

# Chapter I

# Multimedia Essentials and Challenges

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## **ABSTRACT**

This chapter introduces multimedia and multimedia elements and technology that are influencing and will continue to influence much of the exchanged data over the Internet today. It presents all the elements of multimedia with an emphasis on the basic building block of each element and how it integrates with the other elements to achieve a better multimedia content. This chapter also presents the close relation between advancements in multimedia technology and the immense use of the Internet. In addition, various popular image, audio, and video standards are presented with more emphasis on compression standards that are influencing multimedia use. Furthermore, we hope the inclusion of a section dealing with copyrights, ownership, and cross-platform issues will shed light on the challenges facing multimedia producers and owners alike. Finally, the chapter includes some of the future challenges and issues facing the research community for the advancement of multimedia uses.

## **INTRODUCTION**

The term *multimedia* or *multimedia technology* is an overloaded term that has diverse meaning to different people, depending on their use of the various multimedia elements. For some, it means the deployment of computers to deliver information in various forms such as text, video, or audio. For others, it is the capacity to manipulate and distribute content via a communication apparatus that includes audio, video, or presentational forms. Nevertheless, multimedia technology is all of that and more; by definition, multimedia is the design, implementation, manipulation, storing, and proper delivery of various types of media to interested users. From this characterization and in order to make this process efficiently effective, a team of specialized individuals and capable machines are essential to ensure

that the integrated elements are well designed for the appropriate use, as well as stored and transmitted within the limitation of storage capabilities and the transmission constraints (Vaughan, 2004; Lewis & Luciana, 2005).

Multimedia is divided into three major types: interactive multimedia where users control the delivery of the integrated elements, hypermedia where users are presented with navigational capabilities, and liner multimedia such as TV or radio where users have no control over the flow of information and have no interaction.

In this chapter, we will look at the various types of multimedia elements and their design, usage, integration, storage, and transmission. We will also present the techniques and standards used for compression and delivery of the various multimedia content. Multimedia library techniques and usage are also discussed and presented to highlight the overwhelming use of such media in all aspects of life.

## Multimedia and the Internet

The World Wide Web is the largest collection of networks that shares information on every subject and is considered the largest hypermedia application. Its importance is most visible in the universal and equal access to disperse resources and the diversity of information available to everyone everywhere.

Figure 1. Popular Web2.0 home pages (Youtube.com and Napster.com)



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