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Search and Advisory Systems

Intelligence Monitoring

A new way of looking at information technology

A Special Report from AnswerChase, Inc.

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TABLE OF CONTENTS

Introduction to Intelligence Monitoring (IM)

The most useful knowledge to be obtained from the Internet is the hidden knowledge that is often fragmented into partly visible information-bits spread across various sites. The collection of scattered information and reconstruction of knowledge may allow the discovery of hidden truth which has a tremendous value in business, finance, politics, national security, and legal applications.

Intelligence monitoring (IM) is the process of discovering hidden truth by collecting clues from the open sources on the Internet. Although it can be applied to sources on corporate intranets and document management systems, it is almost always the Internet which embeds dynamic information about the opponents, competitors, enemies, and markets. Therefore, IM has largely been attributed to acquiring intelligence from external and remote domains.

IM is a generic definition and it encompasses several sub-disciplines such as business intelligence, competitive intelligence, political intelligence, legal intelligence, national security intelligence, and military intelligence, so forth. Traditionally, most of these disciplines heavily rely on human labor coordinated within comprehensive programs involving computers as well as other high-tech devices.

Widely used terms "text mining" and "knowledge mining" refer only to the retrieval component of IM. Nevertheless, the retrieval function of IM includes a wider range of challenges than that of text mining especially in the area of automation and navigation. Another widely used term "artificial intelligence" (AI) or equivalently "computational intelligence" is a scientific discipline which uses the word "intelligence" as ability to think, unlike in IM where "intelligence" means "hidden truth." Although AI methods can be used in IM, they are apples and oranges.

A simplified version of intelligence monitoring, which has found enormous success recently and is known as *Internet monitoring*, does not necessarily focus on discovering hidden truth, rather it monitors major news sources, "clip" those articles containing the company or brand name, and deliver the "clips" - enabling their client companies to assess market penetration and effectiveness of specific news releases and public relations programs.

Today, perhaps the most popular utilization of such *Internet monitoring* services is in reputation management and market intelligence. The Internet has become the medium of choice for dissatisfied clients, angry employees, consumer activists, and environmental fanatics to discredit businesses, their products and services. Criticisms published openly on the Internet can destroy brand image and the reputation of the organizations. Financial damages can mount to millions of dollars because of declined sales or plunged stock prices. Accordingly, *Internet monitoring* has become a powerful strategy to detect bad publicity and market response as a measure of protection from such damages and to improve customer relations. A simple monitoring system that clips news articles related to a brand or company can provide a useful pool of data from which damaging articles can be detected.

A higher level of intelligence monitoring goes beyond clipping news and focuses on extracting precise answers to intelligence questions. Such a sophisticated system requires more advanced language understanding approach than that of the clipping operation. Nevertheless, pay off is bigger and the possibility of discovering hidden knowledge is worth the risk of investment.

Applications of intelligence monitoring for high level objectives include political intelligence, such as in monitoring voters' opinions and campaign activities of the opponents; finance intelligence, such as in detecting economic trends and identifying companies in trouble; defense intelligence, such as in detecting conflicts and anti-government movements; legal intelligence, such as in detecting intellectual property infringements and monitoring regulatory compliance.

Perhaps most important of all, intelligence monitoring applies to the business world where traditional competitive intelligence operations are conducted at a new level with much more challenging goals. For example, supply-chain monitoring can save companies millions of dollars if they can detect troubles that would delay their supply lines.

Traditionally, intelligence monitoring was achieved in a limited manner by tracking a few thousand publications often by manual access. With the advent of the Internet, there are now millions of Web sites where crucial market intelligence and criticism can appear, available for viewing by over 100 million wired consumers. During the last decade, intelligence monitoring was largely conducted by search engines which are continuously declining their effectiveness due to growing volume and inadequate technology.

Natural progress on the Internet has evolved information retrieval into new concepts beyond search engines such as portals, on-line databases, extranets, and news aggregators. Following this move came the on-line subscription services to offer streaming of clipped news articles. Finally, the last wave is taking place right now by the emergence of IM software giving full control to the user as to what to access automatically and what to download for analysis.

Intelligence Monitoring Steps

Total IM solution includes six interrelated steps as shown in the figure below. Starting from mission planning, these five steps result in an intelligence report, notification, or alarm. This outcome becomes an important feedback to the mission planning for modifications. The sixth process in the middle is a dedicated learning and comparing process which tracks each step simultaneously. The objective of the learning and comparing process is to evaluate return on investment and to suggest improvements in concert with the changing circumstances.

Mission Planning

This step requires that the IM team identifies questions and decisions that will drive the intelligence-gathering phase. Although often rushed into by many teams, this phase may be as crucial as the Analysis step itself. Software that can help management direct its attention is invaluable. Without detailed planning, analysts ask the wrong questions, and software may tap into the wrong information pool. Either result is wasteful. While some software products can organize intelligence, it is the IM team, working closely with decision makers, that defines intelligence requirements. No software package will dynamically identify the intelligence needs of a particular company.

Collecting Published Information

The second step is collecting published information. By published, it is often meant that information is on the Internet and is easily accessible. A quick search using Altavista or Google can be an adequate approach to collecting information. However, a true search covers a wide range of sources, from extranets to special databases to government filings to journal articles to local news to vendor brochures and advertisements. Even with the best search engine technology, the collection process needs industry specialists and customization for vertical markets. Fuld & Company, a well-established IM corporation based in UK reports the following selection criteria for IM software:

- The automatic collection of timely information from news feeds through the use of software agents
- The ability to search the Internet and corporate intranets for information from Websites and internal documents
- The organization of collected information in a manner that would facilitate document retrieval.

Utilizing Human Sources

The third step, Utilizing Human Sources, is one of the most essential steps. Traditional IM programs put their largest effort in this step. Human sources mainly refer to interviews, email exchanges, or field data collected by human labor. Most of the information that piles up through peer-to-peer communication remains unreachable by IM software in the market.

Analysis and Reconstruction of Knowledge

Analysis and Reconstruction of Knowledge is the fourth step where the user converts the collected information into a meaningful assessment to discover both implications and possible outcomes. Analysis can include several methods to identify trends, correlations, similarities to known patterns, and anomalies. It can be based on statistical measurements like in traditional competitive intelligence where frequency of occurrence is interpreted as an indication of acceptance or awareness. Sophisticated software packages may include rule-based decision aid systems in conjunction with question/answer retrieval systems. Regardless of the complexity of characterizing this step, the general objective is to deliver the designed outcome in response to the needs of decision makers using the IM program.

Reporting, Notifying, and Alarming

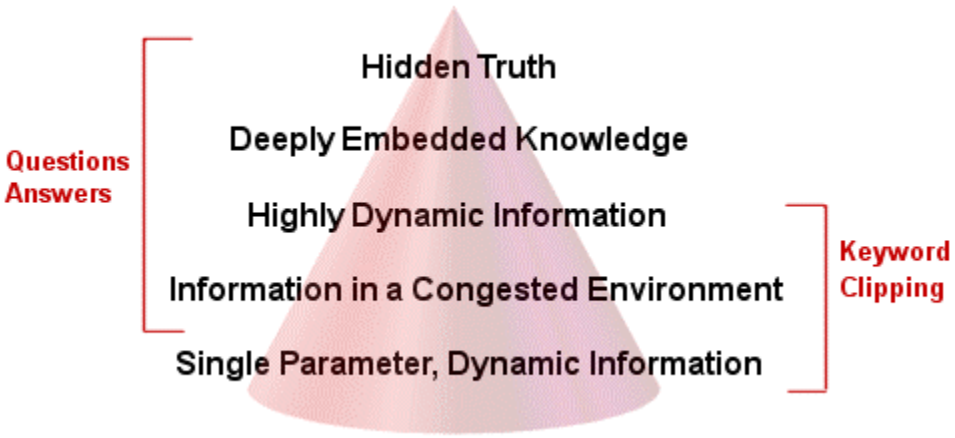
This step involves the delivery of critical intelligence in a coherent and convincing manner to decision makers. It is important to underline that the dynamics of informing the decision makers can be as crucial as the actual message itself. For example, delivery with the alarm status requires near absolute accuracy and sensitivity adjustment for certain topics. However, alarm is not expected to occur frequently and false alarms are intolerable. Notification can be more relaxed and frequent whereas simple reporting can be a periodic process.

Learning and Comparing

In conventional IM programs, which are mainly competitive intelligence (CI) programs, learning and comparing process is melted into other steps intuitively instead of recognizing it as a separate process. Return on Investment (ROI) analysis often conducted at the initial stages of launching an IM program is usually forgotten after the initial judgments are confirmed. Modern IM implementations pay attention to recognize "learning" as a separate process because learning requires rather different set of capabilities within an IM program. Ideally, a well-established learning and comparison process will provide continuous feedback to other processes and will suggest changes in the overall mission.

Ladder of Complexity

It is necessary to distinguish the degrees of complexity by which information needs to be extracted for knowledge retrieval purposes. The diagram below shows a pyramid of complexity versus popularity in IM. The height of the pyramid denotes complexity whereas the width denotes how widely the corresponding IM goals are established in the market today. For example, at the bottom of the pyramid, single parameter tracking is widely deployed today and it is the simplest task. At the top of the pyramid, acquisition of the hidden truth is narrowly deployed (especially in the area of national security intelligence) and it is the most complicated task. Also note that the complex tasks require technologies that can operate at the level of questions/answers (advanced language understanding technologies) whereas simpler tasks can be handled by keyword based Boolean methods and clipping techniques.



Hidden Truth

At the top of the complexity hierarchy, hidden truth represents the most challenging task. Such a knowledge is not spelled out anywhere in the published domain and the objective of IM is to reconstruct it by finding answers to questions relevant to the hidden truth. Strategic military secrets, national security secrets, confidential financial information, and technological innovations fall into this category. In parallel with its complexity, the chances and frequency of acquiring hidden truth from the open sources are normally very low. However, there is a

substantial number of cases where deploying such a challenging task is feasible due to high return on investment.

Deeply Embedded Knowledge

In this case, the knowledge to be acquired is residing somewhere in a well-articulated manner. It can be the knowledge of how to fly F-16 jet fighter, or the organizational structure of a terrorist organization. However, such knowledge is deeply embedded in a remote, hard-to-reach location. It can be hidden in an email file, a newsgroup database, a corporate intranet, or a personal website invisible to the search engines. The two challenges associated with acquiring deeply embedded knowledge are (1) ability to understand content when page is found, and (2) ability to locate the page effortlessly via automated navigation.

Highly Dynamic Information

Third level down from the top of the pyramid is reduced to "information" rather than "knowledge." In this particular juncture, we refer to "information" as something that can be easily identified or encapsulated within couple of words. For example, "how to fly Boeing 747?" is a question that asks the knowledge of flying the plane whereas "what is the number of 747 flights last week" is a question that asks simple information such as 1,244. Having this distinction in mind, locating information is a relatively easier task than locating knowledge; therefore, keyword based clipping methods are applicable with some limitations. One of the characteristics of this category of problems is that information is highly dynamic and it must be caught immediately. Stock quotes, weather information, or disaster news falls into this category. Technologies that handle IM for highly dynamic information require period scanning of the information sources in a timely and accurate manner.

Information in a Congested Environment

Similar to the previous case, the sophistication level required to extract information from a congested environment is relatively lower than that of extracting knowledge by understanding the content. However, the challenge in this case is to be able to sift through a large amount of data in a reasonable time frame. Information itself is not necessarily dynamic that means it is sitting there to be discovered. For example, historical records or scientific research results fall in this category. It is important to catch them when they are published, yet we know they will not disappear or be archived by tomorrow.

Single Parameter, Dynamic Information

The simplest IM case is monitoring a single (or multiple) parameter such as crude oil prices or weather temperature in Phoenix Arizona. This category of IM problems is widely popular in the business world and the conventional clipping services offer a tremendous value. For example, tracking the emergence of a brand name in the news can be valuable information from the competitive intelligence point of view.

Market Demand

IM market is vast that ranges from business to political and military interests. The demand has always been strong in every sector, yet the latest upsurge of interest is notably significant especially attributable to the emergence of the Internet. Instant availability of newsworthy information on the Web has spurred the growth of the Internet monitoring market, a subset of IM, in which some critical business problems have found immediate answers. Supply chain monitoring, credibility assessment, market watch, competitor monitoring, and reputation management have been the most significant examples in this direction.

"Bad things happen to good companies on the Internet," contends William J. Comcowich, president and CEO of CyberAlert, Inc. "Monitoring what is said on the Internet about a company and its products has become a fundamental corporate responsibility to manage corporate reputation, protect brand images, track market opinion, correct misinformation, and improve customer service. A well-conceived Internet monitoring strategy provides an early warning system by finding key nuggets of market intelligence or spotting important trends or patterns in published articles or criticism," he explains.

According to Roy Lipski, managing director, Infonic, Ltd, (http://www.infonic.co.uk/), companies succeeding in the Internet economy take risks, act boldly, and do things quickly. "In order to adapt correctly and act decisively, a company needs timely feedback. Many of the traditional market research and media monitoring methods are simply too slow," he says. "That's why Internet monitoring is fundamental to today's business - providing timely, early warning of problems with brand image, product features, customer service, market direction, and corporate reputation issues. Internet monitoring can also provide key insights into competitor strategy," he concludes.

For decades, corporations and other organizations have utilized traditional clipping services such as Bacon's and Burrelle's in the U.S.; Bowden's in Canada; and Durrants and Tellex in the U.K. Their readers scan thousands of newspapers, business and trade journals, and broadcasts each day, clip pertinent articles, and mail or fax clips to clients. By clipping major publications worldwide, the services help companies measure the effectiveness and reach of corporate public relations activities, provide information on brand image, and glean insight into corporate reputation.

Most traditional print publications now publish on the Internet - often with more and different content than in the print version. "Monitoring online publications is just as important as monitoring print publications - maybe more important because, today, business buzz starts on the Internet, and Web publications wield enormous clout," says Comcowich of CyberAlert. "If you doubt it, reflect on the repercussions of an article in The Drudge Report about the activities of a certain White House intern."

In pre-Internet days, effective market intelligence and reputation management could be achieved by tracking a few thousand publications. On the Internet, it's not just traditional

publications that need to be monitored; anyone and everyone has the ability to publish information - accurate or inaccurate - and distribute it worldwide with few, if any, controls.

Information Sources

NEC Research currently estimates the Web at 1,500 million Web pages, an 88 percent increase from 1998. IDC predicts the number to hit 8 billion (8,000 million) in 2002, exceeding the world's population.[2] In parallel with 2 million pages a day growth of the Internet, and continuous integration of print media into the Web, the possibility of acquiring critical information from the Web also increases everyday. The following outlines some of the most popular means of using the Web by which critical information becomes available and harvestable for IM.

Web Sites and Open Sources

Web sites constitute the most widely used information source today for several categories of topics mostly including consumer opinions, company information, advertising products and services, scientific and literary publications, and entertainment. Governments also use Web domain extensively for public announcements, policies, project descriptions, opinions, procurements, and bidding. Most of the open sources for public information are being converted into Web domain due its unsurpassed visibility and simplicity. Although most of the Web pages contain some sort of intelligence to be extracted through analysis, some Web sites volunteer intelligence openly in the form of opinions.

Many disgruntled customers and former employees have set up Web sites to excoriate corporations and brands. The Yahoo! directory lists over 300 "consumer opinion" sites that criticize major corporations including Advanta, Allstate, American Express, AOL, Bell Atlantic, Carnival Cruise Lines, Chase Manhattan, Citibank, First USA, Ford, GM, Home Depot, Macy's, McDonald's, Microsoft, Monsanto, NatWest Bank, Nike, Packard Bell, Prudential Insurance, United Airlines, Wal-Mart, and, yes, Yahoo! itself. CompanyEthics.com (http://www.companyethics.com/) lists links to sites that use the word "sucks" in the URL. The list includes Abercrombie, Aerojet, Amex, Ameritech, AOL, Ford, GM, Royal Caribbean, and Home Depot.

Protected by the cloak of anonymity and empowered by a worldwide audience, the net-complainers have carried old-fashioned pickets and soapbox tirades into cyberspace, according to Ronald F. Lopez of the law firm Thelen Reid & Priest [3] (http://www.thelenreid.com/). Comcowich estimates that more than 5,000 corporate attack Web sites have been published by disgruntled consumers, disaffected employees, and activists. Some companies such as Nike and Microsoft are targets of multiple Web sites.

Online corporation bashing can be quite sophisticated. A number of sites, for instance, have assembled and published hundreds of complaints about companies and their brands. Others utilize e-mail discussion lists and chat rooms for individuals to vent their anger - often with eloquence. Such well-stated negative opinions can affect attitudes and business decisions of hundreds or thousands of prospects and customers.

In addition to "basher" and "boycott" sites targeting specific corporations, a new category of "consumer opinion" sites has emerged - complaint-specific sites covering a range of industries. Epinions (http://www.epinions.com/) avows to help consumers express opinions about products and make better buying decisions. A search engine enables consumers to search a database of complaints on hundreds of products and services. And Epinions pays a royalty to the complainer each time a published complaint is accessed. According to "Forbes," one million reviews and notes have been posted on Epinions since its launch a year ago, about 4,000 per day.[4] Epinions is not alone. DooYoo (http://www.dooyoo.co.uk/) enables consumers to share their opinions about products and be paid for their opinions. FightBack! (http://www.fightback.com/), is the Web site of consumer advocate David Horowitz. National Consumer Complaint Center (http://www.alexanderlaw.com/nccc) enables consumers to complain directly to US federal agencies and is sponsored by a law firm, presumably to spot potential liability cases and class actions suits.

The aptly named Ecomplaints.com (http://www.ecomplaints.com/) was born out of the frustration of Jennifer Biscoe, a former Gartner Group consultant who fruitlessly battled AT&T for a year over a disputed cell phone contract fee. Biscoe touts the site as more than just a place to whine, urging companies to post replies so potential customers can see how they handle problems. So far only 38% of the firms have bothered to defend themselves.[5] Airlines occupy six of the 10 top spots of complained-about companies.

Business Portals

Number of portals offering business related information are in the rise. Most of these portals are subscription based and access requires membership. There is great variety of them that are too many to list here. However, the most prominent types include (1) organizational information, (2) quarterly reports of public companies, (3) white papers and reports, (4) press releases, (5) financial data and news such as bankruptcies and mergers, and (6) analyst reports. Portals constitute an excellent source of structured information for IM operation. The two shortcomings include limited coverage and lack of timeliness, both due to the effort required to collect, organize, analyze, and publish information.

News Networks and TV Stations

Undoubtedly, the source of most current information is news networks and TV stations. Despite their nonstandard nature, news information is extremely valuable in time-sensitive IM operations. If a public company announces profit loss, the entire market may react. In this dynamics, any delay in reaction can cause financial damage. News networks like CBS affiliates, Reuters, CNN, and BBC utilize the Web almost in perfect synchronization with their news announcements. Other news networks entirely operate on the Web such as PRNewswire and Venturewire.

Perhaps the most important news is the local news from the IM point of view. In supply chain monitoring, a highway accident may delay shipment which can only be captured from local news. Since local news may not make it to the nation-wide broadcast, their appearance on the Web in a timely fashion is critical. Recently, local TV stations are increasingly utilizing the Web which is a great sign for the future of IM.

Newsgroups, Message Boards, Newsletters

Many perfectly legitimate sites include message boards for consumer opinions. Amazon.com (http://www.amazon.com/) allows consumers to write book reviews and thousands of other sites include similar message boards where consumers and employees can vent. Country-specific and industry-specific complaint sites abound; there are at least six complaint sites and a Usenet news group (/alt.flame.airlines) devoted exclusively to the airlines industry.

These sites undoubtedly impact consumer attitudes and behavior. According to a recent survey by Forrester Research, sixty-five percent of community users rate the opinions of other consumers as important or somewhat important influences on their purchasing decisions.[7] In Usenet, a dozen or more news groups are devoted to consumer complaints. The most prominent are alt.consumers.experiences and misc.consumers.

One of the most recent phenomena is newsletters. Serving to selected audiences based on interest, newsletters are solicited by email which links to the corresponding Web sites. Newsletters are usually sent along with a specific business strategy such as exposing targeted banner ads to the audience. This new trend is very promising for creating another channel for strategic IM operation.

Applications of Intelligence Monitoring

There are numerous types of IM applications in the world today. Ranging from political IM to economic IM, covering all these applications is beyond the objective of this report. Here, we outline the most popular IM applications, especially those readily found on the Internet domain.

Public Relations

Like traditional public relations clipping services, Internet monitoring and news retrieval services monitor the contents of major news sources, "clip" those articles containing the company or brand name, and deliver the "clips" - enabling companies to assess market penetration and effectiveness of specific news releases and public relations programs.

In pre-Internet days, effective market intelligence and reputation management could be achieved by tracking a few thousand publications. In the conventional press, all articles (with the exception of letters to the editor) were written by professionals, were reviewed by editors, and adhered to well-established journalistic standards. While "bad press" always existed, critical articles maintained decorum.

On the Internet, anyone can be a publisher - with little or no journalistic training, no editors, and few guiding standards. Now, there are millions of other Web publications and other Web sites that disseminate information and express opinions - not just the few thousand traditional publications. Criticism is much more volatile on the Internet and information tracking has become significantly more difficult.

In the words of Ian Mount, staff writer for eCompany.com (http://www.ecompany.com/), "Bad press, scurrilous rumors, and outright lies have always been a fact of life for corporate-image watchers, but the Internet makes it possible to distribute that grief more quickly and widely

than ever before. From the standpoint of any company concerned about its online reputation, the Web is a monitoring nightmare."[9]

Savy public relations professionals track the media's coverage for both cuttings of news releases and any other information that affects corporate reputation or brand image in traditional publications and throughout the Internet.

Internet monitoring is especially helpful in situations of crisis management. Major news outlets often publish first on the Internet and consumer opinion appears first on the Internet. Tools to monitor the Internet are easily accessible and Internet clips can be delivered the next day or sooner.

Internet monitoring, then, can be a highly productive strategy to measure effectiveness of public relations activities, to assess corporate reputation, to gather market intelligence, to protect brand equity, and to help guide management during crises such as the Bridgestone-Firestone tire recall.

Competitive Intelligence

"Competitive intelligence is one of the hottest areas in management today," according to Jonathan Calof, associate professor at the University of Ottawa's Faculty of Administration, and chair of the Canadian Council for Competitive Intelligence. "It is used to identify opportunities and minimize surprises."[10]

Internet monitoring can gather strategic or tactical intelligence. According to Arik Johnson of AuroraWDC, "Strategic analysis is concerned mainly with ... gaining an understanding of a competitor's future goals, current strategy, assumptions held about itself and the industry, and capabilities. Tactical intelligence...includes competitors' terms of sale, their price policies and the plans they have for changing the way in which they differentiate one or more of their products from yours."[11]

Competitive intelligence (CI) on the Internet can include:
Executive changes, which may signal changes in corporate structure or direction
Financial reports and registrations (http://www.edgar-online.com/)
New patents and newly registered trademarks, which can strongly indicate what new technologies, products, or markets a company looks to for its future (http://www.micropat.com/)
News releases on:
Planned manufacturing capabilities
Alliances or joint ventures
Product positioning and market development
Executive speeches on business strategies
Product reviews, consumer opinion

Monitoring of broader business, political or social issues, and trends is an equally important component of an Internet intelligence program. This involves clipping of editorials, columns by opinion leaders, and op-ed articles in general news publications, trade journals, and activist Web sites. "CI's real value is to provide managers with the organizational tool to learn what the

competitor will do, not what the competitor has already done," writes Johnson of AuroraWDC. Internet-based information can deliver that capability.

Internet monitoring can also be useful in counterintelligence - that is, defending company secrets by helping assure that employees, ex-employees, or suppliers are not inadvertently or maliciously disseminating confidential company information on the Internet. (Through Internet monitoring, a bank discovered recently that a former employee had revealed the password to a server containing a proprietary set of software tools.) During a panel discussion of public relations experts convened by *PR Week* (UK), David Phillips, managing director of Internet Reputations Services in Milton Keynes, UK and author of "Managing Reputation in CyberSpace" maintained that companies must guard against increasing porosity — by which he meant the growing danger of confidential information being leaked out onto the Internet by employees.[12] Not surprisingly, a company's own publications and Web sites can also reveal critical information.

eBusiness Intelligence

To remain competitive, industrial organizations are continually faced with challenges to reduce product development time, improve product quality, and reduce production costs and lead-times. Increasingly, these challenges cannot be effectively met by isolated change to specific organizational units, but instead depend critically on the relationships and interdependencies among different organizations (or organizational units). With the movement toward a global market economy, companies are increasingly inclined toward specific, high-value-adding manufacturing niches. This, in turn, increasingly transforms the above challenges into problems of establishing and maintaining efficient material flows along product supply chains. The ongoing competitiveness of an organization is tied to the dynamics of the supply chain(s) in which it participates, and recognition of this fact is leading to considerable change in the way organizations interact with their supply chain partners. [19]

"When making strategic decisions that directly affect a company's productivity and profitability, decision makers need access to all relevant information wherever they are," said Jerry Hill, chief operating officer for SageTree Inc. eBusiness Intelligence (eBI) is a new discipline that addresses these issues in the realm of the Internet and the availability of electronic information as key indicators of emerging business events. eBI mainly focuses on business operations and market value (shipments, purchases, credibility, financial indicators, etc.) whereas traditional CI focuses on market positioning (brand image, customer opinion, competitors, etc.) However, eBI's growing application envelope is increasingly encompassing CI methods.

Finance intelligence, also considered within the eBI envelope, has much more stringent requirements than that of other IM problems. Timeliness, for example, has the utmost importance in the finance world where financial news require immediate attention, perhaps at the levels of minutes. Big portion of finance intelligence is gathered on-the-fly, such as while watching TV, conversation in an elevator, or monitoring close-circuit tracking systems for stock quotes. Despite this well-established network which drove the markets for decades, finance intelligence is increasingly depending on Web information more every day. Investment and capital firms are forming their own intelligence units rather than relying on outsourced services.

Legal Intelligence

Legal intelligence covers a wide area of conflict detection, compliance monitoring, and policy warnings. However, the hottest topic today is the intellectual property infringement. "The amount of intellectual property infringement on the Internet is astounding," says CyberAlert's Comcowich. "Software, music, photography, and written copyrighted materials are copied blatantly without payment or attribution - and seemingly without guilt."
Corporate and product trademarks are misused and abused - sometimes naively, sometimes maliciously. Owners of pornography and other less-than-pristine Web sites use the names of established companies and brands in HTML meta-tags to divert Web traffic to their own sites. Promoters "borrow" Web domain names for spam e-mail campaigns to sell gray market, black market, or unapproved products.

Internet monitoring can identify culprits - sites that are pilfering or facilitating the theft of intellectual property. Since most monitoring software is text-based, it is more difficult, but still possible, to monitor for infringements of photography or graphics. Emerging digital fingerprinting software will give corporations enhanced capabilities in spotting infringements within graphic, audio, and video files.

Channel Monitoring

For most companies, marketing on the Internet involves alliances, partnerships and independent dealerships. The Internet is replete with organizations or e-commerce sites selling black market or counterfeit products (e.g., Rolex, Gucci, Hilfiger). Approved distributors and dealers often misrepresent, mis-position, or mis-price products of their manufacturing partners. Comprehensive Internet monitoring can identify Web sites that claim affiliation with your company and can track online activities and promotions of channel partners to assure that they are up-to-date and comply with your company policies for promotion and online sales of your products. It is also possible to monitor consumer opinion on the Web about your existing or potential partners and dealers. Such monitoring can minimize regulatory compliance issues, prevent legal proceedings, and reduce channel conflict.

Defense and Economic Intelligence

US Defense Intelligence Agency reports that important intelligence problems today, after the end of the cold war, include proliferation, terrorism, transnational crime, environmental threats, and economic intelligence.

The National Foreign Intelligence Board has stated for the record that open sources comprise 40% of the all-source product, at a cost of less than 1% of the National Foreign Intelligence Program. For some intelligence problems, such as proliferation, and for some allied intelligence services such as the Canadian Security and Intelligence Service, open sources comprise 80% of the all-source product.

The private sector has most of the real experts for those problems which are not traditional intelligence concerns. The Vice President has spoken about the need to "harness the distributed intelligence of the Nation". The all-source analyst needs to identify and exploit experts in the private sector and experts in allied governments.

Although electronic sources are fashionable, and most defense intelligence analysts rely almost exclusively on open sources collected by the Foreign Broadcast Information Service and delivered to their desktop workstation by the Secure Analysts File Environment (SAFE), in fact most open sources are in hard copy, in a foreign language, and not available on the library shelves. Analysts must consciously define their open source requirements and set in motion the process to acquire the necessary open source material. The use of Internet for this purpose is on the rise and promises a great potential.

Open Source Information is legally and ethically available, at a low cost. The analyst that fully exploits open source information to establish a foundation for their all-source product can generally improve their understanding of the problem and its context at a low cost, and can often reduce requirements for classified collection.

Defense and economic intelligence require access to other layers of information such as proprietary and classified information. Although these are normally not published on the Internet, the bulk of the IM goals can be achieved by the open sources on the Internet, especially in the future.

Case Studies and Examples

Customers and consumer advocates for offering low promotional interest rates and then suddenly raising rates assailed a credit card company in the United States on the Internet. To the company, this was the standard way of promoting new accounts with the terms of agreement published on the back of the credit card application. Many customers, however, perceived the offer as illegal "bait and switch" tactics. Many other customers charged (some with substantial evidence) that the credit card company intentionally delayed crediting payments - and then charged a hefty late fee. A pattern of these complaints persisted over a period of at least four months. Affected customers published at least two different "attack" Web sites. The company did little or nothing to rectify the perceived problems. After a short time, the complaints found their way into feature articles in newspapers, magazines and prime time television news shows - thus gaining a larger audience and greater credence. The buzz started on the Internet, moved to more traditional media, and found its way to the company's bottom line. In the subsequent fiscal quarter, the parent company reported a significant drop in sales and earnings as a result of slowed growth in new credit card holders and increased defections among existing customers. The company's stock price plummeted on the announcement.

Moral of the story:

1. Dissatisfied customers have far greater clout than ever before.
2. In today's communications environment, it is virtually impossible to "bury" customer-unfriendly policies or customer complaints. (The credit card company was "hiding" its policies in plain sight in small print on the back of its credit application; customer complaints on the Internet brought those policies into plain view.)
3. Customer complaints on the Internet must be monitored; patterns of complaints must be recognized and reported to corporate decision-makers.
4. Fixes must be implemented quickly, before serious damage is done.

After the drop in stock price, the company fired the outsourced vendor for payment entry and adopted more consumer friendly policies. Online criticism abated, sales and profits improved, but, six months later, the stock price had not recovered.

Since buzz about business generally starts on the Internet, comprehensive Internet monitoring can provide early warning of market intelligence, emerging issues, perceptions, and criticisms.

"View the Internet as a vast, completely uninhibited focus group that can provide insights you'd never get any other way," advises Alan Pell Crawford, a senior counselor at Martin Public Relations in Richmond, VA. "Proper use of the Net allows you to know what your customers are saying about you and, if you are properly prepared, to respond in e-time to...problems." [13] But Internet monitoring is much more than an online focus group.

A major sporting goods company used Internet monitoring to uncover an activist group planning a rally to protest the company's employment practices and boycott the company's products. The early "heads up" enabled the company to brief the press in advance. As a result, press coverage of the demonstration was even-handed, reporting the company's well-constructed defense along with the activists' criticism.

Through monitoring Usenet News Groups, an international banking company in the UK became aware of a serious image problem and major dissatisfaction with its account services among university students. The bank addressed the problems at the start of a new term and was able to stem the drop-off in new student accounts.

A pharmaceutical company discovered physicians in e-health message boards advocating unusual and sometimes dangerous uses of the company's anesthesia products.

A financial company found out that its paid "run of site" banner advertisements in a "community" Web site were being placed on personal pages containing pornography.

A soft drink company discovered that a pornography site was using its trade name to attract traffic to its site.

An insurance company discovered that a licensed agent was grossly misrepresenting features of the company's life insurance product on his Web site.

A test equipment manufacturer was able to uncover engineering specifications for a competing product before its launch, and was thereby better prepared to defend the market position of its own product. (The information was published in the competitor's own Web site.)

Monitoring can also help identify inappropriate or improvable business practices.

A business-to-business (B2B) software company was able to identify specific customer dissatisfaction with its new product shortly after launch and provide a software "fix" within days.

A series of Usenet News Group postings tipped off Hewlett Packard that customers mightily resented that HP didn't have a toll-free telephone number for customer support.

Through CyberAlert clips, a manufacturer of computer hardware peripherals learned that an independent dealer was selling refurbished hardware as new - and was refusing to honor warranties.

A manufacturer of sporting goods identified more than a dozen Web sites that were promoting its products, but were not authorized dealers.

A manufacturer of upscale watches identified Web sites fraudulently selling goods with their trademark.

Credit Suisse First Boston (CSFB) filed a suit seeking $1 million in damages against a New Jersey man and ten others who posted comments on a Yahoo! Finance message board criticizing one of CSFB's investment research analysts.

Raytheon filed and then withdrew a suit against a handful of its own employees alleging unauthorized publication of confidential material on the Internet.

Intelligence Monitoring Strategies

The volume of information on the Internet is astonishing. Traditional publishers are migrating to the Web in droves. The Internet is growing by two million pages a day. Included in those pages are uncountable rumors, innuendo, misinformation, and gossip - all kinds of negative information that can severely affect a company's reputation. Because of the Web's potential for dishing up harmful information, companies find it crucial to monitor for detrimental postings or discussions in order to take immediate action and, in some cases, legal action before severe damage occurs.

The value of free information on the Web goes far beyond negative publicity. Local disaster news, for example, can help manufacturers forecast supply shortages. News related to corporate activities can signal distressed businesses, important information for creditors. Investors can monitor the articles written by analysts on a particular subject to get a collective idea for better investment decisions. Price fluctuations and market response can be monitored for specific parameters to detect market trends. Examples are numerous and each requires a specific strategy for collecting and analyzing information. Here, we have outlined a few most established strategies based on data gathered from the IM market activities.

Search Engines

Search engines and directories are the most evident tool for monitoring the Internet.

Competing search engines and directories (e.g., Yahoo!, Lycos, AltaVista, InfoSeek, Go, Google, and Northern Light) monitor only a fraction of the Web. An often-cited 1998 study in Science by Steve Lawrence and C. Lee Giles of the NEC Research Institute [14] concludes that only forty percent of the Web was available when using a combination of some of the most well known search engines of the day. The same authors published a study in 1999 for Nature (http://www.wwwmetrics.com/) in which they maintain that search engine coverage had decreased to sixteen percent.[15] Google (http://www.google.com/), the search engine with

the most coverage today, now claims to cover more than 1,000 million Web pages, while other major search engines are hovering between 50 and 500 million pages.[16] Competing search engines and directories compile remarkably different results for the same key word search - varying sometimes up to 50 percent in the number of citations.

A key shortcoming of search engines: they do not sort out NEW documents. If you search today and find 900 documents with your brand name and then search tomorrow and find 901 documents, most search engines provide no reasonable way to find which one of the 901 documents is new. In addition, search engines cannot provide an archive of documents that once existed on the Internet, but have been removed - such as news releases.

Most importantly, the public search engines rarely search the daily news media. Even the most advanced search engines index the Web sites of newspapers, magazines, and television stations only once every six to twelve weeks. Newspapers often remove news stories from their site after a few days. That's one reason why results from public search engines rarely include references to daily newspapers in the list of citations they produce.

Manual monitoring using public search engines alone is less than thorough, lacks the required timeliness, and is extraordinarily labor intensive. The costs of professional hours devoted to searching for citations are high, though well hidden in base salaries. Finally, manual monitoring with search engines is tedious work at best - a task much better suited to software automation.

Database Information Aggregators

Established information aggregators such as Dialog (http://www.dialog.com/) and Lexis-Nexis (http://www.lexis-nexis.com/) also offer some version of electronic monitoring and clipping services by paid subscription. The information retrieval services provide "clips" from databases containing licensed information from a wide range of publications and other sources.

For close to 30 years, these companies served an extraordinarily valuable purpose by enabling electronic access to the archived information of multiple publishers and database developers. For current news and information monitoring, however, they have significant disadvantages. First, many of the publications incorporated into these databases have date lags that can range from one to more than six weeks. A Lexis-Nexis search of the publication *Cable World,* for example, indicates that articles from the June 19, 2000 issue were uploaded into the database system on July 18, 2000. Using the Lexis-Nexis clipping service puts those monitoring the cable industry behind the times on stories of interest. Like search engines, database aggregators often lag some four to eight weeks in making current news accessible for electronic search.

The second key drawback for the established online services lies in their failure to monitor the Web, despite the fact that the Web has become an essential resource with a wealth of indispensable information.

Finally is the issue of costs. Today, many newspapers, magazines and journals that supply their copyrighted material to database aggregators also publish their information in their own Web sites on the Internet. Therefore, much of the information accessible through electronic database services at steep subscription fees is also available free of charge on the Internet and potentially accessible through public search engines. On the positive side, the aggregation

services add substantial value by incorporating significant database information not readily accessible on the Internet. They also store information for longer periods than most Internet sites.

The online information services such as Dialog and Lexis-Nexis continue to fill an important niche in finding older, more esoteric information. However, they are not the best resource for staying on top of current news and information about corporations, brands, or issues.

Open Sources

Many traditional intelligence analysts use well-established open sources for intelligence gathering by accessing them through the Internet or by direct communication. These sources offer in-depth analysis useful for economic, financial, political, and security intelligence. However, they often lack promptness, and newsworthy information is delayed before it becomes visible or accessible through these channels.

The British Library specializes in monitoring international publications, and does especially well with respect to Africa and Asia, and conferences about both scientific & technical topics, and general topics including military matters. They are an especially good source now for examining the contents of conference *Proceedings*, and offer their products in CD-ROM. Oxford Analytica is unique for having a global network of almost 1,000 overt human experts on-call to prepare concise forecasts and situation reports suitable "for Presidents, Prime Ministers, and you". They specialize in political-economic reporting.

International research sponsored by governments, international non-governmental organizations, multinational corporations, and universities has been poorly documented in the past; now a new service, *ResearchBase*, is available which allows analysts to determine if there are projects underway which can be built upon rather than duplicated. Info-South is an example of how universities can provide distributed database and media monitoring services to analysts. This service provides English-language translations of key Latin American newspapers, and also biographic profiles of Latin American leaders. Business community information can be accessed through the Special Libraries Association, over 15,000 corporate librarians, through the publication *Inside Information: Profiles of Association Libraries and Information Centers.*

One of the most important changes in the open source world pertinent to the analyst is not the dramatic increase in the availability of raw data, but rather the significant improvement in the variety and capabilities of open services able to provide value-added collection, processing, and production. Unlike direct acquisition requests for sources, these services generally have to be contracted for by the organization before they can be exploited; once a contract is established, however, individual analysts can then obtain direct support on demand.

Academic Journal Monitoring by Uncover Reveal or ISI (Institute for Scientific Information) allows analysts to receive tables of contents--via fax or email--for various journals of interest, from which articles can be selected for acquisition.

Daily current awareness profiles are a very good way of following the international media. The profiles generate daily lists of key articles, which can then be ordered if of interest. Besides

LEXIS-NEXIS and DIALOG, the two most popular services are *Heads Up* from Individual, Inc., and *NewsEdge* from Desktop Data.

Document Acquisition worldwide is something private sector organizations do very well. Instead of burdening an Embassy with finding an obscure but essential document, organizations such as FIND/SVP can be relied upon.

Environmental information, of increasing importance to some intelligence consumers, depends heavily on commercial imagery as well as databases of environmental research. CIESIN (Consortium for International Earth Science Information Network) is among the leaders in this area.

European Economic Research is a specialty of Fuld & Company--specific research projects might be best conducted through a preliminary open source effort such a private sector company, followed by classified tasking.

Grey literature refers to publicly available (non-proprietary) documents printed in very limited numbers and generally not available outside the country of publication. ACCESS International, and Eastview Publications, are among the best in this area.

Infrastructure surveys**,** including "ground truth" photography and surveying, can be done by some private sector organizations which employ former SAS (Special Air Service) personnel traveling discreetly under tourist or business cover. E2G, a British company, is one of the few that is openly available. In the US, BDM Federal specializes in remote infrastructure surveys, using legally obtained open sources.

International investigations, including economic surveys and technical acquisition projects, can be carried out by private firms such as Kroll Associates or Parvus-Jericho.

Third World economic analysis can be contracted to such firms as SIS International, which had created a network of host-country business research organizations with special strengths in Asia and Africa.

Trade database creation is a specialty of the Monterey Institute of International Studies, which is already very well known to the intelligence community for its use of graduate students fluent in Arabic, Russian, and other hard languages to create their proliferation database.

Electronic News Services

In the early 1980s, the MIT Media Lab conceived the idea of a personalized daily news service that would deliver news only on specific subjects requested by an individual reader. That visionary concept has been realized in Internet-based customized news services such as NewsEdge (http://www.individual.com/), MyYahoo (my.yahoo.com), and MyLycos (my.lycos.com). A fairly new entrant is Moreover.com (http://www.moreover.com/). Like the online information aggregators, the Internet-based news aggregators license copyrighted material from publishers who deliver new material as it is published. The typical online service licenses articles from between 200 to 1,200 news sources. The clients of the customized news service specify the news topics that they would like to receive. Each day, the online news

service then automatically delivers to the user the top 10 or so articles on the viewer's selected topics.

Many corporations subscribe to electronic news aggregation services and make them available to key employees on the desktop or through the company's intranet.

These Internet-based news services provide a no-cost or low-cost way for businesses and consumers to monitor key topics in the major news media. Their shortcomings as a reputation management and competitive intelligence tool include the limited number of news sources that are included, the limited number of stories that are delivered automatically each day, and the limited scope of articles. The automatically delivered stories are confined to news; the services rarely deliver editorials or other opinion pieces such as product reviews. Stories in regional publications almost never make it into the Internet-based news services.

While Internet-based news aggregation services provide businesses with the timely news that is necessary for business decision-making, these services are unlikely to provide the breadth of monitoring that is required for a comprehensive reputation management, infringement monitoring, or competitive intelligence program.

Internet Monitoring and Clipping Services

Because of the limitations of search engines, online information aggregators, and Internet-based news aggregators, a new class of Internet-based application service provider (ASP) has emerged — Internet monitoring and clipping services. These highly automated services are designed to provide comprehensive and timely "clips" on customized topics to meet the information needs of public relations, marketing, market research, competitive intelligence, and legal departments for infringement monitoring. The services are also used by business planning departments, information librarians, and other corporate functions.

Web clipping and monitoring services capture the most current information from Web publications, electronic bulletin boards, Web sites, and news sources. Companies can employ these services to track mentions of company activities, brands, and trademarks, as well as those of competitors. It is possible to monitor any subject of consequence daily, such as key topics that center on trends, regulations, legal issues, and thought leaders.

Web clipping companies provide a range of useful benefits that broadly include:

- Automatic monitoring of thousands of targeted Web sites
- Finding new information faster than search engines
- Delivering highly relevant information

The new Internet monitoring and clipping services differ from public search engines in a number of important ways:

- They search key information sources at least daily.
- They filter out "old" citations and deliver only "yesterday's news."
- They deliver results automatically each day.

Internet monitoring services are not without problems. The spidering and indexing software of the monitoring services often takes a few days or weeks to filter out all archival references on the Internet. As a result, clients may receive older citations during the early stages.

Some services do not have the software to deploy complex search strings and, therefore, cannot deliver finely grained search results. Some services deliver weekly or monthly results, rather than daily, thus undercutting the timeliness of Internet monitoring. Remarkably, some Internet monitoring services deliver results in print via US mail ("snail mail") or fax, instead of electronically via the Internet (although many traditionalists still prefer paper-based news clipping services.)

No monitoring and clipping service can guarantee that it will find all articles or postings. Most Web monitoring services do not deliver articles from Web sites of major news organizations requiring subscriptions such as the *Wall Street Journal.* Oftentimes, the services' spidering and indexing software is unable to search Web sites such as the New York Times that block searches by automated robots. Sometimes, the software of Internet monitoring services cannot discriminate substantive articles from unimportant listings, resulting in unwanted "clips" or citations. (The URL of an article combined with an abstract is called a "citation" by some Internet monitoring and clipping services.)

Services that monitor Usenet news groups inevitably deliver clips that contain profanity. Monitoring commercial Web sites may result in clips from pornography sites if those sites contain key words in the client's search string. (One medical company conducting a search on the word "stroke" was inundated with citations from pornography sites.)

A New Breed of Intelligence Monitoring Software

With the advent of high-speed Internet connections, fast methods for natural language processing, and automated navigation, a new breed of IM software has emerged during the last two years. AnswerChase, and IntelliSeek, are the prime examples of this new trend.

One of the first thing corporations realizes that an in-house capability is always better than depending on a remotely handled service. IM software can be an integral part of the IM program, and can be tailored by the IM team for the particular needs of an organization.

IM software, just like the clipping services, capture the most current information from Web publications, electronic bulletin boards, Web sites, and news sources. Some IM software can even utilize generic search engines and access remote extranets and databases. Companies can use IM software to track mentions of company activities, brands, and trademarks, as well as those of competitors. It is possible to monitor any subject of consequence daily, such as key topics that center on trends, regulations, legal issues, and thought leaders.

Among the variety of IM software available today, AnswerChase offers question/answer operation suitable for complex IM goals. The user of AnswerChase can easily lay out the rules of intelligence gathering via natural language interface in terms of “intelligence” questions.

IM software packages provide a range of useful benefits that broadly include:

- Automatic monitoring of thousands of targeted Web sites
- Capability to lay out IM goals in terms of intelligence questions
- Receiving concise answers instead of lengthily news feeds
- Capability to point out known sources for periodic scanning
- Notification capability only when answers emerge
- Capability to determine search frequency
- Flexibility to change the IM goals at any time
- Email warning and notification features
- Capability to notify via wireless devices
- Flexibility to customize the IM software for highly specific needs

Perhaps one of the most important factors for organizations to prefer in-house IM software instead of clipping services offered by remote entities is that in-house IM software is cost effective.

Corporations, Organizations, Products, and Services

There are several IM software in the business intelligence market most of which are marketed as competitive intelligence (CI) packages. These packages vary in functionality and utilization. They have different strengths in addressing the six steps of the IM process. Knowledge Works from Cipher Systems and Jeylin from AnswerChase are the only two software packages that operate at questions/answers level.

- TextAnalyst 2.0 (Megaputer Intelligence, Inc.)
- Jeylin 1.0 (AnswerChase, Inc.)
- C-4-U Scout (C-4-U Ltd.)
- Powerize.com Website (Powerize.com)
- Knowledge.Works Version 5.3 (Cipher Systems)
- Market Signal Analyzer (Docere Intelligence)
- E-Sense (Vigil Technologies)
- WisdomBuilder 2.3.0 (WisdomBuilder LLC)
- Competitive Intelligence (CI) Spider Version 1.2.1 (Knowledge Computing
- Corp.)
- Plumtree Corporate Portal Version 3.0 (Plumtree Software, Inc.)
- Wincite Version 6.1 (Wincite Systems LLC)
- Strategy! Version 2.5 (Strategy Software, Inc.)
- Corporate Intelligence Service Version 1.0 (Intelliseek, Inc.)

There are many Web-based subscription services that offer news streaming and clipping as part of IM functionality. Some of these companies also offer outsourcing consultance services in IM accompanied by a IM software or service. Most of such subscription services fill an important market demand heavily oriented around news clipping. Therefore, they are not necessarily equipped with the fundamental features required for a complete IM program. Major players in this field are listed below.

- Cayenne Communications
- Cyveillance
- Decise

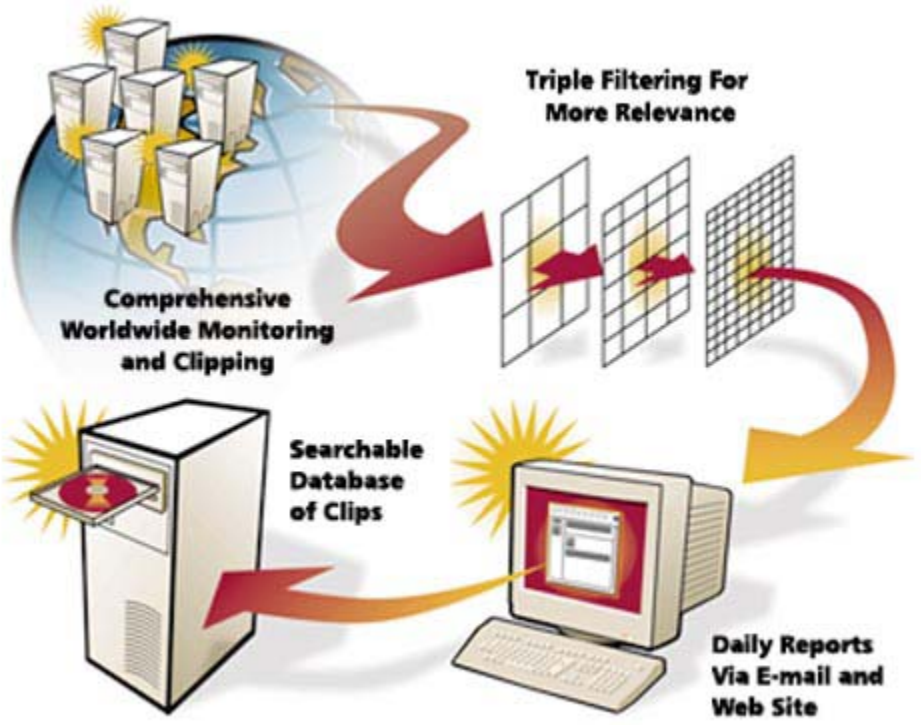
- Hiron's of Indianapolis
- Middleberg Euro
- ScreamingMedia
- CyberAlert
- Plumtree
- Bloomsberg

Companies listed below provide consultation services in economic and security Intelligence. The IM operations deployed by these companies are mostly considered conventional, but their dependency on Web information is increasingly growing.

- BBC Monitoring Service -British counterpart to CIA's Foreign Broadcast Information Service
- The Codex
- Economist Intelligence Unit - a member of the Economist Group, is a publishing and advisory firm created to help companies manage their operations across national borders. Information is gathered by some 750 economists, consultants, journalists and editors from more than 195 countries.
- EIS International (a division of Research Alternatives, Inc.) is a recognized leader in the information technology industry. Environmental and emergency managers with decades of front-line experience dealing with hazards across the nation and around the world.
- Lookout Point, Real-World Intelligence, Inc. delivers customized Business Intelligence Systems through its private online information service, Lookout Point. An RWI Intelligence System enables any company to identify and monitor those key trends in business, economics, geo-politics, science, and technology relevant to its unique strategic objectives.
- Michael Moore Investigative Research - Background Investigation Database 28,000 records with 12 fields. Topics include: organized crime, white-collar crime, corruption, fraud, finance, politics, and government.
- National Security Institute - Security Resource Net Security consulting company with extensive online document library.
- NetWork Intelligence Agency, Inc. Delivering security intelligence products and services.
- The OLIN Project - The Online Intelligence Project is oriented to individuals and professionals with an interest in international news, commerce, and references. It utilizes an intelligence service model to array Internet resources into departments and regional desks.
- Open Source Solutions, Inc. - Robert Steele on the net primarily on account of the impressive OSS Notices implementation.
- US International Intelligence Corporation - Experts in international security and intelligence operations.

Conventional Clipping Services Versus IM Software

The two highly popular IM technologies today are the Web-based subscription services (clipping) and stand-alone IM software. Below is a short comparison between the two solutions. Although stand-alone IM software is a better fit for the IM goals for several reasons, clipping and streaming services satisfy a unique market demand and are not easily replaceable.



To use an Internet monitoring and clipping service, a client establishes an account and gives the customer or technical service department the key words, topics, company, or brand names to be monitored. The service then creates a search strategy (including the areas of the Internet to be searched) and search specification (a "string" of words to be searched, often called a "brief" in Europe).

> In contrast, deploying an in-house IM software only requires proper installation and customization. The IM goals can be entered to the software or modified at any time. IM software may accept natural language questions, such as in AnswerChase, or may require keyword-based characterization of the IM goals.

Each day, the spidering software of monitoring and clipping services indexes the contents of selected Web sites and then searches the index for customer-specified terms. The service delivers to each client a list of citations for new "clips" found during the previous 24 hours that match the client's search terms. The filtering software to deliver only relevant new citations is one of the key value-added features of Internet monitoring services. Each monitoring service uses different technology to identify new clips and assess their relevancy.

> IM software automatically navigates on the Internet at a frequency determined by the user. Accordingly, monitoring can take place every hour or every day. The software may

bring concise answers (paragraphs) such as in AnswerChase, or may bring documents containing keywords using a technology similar to clipping such as in IntelliSeek.

Each delivered citation includes an abstract of the article and a hotlink to the URL of the full-text article on the publisher's Web site. CyberAlert and a few other services also provide clients with access to a password-protected Web site where clients can access their clips.

Similarly, IM software packages also deliver citations, abstracts, and hotlinks. Depending on the IM software, results may be manipulated in different manners. AnswerChase employs an answers management approach since it operates at answers level.

Selecting a Technology to Support IM

Services and products to support IM programs vary widely in their capabilities, features and sophistication. They range from purely manual services that rely on live editors using public search engines to fully automated products using advanced, proprietary technologies. The automated systems deliver more comprehensive and timely results than manual ones.

Key criteria in selecting an IM tool include:

1. **Automation:** What is the extent of automation by which the IM tool collects knowledge and information from the Web sources?
2. **Coverage:** What sources does the IM tool cover? Which online news sources and how many of them? What major news sources are not covered? Can clients add specific news sites to be monitored? Does the IM tool cover non-news Web sites - for example, consumer opinion sites such as ePinions (http://www.epinions.com/), or other commercial, academic, and government Web sites? Does the service or product monitor Usenet News Groups? Does it monitor message boards and forums?
3. **Search Frequency and Depth:** How often does the IM tool monitor each of the news sources? In monitoring news sites, how many layers deep does the robot search? Does it spider the entire site or only the top layer or two? Does it search text behind graphics, meta-tags, and source code?
4. **Selectivity:** Are the news sources divided into media groups so that clients can select specific media groups instead of monitoring the entire list? Can the software exclude irrelevant portions of Web publications such as classifieds, stock listings, and weather reports? Can the client specify search by direct questions?
5. **Timeliness:** How often does the IM tool deliver results? Does the user/client have flexibility to determine the frequency? Does the delivery include news from the previous day? What time of day are results delivered?
6. **Search Specification or Definition:** Can the user of the IM tool ask questions typed in natural language? Does the IM tool offer the ability to do complex Boolean-type searches? Can you "tune" a search to get improved results? Does the software permit "and not" exclusions in the search string?
7. **Relevance:** Do the IM tool use natural language processing methods for advanced language understanding? Does it allow ontological semantics and/or lexical customization? What techniques are used to filter results and assure relevance? Do the service's automated filters exclude "old" clips? How do the filters exclude companies or

brands with similar names? Can the filters exclude specific Web sites - such as the client's own Web site?

8. **Results Management:** Does the IM tool include a searchable database for crosschecking or isolating information in delivered results? Is there a method to annotate clips? Is there an integrated way to easily share clips with colleagues?
9. **Value:** What is the cost of IM tool compared with coverage and services delivered? What cost savings can be achieved compared with manual searching using search engines?
10. **Customer Service:** What are the customer service capabilities and policies? Are account representative assigned to customers? How often can clients make changes in a search string/specification?

Summary and Conclusions

The burgeoning Internet has created a new information and communications revolution. Almost every industry and product category is changing with lightening speed as both dotcom and brick and mortar companies enter e-commerce and consumers exploit Web benefits. In the Internet economy, new companies must find novel ways to succeed, and established firms must innovate to survive. The race to market and growth in competition require innovative ways to find, gather, and process information needed for business planning, reputation management, and protection of brand equity.

As a result, intelligence monitoring (IM) products and services are rapidly becoming an indispensable tool for reputation management, competitive intelligence, and infringement monitoring for most companies. These tools also show great potential in handling other IM problems with more challenging goals.

By combining the best attributes of search engines (in-depth coverage of the visible Internet), electronic news aggregators (timely coverage of news sources), and traditional clipping services (delivery of all found articles) into a single, automated, time-saving, and customized information retrieval system, the IM tools are quite clearly the most effective and time-efficient way now available for Web based enhancements. On the whole, IM tools and services are more effective and less expensive than assigning staff to find news and other articles about a company and its products on the Internet. With their relatively low costs, they are an affordable productivity tool for almost any sized company in almost any industry or business, almost anywhere in the world.

Mining information on the Internet is a vital component of a well-designed reputation management and market intelligence program. However, finding information on the Internet is only the first step. For that information to be useful in corporate decision-making, it must be processed - stored, organized, evaluated, analyzed and, then, reported to key decision-makers - up to and including the CEO - in an actionable form. Well-formed intelligence will lead to better-informed decision-making. For virtually all companies, a cohesive and well-executed program of Internet monitoring and intelligence will undoubtedly lead to better business performance.

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