

Intelligent Agents Come  
in from the Cold

# Virtual Clon

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*Information Highways*  
*Magazine* surveys a  
few agents to find out  
how.

by Teresa Murphy

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e all know that success in today's competitive business environment requires instant access to relevant information resources, but for end users this can be complex. Meeting deadlines while searching for just the right information from thousands of commercial databases or the Internet is time consuming and has limited effectiveness, given the ratio of search time to the number of relevant documents found. Yet until recently there was no alternative but to slog through the problems of low precision, relying on sheer volume for the right data.

Have you ever wished for just one more staff person, or better yet, a "virtual" clone of yourself who could help you optimize electronic resources? Intelligent agent technology can make this wish a reality.

Intelligent agents are software programs that autonomously perform tasks for users. An Internet search engine is not an intelligent agent because it is operated by you - a human. An intelligent agent, however, operates according to your pre-defined criteria. Agents range from simple news filters, which scour the Internet and e-mail the results to you based on key word profiles, to agents which give commands and analyze feedback, just the way you do.

The top intelligent agents will double for you by making appointments, arranging meetings, filtering, sorting and forwarding e-mail and news, and helping you fill out forms. They will also comb the Internet to find relevant information, which they interpret and present in new and interesting formats.

Practical and useful, intelligent agents can, in theory, be fine tuned to do exactly what you want, when you want it, just the way you'd do it. And they can learn from you, by imitating your behaviour. But are they really intelligent? Can they speak the language with fluency?

Theories aside, the reality is "not quite there yet," according to Michael Tanne, Product Manager of Verity Inc., a company known for its leadership in agent technology. Tanne, the author of the recently released "Verity Agent Technology White Paper" believes that while agents "are changing the way people retrieve, manage and disseminate information" more development is needed.

Intelligent agents work to provide customized data by alerting users to new and relevant information so users don't have to keep searching sources over and over, states Tanne. What's more, using powerful concept based techniques, "agents continuously watch data sources on the Internet or corporate Intranet on the user's behalf, taking action when-

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ever they find the right information."

Agents most human-like, such as Oracle's ConText, are able to "understand" the themes and context of human text, by using a complex linguistic routine similar to human processes. According to Oracle, standard text retrieval "relies on a brute force, statistical approach, tracking or indexing every word in the text, and then counting the occurrences of each word or phrase to determine the key words for the text." ConText, however, begins with the smallest grammatical unit which are words or word phrases, in each sentence of text, and identifies the grammatical function. ConText takes into account the placement of each word and its relationship to other words, as well as its thematic function. As ConText analyzes new data, it continuously adds to its knowledge base.

For information gathering and management, intelligent agents show promise as being a valuable resource, particularly for end users who no longer have the time to keep pace with the explosion of data on the Internet. This explosion is evident in even the simplest search. Just try using several popular Internet search engines to locate a list of Canadian business experts who specialize in strategic planning. Even with Boolean operators and specified dates, you'll receive thousands of irrelevant documents. And unless you search the same subject daily, you'll miss out on new information. Are intelligent agents capable of doing more than this?

To find out, Information Highways Magazine surveyed a few well known agents to see what they offer.

## Farcast

[www.farcast.com](http://www.farcast.com)

For less than \$9.95 US per month, Farcast provides clients with "unlimited access to news, stock quotes, weather, sports, updates and more." Clients customize their search and up to 15 of Farcast's "Droids" or electronic agents find what you want and report back in "plain English" exactly when you

want. Farcast offers the latest news, tracks industry trends, monitors stock prices and financials and offers unlimited fulltext searches and retrievals. Special 10 day free trial offer.

## Firefly

[www.agents-inc.com](http://www.agents-inc.com)

Agents' Inc., a leading provider of personalized intelligent agents, has created Firefly, an intelligent agent geared for the user who is interested in information about entertainment. Firefly works by touring the Web for each client to find information and people from a "community" with similar "tastes, opinions, preferences and idiosyncrasies." Your personal agent communicates with other Firefly agents and then suggests new music and people to you, based on what it has learned. It is a free service which offers members a personal page. This agent is fun, creative, friendly and makes a lunch hour whiz by.

## Fulcrum's Web-based Agent Server

[www.fulcrum.com](http://www.fulcrum.com)

Fulcrum Technologies Inc., Canada's leader in technological development, has announced that it will release a new product, Web-based Agent Server, in November. Geared to the "enterprise" or large corporate client, Web-based Agent Server will allow users to customize searches by setting their "own agent search criteria, using simple language, complex queries, Boolean operators and documents properties." Agent Server has natural language request capability. Results are presented in a relevancy ranked list which is hyperlinked to documents.

## Hoover

[www.hoover.iacnet.com](http://www.hoover.iacnet.com)

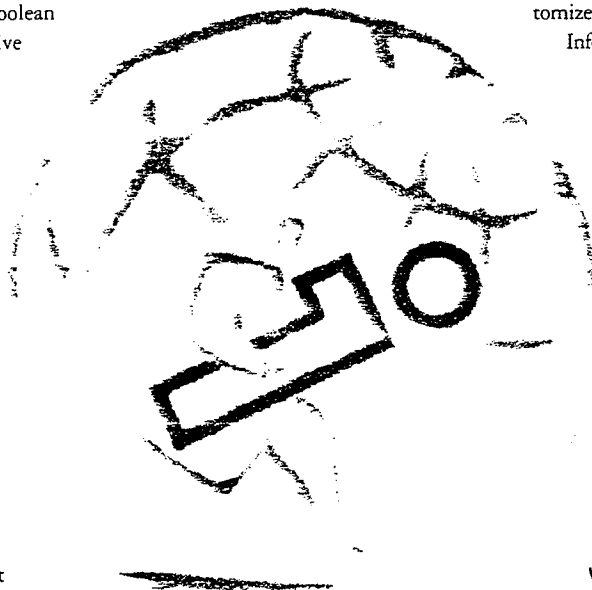
Heralded by the New York Times as the specialist in "knowing how and where to look for certain information." Information Access Company's Hoover is described as a single user interface which delivers "external information such as real-time news and integrated research" to corporate clients through agent software which "searches, retrieves, organizes and integrates data" from news wires, commercial electronic databases, trade publications and your corporate data warehouse.

## InfoSage

[www.infosage.ibm.com](http://www.infosage.ibm.com)

This IBM information delivery service lets clients create a profile of the information they seek, and then customizes information to suit the client's needs.

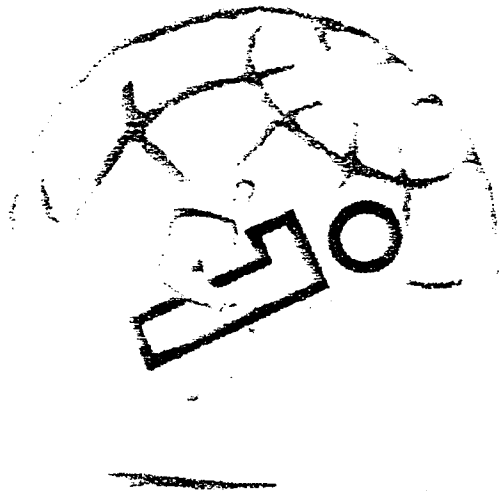
InfoSage scans a "vast array of premium content resources" to find relevant documents, which are delivered via e-mail in the form of a newsletter. Clients can click on relevant articles which have links to in-depth information from related documents such as financial reports. InfoSage also offers "Special Editions" newsletters on an array of business and entertainment topics, as well as a database of information not available to the public, a stock tracker and a Top Stories feature which provides summaries of daily news.



## NewsHound

[www.sjmercury.com/hound.htm](http://www.sjmercury.com/hound.htm)

A Knight-Ridder product offered from



the Mercury Centre. NewsHound has been around for several years, and has been described as a precursor to intelligent technology. For \$4.99 US per month, NewsHound lets users run up to five different "profiles" made up of "required" and "possible" terms or key words. The agent scours the San Jose Mercury News, the Knight-Ridder/Tribune News Service and Business News, as well as other news services such as the Associated Press and PR Newswire, based on these key words, and returns the information from articles and advertisements to the client via e-mail. For a fairly simple agent that employs "fuzzy logic" that "mimics the way people think about information", NewsHound delivers surprisingly good results at low cost.

### Oracle Con Text

[www.oracle.com](http://www.oracle.com)

According to Oracle, 90 per cent of electronically stored information is in the form of unstructured text, which spells big problems for organizations trying to manage information. As a solution, Oracle ConText, a natural language processing technology, identifies themes and content in unstructured text and analyzes the grammatical structure of each sentence in a document for meaning instead of the usual word frequency. With an extensive lexicon of more than 600,000 words and phrases, ConText has mastered the English language. It can be used for summarizing and analyzing online documents and e-mail messages, forwarding e-mail, and creating hypertext links. Geared for use by large organizations, ConText also serves an "intelligent information extraction" function by enabling information-gathering agencies to build advanced applications for tracking and extracting information and trends."

### Ranjan

[www.TheArtMachine.com/Ranjan](http://www.TheArtMachine.com/Ranjan)

This stand alone software which runs on a PC and requires Windows95/NT, continuously searches the World Wide Web at a rate of about 1,000 times the speed of a regular browser. Users customize their searches though assigning value to key words. Free trial available.

### Verity Inc.

[www.verity.com](http://www.verity.com)

Known for its commitment to user satisfaction, (Product Manager Michael Tanne answered all of my questions about Intelligent Agents, faxed information, and had PR Specialist Michelle Stephens phone to ask if I had any further questions) Verity Inc. develops and markets information agent products and technologies to corporations and organization to "filter, search, retrieve, analyze and navigate all available information sources to get the personalized, relevant information they need." Verity's products are used by "information agent partners" in some 650 corporations and organizations worldwide," such as the McKinley Group which has the Magellan Internet Search Engine and AT&T. Agents use Boolean operators, concept-based retrieval, fuzzy logic, proximity search, natural language processing and field operators.

### WiseWire Service

[www.empirical.com/emc/wisewire.html](http://www.empirical.com/emc/wisewire.html)

Empirical Media's new service, WiseWire, aims to "solve the information overload problem" by learning client's interests and providing customized information based on user specifications. Offering both free and premium service, WiseWire works by extracting information from the World Wide Web, newswires, commercial online databases and other sources, and presenting it in the form of a personalized magazine, where users click on headlines to get full stories. WiseWire's intelligent agent "learns" from this feedback, further customizing service.

As electronic information continues to grow, intelligent agents must become more sophisticated and easier to use to be of real value to end users. Just as it's a good idea for any intelligent person to be capable of speaking the local language, intelligent agents must be capable of true natural language searching instead of the cumbersome baby talk of selected key words. That way intelligent agents will become true virtual doubles, instead of being mere digital assistants. IH

### What Do Agents Do?

**Filtering:** User profiles let the agent know what you want to receive. The agent filters from the Internet, records information and delivers it to you according to your pre-selected criteria which may include e-mail, a web site update, or placement in a folder or database. The system will even page you, if that's what you want.

**Categorization:** Agents will organize information in hierarchies and categories for each user according to what each user wants. The agent then analyzes new documents and creates automatic hyperlinks according to subject. This gives users their own personal view of information.

**Routing:** Users create profiles defining subject areas on which they want to receive information. Users are then assigned a corresponding agent according to the subject areas. As messages arrive, a notice is sent to each user assigned to the subject area.

**Gathering:** Agents automatically gather information from an Intranet or the Internet. The information is indexed and organized by subject. Source: Michael Tanne, Verity Agent Technology, June 1996