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Specialists Group on Coding for Visual Telephony

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Title: Information on use of Message Channel for Teleconference Control

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Currently available multipoint teleconferencing equipment operates in an automatic mode upon power-up, with open sound and, for video systems, with voice-switched video.

The provision of a control data channel, or 'message channel' in the teleconference system enables a range of enhancements to the teleconference. Within Europe a project under the EEC Esprit initiative known as MIAC has implemented a message channel controlled audio-visual multipoint conference system. The MIAC protocols will be accepted by CEPT for video conferencing and video telephony.

Enhancements over 'automatic' multipoint systems include:

Provision of various levels of conference control by a 'chairman' located at any designated studio.
Control of data transfer between terminals during a conference, either using vacated time slots, or for simple messages via the message channel itself.
Control of meeting aids eg Facsimile, Telewriter.
Passing of studio parameters in the set-up phase.
Remote configuration of the MCU.
Speaker identification.

Such a channel is allocated in the existing H120 frame structure specification for video codecs where time slot 2(odd) bit 5 provides a 4 kbit/s data rate. The Y.221 frame structure similarly allocates bits for use as a message channel and one implementation has chosen bits 41-80 in the service channel to carry the control data.

Currently, it is envisaged that the message channel is permanently available for the duration of the teleconference session, the set-up of the message channel being one of the first actions after connection of the physical link.

A Message Channel Interface (MCI) is required at each teleconference terminal, and on each MCU port, thus creating point-to-point control data links between each terminal and the MCU. MCU software provides a simple message switch, allowing a wide range of message routings as shown below. Tandem connection of MCUs is possible, and also the direct connection of terminals on a point-to-point basis.

Message routing:

terminal to terminal (directly connected,eg where no MCU is involved)
terminal to terminal via MCU or MCUs
terminal to MCU
MCU to terminal
MCU to MCUs
broadcast terminal to all terminals
broadcast terminal to terminals plus MCUs
broadcast MCU to all terminals

The data communication protocol on each data link is based on the OSI 7 layer model and uses standard recommendations where this is practicable. X25 is used at layer 2 to provide a secure data link, the frame length being 128 bytes. Layer 3 is implemented by MCU software as a simple message switch, using routing information contained in a layer 3 destination field in each packet. Data packets are effectively datagrams. Sequencing, segmenting, flow control, session control and other functions of layers 4 and 5 are currently not required, and these are 'null' layers possibly for future study.

X409 is used at layer 6 for the encoding of messages as defined for the applications layer 7.