EMISPHER Newsletter

Euro-Mediterranean Internet-Satellite Platform for Health,medical Education and Research
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Newsletter June 2004

Key features of the EMISPHER Service Platform

The partners of the EMISPHER project benefit from an innovative integrated Internet-Satellite service platform called MEDSKY. Specifically designed for health professionals, the platform is developed, operated and maintained by EUTELSAT, Europe's leading satellite operator, and Telemedicine Technologies S.A., a software engineering company specialised in electronic clinical trials and telemedicine systems. With the valuable support of CHARITE, the platform also integrates an advanced tele-consultation software called WinVicos. Developed by Engineering Büro Vedat Gürkan (vguerkan@t-online.de), this software provides "diagnostic level" video-conferencing capability for real-time teleconsultation.

Based on proven advanced software solutions, MEDSKY presents a number of features that make it unique and particularly well adapted to the requirements of the wider Euro-Mediterranean community of health professionals. As such, it is expected to foster cooperation between all sides of the Mediterranean basin :

- **Low cost deployment on large geographical areas.** Because it requires at minimum just an internet connection of any kind and a basic PC, the MEDSKY Client software provides immediate and low cost access to a series of on-line applications for second opinion, multimedia medical databases, electronic medical records etc. Fully based on open standards (JAVA J2EE, SSL, HTTPS), the MEDSKY Client software can be installed on any computer of any hospital or medical centre without changes to the firewall and proxy policies.
- **Bi-directional broadband communications by satellite.** MEDSKY provides powerful bi-directional satellite communications adapted for high quality (2Mbps and more) video-conferencing and broadcasting (one-to-many). In the EMISPHER project, ten major hospitals and medical faculties have been equipped with such capabilities (Clermont-Ferrand - France, Berlin - Germany, Palermo - Italy, Athens - Greece, Casablanca - Morocco, Istanbul - Turkey, Cairo - Egypt, Tunis - Tunisia, Nicosia - Cyprus and Algiers -Algeria) to create a powerful "medical network of excellence".
- **Quality of Service (QoS).** MEDSKY implements on-demand and automated satellite bandwidth allocation processes to guarantee the required quality of service (bandwidth), a key requirement for critical medical applications. The continuity of service is also guaranteed on a round-the-clock basis. A hotline and on-line user support service are also provided. The automated email and SMS alert system is a support service of great value for mobile users (e.g. medical escorts in case of repatriation …). This system will also soon support PDA-based interface.
- **A multilingual user interface.** MEDSKY Client Software implements a native multilingual environment. The user interface is currently available in English, French and Spanish. Other languages can be added on demand in a delay of one week.
- **Security and confidentiality.** The MEDSKY Server Platform is hosted in a highly secure and protected environment. Access to the system is only granted to authenticated users and all communications are encrypted. The embedded audit trail system is compliant with the most demanding Quality Assurance requirements and with the EU directives on the protection of personal data as well as with the FDA's regulations.
- **A flexible, evolutive and interoperable solution.** MEDSKY Service platform has been designed to be flexible and evolutive to adapt continuously to increasingly challenging user requirements. Its embedded and automated upgrade process makes it a zero-maintenance system with very low maintenance costs. On average, two upgrades per month are released to provide users with the latest functionalities. The satellite-internet infrastructure is designed to be scalable as new satellite platforms can be integrated on demand. The "Form Editor" enables advanced users to customize their working space in a few mouse clicks. This XML-based feature also provides interoperability with local information systems. The "User Profiles Editor", enables local managers to configure and allocate access rights according to the local ruling and organization. Its automatic usage reporting tools and cost monitoring functions provide powerful means for cost containment, a recurrent problem for the health sector.

By combining a large number of application tools (real-time videoconferencing and broadcasting, electronic patient records, directory and databases, cooperative tools such as shared cursor and white board, etc.) over a wide range of integrated communication solutions (modem on a telephone line, broadband satellite access), MEDSKY can efficiently support the largest variety of medical applications such as real-time teleconsultation, telepathology, teleradiology, 2nd opinion, continuous medical education, shared multimedia databases, etc.

It is also designed to provide an efficient hosting and distribution means for contents directly produced and managed by the owning health professionals.

The assets of satellite communications:

Healthcare services provided from a distance are, by definition, broadband services: transmission of fixed or moving (video) medical images, tele-consultations, joint utilisation of resources, retransmission of seminars and training and on-line sessions which increasingly involve the use of rich-media content.

Ubiquity, independence, easy deployment, broadcast capability, immediate connectivity in any area irrespective of terrestrial infrastructure and high transmission capacity are characteristics unique to satellite communications.

These features present a major advantage for telemedicine applications, as well as for other applications such as e-learning and medical assistance, where a fundamental objective is to share expertise and know-how at a distance (and across borders) through content that associates still images, video, audio, remote controls and data, all of which require cutting edge and real-time transmission technology.

Satellite distribution has the unique ability to deliver bandwidth exactly where and when it is needed - irrespective of geography and local infrastructure. It has therefore become the obvious high-speed transport medium for a wide range of internet and multimedia services, especially in remote regions or countries lacking telecommunications infrastructure.

In particular, pilot projects in such remote regions and countries lacking telecommunications infrastructure have proved that satellite connections are appropriate for medical services such as: tele-diagnostic, tele-radiology, telemetry, tele-training and videoconferencing activities.,. Furthermore, through satellite connections, medical establishments can develop networks for remote medicine applications; educational institutions can communicate across countries and cultures, sharing libraries and databases of research information, or offer distance learning services.

The satellite solution implemented in EMISPHER

All 10 sites of the EMISPHER network (Clermont-Ferrand - France, Berlin - Germany, Palermo - Italy, Athens - Greece, Casablanca - Morocco, Istanbul - Turkey, Cairo - Egypt, Tunis - Tunisia, Nicosia - Cyprus and Algiers - Algeria) have been granted a DSAT-2000 multi-transponder transmission capacity. It constitutes one of the most flexible methods of integrating company-wide business communication networks together with all the benefits of satellite communication. DSAT-2000 is ideal for a broad range of voice, video, data, internet, and multimedia applications. This means high reliability connections and a cost-effective network meeting telemedicine network communications requirements.

Dynamically allocated bandwidth allows end-users to determine their use and limit their costs. There is no hefty space-segment investment, but there is high transmission capacity and real-time interactivity on call. All that is needed is a single unit and a standard antenna and transceiver for multiple services and applications (video, data, voice, fax and multimedia) all tied into one.

Characteristics of the DSAT-2000:

EUTELSAT Wideband DSAT-2000 services provide versatile, easy-to-use, full service integration.

- ✓ A single vehicle manages a broad range of applications.It supports all voice, fax, and desktop videoconferencing equipment.
- ✓ It makes the most efficient use of widespread protocols (X.25, HDLC/SDLC) and interfaces (ATM, Frame Relay, Ethernet, ISDN).
- ✓ It makes parallel service management easy.
- ✓ Two-way point-to-point and point-to-multipoint capacity ensures full addressability of end users.
- ✓ Space segment use is charged at consumption and/or on leased circuits, with variable tariffs according to ground equipment installations.

The satellite terminal configuration designed for the EMISPHER is composed of:

- ✓ 2.4m diameter antenna
- ✓ Non-Redundant SSPA16 Watt Ku-Band RFT
- ✓ LNB 12.5-12.75 GHz
- ✓ 100 m IFL Cable Kits
- ✓ IDU Terminal: “Linkway 2100” modem with Ethernet and Frame Relay interfaces
- ✓ A cisco router for the Frame Relay interface with the LAN.

The EMISPHER network is hosted on Eutelsat W2 satellite, which is located at 16° East and covers the Euro-Mediterranean region as shown in the diagram below.

The EMISPHER satellite coverage

The Telemedicine workstation: WoTeSa/ WinViCos

All of the ten EMISPHER pilot sites have also been equipped with a powerful video-conferencing system called WoTeSa / WinVicos directly connected to the satellite terminal. The system includes a PC, two high resolution CANON video cameras and the full WinVicos (Wavelet based Interactive Video Communication System) software licence implementing a highly performing codec. More detailed hardware specifications are shown in the table below.

Component	Specification, Interfaces
Operating System	MS Windows NT, MS Windows 2000
Processor (*)	Pentium IV 2.2GHz CPU
Video Capture Board	1 S- Video input; 3 Composite (F-BAS) video inputs
Graphic board	Standard
Sound Board	Standard input/output
Ethernet Board	10-BaseT (10 Mbit/s)
Video Camera	Canon VC C4; 1 S-Video output; 1 Composite (F-BAS) video output; remote control; RS-232-interface
Audio set	Standard headset, or microphone / speaker

Hardware requirements and interfaces of WoTeSa

In the overall configuration, WinVicos is integrated with the MEDSKY Client Software to ensure proper satellite bandwidth management and full QoS capability. WinVicos is an easy to operate system. A main user dialog is sufficient for the standard actions of the user. This includes calling the videoconference partner (IP address), changing bit-frame, frame-rate, video-size and speaker volume. The menu offers further possibilities, including showing the document camera, sending documents, configuring the video-input, etc.

Besides the main user interface, three video-windows can be shown on the user's desktop:

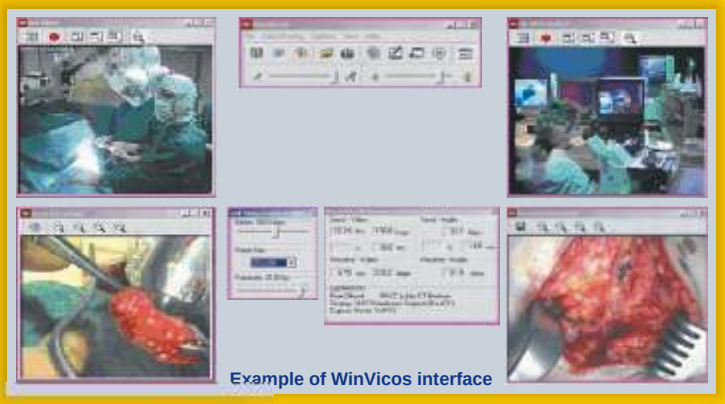
- self-view: the live source being sent to the videoconference partner.
- guest-view: live source showing video received from videoconference partner.
- document-view: up to two windows showing still images that have been sent to the partner or received from them.

WinVicos also supports the use of up to eight cameras using two video grabber cards (six composite and two S-video) or simultaneously up to two of the following:

- live-cameras for true live video conferencing. These are cameras connected to different, medical equipment: camera for open surgery integrated into the operating light, surgical microscope camera, laparoscope and endoscope camera etc.
- document-cameras: scanned images from a live camera that are sent separately, e.g., CT, MRT, US images.
- virtual-camera: sending of image files (saved in TIFF or BMP) previously saved to the computer or a network file server.

WinVicos can support a very large range of telemedicine applications:

- Off-line applications (pre-recorded or store and forward): transfer of patient vital data: EPR, electrocardiography (ECG), monitoring of weight, temperature, blood pressure etc; transfer of still images: x-ray radiographs, ultrasound image, scanner, resonance, conventional radiology, dermatology/pathology).
- Real-time applications: transfer of video-images: tele-consultation, real-time diagnosis in radio-imagery and emergency, intra-operative tele-pathology etc.; tele-teaching, -training and -education, telementoring, videoconferencing.



Example of WinVicos interface

EMISPHER NETWORK

Some of the EMISPHER sites

ODISEAME project: multilingual and multicultural virtual learning experiences on the web

Nowadays, the importance of education for the development of countries is well known and recognised. E-learning provides the flexibility necessary to bring education closer to people who otherwise have difficulties in accessing more traditional means of education (e.g., classrooms, city campuses, and the like). The ODISEAME (*Open Distance Inter-university Synergies between Europe, Africa and Middle East*) project aims at improving the higher education of the partners' regions by offering web-based courses corresponding to the study programs of the partners' institutions. This project is currently in progress (September 2002 September 2005) as part of the fifth sector of applications of the European Union initiative EUMEDIS Strand 2 - Euro-MEDiterranean Information Society Pilot Projects in the Field of Education. It is coordinated by CEDETEL, a technology centre in Spain, and includes the participation of fifteen universities from the Euro-Mediterranean area, in particular from Algeria, Cyprus, Egypt, Germany, Israel, Jordan, Malta, Morocco, Palestine, Spain and Turkey.

During the ODISEAME project, several intercultural training experiences will take place. These will be developed in virtual environments on the web in all the languages of the countries taking part, except for English. For each experience, students and teachers from all participating countries will work closely together, and the quality of service provided will be monitored.

The development of these training exercises will include an analysis of the context in which the exercises will take place, both in terms of network infrastructure and in terms of the educational needs of each participating university. It is this analysis that will determine the didactic units that will be offered via web and their design for e-learning purposes.

Currently, the hypermedia contents for these didactic units are being implemented at the partner institutions by teachers who are being assisted by an interdisciplinary workgroup. These contents will be integrated in a multilingual virtual learning space, developed by the Fachhochschule für Technik und Wirtschaft and CEDETEL. Each virtual classroom will offer several services including different communication tools, a content generator, and evaluation tools, among others. Both the implementation of the training modules and the implementation of the virtual space are being verified by an evaluation process.

Beyond the main goal of improving higher education of the partner regions by applying the new technologies to the training process, the purpose of ODISEAME is also to establish a network of Euro-Mediterranean Universities cooperating in the creation and distribution of education contents on the Internet. Furthermore, the project aims to raise the interest of e-learning in participating countries and elsewhere.

For more information about the ODISEAME project, please visit the ODISEAME project website at www.odiseame.org.

"Perspectives on Health"
Euro-Mediterranean Conference on Health

Algiers, 14-15 February 2004
EUROMED'2004

EUROMED ALGER 14-15 FEVRIER 2004

From left to right : **Luciano Beolchi**, delegate from the European Commission, **Abdelaziz Bouteflika**, President of the Republic

Placed under the high patronage of His Excellency Mr. Abdelaziz Bouteflika, President of the Algerian Republic, and supported by the European Commission, a Euro-Mediterranean conference on health was held in Algiers on 14 and 15 February 2004.

This encounter had as primary objectives:

- The exchange of international experiences in various domains of health.
- The development of networks between civil society and European and Mediterranean national institutions specialized in different domains of health.
- The formalisation of this encounter as a Euro-Mediterranean forum of promotion for comprehensive and integrated approaches to healthcare in the region.

The Euro-Mediterranean conference brought together representatives from countries of Europe and of the Mediterranean basin, as well as specialised agencies from the United Nations, from regional organisations, and from international NGOs active in the domain of health.

In particular, the event brought experts whose fields of competence and activities included:

- Public health and surveillance of epidemiology, health and environment;
- Management of health systems, management techniques, health sickness funds and health insurance, implementation of information and communication technologies in healthcare, patient identification;
- Medical research, pharmaceutical industry, legislation of pharmaceutical products and medical devices
- Organ transplantation, grafts, transfusions, bioethics, highly specialised care.

During these two days, participants worked in thematic plenary sessions and in round-table discussions.

Round-table discussions centred on the following themes :

1- Identification systems for patients, information and identification systems to determine needs and analyse systems

2- Reform of healthcare systems: identifiers, financing of healthcare, including healthcare sickness funds and health insurance

3- Information and Communication Technologies, as applied to health and social care

4- Hospital pharmacology, policy of generic medications, pharmaceutical industry

5- Institutional networks of health, partnering

6- Health, environment and epidemiology

7- Prospective approaches and planning in health

8- Research and development, training in health

9- Issues surrounding the organisation of care, the evaluation of activities, and the standardization of equipment

10- Hospital management and new management techniques

11- Perinatality, infant mortality and the preservation of populations

12- Genodermatosis and the Mediterranean.

Given the conclusions issued on the basis of the work undertaken during the plenary sessions and roundtable discussions, the participants of this Euro-Mediterranean conference on health recommend:

1- The development of networks of health through centres of excellence located on opposite shores of the Mediterranean, aiming towards a "**virtual Euro-Mediterranean hospital**".

This will require the implementation of :

- An infrastructure of Information and Communication Technologies
- An infrastructure of physical healthcare sites
- An infrastructure of physical education sites, for training and development
- An infrastructure for the management and development of programmes.

2- The development of a Euro-Mediterranean partnership for a modern management of hospital pharmacology

3- The development of Euro-Mediterranean networks in the study of bio-equivalence

4- The development of technology transfer, in particular in matters of medication licensing and patents

5- The development of networks working towards the exchange of experiences and lessons learnt in matters of healthcare system reform in nations of the Euro-Mediterranean basin

6- The development of a reference network ensuring the promotion and creation of national programmes for perinatality in all nations of the Euro-Mediterranean basin

7- The development of a network of cooperation and of information exchange enabling the mobility of educators, professors and trainers, as well as research & development staff

8- The participation in a regional partnership for projects of common interest

9- The participation in a partnership for the development of specialized networks ensuring the creation of centres of excellence for care, research & development, and training in matters of cardiology, cancer, renal medicine, grafts and organ transplantations

10- The development of a centre of reference for the prevention and care of persons suffering from genodermatosis. This centre would aim to centralise competencies and existing structures and to unify means and methods to face the needs of those persons suffering from genodermatosis and their families. The centre would have three missions: care, teaching / training, and research.

Hamid KESSIS
General Director, ANDS

EMISPHER Event

24-27 June 2004, Algiers and Nicosia:
EMISPHER Conference on Continuity of Health Care Distributed over two sites, the third EMISPHER Conference will be held in Algiers hosted by Prof. Hamid Kessis, General Director of the Algerian National Agency for Health Documentation (Email: hkessis@sante.dz) and Nicosia hosted by Prof. Marios Dikaiakos, Dept. of Computer Sciences of the University of Cyprus (Email: mdd@ucy.ac.cy).

" Colophon / Imprint "

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