The satellite as a driver for quality and universal eHealth services

Dr. Claudio Dario

Director General
Local Health Authority of Treviso
Veneto, Italy

President
Arsenàl.IT
Veneto’s Research Center for eHealth Innovation – Veneto, Italy
The "World Health Report 2010" is focused on "Health systems financing - The path to universal coverage"

Universal coverage, a goal for all WHO members, is obstructed by:

- Economic and social load of direct payments and co-payments;
- Inefficient and inequitable use of the scarce resources (the 20-40% of health resources is wasted).

The contents of the World Health Report 2010"
Also the European Commission focused the Community Health Strategy for 2008-13 over 4 principles:

1. Shared health values: empowerment of patient, patient-centered healthcare, reduction of inequality on the level of cares (Eastern Europe)

2. Health is the Greatest Wealth (Virgil): the value of prevention to contain increasing economic and social costs

3. Health in all policies: develop synergies with the other fields of policy, as environment, work, food safety, research and innovation, agricultural policy, etc...

4. Strengthen the EU's voice in global health, sharing EU's best practices and strategies with the other international organizations (WHO)
Starting from the 4 principles three main concrete objectives has been identified by the commission:

1. Fostering good health in an ageing Europe: promote health and prevent disease (fight poor nutrition, promote physical activity, increase alcohol and tobacco taxation, etc…)


3. Supporting dynamic health systems and new technologies: eHealth to provide citizen-centred care, follow the mobility of citizens and care professionals over EU and lower the costs of healthcare. In this field a big objective is to create an European wide eHealth area.
eHealth, connecting healthcare facilities, professionals and citizens, allows to:

• extend the access to health data;
• improve the quality and the continuity of care;
• increase the quality and the reliability of collected data;
• reduce costs (economic and organizational);

**Telemedicine.** The delivery of healthcare services, where distance is a critical factor, by healthcare professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease 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 (WHO 1997).
eHealth and telemedicine are identified as enabler of benefits for the EU society and some concrete actions are suggested by the Digital Agenda:

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Some concrete actions are identified to develop sustainable healthcare and ICT-support for independent and dignified living:

• develop secure online access for Europeans to their medical data (empowerment);
• widespread telecounselling and emergency care;
• develop Ambient Assisted Living (AAL) services for elderly and disabled people to be independent and active (eInclusion): tele-monitoring, fall prevention, support for dementia;
• widely adopt standards, interoperability and common semantics for medical data.

European Commission and its Member countries identified these key areas and allocated funds for their development with several means: 7th framework Workprogramme, Interreg, AAL, etc...
Some technological requirements for the delivery of good eHealth services

Accessibility
Ubiquity
Broadband communications
Flexibility/reliability
Affordable costs of access and maintainance
The use of satellite satisfies to many of these requirements.
What limited the adoption of satellite on eHealth and Telemedicine applications?

- **High costs for access to the technology and to the connectivity (new costs are decreasing)**
- Investments are often made in narrow healthcare applications;
- Even if technology is mature there are few providers of affordable end-to-end services and turnkey solutions: the market is fragmented;
- Telemedicine initiatives are often driven at a local level;
- The benefits are often not passed to potential investors (private companies, etc...);
- Low interoperability (proprietary standards) and few synergies.

*Source: Market and Regulatory Study of Telemedicine Via Satellite, 2006 - ESA*
These are also the area of application of many and many projects funded by ESA in the ARTES Programme:

• Telemedicine, homecare and emergency consultation for: remote or isolated areas (patients, small hospitals, prisons, oil platforms, developing countries, peace and war missions) and means of transport (aircrafts, boats, spacecrafts, etc…)

• Continuing medical education, enhancing the broadcast capability of the satellite: one teacher and many sites served contemporary. This can be applied also to patients at home, with prevention campaigns promoting healthy lifestyle

• Epidemiology, environmental studies for prevention, health early warning, preparedness to epidemics and bioterrorism

• Extensive access to clinical data for patients (EHR in mobility) and healthcare professionals (EHR in mobility, distributed databases for clinical research)
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Official Organ » Deutsche AIDS-Gesellschaft

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Opportunities and Challenges of eHealth and Telemedicine via Satellite

C. D tiers1, A. Dunbar1, F. Feliciani1, M. Garcia-Barbero2, S. Giovannetti1,
G. Gruschew3, A. Giedd4, A. Horsley5, M. Jensen3, L. Kleinheksel6, R. Landi6,
M. M. Lane5, P. Mancini1, M. T. J. Meher1, P. Ortiz-Garcia7, S. Podersey1,
J. M. Pérez-Sastre6, A. Rey1

1Healthcare Unit No. 9, Bologna, Italy,
2WHO Regional Office for Europe, Division of Country Support, Brussels, Spain,
3EUMED, Nanakusa, The Netherlands,
4Charing Cross, University Medicine Berlin, Germany,
5Centre National d’Hédatique, Paris, France,
6Department of Medical Statistics and Epidemiology, March University of Technology, Germany,
7National Center for Telemedicine, Tromsø, Norway,
8L’Assistance Publique Hôpitaux de Paris, France,
9Radiological Department, University of Arizona, Tucson, USA,
10Department of Pathology, Section of Microbiology, University of Verona, Italy,
11European Space Agency, Paris, France,
12International Center of Telemedicine, Regensburg, Germany,
13Bnits Medical Service, Spain,
14Hiroshi University Hospital, Switzerland
L'esempio di NEAR TO NEEDS

• Medical assistance for Italian people living near Timisoara and Bucharest and for Romanian people working in Italian companies
• Project co-funded in 2006 by ESA, ULSS 9 Treviso, other local agencies and banks

Near to Needs project
• **Applications:** Telelaboratory, Teleradiology, Telecounselling, Patient Health Record, eLearning

• **The network:** 1 satellite station in Italy and 5 stations in Romania

Near to needs project
Some key factors for the success of eHealth applications via satellite:

- **appropriate business model** to grant economical sustainability, cost savings, demand aggregation;
- **the satellite** as complementary (integrated) and not substitutive to terrestrial network;
- **applications in response to concrete user needs:**
  - **global systems** for public health (epidemiology and environmental surveillance, eLearning, sustainable development)
  - **local systems** for assisted medical support (remote diagnosis, counselling, monitoring)

Some key factors for the success of eHealth applications via satellite:

- before to start an application, study an appropriate business model to grant economical sustainability, cost savings, demand aggregation
- the satellite has to be considered complementary (integrated) and not substitutive to the terrestrial network
- response to concrete needs (mainly clinical and economic, rather than demographic and political):
  - “global” systems for public health (epidemiology and environmental surveillance)
  - “local” systems for assisted medical support (counselling, ECM)
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<tr>
<th><strong>TEMPUS - Telemedicine services for commercial aviation</strong></th>
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<td>• reduction of costs for emergency landings of long-haul flights</td>
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<td>• better diagnoses</td>
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<td>• quick intervention</td>
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<td>• economic sustainability: large scale adoption by airline</td>
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<th><strong>T4MOD - Telemedicine for the French, German, Italian and Spanish Ministries of Defence</strong></th>
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<td>• healthcare services for peace-keeping forces in remote areas</td>
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<td>• better diagnoses and appropriate care</td>
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<td>• support of specialists</td>
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<th><strong>VECMAP – Disease vector mapping</strong></th>
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<td>• different targets: public health authorities, research institutes, private companies</td>
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<td>• easy-to-scale application</td>
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<td>• sustainability study of the model</td>
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In this workshop we will look in the applications developed in the ARTES Programme for some of these success factors and for how user needs have been met.
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The role of satellite applications in emergency relief operations in Japan.

- Hearth observations: how the landscape is changed after the tsunami
- Nuclear fallout monitoring: how the nuclear fallout cloud is changing and travelling over the Pacific Ocean
- Nuclear central monitoring: satellite photos to detect the damages to the nuclear implants
- Telecommunications: submarine and terrestrial cables damaged, cellular communications out of order, etc... satellite communications essential
ITU Deploys Emergency Telecoms To Japan

March 16, 2011 by Sophie Curtis

The UN agency for ICT is providing emergency telecoms for victims of the Japan earthquake.

The International Telecommunications Union is deploying emergency telecoms in Japan to help people in areas severely affected by the recent earthquake and tsunami.

The ITU, which is the United Nations agency for information and communication technology issues, has dispatched satellite phones made by Thuraya and Iridium – some of which are also equipped with GPS to facilitate search and rescue efforts – as well as Broadband Global Area Network (BGAN) terminals from Inmarsat.

Before and after the tsunami

Mapping Japan's changed landscape from space

16 March 2011

Following the massive earthquake and tsunami that hit Japan on 11 March, satellite imagery has been vital in providing a clear picture of the extent of devastation to aid the relief effort now underway.

In response to this event, which turned parts of the biggest earthquake Japan has suffered in living memory, the International

Article:
Japan Disaster Recovery Efforts Get Help From Satellites

Date: 16 March 2011 Time: 02:19 EDT
Thanks for your attention!