

## Chapter 1.5

# Fundamentals of Multimedia

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### ABSTRACT

This chapter introduces multimedia, defined as interacting with information that employs most or all of the media: text, graphics, images, audio, and video. Students and faculty need to learn to create and use high-quality multimedia documents, including references, lecture materials, reports, and term papers. The authors provide a framework for understanding multimedia in its rapidly changing context. They discuss a wide spectrum of multimedia end-user devices that range from smart cell phones and powerful PCs to intelligent cars and homes. They also propose a vision of pervasive multimedia any time and anyplace, and discuss related issues, controversies, and problems. Typical problems are excessive complexity and a plethora of choices that paralyze many potential users. The chapter concludes with a discussion of possible solutions to major problems and probable future trends.

### INTRODUCTION

Multimedia is interacting with text, graphics, images, audio, and video. Creators and users of multimedia employ end-user devices that range from PCs and interactive televisions to smart phones and PDAs. People exchange multimedia using delivery methods such as dial-up and cable-modem access to the Internet, mailed DVDs, and Internet2. Multimedia communications can be more effective and interesting than communications that are limited to text.

Most of us will create, as well as use, multimedia throughout the remainder of our lives. Almost all future work and everyday life will involve dealing with multimedia wherever we are by using the end-user devices at hand. Examples of use include sending images to Aunt Lizzie by way of a cell phone, and writing and wirelessly posting a report on the Internet concerning worldwide petroleum sources, while standing near an oil well in the Middle East.

The objectives of this chapter are to:

- provide a framework for efficiently acquiring new knowledge and skills in the rapidly changing multimedia arena;
- discuss a vision for effective multimedia creation and use, by nearly everybody, nearly anywhere, and at any time;
- delineate the major issues, controversies, and problems that litter the path toward achieving that vision; and
- discuss some corresponding solutions and recommendations, many of which involve skills that instructional technologists, teachers, and students need.

## BACKGROUND

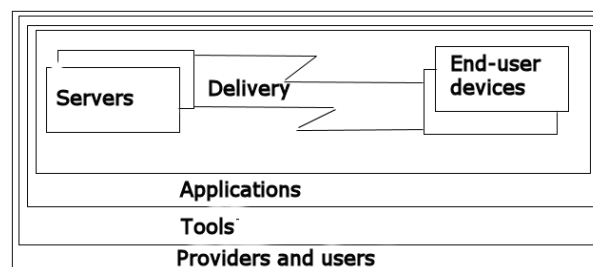
Figure 1 shows a high-level view of people and components involved in creating and using multimedia. Some providers create multimedia content, information, titles, or applications that employ multiple media and are interactive. These authors create this content by employing end-user device hardware and software. They then typically store the resulting content on servers. The content is delivered to other, often different end-user devices employed by users, customers, or readers by means of delivery networks that range from mailing diskettes or DVDs to using

local area networks or the Internet. By no means are all authors professional creators; the most interesting aspect of multimedia is that it is now sufficiently inexpensive and almost sufficiently easy that almost anybody can create as well as use multimedia. Other providers include a wide range of individuals, companies, and governments that play a wide variety of roles. For example, some providers provide products and services that are important to the delivery of multimedia to end-users.

Figure 1 is a framework in which you can add newly acquired knowledge about multimedia. For example, if you think you might want to provide an on-demand multimedia tutorial for your students to use from their cell phones, you need to have an authoring end-user device, a way to deliver this content to your users, and tools to allow you to create content for the desired end-user platform. You should know that, at least in the US, wireless delivery will be problematic. The good news is that network providers are improving their products and services, with the goal of handling wireless high-quality images and video within the next couple of years.

Creators and end-users employ a variety of tools. Some tools operate on the individual media. Other tools, called multimedia authoring systems, assemble multimedia media and add interactivity. Individual media tools include editors for text, images, graphics, audio, and video. Tools that

*Figure 1. Framework*



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