High Level Consultation Workshop
with Industry on
Innovative ICT tools and Telemedicine services

Workshop covering presentations relating to telemedicine
(including teleradiology, ICT for home care and mobile care,
ICT for personal care, and medical devices/remote
monitoring)

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Summary report
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Strateqo consortium
Diane Whitehouse

READING NOTES

In addition to an internal quality review by the Strateqo consortium, this draft has been circulated to Commission service staff for their comments and criticism. The manuscript was also shared with the cited speakers and associated attendees. The participants were particularly encouraged to note that “Who writes wins” – to quote an European Commission official– and hence criticism of this manuscript was strongly encouraged. Any errors remain the responsibility of the author.

This document does not necessarily reflect the formal opinion of the European Commission.
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Executive summary

This workshop provided an opportunity for the European Commission to facilitate a consultation exercise in conjunction with high-level representatives of European industry on the potential directions to be taken in the deployment of telemedicine. The main orientations of the workshop are described here and are also described in a series of boxed texts within the report. These boxes highlight the underlying problem definition; the ways of overcoming perceived barriers and finding solutions to improved telemedicine deployment; and, lastly, several possible policy options and solutions.

The workshop introduced the underlying problem definition of challenges to Europe’s healthcare system(s). It identified various pressures on the healthcare systems including citizens’ expectations for high-quality care; demographic changes (principally ageing) with more people who will require prolonged care; an increased prevalence in chronic diseases which will form a substantial part of the overall healthcare costs; the possibility of increased medical accidents; staff shortages; the possible continuation of a reactive model of healthcare delivery which only responds to health problems after the appearance of symptoms; and rising healthcare costs which are increasing at a rate which is faster than actual economic growth.

Hence, the principle challenges to Europe’s healthcare are considered to be principally two: how to provide high-quality and affordable care, and how to do so in a way which is likely to entail the need for changes in the way that healthcare is delivered. Such potential changes could entail how to: manage and transfer medical knowledge in clinical practice with emphases on such activities as remote monitoring and care (including the continuity of care and the provision of health services outside hospitals); improve the efficiency of disease management (so that patients may be monitored over extensive periods of time, for example, at home); improve the prevention and prediction of diseases (which could thus lead to an enhanced quality of life but also help to avoid costly treatments, and reduce healthcare costs); and strengthen the involvement of citizens/patients in healthcare processes.

Additionally, questions were raised about the mechanisms that could possibly be used in the future to ensure more innovative research, research that is closer to the market, and research which can be implemented more quickly.

In this context, the main four foci of discussion were:

- an exchange of information about current and ongoing mutual activities;
- a capturing of industry’s visions, commitments, and concerns
- an overview of input to the proposed European Union (EU) initiative on telemedicine (including a potential Communication); and
- signals with regard to likely areas of commitment on the part of European industry.

Hence, the industry speakers took as their point of departure, four distinct telemedicine industry segments related to telemedicine: teleradiology; information and communication technologies (ICT) for home care and mobile care; ICT for personal care; and medical devices. Each of these areas is experiencing the potential for considerable growth in deployment. Industry experts from each of these fields cited not only their views of the direction that the particular industrial field will take in the future but also the various perceived barriers to growth in these particular industry segments.

Discussion began with regard to potential solutions. It was explored further in a larger round-table. The focus of the debate was largely on the evidence that could be gathered by organising very large-scale demonstrators with regard to the health and social benefits of telemedicine. The solutions, options, and proposals that were put forward were largely generic and were related to the entire field of telemedicine.
The round-table discussion concentrated on the latter three of these four issues:

- Technical issues, including interoperability and infrastructure;
- Organisational issues, including users’ uptake, training, financing, and public procurement;
- Regulatory issues, including accreditation and certification;
- Legal issues, including personal data protection, reimbursement, liability, tax and competition.

With the managerial and organisational orientation of the workshop’s industrial participants, it is not surprising that the main issues to which they drew attention were principally organisational, regulatory, and legal. The topics which were covered in most detail related generally to the necessary process re-engineering and change management issues required in Europe’s healthcare systems and services. Particular attention was, however, drawn to expanding and creating more awareness of the evidence base that supports a potential growth in telemedicine, including the awareness of a wider range of audiences (e.g., policy-makers, health authorities, clinicians, citizens/patients). The discussion resulted in suggestions to:

- understand the current trends in future health systems;
- explore innovatively the financing models that can support telemedicine;
- concentrate on particular industry segments;
- change the health delivery mechanism(s);
- expand the evidence base that supports the potential for growth in telemedicine;
- aggregate good practices;
- enable further awareness-raising so as to promote telemedicine deployment.

These are largely inductive and didactic solutions. They focus on organising different types of pilot and demonstrator initiatives, and the ensuing type of evidence-gathering that could be facilitated by such demonstrators. They offer various possibilities for the European Commission to consider the ways in which it organises its research, its deployment, and its impact assessment/benchmarking activities.

Specifically in this regard, two general warning signals were raised: firstly, the need for awareness of the length of times that it can take particular research outcomes to shift to the deployment phase; and, secondly, the need for a careful selection of impact assessment and benchmarking methods and methodologies.
1. Introduction

This afternoon workshop provided an opportunity for the European Commission to hold a high-level consultation in conjunction with senior representatives of European industry on the potential directions to be taken in the deployment of telemedicine. The afternoon enabled all the participants to listen to and learn from the opinions expressed, and to formulate a number of practical initiatives in the telemedicine field that would be favoured by industry.

The industrial representatives at this forum were encouraged to consider what particular initiatives they might advise the European Commission to support and co-finance in direct relation to telemedicine. They were encouraged to do so while bearing in mind the kinds of initiatives that industry itself might be planning and what might in parallel be considered as the most effective triggers for further deployment. Additionally, industry participants were asked to identify those areas - technological, organisational, legal, regulatory - on which they would be willing to place their own emphasis when considering potential collaboration with the European Commission. The main four foci of discussion were encouraged to be:

- an exchange of information about current and ongoing mutual activities;
- a capturing of industry's visions, commitments, and concerns;
- an overview of possible input to the proposed EU initiative on telemedicine (including a potential Communication);
- signals with regard to likely areas of commitment on the part of European industry.

2. Setting the scene – why should there be a European Union initiative on telemedicine

This session highlighted the solid strategies undertaken by the European Commission over the past 20-year period, in particular in terms of research and technology development, its policy follow-up, and subsequent opportunities for practical deployment and implementation.

Mr Ilias Iakovidis, Deputy Head of Unit in the ICT for Health Unit in the Directorate-General Information Society and Media, European Commission, outlined historical developments particularly in the 1988-2006 timeline. He identified the key contemporary initiatives to be undertaken and co-financed. He placed particular emphasis on the building of health information networks, especially through regional developments. Currently, there is a growing awareness of the notion of an 'innovation cascade', and a need to move all research towards concrete deployment in very dynamic terms (identifying real needs; involving users from the start of programmes, initiatives, and projects; and focusing on more applied research).

Today, the European Commission agenda for deployment of eHealth is conceived as concentrating on three main themes and activities:

- the Lead Market Initiative;
- interoperability;
- telemedicine.

Mr Iakovidis drew special attention to a number of recent empirical research studies on telemedicine and eHealth impact\(^1\), and to the kinds of scenarios for the development of future health systems and services that are under investigation\(^2\).

\(^1\) Examples include, firstly, BCC Research in 2007 on *Telemedicine Opportunities for Medical and Electronics Providers* and, secondly, GmBH and the Bavarian Red Cross (*Gesundheit Scout 24*).

\(^2\) A 2007-2008 study entitled Scenarios4Health ([www.scenarios4health.eu](http://www.scenarios4health.eu)), undertaken for the Institute of Prospective Technology Studies by empirica (Germany) on behalf of the DG Information Society and Media, is about to publish its final report shortly.
UNDERLYING PROBLEM DEFINITION

This stage of the workshop focused briefly on the underlying problem definition of challenges to Europe’s healthcare system(s). These include various pressures on the healthcare systems, including:

- citizens’ expectations for high-quality care;
- demographic changes (principally ageing) with more people who will require prolonged care;
- an increased prevalence in chronic diseases which will form a substantial part of the overall healthcare costs;
- the possibility of increased medical accidents;
- staff shortages;
- the possible continuation of a reactive model of healthcare delivery which only responds to health problems after the appearance of symptoms;
- rising healthcare costs which are increasing at a rate which is faster than economic growth itself.

Hence, the principle challenges are twofold:

1. How to provide high-quality and affordable care;
2. How to do so in a way which is likely to entail the need for changes in the way that healthcare is delivered.

The second challenge implies, among others, the following changes in how:

- medical knowledge is managed and transferred in clinical practice, with increased emphasis on such activities as remote monitoring and care. This could also involve the continuity of care and the provision of health services outside hospitals;
- more efficient disease management is organised, so that patients may be monitored over extensive periods of time, for example, at home;
- improvements in the prevention and prediction of diseases could lead to an enhanced quality of life and help to avoid costly treatments for patients, thereby reducing healthcare costs;
- the role of citizens/patients in healthcare processes could be strengthened through more active involvement.

In addition, questions were raised about the mechanisms that could be used in the future to ensure more innovative research, research that is closer to the market, and research which can be implemented all the more quickly.

3. Four specific industry segment analyses of telemedicine

Presentations were made that enabled a focus on these four industrial areas:

- teleradiology;
- Information and communication technologies (ICT) for home care and mobile care;
- ICT for personal care; and
- medical devices (including remote monitoring).

The presenters were:

- Peter Pattynama, President of the Radiology Section, European Union Medical Specialists (UEMS);
- Jan Lorman, President, Život 90- Patient group, Czech Republic;
- David Whitlinger, Vice President and Chair of the Board, Continua Health Alliance; and
- John Wilkinson, Director-General, European Confederation of Medical Devices (EUCOMED), together with Hans Jürgen Wildau and Herb Riband.
The presentations covered descriptions or definitions of the four fields; how much work is carried out in the area and by whom (private entities, public entities, and both); and what are the perceived key barriers to achieving wider deployment of the particular technologies.

### 3.1 Teleradiology

Peter Pattynama drew attention to plentiful research on the deployment of teleradiology\(^3\). Its benefits are clearly perceived, and the degree to which teleradiology is ‘ripe’ for further use was highlighted. His main messages with regard to trends were the extent to which radiology as an occupation has already been digitised; the current, increased demand for radiological investigation which is reflective both of growth in certain disease conditions and of the relative decrease in radiologists especially in particular European Member States; the distribution of work away from the hospital to the radiologists’ home and at different times of the day (processes which he described as ‘night hawking’ and ‘day hawking’); and the shift of labour through sub-contracting to low-cost countries. He noted the comparatively good acceptance of teleradiology by both doctors and patients (the latter group are, he posited, probably quite oblivious to the ways in which and in what locations radiological analysis is actually carried out).

Mr Pattynama identified the various barriers to increased deployment of telemedicine as:

- minor technological issues;
- certain privacy issues which would benefit from an appropriate clarification of the legal and regulatory framework;
- supply-side challenges in the market, such as the inadequate number of radiologists;
- demand-side issues such as clarification of responsibility/accountability; medical quality; and reimbursement issues.

### 3.2 ICT for home care and mobile care

The particular example used to illustrate home care and mobile care at the workshop came from the Czech Republic. Jan Lorman presented the ‘Senior Blue Light’ initiative which started over fifteen years ago and has, during that time, brought together electronically healthcare, emergency care, and a range of other services.

In terms of empirical evidence, with regard to emergency care, four call centres in Prague, Hradec Králové, Jihlava and Kutná Hora help up to 1,200 clients in 32 Czech cities. Eleven local and regional providers are registered at the Czech Ministry of Labour and Social Affairs (as a result of the law of social services), and support around 460-500 clients. A consortium consisting of 15 service providers, including international companies, now supplies the services. The interest of both the public and the healthcare professionals in obtaining and providing social and healthcare services, such as emergency care for elderly and disabled persons, shows a growing and accelerating trend.

Broadly, the benefits of home care are seen as: social; clinical; technical; related to the quality of service; and also the introduction of users to a much wider range of electronic services and connection (such as e-banking; e-learning; e-legal services; and an available call centre service). Particularly for the Czech Republic, efficient use of eHealth Books (IZIP) takes place through the interconnection of servers with a central electronic database of medical information. These make it possible for physicians to have updated medical information always at hand. Health-saving or life-saving interventions take place through the technological interconnection with the Integrated Rescue System.

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In terms of **barriers**, high costs, low quality, and low efficiency have in the past hindered further development. (Although Mr Lorman did not explain why this should be so, it could possibly be associated with the following three factors: the relative levels of unconnectedness; the involvement – at least initially – of enthusiasts rather than providers of professional services; and the fact that the initiative has been introduced over a fifteen- or so year period – hence it has probably experienced a number of development costs.)

The implementation intentions and achievements of this set of home care and mobile care applications was relatively limited when compared with the ambitions and range of the personal healthcare services that were presented in the next case study example: ICT for personal healthcare.

3.3 ICT for personal healthcare

David Whitlinger introduced the work of the Continua Health Alliance, a non-profit, open industry alliance of healthcare and technology companies from all over the world that have joined together in collaboration to improve the quality of personal healthcare. The Alliance has over 40 companies and entities with the status of promoting members, and more than 140 which are contributing members. The Alliance's mission is to “establish a market of interoperable personal telehealth systems that empower people and organizations to better manage their health and wellness”. The Alliance's focus is in three areas[^4] which have a global focus: health and wellness (which offers a service to the over one billion overweight adults); disease management (which affects 860 million chronic disease patients); and ageing independently (which involves over 600 million adults).

Mr Whitlinger placed his emphasis on undertaking large-scale trials and pilots. Worldwide, the main industrial players active in the field can be described in the following way. In Europe, several trials and pilots were launched as part of the European Commission's Sixth Framework Programme and Seventh Framework Programme. In the United Kingdom, in particular, there are several examples of large-scale implementations and of pilots: in England, there are some widespread implementations of personal emergency response systems; initial telemedicine trials have been started in three locations; and announcements about personal healthcare services' deployment in Northern Ireland. The number of people involved in pilots and tests in Europe is still, however, relatively low. In the United States of America, initiatives are developing as part of programmes offered by the Veterans' Administration (which includes 23,000 veterans), Kaiser Permanente, and hundreds of employer programmes (companies involved include Nike Plus, Google Health, Microsoft HealthVault, and Dossia). In Japan, similarly-sized initiatives have also been launched.

In particular, Mr Whitlinger made a pre-product announcement with regard to a product launch that is due in the last quarter of 2008. At that point, a groundbreaking platform will allow medical devices to communicate wirelessly. Cambridge Consultants have announced the first demonstration of the emerging industry standards for medical device interoperability. The Vena platform is described as a breakthrough software solution on a single chip that allows medical devices such as blood pressure monitors to transmit data without wires. The development gives consumers, especially those with chronic conditions, the ability to monitor their own health accurately, systematically and independently. The Vena software solution can be added to a medical device using hardware with a potential cost of less than $US 10 at the appropriate volumes and could be available in medical devices by the end of 2008. The Vena platform embeds for the first time two emerging profiles: the IEEE11073 standard and the Bluetooth Medical Device Profile.

Mr Whitlinger sees the **two primary barriers** to deployment as the lack of awareness and the current lack of ease of use. To address these barriers, different awareness-raising exercises are needed, and commonly accepted standards or quality marks would be a distinct advantage. A range of other barriers also exists. These include cost; the perception of the lack of evidence (of actual implementation and of benefits); the relatively low penetration of software that is associated with use of electronic health records; the relative lack of a social care market; and the context with regard to the lack of legal certainty (nevertheless, a situation which Mr Whitlinger sees as currently improving).

[^4]: The figures mentioned are global calculations.
purely from the aspect of data automation. However, he observed that he has not yet seen proof-positive of evidence gathered from very large-scale demonstrators of their health and social benefits.

### 3.4 Medical devices

John Wilkinson was accompanied by two colleagues: Hans Jürgen Wildau of Biotronik (Germany) and Herb Riband of Medtronic (Switzerland) on behalf of the Cardiac Remote Monitoring (CRM) working group of EUCOMED. Mr Wilkinson focused on the benefits of implantable devices to aid telemonitoring. He announced that EUCOMED concurs with the European Commission’s analysis of general health trends and developments in health systems and services in Europe.

With regard to CRM technologies in Europe, the first implantation and feasibility demonstration took place in 2000, and the systems of three manufacturers now have market approval. Worldwide, more than 500,000 telemonitoring-capable devices have been implanted. CRM Telemonitoring serves two clinical applications: firstly, remote device checks and, secondly, disease management.

The benefits with regard to both current and possible future application were described in some detail. With regard to remote disease checks in particular, the benefits are substantial, and significant savings are possible through telemonitoring without any compromise of patient safety. With heart failure patients, telemonitoring has added further benefits to remote patient management schemes.

There are three perceived barriers to the greater deployment of these forms of devices in Europe:
- doctors are not rewarded for remote device data analysis
- new cost components for equipment and services
- the fact that patient management schemes need to be changed.

The three solutions proposed by EUCOMED are:
- installing a reimbursement code(s) for remote diagnosis of CRM device data
- providing reimbursement for telemonitoring devices and services
- setting up a partnership with the CRM industry so as to implement telemonitoring in clinical practice.

### 3.5 Identification of the main barriers according to the different industry segments

A brief analysis has been undertaken of the range of barriers which had been mentioned by the speakers. These were grouped into five categories: technical, organisational, regulatory, legal, and other issues.

A number of the remarks made can be classified according to ‘organisational’ issues. In reality, they have to do with the potential size of the market: that is, although the overall market is considered to be eventually very large, there is at the present time too small a paying market, and also – as yet – a lack of associated software that could enable potential uptake of yet other forms of software. (For example, take-up of electronic health records software applications could enable more independent, patient-based use of monitoring equipment.) The remarks made by the speakers can be associated primarily with the fourth category of issue which was construed as ‘legal’ issues – although this classification is in fact debatable. These are, however, mainly related to reimbursement and proposed reimbursement schemes.

Presumably the appropriate solution to each of the barriers mentioned is some form of reversal of the specific barrier. In certain speakers’ cases (particularly EUCOMED, for example), definite solutions were proposed.

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6 John Cleland et al., *JACC*, TEN-HMS Study, 45; 1654; 2005
On the other hand, solutions were more likely to be raised during the next stage of the workshop – the round-table discussion. In section 4 of this report, a similar analysis is therefore undertaken of the main solutions that were cited by the attendees.

The challenge for industry and for the European Commission is the extent to which these issues do indeed fall within the remit of the Union at a pan-European level.

4. Round-table discussion among participants

Following the speaker-specific presentations, outlined in section 3, in this section of the report, any remarks or comments made are not associated with individual speakers. Instead, this section presents a view of the discussion which understands the participants as building collaboratively on each others’ contributions and input. The round-table was structured around an interaction which focused on some of the following four issues:

- **Technical issues**, including interoperability and infrastructure;
- **Organisational issues**, including users’ uptake, training, financing, and public procurement;
- **Regulatory issues**, including accreditation and certification;
- **Legal issues**, including personal data protection, reimbursement, liability, tax and competition.

Participants were asked to concentrate in particular on what they perceived:

- The European Commission could do
- The Member States could do.

The discussion tended to concentrate on the latter issues (those which are organisational, regulatory, and legal). Its focus was also mainly on what the European Commission could do.

This report does not draw clear distinctions between the activities which could be undertaken separately or together by these two sets of actors. Such a selection process would need to take place at a later stage of analysis.

4.1 General discussion on background

Far greater attention is being paid in the 21st century to what can be called both citizens’ technological and health ‘literacy’. On the health side, individuals are becoming more and more concerned with their own health status. It was considered by the workshop participants that there could be encouragement for education on health awareness to be introduced in the family context, as...
well as at levels of schooling, and at university. There is also a general shift in terms of the doctor-patient relationship to a stance which is provisionally less paternalistic than previously. Particularly, the patient’s role is changing. Patient empowerment is becoming a key issue.

There was a general sense that, particularly in contemporary research and implementation initiatives (in whichever particular European Commission programme they play a part), there needs to be a greater focus on organisational and on process-related issues. Many more people are using technology (as one older participant noted, “Everyone is using it, including my parents.”)

At a more generic level, and as a realisation of the changes that have been brought about by a growing awareness in the 21st century of sustainability and environmental issues, on a number of occasions participants drew attention to the way in which telemedicine can permit automation and can reduce seriously the need for transportation (and hence diminish the consumption of fossil fuels).

The motto adopted at different points in time during the workshop appeared to be the adaptation of a slogan similar to the Nike sports gear phrase, “Just do it!”.

4.2 Solutions to overcoming lack of deployment of telemedicine in Europe

Among the solutions to overcoming the current lack of deployment in Europe of telemedicine applications, a range of initiatives was cited. These included the need to:

- understand the current trends in future health systems
- explore innovatively the financing modes that can support telemedicine
- concentrate on particular industry segments
- change the health delivery mechanism(s)
- expand the evidence base that supports a potential growth in telemedicine (‘create awareness’)
- aggregate good practices
- enable further awareness-raising so as to promote telemedicine deployment.

These solutions are discussed below in a sequence that focuses initially on the organisation, market, and financing solutions that could be explored. They then concentrate on the more inductive and didactic solution. These are related largely to the organisational field, but they also offer a number of possibilities to the European Commission with regard to the ways in which it organises its research, its deployment, and its impact assessment/benchmarking activities.

4.2.1 Understand the current trends in future health systems

The European Commission, together with the Institute for Prospective Technology Studies, will shortly publish the final report of a project called Scenarios4Health which has developed a range of insights into alternative future healthcare models, including what could be conceived of as an ‘ideal type’ European health model. The attendees at the industry workshop will be informed as soon as the report findings are published.

4.2.2 Explore innovatively the financing models that can support telemedicine

Currently, both patients and healthcare professionals are the recipients of only poor incentives to adopt telemedicine. The need to expand citizens’ and organisations’ responsibility (or what was in the workshop termed ‘respons-ability’) with regard to their health status was strongly advocated. Ways and means of developing new incentives in this domain could include particularly the adaptation of taxation systems: adaptation of national taxation, corporate taxation (enabling corporations to exercise corporate responsibility), and individual taxation schemes (thereby encouraging citizens to exercise personal responsibility vis-à-vis their own healthcare). The possible harmonisation of taxation schemes so that tax schemes operate together to support the encouragement and provision of good health systems and good contributions towards good health status on the part of citizens.

Some participants advocated a more consumer-based models of healthcare. In this sense, an
analogy was drawn with the growth that had occurred in the use of information systems and ICT in motor vehicles alongside consumer services and lower warranty claims.

Various European Commission-initiated schemes were described which could have some additional influence on the financing of telemedicine deployment: these included the potential that could be played by the newly-initiated Lead Market Initiative in relation to healthcare (in terms of pre-commercial procurement, and with regard to introducing mandatory requirements for safety and security), although its full range of activities was not explored in detail. An eHealth procurement or procurers’ network (involving both pre-procurement and procurement) was mentioned in this regard, as was the opportunity for exploration of public-private partnerships. The Information and Communications Technologies Policy Support Programme (ICT PSP) and its alternative possibilities for large-scale and smaller-scale pilots, and thematic networks was also raised. So, too, was adequate use of the Structural Funds and Regional Funds. Here, the European Commission was perceived as playing a form of risk-sharing role, in its support for new initiatives alongside regional authorities.

It was suggested that, in relation to the options available in terms of European Commission-initiated schemes and developments, a form of match-making exercise could be undertaken by certain industrial consortia.

4.2.3 Concentrate on industry segments

All four industry segments (teleradiology; ICT for home care and mobile care; ICT for personal care; and medical devices) show considerable potential for expansion of their market, and for the European Commission, the Member States, and the market to concentrate on achieving this potential.

The industrial segments that were explored in the most detail were the medical devices for remote monitoring and teleradiology.

Medical devices for remote monitoring

There was considerable discussion of the role that an industry segment, such as medical devices for remote monitoring, might play. This is particularly so since the evidence that it presents in terms of its benefits vis-à-vis access, quality of care, safety, and sustainability (efficiency and effectiveness) are considerable. However, the available evidence needs to be put together in a more systematic manner. In this sense, it should also be presented in such a way that its impact throughout the different care pathways is particularly evident to the various health authorities. The close relationship between both hardware and software needs to be presented in parallel.

The remote monitoring of active self-management by persons with diabetes was cited as a great success story. More public awareness of its achievements could be created.

The methods for reimbursement of such remote monitoring systems was said to need much more active exploration and promotion.

Attention should also be paid in this regard to understanding the roles of the whole range of stakeholders and the role of the technologies at different stages of the healthcare life-cycle and the healthcare value-chain.

Teleradiology

In teleradiology, the areas that were most strongly emphasised for clear improvement were the professional accreditation of skills, and a demand for the stipulation of the necessary minimum quality attributes of Call Centres and/or Monitoring Centres.

The domains of conformance testing, certification, and minimum criteria for performance

8 Such a network has been set up since the workshop was held, and can be accessed at http://www.epractice.eu/community/ehealth procurers
in relation to safety, reliability, security, and privacy could also be expanded to other fields of telemedicine.

It was considered important for industry to adopt certain standards in terms of the equipment and technologies that it produces, so that the purchasers (at whatever level of purchasing they operate) are guaranteed to be able to buy quality goods and services.

4.2.4 Change the systems for delivering healthcare

Broadly, the different models through which healthcare can be delivered need to be explored actively. Such an exercise would likely result in potential re-engineering of the existing system(s) according to various organisational models, and make new demands on change management in healthcare.

There was certainly some debate about the need to involve the healthcare authorities themselves, and the extent to which this involvement could help to speed up or slow down changes in healthcare provision. A number of participants recommended to deal directly with clinicians. Probably, both approaches – as well as involving the citizens and patients (‘consumers’) – need to be developed at the same time.

So, too, the need to understand that technologies permit work organisation over distances but also in different time zones needs to be understood. The distance-based benefits implicit in telemedicine have been well understood for many years. Indeed, it forms the basis of the fundamental definition of telemedicine, based as it is on the Ancient Greek word tele (distance).

However, both industry and users need to become more aware of the time-based benefits that can be achieved through ‘collapsing time’ and work processes taking place in parallel and in different time zones. The productivity benefits of data automation were well understood by the workshop participants. A brief debate was pursued with regard to the automation existing practices as opposed to using the introduction of technology to transform work practices. Particularly, the workflow aspects of health systems and health organisation need to be explored in a more thorough and creative way.

It is equally important for providers to understand what it is that citizens/patients value in terms of services. Particularly important benefits valued by such clients may be time and convenience.9

4.2.5 Expand the evidence basis that supports telemedicine (‘create awareness’)

By far the most important suggestion that was repeatedly made by this group of industry stakeholders was the issue of creating very large-scale trials and pilots of dramatic size and impact that could follow and test the social and clinical benefits of telemedicine to significant numbers of European citizens; these were termed ‘whole system demonstrators’ by the participants. A single example that was described comprised the potential involvement of: a minimum of three European countries; with some 5-10 high-level, renowned hospitals or other health or care institutions; between 5-10,000 patients/citizens; and for it to take place over a two- to three-year time period. It was even stated that up to 30 of these kinds of trials should be encouraged. The ‘Health Presence’ pilot currently being set up by the infrastructure company, CISCO, was cited as a good example of this kind of endeavour.

If such a concept were to be taken up by the European Commission, it would be especially important to assess how it would fit within the particular research and/or deployment instruments that are currently available in the various co-financing programmes.

The need for telemedicine implementation, and its impact to be explored both at national and at

9 Public services are increasingly basing their understanding of citizens’ needs on a market-based approach (e.g., market surveys). Among the questions that can be added to such surveys are those that relate to potential time gains.
regional level was also strongly advocated.

There was considerable, but unresolved debate about whether the model and the methodology for evidence-based development needs to be along the lines of, for example, clinical trials, health technology assessment, market research analysis, and/or patient involvement.

Here, there should be an exploration of what mechanisms could be used to promote more adequately the otherwise commercially available market surveys developed by such consultancies as Frost and Sullivan. Suggestions were also made for the European Commission to support more market-based investigations.

An appeal was also made for multi-disciplinary research initiatives (whether programmes or projects) that could integrate a concept of examination of the clinical care pathways and various other organisational, social and legal-regulatory elements. It was advocated that, among the participants in such research/studies, there should be social scientists, economists, and cognitive scientists. Other workshop attendees appealed for the involvement in specific projects/studies of industry including the newly-developing wellness industry, universities, regional authorities, health authorities, payers including insurance schemes and companies, and actual users. Certainly, an approach which is based on a wider involvement of stakeholders was considered useful with regard to research, evidence-gathering, and all implementation processes. Fundamentally, the development of mutual trust between doctor (or other healthcare professional) and patient also needs to be investigated, and how this is mediated by particular telemedicine technologies, as how trust in the particular telemedicine application is enabled or encouraged.

Ideally, a series of workshops or, in the worst case, a single workshop, should be organised to focus on what methods, tools and techniques would be the most effective to draw out the most appropriate evidence for generalised deployment, impact assessment, and evidence gathering.

In this respect, conferences may prove to be useful venues for a convergence of disciplinary fields. Industrialists could be encouraged to attend other types of conferences, for example, policy-oriented conferences or medical conferences, just as clinicians should be approached to attend conferences other than medical conferences.

The next step could be to identify a list of concrete events at which such issues can be explored.

Among these, it would seem that the European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry (COCIR), EUCOMED, and Integrating the Healthcare Enterprise could be willing to liaise along such lines by the end of 2008. Also, that the European Committee for Standardization (CEN) and the International Organization for Standardization (ISO) might be included to co-organise an event. Quality assurance or quality assessment as applied to the development of new professions and occupations might also prove to be a suitable topic. It was also implied that perhaps the World of Health IT conference to be held in Copenhagen, Denmark, in November 2008, could include a component that is oriented towards creating new business models in relation to eHealth or telemedicine.

Finally, the foundation of a mechanism/agency, akin to the European Medicines Agency or United States Federal Drugs Agency, but with particular application to telemedicine and/or eHealth, might be worthwhile considering.

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10 Examples of non-governmental organisations or patients’ organisations such as Age Concern and Mencap (both United Kingdom-based organisations) were mentioned. See also the evidence currently being collected by such projects as Health Value Plus, a DG SANCO-supported project, on the extent to which citizens and patients are involved in the development of health-related projects.

11 http://www.worldofhealthit.org/
4.2.6 Aggregate good practices

The issue with regard to what sorts of evidence are currently available that could receive publicity and promotion is one which should be explored carefully. The European Commission is currently building up a database of good practices in a wide variety of eHealth fields, but perhaps more concentration could be placed on specialist fields such as telemedicine. The examples cited throughout Europe by Continua Health Alliance should also be more adequately publicised (e.g., Tunstall). The evidence from the United States (such as from the Veterans’ Administration and Kaiser Permanente) is clear.

Similarly, it is possible to consider exploring some encouragement among Member States of a degree of competition and awareness of how they compare to each other vis-à-vis good (or even best) practice. In this sense, the use of European-wide award schemes could be resurrected. (This formula continues to be used, for example, in the eGovernment field, but was brought to an end in the eHealth field in 2004.) Collections or archives of good practices should be brought together in a systematic way in a single accessible location (e.g., a website). Also, some consideration should be paid to methods of learning (e.g., courses or seminars) to introduce and do good practice, and how to build communities that succeed in implementing good practice.

Equally, the innovation model and the adoption model for telemedicine need to be better understood, for example, in the context of the Lead Market Initiative.

4.2.7 Enable further awareness-raising so as to promote telemedicine deployment

In addition to all the previous suggestions made with regard to building empirical evidence and promoting evidence distribution at more conferences and workshops, the idea was also raised that it could be useful to set up a centre or exhibition space (in Brussels and/or elsewhere) at which it is possible to demonstrate the benefits of telemedicine (presumably because of the benefits that could accrue to demonstrating such systems to European policy-makers).

The development and promotion of a series of videos and/or other promotional materials was also advocated.

4.3 Some cautionary observations

Overall, the workshop was characterised by great enthusiasm and dynamism. A considerable number of creative solutions was suggested, and new ideas put forward. However, there were several areas in which caution was raised.

Among the two principal observations of areas in which a certain conservatism should be shown were as follows. Firstly, there needs to be an awareness of the considerable length of time during which it takes for deployment of any technology to occur. Secondly, a careful approach to the use of particular methodologies was also recommended.

4.3.1 Time to deployment

As has been frequently said of eHealth, the period over which implementation takes place may easily last for more than 15-20 years. As one participant rather jokingly said, “We’ll be at the invention stage for quite some time yet.” Other participants were keen to see the growth model as one of logical incrementalism.

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12 See, for example, http://www.good-ehealth.org/ and also http://www.epractice.eu/
13 See, for example, http://www.good-ehealth.org/
14 See, for example, http://www.good-ehealth.org/
15 See, for example, http://www.epractice.eu/
16 Models of centres along these lines include e.g., AbilityNet in the United Kingdom. Equally, demonstration smart houses already exist on the periphery of Brussels in the Flemish town of Vilvoorde, and at the University of York (http://www.eultec.org.uk/) (United Kingdom).
17 See in particular the results of the eHealth IMPACT project, eHealth is worth it! http://ec.europa.eu/information_society/activities/health/docs/publications/ehealthimpactsept2006.pdf
4.3.2 Methods and methodology

Evidence on positive use of telemedicine was already available in the late 1980s (see, purely as examples, articles during this era by Ilias Iakovidis).

The evidence collected in the various empirical studies should be carefully vetted. Historically, some research studies on impacts have suffered from a placebo effect: simply paying attention to the citizens/patients concerned in the project/pilot improved their conditions rather than the actual care or the actual technologies involved. Also, the extent to which there is a direct correlation between different variables is important: confusion can be rife in this area. Any trials also need to be long-term; it is certainly inadequate to research technology implementation over a period of only a few months.

As mentioned earlier, the various empirical models and methodologies need keen debate and discussion before particular choices are made. This could possibly be done through the organisation of workshops.

POLICY SOLUTIONS AND OPTIONS FOR TELEMEDICINE DEPLOYMENT

Although the workshop had taken as its focus four distinct telemedicine industry segments, the solutions, options, and proposals that were put forward were actually much more generic and were related to the entire field of telemedicine.

Given the managerial and organisational orientation of the workshop participants, it is not surprising that the main issues to which they drew attention were organisational, regulatory, and legal. The topics which were covered in most detail related generally to the necessary process re-engineering and change management issues required in Europe’s healthcare systems and services. However, considerable attention was also drawn to expanding and creating more awareness of the evidence base that supports a potential growth in telemedicine including to a wider range of audiences (e.g., policy-makers, health authorities, clinicians, citizens/patients).

Mechanisms cited and explored included:
- large-scale pilots and trials, and whole system demonstrators
- national and regional levels of implementation
- methodologically-appropriate models for gathering evidence
- multi-disciplinary research/study initiatives
- wider involvement of stakeholders
- a series of conferences and/or workshops
- a mechanism/agency to collate evidence
- exploitation/promotion of particular success stories (e.g., remote monitoring for diabetes).
5. Summary and conclusions

The round-table concentrated on the following four issues, and principally the latter three:

- **Technical issues**, including interoperability and infrastructure;
- **Organisational issues**, including users’ uptake, training, financing, and public procurement;
- **Regulatory issues**, including accreditation and certification; and
- **Legal issues**, including personal data protection, reimbursement, liability, tax and competition.

The focus was in the main on what the European Commission could do.

A range and wealth of solutions to overcoming the current lack of deployment in Europe of telemedicine applications were proposed, including the need to:

- understand the current trends in future health systems
- explore innovatively the financing modes that can support telemedicine
- concentrate on particular industry segments
- change the health delivery mechanism(s)
- expand the evidence base that supports a potential growth in telemedicine
- aggregate good practices
- enable further awareness-raising so as to promote telemedicine deployment.

The highest concentration of suggestions was on the more inductive and didactic solutions (which are in many cases related to the organisational field), that is the various types of pilot and demonstrator initiatives and the type of evidence-gathering that could be facilitated. These offer various possibilities for the European Commission to consider the ways in which it organises its research, its deployment, and its impact assessment/benchmarking activities.

Two general warning signals were raised: firstly, the need for an awareness of the length of times that it can take particular research outcomes to shift to the deployment phase; and, secondly, the need for a careful selection of impact assessment and benchmarking methods and methodologies.
Annex: Agenda

High Level Consultation Workshop with Industry
Innovative ICT tools and Telemedicine services
Wednesday 2nd April 2008
European Parliament, Brussels
room ASP 5F 385

15:00 Welcome
Milan Cabrnoch, Member of European Parliament
Antti Peltomäki, Deputy Director General, DG Information Society and Media, European Commission

15:15 Setting the scene - Why an EU Initiative on Telemedicine?
Chair: Milan Cabrnoch, Member of European Parliament
Speaker: Ilias Iakovidis, Deputy Head, ICT for Health Unit, DG Information Society and Media, European Commission
Questions and Answers on the scope

16:00 Specific Industry segment analysis
Teleradiology - Introductory Speaker: Peter Pattynama, President of the Radiology Section, European Union Medical Specialists
  - definition;
  - how much is carried out, by whom (private/public/both);
  - what are key barriers for wider deployment?

ICT tools and services for Home & mobile care - Introductory Speaker: David Whitlinger
Vice President and Board Chairman, Continua Health Alliance
  - definition;
  - how much is carried out, by who (private/public/both);
  - what are key barriers for wider deployment?

16:45 Coffee break

17:00 Round-table Discussion with all participants
Moderator: Gérard Comyn, Acting Director, ICT addressing Societal Challenges, DG Information Society and Media, European Commission
Introductory remarks by all participants
Discussion (aspects to be addressed include):
  - Technical issues, including interoperability, infrastructure;
  - Organisational issues, including users' uptake, training, financing, public procurement;
  - Regulatory issues, including accreditation, certification;
  - Personal data protection, reimbursement, liability, tax and competition.

18:30 Conclusions
Gérard Comyn, Acting Director, ICT addressing Societal Challenges, DG Information Society and Media, European Commission
Milan Cabrnoch, Member of European Parliament

19:00 Dinner (at the European Parliament)