Chapter 6
How does Telemedicine Benefit from Broadband Technologies?

Vincenzo Gullà
Advanced Digital Technologies (ADITECH SRL), Italy

ABSTRACT

The present chapter focuses on some aspects of the state of the art of telemedicine systems and their use over broadband. It starts with a brief summary of the most popular telecommunication technologies to give the reader an overview of today’s broadband technology and methods. Some important deployment data are included showing the global growth and use in many countries. Results of very significant pilot projects using videocommunication implemented in Italy and in Europe are taken into consideration, demonstrating the benefits of the patient’s psychological status in conjunction with health care assistance. The chapter proposition is to show a business model, based on an Italian reality exploiting the Marche region population development and healthcare statistics. The simulation example is the adaptation of telemedicine solution for early hospital discharge applied to a public healthcare structure, typically a hospital. The model takes into account the possible adaptation of an “early discharge solution” implemented with portable telemonitoring light videocommunication terminals, which, thanks to broadband availability, may be installed at the patient’s home for a predefined period (typically 7 to 10 days). The simulation aims to highlight and dimension cost reduction or, in a more appropriate view, give the percentage of resource that can be relocated to provide a better service and how a national healthcare service may take advantage of these scenarios.

INTRODUCTION

Telemedicine has been a matter of research and convulsive generation of pilot networks and trials in all the world, all aiming to find the most appropriate solution and draw the economic model that could be of reference to define directives and guidelines which may help to provide remote medical cares. The aim of this paper is to focus on some of the most significant results, carried out by researchers
How does Telemedicine Benefit from Broadband Technologies?

and healthcare organisations, in Italy and Europe
and attempt to draw a suitable model, which taking
advantage of the wide broadband deployment and
cost effective approach, can be of help to identify
solutions addressing sustainable telemedicine
service networks.

The study gives the reader some highlights on
the enormous growth and development that have
characterized the telecommunication industry in
this last decade (1990-2000), which has seen the
domination of Internet, the IP protocols along with
the new and much more economic broad band
approach, allowing end users to access advanced
network services in a much easier, faster and eco-

nomic way, than some years ago these events open
new frontiers of interactive applications, related
data transmission, video and IP voice, originating
new services, which one can find useful and
comfortable for itself, but in a more general contest
are essential tools to improve social benefits and
communities quality of life (Gulla (2006), Tao

The study hereby exploited, wants to make
the point on how these consolidated technolo-
gies, properly assembled and merged with more
medical needs, have been successfully employed
in pilot networks and trials, in many countries and
have proven to be a suitable aid to provide better
cares to elderly and weak persons, as well as a
compelling support to healthcare and telemedicine
applications and services.

But technology suitability and availability in
not the only issue to permit that a feasible solution
may be replicable and widely deployed in sustain-
able manner. Successfulness is still cost related
and a more critical factor is the identification on
the most appropriate telemedicine business model.
As a matter of fact telemedicine applications ad-
dressed a few years ago would have cost impact
higher than 30-40% or even more compared to
today’s solutions and broadband cost benefits
(Pelissero and Velo, 2004), Gulla (2005), Gulla

This paper shares the authors experience in
this field as an aid to those who seriously intend
to design, implement and run local telemedicine
networks, given that the final objective is to
improve the quality of health care assistance and
benefit from innovative technology cost saving
methods and lesson learned experiences. Bearing
in mind that any model cannot be successfully
replicable if not designed in accordance with the
local available resources, service requirements
and constrains and local health policies.

METHODOLOGY

The study starts with a brief introduction to the
most popular telecommunication technologies,
gives an overview of today’s broadband tech-
nology and last mile methods implemented by
most of the telecommunication carriers, to reach
end users with a suitable and useful bandwidth
Gulla (2007). Broadband deployments data are
included to give a measurement of how fast this
technology is being used in all the world, providing
the most recent available deployment data, thus
proven the availability of broadband technology
in many countries.

Results of very significant pilot projects car-
ried out by carriers, service providers, universities
and research centres in Italy and in Europe making
use of videocommunication and vital parameters
data gathering medical devices are taken into con-
sideration, for showing that this technology not
only allows the doctor to have a more complete
view of the patient in understanding the patients
psychological status to give more appropriate
guidance and make more accurate analysis, but
also to assure the patient that he is being visited
by someone providing the necessary moral support

The paper will then illustrate a business model,
based on an Italian reality exploiting the Marche
region population development and health care sta-
Related Content

**Current State of Critical Patient Monitoring and Outstanding Challenges**
[www.igi-global.com/chapter/current-state-critical-patient-monitoring/40686?camid=4v1a](www.igi-global.com/chapter/current-state-critical-patient-monitoring/40686?camid=4v1a)

**Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy Cloud Computing Framework**
[www.igi-global.com/article/magnetic-resonance-imaging-magnetic-resonance/74718?camid=4v1a](www.igi-global.com/article/magnetic-resonance-imaging-magnetic-resonance/74718?camid=4v1a)

**Medical Search Engines**
[www.igi-global.com/chapter/medical-search-engines/13023?camid=4v1a](www.igi-global.com/chapter/medical-search-engines/13023?camid=4v1a)

**An Analysis on the Utilisation of Health Information Technology to Support Clinical Operation of Chinese Medicine**
Catherine Han-Lin, Angela Wei Hong Yang, Siddhi Pittayachawan and Nilmini Wickramasinghe (2016). Maximizing Healthcare Delivery and Management through Technology Integration (pp. 113-132).
[www.igi-global.com/chapter/an-analysis-on-the-utilisation-of-health-information-technology-to-support-clinical-operation-of-chinese-medicine/137582?camid=4v1a](www.igi-global.com/chapter/an-analysis-on-the-utilisation-of-health-information-technology-to-support-clinical-operation-of-chinese-medicine/137582?camid=4v1a)