



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

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Search Strategy

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Searching online electronic resources (in the context of the knowledge society and the development of electronic information resources)

Society, organizations, and companies focused on INFORMATION AND KNOWLEDGE

*"The country is becoming a virtual e-village"
[Naisbit, Megratends 2000]*

*"Intangible, colorless and dimensionless bits, these ones and zeros,
traveling speed of light, are the DNA of people connected online. "
Nicholas Negroponte, former director of MIT's famous Media Lab
(cited from VLASÁK, 1995, p.2):*

In thinking about the direction of the development trends of information knowledge-based society can not ignore the world's major publications futurist Alvin Toffler's from second half of the 20th century. Tofflerova basic trilogy theme and decade of escalating own expense:

- 1970: Future Shock
- 1980: The Third Wave
- 1990: Powershift

Alvin Toffler believes that the second half of the 20th century is filled with change, behind which lies the driving force: knowledge. At the beginning of the 21st century, in its first decade, we can talk about the fact that the world is now focused not only on the knowledge and information aspect of their development, but that the topic of so-called digital divide (digital divide) becomes the subject of division of the world.

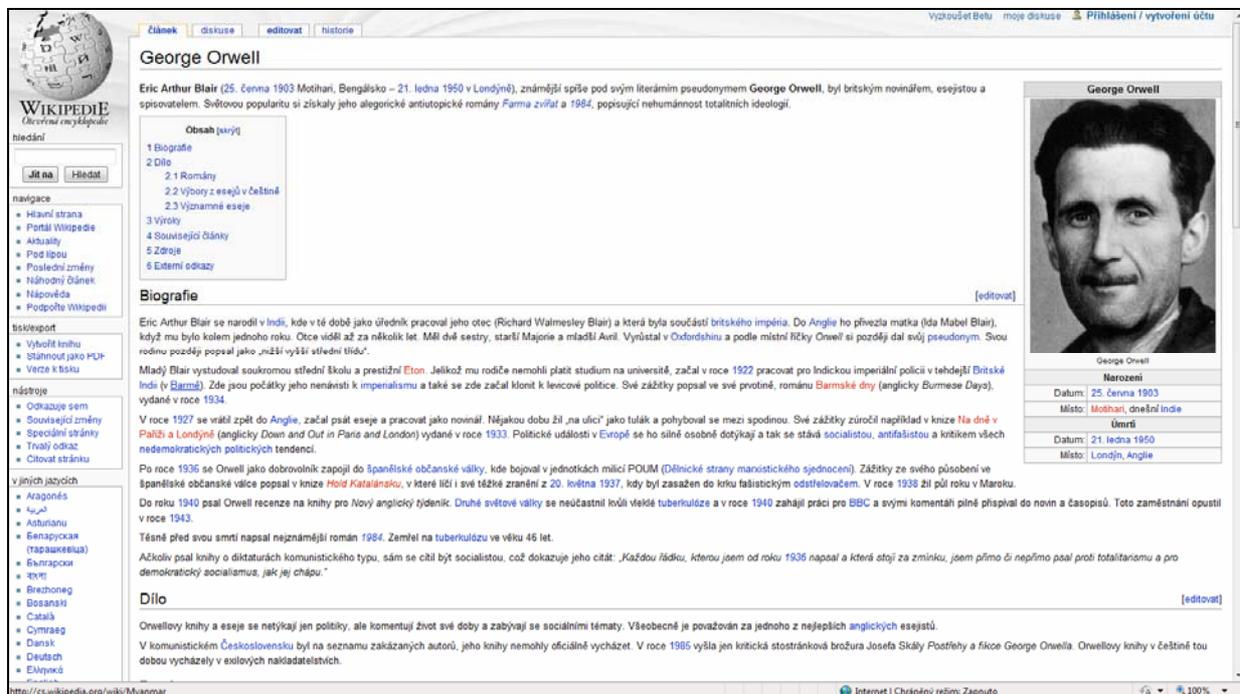
Turn side information society can become a vision of *"Big Brother is watching you"* of a novelist George Orwell in the novel 1984. Any totalitarian society today and connected by electronic networks and with especially digital technologies and telecommunications to track a movement of people and recording and storage media can be very dangerous for freedom and democracy of the contemporary world.

Important is existence of other instruments: information ethics and democratic principles in the information society, civil liberties, control agencies and institutions, that collect data and information about people.

Also libraries of current time with digital technologies and completely automated have a lot of information about their users in the spirit of "tell me what you read and I'll tell you who you are."

By reading the list of users and by them loaned documents it is possible to draw a wide range of information that the user can be considered as personal or corporate user, such as firms, may be a sensitive business data such as associated with the strategic objectives of the company.

Large libraries have also RFID (chip) technologies for a purposes of organisation of documents, books. An usage of chip technologies in the information society generally must be defined by legislation and control mechanisms not only from a side of government, but also other institutions, including non-profit organisations, etc.



Picture 1 George Orwell in Wikipaedia

From industrial society into information society - The Third Wave

Toffler's "third wave" comes during the 50th years. It occurs at the time the question: What happens in the advanced industrial societies, and what characterized this shift, these changes? The work of many sociologists and economists in the 50th years began to record a movement in society away from material production. It was not clear exactly what is happening and what is the problem, because the company was called post-industrial. It was only later began to use the term information society.

New sectors, information industry, digital economy and digital divide

Economists rightly believed that it is the beginning of the tertiary sector dominance - the service sector. Within the service sector growing in importance area information industry. Gradually, information industry and its services are becoming part of the quaternary sector of the economy.

Statistics, though imperfect in the beginning, began to show characteristics of this change. By the early 80's tied the emerging information sector in the USA 45.8% of the workforce in other countries, this figure ranged from 30 to 40% [MĚKUTOVÁ, 1990, s.98-101]. In developed countries started restructuring the company. Normally, began to talk about the information base and mature slowly began to identify with the term information society.

The trends information society in Czechoslovak environment began to mention and embarrassed to notify some professional studies and indications in trade publications at the end of the 80s, even before 1989. Also the name of Alvin Toffler began to appear uncensored. Alvin Toffler in itself is interesting as a person with a futurist complex philosophical overview. From late 80s and particularly in the first half of the 90s, the use of the term digital economy and the related concept of digital divide.

The world is divided otherwise than *West - East or North - South*, and in two parts:

- the company, people, societies, groups, *who have access to information*,
- the company, people, societies, groups, *who do not have effective access to information*.

Digital distribution may not be understood only as a division between peoples and countries, but also within government or social groups.

"The concept of expressing the fact that the world is divided into people who have access or the ability to use modern information technology including global information networks (telephone, television or Internet) and people who access this option or not. Digital divide exists between the inhabitants of such towns and rural areas, among people with higher and lower education among different economic classes, or between citizens of different countries and parts of the world. " [TDKIV]

Digital distribution may act only within the countries or regions in the world but also within communities as one company, one social group, such as students [Waycott, 2010, p 1202-1211], who naturally use information skills in education and those who are not familiarized with the use of information and digital tools. In a way, access to and use of ICT is becoming a competitive advantage not only in competitive economical world, and even non-profit making oriented sectors, such as in education. Use of information and computer tools in the perception of information and knowledge that can only accelerate this process, but rather often be more effective and more complete.

The importance of information in economic theory again shows the connection information and on the economy. When acquired in 2001 for her contribution to the analysis of markets with asymmetric information [Sojka, 2002] the prestigious "Award of the Swedish National Bank for Development Economic Sciences in memory of Alfred Nobel" (known as the Nobel

Prize in economics) three prominent U.S. economists George Akerlof Arthur , Andrew Michael Spence and Joseph Stiglitz.

Just mentioned authors are often associated with the area then as information economics. The concept of information economy, also knowledge economy (or knowledge-based economy) has the equivalent in terms of [Ventresca, Rosenberg, 2008] *new economy or an economy based on innovation (information economy, knowledge economy, new economy, innovation-based economy, etc.)*. The issue of information or knowledge economy is closely linked with the issue of so-called intellectual property, which is very highly valued in today's information and knowledge-based society. All these mentioned concepts have an impact on the microeconomic structure and the business areas.

Budapest Forum on Knowledge Economy in 2004 (the first ever Forum on Knowledge Economy - Knowledge Economy Forum held in 2002 in Paris, in 2006 in Prague), followed by the World Bank presents the principles of *knowledge-based economy* in the 4 pillars [EYE, 2006]:

- Education and training - education, training, lifelong learning and training are essential to the creation, sharing and usage of knowledge.
- Information infrastructure - a dynamic information infrastructure is needed to allow for effective communication, dissemination and processing of information.
- Economic incentives and institutional framework - the need to create a regulatory and economic environment that allows free flow of knowledge, supports investment in information and communication technologies and stimulate business.
- Innovative system - a network of research centers, universities, research groups, private businesses and civic associations to facilitate the use of an increasing number of global knowledge and its adaptation to local needs. Finally, it significantly contributes to the creation of new knowledge.

Changes in management of organisations and companies in a kontekst of information management & knowledge management

Classic bureaucratic hierarchy is changing. For new organizations are several new types of names. Peter Drucker calls it "**network organization**", Peter Senge developed the notion of "**learning organization**", and Davidow is usány the term "**virtual enterprise**", or Tom Peters "**crazy organizations**", James Brian Quinn "**intelligent enterprise**" [Tapscott, 1999].

Now we can speak about concepts of *knowledge-based society* and *knowledge-based company*. Future competitiveness and competitive advantage will be based on information and knowledge [Hamel, Prahalad, 1996].

Asuccess and ability to compete depends on effective management of organization, that recognizes the strategic importance of information and knowledge.

HARRELD [1998, s.60-76] attributes 3 important management roles in the „*new economy*“:

- to manage information flows,
- to drive innovation and creation of intellectual property,
- to drive continuous learning processes.

Organization of knowledge, information and knowledge management

Information management and knowledge management mainly deals with many artists working in large corporations and prestigious consulting companies, as well as in universities or research centers.

A concept of knowledge management and information management is seen differently:

- understand mentioned concepts - information and knowledge - such as two different concepts,
- understand these terms more or less synonymous [e.g. Widen-Wulff.; Allen; Macevicute; Papík, Moringa, Wilson, 2005],
- refuse to use the term knowledge management, because the term information management seems to them more accurate,
- use the phrase „*information and knowledge management*“ as a compromise,
- write about transforming data into information and information into knowledge (data into information, information into knowledge - "*data - information - knowledge*")
- combine with historical stages: the early 90s in the literature and professional circles still uses the term *information management*, but in recent years has replaced the concept of *knowledge management*.

Information science takes often knowledge management as a subset of large field of information science, which is called organization of knowledge (knowledge organization) [e.g., Rowley; Farrow, 2002].

It is possible to create a working definition:

"The management (of information and knowledge) represents systematic activity with sources of information and knowledge in a context of creation, acquisition, processing, storage, retrieval and dissemination of information and knowledge. These information and knowledge are communicated and subsequently applied to other processes."

It should be emphasized that an area of knowledge management is not purely technology, as is often narrowed, but the area is influenced mainly by complex relationships among information **technology**, information resources (**content**) and the **human factor**.

Information and functional literacy

Current time we can write about the quantitative boom of information (popularly known as the *information explosion* or *information crisis*), an ability to work with information belongs to basic assumptions of literacy, today called *functional literacy*.

Functional literacy can be defined as the study by Truneček [2000, p.11] "... as an active ability to work with information. A chain - searching, sorting, re-searching, combining - is culminating by creating of their own opinion, which must be defended.. Emphasis is placed on its own orientation in the often confusing and complex set of information ... "

Data mining and text mining

Knowledge management is used by number of technological tools and methods [HARRELD, 1998, pp. 60-67], namely:

- media mining,
- knowledge repositories,
- collaborative tools.

Just mentioned tools are associated with methods of creating new databases and digital libraries, new generation of search tools (e.g. *search engines*, agents) and the exploitation of resources in new ways.

Methods such as text mining seems to be very useful and promising, because today more than 80% of the world of electronic data is stored in text formats.

Recent years show a monumental multimedia boom into network environment (e.g. through the Internet concept called Web 2.0) and its sharing. Each word or other communication is often not used yet, but this is changing step by step for future use. Examples could include electronic - *digital systems*, **historical and cultural heritage**, where past and present documents in digitizing memory of institutions such as libraries, archives, museums and galleries.

Using digital data transformed into information and knowledge resources search is not yet done so effectively for the future. However, just in new digitization tools, and subsequently in **intelligent searching** and **analyzing the issue** of resources will be more efficient extraction media world. Concepts such as **text mining**, **data mining**, **web mining** are in strong development.

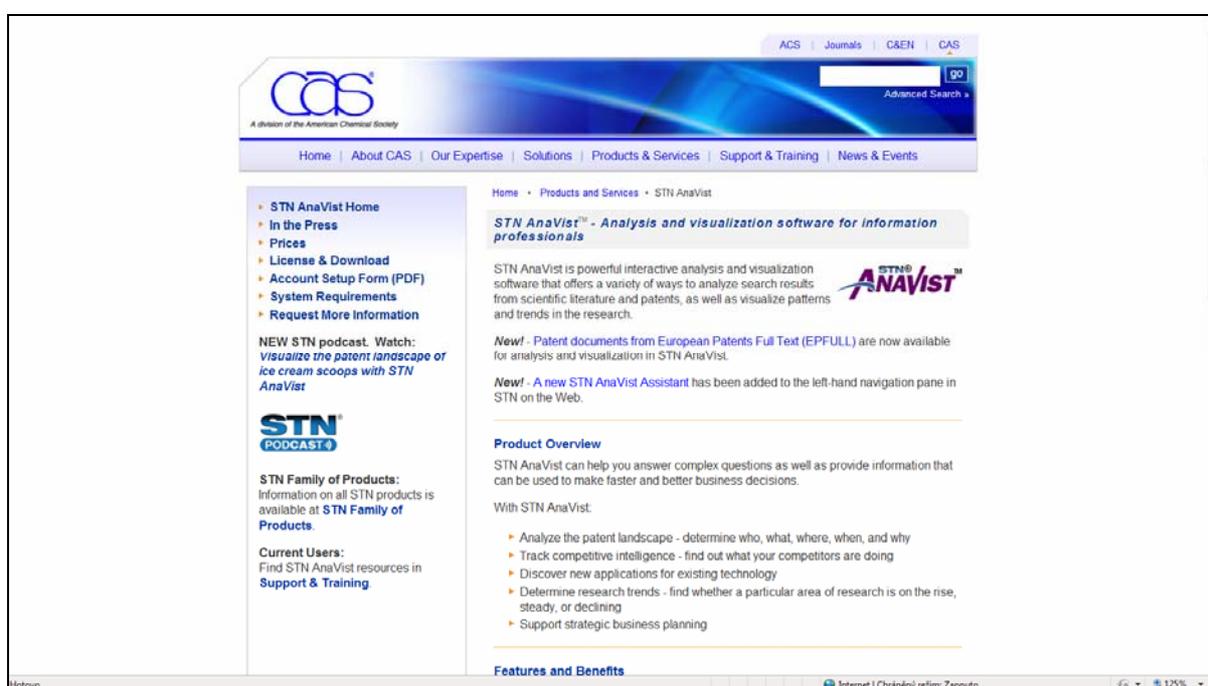
This fact can be illustrated by the following example:

IBM worked in France with one company engaged in an exploration and measurement of public opinion for cars with electric power, and also transportation vision for the future. The company analyzes thousands of messages from networks and applied *text mining technology*

with a purpose identify of major themes and trends. They can capture interesting concepts awaiting future use, and the company can be focused their strategie effectively.

It is obvious how information science with other sciences studying the „phenomenon of information“ is closely related to data mining, information and knowledge, all at time of information society and economy. Similar procedures are now possible with the help of specialized software tools for next generations. Even some of the database vendors are coming with analytical software and tools of the future.

An example is the vendor **STN International**, one of the largest and most prestigious centers of scientific and technical information in the world (<http://www.stn-international.de>), which reported the **Anavist** software few years ago. The analytical software Anavist works even with the visualization retrieval (search) tools.



Pict. Analytical tool based on visualization - Anavist in STN International

That tool for analysis and visualization of scientific and patent information was launched in 2005. Through its functions detects trends and relationships associated with the user query.

An usage of analytical methods is often very expansive, but really important for information specialists and experts of strategic decisions in companies and e.g. their competitive intelligence methods, such as identifying a patent status of products, new applications based on existing technologies and information. The software itself is free of charge for regular and registered users of STN International. [Šerá, 2008, or STN Anavist].

Information with value-added services can include a development of innovative potential and improve the transfer of **knowledge into practice**.