

OTE-BTCP: An innovative broadband telemedicine communication platform

Constantine Chassomeris^a, Evy Karavatselou^a, Costas Boukouvalas^b, George Triantafyllou^a, Michael Koukias^a, Dimitris Lympelopoulous^a

^a *Wire Communications Laboratory, Electrical and Computer Engineering Department, University of Patras, Patras, Greece*

^b *OTE S.A. (Greek PNO), Research & Development Dept, Athens, Greece*

Summary

This paper presents the architecture and implementation of a centralized managed broadband telemedicine communication platform (OTE-BTCP) for quality assured communication sessions delivering telemedicine services to various end-users environments. The innovation of the OTE-BTCP is focused on the provision of a unified interface for different multimedia end-user environments. OTE-BTCP can be used to interconnect vessel and terrestrial health care centers that need broadband links to exchange multimedia information streams. The most significant result is that an open architecture platform compliant with ITU-T standards, can guarantee the interoperability and interaction of an H.320 user, an H.323 user and an H.323 Annex-C user.

Description of the OTE-BTCP platform

OTE-BTCP enhances the OTE-TS [1] model and provides to end-users a unified environment for the support of real time collaboration schemes, irrespectively of the employed networks over broadband terrestrial and satellite networks.

OTE-BTCP includes a unified telemedicine application programming interface (TMAPI) to deliver services to telemedicine end-user environments. TMAPI provides different telemedicine services, such as IncidentPostREQ, IncidentRetrieveREQ, PtPSetupREQ.

The telemedicine endpoints communicate through the transmission of information streams. These information streams are classified into video, audio, data, communication control and call control signals.

Evaluation of the OTE-BTCP

The evaluation was performed utilizing a testbed involving the R&D Department of Hellenic Telecommunication Organisation (OTE), the Ultrasound Cardiology Department of the Patras University Hospital (PPNR) and the Superfast VI (SVI) ship. HellasStream and the Eutelsat W3 satellite have been used for the required interconnections.

For each type of network connection (terrestrial ATM, satellite ATM and satellite IP) the tuning of the communication parameters took place, in order to satisfy the user requirements. The telemedicine application requires the reliable transfer of multimedia time-sensitive data, the intra-, inter-media data and user-level synchronization.

The initial experiments have shown that the proposed architecture is capable of supporting real-time communications among mixed end-user environments.

Conclusions

OTE-BTCP supports real-time communications and information exchange between terminals utilizing different network technologies.

OTE-BTCP provides an innovative TMAPI that allows the collaborating users to interconnect irrespectively of their underlying network environments, thus facilitating the seamless integration of real-time telemedicine and teleworking collaboration schemes in their everyday work.

The use of broadband networks for telemedicine applications upgrades the quality of the provided services. The end-user environment migrates from a stand-alone workstation to an application node, capable of providing simultaneous access to a number of users and applications with guaranteed quality of service.

References

- [1] Karavatselou E, Economou GP, Chassomeris C, Danelli V and Lympelopoulous D, "OTE-TS: A new value added telematics service for telemedicine applications", *IEEE Transactions on Information Technology in Biomedicine*, vol. 5, No. 3, pp 210-224, Sept. 2001
- [2] Seow San Lim, Yoke Kum Pang and Hock Soon Tan, "Telemedicine VSAT Applications: Temasek Polytechnic Experience", *International Telehealth Symposium and Regional Working Group on Satellite Communication Applications*, Bangkok, March 2001