Applying Push technology in the handling of environmental information

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Abstract

The ever-increasing amounts of data make it more and more difficult to get the right information at the right time. The 'traditional' pull technology model is beginning to itself limited for more efficient use of WWW. Specifically requesting information from a particular source, e.g. downloading WWW page with a browser is an example of pull technology. As WWW grows in size and complexity the importance of new information delivery models such as push technology increases. Push technology was created to alleviate problems facing users of the Internet and WWW. Push technology is a data distribution technology in which selected data is automatically delivered into the user's computer at prescribed intervals or based on some event that occurs. The difference between push and pull technologies centers upon the side which is initiating the transaction. The transaction is either intiated on the user/client side (pull) or on the provider/server side (push). This paper describes IDA-PUSH project in which the objective is to implement a push application, where push technology is used to intensify the acquisition and distribution of the environmental information of the European Environment Agency (EEA). The developed system can be applied to many other information services, where efficient use of WWW repository is needed. This paper also contains a table where basic information about different push tools has been collected.

Keywords: Push technology, Push tool, WWW, Web, electronic information delivery, repository, channel

1   Introduction

The Internet and WWW (World Wide Web) serve acquisition of information and distribution of the information very widely at the moment. The use of the new WWW techniques has begun in acquisition and distribution of the environmental information, as well.

The IDA-PUSH project utilises push technology in the handling of the environmental information. The purpose of the IDA-PUSH project is to provide a push application for delivering notifications on new documents and events published on a WWW repository. The created system is tested on an environmental intranet of EIONET's (European Environment Information and Observation Network).

The project is carried out in cooperation with European Environment Agency (EEA), European Commission (Directorate-General III), Tieto Corporation, and VTT Information Technology. Tieto is responsible for the overall management of the project and provides the administrative management services. VTT Information Technology is responsible for the technical matters of the project and designs and develops the application. The IDA-PUSH project started at the beginning of the year 1998 and the application to be developed will be completed in the spring of 1999.

2   What is Push?

The 'traditional' pull technology model is beginning to itself limited for more efficient use of WWW. This model is search-oriented based. This means that the users have to connect to a site, and then read, visit a few pages, and finally get the updated content (if any). This process has to be repeated for each WWW site from which the user wants to get useful information. With an increasing number of WWW sites, combined with the quite slow transfer rate for dial-up users, the task results in a lot of wasted time and a higher telephone bill.

Push technology was created to alleviate problems facing users of the Internet, e.g. information overload and low bandwidth. The volume and dynamic nature of content on the Internet is an impediment to users and has become an ease-of-use issue. Push technologies automatically deliver the information to the desktop thereby eliminating the risk of the user not ever viewing the updated information. The goal of push technology is to deliver the information that you need right to your desktop. Content is delivered through a variety of ways, mainly through a browser either built-in to the push software client or captured by an external browser like Netscape. One possible way is content that is delivered right to your e-mail client.

Most of push technologies use the same outline. An information flow from one content provider is called a channel. User can order a channel and the information specific to that channel starts to flow to user's workstation. The content of one channel can be personalised so that the user gets only information s/he needs. When new information comes to user's workstation, the push application shows it to user in some way.

Most end users are restricted to low bandwidth Internet connections making it difficult to receive e.g. multimedia content. Assuming users are willing to wait 15 seconds for a WWW page to download. This leaves room for little more than text and small graphics. Push technology provides the means to pre-deliver much larger packages of content (with an unattended connection). This leaves plenty of room for multimedia content such as audio, large graphics, or short video clips.

Push technology has been used for a number of years in the financial world, in live news feeds and cable television. One of the more common uses today is the automatic downloading of software upgrades and fixes and the delivery of news information to workstations. Push is beneficial to the end user because it prequalifies pertinent information, thus cutting down on research time. However, it is also vital to the companies or services that use push to sell their products and services. Push is capable of matching prequalified advertising banners to match the specific demographic. This means higher advertising rates and greater profit potential.

3   Push tools

There are several push technologies in competition on the market. Each push technology has its own strength and is better suited for a particular category of users. E-mail is perhaps still the best push technology for delivering time-critical information to a specific audience. Most push tech-

nologies try to be a more serious information tool that changes the look and function of the desktop.

Both Microsoft Corp. and Netscape Communications Corp. are touting competing push standards. Microsoft is pushing the Channel Definition Format (CDF) for defining push updates and content. The actual markup within a CDF file is based on Extensible Markup Language (XML), which is relative to HTML (Hypertext Markup Language) and SGML (Standardized General Markup Language). The CDF format already has some major supporters, including BackWeb Technologies Inc. and PointCast Inc. Netscape is using the Meta-Content Format (MCF). MCF was invented by Apple Computer, and its main architect has since moved to Netscape to work its development. For example Marimba Inc. has begun cooperation with Netscape.

Push tools can be segmented in three different categories

- Server-side only. The server delivers content using some old technologies as email. Users don't have to install any new program to receive the contents. E.g. products like ChannelManager and InfoBeat.
- Client receiver software. The client program fetches the content automatically using http-protocol and shows it later to user. The push channel is easy and cheap to build up because no server software is needed. The drawback is that content providers don't have any control over fetching because they don't know the settings of the client program. E.g. products

like Netscape Netcaster, Internet Explorer 4.0 and PointCast.
• Proprietary client and server. The server sends the content to the client program that shows it to the user. Both users and content providers have control over contents. E.g. products like BackWeb and Marimba's Castanet.

In the IDA-PUSH project it is also reviewed what kind of different push tools are available on the market at the moment, how these tools differ from each other and which of these tools are best suited for the use in the project. One of the push tools is selected to be used as a basis in the application of IDA-PUSH. The push tools about which information has been obtained so far have been listed in Table 1.

4 The IDA-PUSH project

1.1 Objectives of the IDA-PUSH project

We will design and implement a push application for the EIONET. EIONET is a cooperative organizational network of institutions that assists the European Environment Agency in providing the European Community and its member states with environmental information. It also allows electronic interchange of information between these organisations. EIONET is currently an intranet connecting multiple national hosts (intranet nodes). The main interest of the IDA-PUSH project is to manage documents stored into a

workgroup program DSIS-IRC (developed by European Dynamics). This workgroup program enables interest group members to load documents and modify them on the server.

Push technology is desired for managing the changes in the documents by notifying interested users about changes in various channels. The objective is to define the user requirements and to implement the pilot push application that corresponds to the user requirements.

The objectives for the required push functionality and connections to the existing systems are as follows:
• Here push functionality means the ability of the system to inform its users of the changes in the WWW document database that might interest the user.
• The information mediated to the user by push technology can consist of actual data or links to the data.
• The system to be built will be general enough so that it can be applied to different WWW repositories with reasonable amount of work.

Content provider can be in two roles as an author and an editor. The author produces and inserts the documents to the WWW repository and the editor picks up and edits the documents so that the push service can use them. The editor can also insert ad-hoc messages.

1.2 Results of the IDA-PUSH project

The IDA-PUSH application will consist of the following main parts:
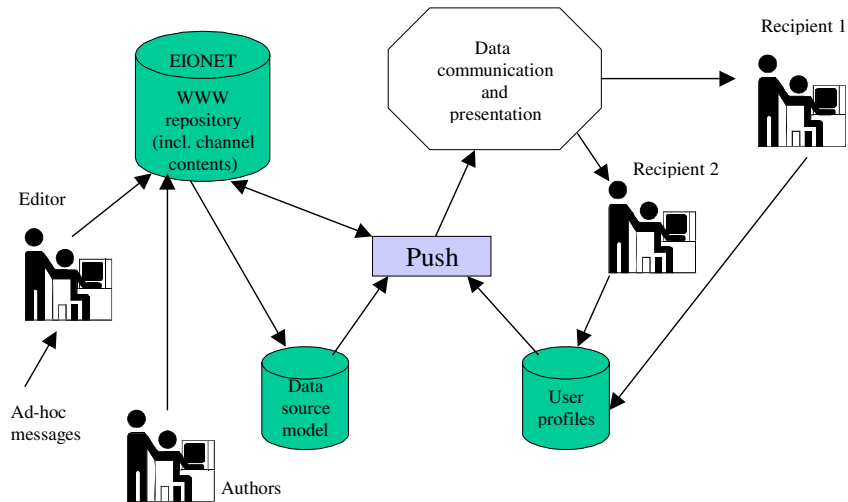
Picture 1. A system architecture of the push pilot.

1. **The actual push functionality**. This includes mediating information about changes in the database that might interest the user. This will happen either periodically or whenever some relevant changes occur in the database. The mediated information will be the actual changes in the database or links to the relevant structures.

2. **User Profiles**. For each user, this contains the user-specific information needed to decide whether information at hand will be passed to him/her. It is assumed that the push module software manages the user profiles. There will also be facilities for the user to view and change the user profile.

3. **Data source model**. This will be utilised in deciding whether the information at hand will be passed to a specific user. User preferences can be seen as mapping from the data source model to the filters in the user profile. For example, in the case of a WWW repository, the data source model includes a contents based mapping into the actual URL (Uniform Resource Locator) addresses.

The editor is attached into the push process for editing and pruning the automatically derived entries of the material to be pushed. Thus the editor edits the channel contents from which the user profile based filtering and personalised push pages are generated. The channel contents is retained and edited under the DSIS-IRC based WWW repository.

2 Conclusions

In this paper, we have described an approach based on push technology to intensify the acquisition and distribution of the environmental information of the European Environment Agency (EEA). We have obtained basic information about more than 40 push products and we have tested several products. We believe that by using push technology we can design and implement user-friendly and effective information delivery systems. These systems can be general enough so that they can be applied to other environments with reasonable amount of work. As WWW grows in size and complexity the importance of new information delivery models such as push technology increases.

Acknowledgements

Some Push References and Sources

http://www.pushcentral.com/index.html
http://pushconcepts.com/pcgeneral.htm
http://www.infoworld.com/cgi-bin/displayTC.pl?/980126analysis.htm#contents
http://www8.zdnet.com/pcmag/features/pushserv/_open.htm
http://www.zdnet.com/products/content/grids/push.html
http://seek-p.infoseek.com/Computer/Software/Internet_software/Push_technologies
http://www.microsoft.com/standards/cdf.htm
http://search.zdnet.com/pcmag/features/webcast/_open.htm
http://www.w3.org/Submission/1997/8
http://www.thunderlizard.com/tlp_webbroad_strom/strom.html
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http://www.tcm.hut.fi/Opinnot/Tik-110.350/Tehtavat/essays/push.html
http://www.cio.com/resources/technologies_push.html
http://webreview.com/push/
http://www.awaken.org/push.html
http://webreview.com/97/04/18/addict/index.html
http://webreview.com/wr/pub/98/02/27/imho/index.html
http://www2.echo.lu/oii/en/push.html

Table 1. Push tools.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
AfterDark Online	After Dark Online is freeware (ad supported). You pay your Internet Service Provider fees. All of the news channels are free as well.	Berkeley Systems http://www.afterdark.com/	32-bit Internet connections are supported. AOL 32-bit client software is supported. 32-bit Internet browsers are supported, such as Netscape Navigator, Microsoft Internet Explorer, NCSA Mosaic and Netcome Netcruiser. Available for Win 95 and Macintosh.	None	Delivery only		Off-line browser/screen saver for news delivery.
AirMedia Live Internet Broadcast Network	Software comes free with Internet Antenna. Service $5.95/month.	AirMedia (formerly Ex Machina) http://airmedia.com/	To connect to the AirMedia Live Internet Broadcast Network, you need an Internet Antenna (a wireless receiver, serial port) and AirMedia Live software and service. CD-ROM drive for AirMedia Live software installation. Available for Win 95 and Win NT.	None	Delivery only		Internet's wireless news delivery.
BackWeb	Client software free. Server starts at $10,500 (one channel-server licence) depending on channel volume.	BackWeb Technologies http://www.backweb. com/ BackWeb has acquired Lanacom, see HeadLiner.	Win 3.11, Win 95, Win NT, Macintosh. A Win95/NT authoring tool to develop the content.	The BackWeb Channel Server runs on Windows NT, Solaris and Irix; the Proxy server runs on Win NT. Server is managed by a remote console running on Win 95/Win NT.	Both	The InfoPaks can be created from a wide variety of sources, such as local HTML pages, Netscape plug-ins, PDF files, multimedia, Java, text, graphics.	BackWeb is a open platform for the development of simple to complex push systems.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
BroadVision One-to-One	Varies by installation (starting about $125,000)	Broadvision http://www.broadvision.com/	One-To-One applications can be accessed from any HTTP server that is compliant with either NSAPI, ISAPI, or CGI standards. RDBMS: Oracle RDBMS Version 7.x , Microsoft SQL Server 6.x, Sybase SQL Server (10.x, 11.x), Informix 7.x	Server Hardware and Operating Systems: Solaris 2.x on Sun Sparc, Win NT 4.0 on Intel x86, HP UX 10.x , SGI IRIX 6.x.	Both	HTML, Java, and JavaScript	Development environment for delivering customized information.
Communicator	Free	InterMind http://www.intermind.com/ It no longer offers webcasting products.	Win 95 or Win NT	Any web server	Notification only	Web pages	Creates a personal, interactive connection between Web site publishers and their channel subscribers.
Channel Manager	$19.500 (100-user minimum); additional users $195 per seat, volume discounts apply for additional user licences.	DataChannel http://www.datachannel.com/	ChannelManager supports most 32 bit Java and Java-enabled web browsers.	Channel Server platforms: Sun Solaris, Win NT 3.5/4.0, HP MP UX, IBM AIX, DEC Ultrix. Web server: Netscape 3.0 and Constel-lation, or Micro-soft Information Server 3.0, or Microsoft Active Server. Data-bases: Oracle, Sybase, Informix, SQL Anywhere, or MS SQL	Both	Web content, links to Word docs, Excel spreadsheets, PowerPoint, archive files and applications, streaming video (for intranets with lots of bandwidth), live news feeds, stock tickers, and more available over a TCP/IP connection.	To cretate and manage unlimited number of channels with real-time push. A navigation management tool for files, applications, and web sites, links users and information on a one-to-one basis.
Crayon		NetPressence http://crayon.net/					a personalized newspaper

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
Desktop News	Free (ad supported)	DesktopNews http://www.desktopnews.com/	Operating System Win 3.11, Win 95 or Win NT 3.51, 4.0. Browser Netscape Navigator 3.0, Microsoft Explorer 3.0 or any popular browser that is 100 % compatible with either of these. Disk Space 4 MB for the Desktop News client software plus content updates Network Winsock 1.1. Desktop News accommodates Java, C++, ActiveX, and soon, Microsoft CDF.		Both		Customized news deliveries to the desktop. Desktop News open publishing model allows any content provider to publish to the Desktop News specification and become a Channel selection for users.
Diffusion Server (formerly IntraExpress)	Diffusion Server 2.0 is available with prices starting at $75,000 per CPU.	Diffusion http://www.diffusion.com/	Supported recipient platforms: E-mail, Fax, Pager, Postal Service, Network Printer, Web Browser Information Sender: Win 95, NT 4.0. Information Recipient Profile Manager: Java-enabled Web browsers such as Netscape Navigator and Internet Explorer, Native Windows support including Win 3.1, Win 95, Win NT 4.0	Win NT 4.0	Both		If you need to send documents to many people who require different delivery methods.
Downtown	$10,000	inCommon, http://www.incommon.com/	Win 95/NT. Win 3.1 coming soon. Minimum 16 Megabytes of memory. 20 Megabytes of disk space (varies with cache size). 486/66 MHz or higher processor.				Customizable Webcasting--choose from a selection of news and weather channels, or create your own.
Eye on the Web		internet eye on the web http://www.eyeontheweb.com					a personalized newspaper
fishWrap	Free	The Gate http://www.sfgate.com					a personalized newspaper

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
GroupMaster	GroupMaster Server software is priced according to its capacity for subscriptions (5000 ->): $495 - $11995. Group-Master Enter-prise, unlimited capacity for sub-scriptions, 16 re-mote managers, retail $9,995, 1-yr. maint. $2,000, package $11,995	Revnet http://www.revnet.com/	Win 95, Win NT, Win 3.1 To administer the program, you'll need a frames-capable Web browser such as Internet Explorer or Netscape Navigator.	Win NT4.0/3.51	Both	Web pages are delivered in HTML-formatted mail.	GroupMaster can deliver information to email as well as web clients, also stage content delivery depending on when a user subscribes.
HeadLiner	Free	Lanacom http://www.lanacom.com/ BackWeb has acquired Lanacom. Headliner information delivery product still available for free.	Win 95 and Win NT 4.x platforms. For Netscape Navigator (3.x, 4.x) and Internet Explorer (3.x, 4.x).		Both		HeadLiner offers you up-to-the-minute customized news and information from more than 700 web-based news sources (you can subscribe to 40 channels).
Highlights2	$49.95	Tierra http://www.tierra.com/	Win 95 and Win NT 4.0 For Netscape Navigator and Internet Explorer.	None	Both		Users select web sites and subscribe to particular pages.
HotWired		Wired Digital http://www.hotwired.com/					a personalized newspaper
InfoPager		ZEBRA Pushware Solutions http://www.infopager.com/					a personalized newspaper
Infoseek Personal		Infoseek http://personal.infoseek.com					a personalized newspaper

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
InfoBeat (formerly Mercury Mail)	Free (ad supported)	InfoBeat http://www.infobeat.com/	Email		Delivery only		InfoBeat delivers news on topics you select at the times you've requested right to your existing e-mail box.
Inquisit	$12.95/month, 24 months $249.95. For Enterprise Inquisit pricing is agreed differently.	Inquisit (before Farcast) http://www.farcast.com/	Any POP email client.		Both		Customized newspaper using agents to retrieve articles via email.
Intercast		Intel http://www.Intercast.com/		None			Viewing of TV and web content together.
Marimba Castanet		Marimba http://www.marimba.com/ datasheets/castanet-ds.html			Both		Designed to distribute and manage applications automatically.
Microsoft CDF (Internet Explorer)		Microsoft www.microsoft.com/standards/ cdf.htm					Microsoft's Channel Definition Format (CDF) is a text-based format for letting publishers define channels that point to Web pages.
My Excite		Excite http://www.excite.com/					a personalized newspaper

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
My Yahoo! News Ticker (formerly known as Instant Online News)	Freeware	Net Controls Corporation, http://www.netcontrols.com/	Win 95, Win NT, Win 3.1 For Netscape Navigator and Internet Explorer.				Yahoo! and Net Controls partnered to bring the My Yahoo! News Ticker, a direct feed of the latest news headlines, stock quotes, sports scores, weather reports, and other news feeds that you can select from.
NETdelivery	Free client + subscriptions	NETdelivery http://www.netdelivery.com/	Win	None	Both		In the business-to-consumer environ-ment, NETdelivery's Electronic Delivery Management (EDM) capability supports personalized infor-mation delivery to and from consumers.
NETpresenter	$799 (1 Editor, 20 Player)	NETpresenter, http://www.netpresenter.com/ netpresenter/	Win 95, Win NT; 16-bit (Q1 '98)				NETpresenter is a push/pull applica-tion consisting of an Editor for designing information chan-nels, and a variety of desktop viewing media, including screen saver, browser plug-in, video and compact (150kB) Player.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
Netscape Netcaster	Free	Netscape, http://www.netscape.com/ netcenter/	Netcaster is now shipping as part of Communicator 4.04 for Win 95 and Windows NT users and is available in beta for Macintosh PowerPC and Unix AIX.	It doesn't need server, but can use Marimba castanet server.	Both	Dynamic Html, Netscape plug-ins, java, javascript, stylesheet	It can be used to load html-pages beforehand and store them to a local hard drive. It offer a information stream to user's desktop (they called it webtop)
NewsEdge		NewsEdge http://www.newsedge.com/					a personalized newspaper
NewsHound		Knight Ridder http://www.newshound.com/					a personalized newspaper
NewsPage		NewsEdge http://www.newspage.com/					a personalized newspaper
Pathfinder Personal Edition		Pathfinder http://www.pathfinder.com/ welcome/					a personalized newspaper
Paracel Today		http://www.unc.edu/~fookie/ home.htm					a personalized newspaper
Personify (formerly Affinicast)		Personify http://www.personify.net/			Delivery only		Personify Snapshot Server is an online, server-based appli-cation that makes Personify Snapshot analyses available continuously, on demand.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
PointCast Intranet broadcast tools (formerly PointCast I-Server)	Clients free (ad supported)	PointCast http://www.pointcast.com/	PointCast Business Network v2.0 (current version) for NT 4.0, Win95 and Win3.1. Or Internet Explorer (needs atleast 486/33, 8 Mb ram,10 Mb free disc space, 256 color mode). Includes screen saver too.	Push-data can be on any www-server. PointCast Caching Manager needs: Win NT V4.0 or V3.51, Pentium 75 MHz, 32 Mb RAM, 18 Mb free disk space. PointCast Intranet Manger, PointCast Administrator and PointCast Studio needs: win95 or NT4.0, Pentium, 16Mb Ram, 10	Both	Html-documents. Screen saver documents (Smart Screen) are made with Pointcast Studio.	PointCast is the pioneer of Push. PointCast Intranet Broadcast Solution enables you to define customized, corporate channels.
Posta	$3,999 for 20 Posta Desktop accounts and the server, plus $189 for each additional account.	Tumbleweed http://www.tumbleweed.com/			Notification only		The sent document resides on the sender's server, and the recipient gets e-mail notifi-cation with a URL for the document.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
SEARCH'97 Agent Server	Varies by installation	Verity, http://www.verity.com/	Users initiate searches and view results using all major Web browsers and client operating systems. Verity also has client-side tools for indexing and searching desktop computer environments.	SEARCH'97 is server-based and runs on Win NT and popular UNIX platforms (including those from IBM, Sun, SGI, DEC, SCO, and Hewlett Packard).	Both	Agent Server will filter, index, sum-marize, and group information from all data sources, inc. Web servers, file servers, rela-tional databases, mail servers, and any Verity collec-tion. Agents can monitor docu-ments in their na-tive format, there is no need to re-format or republish any data in order for it to be searched or pushed to users.	Knowledge management solutions using agent and search technologies for information access.
Smart Delivery	Varies by installation	First Floor http://www.firstfloor.com/	Win 95, Win NT, Win 3.1, Macintosh	Win NT, Solaris	Both		To software devel-opers. FirstFloor's Smart Delivery product line enables client/ server developers to build virtual corporate that deliver mission criti-cal business docu-ments, in their native format, to both cor-porate office and field organizations.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
TIBCO		TIBCO http://www.tibco.com/			Both		Multicast IP publishing development environment.
URL-Minder	Free	NetMind, http://www.netmind.com/	An email account and Internet access via a web-browser or online service are all that is required to use URL-minder.				You can enter the Web sites you want to keep track of. When the site is updated you'll be alerted or you can have that page sent as an attachment.
Enterprise Minder (or Minder)	Commercial		Wind NT 4.0 or Solaris 2.5 or above. 32M of RAM is the minimum. A JavaScript enabled browser, such as Internet Explorer 3.0 or higher, Netscape 3.0 or higher is required by the end user.The Wind NT version can be installed and run on Win 95 on an evaluation basis only.				Enterprise Minder is online tool that monitors the information that you select, and sends you an email whenever your selection is updated. This information can reside anywhere on your company intranet or the public Internet.
WavePhore NewsCast, WaveTop	Free (ad supported)	WavePhore http://www.wavephore.com/	A standard PC with a built-in TV tuner or equipped with an add-on TV tuner card.		Both		Hardware-based products to deliver news.
Wayfarer 4.0 (formerly called INCISA)	Pricing starts at $10,000 for 100 seats with discounts for higher volume purchases.	Wayfarer http://www.wayfarer.com/	Win 95 and Win NT For Microsoft Internet Explorer 4.x and Netscape Communicator 4.x.	Win NT	Both		A tool for companies to create deliveries of business-related information from in-house sources and the Web. Designed for intranets.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
WebCast	Webcast Professional $1,995 WebCast Studio, the authoring environment, as a standalone product without WebCast Server for $495.	Astound http://www.astound.com/	Any desktop system will do, or any system that has write access to your server (such as a network server).	Win NT	Both	A channel can include video and animation (also MPEG, Autodesk (FLC and FLI), GIF89 (with transparency) and, Astound Animator's native format. Audio support includes WAV, RealAudio, and MIDI. Other supported formats include HTML, GIF, JPEG, Java, JavaScript, ActiveX control, and VBScript. The package includes a large collection of media elements in most of these formats.	For developers using middleware tools, such as Cold Fusion. For developers using HTML authoring tools, such as Adobe Pagemill. For anyone interested in creating high-impact Netcaster and Internet Explorer 4.0 broadcast channels, with no scripting required.

Product name	Price/Licence	Company/author	Client platforms	Server platforms	Notification and/or delivery	Document types	Description/ Usability
Web Transporter		Megasoft http://www.megasoft.com/ wtsoc.html	Macintosh, Win, UNIX, Java	Win 95, Win NT, UNIX	Both		Web Transporter combines a Java-based push agent and user-activated pull capabilities, security, scheduling and an open, standards-based architecture that can be linked to legacy systems including corporate directories and purchasing systems.
ZD Net Personal		ZDNet http://www.zdnet.com/					a personalized newspaper