

continuous-time dependent  
discrete - time independent

## Chapter-8 (1 of 20)

### Documentation, Hypertext and MMEG

- Q) Explain Document and its classmate architecture with suitable diagram

Ans: A multimedia document is a document which is comprised of information coded in at least one continuous medium and in one discrete medium.

- It consists a set of structural media information that can be in different forms of media.
- Continuous and discrete data are processed differently. Text is processed with text editor and video is processed with video player.

#### Document Architecture

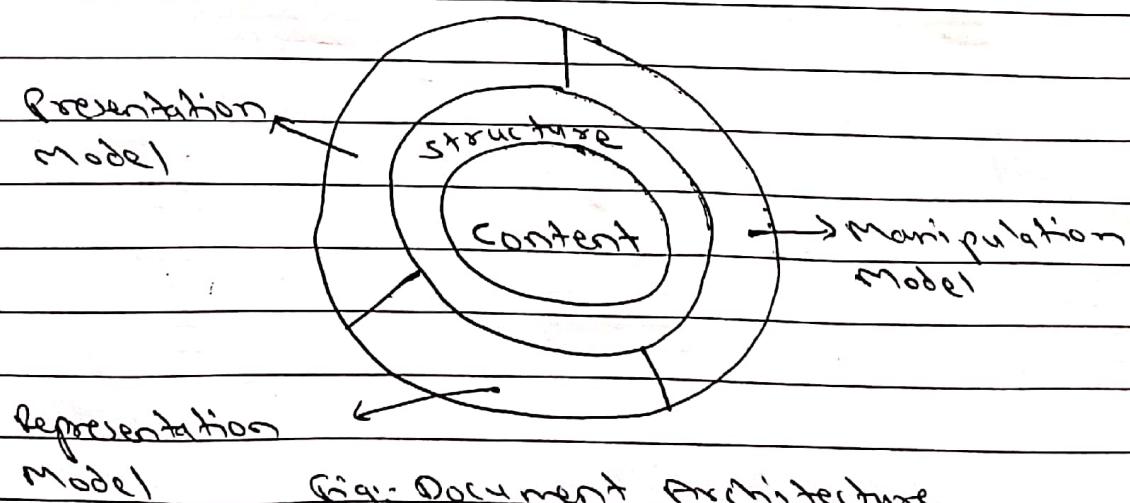


Fig: Document Architecture

- 1) The manipulation model describes all the operations allowed for creation, change and deletion of ~~multimedia~~ multimedia information.
- 2) The representation model defines
  - ↳ Protocols for exchanging information between computers
  - ↳ Formats for storing data
- 3) Presentation model describes the format for the presentation.  
→ The current standardized architectures are:-
  - i) SGML (Standard Generalized Markup Language)
  - ii) ODA (Open Document Architecture)
  - iii) MHFEG (Multimedia and Hypermedia Information Encoding Expert Group)

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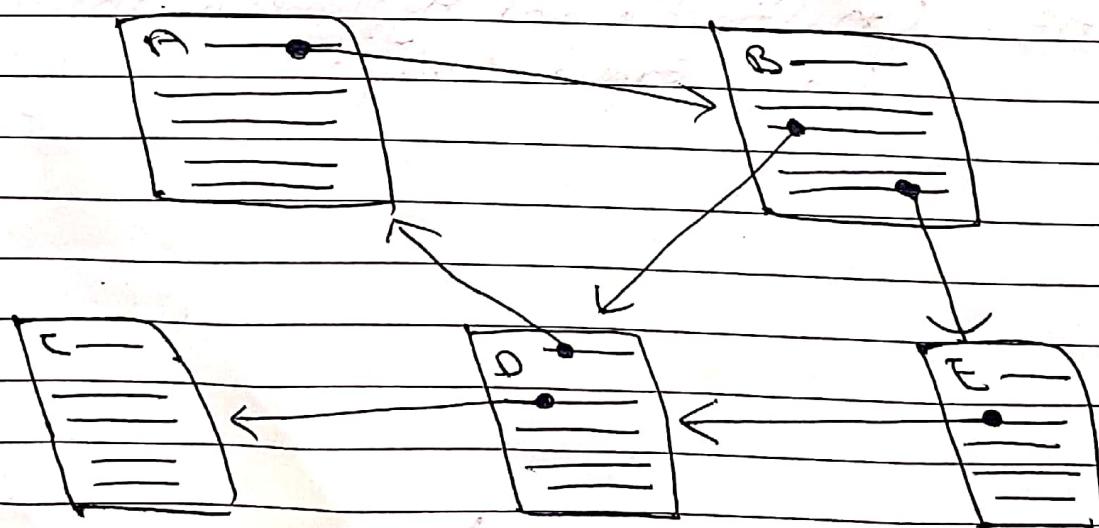
## Hypertext/Hypermedia and multimedia

### 1) Hypertext

- Ans: Hypertext is a text which contains link to another document or text.
- It involves only text.
  - Links connect nodes to other documents and are usually activated when clicked upon by a mouse or other pointing devices.
  - News website & social media websites use hypertext to link pages. It is widely used in World Wide Web and make webpages more interactive.

`<a href="www.facebook.com"> facebook </a>`

↓  
**Hypertext**

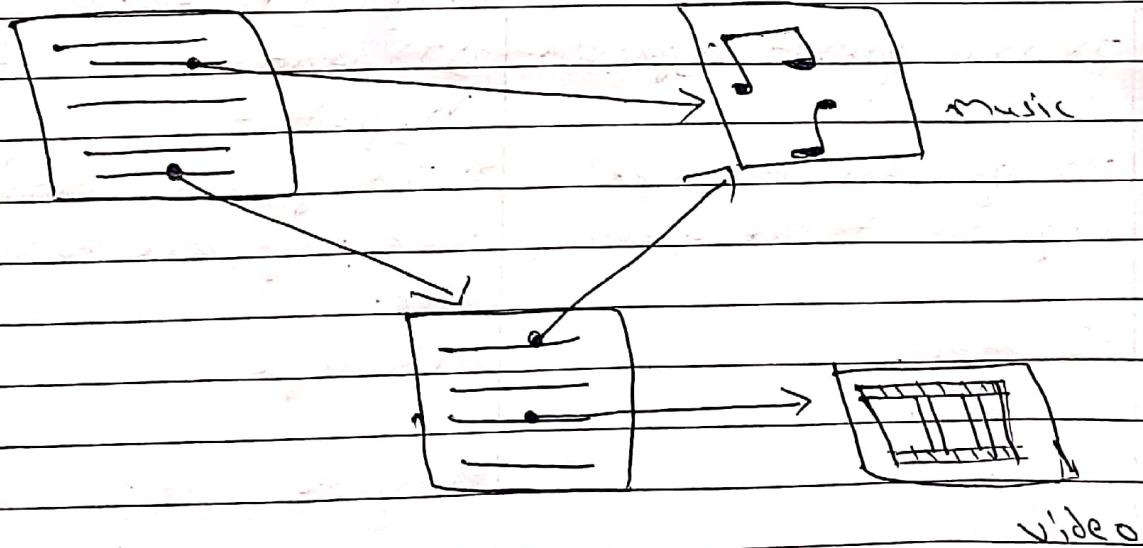


~~Info~~

### 3) Hypermedia / Hypermedia System (2 marks)

Ans: It is an extension of hypertext.

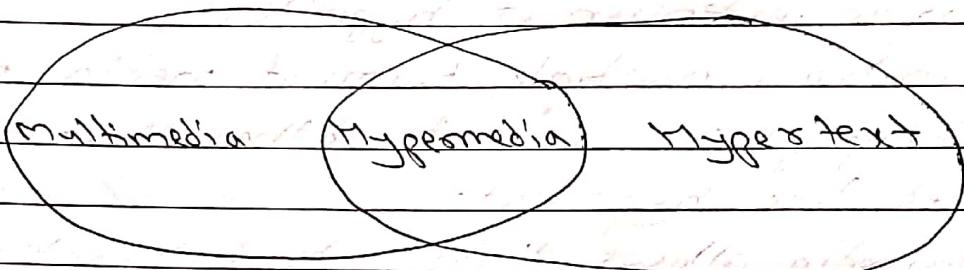
- It includes multiple forms of media such as text, graphics, video, etc rather than only text based like hypertext.
- Hypermedia allows links to be integrated in multimedia elements like images, videos etc and when we click on that it takes us to that web page.
- Example: when we use e-commerce site say amazon and when we click on any product's image in home page, it takes us to the specific product page which belongs to that.
- So here the link is embedded to the image.



→ If Ques asks Hypermedia System in S.O  
Explain previous page & this too.

- Q) Explain the relationship between hypertext, hypermedia and multimedia? Explain in brief.

Ans:



- (Explain Multimedia, Hypermedia & Hypertext -)
- Combination of multimedia & hypertext is hypermedia

- Q) Differentiate between hypertext & hypermedia

Hypertext	Hypermedia
1) It involves only text.	1) It involves graphic, image, video, etc.
2) It is a part of hypermedia.	2) It is an extension of hypertext
3) It provides less user experience to the user.	3) It provides better user experience to the user.
4) Example	4) Example
5) Figure	5) Figure

Ques) What are the different layers of hypertext system architecture? Explain.

Ans: The architecture of a hypertext system can be divided into three layers with different functionalities:-

1. Presentation layer
2. Hypertext Abstract Machine
3. Storage layer

1. Presentation layer  
→ It provides interface to the user.  
→ One or several parts of the document are visualized.  
→ This layer determines which data are presented and how they are presented.  
→ This layer takes control of all inputs.

2. Hypertext Abstract Machine  
→ The HAM is a place between presentation layer and storage layer.  
→ It knows the structure of the document, it has the knowledge about the pointers and its attributes (link)  
→ It does not have to consider the input and output of the upper layer.  
→ It is constructed for the management of the document.

- This layer has the least system dependency in comparison to other two layers.
- This is the most suitable layer for standardization.

### 3 Storage Layer

- This is the lowest layer.
- It is also called database layer.
- It is a repository to store all the hypertext graphs or databases.
- All functions connected with the storage of data i.e secondary storage management belongs to this layer.

#### (i) Nodes

- A node is an information unit in a hypertext document.

#### (ii) Pointers

- Pointers are the edges of a hypertext graph.

(almost true true)

V.V. Imp

- Q) Explain SGML and ODA document architecture.

or

Differentiate between SGML and ODA document architecture.

i) SGML

- SGML stands for Standard Generalized Markup Language.
- It is a superset of extensively used markup languages like HTML and XML.
- SGML is a standard for the uniformity in the content and their representation in the document.
- The content of the document is described within the tags.
- It is an international standard for the definition of the markup language.
- It is independent of any application.
- It is basically a set of rules that break a document into parts and identify the different parts of the document.
- It provides a rules that allow computer to recognize where the various elements of text entity start and end.
- It specifies the syntax (structure) but not the semantics (meaning).

Example:

```

<root> <title> multimedia </title>
      <author> Abhiyan </author>
      <publication> Sagarmatha </publication>
      <summary> This is summary. </summary>
    
```

### Processing of XML document

- The processing of XML document is divided into two processes that are formatter and parser.
- The parser only knows the meaning of the tag and it transforms the document into a formatted document.

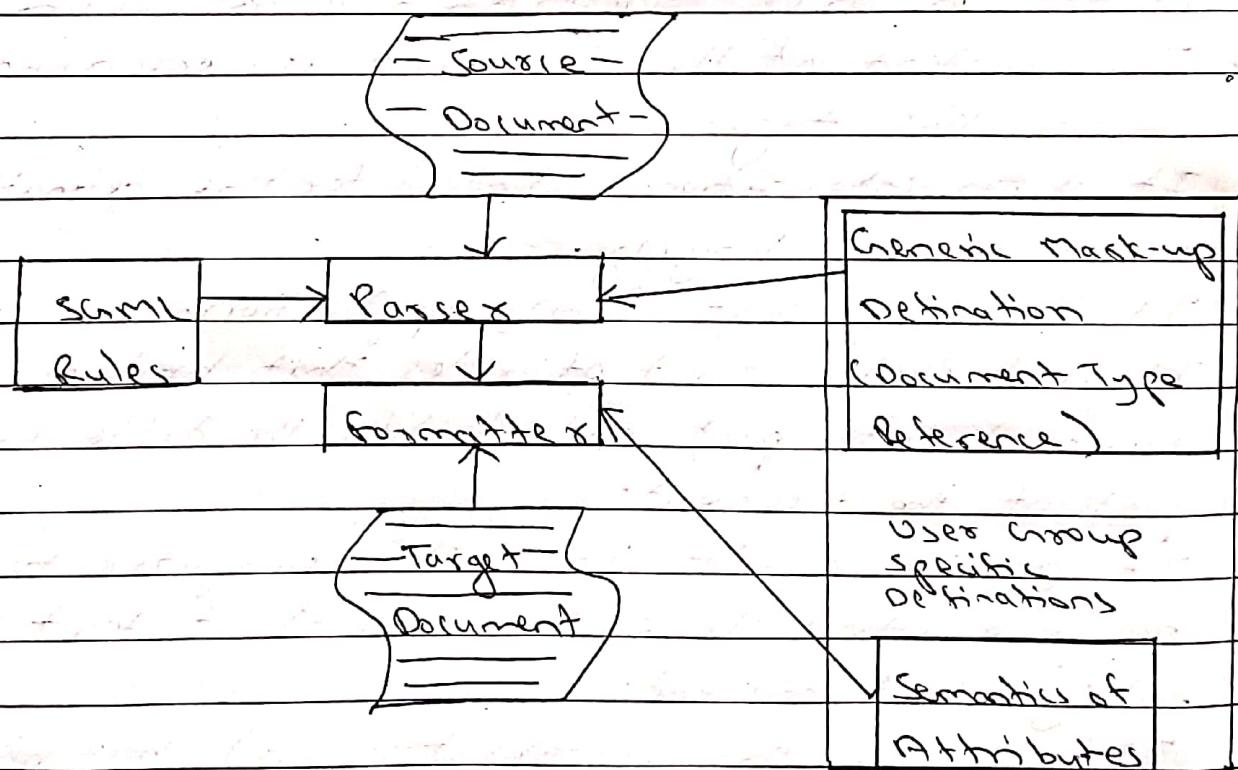


Fig: XML: Document Processing

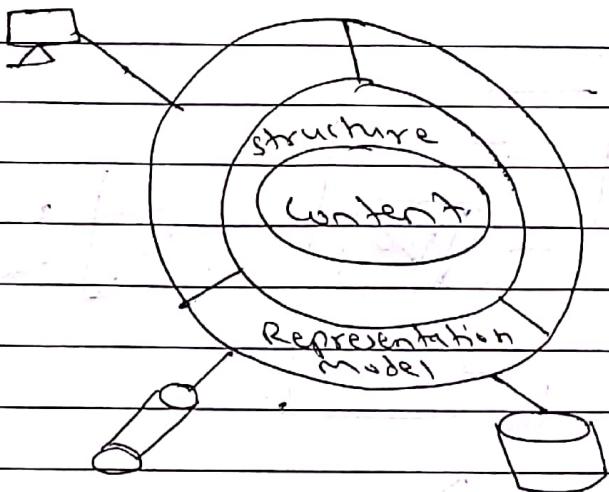


Fig: SGML Document Architecture  
(emphasis on the representation mode)

### ii) ODA

- ODA stands for Open Document Architecture
- The main goal of ODA is to support the exchange, processing and presentation of documents in open system.
- It is independent of any particular communication service.
- The main property of ODA is the distinction among content, logical structure and layout structure.
- This is in contrast to the SGML where only a logical structure and the contents are defined.
- ODA also defines semantics.

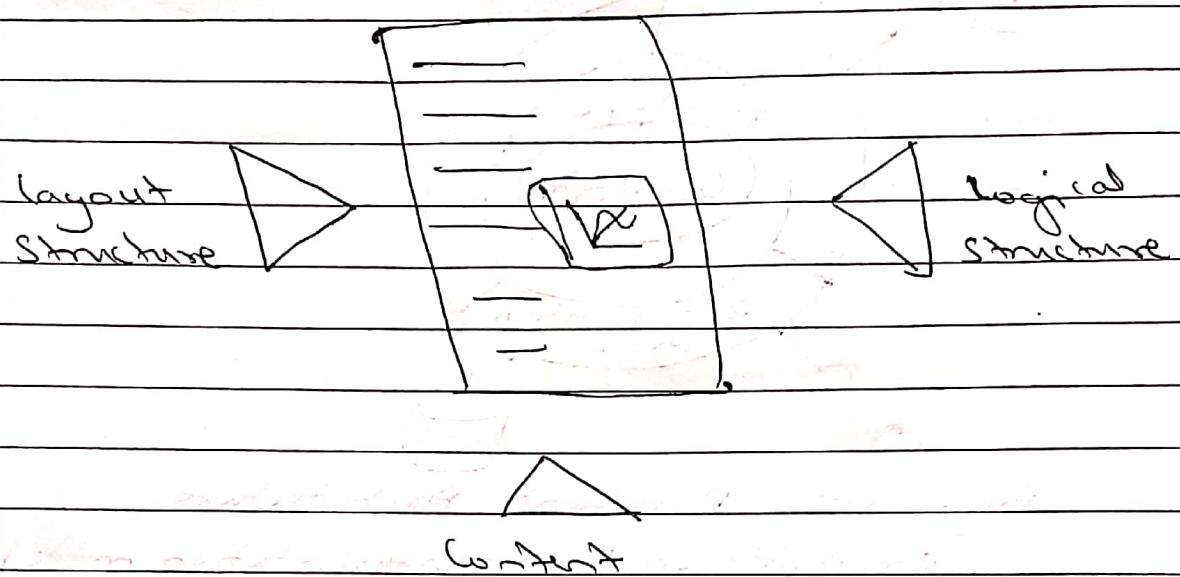


Fig.002 : Content, layout & logical view

#### Content

- The content of the document ~~contains~~ consists of content portions.
- The layout structure specifies mainly the representation of a document.
- It is related to a two dimensional representation with respect to a screen or paper.

#### Logical structure

- ~~The~~ The logical structure includes the partitioning of the content.

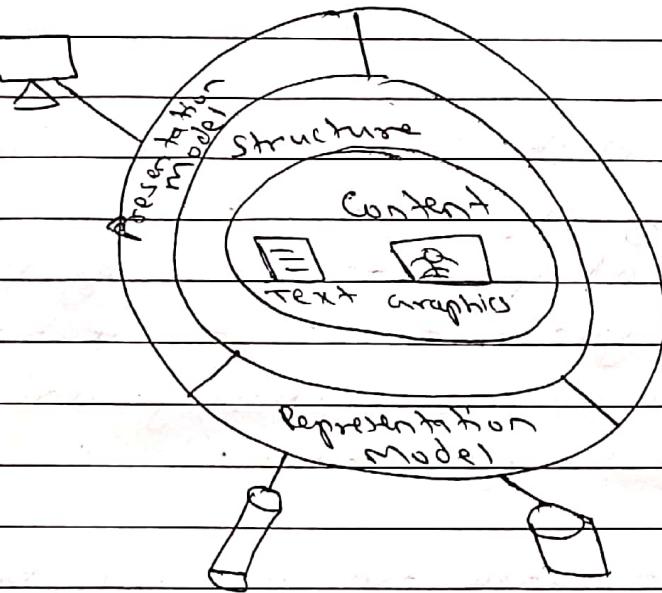


Fig: ODA architecture with presentation & representation model

ISO → International standards organization

### III S) MH4G

Ans:

MH4G stands for Multimedia and Hypermedia

Information Coding Expert Group.

- This is a group of specialists, set up by ISO which was assigned a task of creating a standard method of storage, exchange and display of multimedia presentations.
- Several video and audio standards have been developed including JPEG and MP3.
- So far, there has been no standard method of bringing all these formats together to produce multimedia presentations.
- The MH4G model solved this problem by providing a system independent presentation standard.
- In this way, presentation created on one hardware platform should be viewable on others.
- The goal of MH4G is to provide simple, useful, easy to implement framework for multimedia applications using the minimum system resources.
- Exchange of reliable exchange of multimedia presentation between different ~~platforms~~ machines no matter of the structure. Since it is platform independent.

→ MHEG was used for the provision of interactive services on digital television.

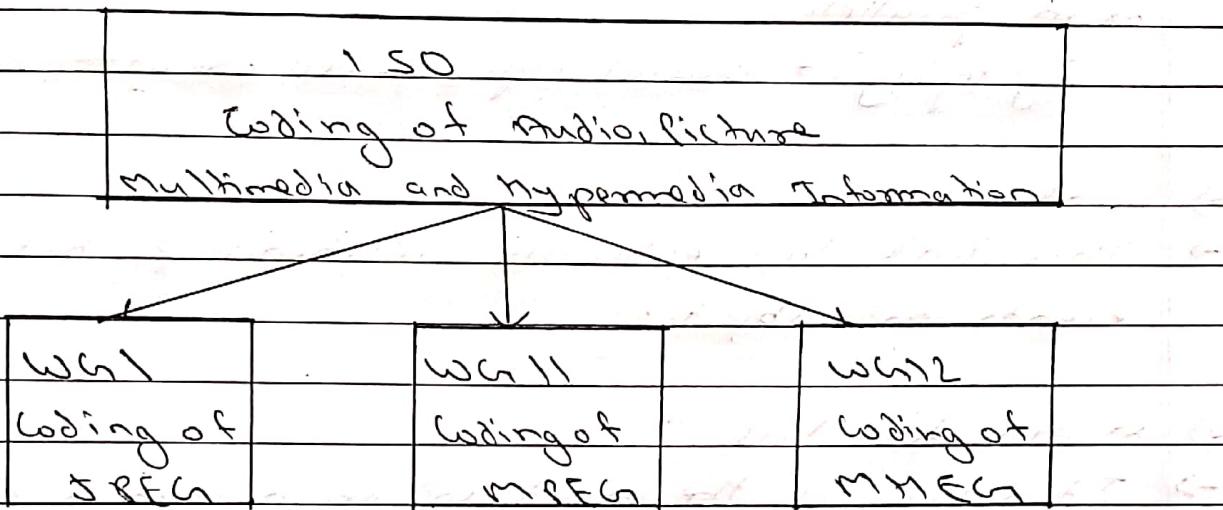


fig: Working groups within the ISO

g) Explain different types of class defined by MHEG.

Ans: They are:-

i) Content Class

→ Content classes are each piece of multimedia data. Eg: Audio or video clips

ii) Behavior Class

→ This class control how and when data is presented to the user.

### iii) Action class

- This class allows events to be triggered sequentially or in parallel.  
Eg: replay of several clips of video one after other.

### iv) Link class

- This link class establishes relationships between events and objects.

### v) Modification class

- It serves as the input and manipulation of data.

### vi) Script class

- It determines the behaviour of the objects.