

# Multimedia Design for the Web

**Alistair Sutcliffe, Leon Watts**

Centre for HCI Design, Dept of Computation, UMIST  
PO Box 88, Manchester M60 1QD, UK  
+44 (0)161 200-3315; a.g.sutcliffe@co.umist.ac.uk

## 1 Introduction

This tutorial will give participants knowledge of and practice in a multimedia design method for Web and traditional UIs which is based on extensive research published in several CHI conference proceedings and practical experience in industrial multimedia design (Faraday & Sutcliffe 1996, 1997, 1998, 1999; Sutcliffe 2000, 2002, 2003; Sutcliffe & Faraday, 1994). The tutorial is intended to provide deeper insight into the design process rather than pragmatic skill in multimedia development (e.g. how to use Director). Usability engineering is the main focus, although aesthetic aspects of media from the visual design community will be reviewed. The content has been developed from a course given to Philips UK, and incorporates elements from the multimedia user interface design standard ISO 14915, Part 3 (ISO 1998), which is edited by Sutcliffe. The tutorial presents a method that provides a comprehensive and thoroughly researched approach to multimedia design, based on psychological models of the user.

The tutorial will explain the following issues and provide design solutions for:

- Specifying the requirements for information-intensive applications and their information architecture.
- Selecting appropriate media to deliver content in a manner that is attractive and comprehensible to the user.
- Ensuring the user perceives and comprehends important information in the presentation.
- Designing web-based multimedia for effective user navigation and interaction.

These questions will be addressed by describing, explaining and demonstrating the use of the following research deliverables:

- A method for design of web-based multimedia UIs.
- Design principles based on psychology.

- Guidelines for media selection and integration.
- Guidelines for directing users' attention and navigation control.

## 2 Learning Objectives & Plan

The tutorial has three objectives:

- to provide a workable understanding of cognitive psychology that is appropriate for multimedia and web UI design.
- to provide knowledge of a design method for specifying information requirements, content architecture and designing web-based multimedia.
- to explain guidelines and principles for designing usable and effective web-based multimedia and techniques for applying them.

The tutorial is composed of five sections. The first section provides a summary of the relevant psychological knowledge for information comprehension, multimedia design and introduces the design process in outline. The second part starts by covering requirements and specification of the content to be delivered using a taxonomy of logical information types and architectural patterns to achieve communication goals, such a persuasion, motivation, or explanation. This is followed by definitions of media and description of mapping rules and heuristics for transforming content specifications into multimedia presentations that are attractive, comprehensible and effective. The third part deals with multimedia scripting and integration. Fourthly, design techniques are described for directing the users' viewing/reading sequence to ensure that important information is perceived and the message thread can be followed effectively across different components in a multimedia application. The final component deals with navigation and dialogue design. A case study (web site for health awareness promotion) will be used to give delegates practice in specification of information requirements and media selec-

tion. A group exercise will be run in which the delegates will be given a description of the requirements and a set of storyboarding materials (marker pens, text, images, scissors glue, etc.). Each group will produce a storyboard which will be reviewed with the instructors in a walkthrough. The case study will be supplemented with web site examples of good and bad media choices, and worked examples of media combination, integration and dialogue design. Web site examples and case study exercises will be used to challenge the audience's interpretation of good or bad design to consolidate background knowledge, guidelines and design method.

### 3 Audience

This tutorial addresses a highly topical area for which little systematic design advice exists. It describes a method founded on substantial research published in CHI conferences that has been tested in an industrial organisation, become part of the ISO standardisation process (International Standard ISO 14915: ISO, 2000), and has been taught on university courses given by the instructors. Multimedia is a key component of most web interfaces; it is also an important and popular area of Human Computer Interaction which has not been addressed comprehensively in previous Interact tutorials.

This tutorial will be useful for anyone who is involved in design of multimedia systems, in particular web-based applications. It will be particularly relevant for web site designers who want to acquire knowledge for user-centred design of multimedia; researchers and educators who are interested in leading-edge research in multimedia usability engineering; and researchers and practitioners who are interested in effective use of the forthcoming ISO 14915 standard, Part 3: Media selection and combination. The tutorial will also be useful for virtual reality and visual user interface designers.

No particular background is assumed; familiarity with web design and usability issues might help but are not essential. The tutorial is aimed at novices rather than web design experts.

#### References:

Faraday, P., & Sutcliffe, A. G. (1996). An empirical study of attending and comprehending multimedia presentations. *Proceedings ACM Multimedia 96: 4th Multimedia Conference, Boston, MA 18-22 November 1996*, (pp. 265-275). New York: ACM Press.

- Faraday, P., & Sutcliffe, A. G. (1997). Designing effective multimedia presentations. *Human Factors in Computing Systems: CHI 97 Conference Proceedings, Atlanta GA*, (pp. 272-279). New York: ACM Press.
- Faraday, P., & Sutcliffe, A. G. (1998). Providing advice for multimedia designers. In C. M. Karat, A. Lund, J. Coutaz, & J. Karat, (Eds). *Human Factors in Computing Systems: CHI 98 Conference Proceedings, Los Angeles, CA 18-23 April 1998*, (pp. 124-131). New York: ACM Press.
- Faraday, P., & Sutcliffe, A. G. (1999). Authoring animated Web pages using contact points. In M. G. Williams, M. W. Altom, K. Ehrlich, & W. Newman, (Eds). *Human Factors in Computing Systems: CHI 99 Conference Proceedings, Pittsburgh PA*, (pp. 458-465). New York: ACM Press.
- ISO. (1998). *ISO 14915 Multimedia user interface design software ergonomic requirements, Part 1: Introduction and framework; Part 3: Media combination and selection*. International Standards Organisation.
- ISO. (2000). *ISO 14915-3: Software ergonomics for multimedia user interfaces. Part 3: Media selection and combination. Draft international standard*. International Standards Organisation.
- Sutcliffe, A. G. (2000). Pay attention! Or How to make sure the user finds the message in multimedia. In D. L. Scapin, & E. Vergison, (Eds). *Proceedings: ERGO-IHM 2000, Biarritz France*, (pp. 2-12)CRT, ILS & ESTAI.
- Sutcliffe, A. G. (2002). Multimedia user interface design. In J. A. Jacko, & A. Sears (Eds.), *The human-computer interaction handbook* (pp. 240-257). Mahwah NJ: Lawrence Erlbaum Associates.
- Sutcliffe, A. G. (2003). *Multimedia and virtual reality: Designing multisensory user interfaces*. Mahwah NJ: Lawrence Erlbaum Associates.
- Sutcliffe, A. G., & Faraday, P. (1994). Designing presentation in multimedia interfaces. In B. Adelson, S. Dumais, & J. Olson, (Eds). In *Human Factors in Computing Systems: CHI 94 Conference Proceedings, Boston MA 24-28 April 1994*, (pp. 92-98). New York: ACM Press.