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Topics

• Introduction
• What is multimedia?
• What is hypermedia?
• Components of hyperdocuments
• Hypermedia on Web
  SMIL and XHTML+TIME
• Examples
Introduction

• Traditional media:
  – Postal service
  – Newspapers
  – Publishing
  – Telecommunications (phone)
  – Broadcasts (radio, TV)

• Personal vs. Mass communication
Multimedia

We may define multimedia communications as the field pertaining to the formation, storage, retrieval, dissemination and usage of documents composed of multiple “media” such as text, graphics, still images, animation, audio and video.
Multimedia (cont.)

- **Media** refers to a form of human interaction that is amenable to computer capture and processing, whereas **multi** signifies that several of those “media” are present in the same application or document.

- We can call an application as a “multimedia” one if it contains at least one *time-continuous media* (e.g. audio, video or animation) and a *time-discrete media* (e.g. text or image).
Multimedia (cont.)

Sources → Capture & Conversion → Organization

→ Translation → Summarization

→ Retrieval & Dissemination

Creation → Presentation

Interaction/Browsing
Multimedia (cont.)

• **Benefits**
  - Video conferencing
  - Collaborative systems
  - Distance learning
  - Entertainment

• Enable a number of participants to exchange various multimedia information via Internet
Hypermedia: on Web

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Hypermedia

• Background
  – Vannevar Bush
    MEMEX (1945)
  – Ted Nelson
    hypertext (1967)
    • Hypertext systems are “a computer based medium for thinking and communication” (Conklin, 1987)
  • Non-linear writing
Hypermedia (cont.)

- Information is stored in chunks, called **nodes**, which are linked together to form a network of links.
- Hypertext can be viewed as a form of non-linear writing where a user follows **links** between nodes to access information.
Hypermedia (cont.)

- Hypermedia = multimedia + hyperlinks
- Hypermedia is multimedia hypertext
Hypermedia (cont.)

- Nodes
- Links
  - Static
  - Dynamic
- Hypermedia document
- Storage system (e.g. Internet) – server side
- Browser – client side
Hypermedia documents

• Components
  – Text (XHTML, WML, XML,...)
  – Image (BMP, EPS, TIFF, XBM, GIF, JPEG, PNG, WBMP,...)
  – Sound (MIDI, Waveform, MP3,...)
  – Animation/Video (AVI, MPEG, QuickTime, Flash,...)
  – 3D Worlds (VRML, X3D)
... on the World-Wide Web

• Why Web?
  – **Strengths**
    • Convergence of technologies
    • Integrated services
    • Ease of use
    • Platform independence
    • Short development time
    • Flexibility & mobility
Why Web?

- Weaknesses
  - Access
  - Bandwidth
  - Loading time
  - Disorientation
  - Superficial learning
• Synchronized hypermedia documents:
  – Basic media objects, like video or audio, have intrinsic duration
  – They can be temporally organized by the author which adds to the document a temporal structure called the **temporal scenario**
  – Edition and presentation operations are carried out at different times and by different users (authors, readers)
... on the World-Wide Web

• Issues:
  – Graphical, sound and video content can not be annotated by using traditional markup languages

• Solutions:
  – XML-based languages (e.g. SVG, VML)
  – Open standards (i.e. PNG, MPEG)
... on the World-Wide Web

- Web standards for authoring hypermedia presentations:
  - **SMIL** (*Synchronized Multimedia Integration Language*)
    - SMIL 1.0 (Aug. 1998)
    - SMIL 2.0 (Aug. 2001)
  - **XHTML+TIME** (*Timed Interactive Multimedia Extensions for XHTML*)
    - HTML+TIME 1.0 (MSIE 4, 5)
    - XHTML+TIME 2.0 (MSIE 5.5, 6)
... on the World-Wide Web

- Advantages of SMIL
  - Wide variety of basic multimedia objects
  - Rich set of operations on them
  - Possibility to control the delivery of continuous media
  - Interactivity & adaptability
  - Temporal style definitions
  - Fast editing/presentation cycle
  - Platform independence
Hypermedia: on Web

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... on the World-Wide Web

- **Browsers (players)**
  - RealPlayer/RealOne
  - Oratrix GRiNS
  - Internet Explorer 5.5 or later

- **Authoring tools**
  - Oratrix GRiNS
  - RealNetworks
  - Visual SMIL Editor

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Examples

- SMIL

```xml
<smil>
  <head>
    <layout type="text/smil-basic-layout">
      <region id="r1" top="20" left="20"
              height="200" width="300" />
      <region id="r2" top="400" left="400"
              height="100" width="50" />
    </layout>
  </head>
  <body>
    <par>
      <video region="r1" src="video1.rm" dur="30s" />
      <video region="r2" begin="3s"
              src="http://www.infoiasi.ro/v/v2.mpeg"
              dur="2min" repeat="2" />
    </par>
  </body>
</smil>
```
Examples

• XHTML+TIME

```html
<html xmlns:t="urn:schemas-microsoft-com:time">
  <head>
    <style type="text/css">
      .time { behavior: url(#default#time2); }
    </style>
    <?IMPORT namespace="t"
      implementation="#default#time2" ?>
  </head>
  <body>
    <img class="time" begin="2" dur="5" src="csb.jpg" />
    <table border="1" id="t"
      class="time" begin="0; t.end+2" dur="1">
      <tr><td>Blinking table...</td></tr>
    </table>
  </body>
</html>
```
Overview

- Introduction
- What is multimedia?
- What is hypermedia?
- Components of hyperdocuments
- Hypermedia on Web
- Examples
Thank you!

Questions?