Prezentace předmětu:
INFORMATION MANAGEMENT

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INFORMATION MANAGEMENT

12. TRENDS IN INFORMATION MANAGEMENT

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Introduction

As in other areas, new trends are emerging, and information management is no exception, and must also respond to current ICT trends that have a significant impact on this area.

These trends include mobility and ubiquitous connections, Big Data, Social Media, Cloud computing, view of ICT as a consumer thing and Artificial Intelligence.

Each of these trends influences in a way the requirements of information management

Goals of the chapter

✓ **Get acquainted with trends in current information management**

✓ **Get acquainted with the consequences of these trends in ICT**

Mobility and ubiquitous connections

Mobility and ubiquitous connections influence the style and way not only of everyday life but also the style and way of work of individuals and work teams.
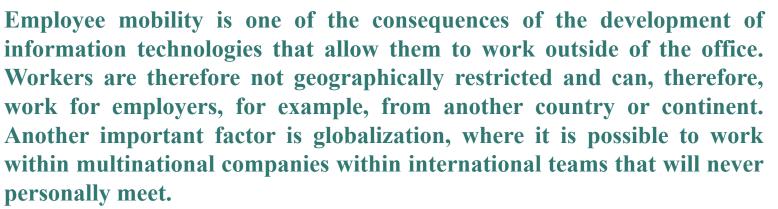
These changes lead to far more flexible work and often lead to the fact that employees of some occupations also work in their spare time after the end of official working hours.

The main impacts of mobility and ubiquitous connections can be:

❑ worker mobility,

❑ change of working tools,

❑ change of decision speed,

❑ the impact of work on the personal lives of workers.

Mobility and ubiquitous connections

Workers' mobility

Employee mobility is one of the consequences of the development of information technologies that allow them to work outside of the office. Workers are therefore not geographically restricted and can, therefore, work for employers, for example, from another country or continent. Another important factor is globalization, where it is possible to work within multinational companies within international teams that will never personally meet.
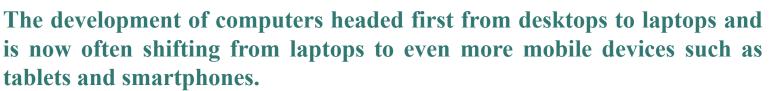
So-called "global data centers" are so often created within global companies to share the necessary information amongst staff. These centers often arise in countries and places with the lowest cost.

Mobility and ubiquitous connections

Change of working tools

The development of computers headed first from desktops to laptops and is now often shifting from laptops to even more mobile devices such as tablets and smartphones.

Information management must adapt to this trend and pass on information in such a way that it can be used to work with tablets and smartphones (different resolution, touch control, etc.).

The main advantage is higher mobility for teamwork and communication, virtually anywhere, anytime.

Mobility and ubiquitous connections

Changing decision speed

Especially for executives, there is noticeable pressure on decision-making speed.

Nevertheless, it is necessary to ensure the quality and accuracy of the decision.

Information management must be able to provide timely information in the required quality and quantity for these quick decision makers.

Mobility and ubiquitous connections

The impact of work on the personal lives of workers

The above factors, such as worker mobility, changing working tools and changing decision-making speeds, often have a negative impact on workers who may suffer from stress due to overworking and communication with colleagues outside of working hours.

As a major prevention against this work stress, it is absolutely necessary to find a balance between personal and working life and not to be overwhelmed with unnecessary information.

Big Data

The term Big Data is relatively new in information management.

The Big Data label it-self suggests that data are large in scope. An important question is: how large the data needs to be characterized by the term Big Data?

Recognized research and consulting company Gartner defines Big Data as data whose size, the speed of growth and diversity do not allow their processing based on current, known and proven technologies in a reasonable time.

Big Data can be characterized according to Mayer-Schönberger and Cukier (2014) with the "three V" characteristics (volume, velocity and variety = volume, velocity and variety).

Big Data

At present, Big Data is critical in terms of information management because it significantly increases the amount of data available, one of the key components of information management, as Doucek (2013) points out.

The huge increase in the amount of data that is characteristic of Big Data has been created by Gartner (2011) as the concept of extreme information management. For the Big Data area, you can find certain characteristics that capture real impacts on practice:

❑ the rapid growth of new data,

❑ growing need for data,

❑ increasing the availability of storage devices,

❑ new data formats,

❑ new data sources.

Big Data

Basic concepts and techniques used to work with Big Data include, according to Holubová et al. (2015) the following:

❑ distribution - distributed data processing in the form of problem distribution on clusters of interconnected nodes,

❑ replication - storage of data on multiple nodes, ideally in different parts of the network,

❑ scalability - ability to flexibly respond to changing requirements (eg higher data volumes, higher system load, etc.)

❑ consistency - a database system based on ATC (atomicity, consistency, isolation, durability) properties that convert data from one consistent state to another.

Big Data

According to Burian (2014), the market for Big Data solutions can be divided as follows:

❑ Hardware - emphasis on performance, frequently integrated solutions including specialized technical equipment,

❑ Big Data Distribution - Software components designed to process large amounts of unstructured and distributed data,

❑ Data management - primarily NoSQL database for loading and writing large volumes of data,

❑ Analysis and visualization - the pressure to increase the volume of analyzed data increases.

Social media

Social media is generally a means of enabling users (consumers) to share among themselves, and with companies, both text, image, and audio-visual materials.

The definition by Kaplan and Haenlein (2010) then states that social media is a group of Internet-based applications based on the ideological and technical basics of Web 2.0 platforms and enabling the creation and exchange of user-generated content.

According to Kotler and Keller (2013), there are three major social media platforms:

❑ online communications and forums,

❑ blogs (individual or centralized),

❑ social networks.

Social media

❏ **Facebook - the world's best-known social networking platform, serving as a platform for creating personal, corporate, and group profiles. Facebook was established in 2004. In 2017, 2 billion active users worldwide (Facebook Q1 2017 reports 4.8 million). Facebook is a very extensive web-based system designed primarily to create social networks, communicate with users, share multimedia data, maintain relationships and also enjoy many different games. Facebook is used just like other major social networks for marketing purposes.**

❏ **Google+ - originated in 2011 as Facebook. The main difference is, as stated in Burian (2014), in setting up sharing via so-called circles that can divide individuals and share things with those who benefit or are affected by it.**

Social media

❑ **VKontakte - an international social network, a Russian analog of American Facebook, founded in 2006. According to Alexa.com, it is the most visited social network in Russia, Ukraine, Belarus, Moldova, and Kazakhstan. It is the second most visited site in Russia. In 2017, this social network had 480 million active users.**

❑ **LinkedIn - over the past it serves more as a professional or work network. Shows participant profiles, references, and links to their focus and work. Managers, consultants, and professionals from all sorts of fields are among the users. million members. LinkedIn is also often used by HR. LinkedIn reports as the world's largest professional network with more than 300 professionals who can find a suitable job candidate on the basis of information contained in individual profiles containing more detailed information about their career, jobs, and education.**

Social media

❑ **Twitter - allows users to send and read messages sent by other users (tweets). The tweet is a text post with a maximum of 140 characters, which is displayed on the user's profile page and also on its followers' pages.**

Social media

From the point of view of information management, the issue of the correct presentation of the company on social networks is important, which is demanding both in terms of expertise and time.

Social networks have hundreds of millions of users, so social media marketing has become an important part of company communication with the public and a significant source of income for advertisers. For this reason, a large number of foreign and Czech companies have this social communication at a specialized PR (Public relation) agency.

If outsourcing is not used directly, in the case of companies, some employees are often entrusted with presenting the company to social media. According to combinatorial calculations (Štědroň and Budiš, 2009), it is very likely that everyone knows up to a maximum of 7 people.

Social media

Social networks thus hide the enormous potential of marketing media. Marketing on social networks is an important component of company promotion.

Smith and Treadaway (2011) report that it is important to ask the following questions at the outset:

❑ **What do you mean?**

❑ **How do you say that?**

❑ **Do you need your own content or will you refer to other content on the Internet?**

❑ **Who will publish this content?**

❑ **What do you need to create (logos, icons, new graphic designs, custom applications) to meet business goals?**

Social media

In addition to feedback, social networks are being used as an effective marketing tool. According to Přikryl and Jahoda (2010), these are mainly the following forms:

- ❑ monitoring attitudes and opinions in forum discussions, conferences, etc.,
- ❑ offering the right form of collaboration to the most active discourse or blogger,
- ❑ placing suitable video clips or photos on YouTube and other content sharing sites,
- ❑ creating discussion forums for a brand or product, or active participation in existing forums,
- ❑ creating a corporate blog,

Social media

❑ establishing a brand profile in selected social networks,

❑ creating applications where users can put ideas about a business or brand,

❑ implementing appropriate PR activities, issuing special press releases for social networking,

❑ information source for collecting data on registered users,

❑ space for viral marketing.

Social media

In the field of information management, social media according to Doucek (2013) have the following additional effects:

- ❑ in-house communications - deployment of intranet sites and newsgroups, in-house social networks

- ❑ communication with clients - new communication channels through social media

- ❑ client knowledge - client analysis based on its activity on social networks

- ❑ data analysis - a large number of new, especially unstructured data in relation to social media that can be analyzed using specialized algorithms

- ❑ new data formats - a very diverse data form

Cloud computing

Cloud computing is based on a model based on the development and use of various computer technologies in its basic principle.

Cloud computing is a comprehensive IS / IT service model that enables the development and use of computer technology on a basic principle of sharing hard-wired and software resources over the Internet. Such provision of services or programs on servers available from the Internet enables users to access their programs and services remotely, for example, using a web browser.

It is the operation and provision of various services or programs where, in the case of paid services, users do not pay for the software itself, but only for its use. Used services are available over the Internet in the form of, for example, remote access, web browsers or e-mail clients.

Cloud computing

The increasing use of cloud computing is a very significant change in corporate ICT in recent years. From the point of view of providing data to users, this change is also very relevant to information management, as there are many questions about working with corporate data, sharing, backing up, security,

According to the IDC survey (Kroa, 2012), Czech companies have the following cloud concerns: security concerns, cloud modeling is not advanced, single provider dependence, high cloud migration costs, lack of adequate information, unclear return on investment, price or lack of Internet connectivity.

Cloud computing

What are the basic characteristics of cloud solutions? Cloud computing is characterized by the following key attributes:

❑ **Multitenancy - the ability to share and use multiple services based on several leases of these services among all users in the organization.**

❑ **Online availability anytime, anywhere - Internet access is available to services, and software can be used virtually anytime, anywhere.**

❑ **Scalability and elasticity - flexibility based on the current need to operatively change computer resources and their performance.**

❑ **Up-to-date - up-to-date software from the provider.**

❑ **Pay as you go - Flexible costs in the form of charging services based on the "how many services we use, so we pay for them".**

Cloud computing

We distinguish several models of deployed cloud computing that tell us how and to whom the cloud is provided:

❑ Public cloud computing - access when a given service is provided to the general public, and the same or very similar functionality is available to all. Example: List.cz, Skype.

❑ Private cloud computing - access when a given service is available only for that organization. Example: Hosted mail server or hosted specialized application.

❑ Hybrid (hybrid cloud computing) - a combination of the public and private cloud.

❑ Community cloud computing - an approach where infrastructure is shared between several organizations (users) who use it.

Cloud computing

We differentiate between several cloud computing distribution models that tell you what is offered in the customer service (hardware, software or a combination of them):

❑ IaaS - Infrastructure as a Service - the principle is that the service provider undertakes to provide infrastructure. A typical form of virtualization. Examples of IaaS: Amazon WS, Rackspace, or Windows Azure.

❑ PaaS - Platform as a Service - the principle is that the provider guarantees complete means to support the entire lifecycle of creating and delivering web applications and services; all services work fully within the Internet and there are no software downloads. Examples of PaaS: Google App Engine or Force.com.

Cloud computing

❑ **SaaS - Software as a Service - the principle is that the application is licensed as a service that is leased to a customer. The customer therefore only purchases access to the application, and not the application itself. Examples of SaaS: Google Apps apps.**

Cloud computing

Advantages of cloud computing:

❑ the absence of management and control of the functionality of HW and SW components,

❑ availability of data and programs anywhere, whenever and wherever it is connected to the Internet,

❑ most intuitive and simple user interface,

❑ scalability - the ability to instantly increase data center performance when needed,

❑ current versions of programs, fast customization according to growth and user needs.

Cloud computing

Disadvantages of cloud computing:

❑ **absolute dependence on internet connection,**

❑ **strong dependence on service providers,**

❑ **security and privacy - Internet usage generally raises many questions about the security of data and user privacy,**

❑ **required migration costs - cloud-based applications often reprogram or change company software and train their own employees,**

❑ **fewer features - SaaS solutions generally offer fewer features than desktop solutions,**

❑ **poor stability - availability of cloud services is strongly dependent on the quality of Internet connection.**

Cloud computing

Lacko (2012) deals with mining by storing and backing data through various cloud services. He states that, according to statistics, average laptops or tablets are stolen every minute, and almost half of them contain sensitive data, with only a small percentage of computers equipped with encryption or other sophisticated data protection methods. For this reason, it is a much safer method of storing documents in cloud storage, which in addition increases our mobility. Also, when you save a document to a cloud storage, it is automatically synchronized when accessing multiple devices. You will also avoid data loss, which is a threat if you only store your data locally on your computer and do not back up.

Velte and Elsenpeter (2011) address the issue of data security in cloud systems and data privacy concerns at a third party. Based on these findings, cloud storage can be considered to be a much safer form of data storage and backup than when you store data on a local disk.

ICT as a consumer matter

ICT is today a common consumer thing that we often use without thinking that the use of ICT is not free and brings some necessary costs.

The ICT infrastructure providing data and information is not free of charge, and in the case of excessive data and information, it is necessary to use additional financial resources to obtain, process and interpret it.

The goal of information management is to ensure that users receive the right information at the right time without unnecessary overspending.

Artificial intelligence

Artificial Intelligence (AI) has a major impact in terms of information management under the GPT-3.5 tool (https://chat.openai.com/) and offers many possibilities and challenges.

Information management is a discipline that deals with the collection, storage, processing and distribution of information in an organization. Here are some of the ways AI affects information management:

❑ **Process Automation**

❑ **Enhanced Data Analysis**

❑ **Personalized Communication**

❑ **Enhanced Searches**

❑ **Pattern and Language Detection**

❑ **Chatbots and Virtual Assistants**

Artificial intelligence

- ❑ **Risk management**
- ❑ **Automatic indexing and metadata**
- ❑ **Demand forecasting**
- ❑ **Ethical and legal issues**

Artificial intelligence

Among the best known tools for working with artificial intelligence in 2023 were in particular the following:

- ❑ ChatGPT
- ❑ Google Bard
- ❑ Bing Chat
- ❑ Perplexity
- ❑ Claude
- ❑ Llama

Artificial intelligence

The ability to write correctly formulated prompts seems to be an absolutely crucial competence from the perspective of working with artificial intelligence.

Prompt is a text input used by AI tools to generate answers to specified questions or instructions. In addition to the classic questions, an instruction can also be entered using the prompt. The output of the question is the relevant answer and the output of the instruction is the generation of content.

Artificial intelligence

Kopecký (2023) gives the basic principles of what to avoid when writing prompts.

1. Unclear and overly general formulation

If the prompt is unclear or general, the AI does not know what exactly to generate, then it very often proceeds at random.

2. Too complex assignment

If the instruction is too complex and contains very many details or requests, it becomes difficult for generative AIs to understand. It is better to divide more complex tasks into smaller ones - easier to understand.

3. No context

In many cases, the AI urgently needs to know the context of the query in order to provide a correct and accurate answer.

Artificial intelligence

4. The prerequisite of human understanding

AI is very capable, but it still does not fully understand human language and context as humans do. People often assume that AI understands subtle nuances, sarcasm or innuendo, which can lead to incorrect results.

5. Security

When writing prompts, it should be borne in mind that information from the prompts can be used for its further training, thus leaking sensitive or private information. However, this should be taken into account wherever personal data is handled - social media, social networks, etc.

THANK YOU FOR YOUR ATTENTION