

Tools for IP-Based Interactive Telemedicine

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In the field of videocommunication technology OP 2000 (Operating room of the future) has played a crucial role in various leading-edge projects during the last decade. One of the key modules of the concept OP 2000 is the interactive video communication software WinVicos (Wavelet-based interactive Video Communication system) for telemedical applications, training of the physicians in a distributed environment, teleconsultation and second opinion [1]. The communication is IP-based and allows for changing bit-rate, frame-rate, video-size and speaker-volume during a connection. The menu offers more possibilities: showing the document camera, sending documents, configuration of the video-inputs, recording of sent and received video simultaneously, etc. Beside the main user interface up to four video-windows can be shown on the user's desktop. For video compression WinVicos employs a hybrid speed-optimized wavelet-codec. This codec is based on the concepts of Partition, Aggregation and Conditional Coding, therefore called PACC (German Telekom Patent DE 197 34 542 A1). The image quality using a moderate transmission bandwidth of up to 2 Mbit/s is superior.

The hardware requirements of a WoTeSa (Workstation for Telemedical Applications via Satellite) are met by an IBM-compatible PC with Pentium IV processors (≥ 3 GHz), 512 Mbytes RAM, an Osprey Video-capture board (Osprey 100 or Osprey 500); a camera with F-BAS and S-Video output; standard headset or microphone with small loudspeakers. Using WoTeSa/WinVicos several EU-projects are currently being realized.

In MEDASHIP (2002-2003, *Medical Assistance for Ships*, funded by EU, in cooperation with D'Appolonia (I), Avienda (UK), Eutelsat (F) and NCSR Demokritos (GR)) an integrated system for telemedical consultations on board of cruise ships and ferries was set up [2]. The system should allow an improved medical care for passengers and crew members. Three ships have been equipped additionally with an ultrasound medical system and an electrocardiograph interfaced to WoTeSa/WinVicos as well as a satellite terminal on a stabilized platform. In three reference hospitals (RH) satellite terminals coupled to WoTeSa/WinVicos are used. In the MEDASHIP network every ship can communicate with different RH's.

Aim of EMISPHER (2002-2004, *Euro-Mediterranean Internet-Satellite Platform for Health, medical Education and Research*, funded by EU, in cooperation with Eutelsat and 15 University and non-University health care institutions in the Mediterranean area) is to establish an equal access, for most of the countries of the Euro-Mediterranean area, to on-line services for health care in the required quality of service. Satellite technologies combined with

internet applications guarantee the required bandwidth. E-learning applications, real-time telemedicine and shared management of medical assistance files are being realized.

References

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