[WoSte98]    *Lars Wolf, Ralf Steinmetz;* "Guest Editorial" Special Issue on the Fourth International Workshop on interactive Distributed Multimedia Systems and Telecommunication Services (IDMS'97), Computer Communications Journal, October 1998, pp.1283-1284.

# Guest editorial
# Introduction to special issue on IDMS'97

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The Fourth International Workshop on Interactive Distributed Multimedia Systems and Telecommunication Services (IDMS) took place in September 1997 in Darmstadt, Germany. The purpose of this event was to provide a forum for the exchange of new research ideas, developments and experiences in the area of multimedia systems, computer communications and telecommunications. The workshop was a lively event with many presentations and discussions around these various topics and showed again that the convergence of multimedia and communications not only provides for a large variety of challenging research issues, but also that applications and systems resulting from research and development in this area have already found widespread interest outside the research community. We are convinced that the IDMS workshop series will contribute to the development of the field in the future. The next IDMS event, which takes place during September 1998 in Oslo, Norway, is organized in coordination with the ACM Multimedia Conference in Bristol, UK, where the Darmstadt team assumes partial responsibility. There are even plans for further workshops in following years; for example, in 1999, it will be hosted by Toulouse, France.

This special issue contains selected papers, refined, expanded and updated, from the '97 workshop in Darmstadt. These contributions cover distributed multimedia systems but also content related aspects. They are, therefore, representative of the range of topics discussed at the workshop.

Holfelder presents his system, developed by the research team of Effelsberg, Mannheim, for the interactive remote recording and playback of multicast videoconferences. This system, which is a follow-on to the well-known MBone VCR, allows users to record certain MBone sessions in a synchronized manner, e.g., because they are in a different time-zone or otherwise unable to attend the original distribution. The recording may not only be done locally but also at a remote site. In this way, a high quality can be achieved by recording on a machine located close to the sending site.

Further, the recorded session can either be played back directly from this service machine or be forwarded off-line and accessed locally. Holfelder describes the architecture of this service, consisting of server and client components and several protocols for control purposes.

Parnes, Synnes and Schefström propose an application-level tunnelling scheme for IP multicast traffic, the users of which are in charge of the decision as to which MBone sessions and which IP multicast groups are forwarded, providing for simplified tunnel management and deployment of multicast services. Their mTunnel application offers further functionality in transcoding data between media formats or compressing data and header information.

Deicke, Mayer and Glesner discuss an architecture which illustrates how future MPEG-4 systems may be structured. They give a brief introduction to the MPEG-4 systems standardization work and, using their prototype implementation, describe the steps performed in a client/server MPEG-4 system for configuration and data presentation.

Michelitsch, Welling and Ott analyse the need for quality of service (QoS) support in user interfaces and propose a framework which provides users with implicit and explicit control of QoS. Users can move objects in a 3D information landscape anywhere between the foreground and the background, implicitly increasing the presentation quality of the object when bringing it further to the front. Additionally, a user may attach a service meter to an object to control the QoS parameters in an explicit manner. Furthermore, they introduce shared virtual spaces as a basis for communication and collaboration among users. This uses a 'coffee table' metaphor in which one can meet and interact with others at one or several tables. It also deals with social protocols and privacy issues.

Lam, Ngan and Ng investigate a priority feedback mechanism for a video server. Video player clients inform the server by feedback messages about their status. For each client, the server uses one dedicated real-time thread for the transmission of the video data. The priorities of these threads are adjusted based on the feedback from the clients. The authors performed various experiments and compare their system with a similar video server operating without

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their priority feedback mechanism. Due to the priority feedback mechanism they gain noticeable improvements with respect to numbers of displayed frames and smoothness of playback.

Korst, Pronk, Coumans, van Doren and Aarts give a very thorough comparison of disk scheduling algorithms for variable bit rate (VBR) streams which may be used in multimedia servers, most algorithms discussed previously in the literature dealing only with constant bit rate streams. The two schemes 'double buffering' and 'group sweeping' are explained and it is briefly shown that they are not safe for the VBR case. These methods are extended towards the handling of VBR streams. The authors introduce six partially new algorithms and compare them by using simulations based on buffer requirements and average response times.

Ohbuchi, Masuda and Aono present several algorithms for embedding data in three-dimensional graphics composed of triangular meshes. Such watermarking techniques can be used for varying purposes, for example, intellectual property protection or the detection of modifications. The authors describe algorithms for modifying vertex topology and others for modifying non-geometrical quantities of polygonal meshes, i.e., texture coordinates, for embedding data. While the algorithms are not robust enough for all application scenarios, they seem to be useful for several applications.

Wang, Li, Wiederhold and Firschein describe a system which allows the classification of images as 'objectionable' or 'benign'. The system uses a combination of several filters and the matching of feature vectors against those obtained from a training database containing objectionable and benign images. The authors evaluated their system by applying it to nearly 12000 test images and achieved good accuracy at high speed. They consider it useful, for example, in preventing children from accessing objectionable images, perhaps those having pornographic content.

Körner proposes the use of design patterns for computer-supported collaborative work applications within the scope of TINA (Telecommunications Information Networking Architecture). These design patterns support multi-party stream binding, voting, floor control and similar issues.