Evaluation of ISDN Video Transmission

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The objective of this research was to perform evaluation tests related to the transmission of digitized video signals over ISDN between a video traffic reporting camera and a traffic management center. The quality of the received video signals was assessed for effectively monitoring the traffic conditions. An evaluation plan was developed which consisted of a market survey of current video-transmission options, an identification of the hardware specifications for the ISDN connections, and a description of the tests to be performed.

The experimental setup is shown in Figure 1. A VHS tape player transmitted the video stream from a video tape of traffic supplied by NJDOT to an encoder. The encoder captured frames of the video stream and digitized them. The digitized, condensed images were sent to an ISDN modem which transmitted them through an ISDN-public network to a local computer. The local computer directed the video stream of images to a decoder which decoded the images and transmitted them to the video memory of the local computer. The uncompressed video stream was then displayed on the local computer's monitor. The video stream was also converted for NTSC output and recorded by a VHS-tape recorder.

The effects of bandwidth (128 vs. 64 Kbit/sec) and image resolution (CIF vs QCIF) were investigated and recommendations were made based on the results of this investigation. CIF was found to be preferable to QCIF since it resulted in a higher frame resolution while achieving comparable frame rates. The larger bandwidth was also recommended because it results in a much higher image quality despite costing three times as much as the smaller bandwidth.

This project is an extension of the efforts of the Urban ITS Center at Polytechnic University related to the video transmission over analog wireless lines and/or CDPD networks.

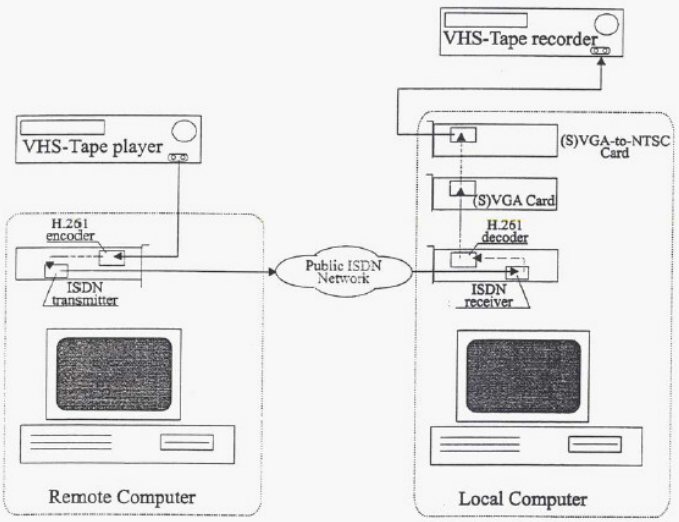

Figure 1: Video Transmission Experimental Environment

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