

Multimedia on Web

a RILW 2001 tutorial

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Topics

- About the author
- Introduction
- What is multimedia?
- What is hypermedia?
- Components of hyperdocuments
- Multimedia on Web
- References

About the author

- MSc in Computer Science (Distributed Computing)
- Assistant Professor at Faculty of Computer Science, "Al.I.Cuza" University of Iasi, Romania
- PhD student (since 1998)
- Points of interest: Web technologies, hypermedia, distributed systems
- Founder of WebGroup - Faculty of Computer Science: www3.infoiasi.ro/~webgr/

About the author (cont.)

- Teaching activity:
 - Web Technologies course (since 1999)
 - User Interface Design course (since 2000)
 - Computer Networks, Operating Systems (since 1998)
- Main organizer and chair of the 1st edition of <Web /> workshop on Web technologies May 2001, Iasi: <http://www.infoiasi.ro/~web/>
- Other information on the Web:
<http://www.infoiasi.ro/~busaco/>

Introduction

- Traditional media:
 - Postal service 
 - Newspapers
 - Publishing 
 - Telecommunications (phone) 
 - Broadcasts (radio, TV)
- Personal vs. Mass communication 

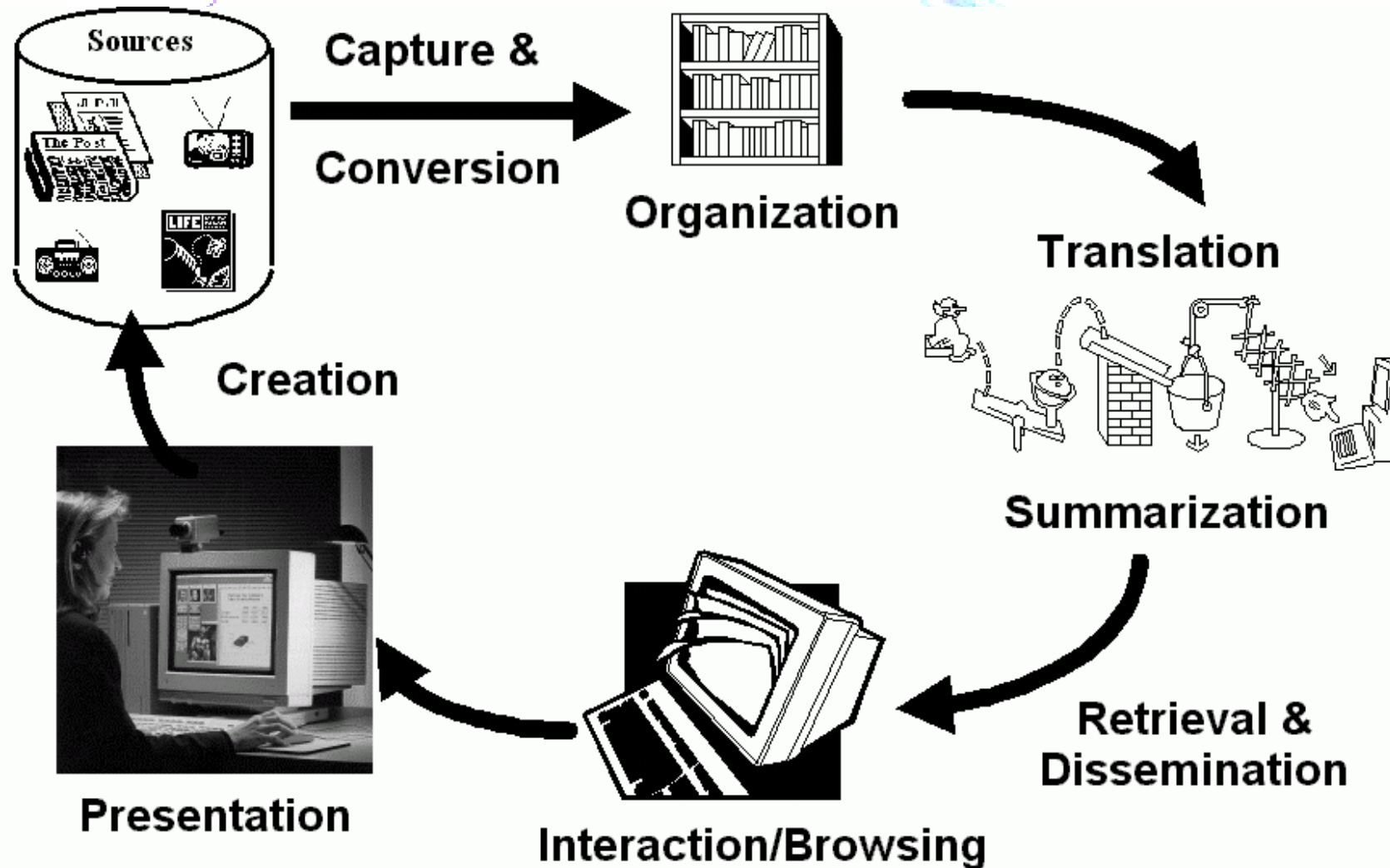
Multimedia

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).

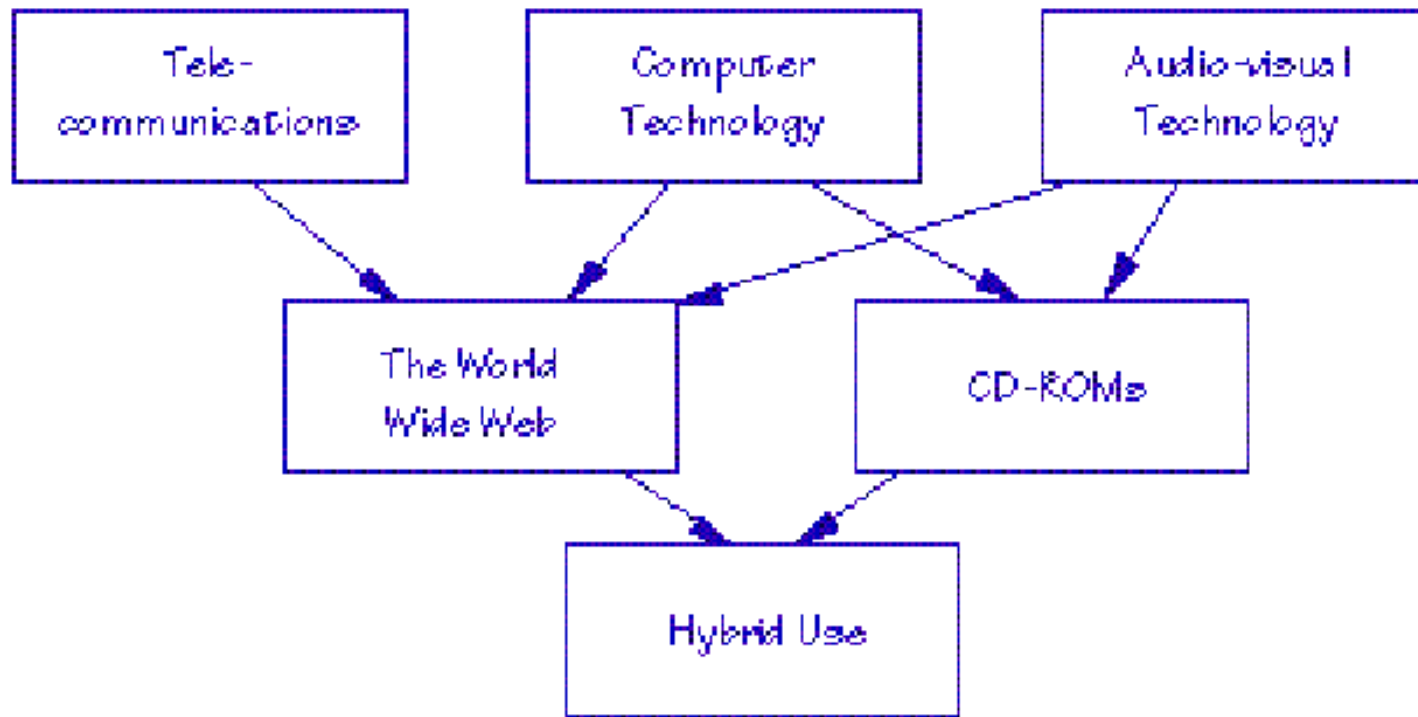
Multimedia (cont.)



Multimedia (cont.)

- **Benefits**
 - Distance learning
 - Video conferencing
 - Collaborative systems
- Enable a number of participants to exchange various multimedia information via Internet

Multimedia (cont.)



Convergence of technologies

Multimedia (cont.)

- Applications (examples):
 - **Multimedia in medicine**
IRIS (Interactive Radiological Information System) - University of Ottawa
 - **Multimedia collaborative work**
NetMeeting - Microsoft
 - **Multimedia distance learning**
 - Multimedia whiteboard
(to share synchronized audio/video documents)
 - Virtual universities - Hagen, Germany (C.Unger, '99)

Hypermedia

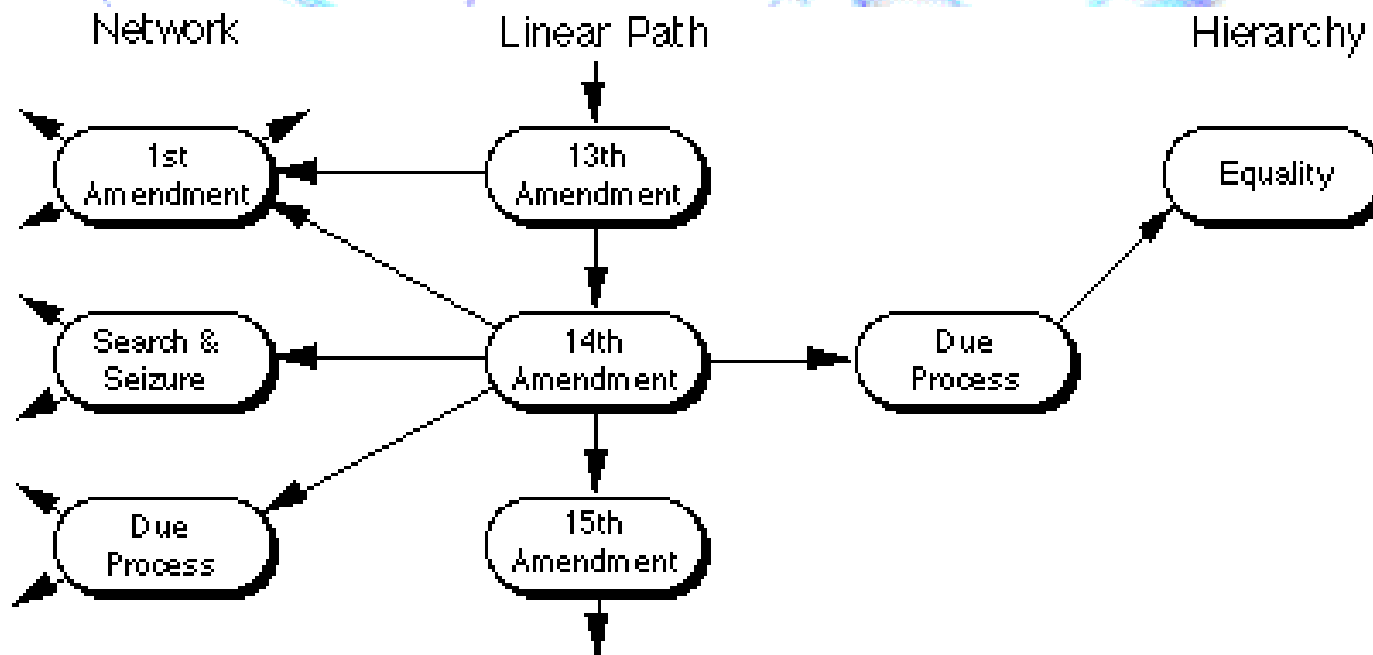
- Background
 - Vannevar Bush - **MEMEX** (1945)
 - Ted Nelson - **hypertext** (1967)
 - Hypertext systems are "a computer based medium for thinking and communication" (Conklin, 1987).
 - Non-linear writing

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.

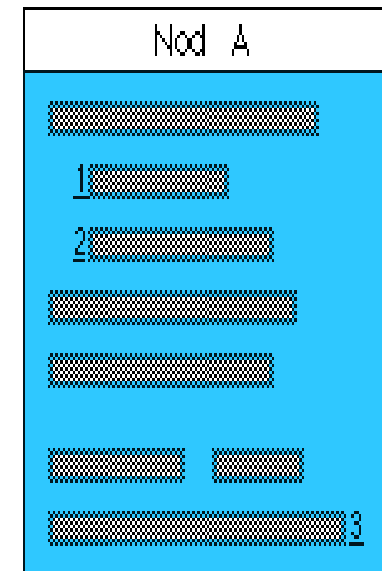
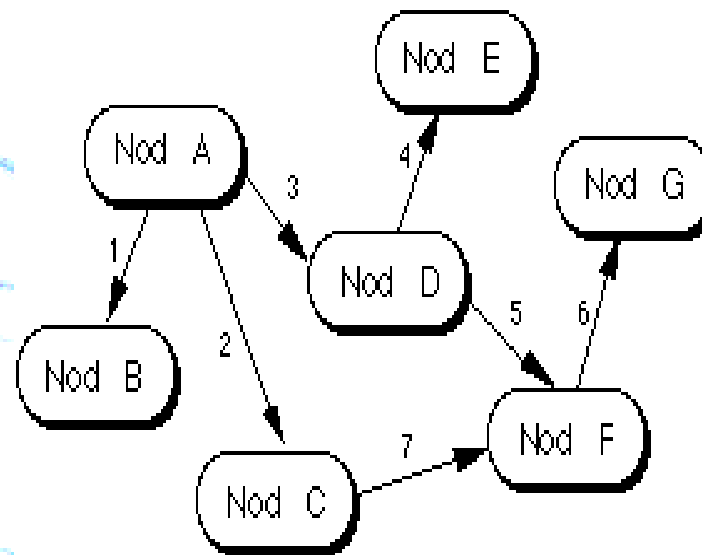
Hypermedia (cont.)

- 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
 - Image (BMP, EPS, TIFF, GIF, JPEG, PNG,...)
 - Sound (MIDI, Waveform, MP3,...)
 - Video (AVI, QuickTime, MPEG,...)
 - 3D Worlds (VRML)

... on the World-Wide Web

- Why Web?
 - **Strengths**
 - Convergence of technologies
 - Integrated services
 - Ease of use
 - Platform independence
 - Short development times
 - Flexibility



... on the World-Wide Web

- Why Web?
 - Weaknesses
 - Access
 - Bandwidth
 - Loading times
 - Disorientation
 - Superficial learning



... on the World-Wide Web

- 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

- Web standards for authoring hypermedia presentations:
 - **SMIL (Synchronized Multimedia Integration Language)**
 - SMIL 1.0 (Aug. 1998)
 - SMIL 2.0 (Aug. 2001)
 - **HTML+TIME (Timed Interactive Multimedia Extensions for HTML)**

... on the World-Wide Web

- Advantages
 - 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

... on the World-Wide Web

- **Browsers (players)**
 - RealPlayer
 - Oratrix GRiNS
 - Internet Explorer 5.5 or later
- **Authoring tools**
 - Oratrix GRiNS
 - RealNetworks
 - Visual SMIL Editor

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References

- V.Balasubramanian - "State of the Art Review on Hypermedia Issues And Applications", Rutgers University, New Jersey, 1994
- T.Berners-Lee - "Weaving the Web", Cambridge Massachusetts, 1999
- S.C.Buraga - "Web Technologies" (in Romanian), MatrixRom, Bucharest, 2001 (to appear)
- S.Singhal, M.Zyda - "Networked Virtual Environments", Addison-Wesley, New York, 1999

References (cont.)

- Alpeda - The Multimedia Course:
<http://www.alpeda.shef.ac.uk>
- SMIL: <http://www.w3.org/AudioVideo>
- JustSMIL: <http://www.justsmil.com>
- World Wide Web Consortium:
<http://www.w3.org>
- Other specific information on my Web page: <http://www.infoiasi.ro/~busaco/>

Overview

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Thank you!