to multitask while listening (Latham & Lundy). Thus, an individual employee could be listening to or watching an instructional podcast while completing the task. This enhances learning capabilities because the employee is actually doing the activity while listening to the instruction instead of just reading the material or listening to a lecture. Podcasts can be used to give information to shareholders who are not in attendance at annual meetings or to help employees understand the format or content of the annual meeting (Felix & Stolarz, 2006). The information can easily be edited so that highly guarded content is not revealed to the public. In addition, corporations can inform consumers about current products and services. For example, General Motors used podcasts to explain and describe new products it was selling (Haygood, 2007). Corporations large and small can easily find benefits to using podcasts as they are easy and economical to create.

Another current trend for podcasting is advertising. Podcasting has allowed advertisers to capitalize using this new technology. Statistics show that US$80 million were invested in podcast advertising in 2006 and that number is expected to increase to approximately US$400 million by 2011 (Haygood, 2007). The use of podcasts is becoming more sophisticated as new companies utilize the software to target consumers (Haygood). Ads will become more personalized and companies are likely to be willing to spend more money if they know their ads are more likely to be seen by one of their target consumers. Of course, this trend may fade if consumers find advertisements to be similar to pop-ups or spam e-mail. There is a wide-ranging future for advertising via podcasts and true potential for increased profitability using this type of medium for ads.

**Business Applications**

There are many internal and external business applications for which companies can use podcasting. If used correctly and creatively, these applications will increase corporate productivity, enhance the communication efforts of the company, and create an interactive experience with customers. Since podcasting is relatively inexpensive and easy to use and maintain, the applications for the technology are only limited by the imaginations of the people in control of the podcasting programs within the company. Successful corporate podcasting programs share a common thread: They expand upon the existing culture of the company and are perceived as adding value to employees and consumers.

Internal podcasting gives employees an opportunity to creatively communicate with and learn from one another. Updates on company and industry news can be posted weekly to make sure that all employees are up to date with the current events in the industry. Podcasting also lets employees see and hear directly from top executives within the company. CEO podcasts are an effective way for the top executive to share his or her vision of the company with employees and update them on how that vision has been furthered through the course of business (Sona, 2008). Executives from human resources can also use podcasting to communicate general orientation, benefits packages, training seminars, and best practices with new hires.

Communicating the best practices of a company is an excellent application for podcasting in a business. For example, the top producer in sales each month can post a podcast giving tips and advice on how to increase sales productivity. Top manufacturers within the corporation can share how they increased capacity and reduced the cost of inventory. Human resource managers
can share how they increased employee retention while reducing training costs. Using podcasting to effectively communicate the best practices of an organization is an inexpensive and powerful tool that ultimately leads to greater productivity (Miller, 2007).

Another outstanding internal application for podcasting is for seminars. Attending every meeting of a seminar can be next to impossible. Creative companies tape each seminar meeting and post it online in the form of a podcast; some companies edit the recording to include only the highlights in a 15-minute broadcast. Not only is this application a benefit for the employee who attended the conference but could not make a specific meeting, it is also beneficial to the associate who could not make the conference at all. Creative execution of podcasting is also a plus to the business that wants to save on travel costs. After the seminar is over, podcasting can be used to obtain feedback from the attendees on what they learned, and liked and disliked about the event (Dodson, John, & Doughty, 2007).

Obtaining quality, objective feedback and suggestions are excellent internal uses of podcasting. Feedback can be given from employees on essentially every topic that is pertinent to an organization. Feedback and suggestions on the direction of the company, upcoming projects, new product development, and a litany of other items ultimately give each employee a voice and allow them to feel like more of a contributing member to the corporation (Young, 2008).

The internal business applications for podcasting run the gambit from sharing best practices to communicating a vision of the company. Creative and consistent internal use of podcasting can lead to a more effective, knowledgeable, and collaborative organization.

While internal podcasts focus on the employee, external podcasts focus on the customer. Well-organized customer podcasts enable a customer to interact with the corporate brand in a profitable way. External podcasts give the customer a way to relay their thoughts with the company. Podcasting gives the consumer of a company’s product or service an excellent avenue to provide feedback and suggestions about how the company can improve (Ochalla, 2008). Effective businesses can utilize this information to make appropriate changes to advance their services.

Since customers know the product or service better than anyone else, many companies use their own customers to champion their products. This podcasting application not only allows loyal customers to form an intimate relationship with the brand, but also gives potential customers who may be immune to normal marketing efforts an opportunity to be introduced to the company by an ordinary person who has benefited from the company’s products and services (Salerno, 2005).

Corporate podcasts are an effective way to communicate to customers. Companies whose business depends upon weather conditions (ski slopes, fishing excursions, etc.) can update the customer quickly and correctly, which provides a meaningful interaction with the brand. The customer views this as an added value to the other products the company sells.

Podcasting effectively requires commitment and creativity. Dedication to this technology extends the brand of the company and enhances the experience for both the employee and the customer (Franklin, 2008).

A summary of relevant internal and external business applications is as follows:

Internal Applications
- Updates on corporate and industry trends
- Communication from top executives
- Seminars
- Training
- Suggestions and feedback

External Applications
- Updates on corporate and industry trends
- Customers championing the brand
Educational Applications

Podcasts are being used as an educational tool both in undergraduate and graduate school. Podcasts enable students to be able to listen to missed class or get more information on a certain assignment (McBride & Wingfield, 2005). The technology streamlines more information from professors and administrators to the students. Assignments, lectures, and additional material could be automatically uploaded for student use, which would eliminate the need for the student to have to search through school databases or other forms of communication to get the information. This would encourage efficiency and effectiveness within the educational system. Educational uses of podcasts are developing and will most likely be a new creative instructional device used more and more by professors.

Outside of the formal education system, individuals are able to learn almost anything from how to cook a turkey to how to snowboard using a podcast (Morris & Terra, 2006). Podcasts, which can be retrieved from extremely reliable sources, are an educational tool that can be used outside of the classroom. The opportunities are endless and there are many individuals who are not aware that this type of technology could be beneficial. One could also research and teach oneself about a new product he or she is considering purchasing by getting a more one-on-one experience through a podcast than reading it on the Internet or going to the actual store. Podcasting is a new convenience that can be utilized for much more than entertainment. As an educational instrument, podcasting will continue to make a bigger impact as society continues to grasp the full utility that this application holds.

How to Create a Podcast

When creating a podcast, it is important to ensure that you first have the proper software downloaded on your computer. Audacity is the most common software used for digitally recording podcasts (Richardson, 2006). Audacity is a free program that can be used to record, edit, and replay sounds and can convert your sound file into WAV, AIFF, MP3, or OGG formats (Audacity, 2008).

Download the Software

To download Audacity, visit the Audacity Web site at http://audacity.sourceforge.net and download the most recent version. To properly convert your file to MP3 format, you must also download the most recent version of the LAME encoder from http://lame.buanzo.com/ar (Richardson, 2006). When saving the LAME program to your computer, you must remember where you save it because you will be required to find the program once you open the Audacity software. You will then be prompted by WinZip to unzip the LAME file. Unzip the file to finish saving the software to your computer.

Once you have saved the applications to your computer and unzipped the LAME file, you should open Audacity and record a practice file. Once you have recorded the file, select the option “Export as MP3” under the File menu (Richardson, 2006). You will then be prompted to find the location where the encoder is located. At this point, you should locate the file entitled lame_enc.dll. Audacity will then recognize the LAME file as the encoder for saving future sound clips in MP3 format. After saving the test file, you can delete it from your computer if you wish. Simply saving the file using the LAME encoder will enable Audacity to appropriately locate the file when exporting any sound clips into MP3 format.
Record Your Sound File and Save in MP3 Format

After you have downloaded Audacity and LAME and allowed Audacity to appropriately locate the LAME file, you are ready to begin recording your podcast. Before recording, you might want to make an outline of what you want to say (Richardson, 2006; Williams & Tollett, 2007). You may also want to set a predetermined length prior to actually recording (Williams & Tollett). Once you have finished recording, you should listen to the sound file to determine if you approve of the quality of the recording (Richardson). If you would like to edit the sound clip, you can use Audacity to cut out unwanted segments.

To delete a segment in Audacity, first find the segment that you want to edit (Morris & Terra, 2006). Click the Selection tool and click and drag across the unwanted segment. Then, click the segment between the two cuts one time and press the Backspace key. Once you have deleted the segment, review the clip. If you do not like the edit, select “Undo Change of Position Region” under the Edit menu (Morris & Terra). If you like the edit, save your changes. Once you are content with the quality of the sound file, you are ready to share your podcast.

Add an ID3 Tag to Your Podcast

An ID3 tag is a way of identifying an audio file’s artist, album, and track title (Morris & Terra, 2006). Adding an ID3 tag to your podcast is important because it allows users to organize and easily locate various podcasts on their MP3 player and recognize which sound clips are playing (Morris & Terra). Creating an ID3 tag is easy in Audacity: Simply choose the “Edit ID3 Tags” option under the Choose Project menu and fill in the fields (Morris & Terra). Audacity will give you the option to automatically create tags when you save a project, so it may be easiest to do so while saving the initial file.

You can also create an ID3 tag in iTunes. Some users prefer to add ID3 tags in iTunes rather than Audacity because iTunes has more options and gives you more flexibility in customizing genres and incorporating artwork (Morris & Terra, 2006). To create ID3 tags in iTunes, simply select “Get Info” from the File menu and enter information into the pertinent fields. You can also add artwork in iTunes by clicking on the Artwork tab and dragging desired art into the Artwork field (Morris & Terra).

Share Your Podcast

You can share your podcast by (a) e-mailing the file directly to a friend, (b) using an RSS feed to save the file to your Web site or blog, or (c) adding your podcast to the iTunes library.

- **E-Mail the File Directly to a Friend.** The simplest way to share your podcast with another individual is to e-mail the file directly to that person. To do this, simply attach the MP3 file to an e-mail and send it to your friend. Your friend can download the file from the e-mail to iTunes to listen to it. However, podcasts are generally intended for a wide audience and it would be tedious to send an e-mail to all of your intended listeners. Accordingly, the following two methods of sharing your podcast are recommended.

- **Use an RSS Feed to Save the File to Your Web site or Blog.** To post the file to your personal Web site or blog, you need to enter XML (extensible markup language) code that indicates the location of the MP3 file (Godwin-Jones, 2005). Typically, such XML code will be in RSS 2.0 format (Godwin-Jones). RSS stands for *really simple syndication* and is a Web content syndication format (Morris & Terra, 2006; Richardson, 2006). Because most podchers use software to generate RSS 2.0 feeds, it is not necessary to go into detail about how to actually create
an RSS feed. If you would like to learn more about RSS 2.0, please refer to the resources at the end of this section.

Today, blogging software, such as Blogger, can be used to automatically create the RSS feed based upon the title and description that the user enters (Godwin-Jones, 2005). You can also use free Web sites such as Feed 2JS, available at http://feed2js.org/index.php?s=build, or Feedburner.com to build a feed. Once the XML code is generated, the link is published to the Web site and is available to the public (Godwin-Jones).

- **Make the File Available on iTunes:** While iTunes does not host podcast files, you can easily make your podcast available on iTunes once you have created your own RSS feed (Apple, 2008). To make your podcast available on iTunes, you must simply click on the Submit a Podcast icon in the iTunes store. Then, place the link to your podcast in the box and hit Submit. Your podcast will then be available to the public and iTunes will automatically update your podcast once new episodes are made available (Apple).

**Conclusion**

It is evident that podcasting has a number of uses in everyday life, including creating radio shows for friends, advertising, and making the general public aware of certain issues. Podcasting has a number of business applications as well, including training employees, internal communications, allowing attendees to review annual meetings, and maintaining relationships with customers. Educationally, podcasts can be used in various ways to facilitate and increase learning. Creating a podcast is relatively simple. By following the steps above, one can easily create a podcast from the comfort of home. It is clear that podcasts will have a lasting effect and will continue to be used in classrooms, marketing programs, music downloads, and an expanding set of business applications. From individual use to the corporate world, the current trends of podcasting and videocasting will be changing as society embraces this new technology.

**REFERENCES**


**ADDITIONAL RESOURCES**


**WIKIS**

*Grant Garcia,*
*Drew Mann, Mike Matthews*

**History of Wikis**

The first wiki precursor dates back to 1945 when Vannevar Bush published an article explaining his vision of a microfilm hypertext system that he called the “memex” (a blend of the words memory and extender; Bush, 1945). Another precursor of the wiki concept emerged in 1972 when researchers at Carnegie-Mellon University created the ZOG (an early hypertext system) multiuser database. The ZOG interface consisted of text-only frames; each frame contained a title, a description, a line with standard ZOG commands, and a set of hypertext links leading to other text-only frames (Abrams, 1998).

In 1981, two members of the ZOG team at Carnegie-Mellon spun off a company and developed an improved version of ZOG called Knowledge Management System (KMS), a collaborative tool based on direct manipulation, allowing users to modify the contents of frames, freely intermixing text, graphics, and images, all of which could be linked to other frames (Abrams, 1998). The KMS database was accessible from any workstation on a network and, thus, changes became visible immediately to other users, which enabled multiple users to work concurrently on shared documents and programs.
In 1985, the ZOG system was the model for Janet Walker’s Document Examiner, which was created for the operation manuals of Symbolics computers. Document Examiner was then used as the model for the Note Cards system, released that same year by Xerox. Note Cards, a hypertext system, featured scrolling windows for each note card combined with a separate browser and navigator window. Note Cards inspired Bill Atkinson’s WildCard, later called HyperCard. In the late 1980s, Ward Cunningham wrote a HyperCard stack that was the impetus to the wiki idea (Cunningham, 2008).

Kent Beck, after obtaining access to HyperCard when he joined Apple Computers, introduced HyperCard to Ward Cunningham. Cunningham used HyperCard to make a stack with three kinds of cards: cards for ideas, cards for people who hold ideas, and cards for projects where people share ideas (Cunningham, 2008).

Next, Cunningham made a single card with three fields (name, description, and links) that served all three purposes. The HyperCard fields were WYSIWYG (what you see is what you get) editors; however, linking between multiple cards was still a hassle. Cunningham deserted the regular stack links and instead used search on demand (Cunningham, 2008).

Only through the hypertext capabilities of the World Wide Web was Cunningham’s first wiki made possible. In 1990, Tim Berners-Lee of CERN (Centre European pour la Recherche Nucleaire) built the first hypertext browser, which he called WorldWideWeb, and the first hypertext server (info.cern.ch). The next year, Berners-Lee posted a short summary of this project on the alt.hypertext newsgroup, marking the debut of the Web as a publicly available service on the Internet (Abrams, 1998).

Enough momentum generated over the next few years that organizations were forming to capture the power of WorldWideWeb. By April 1994, Mosaic Communications Corporation had changed its name to Netscape and continued development of Netscape Navigator. That same month, CERN allowed anyone to use the Web protocol and code for free (Abrams, 1998). Finally, the stage was set for the appearance of Ward Cunningham’s WikiWikiWeb.

In 1994, Ward Cunningham started developing the WikiWikiWeb as a supplement to the Portland Pattern Repository, a Web site that contained documentation about design patterns (Cunningham, 2008).

People, Projects and Patterns, categories Cunningham used to organize his wiki, the WikiWikiWeb, was intended as a collaborative database focused on making the exchange of ideas between programmers easier. Cunningham wrote the software using the Perl programming language. He named it using the Hawaiian word wikiwiki, which means quick, to avoid calling it quick-Web (Cunningham, 2008).

Cunningham installed a prototype of the software on his company Cunningham & Cunningham’s Web site c2.com on November 6, 1994. A few months later, after some initial repository work was completed, Cunningham sent the following e-mail to a colleague, dated March 16, 1995:

Steve—I’ve put up a new database on my web server and I’d like you to take a look. It’s a web of people, projects and patterns accessed through a cgi-bin script. It has a forms based authoring capability that doesn’t require familiarity with html. I’d be very pleased if you would get on and at least enter your name in RecentVisitors. I’m asking you because I think you might also add some interesting content. I’m going to advertise this a little more widely in a week or so. The URL is http://c2.com/cgi-bin/wiki. Thanks and best regards.—Ward. (Cunningham, 2008)

On May 1, 1995, Cunningham sent an “Invitation To The Patterns List” to a number of programmers, which caused an increase in participation. The site earned immediate popularity within the pattern community (Cunningham, 2008).
Immediately, clones of the WikiWikiWeb software were developed. Cunningham himself wrote a version of a wiki that could host its own source code, called Wiki Base. Programmers soon started several other wikis to build knowledge bases about programming topics. Popularity continued to grow for wikis in the free and open-source software (FOSS) community. Wikis were ideal for collaborating on, discussing, and documenting software. Being used only by specialists, these early software-focused wikis failed to attract widespread public attention (Cunningham, 2008).

Until 2001, with the introduction to the general public by the success of Wikipedia, wikis were virtually unknown outside of the restricted circles of computer programmers. Since then, wikis have developed by incorporating many of the features used on other Web sites and blogs, including support for various wiki markup styles, editing of pages with a graphical user interface (GUI) editor and WYSIWYG HTML (hypertext markup language), optional use of external editors, support for plug-ins and custom extensions, use of RSS feeds, integrated e-mail discussion, precise access control, and spam protection.

Current Trends

According to the Gartner Hype Cycle, wikis are in the “Trough of Disillusionment,” with an estimate of 2 to 5 years until mainstream adoption (Knox et al., 2007) and only 5% to 20% market penetration of the target audience as of mid-2007 (Drakos & Andrews, 2007).

What is the market that wikis are penetrating?

Wiki usage can be generally categorized as one of four types (Woods & Thoeny, 2007).

1. **Content-focused** wikis are those that have large amounts of content and are edited by large numbers of people. These wikis should be easy to use and edit.

2. **Process-focused** wikis are often used in business to document or manage a process. Often, notifications are used to let members know of a change or addition that has been made.

3. **Community** wikis are most often used for subject matter that is of interest to a select group of people. Examples might be sport fishing, rock climbing, or *Star Trek*.

4. **Ease-of-use** wikis are simply an easy way to create a Web site. Someone wanting an immediate presence on the Web without the trouble and expense of learning HTML or hiring a Web designer can utilize a wiki. The normal collaboration and open editing are normally disabled with this type of wiki as it is set up as more of a read-only site. The ability to make the wiki private and to lock pages makes this possible.

Content-focused wikis currently rule the wiki world, with Wikipedia at the top of the list. Most people who have no idea what a wiki is have heard of, and have even accessed, Wikipedia. Process-focused wikis are most often seen within organizations and are accessed through a company intranet. Their use is most common among project managers who are running complex projects or processes. Community wikis are often the mom-and-pop type of wikis. Some are very small, such as a wiki for a small town’s historical society. Some are quite large with a much more important impact on the world, such as the Wiserwiki, which is an online medical book created by a leading publisher and edited by board-certified physicians from around the world.

A number of free online wikis have become popular. Each of these has subtle differences. They include PBwiki, Wetpaint, Wikia, BluWiki, and XWiki. Some of these wikis use advertising and some simply ask for donations from their users. Some use WYSIWYG text entry and some use more cryptic HTML formatting. Some require the user to download software and some work directly online.
One of the free wikis, Wikia, was founded by Wikipedia's founder, Jimmy Wales. According to Wales, this for-profit wiki company may go public in the future (Hong, 2008). Revenues for this wiki site are generated through advertising.

A search of the most active communities on the Wikia Web site revealed that community wikis seem to be most popular. The top list included wikis on the TV show 24, astronomy, and the Muppets, as well as seven on Star Trek and Star Wars. It seems only natural that those who currently gravitate to wikis as a social outlet would be interested in these topics. In fact, none of the top-55 sites seemed to be of any serious substance.

It seems that most business wikis utilize company intranets rather than the Internet. Based on interviews with small businesses in North America and Europe (Brodkin, 2008), one observer predicts that Microsoft’s SharePoint collaboration software will continue to dominate the market, and Web 2.0 technologies, including wikis, will make major inroads in companies in 2008.

Numerous government agencies are also using wikis. In early 2008, the U.S. Congress was tallying and tracking earmark spending (known as pork-barrel spending to most) for the Office of Management and Budget. According to The Washington Post, over 13,000 earmarks were compiled by various federal agencies in a 10-week period (Barr, 2008). Without the use of a wiki, the process would have taken over 6 months. This is a closed wiki, available only to the 5,500 members who are registered under their federal agencies. Of course, we must ask ourselves if empowering congress to spend tax money faster and more efficiently is a good thing.

**Business Applications**

As of early 2008, wikis appear to be slowly finding their way into businesses. However, it seems most small business owners and CEOs still do not know what a wiki is other than the popular Wikipedia. A Lexis-Nexis search revealed that most of today's published articles are still written to educate readers as to what a wiki is and how one might be used in a business setting rather than on how businesses are using them and what advantages or gains are being realized. According to a survey by McKinsey, at the close of 2007, approximately one third of businesses were currently using or were planning to use Web 2.0 technologies, including wikis (“Insurer Takes a Bold Leap into Web 2.0,” 2007).

Most wikis that find their way into small businesses start from the bottom of the organization, often without the knowledge of upper management. Young employees who are adept at social networking software often start communicating in the workplace through blogs and wikis. These unstructured communication tools form a collaborative work space in these organizations. Upper management is sometimes introduced to these Web 2.0 technologies only after they have become a part of the company workflow through an underground culture.

A small firm interviewed in early 2008 was working from the top to implement wikis from the bottom. The CEO of this 150-person professional services firm met with the firm’s 35 20-somethings to get ideas on how the firm might benefit from Web 2.0 technologies. One of the ideas that emerged from that meeting was the use of technology wikis for the firm’s knowledge workers. It seemed that most of the company’s engineers had notepads, scratch paper, word files, and spreadsheets where they documented ideas and tasks for the projects they work on. Once a project or employee is gone, so are those ideas, at least in any written form. A number of the young, tech-savvy staffers were brought together by the CEO to create wikis for the firm’s knowledge management using the underutilized SharePoint software sitting on the firm’s server. The wikis were first seeded with some of the firm’s existing technical documents that were spread about in different forms. At that point, the hope was that the employees would use...
this wiki to look up information, add information, supplement current writings, and document new ways of doing things. The CEO openly showed his support of this idea by setting up his own wiki and blog on the company’s intranet.

According to McDougall (2007), a firm’s underutilization of its wiki capabilities is not uncommon. A recent survey found that one in five companies has wikis available on its server, but they go unused (McDougall). Some firms are taking a proactive approach to this problem. A 32-person law firm in Raleigh, North Carolina, has a contest that provides a US$1,000 reward for the most contributions to its internal wiki (Nussenbaum, 2008). The purpose of this “encouraged collaboration” was to wean the employees off of the less-efficient Lotus Notes communication tools and to have a central repository for everything from contracts to case files.

While most small companies do not seem to be on the wiki path yet, many large technology companies have been using wikis successfully for some time. Sun Microsystems uses wikis across its enterprise. In addition to encouraging its employees to use social networking software, such as Facebook and MySpace, the company encourages its employees to use wikis for collaboration among engineers, systems architects, and marketing people (Cane, 2007). Utilizing awiki, Cisco has implemented a company-wide forum called I-Zone. This wiki was developed by the company’s Emerging Technologies Group and has produced 600 ideas from 10,000 of Cisco’s 61,000 employees (Martin, 2008). According to Microsoft, it has over 300,000 blogs and wikis (Hoover, 2007), and Motorola claims 92% of its staff utilizes its intranet Web 2.0 tools, which includes 4,500 internal wikis (“Twenty Great Ideas: Web 2.0,” 2007).

One nontechnology company that has successfully deployed Web 2.0 technologies, including wikis, is a European bank, Dresdner Kleinwort Wasserstein (DrKW). In an article on Enterprise 2.0, McAfee (2006) outlines four keys to a successful implementation of these technologies based on the DrKW case:

1. **A Receptive Culture**: The DrKW culture was already one of collaboration and cooperation. Any firm with this type of culture should have a leg up on the beginnings of successful implementations of wikis. Most firms who utilize knowledge workers should realize an advantage.

2. **A Common Platform**: DrKW found that using a single platform for wikis allowed for better searches between seemingly disconnected groups within the enterprise. The small engineering firm we spoke of previously has also taken that approach. In its case, mechanical, electrical, and civil engineers’ work, while different and performed separately, is connected throughout a project. According to the company’s CEO, their knowledge base, likewise, should be connected.

3. **An Informal Rollout**: By their very nature, wikis are informal gatherings of thoughts and information. DrKW decided nothing more than pointing the employees in the direction of the wiki was necessary. It did this through letting a few groups start using the new tools and allowing them to post non-work-related materials, as well.

4. **Managerial Support**: DrKW’s management showed its support by being one of the first users of the wiki and encouraging employees to log in and provide updates and additions. In fact, the company’s managing director refused to communicate on some issues other than through a wiki he had started. Likewise, the small engineering company’s management showed its support through the CEO’s personal wiki and blog.

It is clear that large technology companies have made extensive use of Web 2.0 technologies and that wikis can be successfully deployed as a
means of collaboration in the workplace. Managers of smaller companies, for the most part, do not seem to know that these technologies exist. However, any business that relies on knowledge workers can reap great benefits from collaboration through wikis.

**Educational Applications**

The use of wikis in education has become increasingly popular among students, teachers, and professors worldwide. Many educators choose to use wikis for multiple purposes such as group projects, homework, and research writing assignments rather than a conventional classroom-assignment approach. Mader (2006) published information about wikis and education on the Web site Using Wiki in Education. According to Mader:

> the Wiki is gaining traction in education, as an ideal tool for the increasing amount of collaborative work done by both students and teachers. Students might use a wiki to collaborate on a group report, compile data or share the results of their research, while faculty might use the wiki to collaboratively author the structure and curriculum of a course and the wiki can then serve as part of each person’s course web site.

In this context, the wiki serves as an ideal online host for assisting students in completing assignments and collaborating with classmates using their existing Web browsers. The wiki is also useful for teachers and faculty members. Its use allows them to easily edit wiki entries and keep track of recent edits by others. They are also able to document the history of an assignment or project as it is revised.

Wikis have recently become the latest method of online writing, which can be used in conjunction with education for writing-related assignments. Writing in a public forum with an audience that includes parents, classmates, and professors, they may be more inclined to work harder, write and revise more carefully, and achieve greater academic competencies.

The process of using a wiki in the classroom setting could potentially replace other collaboration software or network (server) storage systems. Since students would be allowed to use the wiki, and thereby make changes without uploading new documents, the wiki may be a more productive and efficient way to tackle large assignments with lengthy documents.

So how can a wiki be applied to education? Wikis have many uses in education, with some of the most common uses discussed below from the electronic book published on the Web site “Using a Wiki in Education” (Mader, 2006).

1. **Web Site Creation:** Wikis can be used as an easy way to create a personalized Web site, a process that has become part of many courses in secondary and higher education. Some professors require their students to create a Web site as part of the course syllabus, or suggest they create a Web site to showcase their resumes and accomplishments. Students now use free wiki development software as an easy way to fulfill their educational course requirements, and they can make the link to the wiki readily available to other students, professors, and corporate recruiters. Using a wiki also makes Web site creation easier for all students, not just those who have had previous training on technical Web site development. The wiki experience, similar to the blog, can be used in higher education and professional careers, thereby giving anyone with Web proficiency the chance to create, invite friends, and host a page on the Internet.

2. **Project Development and Review:** Students can develop their writing assignments directly on a wiki. The wiki platform allows
the user to write and revise class work within the wiki (with a track-back feature), thus making it an ideal way to complete assignments. The tracking feature allows teachers and professors to follow the students’ progress and view edits and previous drafts in the wiki history. Peers may also view the wiki and make suggestions, which can be an easier way to assign peer-review homework. Students may benefit from teacher and peer comments that can be made directly on the wiki. A wiki also serves as an online location, or Web site, to host the students’ final work, available for public viewing. This feature on a wiki may also entice students to perform at a higher level, knowing their work may be viewed and critiqued by others.

3. **Group Work**: Students are frequently assigned projects that require group collaboration. By using a wiki, group members can post their contributions to the group project, easily edit other group members’ work, and immediately retrieve documents related to the project. A wiki may eliminate confusion caused by multiple document storing locations, or the common problem of overlapping ideas and additions to a project section. Students can also use the wiki as an online home page, where the sharing of documents and ideas brings the group closer together academically. Teachers and professors then track the progress of group work by using the track-back function and history feature on the wiki. In fact, this manuscript was developed by a group of graduate students with the use of a wiki for group collaboration.

4. **Group Work Review**: A wiki is an efficient solution for tracking group progress online and from remote locations. Students can save time by reviewing their team members’ posts to the wiki and edit the entire project or paper from anywhere they have Internet access. Online collaboration through a wiki may also help teachers and professors construct and monitor group assignments. The group (or class) wiki, which can be set up to allow access by only group members and an administrator, gives students an opportunity to comment on the project and review group work in one convenient online location.

5. **Research Collection Center**: Wikis allow posting, editing, and sharing of research collected by students. Having this ease of access can help facilitate the sharing of data in group projects and provides a central location to collect students’ data and research rather than storing data on each individual computer and sharing through a chain of e-mails. A wiki could also replace existing methods of online research collection such as a college or university server. Data collection tools specific for wikis are readily available, with JotSpot (http://www.jot.com) being an innovative solution for this concept.

6. **Sharing of Classroom Experiences**: Web sites such as Rate My Professors and Rate My Teachers allow students to review college professors and high school teachers. The use of a wiki may replace these Web sites as a place where students can post comments on their course experiences and rate the perceived quality of instruction they have experienced. Students will then be able to add comments and reply to these posts with ease on the wiki. Educators may find that sharing classroom teaching strategies and techniques may be more efficient and may reach a larger audience through a wiki focused on classroom experience. In addition, teachers and professors could post syllabus updates, take-home exams, and final course evaluations on a wiki.

7. **Group Presentations**: Students now have the ability to give a presentation through use of a wiki. Many classrooms are equipped with hardware to display computer presentations, thus making it easy for a student
to project the wiki from the Internet onto a whiteboard or screen. In these wiki presentations, the wiki can be used in place of conventional presentation software such as Microsoft PowerPoint.

Previous education issues that were prohibitive to adult learning can also be reconciled by using a wiki. Adult education uses include literacy campaigns, distance learning for commuter students, and secure collaboration for graduate education. The campaign for adult literacy is a perfect example of how individual adults may have some experience with a computer but lack sufficient reading skills. Or, in some cases, they may not have both a computer and reading skills, in which case using a wiki could be an opportunity for adults to become both literate and proficient at using a computer.

In addition to the multiple uses of wikis in general education, there are also specific examples of wikis currently in use in the classroom or in undergraduate and graduate course work. Professors can create a course syllabus, course schedule, and course Web site through the use of a wiki. This concept may be especially beneficial for professors who frequently update course information or the course syllabus, and may reduce the need to physically print new handouts for each update.

There has been a rapid increase in recorded uses of educational wikis in colleges and universities around the United States. Psychology students at Brown University used a wiki to track and collect data for certain human behaviors, which were then recorded as journal entries on the wiki (Mader, 2006). Students at Pennsylvania State University use wikis to post class notes and blog about classroom experiences (Mader). Similarly, students at the State University of New York used a wiki for exchanging feedback on classroom assignments, and completed collaborative writing projects on the wiki (Mader). An information technology class at the University of Richmond had students create a wiki and collaborate on a group project by posting assignments and individual parts on the wiki for peer and professor review.

Many other uses of a wiki have yet to be implemented; however, educators should consider creating and using a wiki if they are looking for a safe way to increase student engagement in classroom assignments, promote accountability and collaborative editing during group projects, and finally, showcase students’ work in a single online location. These are just a few of the many examples of the potential for educational wikis to be used around the world.

Conclusion and Future Trends

Whether it is to collaborate on a class project, brainstorm ideas with people around the world, or record family history, wikis will continue to manifest themselves in educational, business, and personal settings. For now, Wikis have found a permanent place in online communities and, as popularity continues to grow, there is little stopping the wiki from overtaking blogs and current online collaboration software.

Wikis will continue to develop as a personal and organizational online tool. Social wikis and wiki innovations continue to develop at an overwhelming rate. Wiki innovations such as Swicki, a collaborative search engine offering impressive detailed searches, and WikiHow, a social wiki offering thousands of how-to answers to its users, make the possibilities for wiki usage seem endless. Other wiki developments like WikiDocs and WikiTrails help users navigate around wiki pages. Wiki Widgets provides small objects such as calendars, video clips, and audio that can be added to an existing wiki page. The usage patterns and trends among users attract increasing innovation and attention to the capabilities of wikis.

Another future trend of wiki use will most certainly include e-commerce and e-business in Web 2.0. Already visible in the wiki community, advertising will continue to play a vital role in marketing to wiki users and to support keeping
new wiki accounts free to users of hosted wikis. Collaborative wiki technology is also spreading to small and medium-sized businesses as a way to market, advertise, and interact with the public. One company, Des Moines, Iowa-based CustomerVision, released RapidWiki, which is designed to get small to medium businesses up and running with dynamic Web sites that look and feel more like forums than brochures (Cohen, 2007). Business owners know they need to keep up with emerging online trends, wikis included. “It’s time to go beyond static Web sites,” said Cindy Rockwell, president and CEO of CustomerVision, one of the most innovative wiki marketing companies (Cohen). Market penetration has certainly taken place in online social communities like MySpace and Facebook, and there is plenty of evidence that wikis are next on the horizon for companies involved in e-commerce.

Before long, there will even be applications where wiki and video come together to make TV IV, an online compendium of television knowledge that anyone can edit. The world of wikis has a lot to offer and many other variations of the wiki are going online every day.

Wikis are sure to play a significant role in the emergence of Web 2.0, and their applications will continue to develop in business, education, and government, and in online communities. The explosion in popularity of wikis has led to multiple variations, and the number of ways wikis are being offered has grown at an explosive rate. Wikis are a great tool that can help people learn and communicate in a safe, collaborative setting, and the future for wikis is very bright. The time and place is now for wikis, and it will be interesting to watch carefully as the future for wikis unveils itself in the coming years.

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VIRTUAL WORLDS

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History of Virtual Worlds

Since their introduction in 1974, virtual worlds have moved from being solely used for entertainment purposes to being innovative tools in business and education. Currently, virtual worlds are used for everything from training business employees and virtual classrooms, to reaching new audiences through advertising. Analysts believe that virtual worlds will become even more important in the near future through the world of communication. Understanding how to use virtual worlds will be an important step, not only for individuals, but also for businesses and other organizations.

Virtual worlds began with Steve Colley’s Maze War in 1974 (Terdiman, 2006). The original program was a three-dimensional depiction of a maze through which the player tried to navigate. The game design was improved by using serial ports to put multiple players in the game. These other players were depicted as eyeballs. Finally, the programmers added the ability to shoot at other players to score points (Colley, 2008).

Today’s online virtual world’s most recognizable ancestor is the multiuser dungeon or dimension (MUD; Nguyen, 2008). These were text-based multiuser role-playing games. The earliest code was written in 1978 by Roy Trubshaw, a University of Essex student, and resulted in a game with a set of interconnected rooms in which users could move through and chat with other users. Similar to the virtual worlds of today, this MUD had no objective and no score. A landmark came in 1980 when the English MUD developers were able to use an experimental packet-switching system to link up with ArpaNet in the United States and get the first American players to log on. This took off and is still running today as British Legends.

ADDITIONAL RESOURCES


under a license to CompuServe (Bartle, 1990). MUDs have since included graphics and real-time action instead of text.

Massive multiplayer online role-playing games (MMOGs) developed from these original MUDs (Terdiman, 2008) include persistent, virtual-world games like *Ultima Online* and *EverQuest* (Patrizio, 2001). *EverQuest*, launched by Sony in 1999, became the most popular MMOG game between 2000 and 2004 (Woodcock, 2008), but this position has since been ceded to *World of Warcraft* (“Top 10 Most Popular MMO Games,” 2007).

As the MMOGs developed, another kind of interactive online program for multiple users was being developed by Lucasfilm. The result, *Habitat*, is arguably the first online social virtual world (Farmer, 2008). A pilot of the program was developed in 1988 by Chip Morningstar, Douglas Crockford, and F. Randall Farmer named *Quantum Link* for the Commodore 64 computer system. The program consisted of regions through which players could move their avatars, or online representations of themselves. The game also featured “ghosts,” which could move around the regions and become avatars. The program was released in 1988 as *Club Caribe* in the United States and *Fujitsu Habitat* in Japan, both of which were somewhat popular. A refined version of this program was released by CompuServe in 1995 as *WorldsAway*. *WorldsAway* later became *VZones*, taking on the name and format it carries to this day.

*VZones* essentially resembles a series of online chat rooms where avatars, all facing forward, speak to one another in dialogue boxes (*VZones Website*, 2008). The game features two separate online communities: *NewHorizon* and *Dreamscape*. *NewHorizon* utilizes realistic cartoon people as avatars and real-world settings, including various cities around the world. *Dreamscape* has a fantasy element, and avatars can look gothic or fairy-like.

From the relatively simple worlds used as games and chat rooms, the virtual-world industry has come a long way in recent years, seeing many advances that have transformed the nature of virtual worlds. The next progression from *VZones* was the virtual world *There*. *There* takes the social aspect of programs like *VZones* and incorporates them into a more realistic, three-dimensional world. First tested in 2001, *There* is a three-dimensional virtual world that was launched in 2003 (“History Timeline,” 2008). *There* markets itself as an online hangout that allows users to explore the virtual world, interact with other users, and play games (“What is There? Makena Technologies, Inc.,” 2008).

*Moove Online* is an online virtual world released by the German company Moove in 2001. The focus of this virtual world is social networking and chatting (“3D Avatar Chat in Virtual Worlds,” 2008). The program is supported through peer-to-peer connections, and interaction is conducted by visiting other users’ houses, which are also customizable. On average, *Moove* users tend to be older than those of other virtual worlds, with many users over the age of 40 (“Moove,” 2008).

*The Sims Online* debuted on December 17, 2003 (Becker, 2003). This was an online version of the all-time best-selling computer game *The Sims*, created by video game developer Electronic Arts (EA). The online version allowed players to play against each other. *The Sims Online* required players to buy packaged software and then pay US$10 per month to participate online. Upon its release, *The Sims Online*’s reception was disappointing. Much of this was attributed to the required monthly fee and a mismatch with its target customers (Ratan, 2003).

First developed in 1994, *Active Worlds* has existed in various forms and under various names, with its most recent version in 2002. While it allows users to chat, the emphasis in *Active Worlds* is on building and creating worlds and visiting those built and created by others (“Home of the 3D Chat, Virtual Worlds Building Platform,” 2008). Consistent with this emphasis, users have even established a builders’ academy to teach other users...
how to build structures and accomplish a variety of technical effects (SW City Builders Academy, 2008). Active Worlds likely has the most realistic and visually impressive three-dimensional graphics of any of the virtual worlds.

Released in its current form in the summer of 2003, Second Life won a place among Time Magazine’s best inventions of 2002 (“2002 Best Inventions, Robots & Tech, 3-D Online Environment,” 2002). The site has grown to become the most popular, widely used, and cutting-edge virtual world. It is widely considered the benchmark, reflecting both the potential of virtual worlds and signaling a possible demise in their popularity (Ward, 2007). Second Life is the most realistic and comprehensive virtual world available. The breadth of activity and the expanse of its user base make Second Life truly unique. It shows the potential of virtual worlds that was only suggested by earlier programs. Some have argued that Second Life allows users who face impediments in real life to more easily connect with others, thereby allowing them to develop social skills for real life (Terdiman, 2005). While many virtual worlds allow and encourage commerce with virtual versions of currency, Second Life has taken this idea to a new level by utilizing its currency, the Linden Dollar (Dubner, 2007). The Linden Dollar is exchangeable for real currencies through a resident-to-resident exchange facilitated by Linden Labs (“Terms of Service,” 2008). This means that people and companies are able to make real money in Second Life. Companies have flocked to Second Life in search of a new channel for marketing (Siklos, 2006). The ability to buy, sell, and develop land attracts online investors (Craig, 2006). Until early 2008, Second Life even featured banks where users could invest Linden Dollars (Cavalli, 2008).

A little over a year since a Gartner analyst suggested that Second Life had reached the peak of inflated expectations, Second Life’s potential remains uncertain (Reuters, 2007). The history of virtual worlds provides little guidance as the dynamics of Second Life are radically different from MUDs, MMOGs, and even more recent virtual worlds aimed at social networking and exploring a virtual environment. Interestingly, as Second Life has become the premier online virtual world, others have been developed to cater to particular niches of various segments of society.

First launched in 2004, Kaneva offers users a more conservative version of Second Life. Kaneva’s emphasis is on business and social networking (Jana & McConnon, 2007). The environment in Kaneva is much more controlled. Users are limited in their options for self-expression and the extent to which they can affect their surroundings. While Second Life offers users entrance to another world, Kaneva promotes itself as an extension of this world. Avatars are limited to human forms and there are none of the unrealistic or fantasy elements that are available in Second Life. Kaneva strives to deliver a virtual world experience to the suburban user, offering a world more suited to that user’s needs and tastes.

Current Trends

In recent years, virtual worlds have become increasingly relevant to recreational, business, and educational users. These new worlds have made interaction with people in different areas of the world possible over the Internet through the use of each user’s avatar. However, much has changed since the introduction of Second Life in 1991 (Tuft, 2007). Seventeen years later, virtual worlds are far less clumsy and capable of much more than just avatar interaction. The current trends existing in virtual worlds exemplify a world of promise, but these do not come without problems (Dredge, 2007).

The virtual world now has a myriad of applications ranging from gaming to in-world entrepreneurship. The business world has seen opportunity for brand recognition and marketing, not just in worlds like Second Life, but also in regular gaming (“Youniversal Branding: Part 1,”
2006). Also, companies have found ways to cut costs of training and other activities through use of virtual worlds (“It’s Not All Fun and Games,” 2006). The educational arena has found uses in virtual worlds from training to the creation of online classrooms accessible to people around the world. A quick visit to Second Life reveals educational tools, such as access to books and even language lessons. Of course, the social network aspect of virtual worlds still remains the focus of these sites. Even social networking, however, has led to financial opportunity as people create commerce in these parallel worlds, creating real value (Tuft, 2007). Second Life and other sites have created a lucrative professional world for those who have taken advantage of these opportunities to earn a very comfortable real-world living (MacMillan, 2007).

Many current trends look promising for the future of virtual worlds. Perhaps the most important is the proposed introduction of numerous new virtual worlds in the upcoming year (Dredge, 2007). This will mean increased competition and improved interfaces as companies will be forced to consistently advance and adapt to stay relevant in the virtual-world market. In the business world, companies are using virtual worlds for many things.

- As a training ground for employees to cut costs and improve productivity (Dredge, 2007)
- To send mock-ups and drawings to other offices and companies in other locations (“It’s Not All Fun and Games,” 2006)
- To view proposed marketing and branding ideas in a three-dimensional space (Carr, 2007)
- To have virtual premieres for clothing, movies, television, and so forth (Carr)

Education has also found a niche in the virtual world by utilizing the ability to connect people from across the world and set up areas where different resources for learning can be accessed from a computer. Some of the educational applications are as follows:

- Virtual classrooms (Nesson, Nesson, & Koo, 2006)
- In-world language lessons and classes (Suffern Middle School in Second Life, 2008)
- Access to resources in a 3-D environment (Levine, 2008)
- Creation of real-world experiences for a relatively low price through marketing and branding experience, creation of engineering projects, and practice running a business (Beller, 2007; Dartmouth College, 2005; Idaho State, 2007; BBC News, 2007)

There is also the social aspect where people can interact through their avatars (Tuft, 2007). Younger generations seem to be leading the way in virtual worlds because of their familiarity with the Internet. All these new and savvy users will be looking for the best platform that will drive innovation in all virtual worlds. Business and educational applications of virtual worlds will be discussed in more depth in following sections.

While virtual worlds have created many trends that are positive, there are still many problems that exist. Problems with the capability of the worlds to support the number of users that are visiting the sites cause slowdowns and other hindrances that make it more difficult to use these worlds. Other problems also exist, such as the difficulty in making communication between tech-savvy and regular people less “geeky,” difficulty in getting around, and “griefers” who cause problems for users in the world (Dredge, 2007). It is increasingly difficult to police these sites internally as they grow larger and grow in value. A June 2007 estimate indicated that the market was already worth more than US$1 billion (Tuft, 2007). Additionally, there are safety issues for the population at large. The government has taken an interest in whether or not these communities might become
or already are a breeding and meeting ground for terrorists (Nickson, 2008). The answer to these current problems will drive future trends in virtual worlds and help to shape virtual worlds’ capabilities and limitations.

It is still early in the development of virtual worlds and the technology is still in its relative infancy. However, many expect it to take shape as quickly as the Internet did. Companies such as IBM, Coca-Cola, Toyota, and other heavyweights are putting money into creating better applications and opportunities within virtual worlds (LaMonica, 2007). With technology advancing faster than ever before, and many new virtual worlds on the horizon, the explosion could arrive very quickly. Looking at current trends and identifying the problems facing these virtual worlds will help companies and individuals to be prepared for what is to come.

Business Applications of Virtual Worlds

The increasing numbers of users have led to greater opportunities for businesses in the virtual world. There are opportunities for companies to increase their brand recognition, cut costs in training and real-time information transfer, and facilitate employee communication. Companies need to be careful, however, understanding the landscape and what opportunities are present to make the leap into virtual worlds profitable. While many believe that virtual worlds will become increasingly business friendly (LaMonica, 2007), many still heed caution for businesses ready to enter the market (Broersma, 2007). The pitfalls range from security issues to investment risks. Analyzing these pitfalls is imperative before a company enters the virtual world.

The most used and obvious business application of virtual worlds is branding and marketing. Just as in the real world, marketing opportunities are everywhere in virtual worlds because they parallel the real world. Companies utilize this platform to get their name out to new customers (especially teens) and to reach markets that are more dependent on computers than on television for entertainment (“It’s Not All Fun and Games,” 2006). Companies have also realized that operating in a virtual world is similar to operating in the real world (“Youniversal Branding: Part 1,” 2006). Creating a store in a virtual world and leaving it has not proven successful, and companies are realizing they need to run these stores in similar ways to the real world (Carr, 2007). An advantage is that the cost of creating campaigns, store space, and other types of advertising in virtual worlds is exceedingly less expensive than in the real world. It also allows service industries such as hotels and architects to show clients or potential clients what structures will look like (Carr). Even though a company may be reaching only a niche market for now, it is doing so for a much lower cost.

Companies with multiple offices can also cut costs by displaying real-time information and modeling products in virtual worlds. Meetings can be held online, helping to eliminate travel costs for clients and customers. Being able to post designs in a virtual world and allowing clients or other offices to view them can cut down on the costs associated with sending items, while allowing for better representations of products (“It’s Not All Fun and Games,” 2006). While the meeting functions may not be as advanced as teleconferencing and its brethren, the ability to display objects in 3-D can be a huge advantage.

Training has become a much bigger part of the business use of virtual worlds. Any company can take advantage of the cheap costs associated with virtual worlds and supplement its business online. This allows employees to interact with equipment and processes that are costly to provide in real life. It also allows employees to see exactly how processes work and are created (“It’s Not All Fun and Games,” 2006). Travel costs associated with training may also be substantially reduced.
or almost eliminated through the use of virtual worlds. Keeping costs down while providing the best possible training is a definite bonus for companies that maintain a presence in a virtual world.

Most companies face the questions of whether they should enter a virtual world and whether entry is worth the costs. While the amount of potential profit from a virtual world is low, the cost of entry is almost nonexistent. Gartner predicts that, by 2011, 80% of individual Internet users and Fortune 500 companies will be in virtual worlds (“Gartner says 80 Percent of Active Internet Users will have a ‘Second Life,’” 2007). This presents a large opportunity for companies looking to enter now and be forerunners in this technology. There is much speculation that Google’s entry into the virtual world is imminent (Pasick, 2007). Many believe that Google’s entrance and the combination of a virtual world with its Google Earth function could be a boon to businesses looking for more profitability and opportunity in virtual worlds. Some useful applications in MyWorld (the proposed name of Google’s virtual world) are real-time information on city buildings and residents of buildings, among many others. People also expect the usability of MyWorld to be much better than that of existing worlds such as Second Life since Google plans to build off of its already existing technologies (Smith, 2007).

Educational Applications

Education is one sector that has gotten remarkable use out of virtual worlds. Educational institutions at all different levels have found the value in utilizing the ability to connect people from across the world and interact with various resources. The advantages and uses that virtual worlds offer to educational institutions have only been touched upon, but have already been used across the world. Second Life alone has been used by institutions of higher education all across the globe, including Penn State, Columbia University, Duke University, the University of Sydney, and the University of Edinburgh, among others (Harris, Lowendahl, & Zastrocky, 2007).

Virtual worlds are being used for all different types of educational purposes, not just by elite educational institutions. Some educational institutions have utilized virtual worlds in order to create virtual classrooms. For example, one middle school has used Second Life as a venue to practice foreign language skills by having an Italian class meet in a virtual café to practice ordering from a menu. Simply by using headsets, Second Life enables students to practice their foreign language skills in a virtual café environment while, in reality, these students could be on the other side of the world (Suffern Middle School in Second Life, 2008). Another example of using Second Life as a classroom is Harvard Law School, which actually holds all course lectures in a virtual classroom in Second Life (Nesson et al., 2006). Other universities such as Emory University have also used Second Life to hold conferences (Levine, 2008).

The Otis College of Art and Design features a class where students actually create art projects in Second Life using the proprietary software to generate different art scenes. The class was split into teams who met in Second Life at a scheduled time, developed their themes by communicating, and then started to build their art projects.
In addition to classroom uses, a number of researchers have used virtual worlds to model human behavior. For example, following the outbreak of a virtual disease in the MMOG *World of Warcraft*, scientists now point to virtual worlds as environments to carry out experiments on human behavior in epidemic situations. When an outbreak occurred in this virtual world, epidemiologists were surprised by how closely the behavior of online avatars paralleled that of humans in real life. Some players altruistically helped infected players, while some players, once inflicted, tried to pass the disease on deliberately. Running such a disease simulation in a virtual world may provide insight that is otherwise unavailable. Epidemics are usually available for study only after the fact and many simulated scenarios limit human behavior to a mathematical model or ignore it completely (“Virtual Game is a ‘Disease Model,’” 2007).

Another educational aspect of educational virtual worlds is their similarity to real-world institutions. *Second Life*’s economy, for example, is so large that it can reasonably be compared to that of a small country dependent on tourism. Economists have found that studying the growing economies of these virtual worlds can be a useful learning tool and a realistic model of a real-world economy (Beller, 2007).

In addition to classroom applications and behavioral models, virtual worlds have also proven to be useful as training tools. For example, Dartmouth College has used *Second Life* to create an immersive multiuser environment to train emergency responders. This is a virtual prototyping experiment used for emergency response simulation that is funded by the U.S. Department of Homeland Security (Dartmouth College, 2005). Another interesting educational use for virtual worlds is run by the Institute of Rural Health at Idaho State University, which is using a multiuser immersive environment to host virtual tabletop exercises in bioterrorism and preparedness (Idaho State University, 2007).

The educational sector has found tremendous uses for virtual worlds today, from hosting classes, conferences, and training programs to using virtual worlds as venues to test economic and human behavioral models. Educational institutions are finding all sorts of uses for virtual worlds that were never before possible. The possibilities seem endless in an environment that makes communication broader and more interactive than ever.

### How to Participate in Virtual Worlds

Getting started is similar in all virtual worlds. Life begins with an e-mail address. Users generally use e-mail addresses or other names as user names. Users then enter information and may take steps to customize their avatars, connect with a particular community, or add money to their accounts. Nearly all sites offer basic membership for free, but also offer premium services for a monthly charge, usually around US$10. The registration process of *Second Life* serves as a good example because it is similar to that of other virtual worlds, is very user friendly, and is the most popular.

A good place to start is to use a search engine to enter the name of the virtual world, in this case, *Second Life*. Upon arriving at the site, a user is first presented with the option of joining a community, such as Ben & Jerry’s, Dublin in SL, and Scion. This step may be skipped and the user may go straight to Linden Lab’s Orientation Island. This walks the user through the process of picking out a name and entering his or her birth date and e-mail address. For those wary of unsolicited spam or simply wishing to maintain their total anonymity, the process can be started by creating a false e-mail address for their *Second Life* personality.

After this step, the user chooses from among 12 default avatars to represent them in virtual space. Next, the user is prompted to enter his or her real name. Interestingly, the terms and conditions specify that users must agree to provide “true, accurate, current and complete information,”
and to maintain and update this information as it changes (“Terms of Service,” 2008). The user must then enter a password. Following these steps, the user must then check his or her e-mail for a link to Second Life, which will be sent after the registration is complete. The user must then install the software, which will download to the Programs folder on the computer and automatically install a Second Life shortcut on the desktop if the user wishes.

After everything downloads, the user is ready to log in. At this point, the user may make certain modifications, including setting up the VoIP (voice over Internet protocol) option, and is now free to explore Second Life.

**Conclusion and Future Trends**

One thing that is for certain is that virtual worlds will continue to grow in the future. It appears that they will multiply at an incredible rate in 2008, with many new worlds launching then. Additionally, users around the world appear to be multiplying. Entire markets like China seem to be opening up to the idea of virtual worlds (Dredge, 2007). However, while virtual worlds do expect to continue growth in the future, there are a few questions surrounding their future. Who will be using them? How will they be using them? Which virtual worlds will be the major players of the future?

Corporate users are expected to grow as more than 80% of the Global 1000 are expected to have a presence in at least one virtual world by the end of 2011 (Abrams, 2007). However, the question to consider is how corporations will decide to use virtual worlds in the future. As virtual-world technology progresses and access improves, virtual worlds will become an increasingly pervasive part of the Web. As this advancement continues, the potential for businesses to take advantage of this new marketplace will only grow. Businesses will be able to use virtual worlds to transform customer experiences, improve business processes, drive collaboration, enrich commerce and transactions, and enable 3-D modeling and simulations so that they can better understand their markets (Parris, 2007). With all of the advantages that virtual worlds offer modern companies, it seems advantageous for companies to at least test the waters. Whether organizations find themselves in industries that are using virtual worlds or not, it is relatively cheap to enter one such as Second Life to explore the possibilities (Abrams).

Companies that are considering entering virtual worlds must consider how they want to do so. While many companies have unsuccessfully entered them for advertising purposes (Dredge, 2007), there are other options for using virtual worlds internally that appear to be productive. While virtual worlds such as Second Life and There have created a thriving public environment, there is an increasing demand for that same type of virtual world on a more secure and private level (Fenn, Harmo, Prentice, Raskino, & Cearley, 2008). Some companies have found that meetings in Second Life (or their own private virtual worlds) have increased productivity and saved money (Dredge). Research indicates that by 2012, 70% of organizations will use private virtual worlds to support internal collaboration and social interaction. Some even expect that, as organizations make the move to private worlds, their presence in public virtual worlds will decline, decreasing demand for the public worlds (Fenn et al.).

Another consideration for the future of virtual worlds is who the major players will be. While Second Life may have been the first big virtual world, it may not be the leader in the years to come. In fact, in April 2007, Second Life was not even listed as a top-10 most popular virtual world, as measured by percentage of traffic or market share of visits. One of the reasons for Second Life’s decline is that newer virtual worlds are coming out that are easier to use and, accordingly, have a larger potential customer base (Kharif, 2007).
Some of the major virtual worlds that seem to be taking over, such as Club Penguin, Webkinz, and Habbo Hotel, have targeted teenage users (Dredge, 2007). Second Life currently offers a richer creative environment than most other sites, but, if organizations are looking to reach a younger demographic, virtual worlds such as There, Kaneva, and Laguna Beach are also options (Abrams, 2007).

Another threat to Second Life and other current virtual worlds will be incoming competition from already existing technology companies. Many of these companies are trying to offer a virtual world in combination with their current services. For example, a company like MySpace may incorporate a virtual world so that its users can create avatars and virtual houses instead of standard profiles. Google may be looking to incorporate a virtual world with functions like Google Earth, building a virtual world based on a real one. A startup company, Weblo, has already been successful with a similar project (Kharif, 2007). Big names like Microsoft, Google, and Yahoo! may be looking to get a piece of the virtual-world pie, and it seems likely that they will take these virtual worlds to a whole new level.

Overall, virtual worlds are a new phenomenon that will only continue to spread across the globe. As new users continue to enter these worlds and new applications are developed, it seems impossible to predict the potential impact that virtual worlds will have on businesses, consumers, and industry in the future. It appears that we are only scraping the surface at this point and that improved technology in the future is likely to create virtual worlds that will, in one way or another, become a part of everyday life.

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Electronic social networks have become a part of everyday life. Online communities help millions of people instantly connect with former classmates, communicate, find friends or people with the same interests, exchange information, establish business networks, and even share views. Social networking has integrated with day-to-day activities to the point that we now live in a real-time global society.

The first online social network, SixDegrees.com, was established in 1997 (Boyd & Ellison, 2007). This Web site combined the ability to create a profile, send an instant message, and create a circle of friends on one Web site. The concept that all things are within “six degrees of separation” was behind this innovative idea. The site attracted many users. A number of sites similar to SixDegrees.com were introduced to the public in the late 1990s to early 2000s, including LiveJournal, Asian Avenue, BlackPlanet, and LunaStorm. Most of these Web sites targeted certain demographic groups.

MySpace was launched in 2003 by the company eUniverse. Its user base grew exponentially within just a couple of years, transforming the Web site into the most popular online social networking community in the United States. Most teenagers opened profiles on MySpace because of the site’s lenient age policy. By 2006, MySpace had more than 20 million users. It was acquired by News Corporation for US$580 million in July of 2005 (Rosebush, 2005).
Facebook, another popular social networking Web site, was founded by a former Harvard student who used it as a tool to reconnect with former classmates. It was launched in February of 2004 (Yadav, 2006). Soon Facebook became a popular social network for college students in the United States. Initially, to join the network, a person was required to have an active college e-mail address. In 2006, the network extended to high school students and some larger companies. Now, anyone age 13 or older can join the network.

LinkedIn is a professionally oriented social networking site. It was founded in 2003 by Reid Hoffman and Konstantin Guericke. The site applied the concept of social networking, initially used primarily by youths in a casual context, and made it relevant to adults seeking career growth. LinkedIn tries to help people connect with others who might help their careers (“How LinkedIn Broke Through,” 2006).

Other popular social networking sites include Furl, Spurl.net, Shadows, Scuttle, Yahoo! My Web 2.0, Ma.gnolia, Digg, StumbleUpon, and reddit.

**Current Trends**

Recently, MySpace went international and launched its Web sites in Europe, Asia Pacific, and South America. Last year, the Web site added the ImageShack application, which simplified the way videos are compressed and uploaded. MySpace also elected to become part of OpenSocial, a network that enables third-party programmers to build platforms to take advantage of the Web site’s user base. The site is now in the process of adding new products to its portfolio to make users’ communication more dynamic. Photobucket is going to be integrated with the MySpace platform at the beginning of 2008 (“Photobucket to Launch New Applications on MySpace,” 2008). With the help of Photobucket, users will be able to change their photo images and customize and personalize their digital identity more easily than before.

Facebook became part of OpenSocial a few months prior to MySpace. You can now mash Facebook with other applications. As a result of launching a developer platform, the Web site drew many new users. Facebook recently introduced a Spanish version of its site. The new user-friendly Extended Profile application allows members to clean up their cluttered pages and move seldom-used profiles and applications to the extended profile.

LinkedIn is used by professionals across various industries. It enables professionals to network, stay connected, and tap into one another’s list of contacts. The site takes advantage of word-of-mouth and personal references to foster career growth and enables users to stay in touch with other professionals that they may have worked with in the past. The site is more than a job search Web site like Monster.com (“How LinkedIn Broke Through,” 2006). Rather than focusing on individual jobs, it focuses on people. The site does, however, provide expanded tools for job hunters and employment recruiters for a fee (Fitzgerald, 2007). LinkedIn has recently begun adding more features to enable users to customize their profiles with a personal touch. In 2007, LinkedIn doubled its membership from 9 to 18 million users and continues to add 25 new members every minute (Dye, 2007).

**Business Applications**

As previously stated, MySpace is a member of OpenSocial. By integrating new applications into MySpace, businesses will gain instant exposure to millions of customers (Olsen, 2008). If the application becomes popular, the programmer or business can sell advertisements and collect profits. For example, MySpace will let developers sell advertisements, products, and sponsorships on the specially assigned pages and collect 100% of the revenue generated from the ads.

Since Facebook became open, more than 168,000 developers joined its platform to evaluate
and create new applications. Such applications as Top Friends, Fun Wall, Super Wall, and others became widely used on the Web site, generating profits for the creators. For example, Top Friends, used by over 2 million members, is currently valued at over US$29 million. Companies like iLike.com, a music-sharing start-up, and Slide.com, a photo-sharing service, helped Facebook attract more users and market their services at the same time.

Facebook also allows businesses to create profiles. In addition, third parties can now sell advertisements directly on the Facebook member’s page using “hypertargeting.” This system analyzes users’ tastes and preferences and automatically advertises products that might be interesting to the user. By attaching advertisements to news feed stories and social ads, businesses can promote their services (Morin, 2007). Companies can also run surveys targeting specific demographics, which is very helpful when conducting marketing research.

Many employers use social networking sites such as Facebook and MySpace to research potential candidates. Likewise, some interviewees are researching employers and interviewers, which creates some controversy but is becoming a tactic with widening popularity.

LinkedIn’s user base has grown considerably. The company expects 2008 revenue from its fee-based subscriptions and advertising to reach between US$50 million and US$100 million. The more users are on the site, the more useful it is to its members as networks deepen and extend farther. The site has been continuing to grow in popularity and new features have been added to enrich the experience (Ricadela, 2007).

**Educational Applications**

From the standpoint of education, both Facebook and MySpace help students to create and innovate. Even though Facebook opened its network to virtually anyone, the majority of Facebook and MySpace members are either high school or college students. Students currently use technology to create and customize their profile pages, identify new trends, and apply existing knowledge. The main purpose of social networking is communication and collaboration. Students are socially engaged through virtual communities and learn how to build social networks. Students are also able to access, convert, and retrieve digital data, helping them learn to organize and evaluate information.

Facebook developers are now developing educational applications for Facebook. In the fall of 2007, Stanford’s computer science department introduced a new course called *Create Engaging Web Applications Using Metrics and Learning on Facebook* (Eldon, 2007). In this course, students develop new applications for Facebook and analyze how such applications are used by users.

LinkedIn offers academic institutions a way to stay connected with alumni, build recruitment efforts, and increase marketing profiles. College students may be encouraged by the career services center to use the tool to build networks for their careers and learn from people in various fields about areas of interest to help guide them in their professional job search.

**How to Use Social Networking**

Anyone 14 years or older can become a member of MySpace. By providing general information, age, name, and a valid e-mail address, one can create his or her own MySpace account. MySpace members can customize their profiles, upload pictures, write blogs and comments, send e-mails and instant messages, download music, and interact with friends and acquaintances. As a member you can also invite friends to join the network, view profiles of your friends, and much more. Many users have public pages, but you can also make your page private. The service is free.

Facebook enables anyone 13 years or older to open an account. Similar to MySpace, Facebook
members provide information about themselves prior to joining the Web site. Currently, users can store up to 1 GB of information for free. Some Facebook applications are targeted for specific age groups. For example, calendar applications can be used to organize everyday activities. With the help of the Courses application, users can create study groups by knowing who is signed up for a specific academic course. The Skype application allows phoning service for free over the Internet.

LinkedIn membership is free for professionals. Registration is easy and takes just a few minutes. Once members, users can personalize their settings to facilitate different kinds of exchange with other users such as those regarding job referrals, questions about their place of employment, or industry experience. The site is professionally based, and the information posted is career focused in nature. This is the primary difference between LinkedIn and other social networking sites. Resumes can be uploaded and users create a network with other members to build their reach into the corporate world. Members are invited to join other members’ lists of contacts, and may accept or decline. The site offers job search information and enables people to stay connected.

Conclusion and Future Trends

With a huge variety of online communities and the rise of Second Life as a virtual alternative to social networking, it is difficult to predict how the world of social networking will unfold. There will likely be more collaboration and integration of various applications within communities and Web sites. In the future, Web sites like MySpace and Facebook may become wholesale retailers of various applications and features, providing users with multiple options with just a single click.

Sites geared toward professionals and career networking are also likely to grow in popularity. As people continue to work at more corporations throughout their lifetime, sites such as LinkedIn will be instrumental in keeping networks alive. Professional associations, boards of directors, and other advisory committees may be sourced more heavily from social networking sites, and headhunters and recruiters are likely to rely on sites such as LinkedIn more to source job candidates.

REFERENCES


**ADDITIONAL RESOURCES**


**SOCIAL NETWORKS: BOOKMARKS**

**History of Social Bookmarking**

Social bookmarking is an easy way to tag, organize, and manage electronic information with the help of metadata (keywords). Bookmarks provide an alternative way of searching the Web based on popularity rather than algorithm-based systems such as Google. Sites of interest are bookmarked, which is the equivalent of adding it to a favorites list that is organized by category. Once a bookmark is created, it is tagged with descriptions and keywords for future retrieval and can be shared with friends or other members of the network interested in the topic.

ITList was a pioneer in electronic bookmarking. Launched in 1996, it rapidly became popular among users, who could store and share a collection of favorite Web sites and selected information in the assigned folders. Bookmarking Web sites like Backflip, Blink, and Clip2 appeared over the next couple of years but did not attract enough users to continue to compete.

In 2003, the social bookmarking phenomenon was introduced to the mainstream public by del.icio.us, an open-ended system where users choose what information to save. With the help of tags, members of del.icio.us could assign a name to a bookmark, store it, create categories, and share information with other users. Like prior bookmarking programs, del.icio.us is free. The bookmarks can be instantly accessed anywhere in the world by accessing the Internet.

In 2005, Yahoo! acquired del.icio.us for approximately US$30 million (Norton, 2006). While del.icio.us is arguably the most popular, other widely used social bookmarking sites include Furl, Spurl.net, Yahoo! My Web 2.0, Maggnolia, Digg, StumbleUpon, and reddit.
Current Trends

Originally created to help users organize information on the Web, social bookmarks have recently been integrated with social networking sites such as Facebook, enabling multiple Web sites to be easily accessible from one place and shared with friends. When researching a specific topic, Word and Excel files can be uploaded to del.icio.us and tagged accordingly to keep information centrally located and not tied to a hard drive or personal server. By creating a shortcut on a computer desktop, individuals can also view all the saved bookmarks through a browser. Bookmarks can be made public, semiprivate (allowing access only to specific users), or completely private. The del.icio.us homepage also provides members with a list of the most popular and recently posted items. These additional features make del.icio.us more attractive for users and businesses.

Business Applications

Businesses can use del.icio.us by creating an account with shared information on particular topics. If a team is working on a project involving research, each team member can bookmark pages that he or she finds interesting and the entire team can access them. Users can also collect publicly available information on their competitors by tagging articles in del.icio.us.

Del.icio.us is highly beneficial to online publications, journalists, and media professionals who access and source from popular information. Because this group of professionals deals with an overwhelming amount of information on a regular basis, social bookmarks can organize articles and press releases in a preferred order with just a few clicks (Angelotti, 2008). For example, in August 2007, the BBC News Web site started tagging its news links and sports overviews using del.icio.us.

Marketers can also bookmark their company’s Web site to create interest in and awareness of their products and services. Bookmarking a corporate Web site and tagging it with keywords enables the site to be more easily found by others interested in the category.

Sites such as YouTube also have links where video clips can be automatically added to various bookmarking sites to foster viral marketing. As new media outlets continue to appear on the Web, bookmarking will continue to become a more popular feature.

Educational Applications

Students typically work on several computers to conduct their research including in libraries, homes, dorms, classrooms, and so forth. With the help of del.icio.us, students can tag and save information to easily retrieve it from any location. Groups can be formed for classes and information can be saved in a single location for both professors and students to access. Both the professor and the students can enrich the collected information by posting updated research findings in one place.

How to set up a Del.icio.us Account

Del.icio.us is very user friendly. To set up an account with del.icio.us, follow these simple steps:

1. Go to http://www.del.icio.us and click “Get started.”
2. Create a user name and password.
3. Del.icio.us requires e-mail verification: You will be notified via e-mail to confirm registration.
4. A customized Web page, for example, http://del.icio.us/student, will be automatically created in your account.
5. To post a link, click the “post” link on your del.icio.us page, tag it, and save it.
Conclusion and Future Trends

Social bookmarking organizes and customizes information on the Web. It has been successfully integrated with numerous businesses and scholastic applications. Some consider social bookmarking the next stage in Web searches (“Top 10 Ways to Use del.icio.us,” 2008). With so much information available on the Web, social bookmarks create a meaningful way to both locate information and share it with others. In the near future, social bookmarking sites are likely to offer more personalized and customizable features and become more heavily integrated with electronic devices and other technology applications (MacManus, 2007).

REFERENCES


ADDITIONAL RESOURCES

Social Bookmarking Creation Tools

del.icio.us: http://www.del.icio.us
Digg: http://digg.com
Furl: http://www.furl.net
Ma.gnolia: http://ma.gnolia.com
reddit: http://reddit.com
Spurl.net: http://www.spurl.net
StumbleUpon: http://stumbleupon.com
Yahoo! My Web 2.0: http://myweb2.search.yahoo.com

SOCIAL NETWORKS: TAGGING

History of Tagging

Tagging evolved as a method of organizing the vast quantity of information on the Web. Its origins are highly interrelated with social bookmarking and collaborative Web sites. Tagging uses keywords to categorize information. Blog posts, Web sites, articles, and photographs are given keywords, which are assigned by the users themselves rather than through a hierarchical system. This enables users to retrieve information more easily and share information with other users interested in the same category. Sites such as Flickr and del.icio.us were among the first to popularize this feature (Gordon-Murnane, 2006).

Current Trends

Over the last several years, tagging has become a critical component in collaborative Web 2.0 applications, and its usage spans widely across the Internet. Bookmarking sites, which are gain-
ing in popularity, and tagging go hand in hand (Conley, 2005). As online media has become more prevalent, sites such as Technorati have come to rely on tags to filter the information (Roush, 2005). Debates about the quality of the tags have increased as their use has grown. However, many agree that tags provide a critical step in organizing the information on the Web that mirrors the rapid changes in content that is available (Ojala, 2007).

**Business Applications**

A business with an online presence can benefit from tags to help drive awareness and interest within its category by directing those interested in its product or service toward its URL (uniform resource locator). Tags can also facilitate e-commerce by directing people interested in the keyword categories to the right place (Koeppel, 2007).

Social networking sites, bookmarking sites, and online media sites use tags to manage the vast quantity of information within their platforms and connect people with common interests. Tags are invaluable and inextricably linked to prevailing Web 2.0 technologies.

**Educational Applications**

Because tags organize large quantities of information, academic institutions can apply the technology to their services. Libraries can tag information for easy retrieval and, as mentioned previously, classes can use tags to facilitate exchange and class discussion on bookmarking sites such as del.icio.us by tagging content and information.

**How to Create Tags**

Social bookmarking, social networking, and photo-sharing sites prompt users to tag the images or content that they have uploaded or linked. The keywords should be simple phrases that describe the information. This helps users easily find the information at a later date and enables others interested in that category to find it with keyword searches. Any number of tags can be used on a single image or piece of information. Users can use their discretion about what keywords to list as their tags. There are no official guidelines on what is appropriate. Tags on information posted on many Web sites can also be updated to maintain relevancy (Roush, 2005).

**Conclusion and Future Trends**

Tagging is an extremely useful method of organizing various forms of information. It is expected that new applications for the technology will be developed as the information age continues to drive the need for users to filter the noise. Tagging might be applied within the workplace to increase productivity and efficiency. For example, tags may be applied to e-mail messages to enable easy retrieval. Advertisers will also likely use tagging to specifically direct their messages to target audiences with a high interest in their products or services. Tagging is a broadly applicable technology that will continue to be utilized more as a larger volume of information is shared and referenced.

**REFERENCES**


ADDITIONAL RESOURCES


SOCIAL NETWORKS: PHOTO SHARING

History of Photo Sharing

The first photo-sharing sites originated during the mid to late 1990s, primarily from online services that offered finished prints from digital photographs. Services have evolved to include more advanced features like photo editing, purchasing image-based products, public and private file sharing, and community-oriented Web sites with broad networking opportunities. Some services are subscription based and some are free (Beardi, 2000).

Flickr, which was acquired by Yahoo! in 2005 for US$35 million, is one of the most popular photo-sharing Web sites. The company was founded in 2002 by two entrepreneurs attempting to build Game Neverending, a game based on social interactions. In 2003, struggling as a start-up to raise money and stay in business, the team decided to turn the original site into a photo-sharing portal by revamping the gaming interface to incorporate photos. Today, Flickr is considered one of the best photo-sharing sites on the Web (Fitzgerald, 2006).

Flickr is an international site that is available in eight languages, so photos can be shared globally. Every hour, upward of 4,000 photos are added to the site, creating an incredible wealth of visual information and connectivity.

Business Applications

Photo sharing is a way for people to visually stay connected and learn from one another. While initially a consumer technology, there are several applications and benefits within an enterprise. In a business setting, photo sharing is a useful tool for sharing information and learning from external sources. Photo sharing can also help to develop relationships within the workplace, which is particularly important as businesses become more global and employees are scattered around various offices with few ways to feel connected. Photo sharing can be limited to private communities, so employees can post photographs from local events to share with colleagues firm-wide and facilitate exchange without broadcasting the images publicly. Posting images also offers glimpses of personality and coworkers can learn about each other in ways they might not otherwise be able to within the confines of their cubicle walls. Photo sharing can be a useful tool for collaboration, communication, and cultural initiatives, especially in large organizations. In addition, photo-sharing Web sites can also be helpful research tools because images can be sorted based on various geographies and categories. For example, a professional could learn about a new venue for meetings by surfing images posted by other participants without actually visiting the locations. These images could be shared with other decision makers within the firm to help discussion.

From a technical point of view, there are also benefits to using photo-sharing sites such as Flickr within an enterprise. Many corporations house headshots and other photographic records that take up server space. Rather than maintaining photo files on company servers, they can be posted to photo-sharing sites to free up bandwidth and also provide a common place for retrieval that is easy to access for employees within the organization.
Educational Applications

Learning institutions can use photo-sharing Web sites to share visual knowledge about cities of interest, news, events, people, and organizations (Sinclair, 2006). Photographs facilitate learning and, in today’s changing society where youth may learn best through active engagement, photo sharing can be an instrumental tool in bringing information to life and drawing students into the subject at hand. Educators, teachers, and students can share information with each other and with other schools across the globe by posting photographs and sharing experiences. Researchers at the University of Washington have even tapped into Flickr to create three-dimensional models of famous landmarks (Greene, 2007).

Libraries are becoming increasing supporters of photo-sharing sites such as Flickr that enable users to share knowledge and experience with one another. By tagging photos accurately, the images can be catalogued for users to make accessing information simple. Recently, the Library of Congress decided to share archived images on the site (Gordon & Stephens, 2006).

How to Share Photos

If you already have a Yahoo! account, you will just need to create a Flickr user name and password. If you are not yet registered with Yahoo!, you must set up an account, which is free of charge and requires some basic registration information. This service provides 100 MB of photo storage monthly. If you need additional space, you can upgrade to a paid subscription that costs approximately US$24.95 per year.

You can participate in Flickr in a number of ways. Photos can be private or shared publicly with the broad Flickr user base. It is easy and fast to upload photos, and it can be done in numerous ways.

1. E-mail photos from a mobile phone.
2. Upload directly to the Flickr Web site.
3. Export large volumes of photos from programs such as iPhoto.
4. Use a dedicated program called Flickr Uploadr.
5. Link from third-party programs, such as Shutterfly and Snapfish.

The site offers various features that facilitate community. There are groups that can be joined based on common interests. The site includes a blog with photography-related news, such as Polaroid’s recent decision to stop producing instant film. Your account can be customized to create a personality profile, and you can create a buddy list to instantly be connected to photographs from friends and family. Products and reprints can also be ordered using posted images.

Once photos are posted, they can be organized into various libraries and tagged with keywords to help make them easier to locate. Tags are keywords that help organize and identify photos of interest. Descriptions of the photos can be added to provide context to the image for others that view the images. The site provides specific guidelines and photos can only be posted for personal use. Any commercial-based photos result in account termination.

The site is facilitated by tagging photos. These keywords help organize and identify photos of interest.

Conclusion and Future Trends

Peer-to-peer photo sharing has taken basic photo storage and finishing to an interactive level that facilitates learning and social interaction. Future programs will likely have additional features that make the experience richer, more engaging, and more collaborative. Features such as photo retouching or playful Photoshop elements might be added to the functionality. Users may be able to add more in-depth stories to their photos to help bring them to life with words. Schools, busi-
nesses, and institutions are likely to continue to use photo-sharing sites to build relationships and share information.

REFERENCES


ADDITIONAL RESOURCES


dotPhoto: http://www.dotphoto.com

faces.com: http://www.faces.com

Fotki: http://www.fotki.com

MyPhotoAlbum: http://www.myphotoalbum.com

Pixagogo: http://www.pixagogo.com

SmugMug: http://www.smugmug.com

TopTenREVIEWS: http://photo-sharing-services-review.toptenreviews.com

Webshots: http://www.webshots.com

Zoto: http://www.zoto.com

SOCIAL NETWORKS: MASHUPS

Tim Davis

History of Mashups

Mashups came into prominence with the advent of Web 2.0 and the increasing collaboration on the Internet. Mashups are essentially a content aggregation technology that combines and draws on the functionality of diverse applications into one integrated tool that is browser compatible. Typically, mashups rely on information from public web sites as well as private applications.

Mashups began with programmers using a technique called “screen scraping,” where a computer program parses the program from an application or a Web site and tries to discover the advanced programming interface (API), which is the interface that programmers use to modify an application. This was a tedious and often ineffective process, yet it was the only way that programmers could create mashups since no companies had their APIs open for programmers to tinker with. Google was one of the first big companies to open its API when it opened Google Maps. This
was a momentous occasion for mashups since the programmers finally had access to the API. Prior to this, many programmers did not want to take the time to attempt screen scraping, so they did not create mashups. Other mapping applications, such as MapQuest, followed suit and opened up their APIs as well (Fagan, 2007).

Currently, mashups have entered into a new era of use for nonprogrammers with the advent of technology such as Microsoft Popfly and Yahoo! Pipes, which allow nonprogrammers to create mashups (Fagan, 2007). Before these, mashups were largely the domain of programmers who knew enough about the code of the applications to be able to write the transition codes to create the mashups.

**Current Trends**

Mashups were at the peak of inflated expectations in the Gartner “Hype Cycle for E-Commerce” in 2007, which means that they are likely in the trough of disillusionment right now. Yet, Gartner places mashups as a technology that will be adopted in the mainstream in less than 2 years. It is listed as a technology with a high benefit in a short time frame, making it ideally suited for tactical uses by businesses to solve discrete problems. It does not have the same strategic benefit as some of the transformational technologies, but it certainly can solve any number of tactical problems.

Although mashups began primarily as a consumer tool in mashing various applications at a user’s whim, especially with the advent of Microsoft Popfly and Yahoo! Pipes, the current trend is shifting toward enterprise and commercial use of the mashups. Businesses are adopting mashups to solve discrete, tactical problems in an increasingly diverse number of ways. Companies are using mashups to give a more interactive and easy user experience on their Web sites, as well as to improve their Web store offerings. This increased use of business-to-consumer mashups is a trend that will likely continue into the future. Though less utilized at the moment than business-to-consumer and consumer-to-consumer mashups, business-to-business mashups will increasingly be used to allow businesses to compare products and have a more interactive experience, much like businesses provide the service to their customers. Enterprise use of mashups will increase significantly as some of the enterprise mashups mature and companies get a better idea of how they can leverage the technology to meet their needs.

**Business Applications**

Both businesses and government agencies have been utilizing mashups as a way to integrate diverse applications into a single collaborative, user-friendly application. Mashups can be created for nearly anything by combining two or more existing applications, so businesses have a wide variety of possibilities in utilizing mashups (Brodkin, 2007). A few of the examples below demonstrate innovative ways that companies have been using mashups.

Government agencies are increasingly using mashups as they learn to harness the mass collaboration that Web 2.0 offers. For example, the Environmental Protection Agency (EPA) created a mashup known as the Environmental Land-Use Control Web Ring. The EPA uses the mashup to track contaminated sites by combining various state and federal environmental databases that track contaminated sites. Also, the military is using a business intelligence mashup to track defective Humvee batteries that might cause the vehicle to explode. Once a defective battery is found, all of the contracts and orders are consolidated so that all of the Humvees from the same batch can be fixed quickly (Havenstein, 2007). The Air Force also used mashups to streamline their decision-making process for construction on their bases, allowing it to view the posts centrally with live video footage and access many years of construction information. This led to US$5 million a year in savings in decision-making costs for a one-time cost of less than US$1 million.
Social Software and Web 2.0 Technology Tutorial

Businesses have been using mashups to combine internal data with external applications in a number of innovative ways. The most common business use of mashups is to leverage mapping technologies (Dearstyne, 2007). One excellent example is a real estate company that combined its data application with VoIP to make what is known as a VoIP-data mashup (Reed, 2007). This mashup recognized the house that people were calling to inquire about and gave the callers the option to take a virtual tour of the house on a cell phone and to examine the particulars (price, square footage) of the house as well. The real estate agent also received an e-mail notification of the interested buyer and could call and arrange a live tour (Reed).

Although most mashups now combine external and internal applications, there is also the possibility of integrating legacy applications with new applications in a mashup. This allows all of the information from the legacy system to be combined with the new system into one application. Although there are numerous problems with writing translation code to combine the two applications, businesses have been doing this, particularly when the legacy systems contain a large amount of important data.

For a business, mashups provide a way to quickly aggregate multiple sources of content and present it in an easily understandable way (Trombly, 2007). This can lead to quicker time to market and reduced development costs as public applications are leveraged instead of needing to be developed. However, this approach can reduce the thoroughness and longevity of the application. Therefore, businesses need to examine what their needs are with regard to the application before attempting to do a mashup.

In addition to creating mashups for their own tactical use, companies such as Google have opened up their APIs for various proprietary applications in the hopes of getting new ideas. Opening up its API allows Google to leverage its technology in a way that it never could have done on its own. All of the programmers who tinker with Google's technology create new innovations in a shorter amount of time. They are leveraging all of the minds on the Web to improve an application and to create innovations that drive future change within the company. Yet, many companies are afraid to release their APIs due to the fact that they cannot control the direction of the applications once they do. However, releasing the API to their applications may allow certain companies to leverage the innovation on the Web into new and innovative ideas.

Educational Applications

With applications like Microsoft Popfly and Yahoo! Pipes available for free, there are numerous educational opportunities to learn about mashups. Both Microsoft and Yahoo! offer this free service along with tutorials and frequently asked questions (FAQs) about creating your own diverse types of mashups. In addition, the user community offers feedback and support as well as showcasing their diverse mashups. This creates a user-friendly, collaborative environment for students to learn about mashups.

There are many diverse data mashups that students can use or create to assist in their projects and other schoolwork. A few intriguing ones will be described briefly. A particularly useful ability of mashups for students is the ability to mash up all of their favorite RSS feeds into one RSS feed. This provides a valuable tool for keeping up with current events.

Additionally, many data mashups provide an integrated way to do research. For example, a mashup combining MapQuest with an image search would enable students to look up their school or other schools on the map and also see
any pictures that came up. They could likewise look up other places in the world and see the corresponding images alongside a map of where the location is. This represents an interactive way of learning that places heavy emphasis on visuals. This can be a more effective way of learning.

An interesting anthropological project for students would be to create what is known as an “autobiogeography.” An autobiogeography combines one’s autobiography with mapping software to show an interactive map of your life. You can pick discrete events, like places you have traveled to, or any other combination of events. Students could also create an autobiographical resume, where it shows everywhere they worked in the past.

**How to Create Mashups**

1. To begin, create a Windows Live ID account (http://get.live.com).
3. Download Microsoft Silverlight.
4. Click “Create Stuff,” then select “Mashup” from the drop-down menu.
5. Click “Images and Video,” then select “Live Image Search” from the drop-down menu and drag it onto the screen.
6. Click “Display,” then select “Carousel” and drag it onto the screen.
7. Click the wrench on the “Live Search” box and type “Vincent Van Gogh” into the query box.
8. Click on the wrench again to zoom back out.
9. Click on the blue circle on “Live Image Search” and connect it to “Carousel.”
10. Click “Preview” to see what the mashup looks like.
11. Click “Save” to save the mashup.

**Conclusion and Future Trends**

A key trend in mashups is in the increasing use of mapping technologies. Ever since Google released the API to Google Maps, huge numbers of mashups have been created. Due to the popularity of the mapping mashup and the ease of creating one now that Google’s API is open, more and more people are requesting that better public data be released, which has largely been the domain of geographical information systems (GISs) in the past. The demand for GIS has gone up significantly as more and more businesses and consumers have demanded more accurate data. In the future, the demand for readily available geographical information will drive a spike in GIS data, provide more useful and accurate mashups, and provide consumers with much more accurate information to help their decision making. Businesses will begin using this data to get more accurate geographical views of their share of the market and potential customers.

Some companies are opening up their APIs like Google did with Google Maps. Immediately after Google opened up its API, AOL’s MapQuest, Yahoo! Maps, and Microsoft Virtual Earth all quickly opened theirs as well. Since Google was the first one to open its API, it has much more visibility on the Web through these mashups than its competitors. It is likely that other Web applications will open up their APIs so that people can create mashups for them. Just as with the mapping technology, many innovative mashups will spawn from the opening up of APIs. Yet, this is often proprietary information for the companies, and they lose control over how their products are implemented once they release the APIs (Gerber, 2006). Therefore, the potential of their products being used in ways they did not imagine may have a chilling effect on the release of APIs. Yet, it is likely that the trend of opening the API will continue, especially as competitors begin to do it. This presents an interesting conflict between the desire for innovation and the free flow of
information, and the desire of companies to own their intellectual property (Johnson & Wilcox, 2007). However, it seems like many companies are realizing that by giving up some of their intellectual property, they can leverage the innovation of millions of users and create even more useful intellectual property as a result (Tapscott & Williams, 2006).

Additionally, mashups will likely be used increasingly in wireless applications. As the emphasis shifts from wired technology to wireless technology, mashups will increasingly be used in all kinds of consumer products, such as cell phones and GPS (Global Positioning System) devices (“The World on Your Desktop,” 2007). Users often have innovative ideas about what applications would be most useful for their devices, and companies that can leverage their users’ innovation to create useful applications and mashups will likely do well. The problem now is that most of the technology is locked, so it cannot be modified at all. In the future, applications might open up their technology for tinkering and create new mashups for many types of wireless devices.

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Hype cycle for e-commerce (2007). Gartner.


ADDITIONAL RESOURCES


Chicago Crime Block: http://chicago.everyblock.com/crime

Google Mashups: http://editor.googlemashups.com

Housing Maps: http://www.housingmaps.com


Microsoft Popfly: http://www.popfly.com

Programmable Web: http://www.programmableweb.com/mashups

Yahoo! Pipes: http://pipes.yahoo.com
WEB CONFERENCING AND ELECTRONIC MEETINGS

Kostadin Bisharov, Meghan Blake, Melanie Riera

History of Web Conferencing

Web conferencing can trace its roots back before the Internet and World Wide Web to a computer-based education system called PLATO. Wooley (1994, ¶ 1) states that “the PLATO system pioneered online forums and message boards, emails, chat rooms, instant messaging, remote screen sharing, and multiplayer games, leading to the emergence of what was perhaps the world’s first online community.”

In the 1960s, Professor Don Bitzer created the PLATO system at the University of Illinois. PLATO gained more popularity throughout the 1970s as new features were added. PLATO Notes, released in 1973, is the equivalent of what we know today as online message boards. That same year, the PLATO system added Talkomatic, which “transmitted characters instantly as they were typed instead of waiting for a complete line of text” (Wooley, 1994, ¶ 25). Talkomatic allowed for multiple users to chat as a group and was the equivalent of today’s chat rooms. This was a big success and led to the development of TERM-talk, a program that allowed two people to converse and one person to page another person while not having to stop whatever he or she was doing. This can be seen as today’s instant messaging. In addition, there was a feature that allowed for a user to switch to monitor mode, whereby one person could view another’s screen (the equivalent of today’s remote screen sharing). PLATO Personal Notes came soon after, which is the same as e-mail.

As a result of overcrowding, trying to sort through Notes became more difficult because of the amount of information and the limited number of Notes files. This led to the development of Group Notes, which was an extension of the original Notes. Group Notes users could now create their own private Notes files with no set limit. In addition, users were able to organize notes by category.

PLATO’s community started off small with academics, but later grew to include business, government, and military, in which PLATO was marketed as a training tool (Wooley, 1994). With the increased number of users, PLATO experienced many of the well-known problems that plague our online communities today, for example, a person pretending to be a woman when the user is actually a man, or posting inappropriate comments in Note files. No one had ever experienced this before and there was some uncertainty until social norms could be established (Wooley).

The PLATO system has had a huge impact on the development of software and programs that we have today. Some of the descendants of PLATO include Lotus Notes, DEC Notes, NetNotes, and WebNotes. After the World Wide Web became a viable option for collaboration, companies attempted to use conferencing software that was originally designed to run on internal company software by modifying it for the Web. However, the results were not perfect, and it was not until the mid-90s that Web conferencing software was available (Roberts, 2004). The software developed (based on a centralized structure) included Backtalk, Web Crossing, Podium, TALKaway, and PlaceWare.

Another form of conferencing software called groupware, which was not based on a centralized structure, allowed for additional options such as document sharing and scheduling (Roberts, 2004). Some of groupware’s products included Lotus Domino, Oracle InterOffice, WebShare, and Livelink. Of special note is GroupSystems, formerly known as Ventana, which was influential in the development of group software and recognized by Gartner Inc. “as the world leader in Group Intelligence and Innovation” (GroupSystems, 2008). In 1989, it created the group decision
support system (GDSS) category. GroupSystems released GSI WorkGroup and Meeting Room in 1992. These software programs “are still the most full featured team collaboration products for face-to-face meetings on the market today” (GroupSystems).

Interestingly, as the price of personal computers went down, more and more file sharing occurred on a peer-to-peer basis and this culminated in the Napster phenomenon. Peer-to-peer “began to be seen as the way to host Web conferencing, rather than through a single server” (Roberts, 2004, ¶ 23). Some of the groups that offered the peer-to-peer concept to Web conferencing included Groove, WiredRed, and NextPage.

Web conferencing has been evolving for decades and can be defined today as a collaborative way to interact over a network in real time and can take place in peer-to-peer meetings or one-to-many presentations (Mann, 2007). At a minimum, a Web conferencing product should offer presentation delivery, desktop or application sharing, text chat, shared whiteboard, and basic security. However, additional features are available and can greatly enhance the Web conferencing experience. These include integrated public switched telephone network audio, integrated VoIP, audio, videoconferencing, file sharing, application and document sharing, remote control, archiving, feedback, polling, e-learning facilities, and advanced security (Mann).

**Current Trends**

Currently, some of the developing trends in Web conferencing include the increased use of VoIP and video, the incorporation of features to support e-learning, the movement toward document-centric conferencing, and changes in deployment models (Smith, 2008).

Most companies use telephone bridges for the audio part of the Web conference. However, there is an increasing demand for VoIP because it is controlled by the Web conferencing product. Using VoIP allows for on-screen control of the speaker as well as eliminating the need to pass out bridge numbers and PIN codes (Mann, 2007). In terms of the visual component of Web conferencing, with increasing bandwidth capabilities it is becoming more feasible to use webcams to enhance the experience of participants.

There are three deployment options for Web conferencing applications: the software-as-a-service (SaaS) model, on-premise model, and blended model. The SaaS model means the user accesses the software through the Internet from the vendor’s system. The on-premise model means that the user has bought the license to use the software and installs it on his or her system. The blended model is a combination of the SaaS and on-premise model (Mann, 2007). The majority of companies are using the SaaS deployment model; however, it is likely that more companies will turn to the on-premise deployment model because of cost and security concerns. Microsoft will be coming up with a new on-premise version of Live Meeting, which is expected to boost the transition to on-premise models (Mann).

Another important development in Web conferencing is the transformation to a standard (used by all employees) rather than a specific point solution for select users. Mann (2007) believes that by “2010, web conferencing will be available to 75% of corporate users as a standard facility, alongside e-mail, presence, calendaring, IM and other collaborative facilities” (p. 5).

Other factors supporting the trend toward Web conferencing as a standard are cost savings and environmental concerns. Companies can measure hard ROI (return on investment) by reducing the amount of travel employees take. Meetings can take place anywhere and include participants from all over the world. In addition, with the current concerns about the environment, some companies are citing “green” reasons for the increased use of Web conferencing in reducing carbon emissions due to travel (Smith, 2008).
Business Applications

Numerous business applications exist in which electronic meetings are being used as a part of Web conferencing. Through electronic meetings, corporations are able to increase collaboration at all levels, which is becoming crucial to attaining high performance. Mann (2007) states that this technology can increase shared information among colleagues and business partners, provide the ability to work on more projects simultaneously, and increase overall impact. Polls, testing, and chat features can also offer advantages beyond physical meetings (Mann). In the near future, electronic meetings will become a customary tool for all employees (Smith, 2008).

A Chicago-based check-cashing company, Barr Management, uses Web conferencing to train affiliates, customers, and vendors located throughout the country. Specifically, Web conferencing enables remote vendors, such as Western Union, to train Barr Management employees on things such as new wire procedures. Barr Management believes that Web conferencing provides additional functionality that was not included in instant messaging, a tool it were using prior to implementation. Web conferencing allows Barr Management to communicate in real time with other companies that are not on its LAN (local area network) and provides a remote-control capability to increase efficiency in the software training process (“Barr Management Deploys WiredRed’s e/pop Web Conferencing,” 2004).

Pulse Inc. is a company that supplies healthcare providers with a complete solution to automate the record-keeping process. Headquartered in Wichita, Kansas, Pulse Inc. utilizes Web conferencing to enable employees to communicate with each other in real time between four offices. Physicians nationwide use its Patient Relationship Management (PRM) System and Electronic Health Records (EHR) software to improve patient care, while at the same time improving their bottom line. Pulse uses Web conferencing to train customers and help them troubleshoot the PRM and EHR software issues much more quickly than before having Web conferencing ability. Through Web conferencing, Pulse is able to better train customers using the application and desktop-sharing feature, and troubleshoot PRM and EHR software issues as they arise in a swift and efficient manner (“E/pop Web & Video Conferencing Simplifies Training and Company Communications at Pulse, Inc.,” 2007).

Tindall Corporation, headquartered in Spartanburg, South Carolina, designs, manufactures, and erects concrete systems for various types of construction projects, ranging from parking decks at universities to prison cells throughout the United States. The company has held numerous electronic meetings where employees are able to share Outlook calendar functions and PowerPoint presentations dynamically. The engineering team is able to share drawings with others who may not even have the software installed on their own desktops. The company expects to save US$200,000 in travel costs per year since installing Web conferencing. As a result, Tindall Corporation has received a very quick return on their investment (“Tindall Invests in e/pop Web Conferencing to Cut Business Travel Expenses in Half,” 2005).

Educational Applications

Web conferencing has many educational applications. However, it is mainly used in online distance education, which has evolved into an extremely convenient way for working people to continue their education. Some people may be hesitant to engage in this style of education because they fear it may not be interactive enough. However, advancements made in video or Web conferencing applications have made online distance education much more engaging. With a Web conferencing format, students can ask questions in real time, build relationships, meet with professors, and be mentored online directly, much as they would
through face-to-face meetings on campus in order to gain a better understanding of the material.

One very good example of Web conferencing being used for educational purposes is the incorporation of Macromedia Breeze in the Academy of Art University. It has integrated different multimedia applications to enhance the interaction among the students, making the e-learning more similar to real life at schools. However, there was an issue to be resolved: “how to duplicate the rite of passage all graduate school students must go through when presenting thesis proposals and completing projects in front of their professors” (Shaeffer, 2005). The university’s reputation depended on finding a solution to this problem.

Within only 6 months of being used, Web conferencing was proving effective. Scheduled Web-based meetings helped students experience the process and pressure of presenting in front of a live faculty audience. The online students present their work via a Breeze videoconference before a panel of professors seated in a specially equipped conference room. Video images of the students and their work appeared on a big screen for discussion, and a final review decision greatly enhanced the experience (Shaeffer, 2005).

After the success of online reviews, the academy is finding new ways to use Web conferencing. For example, a blog-like journal allows graduate students to conduct weekly videoconferences and chat sessions with advisors. Students and their mentors also use the Breeze whiteboard feature to regularly critique work in progress. Another use is an online multimedia presentation designed for the orientation of new faculty hires. Video-enabled online marketing events are utilized for recruiting new students. Recruiters are set up with microphones and cameras to display art samples and answer prospective student questions (Shaeffer, 2005).

Web conferencing provides a solution for students who cannot leave their homes with an educational experience comparable to what they might have in a classroom. Baltimore County’s Home and Hospital Center in Bare Hills has eight full-time teachers who interact with students using Web conferencing to teach classes such as history, algebra, geometry, and physics. It provides education for Baltimore County students who are unable to attend school for at least 4 weeks due to physical or emotional crisis, medical condition, expulsion, or administrative transfer from their home schools (Dawson, 2007).

Web conferencing is also used in Kent College Preparatory School. The college adopted WiredRed’s e/pop Web conferencing software. It enhanced relations in both education and business to easily communicate complex topics and eliminate unnecessary travel. Web conferencing allows the boarding students to communicate securely with their parents and friends, as well as improve the learning experience and collaboration for the students by enabling off-site teachers and speakers to lead a lesson without being physically in the classroom. It allows arranging virtual classrooms with other schools and colleges both in the United Kingdom and the rest of the world. This can be very beneficial: “Imagine having a French lesson with students in a Paris classroom helping the students in Kent” (“E/pop® Web & Video Conferencing Brings Kent College Pembury’s Staff, Students and Parents Together,” 2006).

Conclusion and Future Trends

The market for Web conferencing is still crowded by numerous vendors, resulting in increased mergers and acquisitions to capture market share. However, there will only be a handful of leaders and as of now they include Microsoft, IBM, Cisco, and Adobe. We will see differentiation strategies from these vendors, such as pricing or ease of use. Nevertheless, companies will first look to the vendor that supports their e-mail infrastructures—demonstrating favorability for collaboration platforms—for enhancing Web conferencing capabilities (Mann, 2007). In fact, Mann states that “by 2010, 60% of companies us-
ing web conferencing will acquire this capability as part of a larger suite of applications, rather than from a specialist vendor” (p. 2).

An important ongoing trend to acknowledge is the mixture of unified communications and collaboration technology and its impact on Web conferencing. For example, many Web conferencing programs and audio products have been merged into one offering. In addition, “instant messaging clients can launch conferences, and presence engines are ‘surfacing’ availability information within web conferencing products” (Smith, 2008, p. 3). Storage and discussion features are being added to Web conferencing products, which are muddying the distinction between “team workspaces and group decision tools” (Smith, p. 3).

Gartner estimates that in 2007, the Web conferencing market was worth US$1.13 billion and will increase to US$1.37 billion by 2008. Revenues are forecasted to grow at a 19.5% compound annual rate (Smith, 2008). There is no doubt that Web conferencing will become an integral part of a company’s collaborative environment. According to Gartner’s hype cycle, it is only about 2 years from mainstream adoption. With globalization, Web conferencing has and will open the door for many to interact with others throughout the world who may not have been able to before in both a business and educational sense. As Tapscott and Williams (2006) state, Web conferencing is another way in which the collaborative spirit will increasingly grow.

REFERENCES


**ADDITIONAL RESOURCES**

http://thinkofit.com/webconf/index.htm

http://www.web-conferencing-zone.com