

Networks for Interactive Telemedical Services

Georgi Grasczew, Theo A. Roelofs, Stefan Rakowsky and Peter M. Schlag

Surgical Research Unit OP 2000,
Robert-Roessle-Klinik and Max-Delbrueck Center for Molecular Medicine,
University Hospital Charité, Campus Berlin-Buch,
Humboldt University at Berlin,
Lindenberger Weg 80, D-13125 Berlin-Buch, Germany
email: op2000@rrk.charite-buch.de; url: www.rrk.charite-buch.de/op2000

Background:

The utilisation of distributed medical intelligence can contribute significantly to the continuous improvement of patient care and accelerates the qualification process of the medical staff. An efficient way of realisation is the use of satellite networks for telemedical applications, as satellite communication has some distinct advantages over terrestrial communication channels: mesh topology networks, broad geographical coverage, multicast capabilities, etc..

Methods:

Using VSAT-Linkway satellite terminals (up to 2 Mbit/s) and the dedicated interactive communication tool WinVicos (Wavelet-based interactive Video communication system) various networks for interactive telemedical services are realised. These networks allow not only for high-quality interactive medical teleconsultation (second opinioning), but also support stereoscopic and multivideo streaming, as well as the remote control of various medical devices.

Results:

The DELTASS network has been designed for improved rescue measures for disaster emergencies. The staff at the Mobile Field Hospital (at the disaster site) is supported by remote experts at a Reference Hospital (outside the disaster area) by means of interactive services such as teleconsultation for second opinioning during triage or surgery, telemicrobiology, teleradiology and telesonography.

In MEDASHIP services for improved health care onboard of large ships is realised. The medical staff onboard is supported by experts from a pre-assigned Reference Hospital by means of tele-electrocardiography and telesonography.

The EMISPHER network is a hybrid satellite-internet platform for health care improvement in the Euro-Mediterranean area. A satellite-based network between Centers of Excellence serves the exchange of new techniques and therapies between the European Union and the non-EU Mediterranean area, including teleteaching & teletraining (contribution network). At the same time, a wider group of general health care professionals is targeted by an internet platform for information dissemination & standardisation (distribution network).

Conclusions:

Networks for telemedical applications can play a key role in the continuous improvement of health care and can additionally improve and accelerate the qualification process of medical professionals.