

Integrated
Communication
Systems

Multimediale Visualisierungssysteme

WS 2000/2001

Introduction

ICSY

[Prof. Dr. Paul Müller](#)

AG: Integrierte
Kommunikationssysteme

ICSY

How to contact

Prof. Dr. Paul Müller

34 / 312

Tel.: 0631 / 205 - 2263

e-mail: mueller@uni-kl.de

Bernd Reuther

32 / 344

Tel.: 0631 / 205 - 2161

e-mail: reuther@informatik.uni-kl.de

Ye Yuan

32 / 346

Tel.: 0631 / 205 - 4173

e-mail: yuan@informatik.uni-kl.de

Acknowledgements

Prof. Dr. Ralf Steinmetz, TU-Darmstadt

Stephan G. Eick, Bell-Labs

Dr. Andreas U. Mauthe, Fa. TecMath

Dr. Peter Thomas, Fa. TecMath

Prof. Dr. Hans Irtel Uni Mannheim

Universität Kaiserslautern:

Dipl. Inform. Bernd Reuther

Dipl. Inform. Ye Yuan

Literatur

Guojun Lu

Communication and Computing for Distributed
Multimedia Systems, Artech House 1996

Ralf Steinmetz

Multimedia–Technologie, Einführung und Grundlagen,
Springer–Verlag, 1993

Borko Furht, Milan Milenkovic

A Guided Tour of Multimedia Systems and Applications
IEEE Computer Society Press, 1995

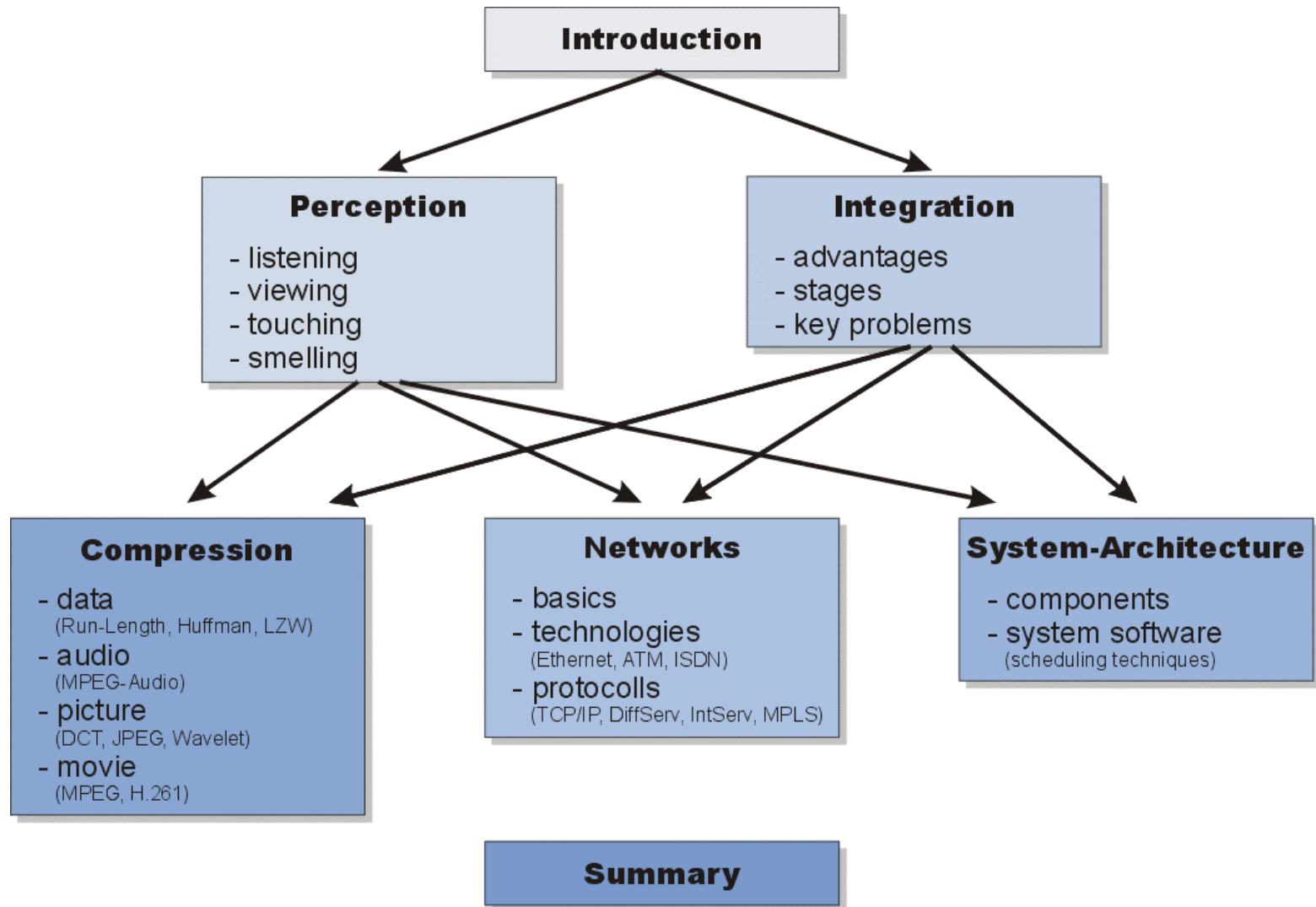
François Fluckinger

Understanding Networked Multimedia, applications and
technology, Prentice Hall, 1995

Andrew S. Tanenbaum

Computer Networks, third edition
Prentice Hall, 1994

Site Map



1. Introduction to Multimedia

Opinions:

- "In our multimedia system you can not only edit text, but also include graphics."
- "While you edit your document you can have these five HDTV windows on your screen – oh, look, right now some voice mail came in.,,"

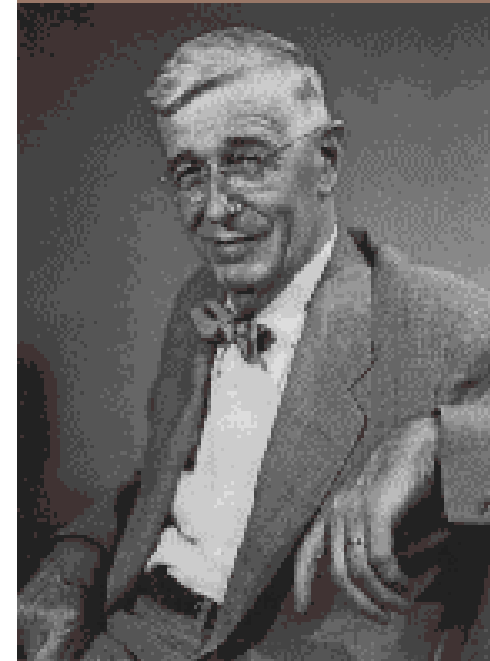
Multimedia = Multi + media:

- Multi:
 - Many
- Medium:
 - "Thing in the middle"
 - Means to distribute and present information

History of Multimedia 1

1945 Vannevar Bush

- Article in: „Atlantic Monthly“ about a system called „**Memex**“ (memory extension), Linkstructure between documents.
- Memex a future device for mechanized private file and library. A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory.
- 1973 at Xerox Palo Alto Research Center (PARC) in California, Alan Kay, a disciple of Vannevar Bush, introduced the graphical user interface (GUI) on the world's first personal computer (Alto) connected to the first local area network (Ethernet).

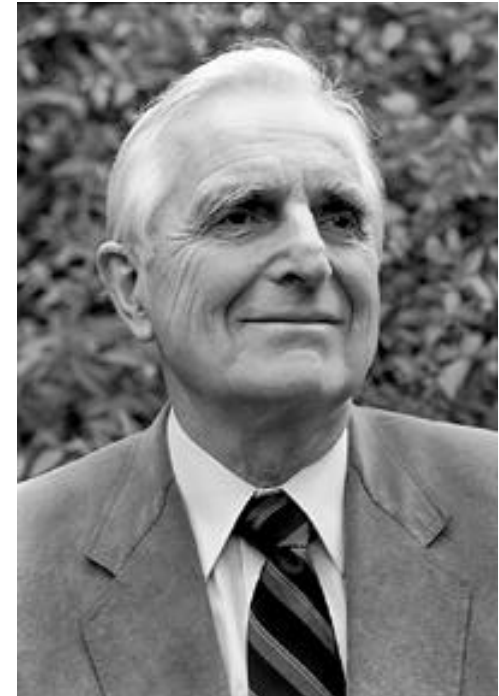


V. Bush original text

History of Multimedia 2

1958 Doug Engelbart

- first began publishing in about future high-performance organizations, enabling collaborative technologies and practices for knowledge work, knowledge management, etc.
- 1963 Doug Engelbart invented the computer mouse.



History of Multimedia 3

1968 Ted Nelson

- 1968 Einführung des Begriffes „Hypertext“
- 1980 Projekt XANADU (Literary Machines)
 - Hypertext is the presentation of information as a linked network of nodes which readers are free to navigate in a non-linear fashion. It allows for multiple authors, a blurring of the author and reader functions, extended works with diffuse boundaries, and multiple reading paths.



T. Nelson original text

Media

Media are means of communication:

- Between computers and their users
- Between humans using computers as communication tools
- Between humans and the environment

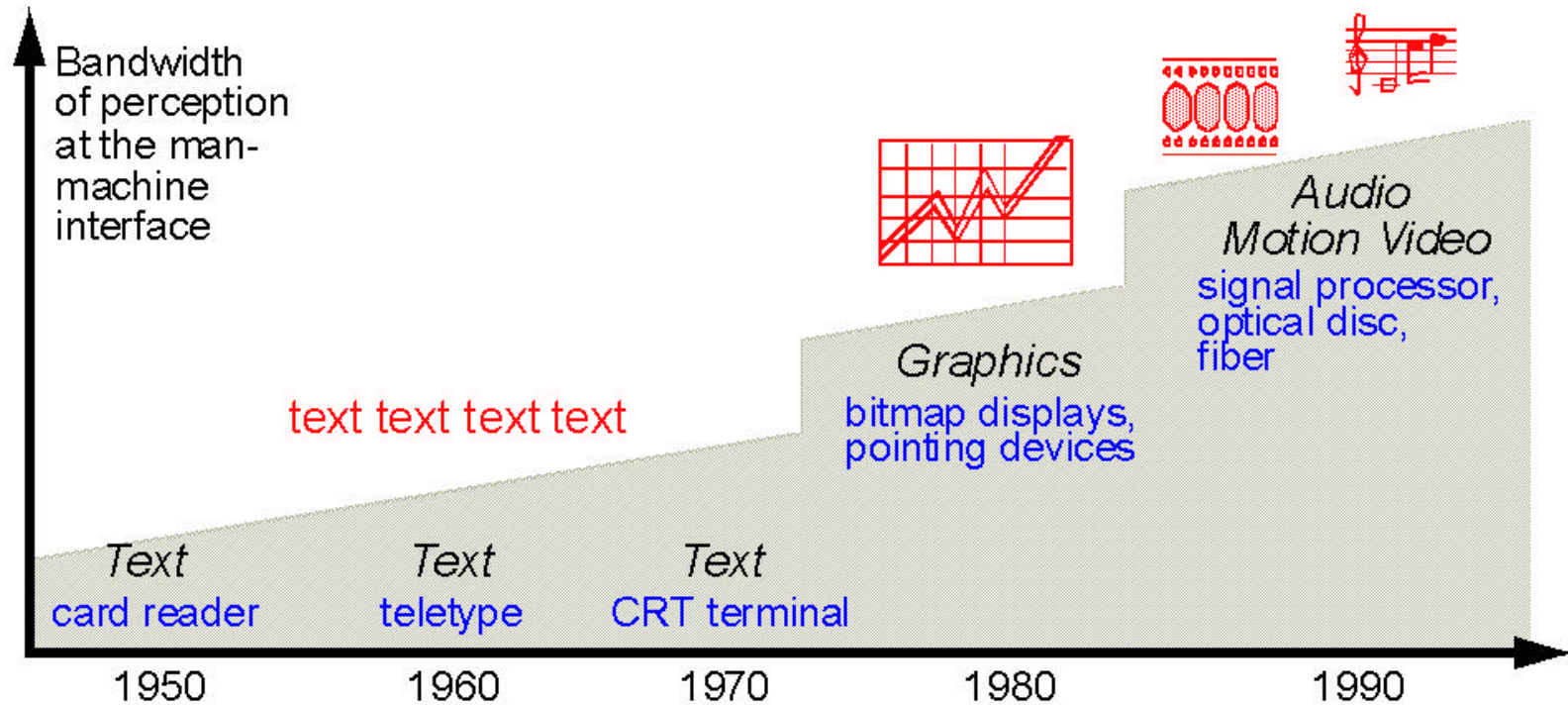
Media in computing:

- Text:
 - 1950's: card readers
 - 1960's: teletypes
 - 1970's: CRT terminals
- Graphics (geometric and raster):
 - 1980's: bitmap displays, pointing devices
- Audio and video:
 - 1990's: digital signal processors, optical disks, fiber

Media

Media affect human computer interaction:

Integrated
Communication
Systems



- Listening is easier than reading
- Showing is easier than describing
- Speaking is faster than writing

ICSY

Why are Media Important?

Media determine:

- For what purpose computers are used
- How computers are used
- Who can use computers

Example: Visualization / Graphics

- New applications:
 - **Geometric modeling, Computer-aided design, ...**
 - **Information Visualization**
- New interfaces:
 - **Windows, Icons, Desktop.**

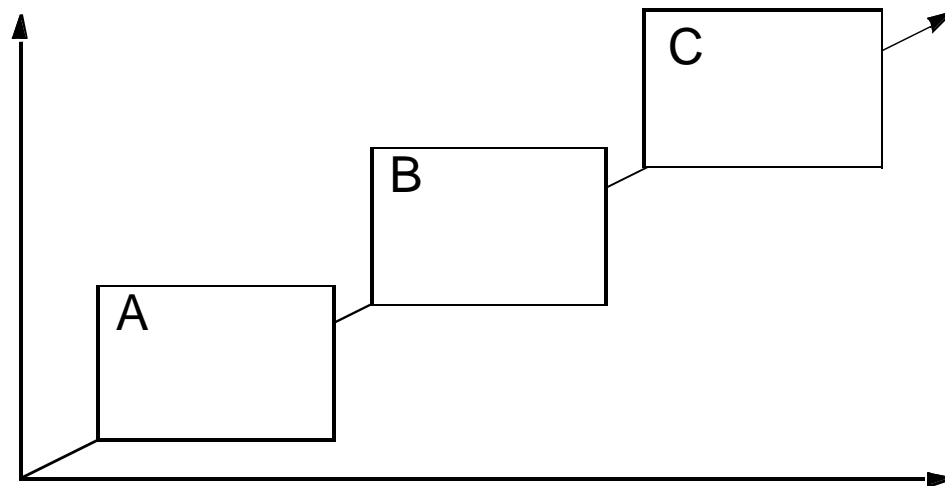
Conclusion:

Multimedia systems affect our view of computing in general, not just specific application areas.

Media Present Information

Presentation dimensions:

- Value dimension (Dimension 0)
- Spacial dimension:
 - Computer screens: 2 visual dimensions
 - Holographic projectors: 3 visual dimensions
 - Stereo sound: 1 acoustic dimension
- Temporal dimension



Time-Dependence of Media

Time-independent media:

- Text
- Graphics
- **Discrete** media

Time-dependent media:

- Audio
- Video
- **Continuous** media

Note: "**Continuous**" refers to the user's impression of the data, not necessarily to its internal representation.

Media Present Information

Media transport information appealing to human senses:

- Presentation space:
 - Sense of vision (paper or computer displays)
 - Sense of hearing (stereophonic sound)
 - Sense of touch/tactile (pressure gloves)
 - Sense of balance (pneumatic simulators)
 - Sense of smell, taste,...
- Presentation values:
 - Characters
 - Pressure waves

Value classes:

- Self-contained values:
 - Temperature, taste, smell
- Agreed-upon values (symbols):
 - Text, spoken language, gestures

Properties of a Multimedia System

Flexibility:

- Provide mechanisms to handle all kinds of media, in particular, discrete and continuous media
- A VCR and a desktop publishing system for text and graphics are no multimedia systems.
- An editor with voice annotation is a multimedia system.

Integration:

- Independent media storage
- Computer-controlled media combination

Definition:

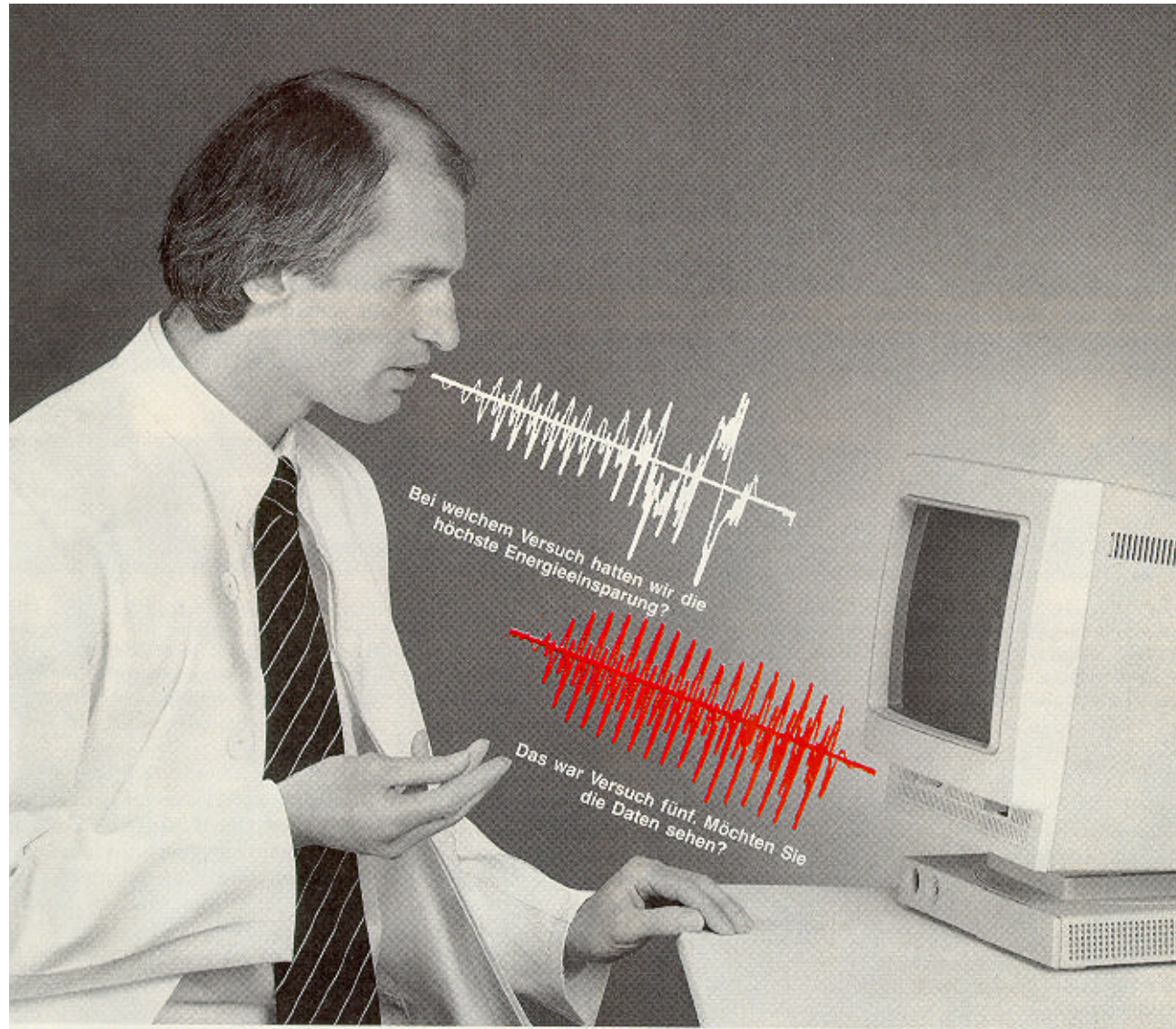
- ***A multimedia system is characterized by the integrated computer-controlled handling of independent discrete and continuous media.***

Essential Elements of Multimedia

Essential Elements are:

- Immersion
- Interdisciplinarity
- Hypermedia
- Interactivity
- Narrativity







A new definition of Multimedia:



Simulation of Human Communication

Mind and Machine

A new definition of Multimedia:

Simulation is the representation or replica of specific aspects of a real world system, in particular of its behaviour in time. The simulation allows us examination or manipulation, which's realization would be too dangerous, too expensive or even impossible in reality.

Questions

1. Persons and their contributions to the history of multimedia
2. Presentation dimensions
3. General type of media
4. Presentation space and value classes
5. A technical and a content based definition of multimedia
6. Essential elements of multimedia
7. What does simulation means?

Some interesting links

Multimedia Glossary

Glossary

Multimedia/Entertainment Industry Law & Business Information Center

<http://www.dnai.com/~pzender/index.html>

Multimedia: From Wagner to Virtual Reality - presenting the untold history of multimedia.

<http://www.artmuseum.net/w2vr/project.html>

As We May Think - this paper by Dr. Bush calls for a new relationship between thinking man and the sum of our knowledge.

<http://www.ps.uni-sb.de/~duchier/pub/vbush/vbush.shtml>

Web Directory: Hypermedia Hypertexts (uni-konstanz.de) - Index of resources on Hypertext on the net

http://www.inf-wiss.uni-konstanz.de/Res/hypertext_e.html

IEEE Multimedia - features the latest practical information on research and applications in multimedia hardware and software.

<http://www.computer.org/multimedia/>

PROJECT XANADU® Founded 1960 • The Original Hypertext Project

<http://xanadu.com/>

The History and the Future of the World Wide Web

<http://www.palevich.com/Articles/a4d3.html>

A Little History of the World Wide Web

<http://www.w3.org/History.html>

The History of the World Wide Web

<http://www.w3history.org/>

What is Simulation? <http://www.solutionsbase.co.uk/simulation/simulation.htm>