Lesson Proper for Week 15

Introduction

A document consists of a set of structural information that can be in different forms of media, and during presentation they can be generated or recorded. A document is aimed at the perception of a human, and is accessible for computer processing.

Documents

A multimedia document is a document which is comprised of information coded in at least one continuous (time-dependent) medium and in one discrete (timeindependent) medium. Integration of the different media is given through a close relation between information units. This is also called synchronization. A multimedia document is closely related to its environment of tools, data abstractions, basic concepts and document architecture.

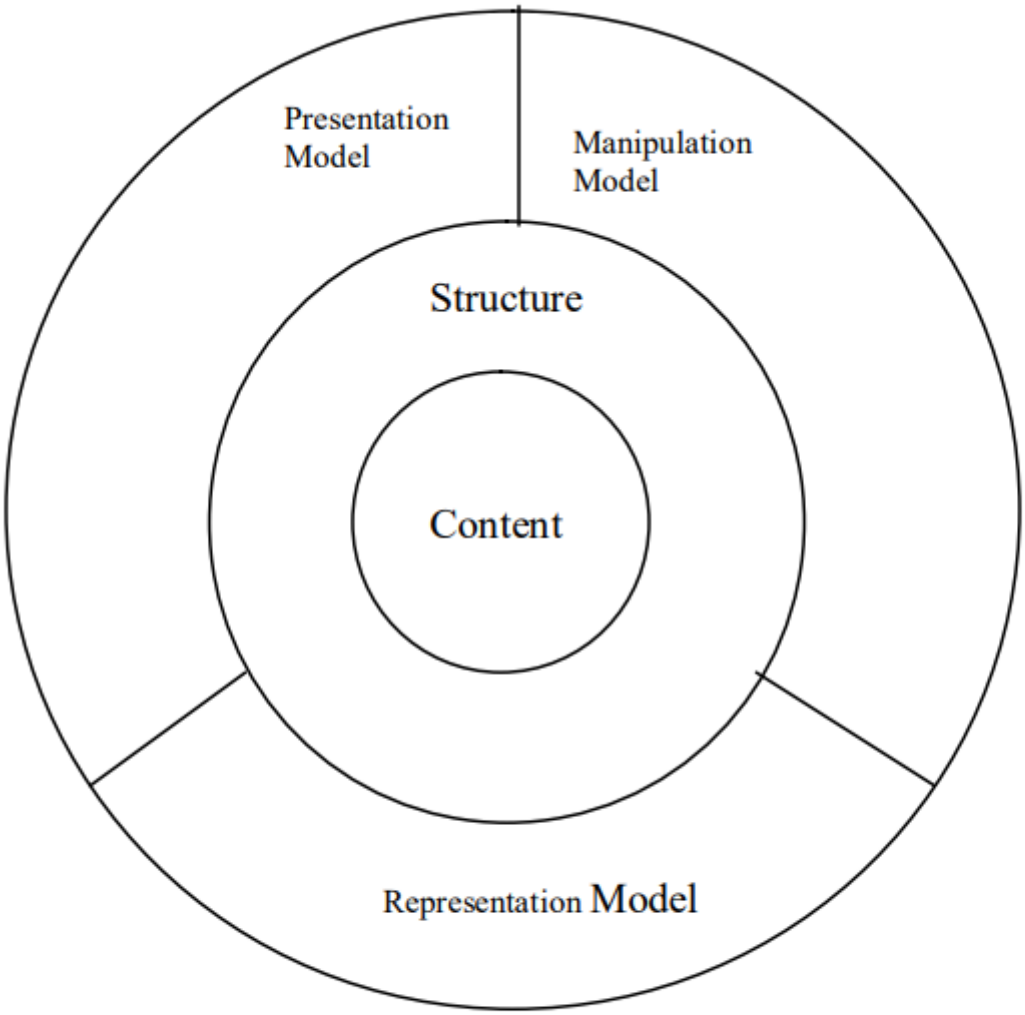
Document Architecture:

Exchanging documents entails exchanging the document content as well as the document structure. This requires that both documents have the same document architecture. The current standardized, respectively in the progress of standardization, architectures are the Standard Generalized Markup Language(SGML) and the Open

Document Architecture(ODA). There are also proprietary document architectures, such as DEC's Document Content Architecture (DCA) and IBM's Mixed Object Document Content Architecture (MO:DCA).

Information architectures use their data abstractions and concepts. A document architecture describes the connections among the individual elements represented as models (e.g., presentation model, manipulation model). The elements in the document architecture and their relations are shown in the following Figure. The Figure shows a multimedia document architecture including relations between individual discrete media units and continuous media units.

The manipulation model describes all the operations allowed for creation, change and deletion of multimedia information. The representation model defines: (1) the protocols for exchanging this information among different computers; and, (2) the formats for storing the data. It includes the relations between the individual information elements which need to be considered during presentation. It is important to mention that an architecture may not include all described properties, respectively models.



Document architecture and its elements.

HYPERTEXT

Hypertext most often refers to text on a computer that will lead the user to other, related information on demand. Hypertext represents a relatively recent innovation to user interfaces, which overcomes some of the limitations of written text. Rather than remaining static like traditional text, hypertext makes possible a dynamic organization of information through links and connections (called hyperlinks).

Hypertext can be designed to perform various tasks; for instance when a user "clicks" on it or "hovers" over it, a bubble with a word definition may appear, or a web page on a related subject may load, or a video clip may run, or an application may open. The prefix hyper ("over" or "beyond") signifies the overcoming of the old linear constraints of written text.

Types and uses of hypertext

Hypertext documents can either be static (prepared and stored in advance) or dynamic (continually changing in response to user input). Static hypertext can be used to cross-reference collections of data in documents, software applications, or books on CD. A well-constructed system can also incorporate other user-interface conventions, such as menus and command lines. Hypertext can develop very complex and dynamic systems of linking and cross-referencing. The most famous implementation of hypertext is the World Wide Web.

11.4 Hypermedia

Hypermedia is used as a logical extension of the term hypertext, in which graphics, audio, video, plain text and hyperlinks intertwine to create a generally nonlinear medium of information. This contrasts with the broader term multimedia, which may be used to describe non-interactive linear presentations as well as hypermedia.

Hypermedia should not be confused with hypergraphics or super-writing which is not a related subject.

The World Wide Web is a classic example of hypermedia, whereas a noninteractive cinema presentation is an example of standard multimedia due to the absence of hyperlinks. Most modern hypermedia is delivered via electronic pages from a variety of systems. Audio hypermedia is emerging with voice command devices and voice browsing.

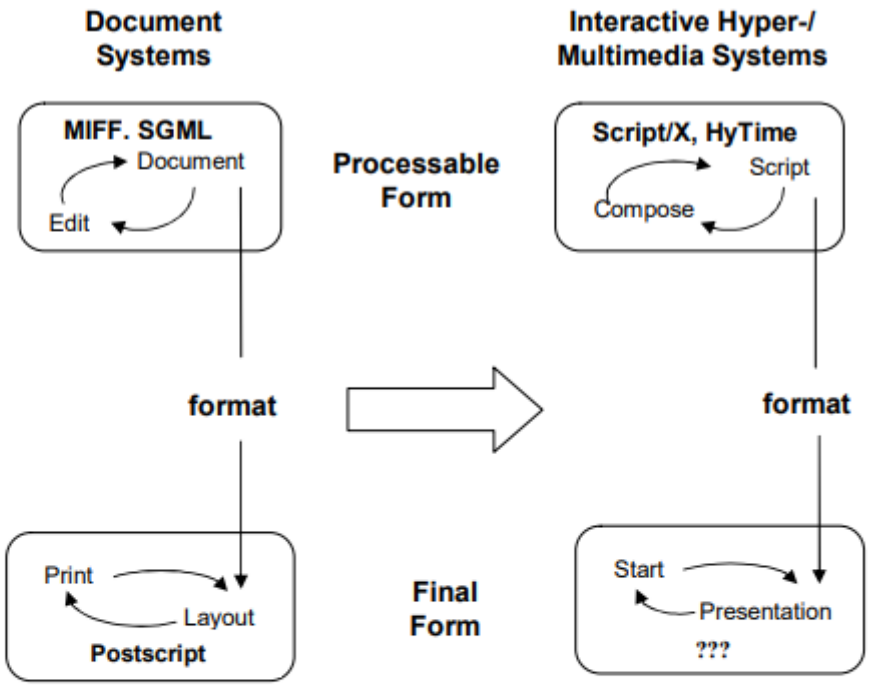
11.5 Hypertext and Hypermedia

Communication reproduces knowledge stored in the human brain via several media. Documents are one method of transmitting information. Reading a document is an act of reconstructing knowledge. In an ideal case, knowledge transmission starts with an author and ends with a reconstruction of the same ideas by a reader.

Today's ordinary documents (excluding hypermedia), with their linear form, support neither the reconstruction of knowledge, nor simplify its reproduction.

Knowledge must be artificially serialized before the actual exchange. Hence, it is transformed into a linear document and the structural information is integrated into the actual content. In the case of hypertext and hypermedia, a graphical structure is possible

in a document which may simplify the writing and reading processes.



Problem Description

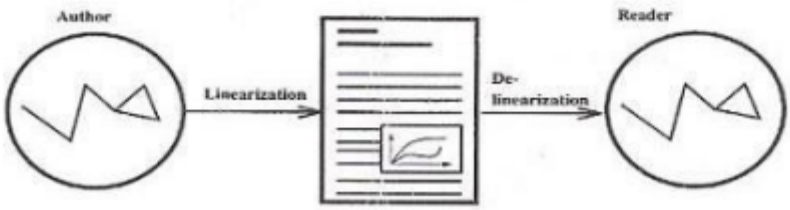


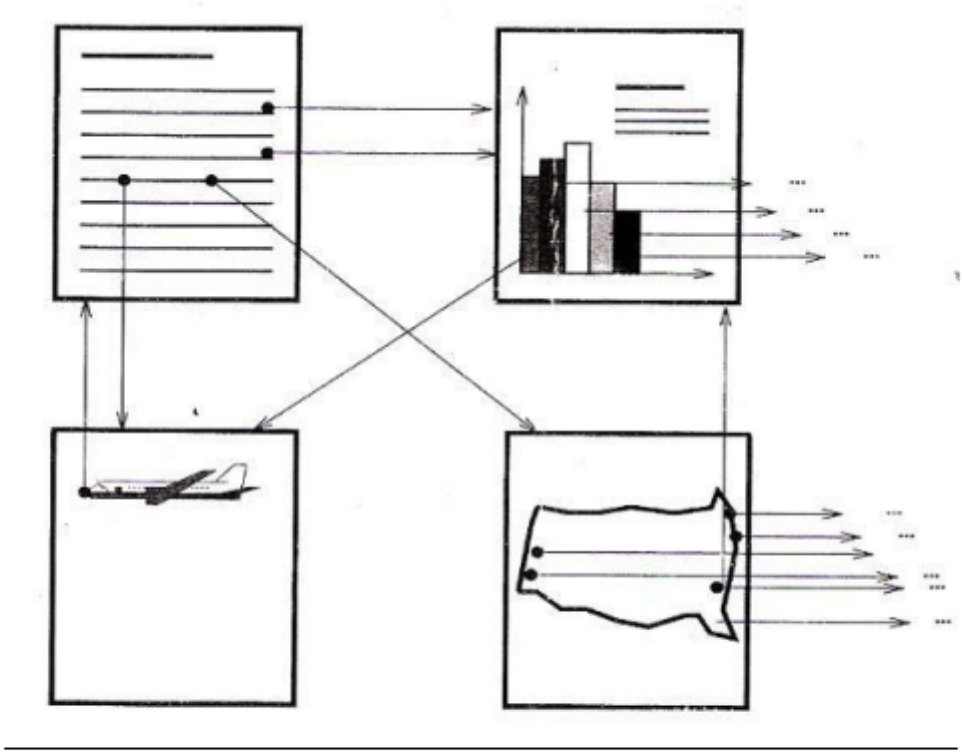
Figure showing information transmission

11.6 Hypertext, Hypermedia and multimedia

A book or an article on a paper has a given structure and is represented in a sequential form. Although it is possible to read individual paragraphs without reading previous paragraphs, authors mostly assume a sequential reading. Therefore many paragraphs refer to previous learning in the document. Novels, as well as movies, for example, always assume a pure sequential reception. Scientific literature can consist of independent chapters, although mostly a sequential reading is assumed. Technical documentation (e.g., manuals) consist often of a collection of relatively independent information units. A lexicon or reference book about the Airbus, for example, is generated by several authors and always only parts are read sequentially. There also exist many cross references in such documentations which lead to multiple searches at different places for the reader. Here, an electronic help facility, consisting of information

links, can be very significant.

The following figure shows an example of such a link. The arrows point to such a relation between the information units (Logical Data Units - LDU's). In a text (top left in the figure), a reference to the landing properties of aircrafts is given. These properties are demonstrated through a video sequence (bottom left in the figure). At another place in the text, sales of landing rights for the whole USA are shown (this is visualized in the form of a map, using graphics- bottom right in the figure). Further information about the airlines with their landing rights can be made visible graphically through a selection of a particular city. A special information about the number of the different airplanes sold with landing rights in Washington is shown at the top right in the figure with a bar diagram. Internally, the diagram information is presented in table form. The left bar points to the plane, which can be demonstrated with a video clip.

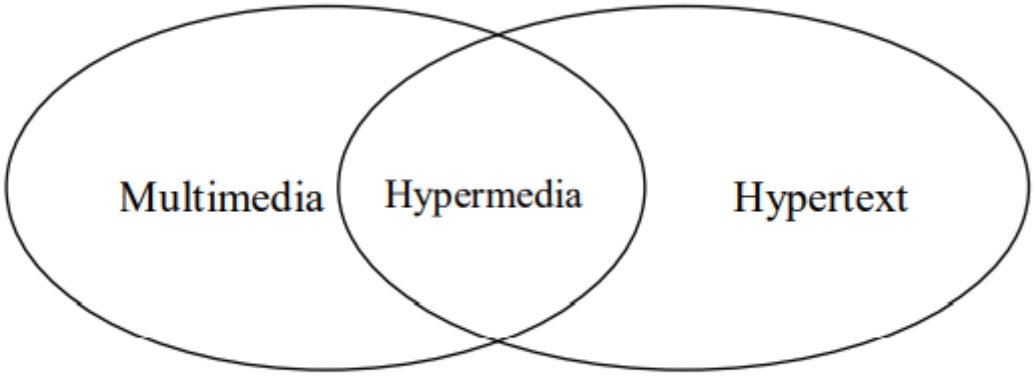


Hypertext Data. An example of linking information of different media

A hypertext system is mainly determined through non-linear links of information.

Pointers connect the nodes. The data of different nodes can be represented with one or

several media types. In a pure text system, only text parts are connected. We understand hypertext as an information object which includes links to several media.



The hypertext, hypermedia and multimedia relationship

Multimedia System:

A multimedia system contains information which is coded at least in a continuous and discrete medium.

For example, if only links to text data are present, then this is not a multimedia system, it is a hypertext. A video conference, with simultaneous transmission of text and graphics, generated by a document processing program, is a multimedia application. Although it does not have any relation to hypertext and hypermedia.

Hypermedia System:

As the above figure shows, a hypermedia system includes the non-linear information links of hypertext systems and the continuous and media of multimedia systems. For example, if a non-linear link consists of text and video data, then this is a hypermedia, multimedia and hypertext system.

11.7 Hypertext and the World Wide Web

In the late 1980s, Berners-Lee, then a scientist at CERN, invented the World Wide Web to meet the demand for automatic information-sharing among scientists working in different universities and institutes all over the world. In 1911, Lynx (web browser) was born as the world's first Internet web browser. Its ability to provide hypertext links within documents that could reach into documents anywhere on the

Internet began the creation of the web on the Internet.

After the release of web browsers for both the PC and Macintosh environments, traffic on the World Wide Web quickly exploded from only 500 known web servers in 1993 to over 10,000 in 1994. Thus, all earlier hypertext systems were overshadowed by the success of the web, even though it originally lacked many features of those earlier systems, such as an easy way to edit what you were reading, typed links, backlinks, transclusion, and source tracking.

◀ Preliminary Activity for Week 15

Jump to...

Analysis, Application, and Exploration for Week 15 ▶

Navigation

Home
Dashboard
Site pages
My courses
121 - CC106
121 - BPM101 / DM103
121 - OAELEC2
121 - ITE3
121 - MUL101
Participants
Grades
General
01 [Enter Module Title Here]
02 [Enter Module Title Here]
03 [Enter Module Title Here]
04 [Enter Module Title Here]
05 [Enter Module Title Here]

Fair Warning

2nd Semester Enrollment

Activities

- Assignments
- Forums
- Quizzes
- Resources