

“The Information Professional facing the impact of Search Technology” Transform everyone into an Information Professional?

Hannah Verhoeff

*Content & Knowledge Engineering, University of Utrecht,
Heidelberglaan 8, 3584 CS Utrecht, the Netherlands
+31(0) 653 151 594 hannahverhoeff@gmail.com*

Anke Vellenga

*Media & Journalism, Erasmus University Rotterdam,
Burg. Oudlaan 50, 3062 PA Rotterdam, the Netherlands
+31(0) 650 237 222 anke_vellenga@hotmail.com*

...

ABSTRACT

“Finding a needle in a haystack”, refers to the role of an Information Professional, but today it also points out the core function of the Search Technology. Is ‘Search’ taking over the differentiating task of the person that has always been in charge of managing the information or specialized in finding the right information, in the right place at the right time? Would an Information Professional become less professional if he or she would use a search engine? What is the future of an Information Professional if everybody can find the information they need by using Google or other Enterprise Search solutions? This research answers the questions: (1) What are the main tasks of an Information Professional and of Enterprise Search, (2) what is the impact of ES on the tasks of the IP, in terms of similarities and differences and (3) is this impact expected to change in the future? This paper draws up results which are crucial for the future of the Information Profession.

KEYWORDS: ICT, Information Profession, Professional, Search Technology.

1. INTRODUCTION

In 2006, the amount of digital information created, captured, and replicated was about 3 million times the information in all books ever written (Gantz, 2007). According to various researchers, the volume of digital information doubles every two to three years. The volume of information is growing with an incredible speed. Information surrounds us, is of great importance for our society and mission critical speaking in terms of business. There is no doubt of the significant role of the Information Professional (IP) in this information economy. But

who is the IP? Many names are given to the professional: information specialists, managers, consultants, scientists, architects, brokers, analysts, but also the librarians, knowledge managers and archivists. Despite the versatility of the IP, this paper focuses on: The IP that provides the overall management of internal and external resources. He / she opens these resources and makes this information accessible. This professional has the expertise to collect information, structure and disseminate (tailor made) information. He / she navigates and guides the person that is searching for information to find the right information at the right time. The IP is also able to analyze the search behavior and results.

The work of an IP is subjected to the developments in the world of Information and Communication Technology (ICT). The IP deals with the use and generation of information and new technologies, the Search Technology is one of those. Search technology became popular as a means of indexing books and libraries. And the software was accordingly modeled after the indexes that writers used to organize their thoughts at the conclusion of a book. In the late 1970s and 1980s the search technology was created that could index and search millions of documents, primarily for online services. Since then, more and more companies used internal web sites (intranets) for sharing documents and to index the growing amount of information within their enterprises. As the volume of information increased exponentially, so did the requirements for search technology to help users locate information. It got modeled not only for online information but also ‘offline’ content within

the enterprise, which is called Enterprise Search (ES). The aim of the ES technology is to challenge the growing volume of information and transform every searcher into an IP. By means of ES every employee of an organization should be able to find the right information without human intervention. While concentrating on the definitions of the IP and ES, we notice the overlap, an overlap which could have dramatically impact on the work of an IP.

The central issue of this paper can be explained as: (1) What are the main tasks of an Information Professional and of Enterprise Search, (2) what is the impact of ES on the tasks of the IP, in terms of similarities and differences and (3) is this impact expected to change in the future? To answer this question we have to distinguish three research aspects:

1. Desk research on The Information Professional
2. Desk research on Enterprise Search Technology
3. Comparison of the IP and ES, both current and future situation

Various techniques for collecting data have been applied in this study. These techniques range from conducting a survey among IP(-experts) to a visit at the library and surfing on the web. A wide range of data which includes published and unpublished documents, company reports, letters and articles have been relevant during this research. In the process of carrying out the research, it became clear that the survey has become the most important technique that we have applied. We have selected a group of IPs working with ES and a group working without ES. These respondents vary from management and hands-on positions in profit to educators in non-profit organisations in the Netherlands. Besides this survey, we have conducted a theoretical research on the role of the IP in (news) organisations today and the latest developments in that role. This way we were able to define the IP in the most meticulous way.

The future perspectives are important for the Information Profession, especially since he/ she is facing several new technologies. This paper discusses the impact of ES on the work of an IP in a neutral way, this means not hunting for reasons to ignore the modern search technology, neither seeking for possibilities to overrule the IP by ES. We discuss the opinions of IPs on the current and future situation by scaling both IP and ES the same way and not leaning towards defending one or the other aspect. This paper closes with the answer to the main question: *What is the impact of Enterprise*

Search on the tasks of an Information Professional? This paper outlines the definitions of the IP and ES and points out the similarities and differences between them. The conclusions can be found in the closing chapter.

2. THE INFORMATION PROFESSIONAL

Why the Information Professional?

The growth of information is becoming the largest risk and challenge for the IP, CIO's and analysts acknowledge. The information volume grows each year with 57 percent, which can cause a smothering feeling. We are living in a information society in which the IP has never been as important as now. Information is the basic resource in the work (Webster, 2002) and it connects us in this networking society linking people to each other (Webster, 2002). Information is the lifeblood of the knowledge-based organization and essential for innovation and continuing learning. The IP plays a distinctive role in gathering, organizing and managing information access to the best available information resources for the organization (Abel, 2003). The professional managing content collections and taking care of the information resources and services, is unambiguously the key figure in this information age.

Who is the information professional?

The information profession seems to be constantly trying to define a role for itself in 21st century organizations. Many experts in the world of information have argued about the focus IPs should have, especially within the framework of defining university's curriculum because of a decreasing interest in the information related studies. Much that is written on this topic is strongly influenced by the author and background of the 'articles'. Scientific papers and writing on this topic are mostly on a specific role or position of the IP and a complete definition or an overview of the information profession is lacking. Some experts say the information profession is something that is subjected to the employment situation, some say it is specially liable to the influences of the Information Technology. Over the last few years, experts have been defining the role of the IP as a gathering of competencies, whether or not broken down in clusters. Obviously the profession is multifaceted and in most cases asks for clarification.

Findings in a research taking place a few years ago point out that the IP would call itself experts in search and retrieval of information, interacting with

the searcher and delivering tailor made information (Hendriks, 2003). The core competencies of the IP is making information resources accessible and organizing it. Next to that creating metadata, performing search and retrieval, and navigating the searchers to the right information (Van Dijk, 2003). This reflects the background of the profession, lying in the world of the librarian. But the modern IP is experiencing more challenges by the influences and the increasing expectations of their environment.

Particular circumstances have had influence on the information profession. Three aspects meddled in the environment of the profession: 1) ICT; 2) Individuality of information searchers; 3) Acknowledgement by the organization. 1) ICT: A practical example is the a large impact on the function of the library. ICT has made information accessible en changed the lifecycle of information (van de Pas, 2006). By increasing digital information becoming, libraries were finding themselves in a crush and because of that integrating the library with other information workspaces. The library and the traditional librarian see their work change rapidly. 2) The 'user' is becoming more individual by web search engines. Intervention by a professional helping the user to find the right information is often becoming superfluous. 3) Acknowledgement by the organization management. Not being noticeable and acknowledged in the business environment is something that is changing. The IP should not be separated by the management, but involved with taking business decisions. The importance of the IP has not always been recognized and IPs inside organization experience being underestimated when it comes to a contribution for the management. This seems to change since the awareness of the importance of information is growing.

From this point we would like to distinguish four major competencies, which are extracted out of earlier studies. Because one must take into consideration that the widespread employability of the IP does not make it easy to define competencies (Boom, 2002), we have chosen to distinguish the major competencies: 1) managing information organizations; 2) Managing Information Services; 3) Applying Information Tools and Technologies 4) Managing Information Resources; (Abel, 2003). The last major competence we discuss more detailed because this is we consider 'managing information resources' to be most pressured by the ES Technology.

Managing Information Organizations

An information organization may be in any environment from corporate, education, public, government, to non-profit. These organizations have intangible offerings and is constantly changing markets. The IP aligns the organization with the strategic directions of the parent organizations and assesses the value of the organization, including information services, products and policies towards senior management (Abel, 2003). He/ she builds an effective information service team and is specially focused on marketing and competitive information. This IP is continuously gathering, interpreting and analyzing information, and distributing knowledge throughout the organization and towards the management to support in business decisions (Rodenberg, 2002). The IP is the person who works on a more abstract level and clearly demonstrates the value-add of the information organization to clients and key stakeholders, he/ she can also be called a business/ marketing/ competitive intelligence specialist, knowledge broker (Boom, 2002), information manager or chief information officer.

Managing Information Services

One of the important major competencies of an IP is controlling the information process. The IP may oversee this process by managing the entire life cycle of information services, from the concept stage through design, development, testing, packaging and delivery of information (Abel, 2003). This IP is specialized in Information Science and gathering information in a pro-active way, and can put information so that it fits the needs of the person that is searching for information (Van Dijk, 2003). The IP has the knowledge of information behavior and understands how information services can most effectively be utilized. He/ she is often doing research for other companies and analyzing information into accurate answers or actionable information for them to immediately apply. IPs specialized in these competencies could be called information analysts, reporters, advisor, information researchers.

Applying information tools and technologies

The IP knows their tools and is aware of the appropriate technologies. Not necessarily understanding the very technical side, but especially the logical design side. He/ she appears as a information architect, who knows how to carry out the business analyses and the accompanying information analyses (Van Dijk, 2003). The IP is prepared to advise all levels of the organization on how technology trends will affect the organization

and the clients (Abel, 2003). He/ she uses appropriate technology to deliver the best services and to provide the most relevant and accessible recourses. Applying expertise in databases, indexing, metadata and information analyses are competencies as well. The IP maintains awareness the latest policy and legislative initiatives that will impact privacy accessibility and openness of information use (Abel, 2003). Because of these reasons the Information Officer often gets confused with a Technology Officer.

Managing Information Resources

The last major competence of the IP is the total management of information resources and includes identifying, selecting evaluating and providing access to the varied repositories (Abel, 2003). In this paper we discuss these competencies as the core competencies which we will compare with the main features of ES. The core competencies of the IP go back to the roots of the profession: search & retrieval, metadata, analyzing, making repositories accessible, organizing information and helping the searcher find the right information by guide and navigation (Van Dijk, 2003). The IP has the ambition to work accurate, to conduct full desk research, and to manage the traditional (library) collections (Hendriks, 2003). We have found these competencies in the work of an IP at a news organization and included her story as a case to outline these competencies.

Information Professional in news organizations

The role of the IP in a news organization, like a newspaper or television network, is to deliver information to the members of the editorial office. The IPs primary 'customer' in a news organization are editors and journalists.

The main task of an IP in a news organization is to take care of the information that the editors and journalists need in order to write their article or to produce a news item. This information can be for example background information about any subject, or when a journalist wants to interview somebody, the IP can deliver information about this particular person. The IP also checks if a certain subject is real news or if there is anything written about the subject before. Other information that journalists might need can be business information about an institute or contact information of people in the news, like telephone numbers or addresses. IPs also seek experts and specialists who the journalist can contact to get more information about a specific topic.

Besides delivering information, the IP can help the editors to find news. By searching on the internet, local newspapers or regional television programs the IP can trace the news subjects. Also journalists with a specialism, like crime or environment, can get an update when there is an development on their field of specialization. These tasks of an IP are on a proactive base.

The research or documentation department in a news organization uses different resources. The resources which IPs generally use for information are digital resources, like databases and Internet resources. Non-digital resources, like handbooks, dictionaries, encyclopedias and International Who is Who are used less these days. This is mainly because a lot of the information is also digital available, which is usually faster. The internet can also be a useful source for the IP. He or she can assess the quality and reliability of the information from the internet. Social networks become increasingly important for the IP and the news organizations when they need information or photos about a person who is in the news. The IP needs to be able to do proper desk research. The professional needs to know how to find information, where to find it, and do this in a as fast and effective way as possible. It is important for the research or documentation section within a news organization to make sure they cannot be missed within the organization.

This brings us back to the focus of this paper: *what are the main tasks of an IP and does Enterprise Search take over these tasks?* To answer this question we have chosen to define the IP whom we will final compare with ES in our survey. This definition is based on the 'managing information resources' competencies explained above.

The Information Professional takes care of the entire management of intern and extern information resources. He or she captures these resources and makes the information accessible. This professional has the expertise to gather information, to structure information and deliver and spread the information to the clients. He or she navigates and guide the information seekers to find the right and reliable information. The Information Professional is able to analyze search behavior and information.

3. ENTERPRISE SEARCH TECHNOLOGY

What is Enterprise Search?

The uses of computers to search through text

documents is not new, and the origins of the way in which most of the current search products work can be traced back to technology innovations on online bibliographic search services in the 1960's and 1970's (White, 2007). Information retrieval and online search has been available for decades, but many of the lessons learned by these search pioneers seem not to have been taken into account. Until the popularization of the World Wide Web, search-and-retrieval was a discipline with a loyal but relatively small following in the overall range of information technology (Regli, 2008). By the early 1960s the first online information retrieval systems were in the prototype stage. However, these systems were designed to be used by IPs steeped in Boolean algebra and with the training to be able to evaluate the information that the systems presented with them (White, 2007).

With each passing day, search becomes more important. The growing volume of information means a growing demand for professional search. The IP notices a indispensable position in organizations and the importance of search. The introduction of web search changed a lot in the interpretation of what search actually is and who is able to search. Searching the web, which is what we all do when we type something into Google or any other internet search engine, is different from ES. While web search is intended for use by individuals seeking web content, both within and beyond the enterprise, ES systems are intended for use within an organization by employees seeking for information internally (Regli, 2008). We can compare ES with the umbrella on top of information systems and the platform that makes all information resources available, taking in account the variety of format and location of the information. ES is a technology for both structured data out of databases and semi-structured data like webpages, e-mails and all variations in between (Hondelink, 2008). According to the context ES offers a multifaceted 'guided navigation' approach to information location, access and search. The results interface can be presented in a way that nobody has to be a search expert in able to search, but clusters or filters of the information will help finding the right information (Arnolds, 2007).

Why Enterprise Search?

The volume of digital information is growing exponentially. In the meantime, the variety of content, both in terms of form (e.g. blogs) and type (e.g., Flash and other multimedia), expands yearly. Finally, a growing number of professional users have become everyday searchers, expanding the user community from a small group of specialized IPs into a ubiquitous group of enterprise employees who have diverse needs and expectations (Regli, 2008). ES has caused a revolution by giving the

people with information needs self-responsibility and the ability to find information itself.

Employees typically spend anywhere from 15% to 35% of their time just looking for information and actually find the information they need 50% of that time. This costs a company \$5.000 for each employee each year. Of their actual working time, studies have shown that they spend more time re-creating existing work than they do creating original materials (Feldman, 2004). Intelligent, targeted delivery of timely information can help to manage the information overload that most knowledge workers are bearing. ES has also the ability to push new information to knowledge workers in real time based on criteria that they can personalize. Using ES saves time searching and for that reason it reduces costs. ES makes searching easier and prevent long lasting search action.

The features of Enterprise Search

ES technology captures internal and external information repositories, makes the information accessible by search and navigation and presents the results by clustering the information. The technology registers and analyzes search behavior and results.

The main features of ES are the 1) Indexing, 2) Searching, 3) Finding features.

- 1) Indexing: The technology creates automatically an index from numerous disparate repositories that store content. It 'reads' a document, indexes the words in that document, and configure that index in such a way that a user can search by "facets" or "related concepts". The technology indexes enterprise information as well as available internet information and can combine the results. Administrative controls to allow a licensee to index only certain documents and to adjust the system so that the speed of indexing, query processing, relevancy ranking, and myriad other attributes can be 'tuned' (Regli, 2008).
- 2) Searching: Searching by natural language; translating languages, lemmatization, Boolean operators; data type; fuzzy search; relevance ranking; spider; fielded search; meta search function; wild-card search, recommendations, authorization. It recognizing sentences, paragraphs and entities, such as location, names, synonyms and symbols. By searching it logs to record user behavior an registers search behavior: for example, the number of queries, the number of 'hits' a document

receives, the most frequently used search terms, and dozens, if not hundreds, of other measures.

- 3) Finding: An administrative interface allows the user to develop customized term lists, synonyms, and "use for" lists. A web browser is available and 'Guided Navigation' functions can be integrated into other applications. It offers security which controls access to content for the specific users, the internal access control list (acl) dictates who has the rights to see what document, that verifying levels of granularity.

4. METHODOLOGY

In the last two chapters we have described the IP and ES. In this paper we compare the IP and ES and discuss the differences and similarities between them in order to be able to determine if the IP is superfluous by the impact of ES now or in the future.

In advanced to comparing IP and ES, we must note that it might seem unusual to compare a technical solution with human activity. Though the concept of a machine taking over the work a people is not new, think about the reading machines at the post office being able to read handwritten addresses on envelopes. Until 1997 people could not imagine machines taking over such "intelligent" work. Machines are able to take of human activity, but the question is how far the technology reaches (Mauk, 2005).

We have chosen to conduct a survey to collect data in order to answer the question: *What is the impact of Enterprise Search on the tasks of an Information Professional?* We considered measuring 'impact' is a matter of interpretation of the individual IP. This survey is held among IPs using ES technology and on the other hand IPs not using ES. This way we would be sure IPs understand the topic. By including IPs using ES, we would be sure they at least understand the specific questions concerning ES features. To make sure every respondent would have the same interpretation of IP and ES, we started off with a definition of the two 'variables'.

IP: The Information Professional takes care of the entire management of intern and extern information resources. He or she captures these resources and makes the information accessible. This professional has the expertise to gather information, to structure information and deliver the information to the persons searching for information. He or she navigates the information

seeker and guides it to find the right and reliable information. The Information Professional is able to analyze search behavior and information.

ES: Enterprise Search is the search technology on top of or integrated within any information system. It captures all available repositories, regardless the format or origin. The technology makes internal and external information accessible and by means of a personalized navigation the information searcher is able to be guided to the right information. This search technology registers and analyzes search behavior and results.

First of all we have chosen to conceive four constructs which we extracted out of the definitions described as above. The constructs are multiple questions put together in order to measure the overall opinion of the construct. We conceived the following constructs: 1) Organizing information, 2) Managing information resources, 3) Information services and 4) Registration and Analyzing. To measure the opinion of the respondent towards these constructs and measure their opinion on the development of these constructs we asked respondents twice the same questions. First they could fill out their opinion on the current situation and second fill out their opinion about to the future situation. But both in the same survey.

Throughout the whole survey, the respondents were asked to answer one question: Do you think 'this' could better be done by an IP or by ES Technology. They could answer on a 5-point scale, by checking the boxes 1 to 5. 1 = The IP can do this better than ES; 2= The IP can do this better than ES but has limitations; 3 = Both the IP and ES can do this; 4 = ES can do this better than IP but has limitations; 5 = ES can do this better than the IP.

We asked the opinion of the respondents on the following 'items':

- 1) *Organizing information:*
 - A. Creating metadata;
 - B. Indexing information;
 - C. Categorizing/ classifying;
 - D. Filter relevant information;
 - E. Creating a taxonomy;
 - F. Managing a taxonomy.
- 2) *Managing information resources:*
 - A. Selecting internal and external resources;
 - B. Capturing (un)structured information;
 - C. Making external information accessible;
 - D. Making internal created information accessible;
 - E. Collecting information;

- F. Collecting information in a pro-active way;
- G. Recognizing data-type;
- H. Evaluate information resources;
- 3) *Information services:*
 - A. Determine the information need;
 - B. Determine what is relevant for the person searching;
 - C. Determine what is reliable information;
 - D. Navigating and guided search;
 - E. Deliver information to the right person;
 - F. Making information accessible to the right searchers;
 - G. Finding information at the right time.
- 4) *Registration and analyzing:*
 - A. Logging searchers;
 - B. Logging search behavior;
 - C. Analyzing search behavior;
 - D. Logging information flow;
 - E. Analyzing information flow;
 - F. Analyzing and reporting unstructured information;
 - G. Analyzing and reporting structured information.

Respondents were able to fill out the survey on the internet, this way they could fill it out regardless of the place and time.

5. DATA ANALYSES

During a period of three months 30 respondents have filled out the survey. All constructs have been measured by the answers to multiple questions. The respondents turned out not all to be the IP that either works with ES or without ES, but also other information professions. This means our findings are general opinions of all kinds of information professions. Not all respondents filled out their opinion on the future of the activities. We report these findings after every construct results of the current situation.

- 1) *Organizing information:* These activities show the most remarkable differences between the IP and ES. IPs working without ES seem to believe more in their own skills than the features of ES, but the IPs working with ES state that ES shows more benefits. Creating metadata is according to IPs something the IP can do better than ES, same as categorizing and classifying. "People are able to understand a text better than a machine can do", was one of the comments. On the other hand IPs with ES filled out they strongly

believe that ES is able to build an index and classify/ categorize the content. IPs with ES thought metadata is something both IPs and ES can do. Taxonomies seemed to be the most unknown topic, since not everyone answered this question. Most of the respondents answered that taxonomies could be created and managed the best by the IP, but this may be effected by the fact that not everybody understands taxonomies. "Filtering relevant information should be separated in 1. Filtering Information and 2. Relevant Information" one of the respondents commented, "because filtering is something ES could do best, but determine what relevant is, is something IPs could do best". Despite this comment, most IPs with ES find this can be performed better by ES and most IPs without ES find this can be performed better by IPs.

Future: Creating metadata is something that ES can do slightly better in the future, is the prediction of the respondents. Filtering relevant information is an activity that ES could do better in the future.

- 2) *Managing information resources:* All respondent agreed that the selection of internal and external resources should be done by the IP. The IP can be the manager, deciding whether a source should be selected or not. Capturing information is something that can be done by ES but it has some limitations with structured information stored in databases. Unstructured information is something that most IPs without ES say can be captured best by IPs and most IPs with ES say ES is the best tool to capture unstructured information. "ES does not gather information over and over again, it captures it once and can find it unlimited times" one respondent commented. This could declare the minimum response of the IPs with ES on C. Collecting information. IPs without ES said collecting is something IPs do. Most respondents think IPs are better in pro-active search. ES can only do pro-active search when information resources are captured and indexed. By push-technology it is possible for an information searcher to receiving information without asking for it. 95% of the respondents thought recognizing data-type can be done both by ES and the IP. Evaluating information resources is something the IP could to better, all respondents agree.

Future: Selection of information resources in man work, this will not change in the future. ES captures information, "only in the future these resources could be more varied" a respondent mentioned. Collecting information is easier by ES, but pro-active information

collecting is something that ES could do better in the future. Evaluating information resources seems a human activity, which does not seem to change in the future.

- 3) Information services: Many respondent thought services ought to be performed by people. "Services and technology are different things" is a remark of one of the respondents. Theoretical we could agree, but not looking at the specific items that belong to that construct. Overall, determining what the information seeker is looking can be done by both the IP and ES, but some comment there is a big difference in precision. This is why all of the IPs without ES think determining what is relevant information can only be done by the IP. IPs using ES mark relevancy as something that can be interpreted in more than one way. Relevancy depends on the information searcher. Determining what reliable information is, means for the IP judging the trustworthiness of a document. IPs with ES say determining the reliability starts at the source; if the source is not reliable it will not be captured and indexed. Navigation and guided search of digital information is one of the exclusive features of ES, even IPs without ES admit but have their doubt about the quality in that case. Overall, the delivery of information can better be done by the IP instead of ES, but making information accessible is more an advantage of ES. Search by professionals is not as fast as a search engine, all respondents reply.

Future: determining what the searcher is looking for, will be optimized in the future by ES. Some say profiling (profiles of searchers) will help an ES in the future to know the searcher better and therefore find the right information. Reliability is something that ES determines in advance to capturing information resources and IPs ascertain the reliability after reading a document. These cannot be compared to each other. Because of this we cannot say anything about the future. The search by IPs is currently more time consuming and in the future this still will be.

- 4) Registration and analyzing: Not every IP thinks registration of their searchers as it were important. IPs would rather log searchers and their behavior. IPs with and without ES both are of the opinion that it helps to guide the searcher to find the right information. Analyzing is according to IPs without ES (75%), human activity. IPs with ES don't believe as much as IPs without ES that is should be work done without a machine. Analyzing on the other hand is an activity that every respondent in a way marks as human

skills, though IPs with ES say it has limitations. IPs have the skills to report, but ES needs a separate reporting tool and the correct interpretation. Reports thus far are created the best by IPs. There is no difference between structured and unstructured information.

Future: Analyzing does not seem a core business for ES in the future, though registration activities will change in the future. Respondents predict ES could do better in logging searcher and search behavior. Respondents agree that ES will neither now and in the future ES be the technology that specializes in analyzing and reporting activities.

6. CONCLUSION

The amount of digital information created, captured, and replicated in one year is about three times the information in all books ever written. We are living in a information society and organizations are getting more and more aware of the importance of information and the IP. Because of the widespread employability of the IP, we have distinguished four major competencies of the profession in this paper: 1) Managing information organizations; 2) Managing information services; 3) Applying information tools and technologies; 4) Managing information resources. The last competence is explained most detailed and the basis for the definition of the IP: The IP takes care of the entire management of intern and extern information resources. He or she captures these resources and makes the information accessible. This professional has the expertise to gather information, to structure information and deliver the information to the persons searching for information. He or she navigates the information seeker and guides it to find the right and reliable information. The IP is able to analyze search behavior and information.

The IP is considered to be the expert in dealing with the information overload. But not only the IP. The aim of search technology is to challenge the growing volume of information and transform every searcher into an IP. ES is the search technology on top of or integrated within any information system. It captures all available repositories, regardless the format or origin. The technology makes internal and external information accessible and by means of a personalized navigation the information searcher is able to be guided to the right information. This search technology registers and analyzes search behavior and results.

The IP is challenged by the ES Technology. A

questionnaire has been conducted to finally determine what the impact is of ES on the work of the IP and whether this will change in the future. Four constructs have been defined: 1) Organizing Information; 2) Managing Information Resources; 3) Information services; 4) Registration and analyzing. The results of this research are also broken down in these four 'categories'.

1. Remarkably, IPs without ES are more convinced about added-value of the human intervention in search, and in particular in 'organization information'. According to the IPs without ES: creating metadata, classifying and categorizing information belongs to the IP and not to the features of ES. IPs using ES think indexing, categorizing and classifying information can better be done by ES than an IP, but with limitations. Deciding which information is relevant is human activity and filtering the appropriate information can better be done by ES. Filtering relevant information and creating metadata are activities ES could possibly do better in the future.
2. Interesting is how the results point out a big difference between IPs and ES in managing information resources. Selecting information resources has always and will always be human activity, all respondents agree. Both ES and IP can collect information, but the IP collects and captures information continuously and ES collects and captures it once. These means ES is less time consuming. But it also means that the IP is better in pro-active search and ES is better in pro-active delivery of information. Respondents do not expect any changes in managing information resources in the future.
3. By studying the differences and similarities of 'information services', we have noticed the IP interprets some terms different than they would be interpreted in the ES world. Relevancy is one of those terms. Relevancy by ES is determined by the content en how much that fits the search words of the searcher, but relevancy according to the IP is how much the finding results meet the needs of the searcher, by looking through the eyes of the searcher. Liability is also a confusing term, comparing ES with IP is therefore difficult. ES determines whether an information recourse is liable and a IP looks

at each individual document. Changes in the future are possible on the domain of relevancy, some IPs with ES say personalized search will take interests of the searcher in account by determining the relevancy.

4. Analyzing and reporting do not seem to be the core features of ES, neither will it be in the future. The search technology needs extra features and in that case will not be called ES anymore. Registration of searchers and their search behavior is not that important to IPs without ES. IPs using ES see this as a feature that will become important when it comes to determining the relevancy, it that case ES does register this data.

There are many activities that IPs and ES have in common. ES comes very close to the tasks of the IP. In some cases ES is more efficient and less time consuming, and on the other hand in some cases the IP is essential because of precision of the search results and understanding what the searcher is looking for. Clearly, ES is not ready to operate independent for the IP. The ideal situation is an IP to select information resources and an ES to capture, index and classify the digital information. The IP can decide if these is has been done accurate and personally refine the search results. The IP is better in pro-active search, but once the information is captured ES is better in pro-active information delivery. The IP is essential when it comes to analyzing and reporting data and managing the entire information process, though it should be taken into consideration that focusing on other more abstract competencies like managing information organizations, information services, and applying information tools and technologies (chapter 2) will give the IP more future perspectives.

7. REFERENCES

- Abels, E & Jones, R & Latham, J & Magnoni, D, Gard Marshall, J. (2003). 'Competencies of the Information Professionals of the 21st century'. Available at: <http://www.sla.org/content/learn/comp2003/index.cfm>. Date: August 21 2008.
- Arnolds, S. (2004) 'About Enterprise Search' Online Vol. 28 Issue 4 pp: p20, 7p
- Boom, D. & Lekanne Deprez, F. & Tissen, R. (2002) 'Angst en hoop voor de bibliothecaris': De grond van bestaan van de IDM beroepsgroepen. Informatie Professional Vol. 6. Issue 4.
- Domisse, B. (2005) 'Informatieontsluiting: wij en

- zij?'. Available at:
[http://www.vhic.nl/default.asp?A1PID=1732PTMC
&A1SID=249020079&FOLDER=340BTMC](http://www.vhic.nl/default.asp?A1PID=1732PTMC&A1SID=249020079&FOLDER=340BTMC).
Date: August 21 2008.
- Feldman, S. (2004) 'The high cost of not finding information' Available at:
<http://www.kmworld.com/Articles/ReadArticle.aspx?ArticleID=9534>. Date: August 21 2008.
- Gantz, J.F. (2007). 'The Expanding Digital Universe': A forecast of Worldwide Information Growth Through 2010. An IDC White Paper.
- Hendriks, B. & Verbei, W. (2000) 'Je hebt altijd systems en people he, maar het zijn mensen die het werk doen': An interview met Evert Jagerman. Information Professional Vol. 4 Issue 10.
- Hendriks, B. (2003) 'De informationprofessional in het hart?' Informatie Professional Vol. 7 Issue 3.
- Hondelink, A. (2008) 'Enterprise Search maakt zoeken makkelijk'. Available at:
[http://digitaalbestuur.nl/opinie/enterprise-search-
maakt-zoeken-makkelijk](http://digitaalbestuur.nl/opinie/enterprise-search-maakt-zoeken-makkelijk)
- Mauk, B. (2004) 'How Do Post Office Machines Read Addresses?' Available at:
[http://www.livescience.com/mysteries/070816_lett
er_reader.html](http://www.livescience.com/mysteries/070816_letter_reader.html). Date: August 21 2008.
- Odding, N. & Molendijk, P.A. & Versluis, Y. (2008) 'Enterprise Content Management' An Interaccess whitepaper.
- Regli, T. (2008) 'Enterprise Search': Seek en ye might find. Computers in libraries Vol. 28 Issue 7 pp: p22, 8p
- Rodenberg, J.H.A.M. (2002) 'Slagkracht van de Intelligence professional' Informatie Professional Vol. 6. Issue 9
- Van der Pas, J. & De Vos, M. & Wiebinga, P. (2006) 'Strategische verkenning in woelige tijden': De informatiespecialist, de student en de IDM opleiding. Unpublished writing for 'online conferentie Nederland'. Saxion Hogeschool, the Netherlands.
- Van Dijk, J. (2003) 'De IDM in een spagaat': IDM – Keer terug naar het land van herkomst. Informatie Professional Vol. 7 Issue 5
- Webster, F. (2002). *Theories of the information society*. London: Routledge.
- White, M. (2005) 'Making Search Work': Implementing web, intranet and enterprise search, MPG Books Ltd Bodmin, Cornwall GB.