Abstract

An Architecture For Flexible Multimedia Group Management Services

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Multimedia systems applications have become major research interests in both computing and telecommunications industries. In some literature, multimedia is defined as "many media" where media is derived from medium, and a medium is a means of transporting information. It is generally accepted that multimedia does enhance communication for individuals and among interacting groups of humans. Applications such as video conferencing, distance learning, and medical imaging, gain advantage in the use of multimedia applications.

However, while it is recognised that future systems should provide multimedia functionality, many issues are being raised about how best to support multimedia communication. This is because multimedia requires new communications infrastructures to enable integration of various media types as well as to manipulate and control the individual media. There is also the need to support the spatial and temporal requirements of continuous media, and to support group based applications.

Thus the requirements of multimedia applications are diverse; this thesis focuses on multimedia group management services.

A number of architectures have been advanced on the management strategies for multimedia communications. A review of these architectures shows that they have been either application specific, or too restrictive for group based applications.

This thesis presents an architecture for connection management for distributed multimedia group applications. The architecture is intended to encourage a uniform appearance to all group applications to assist in their collective management, whilst being sufficiently flexible to cope with all likely multicast mechanisms upon which such applications may be based. The concept of a *media channel* is introduced as the application-independent appearance of an instance of a single application such as a video-on-demand service, or a video conferencing application. A media channel is the basic unit of management in a group user-agent and therefore is used as a basis for the management of multiple applications.

The main aspects of the media channel model considered in the thesis have been substantially implemented and the performance accessed as suitable for a reasonable number of multimedia applications.

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