



THE FIVE T's OF SUCCESSFUL RESEARCH:

The (Search Engine) Tease, Training, Technology, Tools & Taxonomies

Do you download and save documents on your hard drive just in case you need them for possible future use? Do you store articles, e-mail messages, electronic documents, digital music, reports and white papers? How often have you ripped out an article from your doctor's office, or while exercising at the gym, but then once you need it, seems to have disappeared?

You're not alone if information storage and retrieval is a challenge. Information management -- the organization, reorganization and effective retrieval of information -- is a universal problem and getting worse.

Hoarding data like a squirrel hoarding nuts for the winter is typical behavior for today's knowledge workers. All of us are affected regardless of profession, management level or training, industry, geography or discipline. What's more, there's an explosion in content, and no end in sight. As inevitable as death and taxes, the dramatic increase in content and the increasing use of mobile devices as platforms for accessing more information, ironically, often only complicate the task of retrieving information when you need it.

A Truly Toxic Mistake in the Medical Field

Missing or incomplete information plagues many projects. Susan Feldman writing in the *High cost of not finding information* (KMWorld, March 2004) cites an example in 2001 when

“a volunteer on a Johns Hopkins research project died when she was given hexamethonium to inhale. Researcher had done a search on PubMed and the Web to find out if there were adverse effects associated with its use. What the researchers didn't know was that PubMed only goes back to 1966. The research on hexamethonium was done in the 1950s. They also missed standard professional sources of information like Toxline. “

Most of us are inundated with too much information and lack the tools, training or techniques to know how to work with it. “Information overload”, a term coined by Futurist Alvin Toffler in his classic book Future Shock (1970) is known all too well as the state of having too much information to make a decision or remain informed of a topic. According to Toffler, society (over thirty five years ago but as real today as it was in the '70's) is undergoing “an enormous structural change” that “will overwhelm people... leaving them disconnected”.

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The Information overload problem is documented in studies by others including Halpern Info Services, reporting in a DM Review Special Report "*Small Business Can't Find Info Critical to Their Success*" (July 2007).

The Problem of Can't Find It When You Need It

Numerous studies have documented the inefficiencies and waste associated with searching for information. Knowledge workers spend from 15-35% of their time searching for information, yet they are successful finding what they seek only 50% of the time or less. IDC, Working Council of CIOs, Ford Motor Company and Reuters are among the organizations that have examined the problem. Even worse, these same knowledge workers "spend more time recreating existing information than they do turning out information that does not already exist".

Accenture, a leading management consulting firm reported in a 2007 study that "57% have to go to numerous sources to compile information (and) and it is a difficult aspect of managing information for their job" and "there is so much information available that it takes a long time to actually find the right piece of data".

More recently news aggregator and powerhouse LexisNexis in a report prepared by WorldOne Research focused on the legal profession's difficulties in staying abreast of critical information. According to the LexisNexis report, the legal community spends two hours a day searching for documents and emails. Over 85% of respondents agree that "not being able to access the right information at the right time is a huge time-waster.". Also, 72% of respondents complain about information overload, more from legal professionals ... "People like me are increasingly overloaded by the amount of information they have to deal with in their jobs." and nearly 60% say "If the amount of information I receive continues to increase, I will soon reach a breaking point where I can't handle any more information." ,, Nearly half (44.8%) of legal profession agree with the statement "I wish I could spend less time organizing information, and more time using the information that comes my way".

It's a nagging problem. It seems that neither home-grown filing systems nor elaborate taxonomies and category systems are sufficient. A UK-based knowledge management expert David Snowden observes: "We don't know what category information really belongs in until we know how we want to use it and the context in which we want to use it." But that doesn't help because we can't find it when we need it.

The First T: The (Search Engine) Tease

Leonard Fuld, of competitive intelligence consulting firm, Fuld & Company, Inc. wrote in his most recent book The Secret Language of Competitive Intelligence that search engines are a colossal “tease”. Regardless of the keywords chosen, inevitably, the results received are near-hits, providing anecdotal and fleeting results that are close, but no cigar.

If the results from today’s search engines are teases, at least there is an effective way of managing that problem; use a capable research professional. Professional researchers can systematically and efficiently, find and retrieve, filter and synthesize information from disparate sources.

If certain search engines of today are not as good as they’re trumped up to be – and many people feel the same way as Mr. Fuld – then what methods and practices are possible to make sense of information ? Fortunately, there are capable research professionals who have the expertise to do what search engines can not.

The Second T: Training is the Key to Good Research

Professional researchers use a combination of training, technology, tools and an understanding of taxonomies to systematically find information, analyze and report necessary information, analyze and make recommendations.

According to the Association of Independent Information Professionals (AIIP) *Info-Entrepreneurship: A Resource Guide for the Independent Information Professional* (Mary Ellen Bates):

“Info-entrepreneurship is a very broad industry; those in it use many techniques for finding and delivering information to their clients, as well as providing related services. Info-entrepreneurs use the skills of librarians, private investigators, database searchers, market researchers, competitive intelligence researchers, writers, indexers, and other professions in their work.”

Some have advanced degrees in library sciences, whereas others are corporate market researchers, and former engineers, marketing managers and technologists with analytical and creative skills necessary to understand and solve information problems. Many have subject matter expertise as well, e.g., they’re knowledgeable about medical matters, architecture, composites, telecommunications, executive compensation, international tax and employment law, or whatever other subject of interest.

Professional researchers have specialized training. Being able to develop a systematic search strategy, knowing where and how to find the best sources within the parameters of the project separates professionals from do-it-yourselfers.

Becoming an expert researcher requires strong theoretical and practical understanding of searching concepts. Moreover, digital resources are not necessarily the only outlet for information. To the contrary, treasure troves of content have not been digitized nor will they likely be. Nor can search engines penetrate certain password-protected websites. Only the most recent content is found in many searches; historical or trending information is not likely to be found online, or found online with any speed or ease. Other matters require interviewing and manual research skills, government documentation, special collections, special subscriptions or access. Whether the Internet helps or hinders is an open question.

Search tools such as Dialog, and other commercial-grade large-scale databases (LexisNexis, Factiva), are tools for professional researchers. The advantage of these online information databases is the scope, breadth and depth of information at hand – 800 million unique records comprising 12 terabytes of intelligently organized information in Dialog alone. Dialog consists of over 900 databases, 150,000 journals, 11 million investment reports and more. One does not find this degree of quality control and reliability on the open and wide search engines.

Trained researchers follow a process that starts with understanding the problem fully, and leads to a systematic collection of information, which in turn leads to analysis and synthesis, and final development of the deliverable.

Researchers are report writers too. They are trained to write reports based on their findings, with clarity, coherence and professionalism.

With expert knowledge of the content of information resources, including the ability to critically evaluate and filter them, the professional knows “the best” resources for the specific area. Some researchers specialize in certain subjects or interests, whereas others are generalists.

Strategic planning is an important part of any search session. Before a search is conducted there are five steps to consider:

1. Information reference interview is conducted.
2. Describe the topic in one sentence.
3. Determine a list of databases and resources likely to cover the topic.
4. Analyze the topic and identify individual concepts and select synonyms and alternative terms for each concept.
5. Decide on use of truncation, proximity connectors and logical operators.

According to the *Journal of the Medical Library Association*, January 2005, understanding the underlying structure of databases is critical to successful systematic searching and retrieval.

In addition to training in the traditional strengths of information selection, collection, retrieval, and analysis, professional researchers use emerging information technologies, tools and techniques, to complement their skills.

The same skills that an editor or a talented writer possesses apply to a researcher. The same challenges too exist – where to cut, how to summarize, what to emphasize and so forth.

While information selection and retrieval is generally concerned with the indexing and retrieval of knowledge-based information, traditionally this means retrieval of text-based documents. But with the growth of multimedia content, including images, video, audio, and other types of information, information retrieval and reports has broadened.

The growth of the Internet and new modes of publishing like the growth of user-generated content such as blogs has extended the reach and type of information compiled for projects.

This being said, sources on the Internet are not blindly used just because they are on the Internet. Sources and methodologies used for compilation and analysis are vetted to ensure reliability.

The Third and Fourth T's: Technology and Tools

Professionals rely on appropriate information technology (IT) and devices to acquire, organize and disseminate information. The professional keeps up to date with new electronic information products, commercial grade databases and modes of information delivery in order to deliver a well-researched report in the format of choice and in the time required by a client.

Mozilla Foxfire is a technology that supports search online. Special add-ons allow greater functionality. "PDF Download" relieves the pain experienced when encountering PDF files on the Web. Whenever you click on a PDF file, PDF Download lets you know before trying to open it, and then offers you choices such as downloading, opening, or converting it straight to HTML. There are free and easy-to-use Firefox extensions like Zotero which help users collect, manage and cite research sources. "Cooliris Previews" gives you the power to browse and share Web links and rich media faster. Just mouse over any link, and the Cooliris preview window immediately appears to show you the content. To email it, just click.

Google Docs spreadsheets are used when a number of researchers need to collaborate and work together on a project.

Tools provide analysis and expertise and typically help integrate research into workflow so that only relevant data is delivered or produced as a result of the tool.

Researchers work “with the end in mind” using tools to efficiently capture bits of documents and pages that will be part of the final report or presentation.

A new service that helps to not only research but also read online is ButterFly (<http://butterflyproject.nl>). The site's ButterFly-Reader allows a user to add hyperlinks and notes, highlight words, look up information, and translate selections, all within the same Web page and with one mouse-click.

In the biomedical and pharmaceutical fields there are tools like EMBASE and Biosis. These two fee-based databases are used by trained professional researchers. EMBASE is the bibliographic database of choice to access the international biomedical and drug literature. More than 11 million records from 1974 to the present cover more than 5000 journals published in 70 countries. Information includes human medicine (clinical and experimental), health policy and management, substance dependence and abuse, biomedical engineering and instrumentation, and more. Records are updated weekly, and the system is renowned for its rapid, reliable and extensive coverage.

In the healthcare industry there are research data banks, available to members through subscriptions such as National Institutes of Child Health and Human Development (NICHD) and American Hospital Association. Other information systems are known and used along with other sources like PubMed for more complicated research projects.

Research professionals in the medical and life sciences fields are savvy to know where data resides, knowing more about the resources and methods for collection than others. Experience and specialization has its advantages. Health and bioinformatics is a big business and there are numerous public and private sources available to help answer problems.

The Fifth T: Taxonomies

Even professional researchers need help with organization.

Given the overwhelming amount of data and types of data, it's also important to set up taxonomies in advance or at least understand the value of taxonomies so that work is efficiently conducted.

What is taxonomy? Taxonomies have nothing to do with preserving wild game or the IRS. Taxonomy is simply a catalogue or classification scheme. Taxonomies are becoming popular for organizing information in business, and are sometimes found within a knowledge management or enterprise content management system.

Taxonomy structures can be used in a variety of applications, such as helping:

- Researchers find source materials
- Readers locate information in a book
- Web visitors locate information in an electronic journal
- Buyers locate products and services
- Decision makers locate sources of expertise

Taxonomies are common like the telephone book, Thomson Directory, catalogs like LL Bean as well as search engines like Google, Yahoo and hundreds of other systems. Taxonomy structures are used in automated processes, such as in a search engine or a filtering program which personalizes e-mail alerts or Web sites.

According to a recent article online at the *Montague Institute Review* there are three parts to a taxonomy. The first step is a vocabulary. The second step is to add relationships among the terms. Relationships include cross references from nonstandard terms (ie FASB) to standard terms (Financial Accounting Standards Boards), from narrower terms to broader terms (ie, "transportation" see also "industries") and from one term to a related term (i.e, "indexing" see also "taxonomy".) This part of the taxonomy is often called the "thesaurus." Like the familiar Roget's Thesaurus, it contains synonyms, but it also does a lot more.

The vocabulary and thesaurus constitute the taxonomy structure. The next step is to connect the terms with sources -- Web sites, documents, people, or pages in a book. Typically this happens in the taxonomy application, along with sorting and formatting the terms. The final taxonomy may be set up for multiple "views" i.e., alphabetical order, chronological order, subjects, organizations, and people.

By understanding the nature of taxonomies, researchers can *efficiently* source and catalog disparate information sources. Since service delivery is based on time consumption, the efficiency afforded by understanding tools and technology and taxonomies, results in cost savings.

Conclusion

When a leading Massachusetts-based contract medical manufacturer, Optimum Technologies, Inc., needed a preliminary assessment of a market entry point for a

new light-emitting optical cancer detection technology, CEO & Founder, Randy Chinnock, turned to Halpern Info Services to assemble a team of expert information research professionals to do the project. The team collaborated on a script for recruiting and interviewing physicians to hone in on perceived advantages of, and concerns about, optical-based breast cancer diagnostics compared to existing practices. Chinnock confirmed "Previous attempts to extract meaningful results from physicians were *not* attained before the employment of professional researchers."

Halpern Info Services' contribution led to the creation of a new company spin-off from Optimum Technologies Inc. That company will commercialize "optical biopsy" which allows instant diagnosis of cancerous tissue -- without excision!

Information is the lifeblood of successful companies but we're choking on access issues, unable to get the information when needed as part of a quality review, assessment of resources, budgetary and market planning or other needs. With this there is raw data, of which there is plenty, that is turned into meaningful information. Technology may be a facilitator, along with tools and techniques, to find and filter relevant and authoritative information, but ultimately research is a people business too. Much like other professionals, conducting professional research is a certifiable and special skill.

There is no secret formula or single solution for staying abreast of information that matters. Specific information requirements are often *not* available in off the shelf information or business reports. Strategic "brand name" consulting is too costly or not appropriate for many businesses. When more data is needed than is found in a report or database, or is complex and beyond the scope of common search engines, a custom research project may be in order. More often today, disparate information is found in multiple sources and needs to be consolidated and analyzed to be relevant and valid.

Professional researchers, with training and technology expertise, are invaluable resources for those involved in market assessments, new product development, strategic planning, clinical development, sales and marketing operations, and so on. Doing the right research the right way goes a long way toward improving marketing and sales operations, saving time and money, and improving overall business outcomes.

End-notes

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In 2007 his research and writing appeared in *MD&DI*, a peer-reviewed medical technology journal ("The Essentials of Research in Successful Product Development") and *Northeast Export* ("Building Your International Business") focused on global trade services. Richard has presented at Simmons College School of Graduate Studies on "information entrepreneurship" and Merrimack Valley Venture Forum (MVVF), both in Massachusetts. He is a graduate of Brown University.

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