

Global Vision on Telemedicine / e-Health

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Nowadays, after almost four decades of application developments using modern information and communication technology systems (ICT) in healthcare, it appears that a vast majority of the actors are still struggling to grasp the broad picture in which their field of activity performs. Quite often, the global view of what's going on in telemedicine/eHealth is missing.

TERMINOLOGY

Terminology is still a confusing issue, but more recently a consensus has been reached. Initially and for quite some time, the word "telemedicine" was used.

One of the first, who introduced the term "telemedicine", was Thomas Bird in the 1970's, when describing the process of utilization of telecommunications technologies for examination of distant patients. Telemedicine is a combination of two words – the Greek *τηλε* = tele - meaning "at a distance" and *medicina* or *ars medicina* meaning "healing". During decades, numerous definitions were used for telemedicine. Usually telemedicine is defined as "a delivery of healthcare and exchange of healthcare information across distance" (1). More elaborate definitions depict telemedicine as:

- Rapid access to shared and remote medical expertise by means of telecommunications and information technologies, no matter where the patient or relevant information is located – thus the European Commission's healthcare telematics program defines telemedicine;
- Investigation, monitoring and management of patients and staff using systems, which allow ready access to expert advice and patient information no matter where the patient or relevant information is located. This official explanation of telemedicine is a basic concept of Advanced Informatics in Medicine action of European Communities for the period 1989 – 1994;
- World Health Organization (WHO) applied a more sophisticated definition in its Health Telematics Policy in Support of WHO's Health-For-All Strategy For Global Health Development. Telemedicine is defined as "the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of diseases and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interest of advancing the health of individuals and their communities.

The list may be continued, but it is useless. Perhaps the simplest definition of telemedicine is “medicine at a distance” (2).

With more involvement of the electronic communication systems, the major International Organizations W.H.O., E.U., I.T.U., etc... have officially adopted the denomination "eHealth". "eHealth refers to the use of modern information and communication technologies to meet the needs of citizens, patients, healthcare professionals, healthcare providers, as well as policy makers" (3).

We would like to introduce and use also the term “Modern Communication Health Environment” (MCHE) as a broader description for eHealth. From our point of view, it combines all aspects of healthcare and ICT as well as the four aspects of eHealth – eCare, eLearning, eSurveillance and eAdministration.

Lots have been written about eHealth. Thousands of publications concentrate on eHealth efficiency and practicality, on how, relying on the available technology, it enhances the capability of reorganizing traditional medicine, where patients have to “climb” the pyramid of healthcare delivery, towards citizen centered healthcare system (Fig. 1).

ACTION TERRITORY AND PLAYERS

eHealth acts at various levels – within each country (local, regional, national activities and actors), between countries or at continental level as well as at a global level.

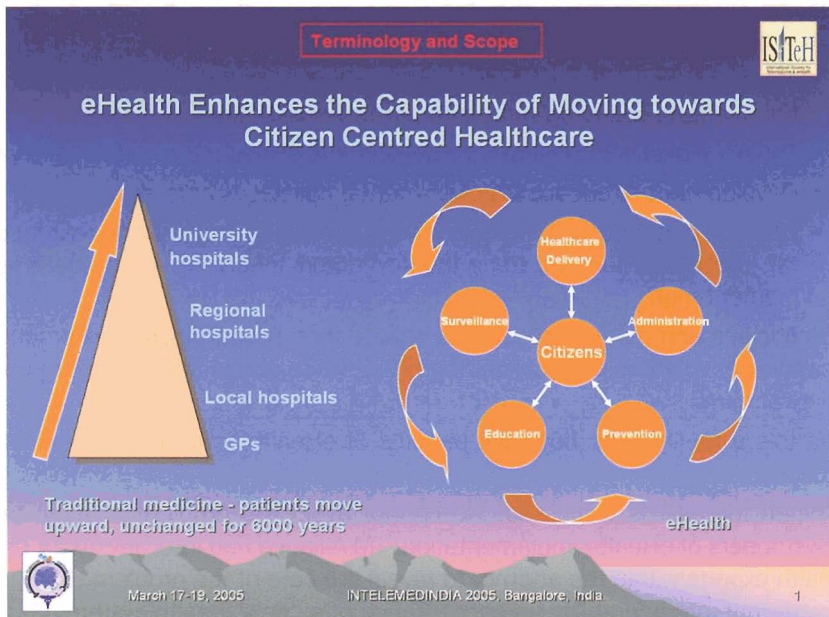


Figure1. (a) Traditional medicine - patients move upward, unchanged for 6000 years
(b) eHealth–patient centered approach

It is not easy to enumerate the energetic players at various levels as the group is quite dynamic. At the national level, there are various national associations and societies, institutions, governmental and non-governmental organizations and foundations, Telecom and IT companies, military structures, etc. Everyone knows some of the most prominent international players – World Health Organization (WHO), International Telecommunication Union (ITU), European Union (EU), United Nations Office of Out of Space Affairs (UNOOSA), United Nations Educational Scientific and Cultural Organization (UNESCO), United Nations Children’s Fund (UNICEF), North Atlantic Treaty Organization (NATO), peace keeping bodies, associations and societies, international telecom and IT companies, etc. In addition, let’s not forget the unique role of science and research as well as the impact of business structures, industries (medical, pharmaceutical, etc.) and administration players.

FORECAST

With such a big action territory and so many players, what is the forecast?

No doubt, MCHC develops and is gaining strength. Let’s have a look what is going on in different countries (Table 1), as well as what are the predictions for the roadmap of eHealth developments in the near future (Table 2) (4). Table 1 summarizes eHealth activities in a yet small sample of countries, arranged alphabetically. The intention is to develop this table towards a comprehensive overview including all nations.

At a first glance, it is obvious that:

- The situation in various countries is ambivalent. National efforts and international efforts still need more and better coordination;
- The need of specific legislations dealing with all aspects of eHealth is essential;
- Development of adequate governmental policies is crucial;
- Defining better cost / benefits analyses of eHealth projects and realizations is vital. These may turn out to be the key factors catalyzing worldwide eHealth implementation.

Politicians and medical specialists believe that eHealth increases productivity by streamlining workflow and maximizing billing while at the same time improving the quality of care.

Is this a reality? The potential benefits of eHealth have to be demonstrated in practice.

When forecast is discussed, we cannot avoid the problem of most important showstoppers of eHealth implementation. TM Alliance had interviewed 54 prominent eHealth experts within the attempt to reveal the core of the problem (5). The results showed that interoperability and acceptance of a “new” health system are the main obstacles when aiming at international eHealth implementation. These obstacles should be handled with a top-down and bottom-up approach at both national and in-

Table 1. eHealth in national context

Name ISfTeH National Membership	Health expenditure (% of GDP)	Specific eHealth Legislation	Authorities responsible for eHealth implementation	National Strategy Telemedicine / eHealth
Algeria	4.1		National Agency for Health Documentation	N/A
Australia	8.5	Commonwealth Privacy Act 1988; Privacy Amendment Act 2000	Research organizations & medical informatics associations	National systems for electronic health records and electronic decision support taskforce; Single Internet gateway providing citizens with high quality healthcare information; National action plan to facilitate the take-up of e-commerce in hospital supply chain....
Belgium	7.6	Protection of personal data, 08.12.1992	Ministry of Social Affairs, Commission "Telematics standards in relation to the healthcare sector"	Patient (SIS) and professional (SAM) chip cards; Administrative intranet between hospitals and insurance companies ...
Name ISfTeH National Membership	Health expenditure (% of GDP)	Specific eHealth Legislation	Authorities responsible for eHealth implementation	National Strategy Telemedicine / eHealth
Canada	9.3		Federal government, provincial and territorial governments	Canada Health Info Partnerships Program aiming at implementation of electronic health records, telehealth (telemedicine, telehomecare)
Chile	5.98		Research organizations	Governmental strategy emphasis to e-learning, e-commerce, national telemedicine network in future. Assessment of cost effects, focuses on radiology, pathology, 3D neurosurgical images
Croatia	8.6	Ministry of Health & Social Welfare accepted CPME/EU Guidance for Telemedicine/ 2004	Ministry of Health and Social Welfare, the Republic of Croatia	National Telemedicine Project "Telemedicine - Adriatic Islands" with national telemedicine network in the future including program for monitoring of diabetic patients (CroDiabNeET); Virtual polyclinic for islands
Cyprus	5.7	N/A	Ministry of Health	Health Information Support System; Patient Administration System Modules; Video bridge for orthopedics consultations with USA
...
Rwanda	5.5	N/A	Ministry of Health	Plan Vision of Rwanda till year 2020; National Information and Communications Infrastructure Plan; National Telemedicine Project Implementation Plan
...

Table 2. eHealth foresight. Adapted after A. Braun [4]

Year	Forecast
2004	Electronic Smart Card first model tests begin
2004	eHealth becomes socio-economic driver in healthcare systems design
2005	Electronic Health Records accessible
2005	eHealth reduces costs
2006	Electronic prescriptions implemented;
2006	Online patient identification systems implemented
2008	Electronic Health Records fully functional
2010	Cost-effective telematic sensors available

ternational level, respectively. One of the pioneering steps in this direction is EU Ministerial Declaration on eHealth from May 22, 2003 (3).

Apart from officially admitted showstoppers, let's also not forget that the biggest challenge nowadays is to make all possible players to coordinate their skills and efforts to achieve an optimal development within the health environment using modern communication systems (Fig. 2). This is something extremely important if we would like to achieve overall implementation of eHealth.

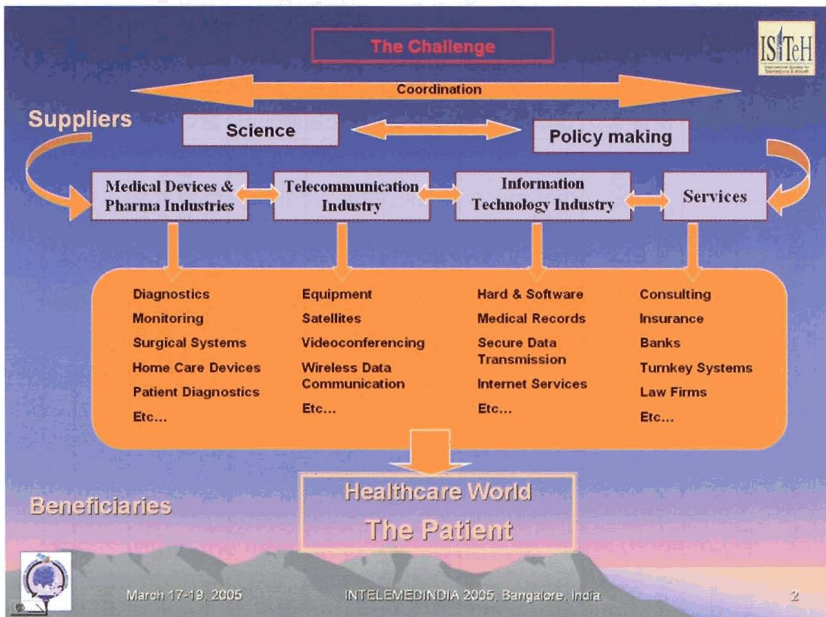


Figure 2. Players

NETWORKING

Within the world of eHealth it is crucial for all the players to be aware what is globally going on. Therefore, networking is a most important factor. Let's focus on a few specific networking enabling initiatives:

International Society for Telemedicine & eHealth (ISfTeH, www.isft.net)

The ISfTeH (Fig. 3) is a not-for-profit membership organization of national associations and others, institutions, organizations, corporations, individuals and students, established under Swiss law. It is the international representative body of national and international telemedicine and eHealth organizations. ISfTeH dedicates its activity:

- To broad promotion of telemedicine, telecare, telehealth, eHealth around the world;
- To facilitate the international dissemination of knowledge and experience in telemedicine and eHealth and
- To provide access to recognized experts in the field worldwide!

ISfTeH fulfills its mission in close collaboration with the UNOOSA, WHO, ITU and other international and national entities.

Its members are from all over the world (Fig. 4).

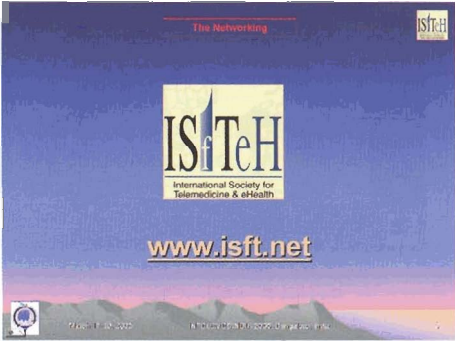


Figure 3. ISfTeH logo

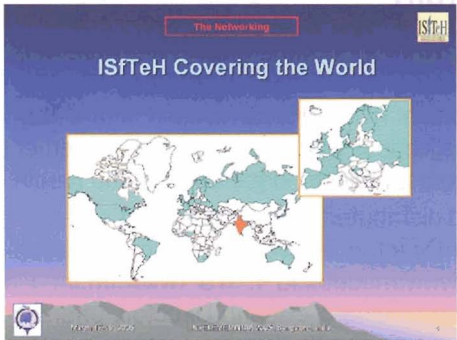


Figure 4. ISfTeH members Looking forward to welcoming soon the Telemedicine Society of India



Figure 5. Med-e-Tel logo

Med-e-Tel (The International Trade Event and Conference for eHealth, Telemedicine and Health ICT, www.medetel.lu)

Med-e-Tel (Fig. 5) is an annual, highly specialized world trade event and conference for eHealth, telemedicine and health ICT. It brings suppliers of specific equipments and service providers together with buyers, healthcare professionals, institutional decision makers and policy makers from many countries around the globe and provides them with hands-on experience and knowledge about currently available products, technologies and applications. Med-e-Tel is a forum where state-of-the-art products, ideas, projects, etc., are presented and discussed. Year after year, it becomes a nesting place for new co-operation and partnerships between scientific groups/institutions, small, medium and large size enterprises, etc., from all over the world (Fig. 6).



Figure 6. Med-e-Tel 2005 – participating countries

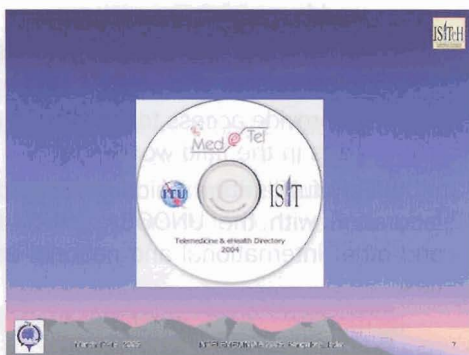


Figure 7. Telemedicine & eHealth Directory - view of the cover

TELEMEDICINE & e-HEALTH DIRECTORY

Made to become an important «Who is Who» for anyone around the world with an interest in Telemedicine/eHealth, this projects was initialized in 2002 by ITU (Fig. 7). Nowadays, it is realized with the joined efforts of ITU, WHO, ISfTeH and Med-e-Tel. The Directory focuses Telemedicine/eHealth applications worldwide and brings together users and suppliers in its four sections – vendors, projects, organizations and media.

The Directory is officially presented and distributed each year at Med-e-Tel exhibition and conference in Luxembourg. The Directory is available for consultation on Internet at the websites of Med-e-Tel (www.medetel.lu), ITU (www.itu.int) and ISfTeH (www.isfteh.net). A listing in the Telemedicine & eHealth Directory offers great opportunities for worldwide recognition amongst people who are looking for eHealth and telemedicine products, technologies and services.

CONCLUSIONS

Only the top of the iceberg;

- A fantastic challenge for the future;
- No way back;
- Requires cooperation and coordination at all possible levels;
- Worldwide;
- Networking is vital;
- As players each concentrate on their daily activities, they must yet be aware of the global frame in which all this has its place and further develops.

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