FINDING INFORMATION

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Contents

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Summary

This article presents an overview of contemporary methods of finding information about a particular subject to support management, decision making, scientific research, and so on.

The following subjects are briefly discussed: The concept of "information", information on CD-ROM, multimedia and hypermedia, computer data networks and the Internet that have paved the way for the World-Wide Web. This system now allows easy access to many online information sources and services. Then the following are discussed: dictionaries and encyclopedias, books and journal articles, electronic journals, citation searching, computer-based network interest groups, interlibrary lending and document supply. The presentation ends with some databases to search for information related to water.

1. Introduction

This article presents an overview of contemporary methods of finding information about a particular subject to support management, decision making, scientific research, and so on. These methods do not depend that much on the particular subject, so that this article can be relevant not only for the readers targeted by this encyclopedia and certainly not only for readers more specifically involved in water-related activities although this article fits into the theme "Water". After the large general part, a more specific and much smaller part offers an overview of sources for information users in the domain of water.

2. Relations with Other Articles of this Encyclopedia

2.1. Relation with the Articles on Teaching

Teaching relies on providing knowledge, information and data to students. Studying relies on finding, managing, and digesting information. Furthermore, a constructivist teaching and learning approach is based on the idea that studying can be more efficient when the student learns by problem-oriented doing, by experiencing the study topics and by searching for information, than when the student is a more passive recipient of the materials to be learned. So this article on finding information is related substantially to other articles by other authors who focus more on teaching.

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2.2. Relation with Providing Access to Information

As this author is also contributing the neighboring article on "Making Information Available", there are certainly many relations between both articles. The idea is that this article focuses on the users of information and tries to guide these users and potential users to an efficient usage of information sources. The article on providing information is complementary and focuses more on how information professionals can assist users of information by guiding these to, and by providing access to, external information and of course by providing efficient access to more local information created internally in the organization. This article on finding information comes first, because the contents should be mastered by anyone; not only by information professionals or providers of access to information, but also by users of information. The article on providing access can then build on this one, and can go further.

3. The Concept of "Information"

3.1. Information in our World

Our world is characterized by a growing complexity, internationalization, and globalization. The evolution of science and technology and society in general is fast and even accelerating. Economic products are now less based on natural resources and more on information and knowledge than previously.

Our reactions and responses to this situation require at least a growing knowledge and more skills, a growing adaptability and flexibility, and willingness to seek global cooperation and mobility.

The exploitation of information and knowledge, and of research and education on a global scale is more important than ever in such a world.

3.2. Some Strange Properties of "Information"

Information has properties that are clearly different from other economical products and other building blocks of our society:

Information is never consumed and does not deteriorate. Nevertheless information obsolesces; the speed of delivery can be crucial. The context is important. There is no agreed measure of a unit of information. Prices of information are not linked to its value in a particular situation. Moreover, one cannot well quantify the benefit and value of information. One information item can be available to different persons at the same time. Information can be well reproduced, which makes it cheap for wide consumption. However, copyright can keep the price high.

3.3. Formats of Information Sources

Information can come informally through people communicating by talking, telephone, fax, electronic mail, etc., or more formally stored in documents such as hard copy or computer-based files. Both of these formats of the flow of information are important.

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Here we focus mainly on information that is stored in documents.

3.4. Criteria to Evaluate the Quality of Information Sources

In view of the widely varying degrees of quality of information sources on the one hand, and of the costs associated with using information on the other hand, we should always be critical:

Is this information item valid, reliable, trustworthy, genuine, authentic, accurate, correct, unique, complete, comprehensive, substantive, objective, current, up to date?

Is a lot of primary information contained within the resource which is not obtainable from other sources? Does this information source offer a wide coverage, a good clear format and layout of the information? Is the information offered through a user-friendly information system; is it easy for users to orientate themselves within the resource and to find their way around it? Does the information system offer good user support, good customer support? Is the type of distribution medium appropriate (for instance print, e-mail, online)?

3.5. The Flow of Documentary Information

The flows from authors, creators, and senders of information to the readers, users, and receivers use many channels and media. We can distinguish the primary information flow with primary information sources, such as scientific articles, and the secondary flow with secondary sources such as abstract journals, catalogues, and bibliographic databases. The secondary information flow is generated on the basis of the primary flow, mainly because the great amounts of primary information lower the chance to retrieve and use the appropriate information item. Secondary information tries to bring some order in the great chaos.

3.6. Categories of Information Sources

Information sources can be categorized in various ways:

- Primary or secondary;
- Text, image, sound, software, data, interactive, or mixtures of those;
- Hard copy, not digital, or digital, computer based, requiring a computer system; the digital sources can then be further categorized as offline (for instance information on a CD-ROM) or online (for instance a database that can be searched through the Internet).

3.7. Retrospective Searching versus Current Awareness

Searching for suitable information takes the form of retrospective searching mainly when we enter a new, unknown field or subject domain where we need supporting information. Once we have found enough information, we are challenged by the continuous flow of newly generated information and by the changing environment in

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which we work and live. Therefore many people want to use also newer information. To find such new sources, we can use a current awareness service, that is a service that provides the recipient with information on the latest developments within the subject areas in which he/she has a specific interest or need to know.

3.8. The Evolution of Storage and Distribution Media

The media for storage, distribution and retrieval of information have always been evolving. Some landmarks are the invention of printing with movable and reusable fonts in the fifteenth century, the first publicly accessible databases in 1975, the birth of the Internet in the 1970s, the availability of CD-ROM in 1985, and the birth of the World-Wide Web around 1990.

3.9. End Users versus Information Intermediaries

People can retrieve information themselves, directly as so-called "end-users". However, the information landscape is complex, it may cost a lot of the time to find the right information, it may be costly to search for information and to obtain the chosen information in a suitable format for final "consumption". Therefore it may be wise to obtain the assistance of an expert information intermediary, such as a reference librarian or an information broker. Their services can vary widely in terms of expertise and price.

3.10. Some Publication Media Compared

Three important information carriers and publication media are paper, CD-ROM and online accessible, computer-based sources. Important criteria for judging the quality and suitability of information media are the amount of information that they can efficiently deal with, and the practical speed of updating. Both are low for paper, medium for CD-ROM and other optical disks, and highest for online information systems. Computer-based information sources can be cheaper to produce, to transport and to store, can offer better search features, various output formats, and fast and efficient “copy and paste” by the reader/user of information to other documents. Taken together, these features allow more efficient access to large, high volume documents or databases. Furthermore, computer-based media can offer multimedia and hypermedia contents, such as animation, video, static and dynamic virtual reality (instead of only formatted text and numbers plus graphics); they can offer “active contents” -- that is, accompanying or even embedded programs, to view, manipulate, manage, order and select the data and information contents.

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Biographical Sketch

Paul Nieuwenhuysen received the degrees of Licentiaat in Physics in 1974, Doctor in Science in 1979, the Belgian post-doctoral degree of Geaggregeerde voor het Hoger Onderwijs in 1983, and the inter-university postgraduate degree in Documentation and library science in 1986.

Since 1983, Paul Nieuwenhuysen has been a full-time member of the academic staff at the Vrije Universiteit Brussel, nowadays as professor. He is head of the information and documentation department, and science and technology librarian, both in the framework of the University Library, as well as teaching courses on information retrieval. At the inter-university postgraduate program in Information and Library Science of the Universitaire Instelling Antwerpen, he is guest professor responsible for courses on information technology and on the information market.

He has organized international training courses on management of information in science and technology. In the domain of information science, he is a member of several societies and of the editorial board of four journals, and he has worked for various international agencies (including UNESCO-PGI, UNESCO-IHP, UNESCO-IOC, UNESCO-MAB, and UNDP.)

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