Croatian Telemedicine Strategy
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Telemedicine

- Telemedicine is generally defined as the use of advanced information and communications technology (ICT) for transfer of medical information.
- ...include acquisition, processing, transmission and storage of medical data, high-resolution medical images (RTG, CT, MRI) and interactive video
CROATIAN TeleMED

TODAY

... what we have to do to provide the successful basic concept?

♦ define the basic networks within particular medical institutions inside the Croatian mainland (health centers, hospitals, clinical hospitals, university hospital centers) at the national and regional level

♦ ... and communication within the health system (Ministry of Health, Public Health Institute, Croatian Institute of Health Insurance, etc.)

Where we are now?
On defining health care development, the system of telemedicine is going to be:

- rational,
- efficient, and should be based on
- highest ethical and
- professional standards

**main goal:**
**protection / information and resources**
I Goal: Become an TeiMED Partner with the Other Region Partners

II Goal: TeleMED *regional cooperation* will Satisfy Croatian & Basic Need of all Partners
III Goal: Increase Efficiency of all TeleMED Contribution

Focus on customer and user needs
IV Goal: Protect Information and Resources

TeleMED Goals and Objectives

TeleMED integration into daily operations
and where is the Telemedicine Segment positioned?
it is one of the functional segments of the Croatian eHealth
key characteristics and benefits

- Telemedicine Segment
  - videoconference as the key service
  - interactive real-time communication
  - diagnostic, consulting, practice, education
  - direct patient welfare
Telemedicine Segment

- **Videoconference** is the essential service to be implemented. The TVC introduces interactivity into medical communications and provides physicians with crucial tool for adequate and timely reaction in emergency situations, in the same way as during normal medical activities.

- Installed videoconferencing systems must fully comply with recognized standards and ensure acquisition, processing and transfer of the audio-visual information as well as data and static images.
we have tested videoconferencing over multiple ISDN lines and IP

Test Cases

- Polycom (ex. PictureTel) videoconferencing equipment
- H.321 and H.323 protocol suite
- 4 ISDN BRA lines (512 Kbps) within Croatia and with medical institutions in Germany, USA and Japan
- IP over Frame Relay/ATM network (768 Kbps) within Croatia
- exchange of video, ECG (color doppler) and other medical data in the form of files containing pictures and/or documents
Description: Our TeleMED Strategy

II. facilitate collaborative development and sharing of information among participants on a day to day basis as well as through IT support to conferences, workshops and exercises
Description: Our TeleMED Strategy

III. store, manipulate, and disseminate all types of data applicable to the TelMeED community
Croatian Guidelines for TeleMED (approved by CPME)

- Physicians practicing TeleMED must be authorised to practice medicine in the country in which they are located and competent in the field of medicine in which they are practicing.
- All patients seeking medical advice should see a doctor in a face-to-face consultation.
- The doctor asking for another doctor’s advice remains responsible for treatment and other decisions given to the patient.
♦ All findings, recommendations and services delivered shall be **adequately stored**
♦ **Written permission** about the use of TeleMED correspondence should be given by the patient
♦ **E-mail is a useful tool as a supplement** to and not as a replacement for, face-to-face consultation

♦ **E-mail must never be used** for seeking emergency, for messages that may be difficult to understand, info. negative for the patient, infos require personal follow up or support

♦ **E-mail correspondence:** lab. results, follow-up of a chr.diseases, health promotion, administrative matters

♦ **risks of usage e-mails** in telehealth care:
  ♦ - technical (interruption, destruction of data, viruses,..)
  ♦ - legal (lack of integrity, indentification of the patients, liability insurance coverage, threat to confidentiality
  ♦ - cross border problems of medical practice with particular regard to jurisdiction, registration and indemnity
Suggested Guidelines for TeleMED (approved by CPME)

- Supervision of medicine will be performed nationally.
- International agreements of the supervision should be developed and the possible need for international registration of doctors practicing telemedicine internationally shall be evaluated/developed.
Current TeleMED activities in CROATIA

- Planning and Managing the Business in Croatian Medicine
- Training/Internet Participation
- Education/Internat.
- Telemedicine / real time

International Presence
TeleMED activities in CROATIA

- Tele-3D-CAS-Surgery
- Tele-virtual-surgery
- Surgery
- Med. care
- Radiology
- Pathology
- Transport
- Follow up - Vital parameters
- Emergency
- PDA
- Internet
TeleMED activities in CROATIA

Tele-virtual-surgery
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- 3D-CAS-Surgery
- Tele-virtual-surgery
- Surgery

Med. care

Radiology
Pathology
Transport

Follow up - Vital parameters

Emergency
PDA
Internet

Use of novel technologies in daily medical routine
TeleMED activities in CROATIA

Radiology

Cross-organizational Teams

- Low cost system, based on PC and iPower televideoconferencing standards
- Conforms to all medical imaging standards
  - DICOM, FDA Approved
- Suitable also for developing countries
  - Low hardware and software costs
  - Low telecommunication charges
- Scalable
  - additional stations for growing user needs
TeleMED activities in CROATIA

'Telemedicine' treatment allows for consultation with all leading experts anywhere in Croatia and/or Europe in making a rapid and reliable diagnosis and in prescribing appropriate therapy.

- Emergency medicine (especially during summer, due to the great number of tourists, boaters, etc.).
- Psychiatry (rehabilitation, favoring the development of winter tourism).
- Education (throughout the year).

In the near future, there is the possibility of consultation/guidance of operative therapy/telesurgery (traumatology, teletele-ENT, etc.), depending on the rate of opening new medical facilities/services.
TeleMED activities in CROATIA

The user is able to visualize a list of patients and to use a search tool to find a specific patient's Electronic Medical Record (EMR).

Follow up
TeleMED activities in CROATIA

Vital parameters
TeleMED activities in CROATIA

Application of the latest technologies are closely followed and implemented in the health care.

Emergency Cardiology
Planning & Managing Business in Medicine

♦ Interviewing . . .
Training & Education

♦ University Courses
Remote Medical Consultation
- unreachable places
- “bring” specialists to local place
- special events (GranPrix, Boat Race…)

Recurring post-surgery checkouts

Expertise prior or during surgery

Most clinical specialties utilize telemedicine:
- Cardiology
- Rheumatology
- Dermatology
- Obstetrics
- Radiology
- Neurology
- Pediatrics
- Psychiatry
- Orthopedics
- Oncology
- Ophthalmology
- Gastroenterology
- Dentistry
- Emergency Medicine
On-Going TeleMED  Medical Education

Content:
International Healthcare: Physicians from Europe, USA and Japan, presented on a variety of healthcare issues. TelMED activities include the following: Captured the content of sessions. Converted the content. Developed web based media www.mef.hr/telMED-MA2002
Telemedicinska strategija Ministarstva zdravstva Republike Hrvatske

Mini SIMPOZIJI

- Kako uvesti telemedicinu u moju opću medicinsku praksu?
- Moderna telekardiologija
- Razvojni teleprojekti u hrvatskoj medicini
- Klinička primjena telemedicine
- Telemedicina 21. stoljeća (prividna stvarnost, telerobotika, Tele-3D-kirurgija)
- Ekonomsko studije isplativosti ulaganja u telemedicinu
- Telemedicina i PZZ u Hrvatskoj
- Telemedicinski sustavi i telemedicina
- INSTRUKCIJSKI TEČAJEVI, ...
Benefits

- savings on travel costs
- call-center expertise
- service to remote / small locations
- competitive advantage
- employees satisfaction (local MDs)
- same information provided at once
- better decisions, more productive meetings
In the light of the actual economic moment in Croatia, the choice of ISDN technology as a communication basis for TelMED system is an optimal solution. The ISDN technology provides a cost-effective but efficient solution for the CITS communications segment.

The videoconference equipment, which is going to be purchased during the Project, is capable of simple transition from ISDN technology to the next generation network technologies such as IP and ATM.
Technical prepositions imply guaranteed bandwidth and Quality of Service (QoS) parameters for designated real-time traffic flows.

From the architectural perspective, CHIS’ communications platform would follow hierarchical, 3-layer structure, a) dispersion of network functionalities across access, b) distribution and core layer would ensure network efficiency and c) reliability. Physically, . . .
• CHIS will be formed of a number of Local Area Networks (LAN) integrated into an intranet, by means of Wide Area Network (WAN) resources leased from telecom operator/service provider.

* Calculated results will be exploited in order to define network architecture, plan network resources, choose proper networking technology and equipment, and implement QoS parameters.
security, standardization and legislative
SECURITY IS AN EVER EVOLVING PROCESS !!!

- Security
  - NOT an ICT segment !!!
  - NO single-point, single-layer security
  - comprehensive, proactive process
  - spread across all ICT layers
  - BS 7799 standard
  - HIPAA
standardization and legislative should be generators and not obstacles

- Standards and Legislative Aspects
  - equipment, applications
  - business process standardization
  - increased efficiency,
  - decreased costs,
  - legislative as a strategic stronghold
attention must be payed to ...

- Key Issues
  - well-defined framework
  - converged ICT platform
  - standardization, legislative
  - joined efforts and coordinated activities with internal and international subjects
PILARS OF PROJECT
PUBLISHING ADAPTIVE FORMATS OF MULTIMEDIA CONTENTS

- COPE principle
- UMA (Universal Multimedia Access)
- UME (Universal Multimedia Experiences)
TeleMED Center & WMC-DIGITAL
VIRTUAL WORKSTATION APPLICATIONS

Participation
Education
Virtual Training
/i.e. Military Purposes/

MULTIMEDIA WAREHOUSE

Participation
Education
Virtual Training
/i.e. Military Purposes/
Conclusion

♦ Creation of the CHIS, and particularly its telemedicine segment, would significantly raise the quality and availability of medical services as well as shorten the time of reaction.
In conclusion, high resolution real time will play a key role in the planning and guiding of various medical procedures in the future... especially if our neighbours would accept our TeleMEDicine philosophy... especially if our neighbours would accept our TeleMED philosophy