CHAPTER – 9

Multimedia Application

Introduction:

- The availability of Multimedia hardware and software components has driven the enhancement of existing applications towards more user-friendly (known as re-engineering).
- It has also initiated the continuous development of new multimedia applications.
- Applications are crucial for the whole domain of multimedia computing and communications because they are the only reason why anybody would invest in this area.

Programs and Structure

Programs:

Several programs for the development of multimedia applications have been established during the last few years, some well known form the US and Europe are outlined below.

- USA: The High Performance computing and communication (HPCC) program accelerates the development of scalable, high performance computers, advanced high-speed computer communication networks and advanced software all critical components of a new National Information Infrastructure (NLL) initiative.
- One of the most significant program components in the HPCC program is the Information Infrastructure Technology and Application (IITA) program.
- IITA technologies will support advanced applications such as:
    - Tele-medicine
    - Remote Education and Training
    - Tele-operation
    - Information Access

Europe:

ESPRIT (European Strategic Program for Research in Information Technology) is a well-known scientific program of the European community. Similarly, a smaller RACE (Research in Advanced Communication in Europe) Program is similar to ESPRIT, but focuses on communication.

- The RACE projects, covers the following applications:
- Tele interaction
- Tele shopping
- Thematic channels with interactive TV and electronic newspaper.
- Tele working

Structure:

- There are many views on how multimedia application should be classified.
- In communication-oriented view, dividing multimedia application into interactive or distribution oriented application.
- Another view derived form hypertext/hypermedia.
- The classification evolves mainly form the need to describe and present a coherent view on this important area discussed at numerous commercial and

scientific events, it looks at multimedia processing from the user perspective. Hence, we have to distinguish among tools and applications which support the user in media preparation, media composition, media integration and media communication.

Media Preparation:

- Media preparation is performed by I/O hardware and its supporting software. Therefore hardware and software are the basic components for introducing media into the digital world of computer.
- Appropriate hardware is the prerequisite for working with multimedia applications. It allows the computer user to use and interactively work with multimedia hardware.

Means:

- New hardware technology is needed for multimedia applications and their interactive experience.

Audio Support:

- Some audio support with multiple-channel digital sound tracks is already available.

Video Support:

- Video boards and digitizers aim toward, a high-resolution picture presentation. Currently, several basic kinds of virtual reality applications are:

(i) Head-Mounted Displays (HMD)
(ii) Surrounded
(iii) Digital Holography

Media Composition:

Media composition involves editing single media, i.e. changing its objects, such as characters, audio sentences, video frames and attributes such as the font of a character, recording speed of an audio sentence or color of an image.

Text Editors:

- Text Editors provide writing and modifying facilities to compose text in a document. There are either separate text editors or text is embedded in graphical tools such as drawing programs: MacDraw, CorelDraw.
- When editing text, we must deal with the issues of font selection, text style and text effects.

Graphics Editors:

- Graphics editors use facilities at the user interface for editing structural representations of graphical objects and for modifying higher-level operations on graphical objects.

Other editors are:

- Image Editors
- Animation Editors
- Sound Editors
- Video Editors

Media Integration:

- Media Integration specifies the relationships between various media elements to represent and manipulate a multimedia object (Example, document).
- Integration is still very much dependent on technology i.e. platform-specific and format-specific, although there are attempts to provide tools which will integrate media on any platform with any format.
- An example of media integration is multimedia application can be found in authoring tool.

Media Communication:

Media communication denotes applications which exchange different media over a network via Tele-services (example, video conferencing, cooperative work, mailing etc) to multimedia application end users.

Tele-Services:

- Tele-services are serviced provided by communication systems which are based on and make use of audio and video data.
- With current networks and the further development of high-speed networks, technology will enable distributed multimedia application, which need Tele-services.

The different services are:

1. Interactive Service
2. Conversational Service
3. Messaging Service
4. Retrieval Service
5. Tele-action Service

Tele-action Service:

General Categories	Applications
1. Transaction Processing	Credit cards, lottery, ATM
2. Alarm and Surveillance	Fire, smoke, medical, disabled persons, environmental surveillance
3. Business Automation	Information access, Data processing
4. Utility Resource Management	Automatic meter reading, time-of-day rate information
5. Control and Command	Appliances, lights, vending machine, hospital equipment, industrial equipment monitoring
6. Interactive Video Support	Home shopping

Distribution Services:

- Distribution services are services for the distribution of information to different remote sites.
- They are one way communication from the broadcasting source to destination. Example, TV broadcasting, Radio broadcasting

Implementation of Conversational service:

Conversational services are implemented as tools like multimedia conferencing, video telephony or Computer-supported co-operative work. These tools are then used, for example, in a group of application called Tele-working.

Media Consumption:

- Media consumption is the act of viewing, listening or feeling multimedia information.
- Viewing and listening are the most common ways users consume media.
- Feeling multimedia information can be experienced in motion-based entertainment parts, for example, through virtual reality.
- Applications of proper media consumptions are E-books, electronic newspapers, music consumption etc.

Media Entertainment:

Virtual Reality entertainment (VR), Locating-Based Entertainment (LBE), motion-based simulators, large-screen film and games (based on audio Visual representation) are applications that use multimedia for entertainment and bring a different and more involved entertainment experience than what is available with a standard TV or Movie theatre.

Virtual Reality:

- The term Virtual Reality (VR) promises far more than our technology can currently deliver.
- Computer based VR systems are three dimensional interactive as opposed to passive and use one or more devices in an attempt to provide the user with a sense of presence, be it visual, auditory or tactical.

Interactive Video:

- Interactive video research addresses various problems in the area of Interactive TV and video-on-demand.
- Interactive TV research concentrates on cable and public Television.
- Video-on-demand concentrates Computer-oriented Television.

Similarly

- Interactive Audio
- Games

Trends in multimedia application:

(1) Applications are going from reengineering of existing application to establishing new application domain.
(2) Multimedia applications are moving form a single PC environment to either a multi-user environment or to a personalized user environment.
(3) Multimedia applications are designed less and less for local environment and more and more for distributed environment.
(4) Media consumption is going from a passive mode of user computer interaction to an active mode of interaction.
(5) Media communication services are going unidirectional to bidirectional information flow.
(6) Technical improvements and changes in multimedia application improve productivity through better collaboration opportunities, visualization of different manufacturing process.