**What is Multimedia?**

The word multi and media are combined to form the word multimedia. The word “multi” signifies “many.” Multimedia is a type of medium that allows information to be easily transferred from one location to another.   
Multimedia is the presentation of text, pictures, audio, and video with links and tools that allow the user to navigate, engage, create, and communicate using a computer.  
Multimedia refers to the computer-assisted integration of text, drawings, still and moving images(videos) graphics, audio, animation, and any other media in which any type of information can be expressed, stored, communicated, and processed digitally.  
To begin, a computer must be present to coordinate what you see and hear, as well as to interact with. Second, there must be interconnections between the various pieces of information. Third, you’ll need navigational tools to get around the web of interconnected data.   
Multimedia is being employed in a variety of disciplines, including education, training, and business.

### **Applications of Multimedia**

Multimedia indicates that, in addition to text, graphics/drawings, and photographs, computer information can be represented using audio, video, and animation. Multimedia is used in:

**Education**

In the subject of education, multimedia is becoming increasingly popular. It is often used to produce study materials for pupils and to ensure that they have a thorough comprehension of various disciplines. Edutainment, which combines education and entertainment, has become highly popular in recent years. This system gives learning in the form of enjoyment to the user.

**Entertainment**

The usage of multimedia in films creates a unique auditory and video impression. Today, multimedia has completely transformed the art of filmmaking around the world. Multimedia is the only way to achieve difficult effects and actions.  
The entertainment sector makes extensive use of multimedia. It’s particularly useful for creating special effects in films and video games. The most visible illustration of the emergence of multimedia in entertainment is music and video apps. Interactive games become possible thanks to the use of multimedia in the gaming business. Video games are more interesting because of the integrated audio and visual effects.

**Business**

Marketing, advertising, product demos, presentation, training, networked communication, etc. are applications of multimedia that are helpful in many businesses. The audience can quickly understand an idea when multimedia presentations are used. It gives a simple and effective technique to attract visitors’ attention and effectively conveys information about numerous products. It’s also utilized to encourage clients to buy things in business marketing.

**Technology & Science**

In the sphere of science and technology, multimedia has a wide range of applications. It can communicate audio, films, and other multimedia documents in a variety of formats. Only multimedia can make live broadcasting from one location to another possible. It is beneficial to surgeons because they can rehearse intricate procedures such as brain removal and reconstructive surgery using images made from imaging scans of the human body. Plans can be produced more efficiently to cut expenses and problems.

**Fine Arts**

Multimedia artists work in the fine arts, combining approaches employing many media and incorporating viewer involvement in some form. For example, a variety of digital mediums can be used to combine movies and operas.  
Digital artist is a new word for these types of artists. Digital painters make digital paintings, matte paintings, and vector graphics of many varieties using computer applications.

**Engineering**

Multimedia is frequently used by software engineers in computer simulations for military or industrial training. It’s also used for software interfaces created by creative experts and software engineers in partnership. Only multimedia is used to perform all the minute calculations.

### **Components of Multimedia**

Multimedia consists of the following 5 components:

**Text**

Characters are used to form words, phrases, and paragraphs in the text. Text appears in all multimedia creations of some kind. The text can be in a variety of fonts and sizes to match the multimedia software’s professional presentation. Text in multimedia systems can communicate specific information or serve as a supplement to the information provided by the other media.

**Graphics**

Non-text information, such as a sketch, chart, or photograph, is represented digitally. Graphics add to the appeal of the multimedia application. In many circumstances, people dislike reading big amounts of material on computers. As a result, pictures are more frequently used than words to clarify concepts, offer background information, and so on. Graphics are at the heart of any multimedia presentation. The use of visuals in multimedia enhances the effectiveness and presentation of the concept. Windows Picture, Internet Explorer, and other similar programs are often used to see visuals. Adobe Photoshop is a popular graphics editing program that allows you to effortlessly change graphics and make them more effective and appealing.

**Animations**

A sequence of still photographs is being flipped through. It’s a set of visuals that give the impression of movement. Animation is the process of making a still image appear to move. A presentation can also be made lighter and more appealing by using animation. In multimedia applications, the animation is quite popular. The following are some of the most regularly used animation viewing programs: Fax Viewer, Internet Explorer, etc.

**Video**

Photographic images that appear to be in full motion and are played back at speeds of 15 to 30 frames per second. The term video refers to a moving image that is accompanied by sound, such as a television picture. Of course, text can be included in videos, either as captioning for spoken words or as text embedded in an image, as in a slide presentation. The following programs are widely used to view videos: Real Player, Window Media Player, etc.

**Audio**

Any sound, whether it’s music, conversation, or something else. Sound is the most serious aspect of multimedia, delivering the joy of music, special effects, and other forms of entertainment. Decibels are a unit of measurement for volume and sound pressure level. Audio files are used as part of the application context as well as to enhance interaction. Audio files must occasionally be distributed using plug-in media players when they appear within online applications and webpages. MP3, WMA, Wave, MIDI, and RealAudio are examples of audio formats. The following programs are widely used to view videos: Real Player, Window Media Player, etc.

**Features of Multimedia**

Multimedia consists of two words. One is "multi", and another is "media". Multi means more than one, and media means medium.

So, we can say that Multimedia is a type of technology by which data can be transmitted from one place to another place in different means.

Very High Processing Power. There is a need for the high processor to deal with the large amount of data that is used in Multimedia.

1. File System.
2. File formats that support Multimedia.
3. Input or Output.
4. Operating system.
5. Storage and memory.
6. Network support.
7. Software tools.

## **Classification of multimedia**

Multimedia system design presents challenges from the perspectives of both hardware and software. Each media in a multimedia environment requires different processes, techniques, algorithms and hardware implementations. Multimedia processing which necessitates real time digital video, audio, and 3D graphics processing is an essential part of new systems as 2D graphics and image processing was in current systems. Multimedia applications require efficient VLSI implementations for various media processing algorithms. Emerging multimedia standards and algorithms will result in hardware systems of high complexity. In addition to recent advances in enabling VLSI technology for high density and fast circuit implementations, special investigation of architectural approaches is also required. In the past few years, multimedia hardware design has captured the most attentions among researchers. New programmable processors, high-speed storage and modern parallelism techniques are among the variety of subjects, which are being addressed in this domain. A detailed categorization of available multimedia processing strategies is required to help designers in adapting these techniques into new architectures. Some of important options in multimedia hardware design include: processor structure, parallelization and granularity, data distribution techniques, instruction level parallelism, memory interface and flexibility. In this paper, we address important issues in the design of a programmable multimedia processor.