Pushing Information – Useful Tool or More Spam?

Sam Berner

11 August 2001

1. WHAT IS PUSH?

"Push" has been around for centuries. Before the first true mail service appeared, the 'town crier' would walk the streets, delivering news and making commercial announcements. In the early period of the legal profession, decisions were not widely reported, and laws were published at government offices, but there was no true delivery service, beyond legal publishers and archivists. The lawyers in these days were not faced with information overload - they had to use their minds and think about the logic of the case to resolve the issues. Enter the first true wide area electronic communication system in 1833 (Samuel Morse designs a system to send electric signals over wires). This technology, however, was not effective for communicating legal information to the growing numbers of lawyers. In 1876 Alexander G. Bell invented the telephone, which could carry voice (sound), but at that time, magnetic and digital data had not even been conceived. No one was "pushing" legal information over the phone. In 1887 Heinrich Hertz transmits radio waves over a short distance and in 1919 KDKA in Pittsburgh, Pennsylvania is licensed as the first broadcast radio station, which begins "pushing" out wireless sound to the public. In 1926, NBC is formed and begins pushing its 'programming' out to 20 affiliates in the Northeast. Then in the late 1930's and early 1940's, television came on the scene (originally having been conceived in 1927). The true age of multimedia (obviously meaning to combine sound and picture) is born.

The arc of development of push technology has been an interesting one to chart. In 1997, it was *the* hot topic. In late 1998, it was pretty much trashed as tired, not useful, "a solution in search of a problem." In 1999, push, sometimes under an assumed name, found a place in companies and intranets, having metamorphosed into something people could actually use. The proliferation of Web sites and the profusion of information led some to think that people would find having Web material gathered and sent to them, instead of going out themselves to search for it, would be A Good Thing. And so push was born, a technology where users can choose content that they wish to receive (DeCandido, 1999).

Push technology is a good example of a worthwhile technology caught up in public derision because of the fears, myths and preferences of pockets of Internet users. Push technology, like any other technology, is 'neutral', not inherently bad or good. How it is applied is another issue.

Traditionally, the Internet has worked as a "pull" system. Users go out on the Web, searching for information and then individually, as desired, "pull" the information down into their computer. This request/reply or client-server model is today's standard method for getting information from the Web. However, this can be tedious and inefficient, especially when one needs updates to information on a regular basis or needs to have some information (software, reports, news, etc.) sent to multiple locations. Push technology allows for the regular canvassing of selected information sources for new information, then having that information sent to users seamlessly, as they work on other applications or perhaps even as they sleep at night (Hether, 1998).

Push Technology incorporates the notion that useful information can be delivered automatically ("pushed") to the user so that they don't have to pro-actively search for ("pull") useful information (Teal, 1997). "Push" technology delivers content to a user's desktop on a periodic basis, turning a

computer screen into a kind of continual news source that displays such information as stock quotes, sports scores, and headline news, according to the user's preferences (Teshima, 1998). "Push" technology sounds like sophisticated e-mail when boiled down (Calvin, 1997).

There are different types of "push" technology available. E-mail lists are just broadcast centers where a central list of subscribers' addresses is kept. As mail comes in, it is re-distributed to the list. E-mail lists are the premier implementation of push technology in the legal field. Mail lists come in two types and a variety of formats. The two types are *discussion* and *announcement*. **Discussion** lists permit subscribers to post messages to the list. **Announcement** lists are one-way - users receive an e-mail when the publisher (list owner) decides to send it. More on these very important lists later. The formats are as follows:

- **Closed** lists only permit persons who qualify to be on the list, and usually require the user to fill out a form stating the basis for the qualification.
- **Moderated** lists are lists that are reviewed by a person before they are forwarded to the list (like 7 second delay).
- **Self-Moderated** lists are lists that have specific topic or program themes on certain days, and the members try their best to stick to the topics (Oliver, 1998).

URL minders are IA's that keep track of when changes are made to pages the users have found on the Internet that are of interest to them, and e-mail them when they change. The original URL minder [**http://minder.netmind.com/**] can be configured so that it would e-mail the user when *any* change was made to the page the user were interested in. Many of the better websites now have e-mail notification built in, and the user does not need this tool. There were a few products being developed that can judge when a page has changed in a way that is material. For example the folks at U.C. Irvine have developed the Do-I-Care-Agent (DICA), which was supposed to weight the changes and only notify the user of important changes (Starr et al., 1996). It was an academic exercise that fizzled out.

Other types of "push" technology are **application distributor** which allows software to be distributed to end-users, and is meant for information systems people; **content aggregators**, which gather information and push it out - PointCast is the prime example; **platform providers** who offer ways of creating your own content aggregator, a PointCast-like product on your own server; and **real-time data transfer**, which transmits data, like stock quotes, to any number of people at once (Forrester, 1998).

2. HOW IT WORKS?

"Push" technology has been trumpeted as the next revolution in the distribution of information. However, since most Internet users are not connected to the Internet continuously, "push" services usually rely upon the subscriber's computer to connect to the Internet and request the information. Today, anyone with a Web site can use "push" technology to distribute information. For example, if the user developed a weekly Web-based newsletter on important developments in a particular area of your practice, they could easily turn it into a "channel" for viewing in Netscape Communicator, Microsoft Internet Explorer, or on the PointCast service. A channel is just a Web page or pages with some extra coding and, in some instances, associated channel definition pages that together allow the chosen medium to recognize the pages and set up the distribution schedules (House, 1998). There is an even simpler way to push information out to interested users in the Internet community -- old-fashioned e-mail. Office newsletters, updates on legal developments and firm announcements all can be distributed by e-mail.

With many of the proprietary "push" technologies, the user must download and run a program on your computer. In the PointCast [**http://www.infogate.com/index.php?page=download:index_pointcast2**] situation, it runs apart

from your web browser; most of the others run as part of web browser, or as a ticker. After the program is run, the user configure it by entering personal information such as your area code, zip code, stocks, preferred news (business, technology, social etc.) which are likened to the channels on your radio or TV. Most users will need expert help in tuning Push tools, and the most logical place to turn is to a librarian. Librarians will turn to reliable, authoritative services that provide access to the largest possible variety and number of sources (Teal, 1997).

Push Technology is the idea that, instead of advertising generally what the user have for sale, and then waiting for someone to ask for it, the user build up a profile of your clients and, when the user have developed something which the user think they might be interested in buying, the user contact them directly (Hammersley, 2000). Push technology is merely the Web-based electronic version of direct marketing.

The one we are directly concerned with is the content aggregator type, epitomized by PointCast, which also represents our object lesson in the rise and fall of a technology. A content aggregator gathers information together and then pushes it out to its subscribers. PointCast (now EntryPoint) was essentially an applet that could be programmed to receive news, sports scores, and other information garnered from broadcast servers.

Push technology can be used for the benefit of the community at large, by providing online legal advice and services. The basic technology for these bulletins exists today -- at least for simple e-mail or intranet transmissions. Increased bandwidth will allow these bulletins to include audio/video. They will be more effective if they provide the opportunity for clients to communicate back with questions they have, or maybe even with related problems they are facing. It will also be more helpful if the bulletins are stored and indexed so that she can refer back to them as the need arises. The information that the bulletins are able to provide will be much more impressive if they are informed by sophisticated information analysis that may be able to discover relevant patterns. The material to be distributed will have to be produced. The opportunity that "push" presents to reach the client community with relevant information will tend to bring together advocacy groups, tenant rights groups and impact litigation groups. All these groups are dealing with the same set of problems and possibilities, and each has something to add (Genz, 1999).

3. PUSHING THE AUSTRALIAN LEGAL PROFESSION

In September 1998, Butterworths launched *P I Online*, the latest addition to its *Butterworths Direct* web-based law library. Originally designed to deliver, via the web, a daily summary of the latest development in areas of law each subscriber had identified as being of interest, this service is now being revamped to use "push" technology in the form of daily email alerts. Thus, instead of having to log on to the web to read the summaries, they will be delivered directly to the subscriber's desktop via email (Christian, 1998).

Push technology is used to *stay current*. It is not used for substantive research on the Internet.

In a typical day the user will receive regular snail mail, telephone calls, e-mail, faxes, overnight express packages, person-to-person contact, and maybe even a cell phone call and pager call. Some will be unsolicited ads (in e-mail terms, spam), some will be generally relevant information, but not client related, and some will be immediately important client matters (Oliver, 1998).

Migration Institute Australia, the body responsible for professional development among migration lawyers and agents, also pushes its bulletin to members through email. The quality of material is pathetic, mostly links to publicly available information on the websites of Dept. of Immigration, the Coalition and the Opposition. MIA makes sure that none of its pushed materials contains news

published in dailies, no articles in legal journals, and no information from foreign legal publications.

ScalePlus [http://scaleplus.law.gov.au/], called also "the window on the law", is maintained by the Attorney General's office. It has a feature, called "Notify me when…" which allows the user to choose databases and keywords and then send an email alert when legal data pertaining to that matter gets published on the website. It is far more informative than the bulletin pushed by Migration Institute Australia.

Many other legal research websites provide updates about their websites. Jurist [http://jurist.law.mq.edu.au/], LegalMart [http://www.legalmart.com.au/] and Butterworths Australia are examples of sites that actively push their information through email.

4. THE PROS

Often breaking legal developments are brought to us by the news media first. These developments can often directly and immediately impact our clients and pending cases. Today, no one expects the lawyers to be familiar with the contents of hundreds of publications, much less within days or hours of their publication. The velocity of business is much greater than ever before. It simply isn't possible to have enough manual researchers to meet everyone's needs. These forces make the emergence of Push technology necessary. The availability of fast computers, combined with a network connecting virtually all of us, make the emergence of Push technology possible Push products allow us, for the first time in history, to sift through all of this material for the name of our client's business or a key topic or issue. The flavor of Push that will make our lives better combines convenient delivery with intelligent filtering. Another buzzword for this combination is Intelligent Agents (Teal, 1997).

One of the pros is practically up to the minute news, which every now and then, can impress a client or lead one to think about a matter in a different way (Oliver, 1998). Business people need to spend their time doing better analysis of information, and making sound decisions and judgments, not sorting through screens of anyone and everyone's opinions or ideas on some topic. *CIO Magazine* surveyed corporate executives and found that 94% felt too much time surfing the Internet for information would spread out into work hours and hurt overall productivity. The American Management Association found that 81% of financial institutions in its study monitored their employees' use of the Internet to see that corporate regulations or guidelines on use of the Internet - or long-distance phone services, and so on - were within reasonable limits. For many companies, push is a very important, timesaving technology, allowing staff quickly to distribute new software upgrades or company policy changes, handle electronic forms distribution, and keep up-to-date on news or competitive information (Hether, 1998). And yet in the popular and sometimes the professional press, push has been described as elitist, as a danger to future tele-democracies and as the end of Internet access for all.

5. THE CONS

Searching technology is still usually based on finding particular, specific words, but we all know that even proper names can have forms that differ from the official versions. General concepts may be impossible to find. Another problem is that the same text may appear many times in publication. The most common example of this is wire stories, and it isn't very rewarding to receive dozens of copies of the same article because it appeared in dozens of newspapers. Even if

duplications are somehow detected and eliminated, the volume of material may overwhelm the user (Teal, 1997).

Security is a major concern for distributed computing, particularly as "active" technology ("push" technology, agents and the like) become the norm. Network administrators will need a high level of control and audit authority over access to both the firm or department's network and external network devices (Steele & Scharbach, 2000).

It can prove troublesome to users who connect to the Internet using analog phone lines and modems. After installation of push components, many users find that their computers have become possessed by slowness demons. The push technology makes calls to users' Internet providers automatically (Teshima, 1998).

The cons are many:

(i)   another piece of software to distribute out over your network, configure, support and maintain with updates;

(ii)   it is distracting to say the least, because the price the user pay is the advertisements that scroll by with the content;

(iii)   it works better with a full time connection to the internet - more expense;

(iv)   some of the programs, particularly PointCast, can cause problems with existing software; and

(v)   a loss of some privacy if one fully configures the services with personal information (Oliver, 1998).

Push, however, can be distracting, as notices of information updates run across your computer screen as the user try to do your work. Some of the information one get won't be what one need; some filtering by the user is still needed. Your Internet connection, since it must remain active, is burdened by the requirements of push technology and this means that more resources (money or network connections) have to be allocated. Lastly, in order to use push technology effectively, one have to have a fast computer system (Hether, 1998).

As long as products use proprietary methods they will not only not work in tandem, but may not work well with existing programs and hardware configurations. Security and bandwidth concerns need to be dealt with as well. Without more information and standards, most conservative buyers - which include most large organisations today - aren't very interested in buying any of these solutions.

Also, push has not so far solved the information overload problem. On the contrary, the amount of information pushed is very often beyond the scope of a single person to manage. As an example, I started as a member of two KM newsgroups, one KM electronic newsletter and three alerts from KM publications. That was about a year ago. Last week I checked the status quo of the KM mailbox: there were 452 unread messages. The Techno/Legal mailbox (where I have IT newsletters related to law practice) sports 148 unread messages. And the few white papers' sites that have electronic alerts have managed to push more than a 1000 documents over the past six months, just for the keyword "knowledge management". In my opinion, "pushing" is not the solution – organising the "pushed" material in a categorised and easy to access way definitely is.

6. THE PRESENT AND THE FUTURE

Information is not something we have a shortage of; what we need is the brains to use it, the discernment to appropriate the useful, and the time to discard the irrelevant. Unless seriously sophisticated filtering techniques are used to locate and push information toward the user in these

new browsers I suspect people will spend a lot of time wading through junk in the quest for the nuggets one need. Eventually they will discard the lot and go back to traditional methods (Calvin, 1997).

There are two environments for push technology that are flourishing right now. One takes place on intranets, and the other is an old familiar friend, email. Email is the original online "push" - you don't have to go to it, it comes to you. Email lists, commonly called "list serves" or online discussion lists, are proliferating, thanks to list hosting services like [eGroups] (purchased by Yahoo!) and [Topica].

"Traditional" push technology like BackWeb and PointCast is also being used on intranets, those interior weblings that both corporations and libraries are building to keep their staff in touch and informed. Using push, a library can send benefits information to all its employees, target software updates to key departments, or reach administrators at all of its branches at once. Intranets can utilize plain old email, or they can use the kinds of technologies we just mentioned (DeCandido, 1999).

Clearly, these products will evolve, both in the sophistication of the searches they do, with thesaurus-based searches and relevancy ranking, and in the delivery methods, with regard to ease of use issues such as format and timeliness (Teal, 1997). When Internet connections become faster, the problem associated with push technology will disappear. Until then, users should move push technology out of their systems. Mailing lists remain a good alternative (Teshima, 1998).

Today push technology generally remains a somewhat distinct product. In the future, push features will be added to all types of integrated network products so that it will become indistinct as a technology. Both Netscape Netcaster 4.0 and Microsoft Internet Explorer 4.0 already incorporated versions of push technology into the browsers themselves. In fact, one of the major reasons that the browser war exists is that the two programs support competing and incompatible channel formats. Microsoft's version uses the Common Data Format or CDF standard for sending Web information over push channels, which is supported by PointCast and the various PointCast-compatible channels on the Web. Netscape's product doesn't offer a standard format for simple channels: users can take Java or JavaScript to determine how their individual Web pages will publish itself over push.

Knowledge management software, such as the various products from Docuwork also incorporates types of push features. Integrated software products are the norm in the computer industry - from Office 97 to 'Internet in a box' types of solutions. Push technology is one tool or feature that is too basic and too important to be ignored as vendors compete for market share in the Internet marketplace (Hether, 1998).

We are in the end of the 1ˢᵗ generation phase of electronic push publication. Second generation solutions are just hitting the street. They will be marked by *configurability* (letting the user refine what one get and what one don't), and better full resource linking, indexing, and highlighting of relevant portions that are sent to them.

Third Generation electronic push will be even better. For example, electronic delivery might include a link generated from a permanent IA the user set up that is always working, searching for news stories, trademarks, issue lists or other items of interest. They will traverse proprietary and non-proprietary systems. When relevant data is found, the IA will deliver the links organized in a relevancy list, with customized notification and automatic organization. Legal publishers will catch on (or if they do not, entrepreneurs will beat them badly), and begin fee for service delivery. Lexis Nexis and Westlaw have already started it in the USA; Australia needs to move out of dark

ages faster. Eventually users will be receiving information pushed to them that precisely encompasses just what they need to know, prioritized and organized for easy in-depth primary research.

Instead of push, perhaps we will see a better system of indexing or categorising the different types of Web pages, such as being able to limit one's searching to the types of providers on the Web. As the Web continues to grow and users mature, it will be essential that the Web itself matures or it will never outgrow its image as a collection of brochures or as a huge bulletin board of posted information.

7. REFERENCES

(1) Calvin, A. (1997). <u>Journeys on the Internet</u>. **Law Society Journal** (NSW, Australia), 35(Teshima, 1998):42

(2) Christian, C. (1998) Cookies and "Push" technology. Legal Technology Insider, Issue 68. [Online] Available WWW: http://www.cloudnine.co.uk/archive/ltinet68.html#story5

(3) DeCandido G. (1999) Push Technology: Pushed to the Brink. [Online] Available WWW: http://www.pla.org/technotes/push.html

(4) Forrester, L. (1998). <u>Push Technology.</u> In **Legal Assistant Today**. May/June:36-37

(5) Genz, M. (1999).Technology and Client Community Access To Legal Services: Suggestive Scenarios on CLE, Intake and Referral and Pro Se. [Online] Available WWW: http://www.equaljustice.org/visions/TechConf/12-Client.htm

(6) Hammersley, P. (2000) "Scenarios, Strategy and Competitive Advantage". In **Management of Information Technology.** [Online]. Available WWW: http://www.staff.city.ac.uk/~sj342/Chapter2.htm

(7) Hether, N. (1998). <u>Push and the Politics of the Internet</u>. In **The Electronic Library**, 16(Steele & Scharbach, 2000): 109-116

(8) House, C. (1998) List Servers, Discussion Forums and Push Technology. [Online] Available WWW: http://www.appellate-counsellor.com/memos/LEGLWK98.html

(9) Oliver, M. (1998). Effective Use of Push technology in Legal Practice. [Online] Available WWW: http://www.bowie-jensen.com/articles/pusharticle.html

(10) Starr, B et al.. (1996) Do-I-Care: A Collaborative Web Agent. In Electronic Proceedings of Conference on Human Factors in Computing Systems, Vancouver. [Online] Available WWW: http://www.acm.org/sigchi/chi96/proceedings/shortpap/Starr/sb_txt.htm

(11) Steele, E. & Scharbach, T. (2000) External Trends Shaping Legal Technology: Technology trends in the computer market. [Online] Available WWW: http://www.ssa-lawtech.com/wp/wp4-2-2.htm

(12)Teal, G. (1997) Staying Current With Push Technology. [Online] Available WWW: http://www.llrx.com/features/push.htm

(13) Teshima, D. (1998) <u>Eight Computer Choices Lawyers Will Be Making in 1998</u>. **Los Angeles Lawyer Magazine** [Online] Available WWW: http://www.lacba.org/lalawyer/tech/comp2-98.html