

The Italian-Croatian Bilateral Plans and Projects for Telemedicine and Health Informatics

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A number of opportunities succeeded in the last year permitted to us to establish a rather strong and spread collaboration in the fields of telemedicine and health informatics between Italy and Croatia.

Things started at the beginning of 1999, with a collaboration of all three of us on a common interest in the field of electronic medical records.

The project was to share the experience of Trieste on the Project DPACS (Data & Picture Archiving and Communication System), developed at the University of Trieste, which final goal is the "integrated virtual clinical card of the citizen" (1) with other medical record projects started in Rijeka and at the University of Zagreb.

Since the standards and formats for health cards are not unique within the European Union jet, and therefore it is very important to enable mutual access to patient data through health cards at least in neighboring regions, also this aspect was included.

This project has been approved this year by the two countries, and a protocol has been signed between the Foreign Ministries of Italy and Croatia, supporting it and more in general a telemedicine developing program (2).

The protocol has catalyzed a very strong collaboration between our countries, in which for Croatia are involved, other than the Universities of Zagreb and of Rijeka, some hospitals, the Croatian Government, the Croatian Parliament, the Croatian Medical Science Academy and some institutions of Istria's Contea.

The involved institutions for Italy are, in turn, other than the University of Trieste, the University Luiss at Rome, the Center ICETS, most of the local institutions in Trieste, first of all the Area

Science Park, and the Fondazione Incontri di Madruzzo of Verona and Milan.

ICETS - the International Center for Transitional Studies founded by the Universities of Trieste and Luiss (private University of Italian Confindustria), started his activity on July 6th, 2000 with a Celebration in Rome, at the presence of the President of the Republic of Croatia Stipe Mesic, with a particular emphasis to the collaboration of Italy with Croatia in the fields of economics, law and information and communication technology (ICT).

The ICT program, headed by P.I., has as the task of analyzing information and knowledge as evolution and decision processes in emergent and transition countries. In particular, the application of new communication and processing technologies for accelerating the development of transitional countries and for reducing public services costs (health, transportation, education, research, safety). The program has started, thanks to the italian-croatian telemedicine protocol, on the development of telemedicine and health informatics and on that of the clinical engineering in Croatia.

Very interesting is the collaboration in this sense just started for the informatisation of the Hospital of Rijeka and the creation of the Clinical Engineering Services, with involves the Universities of Trieste and Zagreb and most of the Institutions of Trieste.

Very important is the Clinical Engineering promotion program, started with the participation to the Clinical Engineering Specialization School of Trieste of Croatian Engineers and with a workshop on the safety of electromedical devices organized in May 2000 in Zagreb.

Indeed, introduction and maintaining of information technologies into the health care system emphasizes the need for professional support to the medical staff and patients. In clinical environment, the best choice are clinical engineers. A common project of ours is continuous education and specialization of clinical engineers and students of electrical engineering who would like to make their careers in this field. We expect that the common program of education that started with the Zagreb workshop and will continue next days (October 2000) with a workshop on clinical engineering in Bled (Slovenia), will become an International school of clinical engineering soon (with participation of professionals from other countries as well). (3-4).

Another collaboration is that related to the E-Croatia Program - Croatia's informatisation Strategy. For this program, which is the most strategic for Croatia, we started a common analysis work together with the Parliament and the Government of Croatia.

An important deadline for our common work, will be the next International Conference on Bioengineering, called MEDICON, which will be organized by one of us (R.M.) in Pula (Croatia) next June 2001. This will be a very important occasion for promoting telemedicine and health telematics as the best solution for the problems of reorganization of hospital health services as well as for the organization of novel personal health services. In this frame, one of us (P.I.), in collaboration with Marcello Bracale of Naples and the Italian Association on Medical and Biological Engineering is organizing for Medicon a day of special Sessions on the new trends on the technology, methodology and management aspects of telemedicine and health telematics and on the consequent changes in the clinical engineering.

In the general plans of future researches common to the Universities of Trieste and Zagreb we have pointed out some other more ambitious topics, which could be, a least partially, started in the future.

a) Telemonitoring, bedside laboratory diagnostics and home monitoring including self-diagnostics and self-education of not only patients, but healthy population as well, are applications in telemedicine that will grow at the beginning of the 21st century due to enabling technologies (information and

communication technology, intelligent miniature sensors, artificial intelligence etc.) and social, economical and political factors driven by the demand for better healthcare.

Plans for telemonitoring of patients during rehabilitation and persons with disabilities in order to improve their mobility and reintegration into civil society could include:

Monitoring of patients vital functions and continuous measurement of specific parameters important for their rehabilitation in health care facilities and later at home and their living environment. Within health care facilities, the telemonitoring system would implement intelligent sensors and infrared telemetry integrated into the monitoring network which is a part of the global information network of the facility. The telemetry system for home monitoring would implement radio-frequency systems to enable patients' better mobility, i.e. outdoors activity as well. The same telemetry infrastructure could be used to enable people with disabilities (for example people in wheelchairs) to improve the quality of their life through extended possibilities of control of their environment (smart wheelchairs, smart house). Integration of these functions into the global network (through Internet) would improve the communication between the patients or persons with disabilities with their physicians and other people taking care of their physical, psychological and social rehabilitation. (Possible partners from Croatian side: Faculty of EE & Computing, University of Zagreb; Clinical Hospital "Sv. Duh", Zagreb, Clinical Hospital Center Rijeka, association "Rehabilitation in Community, Zagreb; World Association for Psychosocial Rehabilitation – Croatian Section, Zagreb; Končar –INEM, Zagreb) (5-9).

b) In health care facilities with an integrated information system, implementation of bedside monitoring includes not only monitoring of vital functions but laboratory diagnostics as well. Hand-held devices based on biosensors and smart sensors and connected to information network enable reading of test results at the bedside and storage of the results into the electronic patient record. We see the possible implementation of the bedside laboratory system within the project of informatisation of the Clinical Hospital Center in Rijeka.

c) The program for self-diagnostics is based on nearly the same technology as the bedside laboratory diagnostics, but it includes education and self-education of the population. It should be a part of a much wider project for moving at least a part of the health care system from a sickness reaction service versus personal health maintenance. Such project is a long-term project, meant for people who live today and will live in future. Internet, multimedia and the supporting information technologies are an ideal media to introduce such new health care philosophy. A good starting point for introducing such programs could be a joint project of Faculty of EE & Computing, Zagreb and the Clinical Hospital "Sv. Duh" in physical medicine, i.e. multimedial presentation of exercises for persons working at personal computers. (6-7) These programs should include self-help for smoking abuse, different types of diets, help in pregnancy and chronic diseases etc. We strongly believe that the Ministries of Health of both countries would support these projects.

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