

HEALTHCARE IT MANAGEMENT

ISSN: 1782-8406

THE OFFICIAL JOURNAL OF THE EUROPEAN ASSOCIATION OF HEALTHCARE IT MANAGERS

Healthcare IT in Europe: Efficiency and Cost Control

.....
Return on Investment
.....

SaaS
.....


Privacy versus
Interoperability in EHRs
.....

One Size May Not Fit All
.....

PCC: Nurse Calling Systems
.....

Country Focus:
Eastern Europe
.....





**Can you afford to give us a
lifetime of the very best care?**

By integrating imaging, lab diagnostics and healthcare IT, we can advance the science of medicine and the economics of healthcare.

Imagine a healthcare system that keeps us healthier by detecting disease earlier. Quality of life increases and costs are better controlled. Genomics and the integration of molecular diagnostics, advanced imaging and healthcare IT open up new possibilities for a lifetime of care. Together, we can deliver on the promise of personalized medicine.
www.siemens.com/Integrateddiagnostics +49 69 797 6420

Answers for life.

SIEMENS

Letter from the Executive Director and Editor-in-Chief, HITM



Dear Reader,

It seems that exciting times lie ahead for healthcare IT. As policymakers and health system managers seek to improve business processes and contain costs, there is a growing consensus that more intelligent, innovative and integrated healthcare systems are just around the corner. Our cover story reviews the state of play in healthcare IT in Europe, in light of increased public expectations for more customer-friendly healthcare.

Meanwhile, a feature on healthcare IT in the US, its challenges and promises – as well as the need to look at ‘soft’ issues such as patient empowerment rather than cost and quality alone – are discussed in an exclusive feature by Robert Roswell, a University Professor of Medicine and a former Under Secretary of Health at the Department of Veterans Affairs (VA). The VA is widely credited with developing one of the first successful national electronic health record systems.

In spite of the financial crisis and the risk of recession, healthcare seems likely to be the only major business sector to see an increase in IT spending. According to a survey by Datamonitor, 57% of companies plan to increase spending on healthcare IT in 2009, in contrast to more than 60% (a record) who plan to cut budgets or keep it flat. Evidence of this is also present in an in-house analysis by Healthcare IT Management on the annual US stockmarket performance of five key healthcare IT-related sectors.

In two of the largest, medical instruments and medical appliances, we found the share price fall to be considerably below the Dow Jones Industrial Average. In addition, the spread in percentage declines for the largest firms was tight. This is a good indicator of the health of the sector, in terms of the irreversibility of investment plans by buyers and the relative tightness of vendor choice.

In spite of the positive outlook on healthcare IT, hopes about easy money should be quickly dis-

carded. Healthcare IT managers and CIOs are, in the coming years, likely to face considerable pressures in justifying investments in healthcare IT – before they are made. The issue of return on investment (RoI) – hitherto confined to sectors like manufacturing and retail – has recently begun emerging in the field of healthcare IT, and as discussed in our Management section, is likely to acquire greater prominence in the near future.

We also provide features on the fast-growing trend of Software as a Service (SaaS) and an analysis about the techno-philosophical debate in EHRs – on privacy and security versus the seemingly contrary demand of interoperability. Other features cover IHE (Integrating the Healthcare Enterprise) profiles in the key application of cardiology and the growth in convergence between medical technology and IT. Such emerging, fast-developing topics will be an integral part of coverage by Healthcare IT Management in 2009.

Following central Europe in the previous issue, our Country Focus this time is on eastern Europe. Alongside our customary overview of five countries (Bulgaria, Lithuania, Romania, Serbia and Ukraine), we also provide a close-up portrait of the new EHR system in Serbia and an analysis of healthcare IT in Romania, a country whose rich tradition in the field of computers underpins its status as a hub of Europe’s offshore IT.

This issue marks the close of our third year in print. It also coincides with the first General Assembly of the European Association of Healthcare IT Managers, due to be held in Copenhagen during the World of Health IT ‘08.

Yours truly,

Christian Marolt

Healthcare IT Management is the official voice of the European Association of Healthcare IT Managers

Publisher and Editor-in-Chief

Christian Marolt - c.m@hitm.eu

Managing Editor

Tosh Sheshabalaya - editor@hitm.eu

Editorial Director

Catalina Ciolan - c.c@hitm.eu

Editors

Sherry Scharff
Caroline Hommez
Dervla Sains

Correspondent

T. Jones

Editorial Assistant

Lee Campbell

Guest Authors

T.Baumann, T.Becker, G.Doucet, G.Hiller,
K.Nikolopoulos, R.Roswell, R.Simon, M.Stupu,
M.Weinhara

Communications Director

Marc Rousseau - m.r@hitm.eu

Art Director

Nicolas Bernier - n.b@emcconsulting.eu

Publishing House

EMC Consulting BVBA
28, Rue de la Loi
B-1040 Brussels, Belgium
Tel: +32 2 286 8501
Fax: +32 2 286 8508
Email: office@hitm.eu
Website: www.hitm.eu

Subscription Rates

One year	Europe 80€	Overseas 120€
Two years	Europe 140€	Overseas 180€

Production and Printing

Nyomda
Print run: 12,000 – ISSN = 1782-8406



VERIFIED CIRCULATION
according to the standards of
International Business Press Audits

Healthcare IT Management
is independently audited by
Accountskantoor Closset on behalf
of the European Association
of Healthcare IT Managers

© Healthcare IT Management is published five times a year. Publisher to be notified of cancellations six weeks before the end of the subscription. The reproduction of (parts of) articles without consent of the publisher is prohibited. The publisher does not accept liability for unsolicited materials. The publisher retains the right to republish all contributions and submitted material via the Internet and other media.

Legal Disclaimer

The Publisher and Editors make every effort to see that no inaccurate or misleading data, opinion, or statement appears in this publication. All data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Therefore the Publisher, Editor and their respective employees accept no liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.



Page 20-23

**RETURN ON INVESTMENT:
CHALLENGES IN A NEW FRONTIER**

A decade ago, IT in healthcare was seen as little more than a country-cousin of sectors like banking, retail, transportation or manufacturing. Budgets were small, and IT spending was dictated by politics and policy rather than justification of investments. Today, the concept of return on investment (RoI) has begun making rapid headway in the field of healthcare IT, but healthcare provides a host of unique challenges for such metrics.



Page 32-33

ELECTRONIC HEALTH RECORDS

Both philosophically and technologically, the margins of the debate about electronic health records (EHRs) have been set by the long-running trade-off between openness and interoperability on the one hand, and privacy and security/confidentiality on the other.

Page 34-35

SOFTWARE AS A SERVICE (SAAS)

Organizations usually spend up to four times upfront costs to manage their software after purchase. Some spend over 75 percent of their total IT budget on maintaining and operating existing IT systems and infrastructure. In such an environment, several innovative pricing models are being offered by vendors. One of the most recent is Software-as-a-Service (SaaS).

Page 36-37

**ONE-SIZE-FITS-ALL ?
NOT ALWAYS IN HEALTHCARE IT**

ASSIST, a major association of British healthcare IT professionals, has published the results of a survey on the National Health Service IT modernization programme. Its findings underscore the need for re-evaluation of some assumptions underlying major healthcare IT projects, especially those seeking to make Europe e-Health ready.

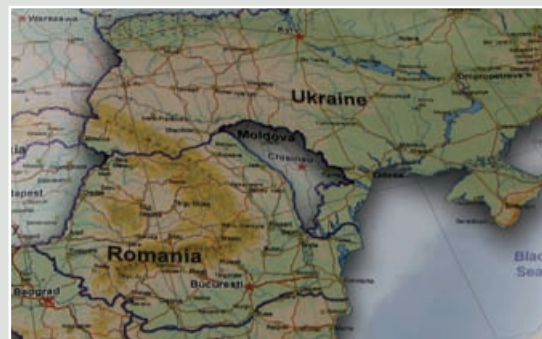
Editorial	1
Letter from the Executive Director, HITM	
HITM News	4-10
EU News	11-13
Cover	
Healthcare IT in Europe: Search for Efficiency and Cost Control	14-15
Product Comparison	
Nurse Calling Systems	16-18
Management	
Healthcare IT and Rol	20-23
Healthcare and the Financial Crisis	23
Features	
The Electronic Health Record in Serbia	24
The Computerization of Healthcare in Romania	25-27
Doing the Right Thing for the Wrong Reasons	28-29
Cardiology and IT in the Context of IHE	30-31
EHR: Privacy vs. Interoperability	32-33
Software as a Service (SaaS): Fad or Trend	34-35
One-Size-Fits-All ?	36-37
No, Not Always, in IT	38-39
IT and Medical Technology: Growing Convergence	38-39
Country Focus	40-46
Eastern Europe	



Page 14-15

**HEALTHCARE IT IN EUROPE:
SEARCH FOR EFFICIENCY AND COST CONTROL**

Healthcare systems in Europe have been evolving in recent years to the impact of an ageing population, fiscal restraints, increased patient mobility and growing expectations for better services and more customer-friendly healthcare. This has been accompanied by the integration of a growing range of healthcare facilities and service provision.



Page 40-46

COUNTRY FOCUS: EASTERN EUROPE

As in central Europe, most countries in eastern Europe have transitioned from an era of 'free' care to one modelled on the mixed, social insurance systems of their Western counterparts. EU membership has clearly helped Bulgaria, Lithuania and Romania, and is likely to stretch the gap vis-à-vis the other two, Serbia and Ukraine. Nevertheless, many challenges remain to be overcome by all countries – not least that of access to funds from a relatively weak economic base.

THE EUROPEAN ASSOCIATION OF HEALTHCARE IT MANAGERS (HITM)

The European Association of Healthcare IT Managers

The European Association of Healthcare IT Managers (HITM) is a non-profit pan-European umbrella association of all relevant national healthcare IT associations in Europe.

Believing in the fundamental importance of unifying healthcare IT professionals at European and global levels, HITM is committed to increasing the professional authority and responsibility of healthcare IT managers and representing their interests to international institutions and associations.

HITM is strategically based in Brussels, for easy access to the European institutions and associations.

HITM's Mission

- To establish common healthcare IT standards, best practices, cross-border collaboration, unifying policies and strategies at EU and international levels
- To increase the visibility, role and importance of IT management in healthcare facilities
- To educate key policy-makers, industry players and the general public about the benefits of healthcare IT
- To promote cross-collaboration in different healthcare sectors
- To promote the efficient, cost effective use of IT

For more on HITM and information about membership, please contact: **Catalina Ciolan, Secretary General, at c.c@hitm.eu**

HITM MEMBERS

AUSTRIA

Ak-MI

BELGIUM

Belgian Medical Informatics Association (MIM)

BOSNIA & HERZEGOVINA

Society for Medical Informatics of Bosnia & Herzegovina

BULGARIA

National Center for Health Informatics

CROATIA

Croatian Society for Medical Informatics

CZECH REPUBLIC

EuroMISE Center

Czech Society for Medical Informatics and Scientific Information

GEORGIA

Georgian Telemedicine Union

FRANCE-SWITZERLAND

Fondation franco-suisse pour la Recherche et la Technologie

GREECE

Greek Health Informatics Association

ITALY

Associazione Italiana Sistemi Informativi in Sanità (A.I.S.I.S.)

LITHUANIA

Telemedicine Center of Kaunas University of Medicine

MOLDOVA

Center for Public Health

NETHERLANDS

NICTIZ

NORWAY

Norwegian Centre for Telemedicine, University/Hospital North Norway

POLAND

Polish Telemedicine Society

PORTUGAL

EHTO-European Health Telematics Observatory

ROMANIA

Romanian Society of Medical Informatics

SERBIA

JISA - Union of ICT Societies of Serbia

SLOVENIA

Institute of Biomedical Informatics, Faculty of Medicine

Slovenian Medical

Informatics Association

TURKEY

Turkish Medical Informatics Association

UKRAINE

The Ukrainian Association for Computer Medicine

Association for Ukrainian Telemedicine and e-Health Development (AfUTEHD)



FDR Velocity U-fp



FDR Velocity Unity



FDR Velocity Unity with table



FCR GO

FDR Velocity Unity is a recent extension of Fujifilm's DR product line. This single-detector, motorised, U-arm system performs a full range of radiographic exams (both stable-based and upright, for any clinical area, from chest to extremities). It is key to providing a flexible, cost-effective alternative to multi-detector systems.

FCR Go is Fujifilm's first portable digital X-Ray system. It integrates a customised version of our FCR Capsula XL-CR reader and a notebook version of the CR console with a portable X-Ray generator system. FCR Go is the first system to provide remote users with the same functionality and sophisticated image processing and optimization features as a portable digital X-Ray, without additional intervention from another workstation.

FUJIFILM MEDICAL IMAGING

Enhancing the Quality of Life of People Worldwide

Complete Solutions for Hospitals and Clinics fulfill this ambitious target. Fujifilm merges maximum image quality with minimum radiation.

Fujifilm and its 263 subsidiaries worldwide strive to meet ever-growing customer needs for high-end imaging solutions. As part of a business re-orientation, Fujifilm Medical Systems has become a showcase of our new global strategy.

Our line-up ranges from X-Ray film and digital radiography to PACS and other hospital IT systems. With over 7000 CR devices in use across Europe's health-care landscape, Fujifilm is determined to strengthen its leadership in the market with newer, top-of-the-line products and high-quality solutions.

A clear, unequivocal diagnosis is integral to effective healthcare. In examinations such as mammography, advanced imaging systems play a crucial role. Fujifilm delivers solutions which allow minute micro-calcifications in the breast to be detected more readily.

We are now focusing greater R&D effort on the new Velocity DR family for digital cassette-less radiography. DR (for direct radiography) represents a generational shift in digital radiography. DR systems are lightning fast – processing up to 240 images an hour – while exposing patients to a very low dose of radiation.

Both this speed and resolution, with an DQE (detected quantum efficiency) of about 40%, rank at the top of the direct radiography league table. Velocity DR Products are offered together with an X-Ray system, allowing for a complete, workflow-optimised system.

AGFA HEALTHCARE

ASSISTANCE PUBLIQUE - HÔPITAUX DE PARIS (AP-HP) TO CHOOSE AGFA HEALTHCARE

Agfa HealthCare has announced the winning of a contract to install its ORBIS (TM) solution at 37 hospitals in France, belonging to the Assistance Publique - Hôpitaux de Paris (AP-HP) group. The project is regarded as one of the most ambitious deployments of a healthcare IT solution in Europe, as AP-HP admits more than one million hospitalized patients/year along with five million outpatients, and has a capacity of 23,000 beds in the Ile de France region and an additional three facilities outside that region. To bring this project to a successful level, Agfa HealthCare will manage a consortium of three other companies: Capgemini, HP and Oracle.

For more information, please visit: www.agfa.com

GE HEALTHCARE

GE HEALTHCARE TO ACQUIRE AGILITY HEALTHCARE SOLUTIONS

Agility's AgileTrac technology provides the most comprehensive enterprise resource management, asset tracking, and clinical workflow solution in the healthcare industry. Agility offers a technology platform that provides enterprise visibility and management of patient flow, assets, beds and rooms, staff, emergency department activities, surgical services processes, and other hospital resources and workflow in an integrated, modular application.

Agility will become part of GE Healthcare's global Diagnostic Imaging Services business and the acquisition will enable GE Healthcare to expand upon its industry-leading offerings to help customers grow through patient-focused service delivery and asset optimisation solutions.

In addition, the combination of GE's patient flow and hospital optimisation capabilities with Agility's cutting-edge visual management technology will allow hospitals to reduce the operational burden on clinicians so they can spend more time at the patient's bedside.

For more information, please visit: www.gehealthcare.com

ISOFT

RADCENTRE LAUNCH IN THE NETHERLANDS

RadCentre radiology information system, a modern, scalable product designed for use in practices and hospitals, is going to be implemented shortly in the Netherlands. RadCentre is already used by healthcare organizations in Germany, Switzerland, Romania, Hungary, Poland and Greece. Installations range from small practices to large university hospitals with hundreds of workstations at multiple locations.

RadCentre includes a web-based extension module that enables fast online communication with referring physicians, whether within the hospital or in primary care. The software also offers highly specialist modules for nuclear medicine and radiotherapy.

According to iSoft representatives, RadCentre is embedded in many leading Picture Archiving and Communications Systems (PACS) and can integrate with DICOM-based PACS to control the entire workflow of the radiology department or practice.

For more information, please visit: www.isoftware.com

SECTRA

SECTRA TO PROVIDE NORTHERN IRELAND WITH WIDE RADIOLOGY IT SYSTEM

Northern Ireland will implement an integrated solution for managing radiology information and images (RIS/PACS) provided by the Swedish IT and medical technology company Sectra through a ten-year agreement.

The solution will be used throughout the entire public healthcare system in Northern Ireland. The contract is valued at GBP 30 million and represents Sectra's largest order to date.

For more information, please visit: www.sectra.com

SIEMENS

ADVIA CENTRAL LINK NETWORKING SOLUTION

Recently launched by Siemens Healthcare Diagnostics, Version 12 of the ADVIA Central Link Networking Solution provides a consolidated environment for the management of information, laboratory results, and workflow – both for automated and non-automated customers. It facilitates communication between the laboratory information system (LIS), automation systems, connected instruments, and multiple clients in the central laboratory or decentralized locations.

Furthermore, Version 12 of the ADVIA Central Link Networking Solution expands system capacity to enable the handling of up to 40 million active patient results with higher database responsiveness. This is of particular interest for large volume laboratories.

Some of the Key benefits of version 12 of the ADVIA Central Link Networking Solution include:

- consolidated information and data management;
- improved workflow with laboratory-wide consolidated data management;
- optimal results management with auto-verification and enhanced QC applications;

For more information, please visit: www.medical.siemens.com

BEST IN CLASS

In matters of
appointment scheduling,
only one name stands out.

UltraGenda®

UltraGenda: accelerating healthcare enterprise
ultragenda.com

BULGARIA

Health eCard initiative Launch in Bulgaria

The first electronic prescription in Bulgaria was issued and presented at an event presided over by the Bulgarian Minister of Health, Prof. Radoslav Gajdarski, and the Minister of Public Administration and Administrative Reform, Dr. Nikolay Vasilev. The online transaction officially launched the pilot system for the Bulgarian electronic health card (eCard).

The eCard initiative currently includes seven physicians, four pharmacies and 1,000 patients who are testing the eCard's secure identification and authentication procedures, as well as the issuing and dispensing of electronic prescriptions. The eCard system introduces a secure communications infrastructure that can later be upgraded to access and exchange medical information using personal health records.

For more information, please visit: www.mh.government.bg

ITALY

Italian GPs to Receive x-rays Online

Italy's San Salvatore Hospital in the Abruzzo Region has announced the development and adoption of a new radiology information system module from Carestream Health.

The Italian-language module allows GPs to directly book digital x-ray examinations for their patients and receive feedback about the examination, together with the accompanying report and the images back on their PC. As well as providing faster tests and results for the patients, it cuts the number of trips they must make to the hospital.

The first project of its kind in Italy, a pilot study is currently underway involving 60 GPs with plans to have the system fully operational with 90 doctors by the middle of 2009.

For more information, please visit: www.sanitab.regione.abruzzo.it

NORWAY

Telemedicine Laboratory at Gigantesque Dimensions

Researchers, stakeholders and health authorities are building one of the biggest test beds for new telemedicine services. The Norwegian Centre for Telemedicine (NST) is the lead partner in this massive project, and research manager at NST, Gunn-Hilde Rotvold, presented her vision: "Troms County will be a laboratory for developing and piloting future ICT solutions for the health services"

Using the fast and secure lines of the Norwegian Health Net, services such as electronic laboratory results, teledialysis and dermatological counselling through the Internet can be extended to serve the citizens of the whole region.

For more information, please visit: www.telemed.no

SWITZERLAND

Telemedmeeting 2008

The Fondation franco-suisse pour la Recherche et la Technologie is organizing the 2nd edition of the TelemedMeeting 2008, to take place on the 14th of November in Genève-Archamps.

Organized under the form of workshops, Telemed-Meeting 2008 aims to gather players from different e-Health systems to exchange ideas and best-practices in the field. In addition, the event points at the needs and expectations of each individual player as well as at the utility and efficiency of the NTIC in the current health systems.

These workshops will follow the following axes:

- expectations and needs of the users (health-care professionals),
- expectations and needs of the industry and researchers,
- expectations and needs of patients,
- expectations and needs of public institutions.

Each workshop will open with a short presentation by each of the speakers and will be followed with discussions/open debates.

For more information, please visit: www.ffsrt.ch

UK

Scottish Health System to Receive 1m £ to Secure USB ports.

NHS boards across Scotland are to share GBP 1 million to help them improve their IT security, beginning with securing USB ports. The funding, from the Scottish Government's e-Health budget, will be used to help boards comply with new government standards. The new rules on encrypting NHS data were introduced after the discovery of paper patient records at a disused hospital.

The 14 NHS boards across Scotland will receive a share of the money, to help them implement the software needed to lock-down computer USB ports.

As a result, the Scottish government commissioned an independent report, which has led to the issuing of new security regulations. These state all mobile devices - such as laptops and memory sticks - that are used to store patient-identifiable data must be encrypted to a new common standard.

For more information, please visit: www.scotland.gov.uk



18 NOVEMBER 2008, BRUSSELS, (DIAMANT CONFERENCE & BUSINESS CENTRE), BELGIUM

E-HEALTH CONGRESS - BE READY TO ENGAGE IN E-HEALTH

The object of the e-Health Congress is to stimulate innovation and cooperation among ICT-related actors and experts from the Belgian healthcare sector, in order to develop and supply products, service offerings and solutions to the healthcare sector in Belgium.

Organized as a service to the community of people and institutions involved in increasing the effectiveness of ICT and related technologies in healthcare, the purpose of the event is to provide a "meeting place" and hence to involve players from all segments of the healthcare industry. In terms of target, the e-Health Congress is aimed at buyers and users of healthcare information systems and technology, IT directors and administrators, as well as policy makers and government officials.

The key objectives of the Congress are:

- To bring ICT managers, technical directors and stakeholders from the healthcare sector up to date on the trends and future of ICT in the healthcare environment.
- To introduce topics targeted at experienced as well as less-experienced people who want to keep pace with the major trends in ICT and the various possibilities offered by ICT.

- To stimulate innovation and co-operation among ICT-related actors and experts from the Belgian healthcare sector, in order to develop and supply products, service offerings and solutions to the healthcare sector in Belgium.

For this 5th edition, three main topics have been selected:

- E-Health – Innovation, roadmap for hospitals and care providers
- Financing and investing for e-Health deployment
- End-to-end care provision – what does "e" mean for the patient?

The European Association of Healthcare IT Managers (HITM) will be present in the Expo Area to meet with participants from the Belgian e-Health sector.

E-Health congress 2008:

a combination of presentations - demos - networking.

For more information, please visit:

www.e-healthcongress.be

DIGITAL DICTATION – FAST, SECURE AND USER FRIENDLY

MedSpeech is a unique software solution for Digital Dictation and Speech Recognition. MedSpeech advantages are many: simplicity, speed and excellent security in combination with support for large volumes of dictations and many simultaneous users.

With more than 20 000 active users, MedSpeech has quickly become the most common system for digital dictation within the Swedish healthcare system.

The software is used in over 100 hospitals and primary care centres in both Sweden and the United Kingdom.

MedSpeech





23-26 OCTOBER 2008, WARSAW, POLAND

A@HTI

The 1st Advances in eHealth and Telemedicine International Conference took place in Warsaw, Poland, during the autumn days of 2008. The conference was designed by and for an audience of international healthcare and ICT professionals that included: clinicians and health professionals, health information technology users and buyers, directors, managers and administrators, health informatics professionals as well as academics, relevant regional and national public authorities and policymakers, regional and national standardization authorities and vendors.

The key topics covered at A@HTI 2008 focused on the experiences and new ideas of services designed for benefits of the patients such as:

- Telecare of chronic diseases (diabetes, musculoskeletal, arthritis, COPD, thromboembolic problems, etc...)

- Market issues, legal issues, reimbursement and business models, user acceptance, user friendliness
- Mobile Telemedicine
- Teleducation in Medicine
- TeleCardiology and TeleRadiology and technologies supporting diagnosis
- Telemedicine Practical applications in medical specialties
- Evidence Based Telemedicine and eHealth

The conference on Advances in eHealth and Telemedicine represented a good opportunity for participants to share experiences and views on how to concentrate the efforts to enhance telemedicine and e-Health usability by users, politicians, administrators, experts, developers and providers.

For more information, please visit: www.aehti.eu



13-15 OCTOBER 2008, SAINT-MALO, FRANCE

2008 NEM SUMMIT - TOWARDS FUTURE MEDIA INTERNET

Organized by the NEM (Networked and Electronic Media) European Technology Platform under the aegis of the European Commission's DG Information Society and Media with the support of the French Ministry of Industry, the Région Bretagne, the Media & Networks cluster and the St Malo Agglomeration, the first edition of the NEM Summit "Towards Future Media Internet" represented a major conference and exhibition devoted to the field of NEM and ICT at large.

In its first year, the Summit featured over 50 exhibitors throughout Europe, including 18 European projects, 65 speakers and chairmen, and gathered over 400 delegates willing to benefit from a unique opportunity to network and share information and viewpoints on R&D status and perspectives in this area, identify future trends, discuss and identify opportunities for research collaboration (including under the ICT Theme of the FP7). The conference namely addressed topics related to:

- Electronic Media Content
- Distributed Media Applications
- New Media Delivery Networks and Network Services
- User Devices and Terminals
- NEM Enabling Technologies

The conference started with an "opening session" chaired by Jean-Dominique Meunier (Executive Director of NEM), and a

video message from Viviane Reding (Commissioner for Information Society and Media, European Commission) rounded up the opening session.

Throughout the 3-day Summit, and in addition to the parallel technical sessions, the conference featured 4 keynote speeches:

- Joao Da Silva (Director of Directorate D "Converged Networks & Services" of the EC's DG Information Society and Media), who shared the European Commission's view on Media and the Internet at the Crossroads
- Matteo Maggiore (Controller EU and International Policy, BBC), who presented his view related to Content Providers and the Networks
- Kazumasa Enami (Director General of NICT), who introduced his paper entitled Research Activities on Ultra-Realistic Communications in Japan
- Luis Rodriguez-Rosello (Head of Unit Networked Audiovisual Systems of the EC's DG Information Society and Media), who gave an insight to the audience about the upcoming FP7 Calls in the NEM area.

For more information, please visit : www.nem-summit.eu

EUROPE LAUNCHES ITS HEALTH DATA EXCHANGE PILOT - EPSOS

epSOS (Smart Open Services for European Patients), previously known as S.O.S. – “Smart Open Services - open eHealth initiative for a European large scale pilot of patient summary and electronic prescription” - is a Europe-wide project organized by 27 beneficiaries from twelve EU-Member States that includes ministries of health, national competence centres and industry. The key goal of epSOS, developed under the Competitiveness and Innovation Framework Programme (see box on page 12) is to build a practical e-Health framework and ICT infrastructure that will permit secure access to patient health information, especially on a basic patient summary and ePrescription, between European healthcare systems. From this perspective, epSOS's parallels the nationwide health information network (NHIN), that is already underway in the US.

As is well known to our readers, the EU Member States still have their own systems of storing healthcare information; yet these systems often cannot communicate or exchange information between each other. According to the epSOS team, this situation should come to an end. The project is set to run for three years and in the end, anyone who falls ill in one coun-

try should have access to his or her health information in other European countries.

In support of this idea, Fabio Colasanti, European Commission Director General in charge of Information Society and Media confirmed that the challenge of increasing mobility of European citizens in the context of healthcare has already been addressed by the European Commission. He states that “together with the launch of its proposal for a ‘directive on the application of patients’ rights in cross-border healthcare, the issue of its July recommendation on the cross-border interoperability of electronic health record systems and the start of the epSOS pilot, the European Commission is laying the groundwork for improved healthcare options for travelling EU citizens.”

Therefore, the key issue addressed by the epSOS project is that of interoperability. Seeing that some countries still struggle with interoperability within their own national boundaries, the large-scale pilot is trying to identify, and later to test “the relevant tools to make things happen.”

AN IMAGE SAYS MORE THAN A THOUSAND WORDS

Professional Image Management for Healthcare where the demands to quickly manage, analyse and store clinical images are high. Easy to use, fast and secure with seamless integration into your patient record system. Excellent functionality within the field of pathology, dermatology, endoscopy, ophthalmology and plastic surgery.

Picsara is the most versatile and competent image management software in the market. Using Picsara, it is easy to capture images from all kinds of image sources.

The images can then be manipulated and a number of different measurements performed. Large quantities of images and video clips can easily be organised, stored and shared with other users through a central database.




Use cases

Within this context, two key cases for cross-border communication have been identified. They include patient summary and ePrescription.

➤ **Patient Summary:** Analyzing two situations (on the one hand, the case of an occasional visitor in a foreign EU country, and on the other, a regular patient using medical services of a country other than that of his/her origin), the benefits of epSOS can be easily identified. In the first case, the occasional visitor is a person on holiday or attending a business meeting, for example. The key characteristic is that this type of visit is irregular, infrequent, and may not be repeated. Under the circumstances of an incidental encounter with the healthcare professional, one of the major problems arising is the lack of a previous medical record of the person seeking care. A routine case, however, can be best exemplified by someone who lives in one country but works in another. The distinguishing characteristic is that this type of visit is regular, frequent, and the person seeking care may be accustomed to using services in the country where he/she works as a matter of personal convenience. This is a type of situation where the healthcare professional may have some information available from previous encounters. However, in both cases, epSOS aims to provide European citizens with the possibility to travel safely all around Europe and have optimum care in case of emergencies.

➤ **EPrescription:** Within the cross-border prescription area there are two basic use cases. The first one concerns patients who need medicine that are already prescribed at home when they are abroad. In this case, the pharmacist should be able to electronically access the prescription from the same e-Health interface used for prescriptions ordered in the local country. When medicine is provided to the patient, the system should notify the home

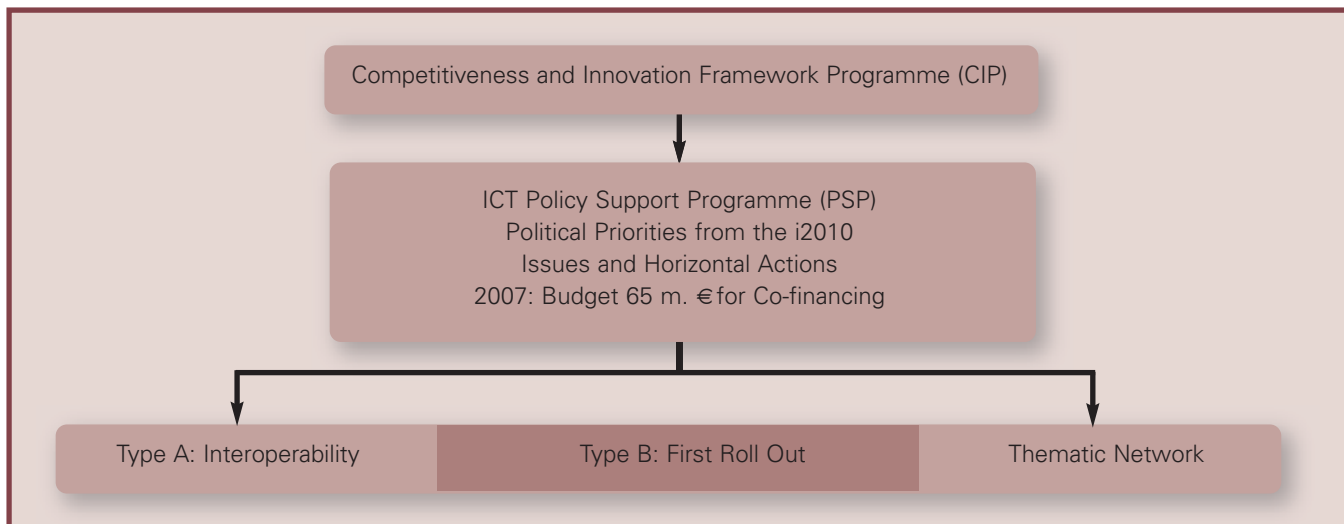
country node of the foreign patient about the dispensed drugs. The second use case is aimed at the medical professional who decides to prescribe medicine to a visiting patient from another country. In order to help the medical professional make the best decision on the pharmaceutical strategy to be used, the patient's medical and pharmaceutical history from his/her home country will be available through the patient summary. When the electronic prescription is finalised, a copy of the prescription should also be sent to the patient's national node for inclusion in the national medication summary.

Based on these two key cases for cross-border communication, the methodology will strive to build a common architecture and core services for the identification of users and institutions, security and confidentiality aspects, and aim to enhance various semantic aspects of the systems. These technical activities will be prefaced by an in depth analysis of the need for the creation of an appropriate legal and regulatory framework to enable field-testing.

Conclusion

epSOS is the first European e-Health project clustering such a large number and variety of countries in practical cooperation. The countries involved in the epSOS project are Austria, the Czech Republic, Denmark, France, Germany, Greece, Italy, the Netherlands, Slovakia, Spain, Sweden and the UK. Connecting what already exists, this pilot project represents a great incentive for the Member States, as they have to turn their heads towards their electronic health records systems and see what can be shared. In addition, the Swedish health ministry has played a fundamental role in setting up the epSOS pilot. Its goal, according to Daniel Forslund, head of the section on e-Health in Sweden's Ministry of Health and Social Affairs, is "to improve patient safety. Citizens should be able to trust any healthcare system in any country they visit or work in."

For more information, please visit: www.epsos.eu





Where's Parker's lab report?



Where's Parker's X ray?



Where's Parker, anyway?



CITY HOSPITAL

Our health care IT solutions deliver information when and where it's needed most. For higher quality patient care at reduced costs.

Siemens solutions in health care IT are helping to connect clinical and administrative information throughout the health care enterprise, giving clinicians, patients and payers the information they need, when they need it, where they need it. This enables informed decisions, and helps deliver more efficient clinical and administrative workflows. Ultimately, innovative health care IT keeps a hospital's workflow flowing.

www.siemens.com/answersforlife +49 69 797 6420

Answers for life.

SIEMENS



HEALTHCARE IT IN EUROPE

The Search for Efficiency and Cost Control

AUTHOR

Konstantinos Nikolopoulos
is Programme Leader for Healthcare IT & Life Sciences IT at consultants Frost & Sullivan.

Healthcare systems globally, and in the European Union in particular, have been evolving and adapting in the last couple of years to the impact of an ageing population and to epidemiological changes in the context of fiscal restraints. There is an increasing trend towards integrated care with the linking up of the range of healthcare facilities, including primary care and diagnostic centres, acute care hospitals and clinics. The situation is further enhanced by increased patient mobility, especially within Europe, and an increased expectation from the general public to have better services and a more customer-friendly healthcare.

Higher efficiency and effectiveness

In the light of the above factors, healthcare organizations are constantly trying to ensure higher degrees of efficiency and effectiveness in the provision of their services. An overriding priority in many EU countries remains the full implementation of Healthcare Information Systems, especially in the light of the new European environment for e-Health and the increased cooperation between EU Member States on this matter. This has created a clear interest to accelerate the transformation of clinical care so that clinicians will routinely use appropriate information systems technologies when diagnosing problems and subsequently planning and administering care to a patient.

A higher profile on the political radar

Across Europe, stakeholders and decision-makers have now come to realize the importance of the clinical, organizational, and financial benefits directly resulting from the implementation of healthcare information technologies. Although, dis-

parate healthcare systems, payer mechanisms, languages and clinical/treatment protocols have retarded a more uniform systems adoption, healthcare IT is increasingly being placed high on the political agenda of most European governments.

Investment in Information Systems

The average IT investment of a healthcare organization in Europe lies in the range of 2-3% of its annual budget which is quite low compared with around 10-15% in the Banking/Insurance or Telecommunication industries. Fortunately stakeholders are now aware of this crucial gap and, according to the European Commission, we should see this going up to 5% of health budgets in the next few years.

According to Frost & Sullivan research, the European Healthcare IT market has crossed the \$5 billion mark in 2007, and is growing at more than 10 per cent year-on-year – one of the fastest among all industries. Major initiatives like government sponsored modernization plans and mandates to adopt and use IT systems, even though they might face issues around funding, changing political agendas, competing interests of involved parties, public acceptance, etc. have had a positive effect on the growth of the market.



Exciting Times for Healthcare IT

Overall, we are looking at exciting times for healthcare IT, which is set to revolutionise healthcare delivery and to significantly impact healthcare systems and processes. As healthcare systems worldwide try to balance resources and improve business processes and workflows, there is a growing consensus that a more intelligent, innovative healthcare system is within reach.

The EU has also emphasised the importance of e-Health as a key focal point for the future of care delivery, making it an integral part of the i2010 initiative. The broad scope of this initiative covers information networks, electronic health records (EHR), telemedicine, personal and portable communication systems, and health portals.

Main Project Types in Europe

There are four main project types being implemented in Europe:

- **Infrastructure projects:** These projects aim to connect primary care, secondary care, pharmacies, and homecare to exchange administrative, procurement, prescription, medical and other information. Related to this infrastructure are also portal projects, which allow online access to medical, administrative or epidemiological information.
- **Electronic Card projects:** Most issued cards are currently used for administrative and insurance status validation purposes only. In the next stage they can be used to transfer prescriptions, store emergency data (allergies, blood group, etc.) and pointers to detailed clinical data. E-Card projects require a relatively expensive and complex infrastructure with card readers, millions of cards, card issue logistics and card access management regulations.
- **EHR projects:** Major components of an integrated e-Health model are local, regional or national EHRs. This term is used in a broad context beginning with high-level summaries (e.g. cancer registries) up to personal, life-long document-based or – even better – structured health records containing all clinical information for each citizen. Partial implementations of EHRs can also be used to support Medication Management or Chronic Disease Management. There are also a wide range of storage philosophies (completely central to completely decentralized) and approaches to access management (access by all necessary persons concerned; only by those who need access; only those who have been directly authorized by the patient).
- **Telehealth/Telecare projects:** These include implementations in areas such as vital signs monitoring, mobile disease monitoring, remote diagnosis and treatment or home care support tools. A broad usage of these technologies can support significant cost savings and quality improvements and a lot of focus is going into this area at present.

Almost all European countries have documented plans to implement key healthcare IT solutions. However, the United Kingdom, Germany and the Scandinavian countries seem to be ahead of the curve and leading the way with their implementation efforts.

The United Kingdom

In the United Kingdom, healthcare reform is high on the policy agenda. e-Health activities are recognized as a key component,



Transforming Clinical Care

An overriding priority in many EU countries remains the full implementation of Healthcare Information Systems, especially in the light of the new e-Health environment. This has created a clear interest to accelerate the transformation of clinical care so that clinicians will routinely use appropriate information systems technologies when diagnosing problems and subsequently planning and administering care to a patient.

and the NHS is one of the most computerized healthcare systems in the world (particularly strong in clinical computing). The main focus is on the “connecting for health” (CfH) plan – a programme of investment and reform, aimed at improving the use of information technology in the NHS.

However, the goal to provide an integrated IT infrastructure and systems for all NHS organizations in England by 2010 continues to present significant challenges. It is a large, complex programme within the NHS, one of the world’s largest organizations, itself undergoing radical change. The aim is to deliver better healthcare for people, and although IT is used in every organization, the way in which it is used varies from the minimal to the highly capable and innovative.

While some national initiatives, such as digital imaging, are progressing steadily towards widespread adoption, others (e.g., national and regional care record management) are only just emerging and are not yet embedded into routine practice. In the primary care sector, provider/payer integration is well established and the sector continues to be a leader in the adoption of EHR as the result of many years of policy requirements and financial incentives - mainly from the NHS.

Germany

The overall health IT project in Germany is known as the “electronic health card” or “elektronische Gesundheitskarte”. This however generally refers to all applications in e-Health. The card is the only thing visible to the patient and has received the most public attention, but other important IT applications include insurance coverage, e-prescriptions, emergency data sets and electronic referral letters.

The personal health card will serve to identify, authenticate and possibly authorize access to the electronic patient folder holding information on longitudinal, person-related medical history and designed to be stored in one of (*continued on page 19*)

Product Comparison for Nurse Call Systems

Identifies the most important specifications to consider when comparing models



ECRI Institute Europe Tel: +44 (0)1707 871511
Weltech Centre Ridgeway Fax: +44 (0)1707 393138
Welwyn Garden City
Herts AL7 2AA info@ecri.org.uk
United Kingdom www.ecri.org.uk

ECRI Institute, a non-profit organisation, dedicates itself to bringing the discipline of applied scientific research in healthcare to uncover the best approaches to improving patient care. As pioneers in this science for nearly 40 years, ECRI Institute marries experience and independence with the objectivity of evidence-based research.

ECRI's focus is medical device technology, healthcare risk and quality management, and health technology assessment. It provides information services and technical assistance to more than 5,000 hospitals, healthcare organisations, ministries of health, government and planning agencies, voluntary sector organisations and accrediting agencies worldwide. Its databases (over 30), publications, information services and technical assistance services set the standard for the healthcare community.

More than 5,000 healthcare organisations worldwide rely on ECRI Institute's expertise in patient safety improvement, risk and quality management, healthcare processes, devices, procedures and drug technology. ECRI Institute is one of only a handful of organisations designated as both a Collaborating Centre of the World Health Organisation and an evidence-based practice centre by the US Agency for healthcare research and quality.

For more information, visit
www.ecri.org

MODEL	Basic Nurse Call Systems	Clino com 21
WHERE MARKETED		Worldwide
CE MARK (MDD)		Yes
MEETS ANSI/UL 1069		Not specified
CONFIGURATION	Desk or wall	PC
Capacity, beds	Should fit facility needs	80 zones, 74 rooms/zone, 4 beds/room
Enhancements available		Not specified
NURSE CALL STATION DISPLAY		
Type	Flashing lights	Incandescent lamps, LED, LCD, monitor, touchscreen
Number of calls		All rooms and beds, alternating
Patient/call information		Room terminals display room and bed numbers
VOICE COMMUNICATION		
Handset	Optional	Yes; 1 handset for phone services and nurse call
Speaker/microphone	Optional	Yes
Hold/recall button	Not required	Yes
Call reminder	Preferred	Yes
Priority sequencing	Optional	Yes, emergency call and patient priority program
Priority levels	2	11
Distinct audible tones	2	4, pulsating at different frequencies
Patient-disconnect signal	Preferred	Yes
Staff register	Not required	Yes
Staff follower	Not required	Yes
Staff locator	Optional	Yes
MANAGEMENT REPORTS	Optional	Yes
Events stored		Not specified
Self-diagnostics	Not required	Yes
PATIENT BED STATION		
Speaker/microphone	Optional	Yes
Controls	Call, cancel	Not specified
Pendant for O2 use	Optional	Not specified
Voltage		24 VDC
INTERFACES		
STAFF COMMUNICATION		
Intercom		Not specified
Pagers		Yes
DATA MANAGEMENT		
HIS		Yes
HL7		Yes
Printer		Yes
Other		DECT, W-LAN, radio/TV tone transmission and channel control, PABX, fire detection
EMERGENCY INDICATOR	Optional	Fast-pulse tone, flashing lamp, code-number display
CORRIDOR LIGHTS, Colors	2	4
LINE POWER, VAC		Yes
UPS	Optional	Yes
PURCHASE INFORMATION		
List price range per bed, basic configuration		Not specified
List price range per bed, enhanced configuration		Not specified
Support		Not specified
Warranty		2 years
Delivery time, ARO		6-8 weeks
Year first sold		Not specified
Number installed		Not specified
Fiscal year		January to December
OTHER SPECIFICATIONS		Multimedia integrating system; bedside Internet; individual/room TV; accounting system for patient services; PC; master station; zone linking; call transfer; plugged components; automatic-release plug system; room and pager number allocation; PC network possible; ground plan of station is monitored; centralized and decentralized system. Meets requirements of DIN VDE 0834.
LAST UPDATED		Aug-07
Supplier Footnotes	<1>These recommendations are the opinions of ECRI Institute's technology experts. ECRI Institute assumes no liability for decisions made based on this data.	

ACKERMANN

JERON ELECTRONIC SYSTEMS

WANDSWORTH

Clino phon 99	Provider 680 Touchscreen Master	QD300 : Digital Call System : SafeCall System
Worldwide	Worldwide	Far East, Germany, Middle East, UK
Yes	No	Yes
Not specified	Yes	No
PC	Desk	Not specified
64 zones, maximum 127 rooms/zone	4,096	Unlimited
Not specified	Optional print screen feature	Not specified
Lamps, LED, LCD, monitor	Color LCD touchscreen	LCD
All rooms and beds, alternating	All	Depends on configuration
Room terminals display room and bed numbers	Room/bed numbers, physician name, time, priority level	Not specified
Yes	Voice activated	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes, emergency call and patient priority program	Manual override	Yes
11	31, programmable	Patient call, bathroom, emergency, cardiac
6, pulsating at different frequencies	8, pulsating at different frequencies	5
Yes	Yes	Yes
Yes	Yes	No
Yes	Manual/automatic	Yes
Yes	Yes	Manual
Yes	Yes	Yes
Not specified	Depends on PC	Not specified
Yes	Yes	Yes
Yes	Yes	Yes
Not specified	Call, cancel, entertainment, lights, staff emergency, code	Call, reset, emergency, red light, radio/TV sound
24 VDC	Yes	No
	24 VDC	24 VDC
Not specified	Yes	Not specified
Yes	Yes	Yes
Yes	Yes	Not specified
Yes	Yes	Not specified
DECT, W-LAN, VoIP, radio/TV tone transmission, fire detection, door station	Radio pocket page, phone, wireless phone, IR locator, ADT, room-to-room communication, bedrail	Bed alert, lavatory, intruder alert
Fast-pulse tone, flashing lamp, code-number display	English words, pulse tone, flashing LED	Fast-pulse tone, flashing lamp
4	8, programmable LED	5
Yes	105-130	240
Yes	Battery backup	No
Not specified	\$701	Not specified
Not specified	Not specified	Not specified
Not specified	Factory training available	Not specified
2 years	5 years	1 year
6-8 weeks	30 days	30 days
Not specified	2005	1995
Not specified	Not specified	Not specified
January to December	January to December	April to March
Individual/room TV; PC; master station; zone linking; call transfer; plugged components; automatic-release plug system; room and pager number allocation; PC network possible; ground plan of station is monitored; centralized and decentralized systems. Meets requirements of DIN VDE 0834.	15" color LCD touchscreen display with IP connectivity; graphic map of all rooms on a ward; networkable; multiplexed (Cat5) wiring; radio pocket page with programmable call messages; flexible architectural addresses; digital volume buttons; flexible alert tones; code-only operation; night transfer; swing rooms; bulb supervision; code supervision; nurse/patient activity archiving and printout; Personal Mobile Master; fully programmable Prism Dome lights.	None specified.
Aug-07	Aug-07	May-06



Product Comparison Chart



WEST-CALL

MODEL	AXIO i-Tec	Focus Care
WHERE MARKETED	Europe	Worldwide
CE MARK (MDD)	Yes	Not specified
MEETS ANSI/UL 1069	Not specified	Yes
CONFIGURATION	Desk, PC	Desk, wall
Capacity, beds	16 x 400 rooms	Unlimited
Enhancements available	Not specified	Unlimited call points, up to 25 call types, wireless phone interfacing, Vocera badges, paging interfacing
NURSE CALL STATION		
DISPLAY		
Type	Backlit LCD, 4 x 20 alphanumeric characters, PC TFT touchscreen	15"/17" LCD touchscreen with integrated handset
Number of calls	1,600 rooms; 6,400 beds	Complete floor with map
Patient/call information	Not specified	Patient name, age, DOB, admit date, account number, language, gender, smoker, religion, status, acuity, attributes, activity, diagnosis, doctor, staff assigned, memos
VOICE COMMUNICATION		
Handset	Optional	Yes, duplex audio
Speaker/microphone	Optional	Yes, duplex audio
Hold/recall button	Yes	Yes
Call reminder	Yes	Yes
Priority sequencing	Yes	Yes
Priority levels	Normal, bathroom, assistance, doctor, diagnostic, emergency, code blue, technical	Unlimited
Distinct audible tones	4, pulsating at different frequencies, unlimited number of .wav files	Unlimited
Patient-disconnect signal	Yes	Yes
Staff register	Yes	Yes
Staff follower	Yes	Yes
Staff locator	Yes	Yes
MANAGEMENT REPORTS	Yes	Yes
Events stored	Staff, number of calls, staff name, level, pager, assignments, badges, shifts, teams, response times, location reports	Patient name, admit date, gender, bed, age, status, staff, acuity, number of calls; staff name, supervisor, level, pager, assignments, badges, shifts, teams, response times, location reports
Self-diagnostics	Yes	Yes
PATIENT BED STATION		
Speaker/microphone	Optional	Yes, duplex audio
Controls	Call, assistance, doctor, monitoring, music control, lighting control	Call, cancel, bath emergency, staff emergency, code blue, auxiliary jack; compatible with digital or analog television
Pendant for O2 use	Optional	Yes
Voltage	24 VDC	24 VDC
INTERFACES		
STAFF COMMUNICATION		
Intercom	Optional	No
Pagers	Optional	Yes
DATA MANAGEMENT		
HIS	Optional	Yes
HL7	Optional	Yes
Printer	Optional	Yes
Other	DECT systems, PABX equipment, fire detection, technical alarms	Radio paging, wireless telephones, Vocera, ADT, infant abduction, telemetry, alarms, IV, CPOE, beds, security systems
EMERGENCY INDICATOR	Fast-pulse tone, flashing lamp	Unlimited fast-pulse tones, flashing lamp, user-definable, color coded, emergency calls displayed onscreen, emergency type displayed
CORRIDOR LIGHTS, Colors	3 or 4	Up to 6 with various scroll and flashing rates, optional LED dome lights
LINE POWER, VAC	115/230	110
UPS	Optional	Yes
PURCHASE INFORMATION		
List price range per bed, basic configuration	Not specified	\$1,800
List price range per bed, enhanced configuration	Not specified	Not specified
Support	Not specified	On-site training, 24/7 free technical support, free factory training for life of system
Warranty	1 year	5 years
Delivery time, ARO	~8 weeks	21 days
Year first sold	2006	2004
Number installed	Not specified	>800
Fiscal year	Not specified	January to December
OTHER SPECIFICATIONS	IP-based system; central controllers connected to existing or new IP-network; nurse presence indication with personal key (identifying nurse), technical alarms and building management integrated in the same system; display messaging system; nurse station with touchscreen; LAN-network between the rooms; optional digital.	System includes PC with touchscreen monitor, keyboard, and mouse; direct request from patient to caregiver displaying request on pager; operates in centralized or decentralized mode; TQI management reports; operates in attended or unattended mode; full duplex audio; custom programming of patient requests, recall times, levels of call, etc. UL listed.
LAST UPDATED	Oct-08	Aug-07

(continued from page 15) a few centralized servers. Currently, there are two test regions in Germany. Each has 10,000 patient cards being tested offline for insurance coverage checks, but neither centralized services nor security certification has been implemented as yet.

A national German e-Health card rollout is planned to begin in 2009. The first application will be offline insurance coverage checks followed by online insurance checks against the insurers' data centres, e-prescription and emergency data sets.

Scandinavia

The first dedicated EHR and home care solutions have been in place in Scandinavia for 12-15 years, while the first GP systems have been available for more than 20. Routine tasks are nowadays carried out electronically by healthcare professionals on a daily basis. These include hospital admit/discharge/transfer (ADT) functions, medication administration, clinical functions (planning, documentation and monitoring of results and vital signs), scheduling and physician order entry.

All Scandinavian countries focused early on building national e-Health networks. Now that they have been built, the focus has shifted towards providing patient-centric healthcare services across organizational boundaries, with a focus on security, regulation, and standardization.

Healthcare services across the Scandinavian countries also benefit from their collaborative efforts around technology. For example, Norway, Denmark and Sweden have linked each of their national networks to form the Nordic Healthcare Net. Additional examples of collaboration include the Nordic Centre for Classifications in Healthcare, and the Collaborative Network of Nordic e-Health Competence Centres.

In Denmark, hospital biochemistry and immunology departments will soon be able to receive electronic requests from GPs through the Danish National Health Portal, while to date, all 98 municipalities have invested in homecare solutions for administration, planning and clinical documentation. In Norway, the national healthcare network includes all hospitals and a significant proportion of primary care practices. It facilitates telemedicine and the interchange of electronic messages (lab reports, referral and discharge letters and radiology reports). Norway is also known for the fact that more than 99 percent of GPs use an EMR-system for a majority of their clinical and administrative tasks.

Conclusion

Overall, we are looking at exciting times for healthcare IT. As healthcare systems worldwide try to balance resources and improve business processes and workflows, there is a growing consensus that a more intelligent, innovative healthcare system is within reach. What is definite is that information technology is set to revolutionize healthcare delivery and to significantly impact healthcare systems and processes.

HEALTHCARE IT
MANAGEMENT
ANALYSIS



HEALTHCARE IT WILL BUCK DOWNTURN IN SECTOR

A recent report ('Technology Trends: Analyzing Global Enterprise IT Budgets 2008') from market analysts Datamonitor forecasts a further deceleration in IT spending in 2009. The consecutive decrease, for four years in a row, is largely due an exacerbation of problems following the current financial and economic crisis with its yet-unclear implications for credit and liquidity.

The only industry likely to see an increase in the stagnant IT market is healthcare.

Datamonitor researchers found that overall more than 60% of businesses (a record) plan to cut IT budgets or keep it flat in 2009. This is in marked contrast to 57% of companies in the healthcare area, who say they intend to increase spending.

Overall, companies planning to increase their IT budget has fallen from 21% in 2006 to just 9% in 2009.

The special position of healthcare is largely because of an aging 'baby boom' generation in Europe, the US and Japan, according to Datamonitor. This is beginning to increase demand on health services, leading to rising costs for healthcare. To address this, the industry is investing in new technologies which will enable them to cut costs in the long run and provide more efficient care.

The role of European institutions and activities, in particular the e-Health action plan, in raising awareness in this field is evident. More than half of the countries within the EU make an explicit reference to at least one initiative or policy document at the EU level and seven refer directly to the e-Health Action Plan as the basis of their developed national strategy.

The i2010 Initiative, the eEurope Action Plan, the initiative to introduce a European Health Insurance Card (EHIC) and the aim to facilitate mobility of citizens, patients and professionals, as well as the EU's legal framework, are other impetuses having high impact across Europe.

We have a timely opportunity and an urgent need to build a 21st-century health care system – a comprehensive, modern system capable of providing information to all members of the healthcare team who need to make decisions about our health. Patients, healthcare providers, public health professionals, employers, policymakers, and others recognize that ready access to relevant, reliable information would greatly improve everyone's ability to address personal and community health concerns. This is the role information systems are waiting to perform.



HEALTHCARE IT and ROI

A New Element in an Old Equation

AUTHOR

Guido Doucet is a Belgian PMI-certified IT consultant, previously with Philips and PwC.

How times have changed ? A decade ago, IT in healthcare was seen as little more than a country-cousin of sectors like banking, retail, transportation or manufacturing. Its status, even in a pioneering country like the US, was summed up in 2001 in a report by the prestigious Institute of Medicine that "IT has barely touched patient care." (Crossing the Quality Chasm: A New Health System for the 21st Century. National Academy Press, 2001).

Distributing and digitizing healthcare

Today, hospitals across the US and Europe are in the throes of major modernization. Some are being privatized. All are investing heavily in IT, and healthcare looks set to become one of the key areas of IT spending in the years to come.

Most of the drivers of such a process involve the fast-growing promise of e-Health, symbolized by the new EHR or Electronic Health Record (in its various forms). While e-Health simply means increasing the reach of healthcare service delivery, electronically and digitally via secure networks, the EHR (in a secure database) will become the cornerstone of such a distributed healthcare architecture. Under such conditions, IT is clearly the engine for the new shape of healthcare.

... But questions remain

And yet, many questions remain about how exactly such new IT spending will be channelized. As shown by the UK's massive healthcare IT modernization programme, Connecting for Health, there are not only many promises to keep, but also many miles to go. One of the key challenges is that time does not stand still. New equipment and technologies (from diagnostic and lab information systems to RFID and patient monitors) are emerging by the day. Many (though clearly not all) entail mini-revolutions in efficiency. Nevertheless, they have to be integrated into the still-functional 'old' IT backbone in a hospital - and the wider healthcare environment.

In an environment like banking or finance, errors may entail huge costs, but they are rarely issues of life and death. In healthcare, on the other hand, there are several examples of faulty implementation of systems leading to huge problems. In the US, Medicare and Medicaid have planned to stop reimbursing so-

called Never Events – the term for the most serious medical mistakes such as wrong site or wrong patient surgeries, mismatched blood transfusions etc.

Sharing experiences = flattened learning curves

In healthcare IT, therefore, the imperative for zero learning curves is stronger than anywhere else. This is indeed one of the major reasons for resistance to change in the healthcare IT and wider healthcare management profession.

Nevertheless, as more and more hospitals modernize, implement new systems and successfully re-engineer their old, a critical mass of expertise is accumulating, which will certainly make it easier for others to take the plunge. A magazine like Healthcare IT Management is playing a laudable role in not only bringing new developments to light, but also enabling their dissemination to peers across borders. In my own career, I have seen that there is little as powerful a tool as sharing experiences and learning from others in the IT profession.

Justifying (new) investments

The second question which faces healthcare managers and CIOs in particular is justifying investments in healthcare IT. As one of the principal economic sectors in industrialized countries, healthcare currently faces massive pressure for cost-containment and efficiency. And even though the lifetime capital costs of a new IT system (or modernization project) pale into insignificance compared to other spending headings in a hospital budget, they are not the smallest categories either.

It is therefore no surprise that issues of return on investment (RoI) – hitherto confined to sectors like manufacturing and retail – have begun steadily emerging in the field of healthcare IT too.

Healthcare IT and Rol: Unique challenges

However, measuring Rol in healthcare faces a host of unique challenges. These have to be first understood, accommodated and mastered to sell the concept of Rol itself – before making Rol the centerpiece of a case for an investment in healthcare IT.

Traditionally, ROI measures the financial impact of operating expenses against revenue gains from service delivery. If the latter exceed costs, Rol is positive and an investment is justified.

In healthcare, however, benefits have so far been usually aimed at avoiding costs rather than increasing revenues. In Europe, in particular, the enormous complexity of the healthcare payment system has resulted in making revenue measurement (along the lines of commonly accepted principles in other economic sectors) a Herculean task.

This was, of course, not the case, when healthcare IT principally involved isolated applications, such as payment and invoicing, appointments scheduling, or even lab reporting. Such early-stage developments essentially involved PC packages, and off-and-on, a mid-range computer such as an AS/400 or HP 3000 for departmental applications, especially in large general hospitals.

e-Health persuades holdovers

The wheel has now turned full circle, and the key driver is e-Health.

In the past, while investing in devices such as CT scanners or PACS systems provided an instant revenue stream for a specific hospital, few facilities saw an EHR yielding 'measurable' revenues in less than 3-5 years; it thus stayed on the perceived cost side of the balance sheet. This is no longer the case, where hospitals are obliged under new EU rules (and corresponding national laws) to ensure that their IT systems are (or will become) interoperable. Failure to comply carries penalties, and this too is/will become a cost. In addition, a longer-running reorganization of healthcare (principally to unbundle specialties from general hospitals) has also been slowly but surely increasing the costs of non-interoperability.

In the US, on the other hand, an almost perverse logic militated against increased IT. Senior officials from payers such as Medicare and Medicaid publicly noted that efficiency in services provision ensured higher payments in all sectors bar healthcare. In 2006, Mark McClellan, then director of the Centers for Medicare and Medicaid Services, pointed out to The Detroit News that "in health care, you're paid more if there are more complications and you provide more services. If payments drop when you provide better care, it's difficult to convince providers to invest in IT."

A brief glimpse at the past

The Electronic Health Record has its roots in what was previously known as the Computer-based Patient Record (CPR), with

an impetus provided for its development by the US Department of Defense and its clinical information management mission for the 21st century (see N. Stagers and A.V Leaderman, 'The Vision for the Department of Defense's Computer-Based Patient Record', Military Medicine, 2000, Vol. 165, No. 3).

Like much else in IT inspired by the US Defense Department (not least the Capability Maturity Model or CMM certification system), quality standards played a key role in the development of CPRs, and a CPR Institute conceived an Award of Excellence for computer-based patient record implementations in the early 1990s, named after Dr. Nicholas Davies (the designate President of the American College of Physicians who was killed in an airplane crash a few days before he took up his post).

The CPR Institute set up a work group to determine evaluation criteria for the assessment of CPRs: management, functionality, technology and impact (rather than the 'value' used in current assessments of healthcare IT systems, when metrics for its assessment are far more mature than a decade ago). In spite of the lack of capacity to quantify financial outcomes, the Davies Program consistently focused on the costs and benefits of CPRs, which could in turn be used as a benchmark for CPR/EHR buyers to anticipate costs and expected returns. These benefits included a reduction in adverse events such as medication errors, enhanced treatment protocols and quality/ continuity of care.

Key aspects of Rol in healthcare IT

While a field like Rol in healthcare IT has drawn a blizzard of academic papers and guidelines, its key elements consist of three: financial, quality of care and business/organizational, much along the lines of the CPR Institute criteria for the Davies Award, with 'quality of care' straddling both 'functionality' and 'technology', and 'business/organizational' corresponding to 'management'. These are described below.

Financial

Financial Rol in healthcare IT consists of cost savings from decreased staffing and resource requirements. Examples include automated LIMS which reduce the need for data entry personnel, speech recognition devices which eliminate manual transcription, or appointment and treatment scheduling systems which reduce waiting times from order entry to procedure completion and reporting. IT systems which enhance throughputs and achieve scale efficiencies also fall under this heading.

Quality of care

Efficiencies in the care pathway range from IT systems which provide higher adherence to clinical protocols, enhance the speed of consultation and decision making, and above all, reduce medical errors. More efficiency in simpler systems, such as call centers and hotlines, can also impact on both quality of care (and thereby on financial Rol). In the US, for example, a government investigation in 2006 found that operators on Medicare hotlines

provided accurate information to callers only 40 percent of the time in certain instances.

Business/organizational

Across Europe, a growing measure of business/organizational RoI has been length of stay (LoS). This is now routinely monitored by hospital management to identify overall business/organizational efficiency. The LoS indicator also correlates strongly with patient outcomes, with lower lengths of stay and quicker discharges - accompanied by a lower incidence of readmission. In addition, LoS is directly related to bed capacity and utilization rates, and this form of RoI is widely used across a whole range of sectors.

Softer issues such as higher satisfaction on the part of healthcare professionals and patients, reduced waiting times and quicker information are also factored into business/organizational RoI. Indeed, hospitals in some central and eastern European countries have already begun monitoring patient satisfaction via questionnaires, and such a practice - once formalized - will no doubt be brought into the matrix of RoI measurement.

RoI and healthcare IT - the future

In October 2006, the EU's eHealth Impact project was used to demonstrate that selected e-Health projects were already promising 2:1 payback ratios between economic benefits and costs.

In addition to making RoI calculations, the project team identified some of the key Best Practices in the most effective efforts.

The project focused on the three stages in the lifecycle of e-Health investments - planning and development, implementation, and routine operation. Its team developed a set of tools to collect relevant information on each stage. They found that among other things, successful e-Health projects included all key stakeholders, allowed for changes in workflow and got staff members on board.

In spite of the findings of eHealth Impact, it will be some time before RoI is formalized and used routinely to make healthcare IT investments. The EU project acknowledged that it limited itself to assessing "the cumulative average from ten of the best eHealth implementations we could find." Meanwhile, across the Atlantic, a Congressional Budget Office report in May 2008 found that the ROI of healthcare IT was not "uniformly positive". One of its key conclusions, which will no doubt have relevance here in Europe too, was that the potential of healthcare IT will depend on "how effectively financial incentives can be realigned to encourage the optimal use of the technology's capabilities."

While the former remain competencies of governments and hospital managers, the definition of IT capabilities and the clarification of its optimal use are clearly areas where healthcare IT managers may be advised to already make themselves heard.



HEALTHCARE COMPANIES AND THE CURRENT FINANCIAL CRISIS



As noted previously (page 19), healthcare is one of the only major sectors forecast to buck the major decline forecast in IT spending for 2009.

To get a bird's eyeview of the impact of the current financial crisis, we selected the Top Four companies by US market capitalization in five key healthcare sub-sectors and assessed the 52 week change in share prices, as compared to the situation at noon October 21st. We excluded pharmaceuticals and biotechnology, whose stockmarket and industry dynamics vary from the rest, and bear far less directly on investment plans by hospitals - the key area of interest for healthcare IT.

We also excluded heavyweights such as GE, Siemens and Philips (with market capitalizations of 204.3 billion, 58.2 billion and 18.3 billion US dollars, respectively). Share price movements by such large firms both drive and reflect trends in the wider market as a whole.

The sectors we selected were medical instruments and suppliers (cumulative market capitalization [CMC] 199 billion dollars), medical appliances (CMC 128.5 billion dollars), healthcare plans (CMC 94 billion dollars), specialized health services (CMC 14 billion dollars) and hospitals (CMC 9 billion dollars).

Compared to the 52-week decline of the Dow Jones Industrial Average by 80% (from 13,990.7 to 7,773.7), the changes for our indicator sectors were as follows:

- Medical Instruments and Suppliers: 50% fall (far below the Dow Jones average), with a tightly-knit range of 39 to 61% for the Top Four firms, indicating the relative inelasticity of this key healthcare sector.
- Medical Appliances: 72% fall, with a small range of 65 to 79% declines for the Top Four, again underlining the relative inelasticity of this major healthcare sector.
- Healthcare Plans: 208% fall (well above the Dow Jones average), indicating the relatively high exposure of this sector to the crisis in the financial services industry. The range of share price falls for the Top Four firms varied from 168 to 310%.
- Specialised Health Services: 96% fall, with a wide range of 51 to 164%, indicating an impending shakeout in the sector.
- Hospitals: 109% fall, again with a fairly large range of 65 to 164%, underscoring the relatively higher vulnerability of some groups to the financial crisis.

Panasonic recommends
Windows Vista® Business.

Panasonic
ideas for life



THE NEW PANASONIC TOUGHBOOK MCA

- First MCA device with Intel® LPIA CPU (Atom™)
- Genuine Windows Vista® Business or Genuine Windows® XP Professional
- Large display
- Rugged and lightweight form factor
- Long battery life
- Wireless connectivity
- Easy to wipe/clean
- Integrated carry handle



Information at www.toughbook.eu
or mail to mca@toughbook.eu



TOUGHBOOK

THE ELECTRONIC HEALTH RECORD IN SERBIA

AUTHOR
Michael Weinhard,
 Hospital Economist and
 Team Leader.

Serbia's new EHR system went live a few months ago, marking a major milestone in its efforts to leapfrog interim solutions and access the benefits of e-Health in the shortest possible period of time. Overall, the Serbian EHR is both a national e-Health backbone - allowing various health information systems to exchange data in real time, while serving as a backup in case of failure of an institutional information system or if a change of software vendor becomes necessary.

The introduction of the EHR was managed by the European Agency for Reconstruction on behalf of the Serbian Ministry of Health. The project was kicked off in 2005 and deployed in summer 2008. The Serbian EHR is a centrally hosted web-application, with an Oracle database at the back-end. For basic use, clients simply require Internet access and a browser. The application supports the integration of legacy systems as used in various primary and secondary care sectors, and all required codes are available free. A description of its software and hardware infrastructure is provided below.

Software infrastructure

- Cluster of two Oracle 10.2g Servers for data
- Two balanced Java Application Servers 'GlassFish' for the following applications:
 - Server side of the EHR, pharmacy data upload, administration of EHR, patient viewer etc.
 - Microsoft IIS for .NET web GUI
 - Jasper server for Warehousing

The development software used for the project:

- Microsoft Visual Studio .NET for web GUI
- Java, EJB3, TopLink for Server Side Java
- Java, Tapestry 5 for Web java
- NetBeans 6.1 and Eclipse 3.4 for Java applications
- Oracle tools for DB
- PowerDesigner for DB and Warehouse

Hardware infrastructure

- National Institute of Public Health (National Clearing House - NCH) at Belgrade and four Regional Clearing Houses - RCH.

Standards, certification

The Serbian EHR system defines standards for XML messaging. This enables the exchange of health data between existing information systems, if they comply with EHR standards. The National Institute of Public Health, functioning under the mandate of the Health Ministry, ensures that all security and data exchange standards are maintained in the best interests of the public health sector. They are also intended to provide a fair and transparent set of preconditions for certification of vendors who like to enter the Serbian e-Health market. Beside the advantage of having all health data available any-

National Clearing House (NCH):

Model
 Fujitsu-Siemens Primergy RX600S3 server
 Fujitsu-Siemens Primergy TX200rs server
 Fujitsu-Siemens Primergy RX300 server
 FAS 270 Network attached storage
 Fujitsu-Siemens PY SX30 server attached SCSI storage
 Fujitsu-Siemens PY SX10 tape
 Symantec Gateway Security 5620
 Cisco router 3825
 Cisco layer 3 switch WS-C4507R
 Cisco layer 2 switch WS-C2950G-24
 Cisco layer 2 switch WS-C2950T-24

Regional Clearing Houses (RCH):

Model
 Fujitsu-Siemens Primergy TX200rs server
 Fujitsu-Siemens PY SX30 server attached SCSI storage
 Fujitsu-Siemens PY SX10 tape
 Symantec Gateway Security 1650
 Cisco router CISCO2811-HSEC/K9
 Cisco layer 2 switch WS-C2950-24

time, anywhere, the Serbian EHR has multilingual capabilities, so that data entry in the Serbian language (even with Cyrillic script), can be translated to other languages. This is however so far limited to key medical expressions about diagnoses or procedures, along with short text.

Leaving room for phased expansion

Data entry and view function for health professionals during the care process as well as the statistical datawarehouse are fully operational in the form of web applications. Five levels of access rights for professionals are provided, in line with ISO 13606. Patients can review their own health records, add comments and review access lists to their health record. The current configuration provides an infrastructure that permits a phased, country-wide rollout at what are believed to be the lowest possible costs. Stable, high-speed Internet coverage is now increasingly available in remote areas of the country too. As the cost of IT workstations decreases, the design of the system is meant to permit a thin-client structure, with low incremental costs per additional workstation – while still allowing full functionalities. Such economic equations underline why smartcard features have not been applied, since added benefits were outweighed by the extra costs.

Clearing Houses: Their roles

The National Clearing House (NCH) in Belgrade acts as the central facility to receive and display health record data in a daily routine. One regional clearing house (RCH) functions as a disaster recovery center with a mirror backup. The other three RCHs are used as datawarehouse for routine statistical data analyses and specific data mining function.

THE COMPUTERIZATION OF HEALTHCARE IN ROMANIA

AUTHOR

Marius Stupu
is IT Manager of
SUJB, the University
Hospital of Bucharest.

An Experiment In Progress

An overview of changes in the hospital/healthcare IT system in Romania – long known for a traditionally high caliber of IT competencies - is provided below by the IT manager of one of the country's leading medical institutions.

Computerization has revolutionised human progress at a pace never known in history. It has also fast become an unavoidable necessity. Healthcare is no exception to this rule. High technology investigation, the creation of massive databases, collaborative working, migration from IT silos to vast networks have all emerged in the space of less than two decades to make healthcare IT both a vital segment of medical care and an everyday reality.

A longstanding tradition

Romania's healthcare IT tradition began in the 1960s when Timisoara undertook the first simulation of neural network models through its new MECIPT-1 computer (Masina Electronica de Calcul a Institutului Politehnic Timisoara). In a space of a few years, a Computing Centre for Medical Statistics (known as CCSS, its acronym in Romanian) was established to create a future system of national specialists in analysis, design and the programming of healthcare applications.

Such activities resulted in the development and implementation of the first system to track medical staff in Romania, and continued later with a spate of follow-on projects, including computerized hospital records of beds, blood donors and patients, especially those with chronic illnesses. Since 1984, the CCSS has been a reference center for developments in the field of healthcare IT.

From academics to the real-world

Historically, healthcare IT emerged as a formal university course in the academic year 1983/1984 at the University of Medicine and Pharmacy in Timisoara. It was soon introduced in other universities across the country. The Romanian Society of Medical Informatics contributes directly to research activities in the healthcare IT area, and is an active participant in European and international workshops/seminars, conferences and other forums (including those conducted by the World Health Organization).

The transition of Romanian healthcare IT out of an academic space, with a largely theoretical focus, into the real-world of practical implementations has had its share of problems and difficulties, and no small level of frustration. On the theoretical side, as discussed above, there were few problems for Romanian researchers, although funding was

(and still remains) a major challenge. Paradoxically, in spite of an unremitting series of declarations showing universal agreement about the importance (indeed necessity) of healthcare IT, the situation in real life has been rather different (both in terms of acceptance and involvement in making the requisite investments).

The challenges of transformation

Firstly, the creation of a uniform strategy for the implementation of healthcare IT superstructures in a European context is a clear necessity. However, there is still no concrete, strategic roadmap based on the specific challenges faced by Romania.

The country's political transition from a socialist system established on a high (indeed excessive) level of centralization to a capitalist one based on an equally high level of decentralization has taken far longer than necessary. In turn, this has led to a slackening in the design of unified management structures to achieve the objectives of a healthcare IT system in harmony with that evolving in Europe.

Politics and problems

Healthcare reforms have been initiated and re-initiated by a succession of new governments. Worse, some concrete achievements have often been reversed. Adding to the pressure has been the deadweight of budgetary and financial problems. This has, in brief, led to incoherent decisions in both the medium- and long-term, resulting in protracted delays in devising a solid and coherent healthcare IT strategy. Moreover a series of hasty political steps has proved once again that political intrusions, especially in the medical area, do not bring solutions to problems - but often intensify old ones and create new difficulties.

Potholes on the path to perfection

Admittedly, there are solid attempts to create centres of cohesion at the regional level, but implementation has been delayed, and until now, it is impossible to calibrate and assess results in this context.

No country in Europe, or for that matter the world at large, can claim a perfect system of public health. Neither can it be said that healthcare and healthcare technology/IT problems have been resolved anywhere, as yet. As everyone knows, health is a highly complex area, resplete with interlocking financial, social and political challenges, and difficult trade-offs and implications in choices which are rarely easy to quantify. Romania too faces exactly these problems.

A mixed picture

As a result, the picture is not entirely bleak, but neither is it wholly straightforward. For example, mandatory requirements to report per-



formance indicators have made hospitals and other public healthcare organizations implement a variety of modern IT applications. However, the costs of such applications are relatively high, and have often entailed shelving/discarding other initiatives.

Such a situation will be to the advantage of the software industry, which has yet to develop specific applications targeted at processing these indicators at the levels required by medical insurance firms. Romanian IT companies currently implement applications, which encompass a full range of departments and functions – for example, administrative, financial/accounting as well as medical. One factor to bear in mind here is that IT implementations in the latter case do not concern a domain-specific ‘product’ (one which can be delivered directly to the user group), but are directed at ensuring compliance with medical rules and laws.

Although it is clear that such generic IT systems have eliminated redundancies between different departments of hospitals, cost-benefit analyses can only provide an indicator of the overall picture, in terms of enhanced efficiency of services – not inter-departmental performance metrics.

Lessons from the University Hospital in Bucharest

These challenges have also been faced by the University Hospital in Bucharest. Fortunately, many have been overcome – in a strongly-symbolic example of collaboration between hospital management, the IT department and software solution vendors. Such a process is built upon strong traditions and deep roots.

History

The history of healthcare IT at the University Hospital from Bucharest starts over ten years ago, when the IT Department was established as a result of both necessity and ambition.

Over this period, an in-house IT solution was implemented (with constant revision and re-development). In its current shape, it includes all departments, both medical and non-medical, at the hospital. The process developed gradually, but did so homogeneously and uniformly, in comparison with other university hospitals where computerization consisted of isolated silo-style solutions initiated by local departments, with follow-on efforts to connect (and sometimes, retrofit) them.

The current IT system

The University Hospital of Bucharest’s IT architecture consists of over 300 computers in a datacenter solution hosted on four servers with the latest generation software solution deployed on an SQL platform.

One of the key challenges has been preparation, training and end-user awareness on the importance of correct implementation and use. Indeed, the University Hospital of Bucharest’s experience broadly reflects those encountered elsewhere about the human factor being critical in providing value to investments and ensuring continuity and consistency in information flow – the organic nervous system of any meaningful IT architecture.

The usual war between paper and computers at the University Hospital of Bucharest was brief but intense. Over time, all those involved in the process however began to agree that the benefits of central-

ization of information and structuring this into a coherent whole would provide greater overall benefits for the entire hospital – once again, an illustration of the age-old adage about the whole being greater than the sum of its parts.

Strategy and philosophy

Implementation of IT solutions in all public institutions is a tough challenge. It is especially so in the healthcare area.

What is of overwhelming importance is the creation of both short- and medium-term strategies, anchored by an over-arching long-term philosophy. Such an environment requires buy-ins of decision-makers, health professionals, non-medical assistants (and sometimes, different IT camps). As anyone in an institutional field like healthcare IT knows, the creation of faster and more-efficient information flows implicitly amends existing management and power structures, opens new alternatives and directly impacts upon the final ‘product’ – the delivery of medical care to patients.

This is why it is important that the decision of healthcare IT in hospitals begins with a thorough analysis to define both desired operational/achievement levels and trade-offs in efficiency/complexity, alongside the ultimate aim of the project.

Such a strategy was conceived and implemented successfully by the University Hospital of Bucharest. However, it must be mentioned that financial difficulties posed major challenges, by stretching timeframes unduly (sometimes with the result that the technological playing field and its goalposts had shifted considerably between idea and implementation).

The other challenge was a fragmented approach by different departments, which further exacerbated the timeframe stretch.

Lessons learned

Overall, taking strategic decisions on implementing a new information system is usually easier if done well beforehand. Tweaking and, above all, modifying a ‘new’ IT system, is very expensive – both in terms of finance and human resources.

Another lesson is that the implementation of infrastructure hardware and software is not everything in healthcare IT. Security solutions and data protection, investment in upgrades of certain sub-systems, contingency costs caused by unforeseen situations, the ensuring of routine end-user training, the allocation of personnel to provide helpdesk services - all of these involve specific financial and logistical efforts, as well as high-level (sometimes hands-on) management commitment.

The future ...

In the future, the University Hospital of Bucharest intends to continue with initiatives to modernising its IT systems. One core objective is migration to a more scalable platform and the ensuring of stability, portability and mobility. The Hospital IT Department’s investigation, undertaken jointly with software providers, has shown that application portability is one of the key factors providing value addition to the system. Expanding data storage is another, along with the introduction of telemedicine as a means of pooling information and taking faster and more accurate decisions. Supported by the IT Department,

the medical school at the University Hospital has also made significant efforts to consolidate theoretical and practical knowledge by supporting e-learning and distance education projects.

Although there has been an increase in remuneration in Romania, this has so far been confined to managers, hospital physicians and nurses. At the level of auxiliary personnel, wages remain low and this creates major gaps in quality of service. And as long as Romania does not understand that poorly paid staff are usually unqualified, the healthcare system will face a constant problem.

For all these reasons, it is extremely important for Romania to access external budgetary support in the healthcare IT area, accompanied by a well-defined strategic vision about the contours of its future medical infrastructure – both internally, and in terms of its Europe-interfacing elements. This is an area of some hope, with new proposals by the Directorate General for Health of the European Commission to obtain funding for the Romanian public and private healthcare sectors.



Romania's half century tradition of computing

It is not widely known that, while most other countries in the Soviet sphere of influence decided to centralize computing in the USSR, the Romanian government decided to go it alone, assigning key Romanian universities (and groups of outstanding engineers and mathematicians known well beyond the country's borders) to design and build their own computers. The first Romanian computer, the Masina Electronica de Calcul a Institutului Politehnic Timisoara (MECIPT-1) was built at the University of Timisoara as long ago as 1959.

MECIPT-1 used 2,000 diodes, 20,000 resistors and capacitors, with 30 kilometers of wiring. Along with medical informatics, other successes included translation of the first sentence from English to Romanian in 1962.



Your Medical Computing Partner

ONYX
The Smart Medical Idea

ONYX-174

Power Medical Station, 17" LCD Battery Backup with Pentium® M Processor



- 17" True Color High Contrast 300 nits Medical LCD
- Battery Backup
- Integrated Smart Card Reader Security
- Mini PCI Capture Card Supports Non-DICOM To DICOM CAM
- High Performance & Low Power System Solution
- 802.11g Wireless Antenna (Optional)
- UL60601-1, EN60601-1 and IEC60601-1 Certified

ONYX-193

Low Noise Medical Station, 19" LCD with Pentium® M Processor



- 19" True Color High Contrast 300 nits Medical LCD
- Integrated Smart Card Reader Security
- Telemedicine Solution
- Mini PCI Capture Card Supports Non-DICOM To DICOM CAM
- High Performance & Low Power System Solution
- 802.11g Wireless Antenna (Optional)

ONYX-195S

Super Medical Station, 19" LCD with Intel® Core™ 2 Duo Processor and COM Isolation



- 19" True Color Diagnostic Medical PC
- High Performance Intel® Core™ 2 Duo Processor
- Isolation COM Port x 2
- Built-in RFID and Finger Printer Security (Optional)
- PCI Expansion
- Mini Capture Card Supports Non-DICOM to DICOM CAM (Optional)
- 802.11g and Bluetooth Wireless Solution (Optional)

AAEON® Medical Solution
www.aaeon-medical.com

DOING THE RIGHT THING FOR THE WRONG REASONS

AUTHOR

Robert H. Roswell

is Professor of Medicine at the Oklahoma University College of Medicine and a former Under Secretary for Health, U.S. Department of Veterans Affairs.

The need to reduce errors, increase economies of scale in a fragmented system, and derive efficiencies in the delivery of medical services have been the key drivers of healthcare IT in the US in recent years. However, the pace of progress has been less than expected. Given below is an account of the evolving role of healthcare IT in the US, its challenges and promises – as well as the need to look at ‘soft’ issues such as patient empowerment. The author, currently a University Professor of Medicine, was previously an Under Secretary of Health at the Department of Veterans Affairs, widely credited with developing one of the first successful national electronic health record systems.

To Err is Human

Over the past decade, the US has seen an accelerated effort to increase the use of health information technology (HIT) including electronic health records in the US healthcare system. Much of this emphasis can arguably be traced to a pivotal report published by the prestigious Institute of Medicine (IoM) in the year 2000. The report, titled ‘To Err is Human’, estimated that as many as 98,000 people die in any given year from medical errors occurring in US hospitals.

A companion report published by the IoM the following year, titled ‘Crossing the Quality Chasm’, characterized the US healthcare system as “A highly fragmented delivery system that largely lacks even rudimentary clinical information capabilities (and) results in poorly designed care processes characterized by unnecessary duplication of services and long waiting times and delays.” The report went on to recommend the use of HIT as a critical tool to address problems with both quality and cost in the US healthcare system.

The Department of Veteran Affairs: making a case for EHRs

Interestingly, during this same period, the US Department of Veterans Affairs (VA) deployed a robust electronic health record that had been developed internally over a number of years with extensive physician and staff involvement. The EHR was implemented throughout the extensive VA nationwide health care system. As portrayed in a 2004 feature in *The American Journal of Managed Care*, the VA’s EHR soon began recording benchmark results in a number of nationally recognized quality measures while dramatically increasing the number of veterans receiving care through the system. This experience in the VA,

once considered a prime example of government bureaucracy and inefficiency, added further evidence to an increasingly popular belief that HIT was an essential strategy for improving quality and controlling costs in the US healthcare system.

The National HIT Plan 2004-2014

Then, in early 2004, President Bush announced his national HIT plan with the goal of assuring that most Americans have access to electronic health records (EHRs) within the next 10 years (by 2014), facilitated by the efforts of the newly created Office of the National Coordinator for Health Information Technology. More recently the US Centers for Medicare and Medicaid Services (CMS) implemented a pilot program to encourage adoption of EHRs through the use of enhanced payments to physicians who agree to implement these systems.

Yet despite this senior leadership emphasis, progress towards HIT implementation in the US has been relatively slow. In fact, a countrywide analysis ‘Electronic Health Records in Ambulatory Care - A National Survey of Physicians’, published by the prestigious *New England Journal of Medicine* found that only 4% of US physicians were utilizing a fully functional EHR in their practice.

Funding and implementation

However, the lagging HIT implementation effort by the US is not surprising when one examines how these efforts have been funded. In the predominantly fee-for-service US health care system, the implementation costs of electronic records systems are recouped very slowly, if at all, by the providers who have traditionally paid these costs, while payers, including commercial insurers and the CMS reap significant savings due to the elimination of adverse events, redundant care, and

unnecessary services, with virtually no investment in HIT implementation. Furthermore, while the US spends far more on health care per capita than any other Organization of Economic Cooperation and Development (OECD) country, the US government spending on infrastructure and efforts to implement HIT is one of the lowest per capita compared to other major OECD countries, where significant investments have been made by both insurers and government instead of relying on providers to carry the brunt of implementation costs.

Looking beyond quality and cost

However, before we write off the US lack of progress towards HIT implementation as a combination of misaligned incentives and a lack of government funding, we should examine the system in more depth. Are there more fundamental problems with the US healthcare system that HIT implementation efforts are failing to address? Quality and cost, though important, may be the wrong reasons for increased adoption of HIT.

The average US life expectancy was only 47 years in 1900 prior to the availability of antibiotics, antihypertensive therapy, insulin, and effective cancer treatment. In this setting a hospital served as an effective place to treat patients who either survived, or succumbed to acute injury or illness.

A paternalistic, somewhat pedagogical style of medicine was practised in a system where patients did not question their physician and rarely understood the nature of their disease process. After all, if they survived it was no longer relevant, and if they succumbed it really didn't matter.

However, with the advent of effective pharmacotherapy for numerous once-fatal diseases and radically improved cancer management, Americans are now much more likely to survive and live for decades with chronic disease. In fact, in large part due to the huge post-war US "baby boom" population now entering their 60's, it is estimated that 75 to 80% of all US healthcare expenditures are for chronic conditions. Unfortunately most of this care is delivered in a hospital-centric health system that was never intended to provide these types of services.

Additionally, patients who must play an integral role in the care and management of their chronic conditions lack the expertise, means, and the cultural impetus to effectively interact with their providers. Thus, care for most chronic conditions is provided in a few brief minutes in the physician's office several times a year, interspersed with the occasional hospitalization that might have been avoided with effective chronic condition care.

An effective care model for management of chronic conditions might include improved patient education and access to health resources, enhanced screening and preventive care for chronic disease and associated complications, simplified self-monitoring of physiological indicators of disease such as blood sugar, body weight, blood pressure, etc., improved communication between patient and provider, and most importantly direct involvement of the patient in the clinical decision making and care management process. Not surprisingly, each of

these components is easily achieved with technology available today.

Personal Health Records

A particularly interesting approach to this need is the use of personal health records (PHRs), which have been debated extensively in the US. PHRs have been criticized because they may introduce commercial bias to patients, and physicians have expressed reservations about relying upon the accuracy and validity of patient-entered and maintained clinical information. However, at least as an interim measure, PHRs have the potential to educate and motivate patients, while creating pressure to develop greater availability of interfaces to allow the direct flow of clinical data into these records. Over time these interfaces will also facilitate other types of health information interchange (HIE) among providers as well as patients. Thus, it appears that increased use of PHRs could leverage efforts to adopt HIT in several possible ways.

The VA and low-cost telehealth

Another interesting example of the use of HIT to address chronic condition management can once again be found in the US Department of Veterans Affairs (VA). Beginning with a pilot program in the state of Florida in 2001, the VA used low cost, in-home, interactive technology to monitor patients with chronic disease with remarkable results. Significant reductions in hospital admissions, nursing home admissions, and emergency department visits were achieved by early detection and intervention for complications associated with chronic conditions. The program was subsequently deployed nationally in the VA as the Care Coordination Home Telehealth program with similar results.

From error reduction to empowerment

The greatest potential benefit of HIT adoption may not be the elimination of costly, unnecessary, ineffective, or duplicated care, or the avoidance of medical errors and adverse events. While these benefits are real and quite substantial, simply lowering costs and reducing errors would create greater efficiency in a health care system that still fails to meet the essential needs of the US population in the 21st century. The real value of HIT may lie in its ability to empower, educate, and motivate patients so that once paternalistic care models are replaced with a partnership model between physician and patient with a common goal of more effective disease screening and prevention and improved chronic condition management, facilitated by technology, and utilizing evidence-based medicine.

Only after patients become knowledgeable health care consumers will they be able to discern and seek out true value in care and services. This increased healthcare "consumerism" will encourage providers to focus on quality, cost, access, and condition healthcare services increasingly sought by more informed and medically sophisticated patients desiring optimal management for their chronic conditions.



CARDIOLOGY AND IT IN THE CONTEXT OF INTEGRATING THE HEALTH ENTERPRISE (IHE)

AUTHORS

**Tim Becker and
Rüdiger Simon**

are with the Department
of Cardiology at the Uni-
versity Hospital of Schles-
wig-Holstein in Germany.

Computer applications are indispensable tools in cardiology today for digital image acquisition, deployment and reviewing, and also for documentation, dose reporting, quality assurance and exam scheduling in the Cardiology Information System (CIS). Image archiving systems (PACS) and electronic patient records reduce the required amount of time to access relevant patient information. Furthermore, billing in hospitals is unimaginable without the digital aid of Hospital Information Systems (HIS).

In the past, communication or data exchange between all these systems was impossible. For example, it was necessary to enter the patient name several times into different computer systems. Results from haemodynamic systems or laboratory results had to be re-entered into the CIS. Corrections of errors in patient names were not carried through to the CIS or PACS, a system flaw that doubles work and is a proven source for mistakes. Interfacing all these systems at a high level is very time-consuming and requires a large effort from vendors and hospital IT administrators. Most of the above-mentioned systems are developed by different vendors and operated by different applications in a hospital. That is why in many institutions, these interfaces are not being optimized.

Challenges of interface development

Usually, interfaces between two systems take into account only whatever data exchange is necessary for those two systems. In real life, all systems work together in a larger environment and interfaces need to follow the requirements of a complex workflow. The goal of most communication standards like HL7 and DICOM is to exchange information between two parties using flexible configurations. These standards offer a lot of optional fields for additional information – data that might or might not be delivered by a given system. In practice, a receiving system will often not get any information that is required for the next work step. For example, an acquisition modality might send a set of data of a stress echo examination. The receiving system is able to display all images but does not get any useful information about stress stages and views. Without this information it is not able to perform a proper quad screen display. IHE targets exactly this problem. It defines abstract process models of real world workflows and datasets that are required for these workflows.

Setting appropriate communication standards

In order to reach this goal, clinical experts and software engineers together define abstract workflow models for given scenarios. Using these abstract models, for each data exchange

step between two systems the appropriate communication standard and transmission service is selected. In a final step the required data attributes are selected and specified. At this point IHE might overrule a given standard and define additional attributes that are required. Doing that, IHE reduces ambiguity and potential misinterpretation of present standards.

IHE Cardiology domain

The IHE Cardiology domain was sponsored for the first four years by the American College of Cardiology (ACC) and supported by the European Society of Cardiology (ESC). Representatives from both societies are actively involved in the work of the IHE Cardiology Committee.

As in other IHE domains – such as Radiology, IT infrastructure or Laboratory – in Cardiology there is a Planning and a Technical Committee. Once a year, the Planning Committee defines the most urgent user demands. In the following months, the Technical Committee reviews existing standards and prepares solutions for the given topics. Every group of topics is handled in a so-called Integration Profile. The technical descriptions of these Integration Profiles are summarised in a Technical Framework. After a public comment phase, the vendors implement the framework into their products. Any problems with the framework are communicated back to the technical committee. For cardiology there are already several Integration Profiles available. The most important Integration Profiles shall be presented here.

Primary Cardiology Integration Profiles

Cardiac Catheterisation Workflow: The common workflow in a cardiac cath lab includes patient admission in the HIS, exam ordering and scheduling. Image archiving and notification of the HIS about the performed procedure and the availability of image data is also part of this workflow. Typical for cardiology routine, is the high rate of unscheduled emergency cases. It is not uncommon to start the exam with the creation of some images and report back all information to the HIS. This sce-

nario is quite a challenge for proper reporting and billing because it is necessary to reference all exam information to the 'official' patient data set handled by the HIS.

Echocardiography Workflow: This workflow is very similar to the cardiac cath workflow as described above. Although ultrasound exams are commonly not performed in emergency situations, another characteristic is relevant from the IT point of view.

Ultrasound systems are generally mobile units and therefore not always connected to a wired computer network. This results in problems in exam scheduling for this area. These problems can be covered using this Integration Profile. Another goal of this profile is the proper indication of stress stages and views for stress echo exams. These data can be used by a viewing station for a proper simultaneous display of different stages or views in a quad screen.

Retrieve ECG for Display: A typical problem in cardiology is the quick and easy distribution of ECGs inside or outside of the cardiology department. This Integration Profile makes use of web technology to distribute ECGs in PDF format. This feature might be used stand-alone in a web browser or as an embedded function of an electronic health record.

Displayable Reports: Reports in cardiology not only contain plain text and numbers. Very often they also contain images, graphics or tables. For a safe layout control this Integration Profile uses the PDF format to create reports. These reports can be sent from image analysis workstation to the PACS or HIS so they are available very quickly and can be sent to the EMR without producing paper printouts.

Implantable Device Cardiac Observations: A new and promising Integration Profile, this handles the topic of implantable devices – such as pacemakers or defibrillators that need to be verified in regular terms using vendor proprietary equipment. Until now, these data can be collected in vendor databases only or sent to a paper printer. Using this profile the data from devices of different vendors can be sent over a network – which also might be a wide area network – and collected in one and the same database for further analysis or long term storage.

Validating Integration Profiles

All the above-mentioned Integration Profiles were validated in a practical setting during "Connectathons", events where engineers from different vendors come together and exchange information following the specifications in the Technical Frameworks. IHE offers several advantages for the clinical user.

IHE compliant products have already proved their ability to exchange data following the IHE specifications defined in the Technical Framework which includes detailed descriptions of the expected behaviour of each involved system.

Therefore these documents can be used by hospitals for describing their demands on new systems and their interfaces.



IHE (Integrating the Healthcare Enterprise)

IHE is an initiative by healthcare professionals and the healthcare IT industry to enhance the sharing of information by computer systems. Healthcare IT managers seeking to buy or upgrade systems need a convenient, reliable means to specify compliance with standards which are sufficient to achieve truly efficient interoperability. The purpose of the IHE initiative is to meet that need.

IHE Profiles provide a common language for purchasers and vendors to discuss the integration needs of healthcare sites and the integration capabilities of healthcare IT products. They offer developers a clear implementation path for communication standards supported by industry partners and carefully documented, reviewed and tested. They give purchasers a tool that reduces the complexity, cost and anxiety of implementing interoperable systems.

Other than Cardiology, IHE profiles published either as trial/pilot implementations or final text versions include:

- Eye Care
- IT Infrastructure
- Laboratory
- Pathology
- Patient Care Coordination
- Patient Care Devices
- Quality, Research and Public Health
- Radiation Oncology
- Radiology

The European wing of IHE, IHE-Europe, has been active since 2000, with national initiatives in Austria, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain and the UK.

In April 2008, a new non-profit association called IHE-Europe aisbl, was formally established in Brussels, giving the organization legal status (and direct access to participating in EU projects). So far, successful implementations of IHE have been achieved by Johannes Gutenberg University Hospital at Mainz (Germany), University of Pisa, Italy and the Hôpitaux Universitaires de Genève (Switzerland).

Source: IHE



ELECTRONIC HEALTH RECORDS

Openness/interoperability versus privacy/security

AUTHOR

Tosh Sheshabalaya,

HIT

Both philosophically and technologically, the margins of the debate about electronic health records (EHRs) have been set by the long-running trade-off between openness and interoperability on the one hand, and privacy and security/confidentiality on the other.

From telephones to satellites and DNA screening – a longstanding debate

Such a debate stretches back several decades, marked in the first instance by the invention of the telephone and radio. In 1928, US Supreme Court Justice Louis Brandeis noted that technology had made it possible for governments, “by means far more effective than stretching upon the rack to obtain disclosure in court of what is whispered in the closet. The progress of science in furnishing the government with means of espionage is not likely to stop with wiretapping.”

The 1950s saw the issue of technology assaulting privacy attain a fever pitch. The infamous campaigns by Senator McCarthy against trade-unions and everyone showing the slightest Communist ‘sympathies’ – real or imagined – were followed in the 1960s by the personal crusades of Federal Bureau of Investigation Director J. Edgar Hoover to wiretap a wide range of people, from civil rights campaigner Martin Luther King to Mafia bosses.

The decades since then have seen a variety of other technological developments intensifying this longstanding debate. Spy satellites were less eagerly embraced by the public than the evident utility of mobile phones, the Internet and GPS navigation systems. Only recently have some critics pointed out that the latter can provide authorities far more private data than any spy satellite possibly could.

The greatest recent concern about privacy is DNA screening and monitoring, biometrics and sophisticated face recognition systems.

The Katz decision – reality check or submission?

Meanwhile, the legal establishment has sought to stop a Sisyphean battle against the march of technology. In 1967, about 40 years after the libertarian observation by Justice Brandeis, the US Supreme Court ruled in its so-called ‘Katz decision’ that privacy was only protected when it could be reasonably expected.

The debate on EHRs in the US

The current debate about EHRs (as well as their cousins electronic medical records/EMRs and electronic patient records / EPRs) have to be set against this backdrop.

So far, the signals are mixed and volatile, both in Europe and the far-more litigious environment of the US.

In November 2007, a survey by Harris Interactive and the Wall Street Journal concluded that a three-fourths majority of Americans believed that the benefits of EMRs outweigh privacy risks. 63% felt such technologies could cut medical errors, while 55% believed they would cut healthcare costs (against 15% who disagreed, with the rest unsure).

The issue of building up a critical mass of users – to provide buy-in – was also clearly demonstrated by the survey. Half of patients whose physicians had their records in electronic form said they trusted their provider to see their entire clinical history and status. The figure for those whose providers did not use electronic records was only 27%.

Up and down

More recently, the outlook seemed to have reversed in some key respects. In October 2008, a survey by the Employee Benefit Research Institute found that although most Americans found the idea of having electronic medical records likeable, they were concerned that their privacy would not be protected. Indeed, only a little more than half (55%) of respondents to the survey said it was ‘extremely’ or ‘very important’ for health care providers to use electronic records. 43% of respondents said they would be ‘extremely’ or ‘very likely’ to access their health records online, while half this number (21%) reported that they were not likely to do so.

However, the survey reported that 62% lacked confidence about their EMRs remaining private, over 5 times higher than the 12% of respondents who were confident or extremely confident about it.

From legal definitions to technology standards

Also in October, US media reports again raised the issue of legal risks with EMRs. The key concern is about the Federal Rules of Civil Procedure, which the Supreme Court approved at the end of 2006. This makes any electronically-stored data discoverable in a trial. One example cited was a nurse recording erroneous information under a doctor’s login and password, which would make the doctor liable for any misinformation. In addition, physicians were warned about problems if the EMR time stamp (ac-

cess or data entry) conflicted with their version of events. The final word of caution ran close to the tighter rules-based world of technology standards.

Some experts have warned that the legal status of an EMR is still not clear, nor is it certain if all EMRs meet the legal definition of medical records. Such concerns could come to the fore in legal disputes over patient care.

European perspectives

Perspectives in Europe are also mixed. In France, media critics have launched concerted attacks on its perceived technical limitations. Underlining its perceived risks to privacy, the newspaper 'Liberation' has darkly alleged that the EHR carried the risk of making 'Big Doctor' into an Orwellian 'Big Brother'. Similar concerns have been voiced from Scandinavia and Germany to Italy and Spain.

In Britain, some observers state that EHR is a war, pitting a powerful Anglo-American alliance against the rest of Europe and the world. In early 2007, the influential Royal College of Nursing attacked a core plank of the EHR project – to make national healthcare databases accessible across all European Union Member States – saying this could compromise patient care and safety.

The EU response

Such concerns have been voiced since the early 2000s. However, many of them reflected national cultures as well as vested interests, and priorities.

In 2007, the European Union's Working Party of European Data Protection Commissioners finally published a paper on the privacy of medical data within an EHR system.

Endorsing the primacy of patient privacy rights, the conclusions of the document are straightforward: unless there is a substantial public interest to the contrary, a patient's wish on the processing of his or her medical data held in an EHR system should prevail.

Differences in the EU approach versus the UK/US

Centralization

One of the Working Party's key observations was the need to avoid too much centralization. It pointed explicitly to the English NHS model, which "assumes there will be a single controller for the whole system separate from the healthcare professionals/institutions".

This, it said, would erode the trust of patients and the public. In contrast, it went on, such a credibility gap would not arise in a decentralized EHR system, where responsibility for personal records rests with healthcare professionals and institutions.

Information and informed consent, medical research and public interest

Further evidence of such a difference between the UK (along with the US) and the EU is also apparent in the European Data Protection Commissioners report, which asserts that all EHR information – including administrative data – is personal data (simply by virtue of their inclusion "in a medical file"). In the UK, healthcare administrative data is treated separately from personal medical data.

The EU report calls for major efforts to strike a balance between the privacy of medical data and the public interest. It limits the legitimacy of the use of such data to healthcare professionals for healthcare delivery – but explicitly makes two exclusions, limiting access to an EHR only by professionals "presently" providing a patient with medical care, and excluding medical research as part of the latter.

While underscoring that patients should retain residual rights to prevent access to their data, the European Data Protection Commissioners also voice major concern about patient consent – as a means to legitimize the use of protected personal medical data by actors outside the healthcare delivery area (so-called 'secondary use').

The report highlights the need for "genuine" free choice and the provision of full information to patients; otherwise, it warns, both the substance of medical data confidentiality and patient rights to withdraw consent are misleading.

Again, this contrasts with UK policy, which holds that substantial public interest for secondary use over-rides the need to consider issues of self-determination.

The challenge for technology companies

In the final analysis, it is up to the healthcare IT industry to satisfactorily reconcile the conflict between openness and interoperability (crucial to any meaningful EHR) and concerns by the general public and policy makers on privacy and security. This will be crucial to ensure its adoption.

In the US, as reported in this edition of Healthcare IT Management (see 'Doing the Right Thing for the Wrong Reasons'), President Bush has called for setting up a National Health Information Network (NHIN) by 2014. On its part, as reported in our previous issue, the EU has recommended implementation of a pan-European EHR system by 2015.

For now, however, this question remains open. In 2007, the New York Times cited the US Government Accountability Office finding a "jumble of studies and vague policy statements but no overall strategy to ensure that privacy protections would be built into (EHR) networks." Such a picture still has many elements of truth, both in the US and Europe.



SaaS

Profile of Software as a Service

AUTHOR

Tosh Sheshabalaya
HIT

The Gartner Group, a respected IT research firm, finds that organizations usually spend up to four times upfront costs to manage their software after purchase. Some spend as much as 75 percent and more of their total IT budget on maintaining and operating existing IT systems and infrastructure. In such an environment, several innovative pricing models are being offered by vendors. One of the most recent is Software-as-a-Service (SaaS). It may offer some interesting choices for healthcare organizations.

In real-life use today, SaaS allows users to access a huge range of software applications across the Internet, implemented and managed on hardware hosted by the vendor.

Software as a utility

SaaS provides software services like any utility, on the basis of a user contract, and is offered on the basis of a 'pay-as-you-go' subscription pricing.

Nevertheless, some SaaS firms also charge a one-time fee for set up and installation (including the training of key staff) as well as basic customization and integration services for legacy applications and databases.

(Strictly speaking, SaaS covers IT solutions – not only software but hardware and middleware and hosting).

SaaS, ASP and Web-enabled services

The key difference between SaaS and application service providers or ASP, the predecessor model which it is still sometimes confused with, include fundamental differences in architecture.

SaaS is based on a multi-tenant application architecture, designed from the outset to be scalable and replicable, with an inherent capability of supporting several hundreds (or even thousands) of simultaneous users at different locations - a direct result of the increase in bandwidth availability.

SaaS also offers major security and performance improvements, as well as easier integration and/or customization with other systems.

On the other hand, both SaaS and ASP do not have any resident software on a user's PC. Access is wholly through a Web browser.

Another relatively new model, the Web-enabled one, allows users the option to access the system either via a Web browser or Citrix. However, Web-enabled software, unlike SaaS, allocates responsibility for maintenance to a user's IT department, an external consultant, or a third-party maintenance contractor.

Healthcare and SaaS

For a relatively newer high IT spending sector such as healthcare, SaaS offers a host of promises.

Firstly, users avoid the need to choose, buy, install and maintain expensive hardware or software, and then track, assess and chase upgrades. Given the pace of new solutions on offer, the issue of making a good choice – devoid of heavy pressure from existing vendor relationships is hard enough. So too is selling the concept to management.

Its proponents argue that SaaS not only enables healthcare facilities to save money on software applications, but frees up IT specialists to focus on building the business. Their argument is especially compelling for some hospital CEOs who see their core business as healthcare delivery, not IT.

Growth drivers

Overall, the growth of SaaS is being driven by the following factors:

Technical

- Simplicity and speed of deployment.
- Scalability (incremental growth rather than the quantum leap in systems required for new needs). As one SaaS vendor explained, "it is hard to buy 37% of a new server".
- Flexibility, in terms of on-demand features and functionalities. For instance, SaaS allows for customizing on-line software through new scripts, or even new code, in far less time than an in-house team or dedicated third-party vendor ever could.

Financial and managerial

- Transparent pricing.
- Quicker payback on investments, with reduced costs (compared to licensed solutions whose costs are rising in many IT application environments).
- In monthly payment arrangements, some SaaS vendors allow for adding or reducing costs based on a growth or fall in the number of users or additional services.
- 24 x 7 support.
- In cases where application users (occasionally) cross physical or contractual/legal boundaries (e.g.

a project team on a clinical information system which requires resorting on an ad-hoc basis to an external consultant, who may not be covered by the licence).

➤ Global growth pathways via hosting centers outside one country.

SaaS and the real world: the pluses

Crucially, SaaS also addresses a world of limited IT human resources. It does away with the need to estimate numbers and downtime allocations for existing IT staff, as well as having to train them in the deployment of new applications.

This is especially pertinent given the diminishing pool of specialists having skills which span both the growing number of new IT solutions as well as old workhorse legacy systems. As any hospital CIO knows, integrating old and new, and keeping options open for even-newer systems, while overcoming user resistance and managing the huge task of change management, is not only very demanding but sometimes a thankless task too.

SaaS is of specific relevance for clinics and hospitals which face budgetary pressures, or have low margins. Another major advantage is the efficient and timely implementation of new healthcare IT solutions.

SaaS and the real world: the minuses

On the other hand, it is important to also account for occasions where SaaS is not appropriate. These include the following:

Excessive heterogeneity in the IT environment: SaaS systems are typically designed to address the needs of a wide variety of requirements from a centralized application. The flip side of this is a reduction in capability for complex customization. Although some SaaS vendors have sought to address this limitation, the immense complexity of the existing IT environment in most healthcare facilities makes this a crucial factor to take into account.

Pricing models: Though the pay-as-you-go subscription pricing model lowers upfront

costs, fees add up over time, especially since successful applications entail a steady growth in the number of uses and users.

Over a period of time, SaaS fees can converge with those paid upfront for a perpetual license – especially in both offer equivalence in technical and operational efficiency.

Vendor concentration: SaaS is marked by a limitation in the vendor pool, especially in terms of those offering high reliability and comprehensive features. As of now, most vendors tending to offer IT as a utility service are traditional ASP providers.

Lack of high-speed/broadband: This would be especially pertinent in eastern and central Europe, although there are many black spots in northern and western Europe too, as far as comprehensiveness of coverage is concerned. SaaS requires high-speed and dependable bandwidth.

Advantages for vendors

Like any emerging business paradigm, SaaS also promises to offer vendors a swathe of advantages, not least economies of scale, and an alternative to on-site deployment.

However, the presence of SaaS vendors is still small, and their credibility remains to be established – on both the technological and business sides.

One major issue concerns business culture. This consists of the challenges entailed in moving from a traditional business model (by virtue of which software is sold by a vendor's sales department to customers - with who they have a sometimes-longstanding relationship - with billing by the finance department in the form of an up-front fee, and support and maintenance provided by technical staff on the basis of an annual contract for maintenance and support negotiated by the legal department, to the SaaS model, where revenues trickle in on a monthly basis and can vary unpredictably from one month to the next.

Reliability, security and design

Like the wider IT industry, SaaS solutions have to still prove reliability and security, as well as an ability to be integrated with an existing IT environment. All these are challenging enough for any business sector; for healthcare, it is critical. This is where the design element comes in to play. Firstly, new SaaS offerings almost universally incorporate emerging SOA architectures.

Secondly, they (promise to) offer much higher levels of security, which too is not a core business of a hospital; indeed, security outsourcing firms focus purely on physical security (rather than the technical). New SaaS vendors offer both. At their hosting sites, they offer both physical security (layered, electronically-controlled with biometric support and access logs) as well as state-of-the-art industry-standard encryption and other technologies to protect against unauthorized IT system intrusion or attacks.

A look at the future

Overall, the growth of SaaS in the future can be considered a given. According to a 2006-2007 survey by Computer Economics, 57% of vendors indicate that economic benefits exceeded the cost of the investment, while 34% report a breakeven ROI. Only 9% of respondents indicated a negative ROI for software as a service.

Though SaaS in the healthcare area has been earliest to pick up in the US (including implementations at prestigious hospitals like that of the University of California at Los Angeles), many IT departments remain wary of it – both in the US and Europe, in healthcare and other sectors.

The reason is that many fear that SaaS will remove the *raison d'être* for their existence. However, to the more far sighted, SaaS offers the choice of an alignment of IT with business rather than the commonplace reality of becoming trapped in the quicksand of commodity IT applications and management.



ONE-SIZE-FITS-ALL? NOT ALWAYS

Small+local may still be beautiful and functional

AUTHOR
Catalina Ciolan
HIT

ASSIST, an association of 1,800 healthcare IT professionals in Britain, has published the results of a survey on the Big Bang modernization project of the England’s National Health Service. Its findings may underscore the need for some re-evaluation of the parameters and objectives of major healthcare IT projects, especially those seeking to make Europe e-Health ready.

The ASSIST survey, whose findings were released in September to an Independent Review Group, set up by Member of Parliament and Shadow Health Minister Stephen O’Brien, sought to determine how clinical, public and management needs could most effectively be addressed by IT.

The survey’s backdrop consists of growing concerns about NPfIT (the National Programme for Information Technology), the IT modernization mega-project underway in the National Health Service (NHS) which has been billed the world’s largest civilian IT project.

Stunning successes but ...

The ASSIST investigation was moored in agnostic foundations. It began by underlying an assumption about the intrinsic benefits of healthcare IT, especially from electronic patient records.

ASSIST also expressed particular concern about the sustained bouts of negative publicity over NPfIT, in spite of what it called “stunning” successes over the past decade.

It praised standards of IT in use at GP practices and emphasized Britain’s global leadership in developing health information and IT standards. Largely due to NPfIT, it noted, Britain had a “robust, secure IT network”.

... small is beautiful

Nevertheless, ASSIST concluded that “IT-imposed solutions” have “always tended to failure and that a one-size-fits-all approach does not work in the real world.

Instead, the study advocates ‘simple’ systems which can be configured locally. More sophisticated systems, in its view, are a recipe for rigidity.

Return to basics

ASSIST recommends that major healthcare IT projects focus first “on the basics”, and only then target more ambitious goals.

Crucially, it strongly calls for policy makers and managers to begin by making existing healthcare IT systems achieve their original objectives before aiming higher at more sweeping ones.

Standards or standardization - more than terminology at stake

ASSIST also says calls for more focus on standards, rather than the standardisation of systems - which was one of NPfIT’s original goals.

In this context, it underlines that although IT plays a core role in delivering healthcare at both national and local levels, it is often an “afterthought” for planners and policymakers – “at all levels.” In turn, such an absence of strategic vision leads to “last-minute, ad-hoc” demands and system changes.

More than performance at stake

The problem lies in the increasing coupling of the above factors – between the integral role of core systems in front-line care and a Band-Aiding ad-hoc approach. This “increasingly put patients at risk”. The ASSIST report provides several examples of strategic planning and impact assessment lagging behind implementation.

It also calls for greater transparency in learning from what has gone wrong. To do otherwise, it asserts, “is not just a matter of seeking to avoid criticism; patients’ lives may be at risk if we do not heed them.”

No hyperbole

The above observations were not hyperbole. On October 5, a ‘Sunday Times’ report (‘Patients ‘at risk’ from flawed £12bn IT system’) quoted an internal paper about a computer system at the Royal Free Hampstead NHS Trust in London. The system, which was “intended to revolutionize patient care”, had so many software flaws that seriously ill patients faced a risk of being inaccurately diagnosed. According to the document, the system (used in the accident and emergency department), had been routinely crashing, with patient information intermittently ‘lost’ forcing staff to revert to pen and paper. Sources have also pointed to a host of other issues with the Royal Free Hampstead NHS Trust system. Some of these were, in fact, discussed in HIT Issue 2, 2007 in an exclusive article by Dr. Jan K. Melichar, ‘The UK NHS IT Programme: The most expensive patient administration system ever?’.

The key ones:

- Problems expected to be sorted before the system went live were remained unfixed three months later.
- Regular system crashes posed a clinical risk as patients can be lost in the system.
- Long smartcard log-in times wasted valuable clinical time and/or discouraged physicians from using the system. This also led in some cases to smartcard sharing (not only a breach of protocol but also carrying serious problems about liability).

ASSIST recommendations

Focus on the basics before trying the ambitious: The visibility of ICT in hospitals is high and successes will be noticed and build confidence.

Do not lose or threaten the hard won successes:

The national security and information governance models, the high levels of ownership and use in primary care, the success of national systems and IT infrastructure – notably PACS and the national broadband network. Public and staff confidence is fundamental to exploiting the further potential of (healthcare IT).

Focus on standards not standardisation: A key theme of the 2002 NpfiIT implementation vision was ‘ruthless standardisation’. This emerged from an attempt to see the health services as analogous to a big business, where efficiencies and control was exercised through the deployment of common systems. We reject the notion that the NHS is analogous to a bank, ... a global telecommunications company or an airline.

Achieve a balance between technology, systems, people, process and culture: Different health and social care organisations are at different stages of maturity, for each of these key dimensions. ‘Big bang’ implementations of highly sophisticated solutions will rarely suc-

ceed in organizations without structured and integrated operational processes, top-level commitment from care professionals and managers, and strong informatics skills and infrastructures.

Ensure much earlier and more integrated policy planning at both national and local levels: It is important to recognise that informatics is now core business and needs to be included in mainstream planning. Information is a vital and costly asset and should be treated as such.

Invest in a systematic health informatics research and development programme: This should be used to develop an innovative and robust supplier market, with lower entry barriers into the NHS IT market.

Avoid structural change: This drains resources, diverts management attention, incurs cost, creates substantial disruption, and delays implementation of the consistent vision.

Avoid stand-alone data demands: Information should be derived as the product of operational systems. Ad hoc demands, often re-

quiring inefficient and staff-intensive solutions, are wasteful, produce poor quality data and continually divert resources and attention from addressing the underlying information and systems gaps.

Avoid insular systems development. It is important to recognise the potential value that individual local systems can have but only if they are developed in line with standards and support the flow and integration of information along care pathways, and delivered where and when needed by care professionals.

Invest in developing informatics skills, leadership and the profession. The full benefits of investment in informatics depends critically on the NHS and Social Care workforce – care professionals, managers and administrative staff – having the necessary core skills to make effective use of information and IT.

Source:

Adapted from report to the independent review group for the use of information technology in the NHS, health and social care in England. ASSIST National Council, September 2008.



Expertise in Electronic Health Records

For ten years now, Orion Health technology and experience has been contributing to EHR, telehealth and disease management programmes worldwide. We add new capabilities to health infrastructure by linking legacy systems, providing secure data access and creating a unified view of patient information – across facilities, regions and nations.

Our technology framework is being implemented as part of local, regional and national projects in four continents, for clients including the US Centers for Disease Control (CDC), the University Hospitals of Leicester NHS Trust and the Ministry Of Health And Consumer Protection of the Balearic Islands.

Find case studies and more information on how Orion Health can assist your eHealth strategy at www.orionhealth.com





IT AND MEDICAL TECHNOLOGY PULLING TOGETHER

*The Klinik am Eichert in Göppingen
(Germany) breaks new ground*

AUTHORS

**Joachim Hiller and
Timo Baumann** are
respectively Heads of the
Biomedical Department and
of the Department Service
Centre IT and Organisation
at the Klinik am Eichert in
Göppingen, Germany.

Information technology and biomedical technology are subject to constant adaptation. This is particularly clear in the field of biomedical technology with its orientation on the narrow level between natural sciences and medicine. Reduced to a common denominator: "The patient should benefit as soon as possible from a technological advance." This therefore calls for an interdisciplinary team consisting of IT and biomedical technology to implement the rapid leaps in technology that industry requires of us in the health sector.

Biomedical technology in changing times

From classic precision engineering, the orientation of this specialist discipline has changed totally and is today found more in mechatronics.

At the latest, the absolute necessity to open up to IT came about concurrently with the use of standard IT components such as PCs, network technology and database applications, etc., in nearly all areas of medical technology.

IT in the patient environment

Classic IT components automatically become medical technical components when used in the health sector and especially if used in close connection with the patient.

Marketing, operating and using these IT components suddenly came under the rules of EN 93/42, in Germany, the MPG (the Medical Products Act) and the MPBetreibV (the Medical Products Operators' Ordinance) as the legal basis and IEC

60601-1-1 with regard to electrical safety. This requires an enormous amount of specialist knowledge that de facto can only be understood and implemented by biomedical specialists.

Specialist departments link up

The Klinik am Eichert in Göppingen is breaking new ground. Originally separate specialist branches and departments are working on projects in a dynamic interaction with clearly defined parameters.

A few figures

Both organizational units in the Klinik am Eichert distribute the tasks as follows:

About 4,700 active medical products from approx. 250 different producers are supplied mainly by the medical technical service centre.

Approximately 40 software applications with 1,500 IT appliances and their 2,100 users and 42 current IT projects represent the remit of the SCIO (Service-Center Informationstechnologie und Organisation

[Service Centre for Information technology and Organisation]).

Organisational measures

Service Level Agreements form the basis of the organisational cooperation for joint projects. In these, functional and administrative activities and responsibilities are set out in writing in an object-related manner.

The user will receive this SLA for his application or modality on putting the system into operation and will be able to communicate objectively with the correct department.

The teams grow together

It is not possible to bring together colleagues from both disciplines in a purely organisational context. This is a question of personal identity. An IT employee will never become a medical technician or vice versa.

The greatest challenge is consequently creating human harmony that enables interdisciplinary team building.

A 14-day "Jour Fix" on a performance level has been implemented. Here, subjects that need to be dealt with top-down are on the agenda, e.g., the collection of current themes and their prioritizing or the distribution of employee resources among the actual projects.

Staff from both departments rotate for the daily briefings, twice a week. This already makes for an enormous exchange of experience!

Joint training sessions complete further specialist instruction in a bottom-up manner.

Conclusion

Medical products and information technology are merging ever faster and inseparably with one another. A rethink is necessary. Only together can complex, networked medical products, installations and IT systems be set up and operated in the future.



A typical medical product from this new generation.

The Klinik am Eichert

The Klinik am Eichert began operations in 1979. It is a central hospital for acute care with 16 departments, 896 beds and an academic teaching affiliated with the University of Ulm.

The Klinik has a total staff strength of more than 2,000.

Key services include centers for ambulatory dialysis, arthritis, diabetes, geriatrics, joint treatment, oncology, perinatology, pain, social pediatrics and vascular care. The Klinik also has a Center for Intensive Care Medicine.

The physical architecture of the Klinik is innovative, with buildings designed to influence work structures and workflow. One

key element is the absence of long corridors and the general sense of anonymity associated with many large hospitals.

The Klinik building is divided into two wings, and organized around self-sufficient divisions. Divisions generally consists of four care groups, which supply all core services, from admissions/administration and wards through fully-equipped interventional care units to a kitchen, supply and waste disposal areas. Physical equipment, ranging from food and clothes to medical disposables and other materials are moved by an automatic transportation system.

A system of support provided by 'care assistants' relieves nursing staff of non-core activities.

HEALTHCARE IN EASTERN EUROPE:

*A multi-speed,
multi-dimensional
matrix of change*

Though generally behind their counterparts in central Europe (the Country Focus in our previous issue), significant developments are also underway in the healthcare systems in eastern Europe (Bulgaria, Lithuania, Romania, Serbia and Ukraine).

As in central Europe, a major driver is the impact of transition from the Communist-era systems inherited by each country and the priority given to healthcare by national governments.



In principle, most countries in the region have transitioned from an era of 'free' care to one modelled on the mixed, social insurance systems of their counterparts in western Europe. Membership in the European Union by Bulgaria, Lithuania and Romania has clearly helped, and is likely to stretch the gap vis-à-vis the other two, Serbia and Ukraine.

Nevertheless, many challenges remain to be overcome by all five countries – not least that of access to financing resources from a relatively weak economic base.

The growth of private hospitals and practices is relatively slow (and in Ukraine's case, non-existent). This, in turn, has impacted downstream on engendering efficiency in healthcare financing – although many countries have begun assessing DRG-like schemes. Ironically, partial transformation of the healthcare delivery system has, in some cases, led to a spike in in-patient admissions.

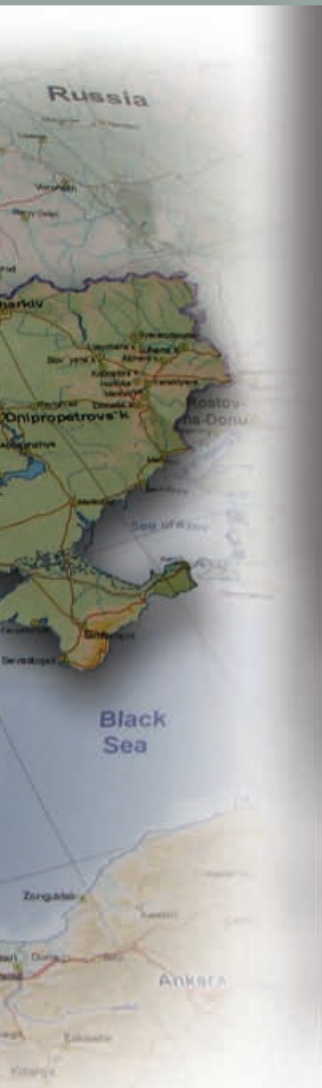
Given below is an overview of the healthcare system in each of the five eastern European countries.

Bulgaria

Bulgaria witnessed dramatic changes to its health care system over a very brief period of time in the late 1990s, and then follow-up efforts to fine tune the first burst to later realities.

Like other transitional countries in the region, the passage of a new Health Insurance Act in 1998 set the legal basis for both compulsory and voluntary health insurance in Bulgaria.

The new system was financed by payroll contributions (6% of monthly wages, shared in a 1-4 ratio between the employee and employer – with a target 50-50 split by 2009). Meanwhile, the role of the State (at both federal and local government levels) was circumscribed to coverage of retired citizens and lower-income groups.



COUNTRY FOCUS: EAST EUROPE

	BULGARIA	LITHUANIA	ROMANIA	SERBIA AND MONTENEGRO	UKRAINE	
<i>Population (million: 2007)</i>	7.64	3.38	21.55	7.39	46.38	IFC
<i>Birth rate per 1,000 (2005)</i>	8.98	8.95	10.22	10.7 (2002)	9.08	WHO Regional Office for Europe
<i>Crude death rate per 1,000 (2005)</i>	14.15	12.83	11.95 (2004)	10.8 (2004)	16.66	WHO Regional Office for Europe
<i>Life expectancy (2005)</i>						
<i>Males years</i>	69.1	65.4	68.3 (2004)	70 (2004)	61.5	WHO Regional Office for Europe
<i>Females years</i>	76.3	77.4	75.6 (2004)	75.4 (2004)	73.4	WHO Regional Office for Europe
<i>GDP (billion USD: 2007)</i>	39.55	38.33	165.98	NA	140.48	World Bank
<i>Total healthcare expenditure (% GDP: 2004)</i>	7.7	6.5	5.7	10.1	5.8	WHO Regional Office for Europe
<i>Public healthcare expenditure (% GDP: 2004)</i>	4.3	4.9	3.4	7.8	3.9	IFC, OECD data and HITM estimates
<i>Total healthcare expenditure per capita (PPP dollars: 2004)</i>	638	816	566	431	361	IFC, OECD data and HITM estimates
<i>Number of hospital beds per 100,000 inhabitants (2005)</i>	642	812	656	NA	868.3	WHO Regional Office for Europe
<i>Number of hospital admissions per 1,000 inhabitants (2005)</i>	210	238	246	NA	216	WHO Regional Office for Europe
<i>Length of stay in acute care hospitals (average in days)</i>	8.3	NA	NA	NA	13.4	WHO Regional Office for Europe
<i>Number of physicians per 100,000 inhabitants (latest available data)</i>	365	390	195	270	302	WHO Regional Office for Europe
<i>Number of nurses per 100,000 inhabitants (latest available data)</i>	383	750	400	600	780	OECD
<i>Percentage of population with Internet access</i>	55.1	37.4	53.9	14.8	21.7	ITU

Source: European Central Bank, OECD, WHO, EU Commission and national statistical agencies

In tandem, a National Framework Contract laid down a basic benefits package.

Structurally, the key goal of the reforms has been to separate healthcare financing from provision. 28 regional insurance funds currently reimburse both public and private facilities on a contractual basis.

Seven years before the Health Insurance Act, the government had already moved to legalize private practice in the healthcare area (labs, clinics, surgeries and pharmacies), and begun to reorganize government health facilities.

Physician practice groups, diagnostic centres, pathology laboratories were established or transformed into companies and cooperatives, including joint ventures with State entities.

At present, hospitals in Bulgaria are divided into specialized or general/multidisciplinary facilities. National hospitals, though State-owned, have been corporatized. Regional

and inter-regional hospitals are joint ventures between the State and local governments. Local hospitals are owned by the municipalities where they are located.

Financial restructuring in Bulgaria was backed up by reforming the payments system for hospital providers and the launch of a DRG-like scheme based on performance and case payments. Accompanying this was an overhaul of the primary care system with GPs progressively designated as gatekeepers for access to specialized care.

Reflecting the separation of healthcare financing from provision, reforms in the hospital funding system have been designed to bring about competition between health care providers, and increase both choice for patients as well as quality of services.

Though near-universal, the system is still some way from achieving the 'free' status of its counterparts in northern and southern/western Europe. Co-payments continue to be required for the basic benefits pack-

age: at 1% of the minimum monthly salary per out-patient visit and twice this level per day of hospitalization, up to a maximum of 10 bed-days a year.

In the period to 2012, one of the government's principal priorities is to set up and implement a quality/accreditation scheme for players in the healthcare sector. This is clearly an area where healthcare IT will play a central role.

Lithuania

Lithuania's healthcare system attained a watershed in 1996, when legal changes saw the country move away definitively from its historical centralized, integrated delivery system towards a contract-based model.

Two major changes have accompanied this process: the emergence of third-party payments in the shape of a Statutory Health Insurance Fund (SHIF), alongside legislation redefining the status of health care institutions and private property rights.

Tentative steps towards statutory health insurance date back to the 1991-1995 period, when the scheme was limited to pharmaceuticals and spa care (partly reimbursed through a general social insurance scheme, administered by SODRA, the State Social Insurance Agency, and supervised by representatives of the Government, trade unions and employers).

In 1992, the government established a State Sickness Fund under the Ministry of Health, with the role of financing recurrent costs of healthcare facilities on the basis of prospective payment contracts. In 1997, SODRA's responsibilities were transferred to SHIF.

Currently, the majority of Lithuanian health care institutions are non-profit-making enterprises.

The federal Health Ministry provides overall supervision of the Lithuanian health care system, via laws and regulations, and shares control of two major Lithuanian university hospitals at Vilnius, and the Kaunas Medical University (with a highly regarded telemedicine center).

The country's 10 counties and 56 municipalities are responsible, respectively, for implementation of the state health programmes in their regions and providing primary health care.

To encourage competition, Lithuania's citizens are free to choose hospital providers, primary health care institutions and physicians (within a selected institution).

Public health care institutions are financed by SHIF, while ownership and operational responsibility lies within the jurisdiction of the Ministry of Health (shared with the counties and municipalities).

Counties have ownership of nursing homes and outpatient facilities (with progressive separation of polyclinics and ambulatory services from hospitals), while municipalities are principally responsible for operating smaller hospitals within their territories.

Lithuania has about 150 polyclinics. These employ a wide range of specialist physicians - equipped with a full range of diagnostic devices, and providing a full spectrum of primary

and secondary outpatient care in the towns where they are based, and outreach/referral facilities for the rural population.

In recent years, outpatient surgery (principally revolving door minimally invasive interventions) have begun to be increasingly carried out by polyclinics.

The country also has about 200-plus ambulatory services. These are essentially group practices in small towns, and provide unspecialized primary care centred on a general practitioner and/or an internist, a midwife and a paediatrician. The budding private healthcare sector in Lithuania mainly provides out-patient services. These are largely (though not wholly) paid out-of-pocket.

Romania

Since the 1989 Revolution, Romania's centralized, tax-funded Semashko healthcare system has been drastically overhauled in an unremitting series of reforms. This has led to tangible improvements across the entire spectrum of healthcare delivery.

Healthcare financing is now based on a mandatory social health insurance system, covering the entire population. This is organized under 42 District Health Insurance Funds as well as two funds for government employees.

The Funds contract, on the one side, with purchasers (employers and employees), and on the other with providers.

Hospitals are organized at the regional, district and municipal levels, with specialized units (clinics and some dedicated teaching and other hospitals) providing tertiary care.

At present, a combination of budgetary allocations (determined by Parliament) and fee-for-service arrangements cover the delivery of primary care services - principally via family physicians under contract with the Funds. Specialists providing ambulatory treatment as well as home care are almost wholly funded by fee for service.

Acute care hospitals are financed by a mix of budgets and fee for service, with tertiary care provided in specialized units (hospitals or institutes as well as dedicated centres in

acute care facilities). Long-term care for chronic patients is delivered, among others by "medico-social" facilities and sanatoria, and is financed principally via the State budget.

There are some moves to implement diagnostic-related group (DRG) systems in the Romanian hospital system. The key motive is to reduce a high rate of in-patient admissions - a result of an incomplete transformation of primary and ambulatory care, as well as a fragmentation of service delivery.

Over the past decade, the foundational Health Insurance Law of 1997 has been adapted to changes in the economic environment, mainly to continue whittling down the financing powers and responsibilities of the Ministry of Public Health.

A new legislative reform package in 2006 increased decentralization further, along with a boost to preventive care and a guaranteed minimum service package (covering drugs, medical devices, hospital/clinic services and emergency care). It also offered Romanians the possibility of obtaining private insurance to supplement the mandatory scheme.

Overall, the Romanian healthcare system currently incorporates a northern European-style redistribution of funds from wealthier districts to poorer ones, along with free choice of providers by patients.

Nevertheless, the system remains in a state of transition. Out-of-pocket payment levels remain significant (for services beyond the statutory minimum package) and taxes continue to account for about one-sixth of health spending, principally capital spending by hospitals.

The overall health status in the country also remains below the European average, with life expectancy of 73 years as against 79, and - in spite of reductions - a persisting high rate of both infant and maternal mortality (about 14 and 15.5 per 100,000 births, respectively).

Serbia

After years of upheaval, Serbia is systematically rebuilding a stressed and severely underfunded healthcare system. Although the country's healthcare professionals are

trained to global standards, outdated equipment and infrastructure has impacted in a major manner on the quality of healthcare service delivery.

In 2002, a European Agency for Reconstruction study found 75% of the medical equipment in health facilities more than 10 years old. In addition, only one third of hospitals had operational sterilisers.

Health centres in Serbia are classified either as major hospitals (domovi zdravlja) or clinics (zdravstvene stanice), and exist in all major towns and cities. Patients are admitted to hospital either through the emergency department or via a GP referral.

Treatment is assigned to a hospital doctor. In spite of the HIF health fund (see below), drugs and basic medical supplies are obtained on payment from privately owned pharmacies. Hospitals too often require cash payments.

Serbia allows citizens to register with a doctor of their choice. However, they are charged a fee for each visit. GPs act as gatekeepers, making referrals to specialists, as well as prescribing drugs and providing preventive care.

The country's Health Insurance Fund (HIF) operates its health service. Its aim is to provide equitable access for all citizens, regardless of economic circumstances.

However, given the political pains of the past decade, quality healthcare is the exception rather than the rule. Nevertheless, the HIF seeks to cover core medical services - including prescriptions, hospitalization, treatment by specialists, maternity and rehabilitation. Private healthcare is also available for those who can afford it.

Employers must register their employees with the HIF. Depending on income levels, both employers and employees make contributions, as do the self employed. The federal budget covers pensioners, unemployed and people on long-term sickness benefit.

In spite of all these challenges, many health indicators have remained steady

during the 1990s, as reported in February 2007 by Britain's The Lancet. The article was based on an interview with Snezana Simic, who was then just resigning from her position as acting Minister of Health for four years. Ms. Simic was both sanguine and optimistic in her outlook.

The goal of reforms, she told The Lancet, was to "build on the good points of the old system" - in particular primary care networks. In addition, investments were being made to improve morale, with salaries hiked by 40% and buildings refurbished and re-equipped.

Such efforts are accompanied by a new 'patient-centred focus', with a higher profile role for healthcare IT, in monitoring indicators such as hospital mortality rates, mean lengths of stay, and utilization of health services.

Eventually, the aim is to link hospital payments to performance (in terms of patient throughputs and quality of services).

Ukraine

Ukraine's independence from the former Soviet Union was followed by a massive healthcare crisis, with life expectancy dropping by almost 4.5 years (males) and 2.5 years (females) in the 1990-1995 period.

The government nevertheless persisted in seeking to reform the health care sector. Its goals were twofold, to improve structural efficiency - principally by means of decentralization, as well as standardization of healthcare technologies, alongside accrediting hospitals.

Alongwith, it sought to mobilise private funds for healthcare delivery; this largely consisted of attacking over-capacity in certain specialties and regions, while whittling down the scope of 'free' care. In 1996, 'user charges' were formally introduced for the first time to cover healthcare services.

Politics have, however, clouded the outlook. A social health insurance law has been on the Parliamentary agenda for many years, but, in spite of a succession of changes to accommodate a variety of vested interests, it has not made any mean-

ingful headway was finally rejected in September 2003; a fourth reading originally considered for May 2004 has now also been withdrawn.

Formally, Ukraine's health care system is supervised by the Ministry of Health. However, the bulk of delivery is through hospitals and clinics owned and run by regional authorities or municipalities, with a mix of federal and locally-raised financing (in an overall ratio of roughly 20-80%).

Budget allocations are made on the basis of bed capacity and patient throughputs and strictly regulated. Given the chronic financial shortfalls, they are also prioritized - beginning with staff salaries, followed by drugs and equipment.

Nevertheless, the capacity/patient throughput-based payment system encourages clinics and hospitals to increase the number of consultations and in-patient admissions, and militates against raising the efficiency of the system.

In effect, the basic principles of the old system still underline the new. Both cut-backs and growth in capacity have been uneven and inefficient.

The State guarantee of universal, unlimited access to free health care also remains, in spite of a huge swell in waiting lists and sub-optimal outpatient and tertiary care.

In addition, official salaries for many categories of healthcare staff have, for years, been below subsistence levels, and unofficial payments have become routine.

The bulk of the financial slack, not unexpectedly, is still taken up by out-of-pocket payments, and for items ranging from syringes to food and beds, full upfront payments are required. Overall, private payments now account for an estimated 50% of total health spending.

There is, nevertheless, a small presence of private facilities. These are however focused for now on dentistry, sexually transmitted diseases and drug/alcohol dependency.

THE HEALTHCARE IT SYSTEM IN EASTERN EUROPE



Serbia

Serbia's e-Health vision is part of the government's September 2005 position paper: National Strategy for an Information Society in Serbia. This defines the main issue as "the implementation of an infrastructure to provide for medical care, disease prevention, and health education on-line."

In general, the Strategy Paper acknowledges that health information systems in the country "are largely outdated and paper based. Coordination is not present, and ICT is deployed in a fragmented and duplicative way." As a result, "no one can have an accurate picture of the current situation, which hinders plans for the future as well."

In such a context, one of the government's priorities has been to make an assessment of the country's healthcare IT infrastructure, and towards this, it has been assisted by bodies such as the World Bank and the European Union resulted in the realisation of several projects.

At the moment, its priorities are to:

- Create digital infrastructure (extend and upgrade the backbone communication network)
- Provide affordable access to telephone and internet services
- Establish links with public health information networks and databases
- Build and maintain health portals, with development of content in local language
- Define clinical paths and electronic support for them
- Accept internationally harmonized standard documents
- Reengineer processes with internationally accepted best practice
- Use online technologies for availability and quality of health services
- Use wearable and portable monitoring systems
- Develop health telematics infrastructure for telemedicine services
- Use health services network for collection of statistical data, monitoring and reporting
- Develop data warehouse for monitoring and decision making

On a technical level, the government has outlined three priorities. These concern data standards as the first step to interoperability, the need to give the highest attention to privacy and security, which it sees as "critical ingredients" for building trust, and the promotion of personal health as a means to secure user buy-in by Serbs.

Flagship e-Health projects

A feature on the new Serbian EHR system (deployed in summer 2008) is provided on page 24.

It represents an ambitious attempt by the country to leapfrog its way into the e-Health arena, which remains outdated, paper based and poorly interconnected (as discussed above).

Nevertheless, Serbia has been moving to both take stock of and incrementally boost the foundations of its future e-Health network.

The principal player in this area is the Belgrade University Computer Center (BUCC), which is responsible for development, maintenance and management of the nascent Serbian national healthcare network NREN.

This provides free 1 Gb/s links to over 60 hospitals. However, most of the latter are affiliated to Belgrade University.

A separate network of the National Health Insurance Fund connects about 200 internal locations with headquarters.

In the coming years, the principal challenge will be to link the above networks seamlessly (and in accordance with international security standards), alongside growing the user base to more hospitals and other healthcare institutions, as well as develop new services. The recently launched EHR is a potentially major step in the latter context.



Lithuania

e-Health policy in Lithuania falls under the jurisdiction of the Health Ministry. This is encapsulated in a position paper 'eHealth Strategy for 2005-2010', which acknowledges the central role of IT in modernising the country's healthcare system. One key point of interest in the strategy paper is a central role accorded to patients, to enable them to participate directly in their own healthcare activities.

Meanwhile, Seimas (the Lithuanian parliament) has provided legal moorings to issues of data protection, confidentiality and digital signatures as well as data interchange standards. It has also proactively sought to align this framework with regulations and other evolving measures across the European Union.

Key aspects of Lithuania's e-Health strategy include optimization of resource management, prioritizing plans and projects with regard to telemedicine (remote monitoring and telecare), clinical decision support, as well as patient health records – in the latter case, via integration of health care registers and databases.

In tandem, there are plans to boost computerization and networking of GPs, outpatient clinics, and implement modern hospital information systems.

The jewel in Lithuania's budding e-Health apparatus is the Telemedicine Centre at Kaunas University, a leading regional R&D institution for developing telemedicine solutions and services, which also advises healthcare institutions and the government on e-Health policy and Best Practices.

Flagship e-Health projects

A master project simply labelled 'eHealth services' is the keystone of Lithuania's e-Health system. This includes implementation of a base Hospital Information System in three regional healthcare institutions (in Kaunas, Klaipeda and Vilnius) and their systematic expansion and integration to a nationwide system in consonance with international standards.

Key technical objectives are to permit faster data exchange between healthcare institutions on patient treatment procedures and lab results. The project is jointly financed by the government of Lithuania (45%) and the European Union (55%).

To keep patients, physicians and the general public up-to-date on developments in the country's, the government has established a Website (<http://esp.sam.lt>).

In summer 2008, the government followed up its 2005-2010 e-Health strategy paper (see above) with a more goals-oriented document for the period 2008-2015. This foresees a three-step e-Health implementation programme.

- By 2010, the infrastructure of the national e-Health system is expected to be in place. The government expects 20% or more patients' visits to be registered in the eHealth system, and its use by a similar share of Lithuanian healthcare institutions (including the largest hospitals) as well as 30% of GPs
- By 2013, the above shares are expected to reach "a majority" of patients, hospitals and physicians
- Universal coverage is planned by 2015.



Romania

Romania's status as an IT hotspot in eastern Europe (and well beyond) is reflected in all the trappings of an advanced e-Health infrastructure.

Indeed, as in the richer countries of Europe, the debate on the future of e-Health in the country is centered on interoperability of IT systems – ranging from databases at the Ministry of Public Health and its local organs, through health insurance funds to hospitals and other providers as well as patients. The eventual aim is to offer healthcare professionals decision support tools in real time.

Romania has considerable practice of hospital information systems (HIS), with three out of four hospitals already deploying controlled IT procedures in clinical departments.

Though still heterogeneous, the HIS systems in use in Romania (some dating back to the 1980s) include patient IDs and health records, and are integrated with independent departments (OR, outpatient, laboratory, pharmacy, etc). Moreover, all State hospitals in the country use the same application for DRG datasets on patients.

Flagship e-Health projects

Current efforts in the country are focused on developing and implementing an integrated national health information system, interfaced with electronic patient records, and backed by a rigorous dictionary of clinical terminology. There are also moves to extend telemedicine applications, used in several major cities for emergency healthcare, to the national level.

Towards all this, Romania has made a head-start over many other countries by adopting the existing 13-digit ID number issued to all citizens as a unique identifier within the (emerging) e-Health framework. One initiative foresees a smart card, identifying patients and embedded with a minimum (but eventually scalable level) of personal health data for use in emergencies.



Bulgaria

Bulgaria's healthcare IT perspectives are anchored in an April 2006 policy paper on a National Strategy for Health and an Action Plan for e-Health.

Its main goals are to increase quality of health care, apply state-of-the-art medical and healthcare IT technologies and augment the qualifications of the country's health professionals. Towards this, the country has begun rolling out a variety of pilot e-Health projects.

The e-Health Action Plan seeks to introduce EHRs, alongside new hospital information systems as well as Web-based applications for access by patients.

Reflecting the country's past political system is the ownership by the Health Ministry of a variety of bespoke software systems, principally legacy applications to process information originating in subordinate authorities. In spite of this, the country lacks a centralized data repository of medical information on patients, or means to transfer this for planning or analysis. One of the country's first goals will therefore no doubt lie in updating or replacing these systems.

In spite of this, a skeletal healthcare IT backbone is already in place, centered on the National Health Insurance Fund (NHIF), which uses a VPN to connect headquarters with regional funds, and has already automated processing of claims by the majority of medical service providers. According to some sources, 90% of Bulgarian GPs and 100% of laboratories report electronically - but principally via diskette rather than online)

Flagship e-Health projects

The Bulgarian Ministry of Health and the National Health Insurance Fund began a pilot project on electronic health cards in October 2007. The first phase in this EU-supported project involves 1,000 residents (principally chronic patients) from one town (Slivnitsa) and a village Aldomirovzi. Physicians nominated patients, based on their condition.

The first service consisted of e-prescriptions, with a secure, scalable network linking four pharmacies and seven GPs with the patients. The system is currently being evaluated for a wider roll-out. In the long-run, this project (a hub of the country's e-Health plans) foresees the following targets:

- The availability of electronic health records by 2009
- The full availability of eHealth cards by 2013.



Ukraine

Telemedicine has a long history in Ukraine, dating back to the 1990s and before (for example, in monitoring vital signs of coal miners). Telepathology was started up in 1995, and along with distance education, teleconsultations remain the mainstay activity in the field. In 2000, Ukraine's first Department of Telemedicine was set up in Donetsk.

It has since carried out teleconsultations across a full range of specialties – from trauma and neurosurgery, to oncology and obstetrics – both internally, and with medical specialists abroad.

One of its major recent initiatives has been to establish a legal Best Practices model for the country (and the region), with due attention to issues such as privacy, informed consent, confidentiality of telemedical data and issues of responsibility for patients treated via telemedicine.

Flagship e-Health projects

Formally, Ukraine's e-Health system is centered on Health-Net, which consists of national medical networks and a database Registry.

The most prominent is a National Register of over-700,000 individuals suffering from the aftermath of the Chernobyl nuclear accident. It covers 25 districts and two cities - Kiev and Sebastopol. The second e-Health network is the Health Ministry's Sanitary and Epidemiological Service, run at 70-plus districts. The bulk of its activities are directed at monitoring for infectious diseases.

A more recent medical network has been created for monitoring oncological patients in 19 regional dispensaries, with its hub at the Kiev-based Institute of Oncology.

HEALTHCARE IT MANAGEMENT

Subscription form

Ways to subscribe:

- Send an email with your name and address to: office@hitm.eu
- Transfer the correct amount to the following bank account:
Healthcare IT Management - 28, Rue de la Loi - B-1040 Brussels - Belgium
IBAN BE29 7350 1603 2064 - Swift: KREDBEBB
(in Belgium: 735-01603 20-64) Note: Charges to the principal
- Complete this form and post it to:
Healthcare IT Management - 28, Rue de la Loi - B-1040 Brussels - Belgium
- Complete this form and fax it to: +32 2 286 85 08

Subscription form:

Name: _____
Institution: _____
Address: _____
Postal Code & Town: _____
Country: _____
Telephone: _____
Email: _____

- Two-year subscription One-year subscription

Subscription rates:

One year:	Europe:	80€
	Overseas:	120€
Two years:	Europe:	140€
	Overseas:	180€





November

WORLD OF HEALTH IT '08

04 – 06 November 2008
Copenhagen, Denmark
www.worldofhealthit.org

TELEMEDMEETING 2008

14 November 2008
Geneva-Archamps, France
www.telemedmeeting.org

EHEALTH CONGRESS

18 November 2008
Brussels, Belgium
www.exhibitions.tmb.be

MEDICA

19 – 22 November 2008
Düsseldorf, Germany
www.medica.de

ICT EVENT 2008

25 – 27 November 2008
Lyon, France
www.ec.europa.eu/information_society/events/ict/2008/index_en.htm

SWISS NATIONAL CONFERENCE « ICT AS A MEANS FOR INTEGRATION – POSSIBILITIES AND LIMITS »

27 November 2008
Bern, Switzerland
<http://www.bakom.admin.ch/themen/infosociety/02030/index.html?lang=de>

E-INCLUSION MINISTERIAL CONFERENCE

30 November – 02 December 2008
Vienna, Austria
www.ec.europa.eu

RSNA 2008

30 November – 05 December 2008
McCormick Place, Chicago,
Illinois, USA
www.rsna2008.rsna.org

February

INTERNATIONAL CONFERENCE ON EHEALTH, TELEMEDICINE AND SOCIAL MEDICINE E-TELEMED 2009

01 – 06 February 2009
Cancun, Mexico
<http://www.iaria.org/conferences/2009/eTELEMED09.html>

EHEALTH CONFERENCE 2009

19 – 20 February 2009
Prague, Czech Republic
<http://www.mzcr.cz/>

March

ESR

06 – 10 March 2009
Vienna, Austria
<http://www.myesr.org/cms/website.php>

April

MED-E-TEL

01 – 03 April 2009
Luxembourg, Luxembourg
<http://www.medetel.lu/>

HIMSS09

**HIMSS ANNUAL
CONFERENCE & EXHIBITION**
04 – 08 April 2009
Chicago, USA
<http://www.himssconference.org/>

May

THE 5TH ANNUAL HEALTH CARE CONGRESS EUROPE 2009

13 – 14 May 2009
Brussels, Belgium
<http://www.worldcongress.com/events/HR09015/index.cfm?confCode=HR09015>

June

FREE FLOW OF PATIENT INFORMATION - FICTION OR FACT?

15 – 16 June 2009
Tromsø, Norway
<http://www.telemed.no/>

CARS 2009

23 – 27 June 2009
Berlin, Germany
<http://www.cars-int.org/>

20
08
-
20
09



ISSUE 1, 2009

➤ COVER

Convergence: Medical Informatics and e-Health

➤ FEATURES

Smartcards and Healthcare

QA/Testing

Remote Monitoring and Care

➤ PRODUCT COMPARISON CHART

Radiology Information Systems

➤ MANAGEMENT

Asset Management

➤ COUNTRY FOCUS

United Kingdom

➤ EU SECTION

EU Developments

GE Healthcare

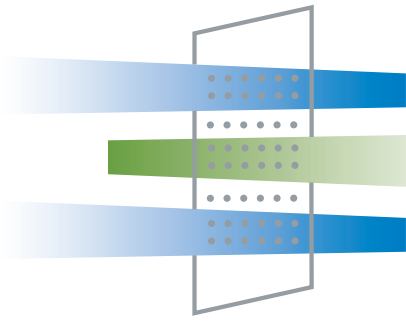
The end of disease starts at the beginning.

The sooner the better. Never did that phrase ring more true than when treating illness. From predicting and diagnosing to monitoring, treating and informing, GE Healthcare dedicates its resources to help healthcare providers stay as many steps ahead of illness as possible. Because the earlier the detection, the sooner we just might bring disease to an end. **Healthcare Re-imagined.**

To learn more, visit www.gehealthcare.com



GE imagination at work



European Association of HEALTHCARE IT MANAGERS

The European Association of Healthcare IT Managers is a non-profit pan-European umbrella organisation for all relevant national healthcare IT associations in Europe.

OUR MISSION:

- *The European Association of Healthcare IT Managers supports and encourages the emergence of common healthcare IT standards at both EU and international levels.*
- *The European Association of Healthcare IT Managers believes that the European Healthcare IT sector needs a common voice - especially in the face of rapid technological change and growing socioeconomic pressures.*
- *The European Association of Healthcare IT Managers invites you to be involved in a community to exchange opinions and experiences with like-minded colleagues. We defend your interests and make your voice heard, effectively.*

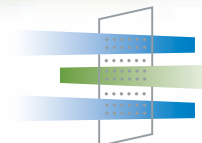
*If you are a CIO, CMIO or IT Manager
in the healthcare area*

JOIN US !

Visit our website at www.hitm.eu to apply for membership today!

European Association of
HEALTHCARE IT MANAGERS
28, Rue de la Loi
B-1040 Brussel, Belgium

Tel.: +32/2/286 85 01
Fax: +32/2/286 85 08
Email: office@hitm.eu
Website: www.hitm.eu



European
Association of
HEALTHCARE IT
MANAGERS



**Can you afford to give us a
lifetime of the very best care?**

By integrating imaging, lab diagnostics and healthcare IT, we can advance the science of medicine and the economics of healthcare.

Imagine a healthcare system that keeps us healthier by detecting disease earlier. Quality of life increases and costs are better controlled. Genomics and the integration of molecular diagnostics, advanced imaging and healthcare IT open up new possibilities for a lifetime of care. Together, we can deliver on the promise of personalized medicine.
www.siemens.com/Integrateddiagnostics +49 69 797 6420

Answers for life.

SIEMENS