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Multimedia Communication Systems

by

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Multimedia Communication Systems

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Content:  Multimedia - An Overview
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Different Platforms
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Multimedia Elements

Multimedia contains five different media:
Text
Graphics
Animations
Audio
Video
In general the definition for multimedia demands a combination of at least 3 out of the five known media. Application as well as hardware must be able to use three different media at the same time.

Text

Text is defined in four different properties:
Font Type
Font Size
Font Style
Font Color
These properties or font characters have to be set for each text and contribute to picture and style of the text.

Graphics

Basically two different kinds of graphics are used:
Pixel Graphics
Vector Graphics
Pixel Graphics are commonly used for photographs and video capturing; while vector graphics are used for charts and diagrams.
Graphics can be displayed with different colors and color palettes. The computer can display between 1-bit (monochrome) and 64-bit (true-color) color depth.

Animations

Basically three different animation types are in use:
Point-to-Point Animations
Path Animations
3D Animations
The first two are 2D animations, which are basically moving graphics.

Audio

Four different audio forms are used:
MIDI
Digital Audio
Analog Audio
Live Audio
MIDI is played via a computer file which contains music instructions. CD, DAT and MiniDisk are in general analog audio sources, as the digital format is not computer compatible. These formats have to be digitized in another format.

Video

Similar to Audio, Video is used in three different forms:
Digital
Analog
Live
Digital Audio files are existing on the HDD of the computer platform itself. Analog on life video are displayed via video camera or VCR/LDP through a video overlaying card on the computer monitor.
Multimedia Applications

Multimedia technology enables to create applications of the following nature:
- Presentations
- Information Kiosks
- Transaction Kiosks
- Executive Information Systems
- Simulations
- Computer Based Learning (CBL)
- Computer Based Training (CBT)
- Video Conferencing
- Interactive Television

Presentations
Because of the rich media capabilities, multimedia technology can use any media necessary to complement any presentation. Interactivity makes multimedia presentations more lively and react on user input. Due to its digital nature, multimedia presentations can be easily maintained and upgraded. In general a multimedia presentation is cheaper in development and maintenance than traditional media.

Information Kiosk
The information kiosk is a new communication tool, enabling the user to retrieve information at the own convenience and pace.

Transaction Kiosk
Similar to the information kiosk, it enables the user to retrieve information and services. But the transaction kiosk demands at the same time information from the user. Prominent example of such a system is the bank kiosk.

CBT/CBL
Computer Based Training and Learning is a new technology, that benefits the most from multimedia capabilities. Unlike regular class-room training, CBT/CBL is self-paced, easy to upgrade, media rich and interactive. Database access allows the user to store results and be reminded on repeating difficult topics.

Video Conferencing
Video Conferencing is currently the most effective multimedia communication solution. It allows conferences from the desktop and can be implemented in the LAN environment.

Interactive Television
Interactive Television will conquer the world in the next five years. It will combine every known communication system, such as TV, phone, fax, computer, newspaper.
Different Platforms

Multimedia computing is possible on all existing computer platforms. Still, some environments are media friendlier than others.

**PC with Microsoft Windows**
The PC with Microsoft Windows as the user environment gives developers as well as user the best media support compared to other platforms. Though it still lacks integration, the potential with this current operating systems/GUI combination gives users and developers more flexibility.

DDE, DLL, MIDI are not known on other comparable systems. They are the most powerful tools for multimedia development on the PC/Microsoft Windows Platform.

**Apple Macintosh**
The Apple engine is highly integrated, though it lacks speed. Ease of use make this platform still the premier machine for multimedia development and delivery.

**Workstations with OSF/Motif**
Motif does not know video or 3D animations. In general Motif set no standards for such media such as video, audio and animations. Audio is very good supported, as almost every existing audio format is supported.

But the lack of animation and video standardization make this environment not the premier choice for multimedia communication systems.

**NextStep 486**
This operating systems is entirely object based and supports every media as objects. It is the only approach in this direction.

**Kaleida**
IBM and Kaleida are promising higher media integration as the present known systems. Still, details are not known. It is expected to show an integration level of NextStep 486.

**The future**
Optical PC’s, memory HDD, RISC will bring much more power to the desktop and therefore to multimedia communication systems. Text-, Handwriting-, and Voice-Recognition systems will become possible with these technologies, enabling true multimedia on the PC.

Multimedia Hardware & Software

Different hardware and software solutions for multimedia work and delivery systems are currently available on the market:

- Sound Cards
- Video Overlaying Cards
- Video Digitizing Cards
- Touchscreens
- Authoring Software
- Animation Software
- Audio Software
- Video Software
Video Networking

Video networking still provides a certain amount of difficulty due to the synchronous datatransfer mode. Asynchronous datatransfer will enable the user to view video over the LAN environment without any obstacles. Special solutions for these networking solutions are available in the market and can grow with the network expansion.

Future Multimedia Communication Systems

Future communication systems will benefit from new and emerging technology, which will be downwards compatible:
- Interactive Television
- Optical Computers
- Realtime Digital Video
- Voice Recognition Systems
- Wireless Networking