# The Five T's of Successful Research:

## The (Search Engine) Tease, Training, Technology, Tools and Taxonomy

By Richard Halpern

Do you find it vexing to spend countless hours searching without finding the answers for seemingly simple questions? Do you feel that Google has everything you need, and it's just a matter of trying the best keywords to find it? Do you question whether what you find is credible, definitive, and up to date? Does this sound familiar?

You're not alone if information storage, retrieval and understanding are a challenge. Information management – the organization, re-organization and effective retrieval of information – and making sense of it – 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 make no difference. 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 complicates the task of searching and finding 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" (KM World, March 2004) cites the 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 researcher 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 class 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 is undergoing "an enormous structural change" that "will overwhelm people... Leave them disconnected." This was stated over forty years ago, can you imagine what he would say today! Factual Inc., a California start-up, whose mission is to collect and store all the facts of the world, wants to build the world's chief reference point for thousands of interconnected supercomputing clouds. The digital world is expected to hold, according to its founder, Gilad Elbaz, a US citizen, born of Moroccan descent, 2.7 zettabytes of data by the end of last year (2012), an amount equivalent to 700 billion DVDs.

How much data is there? FAOSTAT, an online database of statistics on food and agriculture alone, features over a million records, originating from 1961, with data from 210 countries and regional development offices – and over 1 billion data points.

## Can't find it when you need it

Numerous studies have documented the inefficiencies and waste associated with searching for information. Knowledge workers spend 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, Reuters are among the many organizations that have examined the problem. Even worse, these same knowledge workers "spend more time re-creating existing information that they do turning out information that does not already exist." 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 the LexisNexis study, 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". 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." Nearly 60% say "If the amount of information I receive continues to increase, I will soon reach a braking point where I can't handle any more information."

Managing information is a nagging problem. A British based knowledge management expert, David Snowden once said, "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 really help, because we can't find it when we need it."

## The First "T": The (Search Engine) Tease

Leonard Fuld, co-founder of the famous Competitive Intelligence (CI) consulting firm that bears his name, Fuld & Company, wrote in a 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 not direct hits.

If search engines of today 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 felt the same way as Mr. Fuld, despite the proliferation of specialty search engines (beyond Google, and the rise of the semantic search engine, notwithstanding)—then what methods and practices are possible to find, filter and make sense of information?

Fortunately, there are capable research professionals who have the expertise to do what search engines cannot.

## 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 and make recommendations. In many cases, they know of resources that the layman does not, and have training in use of them.

Some have advanced degrees in life sciences, whereas others are corporate market researchers, and former engineers, product marketing managers and technologists with analytical and creative skills necessary to understand and solve information (data) problems. Many have subject matter expertise as well, i.e., they're knowledgeable about medical science, architecture, composites, telecommunications, executive compensation, legal, toxicology, and whatever other subjects of interest.

Professional researchers have specialized training. Developing 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.

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.**

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 primary research, phone interviewing and manual research skills. Special collections, symposium, certain proprietary resources may require special subscriptions or access. Whether the free Internet helps or hinders is an open question, though it may be a good starting point, but rarely the end point. Video, images, audio are other mediums used today.

"We live in a world of data trails", says Victor Camlek, Vice President, Market Intelligence at Thomson Reuters, "though not always the case in all countries, nor captured, and accessible, to everyone, easily." He maintains that in the "old days" we collected data associated with business transactions and stored this in departmental databases, whereas today we live in a much more robust data environment, with ongoing, daily applications. Data is more fluid, and more connected to and through more devices, such as the kitchen pantry or supermarket shelves, as they become "connected" data transmitters. It's part of the big data phenomenon.

Search tools such as Dialog, and other commercial grade large-scale databases (LexisNexis, Factiva) are tools used by professional researchers. The advantages of these online information databases are 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 engine.

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 inevitable analysis, synthesis and final development of the deliverable.

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

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 of concentration, and with respect to the client's budget and timeframe. Sometimes free sources are presented instead of paid sources because that's all the budget allows.

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

- **Information reference interview is conducted**
- **The topic is described in one sentence**
- **Determine a list of databases and resources likely to cover the topic**
- **Analyze the topic and identify individual concepts and select synonyms and alternative terms for each concept**
- **Decide on use of truncation, proximity connectors and logical operators**

Understanding the underlying structure of databases is critical to successful systematic searching and retrieval – it's not as simple as finding the right set of keywords.

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 exist—where to cut, how to summarize, what to emphasize and when to stop! 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 and credibility.

## The Third & 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.

Dialog is for some, the "go to source" for authoritative information, due to its aggregation, taxonomy and breadth of resources. Once the interface and language skills are mastered, it's a valuable technology and tool. Dialog indexes, for example, books, monographs, conference presentations, symposia, meetings, notes, journals, letter articles, patents too. BIOSIS contains Biological Abstracts with worldwide coverage of research in biological and biomedical sciences. Factive, a Dow Jones source, features 35,000 sources in 28 languages, from nearly 200 countries, including thousands of sources not available on the free web.

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.

In the biomedical/pharma fields there are tools like EMBASE from Elsevier Life Science Solutions. EMBASE is the bibliographic databases of choice to access the international biomedical and drug literature. More than 25 million records from 1974 to the present cover more than 5,000 journals published in 70 countries. Information from peer-reviewed journals includes human medicine (clinical and experimental), health policy and management, substance dependency and abuse, biomedical engineering and instrumentation. Records are updated weekly, and the system is renowned for its rapid, reliable and extensive coverage.

In the healthcare industry there are numerous research data banks, available to members through subscriptions such as National Institutes of Child Health and Human Development (NICHD) and American Hospital Association. At the later, librarians are available to assist search needs. Researchers in the medical field are savvy to know where data resides, knowing more about the resources and methods for collection than the average person. This is important because of the weight provided to the information and analysis provided. Phone research is a skill and tool that should not be de-emphasized. As has been pointed out, not everything current, relevant and real is on the Internet; often times it is in the minds and hearts of subject matter experts, ie, doctors, researchers, and industry analysts themselves. A trained and sophisticated telephone researcher is the one who can extract, report, analyze and interpret findings successfully. Primary research requires innate skills and talents. Considering the weight of the problem to be solved using the information gathered and analyzed, most people recognize this is not something to be left to someone like an unpaid intern.

## 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 systems.

The Montague Institute Review (MIR) from the Montague Institute specializes in taxonomy information. A good taxonomy allows users to navigate from need to resource consistently and quickly. According to the MIR, there are three parts to a taxonomy:

- **Vocabulary (terms)**
- **Relationships amongst the terms Relationships include cross references from nonstandard terms (ie, FASB) to standard terms (Financial Accounting Standards Boards), and from narrower terms to broader terms (ie, "transportation" see also "industries"), and from one term to a related term (ie, "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 third step is to connect the terms with sources – websites, documents, people, and 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", ie, alphabetical order, chronological order, subjects, organizations, and people.**

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 (remember that?). The Thomson Directory, LL Bean catalog as well as search engines, and thousands of other systems are taxonomies. Taxonomy helps with the explosion in content, including Big Data.

By understanding the nature of taxonomies, researchers can efficiently source and catalog disparate information sources. The key variable is efficiency; that's one of the greatest values for turning to a professional researcher/ analyst – the speed of accessing volumes of data. Since service delivery (such as research services and analysis) is based on time consumption, the efficiency afforded by understanding tools and technology and taxonomies, results in cost savings for the client-customer. This is all the more real in today's Big Data world.

In Big Data, aside from volumes of data, there is also velocity or transmission of data. There's enormous amount of data to retrieve and search through, and speed of transmission is a big part in the ability to do so.

## Conclusion

When a Houston-based global engineering firm needed to know the prices for laboratory equipment, training and spare parts needed for a laboratory under construction in the Middle East, Overbrook Advisory Services was called. The spreadsheet deliverable had a 2 week, ten day turnaround requirement and we delivered.

Information is the lifeblood of successful companies but we're choking on access issues, unable to get the information when needed. There is raw data, of which there is plenty, but without analysis it is oftentimes not 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 not appropriate or may be too costly 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, is an invaluable resource for those involved in market assessments, new product development, strategic planning. Research is a necessary first step in so many facets of business. Doing the right research the right way goes a long way toward improving business operations, saving time and money, and improving overall business outcomes.

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