

How to choose a suitable technology for teleconsultations

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Abstract

Telepresence is a matter of degree. Rarely a telepresence system will provide such comprehensive and convincing stimuli that the user perceives from actual presence. Teleconferencing is the alternative, and can be considered when a live conversation is needed; visual information is an important component of the conversation and the parties of the conversation can't physically come to the same location.

In this paper are discussed different versions of solutions for consultations from distance. It will be presented review of consultations through web-site, portal, bridge and cell phone - examples of the different technical and virtual schemes, used in telemedicine.

Based on our experience we would discuss positive and negative factors, which can influence the choice of a concrete working model for telemedical practice.

As a successful example would be presented one solution, which is based on several interoperating systems: Desktop software that is composed of: a patient database access module, an administrator module and an operator module; a teleconference software solution, a forum and a mail module.

Introduction

Telemedicine is currently being used to bridge the physical distance between patients in remote areas and medical specialists around the world. Closely associated with telemedicine is the word telehealth, which is often used to encompass a broader definition of remote healthcare that does not always involve interactive clinical services, provided by physicians or clinical services at all. Videoconferencing, transmission of still images, e-health including patient portals, remote monitoring of vital signs, continuing medical education and nursing call centers are all considered part of telemedicine and telehealth. Telepresence refers to a user interacting with another live, real place, and is distinct from virtual presence, where the user

is given the impression of being in a simulated environment. Teleconferencing adds alternative and can be considered when a live conversation is needed with visual information is important and the parties can't physically come to the same location.

Methods

The new era of information and communication technologies, the digitalization of every single service to the customers and Internet are the main factors that facilitate and determine the possible choices when emergency medical help is needed.

Users become more and more informed, both in working with different types of technologies and assimilating easier and faster medical knowledge. During the research job we have discussed with users and medical practitioners what are the most commonly mentioned by the patients sources of information, that they have searched to and what is the best solution for them if a standard technology is placed for their own disposal.



Medical website - consumer medical search engine focused on delivering results from trusted, high-quality healthcare websites, and trustworthy timely health and medical news and information. Generally, it is dedicated to a concrete theme or problem. Internet users according to the latest data are approximately 1.5 billion worldwide.



Medical portal – grouped resource for healthcare consumers and professionals, links to health services and products, alternative health, education, dental and medical resources, hospitals, employment, healthcare publications, mental health and etc., accessed at any point, place and time with Internet.



Medical telebridge - facility enabling group phone conversation: a telephone system that enables three or more people to be connected simultaneously. This is the science and technology of transmitting information electronically by wires or radio signals with integrated encoding and decoding equipment.



GSM patient-doctor connection - The field of digital, mobile communication is still being strongly developed. Right now, the most used standard for the digital transmission of speech and data is GSM. GSM stands for Global System for Mobile Communications and is used in more than 135 countries. Using standard, commercial-grade protocols has many advantages. Important features like setting up a connection or

link and error control are already being implemented and are well tested. Any data, but medical data in particular, must be transmitted with the most applicable security.

Especially when transmitting medical or patient data, encryption and secure authentication are mandatory. Today there are 2 billion users worldwide.

Videoconferencing – it is set of interactive telecommunication technologies which allow communication between two or more locations. Videoconferencing uses telecommunications of audio and video to bring people at different sites together for a meeting. This can be as simple as a conversation between two people in private offices (point-



to-point) or involve several sites (multi-point) with more than one person in large rooms at different sites. Besides the audio and visual transmission of meeting activities, videoconferencing can be used to share documents, computer-displayed information, and whiteboards.

The comparative analysis with 17 parameters (Table 1), between the most common used methods: Medical website, Medical portal, Medical Bridge, GSM connection and Videoconferencing, is elaborated on the base of Presence/Absence of a concrete parameter in every solution for connection between the doctor and patient.

According to the specific work and targets, that analysis performs a navigation issue for precise choice and accurate technology application.

Some of the technologies like GSM connection and Telebridge conditionally have only 2 users, but in comparison with the others – they are much more limited in that position. One of the best characteristics of these two technologies is their popularity and lack of special literacy to work with. The easiest solution is undoubtedly the GSM connection – it doesn't require any specific computer literacy as well it is the most reliable communication form.

Parameter N7 – obligatory for a telemedicine consultation is equally performed. A positive part of the web-site and portal versions of telemedical consultations is the available up-date function, as well the History and Database archives.

<i>Parameters</i>		<i>Website</i>	<i>Portal</i>	<i>Telebridge</i>	<i>GSM</i>	<i>Videoconferencing</i>
1	Number of pages	1	∞^*	0	0	0
2	Number of subpages	0	∞	0	0	0
3	Number of users	∞	∞	2	2	∞
4	Initial registration	No	Yes	No	No	No
5	Opportunity for personalization	No	Yes	Yes	Yes	No
6	Portlet support	No	Yes	No	No	No
7	Ability for audio, video and picture transmission	Yes	Yes	Yes	Yes	Yes
8	Requirements for information content	Yes	Yes	No	No	No
9	Necessity of programming languages for development	Yes	Yes	No	No	No
10	Necessity for visualization in web media	Yes	Yes	No	No	No
11	Necessity of internet media	Yes	Yes	No	No	Yes
12	Information up-dates	Yes	Yes	No	No	No
13	History	No	Yes	Yes	No	No
14	Intranet	No	Yes	No	No	Yes
15	Data bases	It is not necessary	Yes	No	No	No
16	Specific literacy	Yes	Yes	No	No	Yes
17	Trustworthiness	No	No	No	Yes	Yes

Table 1
Conclusion

This comparative analysis has allowed us to investigate and study different modern, and in the same time – standard methods for data transmission within their application in telemedical services. One good strategy for development of teleconsultations system is to possess and combine each of these technologies in the most appropriate scheme in the appropriate moment.

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