Week 8: Chapter 11

The Computer as a Medium for Sharing Knowledge

Chapter Objectives

- Introduce the student to how the digital computer has become an essential tool in managing knowledge
- Introduce the student to the World Wide Web as an unparalleled medium for sharing knowledge
- Introduce the student to the issue of network security to maintain control of intellectual property
- Introduce the student to collaborative computing

Communicating knowledge

- KM involves communicating knowledge among people
- The emergence of the digital computer facilitates the communication of nonhuman information (documents, photos, drawings, films, etc.)
- The internet and the World Wide Web (WWW) have revolutionized the concept of communications as a medium for sharing knowledge via this communication link.

Word Wide Web (1): sever-client

- Servers containing information to be made available to the requesting public await requests received through the internet and respond to them by giving the client access to their information in the from of web pages
- The web pages, expressed in HTML, provide access to files and other downloadable information, as well as serve to send programs executable in the client's own machine

Word Wide Web (2): hypermedia access

- Web pages are hypermedia documents that express the contents of the server in an organized and often highly artistic and dynamic fashion
- Web pages provides the desired information to the client and also how to acquire this information—usually by providing the ability to download documents
- WWW provides interactive means of sharing knowledge among clients

Types of web pages

1. Static. The content of the document (web page) is determined at the time the document is created by its designer and it does not change. When a static document is requested, the server sends the same document all the time.
2. Dynamic. These web documents are not predefined. The document is created automatically by the (a program in) server when the document is requested. Once the page is created and sent, it does not change. An example is CGI technology
3. Active. Active pages can change once it gets to the client computer and runs therein either by continuous update or a client program

Web search engines (1)

- Browsers requests the URL of the server that the client would like to visit.
- The user should know the exact address of the desired server.
- Practically it is impossible to search the billions of web sites in existence, one at a time.
- Search engines introduces the importance of searching the web to look for useful knowledge (contents)

Web search engines (2)

- The user provides the search engine with terms describing the objective of the search and it returns a list of links containing these terms
- Search engines do not actually search the web in real time, they instead search an index or directory containing relevant web sites. They provide ranks to the web sites found according to how likely they are to meet the desires of the client
- Metasearch engines make use of other search engines

Constructing the database to be searched by the Web search engines

- Web directories.
  - Web designers contacts the search engine organization and provide them with the URL and the some keywords that describes their sites. This will be added to the DB (web directories) and made available for searching.
  - Updating these directories is not always done in a regular or timely fashion
- Web crawlers (spiders).
  - Programs that search the different web sites to extract the required information from them.
  - Updating on regular basis
  - Keywords are extracted from contents of the web pages or from the metatags provided by the web page designer

Network security

- Managing knowledge necessitate keeping it secure and safe from inadvertent loss, or from malicious instruction by unauthorized parties.
- means to protect against risks:
  - Access control through password control. Provide authorized access to the data or knowledge. It provides low security because hackers sometimes succeed to break through.
  - Encryption. The intended recipient can only understand (decode) the knowledge. Not easy to be defeated.
  - Digital signatures. Used for legal authorization for critical transactions. We must verify the author's identity. Signatures are encrypted.
  - Firewalls. Software that runs on a gateway computer connected to internet to keep out undesired intruders who present a security risk as well as to keep aggravating promotional emails, pop-ups, etc.

collaborative computing on the Web: workflow systems

- We need some sort of collaboration such as capturing knowledge from group of experts, getting customers preferences, etc.
- workflow management (WfM) system is a set of tools that support defining, creating, and managing the execution of workflow processes.
- A workflow tool provides a method of capturing the steps that lead to the completion of a project with a fixed time frame and illustrating such steps.

Document management

- A document management system unifies an aggregate of relevant information conveniently in one location through a common interface.
- Provides collaborative environment that increases the communications and allowing the sharing of organizational knowledge
- Is Blackboard a document management system? Explain

Discussion

- ***How does the Web fit with knowledge sharing? Discuss.***
- The Web is a medium used for allowing people to exchange or share knowledge via the Internet.
- One could view the Web as the vehicle and the Internet as the highway.
- It is an opportunity where people can access, confront, and negotiate experience, information, and strategies for problem solving 24 hours a day, year round.

Discussion

- ***Is the Internet different from other media for knowledge transfer?***
- It is different, in the sense that the Internet is global and 24/7 ‘free’ highway for knowledge transfer or exchange.
- …

Discussion

Describe an option that a relatively small company can use to provide customer service or technical advice over the internet for an average user. What knowledge processes will be used?

- Yes. An example is FAQs.
- A simple Internet search query can usually solve the problem an average user is having.
- Most errors can be well documented and there could be detailed procedures provided to fix various problems users may face. This is an **application process** as it does not require the transfer or creation of new knowledge.

Conclusions

- The student should be familiar with:
  - The World Wide Web as a medium for sharing knowledge
  - The issues related to maintaining security in the intellectual property situated in the WWW.
  - The concept of workflow systems and how they can capture and use process knowledge to facilitate the accomplishment of goals set by a business organization.

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