Workstation for telemedical applications

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Among the several problems related to implementation of videoconferences in health care the most important are: vast differences in network connectivity and bandwidth available to hospitals and other health care actors aiming at teleconferencing, as well as relatively high costs of popular commercial-off-the-shelf (COTS) videoconferencing solutions. These problems are particularly commonplace in CEE countries. The solution we propose is a workstation designed and built from standard multimedia components in the Krakow Centre of Telemedicine. It allows for a scalable approach to videoconferencing: from the low quality H.320/H.323-based teleconferences over ISDN and low-rate leased Internet connections (approx. 256 kbps) up to a high-end MPEG-1 scenario offering a PAL or NTSC TV-quality motion video and MP3 audio over lines providing 2 Mbps or broader bandwidth. All this comes at a price lower or comparable to the COTS H.320/H.323 products, which inherently use the primitive H.261 and H.263 video codecs and basic speech codecs. Such a workstation, working in the MPEG-1 scenario, is currently being deployed for regular coronarography cardiovascular tele-consultations and videoconferences held over a 75 km distance between the John Paul II Hospital in Krakow and the Szczeklik Hospital in Tarnow, Poland.

Another feature of this workstation is its unique tele-consultation support software called tele-negatoscope, also developed in the Krakow Centre of Telemedicine. This program enables transmission of reference still images (e.g. JPEG images from a digital documentation camera) to the other side and supports both parties of a tele-consultation in description, comments and selection of regions-of-interest of images in parallel, on-line, in real-time over low-bandwidth lines. It may be crucial in teleconference applications where the available bandwidth is insufficient to allow high-quality motion video transmission.