




VIRTUAL CLINIC – POSSIBILITIES AND PERSPECTIVES

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The term globalization involves a complex series of economic, social, technological and political changes seen as increasing interdependence and interaction between people and companies in disparate locations.


The phenomenon of globalization has already reached the medical field, most importantly in the areas of knowledge, diagnosis and therapy.

The access of as many people as possible to these areas should be guaranteed by a technically efficient man-machine interacting system and by an effective organization of specialists around the world.

An efficiently operational and organized exchange of medical information increases the quality of diagnosis and therapy, and assures the training and continuous education of the medical personnel.

The main task of a medical informatics system is to enable medical non-experts to gather, exchange and discuss relevant data at any time with experts in any place of the world.

A wise conception of such a structured dialogue for consultations and continuing medical education is based on a user-friendly, fast, simple, efficient and sustainable system for the exchange of medical information.



Countries with middle and low incomes are often affected by severe limitations in medical practice.

The result of this inefficiency often translates in inappropriate treatment of patients due to inaccurate diagnosis.

The rapidly expanding Information and Communication Technologies (ICT) allows that day after day we are near to closing this gap.

Several years ago any talk related to the Internet would have to be preceded by an explanation of what it is and how it works, but at present computer technologies and Internet connection became the essential part of our life and practical activity.


Internet has two roles in telemedicine: (1) Internet is a source of knowledge and offers the opportunity of knowledge sharing; (2) Internet is under the conditions of telemedicine a tool for quality assurance.

Telemedicine is one of the most important use cases of the Internet.

Using the Internet in countries with middle and low incomes has many advantages:

- i. saves money – the users have an access to an international infrastructure – if a hospital has an Internet access then they can provide and handle the complete business case via this network;
- ii. saves time – the Internet provides an access to databases and many other resources of knowledge;
- iii. save resources itself – using the Internet resources saves the own resources.

Simple workstations, thin clients, PDA and other devices allow exchanging data and knowledge.



Telemedicine and eHealth can be designated as a special form of ICT; as a method of delivering medical services by electronic means of communication, with the provider and the recipient of these services being at different places.

Telemedicine can help:

- To assure accurate diagnosis in regions; and
- To assure or increase the quality of an existing medical service.

In the second situation telemedicine supports local doctors and healthcare workers by giving them the opportunity to consult specialists abroad, by offering interdisciplinary local or national boards of specialists (e.g. tumor boards, clinical conferences), by allowing a simple and continuous access to the literature or to publications, and by presenting lectures and teaching courses using the same instruments offered for teleconsultations.

The general objectives of telemedicine are:

- To reduce direct costs to the healthcare sector and to the patients;
- To reduce indirect costs (loss of production);
- To enhance citizen's equality in the availability of specialized medical services (e.g. surgical pathology) in remote areas and by providing them the same or similar level of medical care as provided by conventional technology;
- To improve cooperation between specialized and primary care centers;
- To promote the proficiency of physicians and other healthcare personnel by means of teleconsultation and continuing eTraining, eLearning and eMonitoring;
- To reduce waiting lists for specialized healthcare by providing consultations to remote health centers in the most usual procedures;
- To improve and expedite consultations among different healthcare units in special case (e.g. tumor boards and clinical conferences);
- To increase delivery of primary and secondary health services to the patient's home and to increase access to healthcare information directly (e.g. virtual libraries and international publications).

The introduction of telemedicine applications often result in substantial changes in healthcare practices.

Investments in telemedicine are usually accompanied by improvement in the quality of care and services, shorter turnaround times and more availability of information. As a consequence there are significant changes in health outcomes and patient satisfaction.

A continuous assessment is required to appreciate and respond to changes after the introduction of telemedicine in a healthcare system.

A proper evaluation should include: assessment of advantages, disadvantages, costs (transaction and incremental costs), investment schedules, fluency and quality of communication, needs of and access to different services, changes in work processes, and the division of work evoked by the new “instrument”.

Since telemedicine can also influence the conventional decision making of clinicians, the legal and ethical consequences of telemedicine and eHealth should also be assessed.

Technological changes have specific implications for economic research in social welfare and health services.


Organizational effectiveness is measured by the momentum of the service system, business, and research institutions in regional, national and international cooperative networks.

Effects should be assessed on the bases of the functionality (changes in processes), fluency (saving time, speed of diagnosis, quality of diagnosis and treatment), and efficiency (cost-effectiveness) of the new technology.

Telemedicine applications may be difficult to evaluate, since study designs usually feasible for some operators may not achieve proper scientific standards.

Randomization and double blinding may not be possible. However, controlled trials can be made in nearly all telemedicine applications.

In the present project, a prospective assessment of every medical case and of the quality of teaching sequences is proposed.



Efficient, effective and reliable systems for remote consultations and distance education are the top requirements for eHealth organizations.

However, solutions have so far proved elusive and the deployment of ICT in many health sectors has required major transformational changes.

One of the major problems for a full potential delivery of telemedicine is to provide the tools for the world-wide access.

Thus, it is necessary to make radical improvements in service productivity, access to medical services, and improved quality of diagnostic with acceptable levels of patient safety.

A well developed ICT could serve to breakdown many of the existing barriers to the access of eHealth in the world.

The overall technological objective of the present project, which centers on the creation of a unified, effective and resilient eHealth system, will serve to transcend the state of the art in eHealth.

The present project offers the concept of Virtual Clinic (VC).

Its purpose is the development of a system that possesses the **Knowledge**, **Skills** and **Abilities** to:


- **recognize** medical indications;
- **treat** patients and communities in a safe and appropriate manner;
- **participate** in a coordinated multidisciplinary community response;
- ***alert*** healthcare system rapidly and effectively.

In the frames of the present project, the following tools will be used:

- eClinic – telediagnosis, teleconsultation activities;
- eLearning – telementoring, teleinstruction and teleeducation;
- elmaging – videoconferencing to support multidisciplinary (i.e. tumor boards) team meetings and diagnosis across distances.

The project envisages the deployment of ICT to enable:

- secure remote patient diagnosis, follow up and monitoring;
- enhanced and ready access to educational materials on medical topics in the form of lectures, clinical cases and downloadable slides;
- increase the understanding of cancer diagnosis and treatment in healthcare professionals by providing high quality annotated guidelines, CTs, X-rays, pathology images, and online help for difficult questions and clinical cases;
- increase the understanding of cancer screenings in the non-medical community and for patients with cancer by answering frequently asked questions and making available a community bulletin board.



The main goal of the proposed project is to overcome the time and distance barriers that separate caregiver from the patient.


Widespread adoption of the technology has been hampered by a number of technological, regulatory and other barriers. Innovations such as ICT-based patient records, remote consultations, hospital information systems, ICT-based decision support tools, community health information networks, and new ways of distributing health information to professionals and consumers are supported by, and in some cases reliant on, the widespread use of networked eHealth technologies.

The proposed project will transcend the existing state-of-the-art in ICT by the creation of a system which will support both point-to-point and multi-point communication in a fully meshed topology and which we will create a test bed to provide support for sophisticated authorization, workflow, security, error detection and recovery.

The implementation of the present project can effectively:

- Reduce medical errors;
- Help manage the knowledge and information in medicine, and support the decisions making process based on evidence based practice guidelines;
- Ensure better communication between healthcare providers and patient;
- Advance the goals of redesigning the healthcare systems;
- Develop and improve eHealth technologies.

As a result of the present project, the VC in Georgia will help implement new evidence-based healthcare protocols, and support the notion that, every citizen of the world need to receive the best possible existing care.



Overall methodology that will be used during the project implementation is dissemination of information, exchange of experience, education/training, demonstration and practical implementation of work.

As a result of the present project we will gather and prepare all relevant information, disseminate materials, create web-pages, update web-page information, host project gathering, provide eHealth, eLearning services, virtual conferences, seminars and webinars (seminar in the web), etc.

The project will be implemented by usage of Virtual Organization (VO) technology.