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Dear Reader,

In several editorials and features over the past years, Healthcare IT Management has advocated the need for a European face to healthcare IT. We have argued that more than industrial policy or simple feel-good, such issues relate to fundamental questions about healthy business, scientific continuity, and the European way of life.

The challenge is clear. The creative juices of innovation do not lie in policy. The birth of new ideas cannot be left to politicians, playing midwife. Neither can civil servants be the babysitters tasked with nurturing the infant called innovation.

What both politicians and bureaucrats can do is to protect innovation from being thrown to the wolves. And this is an area where Europe, more specifically European healthcare IT, needs attention.

We are not chauvinists. We seek to be realists. We do not believe that the emerging world of healthcare IT will necessarily be aligned with the unique European Welfare State model – where equity and efficiency are two sides of the same coin. This is not the American way, nor the Chinese or the Indian.

Students of the history of science know about both the European, Roger Bacon, and the American, Thomas Kuhn.

Bacon focused on incremental innovation. He wrote about ants (their painstaking step-by-step job of improving the way things work), and spiders (who organised) this into something bigger. This is a European gift. Testimony to it lies in the iconic global value of that engineering brand: 'Made in Germany'.

Kuhn described paradigm shifts, those earth-shaking transformations by which technology reshapes the world. Since the middle of the 20th century, this has been the domain of the Americans. However, many such transformations were driven by Europeans, who went to the United States. The atomic bomb was the handiwork of Germans, an Italian, an English-origin New Zealander and a Dane. The more powerful Hydrogen Bomb was developed by a Hungarian. NASA's Father, too, was a German: Werner von Braun led the team for the Saturn V rocket, which propelled the astronauts on Apollo 11 to the moon. And we know about the Englishman Tim Berners-Lee and the Internet.

Tomorrow's healthcare paradigm shifts, such as nanotechnology, robotics, biochips and supercomputing, may well have their roots elsewhere. Many gurus in enabling areas – from RFID to image compression and encryption algorithms – are still Americans, but not necessarily from Europe. Urobot, the first prototype robot for minimally invasive surgery, was developed by Nanyang Technological University in Singapore.

In this context, we at Healthcare IT Management were encouraged by the response to *IT@Networking 2009*, organised at the end October by the European Association of Healthcare IT Managers and the European Association of Hospital Managers.

This event, the first-ever of its kind, aimed at providing recognition to imaginative European innovators – those who have designed and implemented new solutions with the potential to shake up the healthcare IT landscape, both in Europe itself and beyond its borders.

IT@Networking 2009 drew an encouraging response. The breadth and technical depth of the 50-plus entries, from across the continent, was overwhelming. On her part, EU Commissioner for the Information Society and Media, Viviane Reding, applauded the initiative as a means to further develop and deploy innovative e-health solutions.

I began by referring to the need for a 'European Way'. *IT@Networking 2009* was an attestation to the fact that there are many of us, in the healthcare IT industry, in hospitals and universities, and at the European Commission, who endorse this. More details about the event are provided in the following pages of this issue. Both the European Association of Healthcare IT Managers and the European Association of Hospital Managers plan a follow-on *IT@Networking 2010*.

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

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

Editors
Lee Campbell, Sherry Scharff, Dervla Gleeson

Communications Director
Jonathan McHugh - j.m@hitm.eu

Art Directors
Aleksander Bugge - a.b@emcconsulting.eu
Luca De Battista - art.one@emcconsulting.eu

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HEALTHCARE IT MANAGEMENT

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E-HEALTH / EHR AND CLINICAL RESEARCH

Conceptually the main purpose of the Electronic Health Record (EHR) is to assist medical care by providing information for diagnosis and therapy where, when and how it is needed. This is particularly important in the today's highly specialized and sometimes fragmented environment, where a patient is seen and treated by many different health professionals. However, there are many (potential) secondary uses of the data in the health record – not least in terms of clinical research.

Page 40-46
COUNTRY FOCUS: GERMANY

In spite of being over two years behind schedule, Germany's national healthcare IT infrastructure project is inching forward to a roll-out.

Still, some hurdles lie ahead. In the near future, what is likely is akin to the kaleidoscopic effects of an electronic salad bowl.

More Talent Needed to Match Jobs

Sir,

I agree with Tom Olivo (Issue 4, 2009) on the challenges of Matching Talent and Jobs. I personally believe that in Europe too there is a major problem of finding the right IT people for the right roles. Unfortunately, I think the problem here is more political (as well as economic and cultural) than managerial.

There is a decline in interest in IT as a career, and this has begun since the dotcom crash almost a decade ago. What we see is a big squeeze in the availability of IT professionals with 5-7 years experience. These are the people who need to be groomed by their seniors to produce appropriate levels of alignment in a fast-changing healthcare IT environment. But there just are not enough of them around.

The US has seen fit to fill this gap by importing highly skilled professionals from India and elsewhere. Here, in my company, a 3-month visa from a top Indian engineer takes 6-months to get, and in many cases, the people we have identified lose interest. I do not think many people understand that mid-level Indian engineers are not economic migrants but career opportunists, who actually make more money in India (and the US, of course) these days.

In my company's case, rather than bring Indians here, we have had to send the jobs out to India, and do this at a greater cost to our company – not just financial. Several support functions here in Belgium have been lost, too, once the IT jobs have gone. In contrast, I read sometime ago in the New York Times that many American IT students are going as interns – to India. What a reversal?

Is it not time for the EU Commission to face up to the facts: Demographics and the general malaise in our economy mean that we have to either get people here or send our IT industry to India. The Indian IT industry will soon be larger than the Belgian economy!

Bob Stokman
Brussels, Belgium

Cloud computing and SaaS

Sir,

Congratulations to your separate features on these two linked issues (Issue 4, 2009). We have been working on a strategic five-year plan at my hospital, and see both as ways to save on EMRs. This is principally because we are part of a group and can share a core EMR application, while maintaining patient data on our own servers.

In addition, SaaS is explicitly committed to customise applications and maintain those in future releases. So far, one has to pay through the nose for such upgrades – or risk losing support.

In the future, I see the only issue which will be a problem as ownership of data and the legal implications of this. Our servers are soon due to be moved overseas.

In any case, I believe vendors are giving a lot of thought to issues of security and privacy.

The only question which was left unanswered is why are there only few SMEs in this area, especially from Europe.

Jon Rasmussen
Copenhagen, Denmark

The US and Europe

Sir,

I am happy that, unlike many of your counterparts, your Association (and magazine) take a cautious stance on defending the European way as far as healthcare IT is concerned. The principal threat is indeed from the US. This IS a zero-sum game. I wholeheartedly agree with Dr. Madjaric's conclusion ('Health IT Stimulus: Obama's Dream or Nightmare', Issue 4, 2009) that there is a 'threat for Europe' from the billions being spent in the US on redefining healthcare IT in its own interests.

If I recall, this is exactly the message which you have been driving home in your editorials and articles for the past 2-3 issues.

However, I must say that Dr. Madjaric is one of those rare creatures – an optimist, in today's world. I would like to revisit the issue that the US threat can be "converted into an opportunity" by having European IT companies attacking the US market more aggressively and "piggy-backing" themselves on the Obama initiative. The Americans will shrug them off like fleas.

Chris Nielsen
Nuremberg, Germany

*We invite comments from readers at **editor@hitm.eu.** Please keep your letters to below 150 words. Healthcare IT Management reserves the right to edit letters for space or editorial reasons.*

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: **Morna Chitiyo, Project Manager, office@hitm.eu**

HITM MEMBERS

AUSTRIA
Working Group Medical Informatics and eHealth of the Austrian Computer Society(OCG)

and the Austrian Society for Biomedical Engineering (AK-MI)

BELGIUM
Belgian Medical Informatics Association (MIM)

BOSNIA & HERZEGOVINA
Society for Medical Informatics of Bosnia & Herzegovina HSMI)

BULGARIA
National Center for Health Informatics (NCHI)

e-Health Bulgaria Foundation

CROATIA
Croatian Society for Medical Informatics (CSMI)

CZECH REPUBLIC
EuroMISE CenterCzech Society for Medical Informatics and Scientific Information (CSMISI)

FRANCE-SWITZERLAND
Fondation Franco-Suisse pour la Recherche et la Technologie (FFSRT)

GEORGIA
Georgian Telemedicine Union (GTU)

GREECE
Greek Health Informatics Association (GHIA)

HUNGARY
John v. Neumann Computer Society (NJSZT)

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

THE NETHERLANDS
National IT Institute for Healthcare (NICTIZ)

European Society for Engineering and Medicine (ESEM)

NORWAY
Norwegian Centre for Telemedicine (NST)

POLAND
Polish Telemedicine Society (PTS)

PORTUGAL
Administração Central do Sistema de Saúd (ACSS)

EHTO-European Health Telematics Observatory (EHTO)

ROMANIA
Romanian Society of Medical Informatics (RSMI)

SERBIA
JISA - Union of ICT Societies of Serbia (JISA)

SLOVENIA
Institute for Biostatics and Medical Informatics (IBMI)

Slovenian Medical Informatics Association (SIMIA)

TURKEY
Turkish Medical Informatics Association

UKRAINE
The Ukrainian Association for Computer Medicine

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

NETWORKING AWARDS 2009 REVIEW

On October 29-30 European healthcare IT professionals joined together at Square in Brussels for the first *IT @ Networking Awards (IT @ 2009)*, a unique event which shone a much needed spotlight on healthcare IT innovations and solutions. The stakes were high: An unrivalled cash prize of 5000 euros as well as the coveted *IT @ 2009* trophy and extensive press coverage in Europe's leading healthcare management journals for the winning project. With 78 submitted projects this event was a resounding success. The top 23 nominees were selected to present their MINDBYTE presentations on the first of this two day event.

The organisers- the European Association of Healthcare IT Managers (HITM) and the European Association of Hospital Managers (EAHM) created *IT @ 2009* on the basis that there was a lack of recognition of the innovators of healthcare IT on a pan-European level. They also believe that healthcare professionals who use IT solutions on a daily basis are best placed to judge the value of new projects.

EU Commissioner Viviane Reding

Unifying Healthcare IT Across Europe

The healthcare IT industry is not immune to the effects of rapid globalisation and emerging competition from China and India. The US is also reengaging itself in the industry despite current economic downturn. Christian Marolt, Secretary-General of HITM addressed this important issue in his opening address. He stressed the need for Europe to collaborate – to join together, not only to survive in healthcare IT for the years to follow – but to lead. Secretary-General of EAHM, Willy Heuschen stressed the core importance of healthcare IT and innovation for hospital managers.

Willy Heuschen, EAHM

EU Commissioner for Information Society and Media, Viviane Reding gave an inspiring e-address, in which she emphasised the importance of utilising IT in healthcare given the current financial crisis and issues of cross-border patient care throughout Europe. She applauded the efforts of the organisers and participants of *IT @ 2009* in furthering development and deployment of innovative e-health solutions.

Entertaining Networking Opportunities

Delegates gathered at the Grand Casino Brussels to celebrate the finalists from the first day of competition and to network with healthcare IT colleagues from across the continent. *IT @ 2009* participants, organisers and corporate sponsors were treated to drinks and canapés and a lively demonstration of black jack and roulette at the Casino's Cotton Club. The evening culminated in the draw for the order of presentations in the final WORKBENCH sessions.

Electronic Voting System

As *IT @ 2009* believes in peer to peer voting, the winning project was chosen not by the usual panel of expert judges, but by the audience of hospital CEOs, CIOs, CMIOs and hospital and healthcare IT managers. This was made possible thanks to a state-of-the-art electronic voting system. After each presentation the audience decided whether or not the presentation fulfilled the outlined criteria by pressing the relevant button on their personal keypads.

AND THE WINNERS ARE...


Winners: Kaarina Tanttu, Emile Knops, Dr. Pierre Biron and Bert Verdonck

The Winning Project

Dr. Biron from the Centre Léon Bérard in Lyon was awarded first prize. He and his team showcased the SISRA Health Information System and DPPR Shared and Distributed Patient Record, which have been implemented in the Rhône-Alpes region of France.

SISRA is a unique data capture and storage network built and reinforced with a strong identification access feature- allowing only patient and professional health ID cards clearance. Patient information is available securely and confidentially when and where needed –allowing patients to remain the gatekeepers of their own personal records.

Second Place

Digitisation of the Nationwide Breast Cancer Screening Programme in The Netherlands (presented by Bert Verdonck)

The National Institute for Public Health and the Environment (RIVM) provides a free nationwide breast cancer screening service for all women between 50 and 75 years of age. This programme is now digitised and referred to as DigiBOB. The service allows radiologists to access new and historical patient data, including multiple mammograms, in seconds. It claims to be the first digitised programme of its kind in the world.

Third Place

From Free Text to Standardised Language – The National Development Project of Nursing Documentation in Finland" (presented by Kaarina Tanttu).

The Nursing Minimum Data Set (NMDS) is a part of the core data elements of national EHR. The national nursing documentation model and the Finnish Care Classification (FinnCC) were developed in the national nursing documentation project 2005-2008. NMDS and FinCC were integrated during 2005-2007 into 8 health recording systems in 33 healthcare organisations. As a result, the quality of nursing documentation is more uniform.

Dr Pierre Biron receiving his prize

Looking Forward

Both HITM and the EAHM were overwhelmed by the positive response and look forward to an even more successful *IT @ Networking* next year. As HITM Secretary General, Christian Marolt stated, "It is clear that here in Europe, we also have outstanding healthcare IT jewels. As a non-profit body, we are doing whatever we can to get these innovations recognised globally. EU opinion leaders, politicians and policy makers also need to show their support, just like their counterparts in the US."

IT @ Networking 2010 promises to be bigger and better with more groundbreaking innovations and networking opportunities. See you in Brussels in October 2010! More details to follow.

AGFA

AGFA HEALTHCARE SIGNS OVER 40 NEW ORBIS AGREEMENTS

Agfa HealthCare has signed over 40 new agreements for its leading Hospital/Clinical Information System ORBIS since January 2009. ORBIS, available in Germany, Austria, Switzerland, France, Belgium and Luxembourg is a hospital-wide IT solution which manages and monitors all patient-oriented processes: Medical, nursing, administrative and business.

ORBIS is an enterprise-wide solution designed to enhance the quality of patient care and provides fast and complete availability of patients' histories, including all images and clinical and administrative data. The permanent availability of this information to authorised nursing, technical and medical staff, enables quicker diagnoses and treatments. ORBIS is designed to help care facilities increase productivity, improve the delivery of care and save cost.

New agreements for ORBIS in 2009 include local, regional and university care and hospital centres. In France agreements were recently signed with the Centre Hospitalier Universitaire du Mans, the Centre Hospitalier Universitaire de Montpellier, and the Centre Hospitalier Intercommunal de Créteil. In Belgium and Luxembourg, the ZOL Genk hospital and St. Lucas hospital in Ghent have begun implementation of the new system, and agreements were signed with the Centre Hospitalier Emilie Mayrisch in Luxembourg. New agreements with leading care facilities in Germany, Austria and Switzerland include the St. Theresien Hospital in Mannheim (Germany), the SLK group in Heilbronn (Germany), the Hera nursing home in Vienna (Austria) and the Appenzell Hospital in Appenzell (Switzerland).

Agfa HealthCare has also signed several major agreements for its ORBIS Document Management System, also known as HYDMedia, such as with the University Hospital of Leipzig in Germany.

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

IBM

IBM SIGNS SPANISH HEALTHCARE DEAL

IBM and Telvent Global Services have signed a multi-million euro agreement with the Castilla y Leon government in North-West Spain to improve back office management of the province's healthcare centres.

As part of the agreement a healthcare management system will be rolled out to all the health centres in order to enhance aggregated procurement from the different centres and expand integration with suppliers.

The project aims to reduce the costs for the province by streamlining operating procedures and information exchange between primary care centres, specialised care centres and emergency and central services and provide greater control over supplies and resources.

The two companies will provide consultancy and IT services to help the region transform and improve health centre procurement, logistics and supply processes.

The system will integrate with the IT systems of the Regional Health Management organisation and the corporate systems of the Castilla y Leon government and will be the first autonomous community in Spain to use the technology platform.

For more information, please visit: **www.ibm.com**

BARCO

BARCO PREFERRED VISUALISATION PARTNER OF E-HEALTH SOLUTIONS PROVIDER NEXUS

Medical imaging specialist Barco has been selected by medical information systems provider NEXUS / DIS as the preferred supplier of medical display technology. NEXUS / DIS, headquartered in Frankfurt am Main, Germany, has been a longtime Barco customer.

Under the terms of the agreement, Barco will be the preferred PACS (Picture Archiving and Communications Solution) display provider for NEXUS's worldwide client base. This includes the delivery of a wide range of diagnostic and clinical review displays in combination with Barco's MediCal QAWeb system for long-term quality assurance.

Uwe Beikirch, Managing Director at NEXUS / DIS explains: "Barco's innovative display offering is the ideal complement for our cutting-edge healthcare IT systems. Barco is an established market leader in high-quality PACS displays. They have a full range of grayscale and color displays which, in combination with MediCal QAWeb, guarantees perfect image quality over time and across displays. In addition, Barco's advanced technology solutions such as the Coronis Fusion 6MP sets the company apart from the competition."

"We are delighted to be selected as NEXUS's preferred visualisation partner," comments Piet Candeel, Vice-President of Barco's medical imaging division. "This agreement is an award for our long-standing business partner relation with NEXUS. NEXUS has a solid, worldwide customer base and we are confident that this collaboration will allow us to further expand our market reach."

For further information, please visit: **www.barco.com/medical**

Multi-site PACS contract signed by Hospital District of Helsinki and Uusimaa and GE Healthcare

Better patient care for the Helsinki population thanks to fast and secure access and distribution of patient images with Centricity PACS

HELSINKI, FINLAND, November 23, 2009 – The HUS Helsinki Medical Imaging Center and GE Healthcare IT announced having signed a significant contract to implement the digital Picture Archiving and Communication System, Centricity PACS. Hospital District of Helsinki and Uusimaa (HUS) is the largest hospital district in Finland and about 30% of the Finnish population lives in this area. The district produces almost one million radiology exams per year and owns over 250 images producing modalities. 160 radiologists and thousands of PACS-using clinicians work in HUS. The new solution will help to connect all imaging units throughout the wide Helsinki area. Wherever a patient will go for medical consultation, his or her images will be accessible via a secure and encrypted digital portal.

When asking radiologist Mika Koivikko at Töölö Hospital for the considerations that led to replace the existing PACS solution he said: "Imaging and image distribution have to work in any clinical environment. That's why during PACS acquisition we specifically paid attention for applications and image distribution from the clinician's point of view. In addition, HUS-Röntgen was looking for a partner, who is able to deliver the required technology, know-how and proven reliability. With the new PACS we now have a suitable and practical solution and system maintenance is not binding too much resources."

Even with a low bandwidth the solution provides very fast streaming and a big set of tools with a simple internet connection: MIP/MPR, integrated ultrasound, mammography and orthopedic tools, easy second opinion consulting and a lot more. By means of an easy authorization concept, external users like referring physicians get access ('Grant Access') to the same data, images, reports and tools as their colleagues at a hospital site. Thanks to AW Server a smooth radiology workflow with intuitive tools, advanced clinical applications and fast post processing is guaranteed. The synergy especially between AW Server and RIS offers extensive reporting capabilities to radiologists and clinicians.

"We are very happy to connect the HUS healthcare providers to a joint platform from where they can manage, retrieve, exchange and store patient images throughout the whole region," said Juergen Reyinger, Vice President and General Manager at GE Healthcare IT EMEA. "The full IT package to be installed there will on the one hand, help to increase access and save costs and on the other hand will speed up workflows and ensure higher efficiency. In the end this will be to the benefit of medical staff and the local population alike," Reyinger concluded.

About HUS Helsinki Medical Imaging Center

HUS Medical Imaging Center is the leading medical imaging provider in Finland. We serve the departments and municipalities of the Hospital District of Helsinki and Uusimaa by producing medical imaging for specialist medical care and health care. We also serve the third sector and private health care. As the largest medical imaging unit in Finland, we are responsible of all examinations requiring special skills and techniques nation wide. We also take care of the long term archiving of the pictures produced in a digital archive.

HUS Medical Imaging Center is a municipal enterprise owned by the Hospital District of Helsinki and Uusimaa. Today we have 31 imaging units at the Helsinki area and we have more than 800 employees to provide radiology services.

About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technology, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our "healthymagination" vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality and efficiency around the world. Headquartered in the United Kingdom, GE Healthcare is a $17 billion unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employs more than 46,000 people committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at **www.gehealthcare.com.**

Contacts

Helsinki Medical Imaging Center
Katri Laukkanen, *communication coordinator*
Phone: +358 9 47 180 036
katri.laukkanen@hus.fi
Sami Mastomäki, *project manager*
Phone + 358 50 4271309
sami.mastomaki@hus.fi

GE Healthcare
Nicole Lipphardt, *communications*
Phone: +49 172 74 600 38
nicole.lipphardt@ge.com
Timo Aarnio, project manager
Phone: +358 10 394 3404
timo.aarnio@ge.com

GE Healthcare

ITALY

Medical Certificates Online in Friuli Venezia Giulia

The Italian Autonomous Region of Friuli Venezia Giulia (FVG) represented by its regional agency for health has signed with the Italian Workers' Compensation Authority (Inail) a protocol agreement aimed at implementing the "medical eCertificate service". The latter will enable the direct transmission by electronic means of one's medical certificates to the information system of Inail.

The service will first be activated for a small number of General Practitioners. This is part of a wider agreement made between the two groups to improve the services delivered to the citizens of the Region through online data and information sharing.

Once the service becomes operational, citizens will no longer have to hand in their medical certificates at the Inail counters. Every time GPs will issue a medical certificate following a work-related accident or illness, the certificate will immediately be stored in the Inail information system. Likewise, citizens holding a National Services Card (CNS) will be able to view online all their medical certificates.

FRANCE

Connectathon Goes to France

The Tenth Annual European interoperability testing event, known as the IHE Connectathon, will be held in Bordeaux, France from April 12th to 16th, 2010 at the Cité Mondiale, a conference centre located in the heart of the city on the banks of the Garonne river.

More than 300 information technology engineers from 90 companies are expected for this year's event, an intensive, five-day 'connectivity marathon' for testing the interoperability of applications used in health information systems.

In parallel with these testing activities, Connectathon 2010 will offer two full-day conference programmes, one focused on the progress towards interoperability in European health IT programmes and one focused on developments in France.

At the IHE Connectathon all companies implementing IHE Technical Framework specifications in their products have a unique opportunity to test their applications with systems and products from other vendors in a real-time interoperability environment.

For more information, please visit: **www.ihe-europe.net**

SPAIN

eVIA Spanish Technological Platform - General Assembly

eVIA is the Spanish Technological Platform for eHealth, eWellness and Social Cohesion. eVIA gathers stakeholders, end-users, associations, public administrations, industry and researchers, intending to promote effective and market oriented R&D.

During the General Assembly (9-10 December 2009) new working groups were launched in the areas of eHealth, such as interoperability, privacy, telemedicine, citizens involvement; eAccessibility: interoperability, digital TV, ICT for physical accessibility, accessibility in tourism.

The existing groups shared their progress and last activities : Social Spaces for Innovation and Research, AAL, technology watch, accessible entertainment and rehabilitation, inclusion of minorities, Assistive technologies, eLearning and other areas.

For more information, please visit:
www.idi.aetic.es/eVIA/VerEvento.aspx?id=1778&idContenidos=1779&idEvento=622

UK

Health-e-Space Website

A new website that provides a platform to enable people to take more responsibility for their health has been launched in Moray, Scotland. "Making e-health real health" and "For the people by the people"

The new Health-e-Space website provides local health information, links to recommended websites and suggestions on how to live with health conditions.

Community Health-e-Space, the website's sister site supplies a social networking platform for people to share their health concerns and experiences with others in the Moray area.

The site, which allows anybody to register also has several elements where patients can interact with NHS professionals, such as 'visit the clinic' which provides detailed information on conditions and a section where clinicians can blog about specialist subjects. The service has been likend to other online services like facebook and bebo but with the different objective of getting people to take responsibility for their health.

The initial costs of the site set-up were around 4,000 GBP and development of the site is being completed as a partnership involving the NHS Grampian, Moray Health and Social Care Partnership, Moray College, Moray Council and others.

For more information, please visit:
www.health-e-space.com

15 -18 MARCH 2010, BARCELONA, SPAIN

WOHIT CONFERENCE & EXHIBITION

The World of Health IT Conference and Exhibition is a leading platform for e-health in Europe, convening major stakeholders from the Healthcare IT community to engage in knowledge sharing, networking with peers and learning about the latest healthcare IT trends, challenges and solutions.

In 2010, The World of Health IT Conference & Exhibition (WoHIT) will for the first time be held in conjunction with the European Union's annual High Level e-Health Conference in Barcelona on 15-18 March 2010. The union of these two high calibre events presents vast opportunities for delegates and exhibitors in terms of education, exhibition and networking. March 15th will feature an invitation only ministerial day, hosted by the Spanish EU Presidency, the European Commission, and the Regional Government of Catalonia. The 16-18th of March will be open to all delegates.

This unique combined event is being organised by the European Commission, HIMSS Europe, the Spanish Ministry of Health and Social Policy, the Regional Government of Catalonia and Foundation TicSalut. The objective is to create one European high level platform for stakeholders sharing the common goal of advancing e-health in Europe.

Who should attend?

- CIO and other C-suite executives;
- Senior managers;
- High-level government officials;
- Academics;
- Healthcare practitioners, including doctors and specialists, and
- IT professionals

The conference is expected to attract more than 2,500 delegates and 60 local, European and international exhibitors.

Conference themes include:

- e-health for Sustainable Healthcare Delivery;
- e-health Addressing Global Challenges through Local Actions;
- e-health works: Here is the Evidence;
- e-health Market: Past and Prospects, and
- e-health User Platform

For more information, please visit:
www.worldofhealthit.org

24 FEBRUARY 2010, BIRMINGHAM, UK.

MOBILE AND WIRELESS HEALTHCARE CONFERENCE

Mobile and wireless technologies offer the opportunity to secure the delivery of more patient-centred care. Better access to knowledge at the point of care also increases overall efficiency and reduces costs.

This one-day conference will bring together healthcare IT professionals and clinicians alike to explore how to realise the benefits of mobile and wireless technologies both on the ward and in the community.

This conference will enable ICT professionals to learn through a combination of practical case studies, keynote addresses, workshops, panel discussions and interactive product demonstrations.

The conference will explore questions such as:

- How can mobile technologies enable the delivery of more efficient care that enhances the patient experience?
- How can investment in mobile and wireless technology contribute to the realisation of strategic business outcomes?
- As the threats develop and technology evolves, how can you ensure sensitive data is both mobile and safe?
- How can you adapt processes and systems to support mobility?
- What steps can you take to streamline programme steps for mobile devices?
- To what extent will you need to reassess the organisation of information and data when implementing mobile devices?

Confirmed speakers include:

- Dr Nick Gaunt, NHS Institute for Innovation and Improvement;
- Barbara Stuttle CBE, Directorate of Quality, Clinical Development and Innovation, NHS South West Essex and
- Danny Roberts, University Hospitals and Warwick NHS Trust.

For more information, please visit:
www.smarthealthcare.com/mobile-wireless

18-21 NOVEMBER, DUSSELDORF, GERMANY

MEDICA

MEDICA, one of the world's largest medical trade fairs and congresses saw its fortieth anniversary on 18-21 November in Dusseldorf in Germany. The fair is an opportunity for decision makers from across the world to come and discover the latest technologies and innovations, for professional development, networking and discovery.

Over the four days of the event, MEDICA registered almost 138,000 trade visitors from over 100 countries (previous year: 137,000 visitors). 45% of visitors came from abroad (2008: 42%), a particularly high number also travelled to Düsseldorf from the Asian growth markets and the Arab region.

4,324 exhibitors (2008: 4,279) from around 60 nations offered them a clearly segmented line-up with a plethora of new products, systems and services for the entire process chain in both in and out-patient care.

"The medical technology sector has met the efforts made to cut costs in the healthcare industry worldwide with a sparkling array of product innovations, which are a known way of cutting costs", said Wilhelm Niedergöker, CEO of Messe Düsseldorf, emphasising the strength of the "MedTech" industry, in an allusion to the current studies published by the trade associations ZVEI and SPECTARIS on the potential savings that can be achieved by using state-of-the-art medical technology.

Telemedicine is forging ahead – in outpatient as well as inpatient care

Not only in hospital operating theatres or in doctors' surgeries are the new innovations in the field of medical technology presented at MEDICA 2009 already being put to use. Patients are also being increasingly included in outpatient care, too. The trend towards home medicine and telemedicine applications continues unabated. While in the past electronic thermometers were the only medical devices to be found in private homes, these days we see the advent of measuring devices for a wide variety of vital data such as mini ECG sets, for instance. The opportunities presented by these "self-payer products" in terms of prevention and remote patient monitoring appear to be far from exhausted so far. For example, there were various heart monitoring systems that are incorporated in clothing, which are currently still at the experimental stage, on show at MEDICA 2009. They are comfortable to wear and make for uncomplicated patient monitoring over extended periods of time.

The MEDICA Congress once again had a wide range of topics on offer this year. The international continuous medical education module in English, which was included in the programme for the first time, attracted a lot of attention. Integral diagnostics and therapy in the fields of oncology, patient monitoring at ORs/ICUs and trends in the area of heart surgery were the main topics that met with great interest. Another international event was dedicated to palliative medical care and special care concepts for people in the final stages of life.

"Hospital Policy after the General Elections" was the guiding theme of the 32nd German Hospital Conference, attended by 2,215 participants interested in finding out more about the current health policy plans of the various political parties in the German Parliament for the 17th legislative period and their potential financial impact on hospitals.

For more information, please visit:
www.medica.de

7-8 DECEMBER 2009, DUBAI, UAE

HEALTHCARETECH 2009

HealthCareTech 2009- a must-attend event for healthcare technology professionals- hosted a prestigious roster of distinguished speakers from all over the globe chosen for their leadership and innovation within their corporation.

The European Association of Healthcare IT Managers was a proud Association Partner of this event, which gathered high-level senior healthcare and healthcare technology executives. The goal was to gather practical information, discover new technologies and discuss and network with peers and experts alike.

Sessions included:

- Positioning the Middle East as a leader in Healthcare;
- Increasing Healthcare Effectiveness through Cutting Edge Technology;
- Utilising Data to Improve Efficiency & Quality of Care;
- New Metrics for Identifying the Equipment Purchases that Truly Earn Their Way;
- Walking the tightrope in data security; Ensuring Patient Data is Confidential yet Accessible, and
- Implementing an Effective Disaster Recovery Programme to Minimise Impact of Disruption.

The HealthCareTech Business Forum gave all attendees the opportunity to schedule peer-to-peer appointments with delegates and Solution Provider Partners of their choice. It was an excellent opportunity for information exchange, new business development and targeted networking.

For more information, please visit: **www.healthcaretechme.com**

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THE SOCIO-ECONOMIC IMPACT OF INTEROPERABLE ELECTRONIC HEALTH RECORD (EHR) AND EPRESCRIBING SYSTEMS IN EUROPE AND BEYOND

Commissioned by DG INFSO and Media, unit ICT for Health the EHR IMPACT study (EHRI) investigates the socio-economic impact of interoperable Electronic Health Record (EHR) and ePrescribing systems in Europe and beyond.

The study comprises of detailed qualitative analyses of 11 good practice cases in Europe, USA and Israel. Nine of these cases also went through quantitative evaluation of their socio-economic impacts. The aim is to support ongoing initiatives and implementations and to improve awareness of the benefits, socio-economic impacts and lessons learned from successful implementations.

An inductive, empirical approach was taken with two applied perspectives: The socio-economic and a narrower, financial one within the socio-economic therefore providing a rigourous evaluation of the long term impacts of interoperable EHR and ePrescribing systems. Case studies include systems from Scotland, Switzerland, Bulgaria, Spain, Sweden, Czech Republic, France, Italy, Israel and the USA.

Evaluation consists of a two-point analysis:
1. Developing an understanding of the healthcare and organisational setting in which the systems operate, identifying the path of development, ICT functionality, usability, users and stakeholders.
2. Identifying relevant impacts over time from an initial hypothesis. (This step develops the qualitative analysis into a quantitative evaluation by assigning monetary values.)

Cost Benefit Analysis (CBA)
CBA turns theory into a pragmatic evaluation tool. It is often used to analyse the impact of investments and can include all stakeholders and can extend over a long period of time. CBA also allows narrower financial components within the costs and benefits to be identified and analysed separately.

The roll-out of EHR systems requires a consistent methodology and close cooperation with teams onsite to ensure models are fit for purpose. This includes telephone and email exchange, site visits and face to face interviews. Close cooperation is needed to reflect specific settings.

Worth the Investment?

For all cases, eventually the socio-economic gains will outweigh the costs although this is often after a considerable amount of time. The report describes EHRs and ePrescribing as sustainable wins, not quick wins; positive socio-economic gains are produced only after four to nine years and six to eleven years are needed to produce a cumulative net benefit. These factors are very important when considering investing in such systems; a long time scale is essential.

The study shows that benefits from the implementation of these systems come under very broad, diverse categories but are very individual and specific to particular contexts.

The analysis of financial impacts of the system highlights the importance of managerial input. Managers' skills and expertise in facilitating organisational change and resource redeployment is a key factor in producing financial returns. The report states that healthcare provider organisations bear most of the costs and are the main beneficiaries but citizens and healthcare providers are more likely to reach a net benefit more quickly.

Interoperability
Interoperability is the key benefit of such systems: Information is available anywhere, at anytime. Closed systems would not reap as many gains. EHR systems are the backbone of health information systems and support other systems such as ePrescribing, eBooking, management systems etc.

Continuous, constructive engagement is a prerequisite for positive performance outcomes. This engagement should come from both the management and professionals, moving from consultation to dealing with propositions, concerns and requirements.

Policy
Policy should establish the right climate and incentives for health organisations to make the required investments. Political commitment to the main healthcare goals such as quality improvement, increasing efficiency and also to removing organisational and regulatory barriers. Policy makers should also ensure that investors, project teams and stakeholders are given adequate time to achieve net socio-economic returns.

Investment and Support
Consistent, continuous investment in people as well as technology is essential in achieving proposed strategic goals. Financial support should also be sustainable as timeframes are often lengthy.

Made to Measure
The report highlights that there is no correct style or strategy. EHR and ePrescribing systems should be "made to measure" depending on local/regional settings and requirements. Obviously roles and priorities differ between healthcare systems and systems should be designed to meet these particular needs. What are transferable are the experiences and success stories from others who have implemented such systems. A lot can be learned from the principles, tools and techniques of other projects.

The overall goal is better healthcare, not financial gain. The implementation of these systems is a clinical venture in order to facilitate change in clinical and working practices; improving the delivery of health services and performance. The socio-economic benefits of the systems can reach as much as 200% returns on initial investment.

There are two main findings from the EHR IMPACT study. The first is the need for constant engagement and dialogue between users and ICT experts. Although time consuming, this dialogue (before any investments are made) is essential to ensure the right decisions are made. The second point is the benefits of interoperability: Access regardless of time or place and the ability to re-use information for multiple purposes makes life easier for users and increases gains and justifies the costs of investment.

The results of the EHR IMPACT study show a positive outlook for the future of EHR and ePrescribing in Europe. Its strategic recommendations are meant to encourage and support future initiatives of this kind.

For more information, please visit:
www.ehr-impact.eu

SAFE AND EFFICIENT HEALTHCARE THROUGH E-HEALTH

The Health Council adopted, on 1 December 2009, conclusions on safe and efficient healthcare through e-health. These conclusions recognise "the need for further political leadership and to integrate e-health into health policy in order to develop e-health services on the basis of public health needs". Therefore the Council "invites" the Member States to conceive and implement initiatives aimed at enabling the deployment and use of e-health services, and to "empower a high-level mechanism of governance at EU level".

The Council adopted several conclusions at the Employment, Social Policy, Health and Consumer Affairs Council meeting. They recall that a high level of human health protection needs to be ensured and that cooperation between the Member States to ensure this is encouraged. They emphasise that one of the objectives of the Community health strategy (2008-2013) is to support dynamic health systems and new technologies and that these technologies can improve prevention, diagnosis and treatment.

The report welcomes recent collaborations between Member States stating the epSOS large scale pilot project (for cross-border interoperability) and the Calliope thematic network (to develop a roadmap for interoperability) as examples. The Council also supports the ongoing cooperation in e-health standardisation.

The Council recognise the importance of e-health as a tool to improve quality and patient safety and also in the modernisation of national healthcare systems (increasing effectiveness and accessibility) to meet individual patient needs, staff needs and also to meet the challenges of an ageing society.

In conclusion, the Council calls on Member States:
- For political commitment to e-health;
- To build confidence in and acceptance of e-health services;
- To bring legal clarity and ensure protection of health data, and
- To solve technical issues and facilitate market development.

And calls on the Commission to:
- Update the European Action plan on e-health;
- Produce a report on the development of existing EU policies and actions regarding electronic identification management, and
- Organise an evaluation, at appropriate intervals, of the health benefits and cost-effectiveness of the use of different e-health services.

For more information, please visit:
www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/lsa/111613.pdf

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E-HEALTH / EHR AND CLINICAL RESEARCH

AUTHOR
Günther Gell,
is at the Institute for Medical Informatics, Statistics and Documentation, Medical Unversity of Graz

Conceptually the Electronic Health Record (EHR) will be a lifelong collection of health-relevant data for a (consenting) person. The main purpose of the EHR is to assist medical care by providing health professionals with the information for diagnosis and therapy where, when and how it is needed. This is particularly important in the highly specialised (and sometimes fragmented) health sector of today, where a patient is seen and treated by many different health professionals.

Uses Of EHR Go Beyond Direct Medical Care

Besides direct medical care, there are many (potential) secondary uses of the data in the health record – streamlining of organisational processes, data for management and planning in the healthcare system, epidemiology, quality control, medical research etc.

In e-health, the EHR is part of an integrated system of actively distributing and monitoring the information in the EHR. On a small scale this could mean an alert to a physician that patient data suggests a contraindication to a prescribed drug or on a national or even international scale an alert to health authorities, that an abnormal increase in the incidence rate of a infectious disease in some region might need attention and intervention.

Controlling Misuse

Of course there are also potential misuses of the EHR infringing the patients (but also the health professionals) right of privacy or informational self-determination. This shows that the policies about who might (legally) access which parts of the EHR and for what use and who (e.g. the patient) might deny or grant access to (specified parts of) the EHR and the methods to enforce these policies are of vital importance for the implementation of the EHR.

Clinical Research / Clinical Studies

Today the terms clinical research and clinical study are almost synonymous, because the well designed clinical study is the most reliable means to test a clinical hypothesis and to get dependable results.

To achieve that the study must meet a number of requirements: The hypothesis must be known beforehand, random assignment of patients to test group and control group, blinding and double blinding, clear definition of inclusion and exclusion criteria, strict formal requirements for documentation etc.

Integrating Clinical Studies in an e-Health System

In principle it should be possible to integrate clinical studies in the e-health system because a considerable part of the data needed for a clinical study are also part of the EHR and the additional data particular for the study are usually elicited in a clinical environment and could be integrated in the data capture protocols of the EHR for the time of the study. In reality for a multicentric study this is almost impossible because of differences in terminologies, policies, data formats, regulations, interfaces etc.

In a recent article in 'Meth. Inf. Med.' Prokosch listed the integration of medical record systems and clinical trial databases as one of the most important challenges for medical informatics. In analogy to the alerts described in the first paragraph, the e-health System could give an alert if a patient matches the inclusion criteria of a current clinical study, thus assisting patient recruitment.

Clinical Research Outside of Clinical Studies

For different reasons, clinical studies are not always feasible. As a rule of thumb a study cannot be performed if the potential risk outweighs the potential benefit for the patient. To give a classic example: The hypothesis that an increase in the incidence rate of congenital malformations is due to a newly introduced drug cannot be tested by a prospective study! In such a case the only possibility is a careful analysis of already existing data - hence the importance of a comprehensive documentation even of 'routine' cases.

In this case, one could in a first step retrieve all babies born after the introduction of the drug and then build four groups: Baby has no malformation and mother did not use the drug, baby has malformation and mother did not take the drug, baby has no malformation and mother did use the drug, baby has malformation and mother did use the drug.

In an integrated e-health system, such a task should not be too complicated (except if the drug is sold over the counter) and the

statistical analysis would give a strong indication how to proceed (from removing the drug to dismissing the hypothesis).

An e-health system could even recognise the increased rate of malformations automatically, give a warning and then assist in the search for possible causes (finding differences in the anamnesis of babies with and without malformation). In most existing systems only the first part – finding the mothers of babies with and without malformation could be automated (but many different databases would have to be involved).

Results that are not obtained by planned clinical studies are more likely to be distorted by different forms of bias. Still the physician facing a patient must make a decision how to proceed even if information is incomplete and the therapeutic options are not perfectly validated. Clinical science cannot disregard any information that may help the physician to make a rational decision.

"There is no question that e-health systems including the EHR could and will be an important data source for clinical research, supporting clinical studies, testing clinical hypotheses and, even more important, generating hypotheses (e.g. about possible causes for diseases or different responses to treatments) from a linked analysis of so far unrelated data in particular including genomics and proteomics..."

The Role of Classification in Clinical Care and in Clinical Research

Each patient is a unique individual and must be treated (and documented) as such. Each patient must be put in a class for rational (evidence based) treatment.

Let us start with the second of these two seemingly contradictory statements. Experience leads us to expect that a treatment that was successful in one case will be successful in a similar case. How is 'similar' defined: The two cases are not too different with respect to parameters that are (may be) relevant for the outcome, e.g. age, gender, stage of the disease, condition of the patient etc.

With these parameters one defines classes of similar cases (a typical example is the classification of tumour stages) and these classes are the basis of clinical studies, treatment protocols etc. If a tumour patient comes for treatment, the type and stage of the tumour is determined and the appropriate treatment protocol is applied.

Although this protocol has been found to be the most effective one for this class of patients, results are not uniform, some patients do not respond and relapse or develop metastases (and might have needed a different treatment). Scientists do not attribute these differences to mere chance but to causal chains that are not yet understood. It is therefore a constant aim of medical science to find these causes, the hidden parameters that make the difference and to refine the classes accordingly.

An e-health system could be used again to find patterns associated with different responses to the treatment if as many findings as possible had been collected, even if they were seemingly unrelated to the clinical problem. So even if the patient is put in a class to determine the treatment he/she must also be documented as an individual. Needless to say that in the direct communication with health professionals the patient must always be seen as an individual person and not merely as a case.

It is likely that many hidden parameters mentioned above may be attributed to differences in the genome or proteome. The linking and common analysis of genome/proteome data with clinical data is one of the big challenges in medical research and will require sophisticated and standardised databases within the e-health system.

Medical Records

The classical medical record was/is a heterogeneous collection of handwritten or typed notes from different sources about anamnesis, diagnostic and therapeutic procedures and results, discharge letters, images, lab results etc., with a relatively free format. Patient ID (or name) was the only criterion for direct retrieval. The record was for human use only and the content had to be scanned visually to extract any information. Still, as a basis for information about the individual patient it was remarkably successful.

The first electronic records were not meant to replace the paper record but to complement it with a kind of electronic summary consisting mostly of codes denoting more or less complex medical entities. From the point of view of research they did allow for some calculations, frequencies, correlations etc, but for most instances they had the important task of case finding, selecting those cases that were relevant for a problem. Then one had to retrieve those records and extract the details for the scientific analysis.

The EHR has the aim to replace the paper record. This has become a possibility for two reasons: The processing power and the storage capacity of IT-systems has increased tremendously and almost all the data are now captured in digital form because IT has been integrated in imaging devices, lab-systems, measuring devices etc. and virtually every report is written with digital text processing.

Form Follows Function (of the EHR)

The medical record has one main function, serving medical care by providing the necessary information to the different health professionals treating the patient and many secondary functions from billing to research. In the first case, the system merely presents the data for human interpretation. In most of the secondary uses the system is supposed to interpret and process the data directly and therefore needs a formalised representation (a code) of all relevant medical concepts.

Examples are ICD (International Classification of Diseases) or SNOMED (systematised nomenclature of Medicine) but in reality codes are often local (and not explicitly seen as codes)

"On a small scale, EHRs could mean an alert to a physician that patient data suggests a contraindication to a prescribed drug or on a national or even international scale an alert to health authorities, that an abnormal increase in the incidence rate of a infectious disease in some region might need attention and intervention."

defined as input forms with menu items etc. Choosing a code is a classification of the patient which means abstracting from (seemingly) irrelevant details. As an example, in many systems you have to select either female or male (rarely a third option is possible). But if the patient does not fall in one of these groups either physically (e.g. hermaphrodite) or mentally (transgender) this should be documented in the EHR because it is relevant to address him/she as an individual.

The functions of the EHR pose sometimes conflicting requirements to the documentation. In particular when dealing with human interpretation of findings (e.g. a radiologic report describing the position of a tumour or the abnormal run of a vessel) or human communication (e.g. describing the anamnestic details given by a patient in a psychiatric case) it is difficult to replace natural language by codes without losing important information (by the way, imagine a clinical conference where participants use only SNOMED codes to discuss a complex case).

Challenges

There is no question that e-health systems including the EHR could, and will be an important data source for clinical research, supporting clinical studies, testing clinical hypotheses and, even more importantly, generating hypotheses (e.g. about possible causes for diseases or different responses to treatments) from a linked analysis of so far unrelated data in particular including genomics and proteomics.

In addition to the necessity to define and implement data protection, communication standards etc., there is an urgent need to develop a medical ontology allowing a clear and standardised representation of medical concepts including temporal and spatial relations. In designing an information system for e-health the needs to classify patients in groups for therapy and data reuse for e.g. research on one side and to retain and document the individual details on the other side must be carefully balanced. The same is true for the use of natural language for human communication and classifying codes for selection therapy protocols and other secondary uses.

Patient ID and Security Systems

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Weltech Centre Ridgeway
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Herts AL7 2AA
United Kingdom

Tel: +44 (0)1707 871511
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info@ecri.org.uk
www.ecri.org.uk

Identifies the most important specifications to consider when comparing models

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**

1. *These recommendations are the opinions of ECRI's technology experts. ECRI assumes no liability for decisions made based on this data.*

	ECRI INSTITUTES RECOMMENDED SPECIFICATIONS <1>	CARE ELECTRONICS	
MODEL	**Patient ID and Security Systems**	**PatientCARE WANDERER MONITORING SYSTEM**	
WHERE MARKETED		Worldwide	
CE MARK (MDD)		No	
APPLICATION		Wandering, elopement	
Configuation	Stand-alone and central station preferred	Stand-alone door with wireless remote annunciator at nurses' station	
SIGNALING TAG			
Configuration	Wrist, ankle preferred	Wrist, ankle	
Transmission type	RF preferred	RF	
Active or passive	Active preferred	Active	
Frequency, MHz	System defined	433-450	
Range, m (ft)	System defined	0.6-3.7 (2-12)	
Pulses/ sec	System defined	1	
WxL, cm		3.8 x 3.8	
Weight, g (oz)		28.4 (1)	
Operating time, months	>12 preferred	48	
Rechargeable	Optional	No	
Low-battery signal	Preferred	Optional	
CENTRAL MONTINORING	Preferred	Optional	
Patient capacity	User preference	50/64 doors	
Location(s)	At least at nursing station	Not specified	
Hardwired/wireless	User preference	Wireless	
STAND-ALONE SYSTEM	Preferred	Yes	
Location	Optional	Wall	
Range, m (ft)	User preference	0.6-3.7 (2-12)	
Hardwired/wireless	User preference	Wireless	
Faceplate	Steel is preferred	ABS case	
Alarm response	Minimum audible	Audible, visual	
Display	User preference	LCD	
WxL, cm		2.5 x 7.8	
REMOTE ANNUNCIATOR	Optional	Optional	
Patient capacity	User preference	50	
Faceplate	Steel is preferred	Not specified	
Display	User preference	LED	
WxL, cm		Not specified	
MOBILE LOCATOR	Optional	Optional	
Range, m (ft)	User preference	61 (200)	
EMERGENCY RESPONSE			
Programmed calling		No	
Responders called		N/A	
Answer detection		N/A	
Termination of calling sequence		N/A	
Manned relay center 3rd-party patch-in		No	
Confirmation of patient location		No	
Staff register		No	
Staff/patient follower		No / No	
ALARMS	Required	Parameters adjustable by user at door unit	
Priority levels		Not specified	
Distinct audible tones or visual	Multitone is preferred	Audible tones, visual	
STAFF BYPASS		Yes	
Type	User preference	Key, bypass transmitter	
Time allotted, sec		7 after release of transmitter button	
Reset options		Key switch	
HOLD/ RECALL BUTTON		Yes	
INTERFACES		Door locks, nurse call, wireless remote annunciator	

CODE ALERT	McROBERT'S SECURITY TECHNOLOGIES	RF TECHNOLOGIES
CA 9450 WANDERER MONITORING SYSTEM	RoamAlert	SAFE PLACE 9450 INFANT AND CHILD SECURITY
Worldwide	USA	Worldwide
Not specified	Yes	Not specified
Wandering, elopement	Wandering patient (adult/pediatric), asset protection, real time location, staff location and duress	Infant, child
Stand-alone, central monitoring	Stand-alone or networked door and elevators, central station with remote annunciation or workstation	Stand-alone, central monitoring
Wrist, ankle	Wrist, ankle, umbilical-cord clamp, asset, staff	Wrist, ankle
RF	RF (tag ID, detection, tag tamper, location, low battery)	RF
Active	Active	Active
262KHz	433	318; 262 kHz
1.2 (4)@262 KHz	4 (13)	9 (30) @ 318 MHz; 1.2 (4) @ 262 KHz
1	16	10/min @ 318 MHz; 1 @ 262 KHz
3.8 x 5	2.8 x 2.5	3 x 4.1
45 (1.6)	10 (0.4), cord	20 (0.8)
36	36, standard	12
No	No	No
No	Yes	Yes
Yes	Yes	Yes
User-configured	Unlimited	240
Nursing station, door triggers	Nurses station, security (up to 100 workstations)	Nursing station, door triggers
Both	Both	Both
Yes	Optional	Yes
Door	Ceiling	Door
Not specified	Selectable	Not specified
Both	Both	Both
Cold-rolled steel	Steel screw-down	Steel surface/ flush
Audible, visual	Audible, visual	Audible, visual
LED	LED	LED
22 x 13	17 x 28	22 x 13
Staff-alert panel, Quick-Look Display	Yes	Staff-alert panel, Quick-Look display
User-configured	Unlimited	Not specified
Optional	Plastic	Optional
Optional	LED	Optional
Not specified	11.5 x 11.5	9.14 x 28
No	Optional	No
N/A	9.1 (30)	N/A
Yes, paging	Optional	Yes, paging
Yes	Optional	Yes
No	Optional	No
Yes, when reset	Optional	Yes, when reset
No	Optional	No
Yes	Optional	Yes
Not specified	Optional	Not specified
Yes/ Yes	Optional	Yes/ Yes
Door, elevator, room, exit, wire damage, hallway, stairs, loss of power	Exit alarm, door auto lock, open door or breach of door, tag tamper alarm, battery low, tag location message, missed tag pulse, transport timeout, network node status alarm, others	Door, elevator, room, exit, signaling tag, wire damage, hallway, stairs, loss of power
3	User, supervisor, team leader, administrator	3
Colored lights	Visual, custom audible tones	Colored lights
Yes	Yes	Yes
Keypad	Transport function, keypad, staff tag, or interface to access control system	Keypad
12 choices from 10-120 sec in 10 sec increments	Variable	13 choices from 10-120 sec in 10 sec intervals
Keypad	Automatic or manual	Keypad
Not specified	No	Not specified
Dry contact paging, central monitoring system, voice alarm, Emergin	Fire alarm, door, 2 relay contacts, eleva- tor, access control, CCTV, card readers, pagers	Paging, central monitoring system, voice alarm, Emergin

MANAGING HOSPITAL CARE FROM THE DESKTOP

A DREAM COME TRUE?

AUTHOR
Christopher Bain, is a Health Informatician, and Chair HISA health-mic SIG

It's hopefully a very non-controversial statement to a healthcare audience to state that healthcare internationally – especially what is often highly specialised and costly hospital care – is progressing at a rapid rate, arguably at an exponential rate.
The dimensions of that progress include its technical detail, the volume of services provided and the complexity and speed of the clinical decisions that must be made.

What Direction are we Being Driven in?

The question must be asked: What does this mean for those trying to managing these facilities and their performance.? This is an equally valid question for both clinical and non-clinical managers. Would it indeed be a dream come true or an 'ideal' state, to be able to manage hospital care from the desktop, or a case of the 'grass always looking greener' on the other side?

This article will examine this question, drawing on relevant research and a recent health informatics seminar organised to address this question.

At this seminar, a range of professionals relevant to this area – senior healthcare managers, informaticians, developers and analysts, and operations researchers - spoke on this topic so each could understand the others perspectives, and an interactive discussion had on whether this was a worthwhile or even an achievable aim.

Analogy with Other Industries

Interesting background raised in the seminar was of the analogy with other industries – and there have been many such analogies made in recent years in relation to healthcare and its management, some good and some bad.

One of the speakers at the seminar was an international expert in queueing theory and an operations researcher who has undertaken many industry-consulting projects. They have significant experience in telecommunications, and the application of queueing theory and 'service provision' to telecommunications networks.

Things have moved forward in that industry to such an extent that humans no longer monitor the ability of the systems to perform – in an immediate sense – it is now all driven by computing.

Arguably this is a step beyond the issue we are looking at in this article, and one of questionable applicability to healthcare. The observation of the current state in telecommunications however, just goes to highlight how far behind we are, coming from as an industry in examining issues such as managing hospital care from the desktop.

Diversity of the Hospital Setting

One important context in relation to this issue is the diverse nature of hospitals, both in Australia and internationally, and hence the diverse roles of people who would identify themselves as managers. In addition, organisations may be public or privately funded, ranging from 50 or fewer beds to hundreds of beds, providing niche services such as elective surgery only, or the full range of tertiary-quaternary services.

The management imperatives in this diverse range of settings have some commonalities, but the day-to-day decision making required may vary substantially.

Health-Mic

Health-mic (healthcare management informatics and computing) has evolved as a special knowledge area to attempt to address issues such as these. Health-mic can be considered as "that subset of health informatics dedicated to the study, design and implementation of information technology solutions in support of the practice of healthcare management in all its forms - including, but not limited to, primary care and general practice, sub acute and rehabilitation care, and hospital care." Furthermore, health-mic involves the study of the needs of healthcare management practitioners, including information presentation and decision support. It can be thought of as sitting at the intersection of health management, computing and the relevant sciences – including management science (operations research), mathematics, statistics and – as well as being informed by the clinical sciences.

Is Managing from the Desktop a Good Thing?

This is a difficult question to answer - and the answer to this question is, in many ways, dependent on one's point of view or role in managing hospitals.

If a manager's role involves actively being on the floor of a hospital, for example in the case of a nurse unit manager (NUM), then that is probably a bad thing by way of interfering with the need to speak with nurses on the floor, or to trouble – shoot active operational problems and so forth.

This is certainly a point of view supported by one of the managerial speakers at the seminar who made the very clear point that in order for many operational managers in hospitals to do their jobs properly, they need to be supported by mobile information technology (IT) solutions, rather than be tied to their desks by information available only at that physical location.

A quick walk around any modern hospital supports such perspectives, with even many non - clinical staff carrying mobile phones and regularly using them in order to have, and provide, up to the minute information on issues such as patient flow.

If the manager is a more senior executive with an oversight function in relation to hospital operations – then our 'ideal state' may be a good thing by streamlining workflows and allowing the manager to have all the information required by them available in an electronic format at their fingertips.

Arguably also, another key factor in addressing this question is what information and functionality is available at the desktop. There are now increasing numbers of new and useful applications (eg – Cap Plan) that can assist dramatically in managing patient flow as an example. The evolution of such systems, and their availability on a desktop, could be a driver towards workflow that is more desktop based.

What are the Barriers if we Tried to go that way?

There are a number of key barriers to managing hospital care from the desktop.

If we consider professional cultures – certainly in some professional groups, computers are still a scary proposition – especially in relation to the concept of routine use. We can reasonably expect, however, that looking forward, more recent generations of managers who have been raised on computers in everyday life, will have a higher levels of comfort with a dominant role for them in the workplace.

That higher level of comfort may in fact be more like a basic level of expectation and a demand for them.

Currently, there remain many paper based processes in many organisations. Whilst these can be supplemented to some extent with automation (for example scanning software, archiving solutions and other software tools) – thus facilitating management from the desktop – the 'ideal' of managing from the desktop would be much more easily achieved, and a much more worthwhile goal, if these existing paper processes could be fully automated.

Decision Making – the Specific Challenges

Another key dimension of the workload of managers is decision making. Hence, a barrier to achieving the 'ideal' state is the need for a better series of tools to assist in management

In 1999, Adrian Bagust, Michael Place and John W Posnett from the Health Economics Consortium at the University of York in Britain, sought to examine daily bed requirements arising from the inflow of emergency admissions to an acute hospital, to identify the implications of fluctuating and unpredictable demands on hospital bed capacity for emergency admission, and to quantify the risks of insufficient capacity for patients requiring immediate admission.

The dynamics of the hospital were modelled on the basis of discrete-event stochastic simulation (which reflects the relation between demand and available bed capacity).

Their research objectives were to identify and quantify:

- The risk of having no bed available for any patient requiring immediate admission;
- The daily risk that there is no bed available for at least one patient requiring immediate admission, and
- The mean bed occupancy rate.

Their findings, published in the 'British Medical Journal'*, identified discernible risks when average bed occupancy rates exceed about 85%, and that an acute hospital could expect regular bed shortages and periodic bed crises if average bed occupancy rises to 90% or more. [Note: These numbers are still widely used for planning capacity, especially those 'traditionalists' who resist cutbacks in hospital bed capacity as part of ongoing reforms across Europe.]

As a result, the York researchers concluded that there were limits to the occupancy rates which could be achieved safely without considerable risk to patients and to the efficient delivery of emergency care. Spare bed capacity, they suggested, was thus essential for the effective management of emergency admissions. The costs of this, according to them, should be borne by purchasers as an essential element of an acute hospital service.

** 'Dynamics of bed use in accommodating emergency admissions: stochastic simulation model', BMJ 1999;319:155-158.*

decision making. There is significant scope, for example, in areas like expert systems to provide guidance around key financial, access or quality decisions... Or even, more simply, in the establishment of electronic decision support pathways around standard management scenarios.

HISA health-mic SIG

HISA health-mic SIG is a web site dedicated to the evolving specialty of Healthcare Management Informatics and Computing. The key questions addressed by HISA health-mic SIG are:

- What are the key information requirements of healthcare managers, be they GP practice managers or senior hospital executives?
- What are the decision support requirements of these same groups?
- What are the change management issues inherent in implementing management information solutions?
- How do we harness some of the groundbreaking work in scheduling, forecasting and other problem areas happening in pockets, often in research environments. In particular, how can such innovations be operationalised and /or incorporated into robust, integrated IT systems?
- How do we represent (or even firmly agree with definitions for) management concepts such as 'occupancy" and 'congestion' - in a way that IT practitioners and developers can incorporate them into practical IT systems, for example, through the use of archetypes (openEHR) or other kinds of modelling environments?
- How do we engage funders sufficiently for them to see that management, and by inference patient care (eg -through improved access), can be improved signifcantly (and in particular can become more evidence based) through the utilisation of relevant management technologies.

For more information, please visit:
www.hisa.org.au/health-mic

In many systems and facilities – not so much cost – but competing priorities for scarce resources is a key issue.

When profit is a driver, and the workforce is unskilled or less educated, having managers and management receive significant amounts of funding in order to set up electronic solutions to improve systems performance and monitoring is arguably a relatively easy sell.

This in not the case in not-for-profit hospital facilities, where many educated clinicians have senior and influential roles, and themselves struggle to deliver care in a under-funded environment. If management from the desktop is seen as a positive thing to aim for, the key challenge here is making a case regarding the benefits, and doing so in terms that all relevant parties can understand and support. Such factors would include improvements in cost containment, patient and healthcare worker satisfaction, equity of decision making and access, and improved quality of care.

The Need for Clarity

Arguably, one of the key things that needs to happen if we are to go this way is that there needs to be much greater clarity established around (although there are some excellent organisations that are clear) on what information managers need to track, measure and act on and why. Whilst some measures are well known and have been used for some time, there are many relevant measures (eg – hospital occupancy) that are not well understood or do not have agreed definitions.

Let us contemplate this issue further. There has been much written about hospital occupancy, and the work by Bagust and colleagues in the UK ten years ago, is still often cited in reference to this issue.

The message that many people have taken away from this work is that for optimal performance (itself an ill-defined concept), hospitals should run at no more than 85% occupancy.

Let us ignore many of the potential discussion points around this take away message, and focus just on the concept of hospital occupancy as a metric.

If we had a system to monitor occupancy in real time – and they do exist but are not that common – what aspects of hospital occupancy should be measured and acted upon? And what would the numerator and denominator be to make up this metric?

Hospital Occupancy: Getting a Grip on the Metrics

Drilling down further, what are the possible dimensions of hospital occupancy that could be valuable to measure. The trouble is that we have no universal understanding or evidence around which of these is most relevant currently. Let us just assume that keeping the hospital at 85% occupancy is a good thing in most circumstances, but the question remains – should we monitor, say the following:

- Current (real time occupancy) every 5 minutes, every 2 hours or somewhere in between.
- Average occupancy in the last x minutes, hours or days – and if so is it a moving or static average?
- Recent changes in occupancy. For example, if the occupancy has risen from 75 % to 85 % in the last 24 hours, arguably this would be more cause for alarm than if it were now 85 % having fallen from 90%. This would be all the more a cause for concern if it had remained at a 90 % level for the previous 3 days, and there were associated adverse effects on hospital performance such as longer then usual queues for admission from the Emergency Department.
- Weekend occupancy versus weekday occupancy. For example, one could argue that an occupancy of 85% on a Friday evening in a mixed emergency-elective hospital is a much more concerning figure than an occupancy of 85% on a Monday morning – as many more staff are likely to be available to facilitate the discharge of patients on a Monday morning. In addition, 'downstream' resources to facilitate discharge are much more likely to be available (for example, patient transport mechanisms, aged care facilities ready to receive hospital discharges, community nurses and so forth). In contrast, on a Friday evening, in many settings, such facilitation mechanisms close for the weekend, and whilst elective admissions may not occur over the weekend- emergency patients will continue to present and require admission.
- Predicted future occupancy. This is an even more radical thought, although there already are software applications in use that work on this premise – that future occupancy is the most useful expression of the hospital occupancy concept. This would allow pre-emptive decisions about patient flow, discharges, elective admissions and staffing to be made prior to occupancy reaching unacceptable levels.

Other Factors

Other things that need to happen include the sustained collaboration of multiple relevant skill sets to achieve this 'ideal state'. Managing from the desktop around a difficult decision, requires numerous skill sets to come together for a sustained period of time.

Let us consider the example of an operational manager who has an elective surgery waiting list target to achieve before the end of the month. The target is achievable provided they can ensure access to care for the right numbers and mix of patients prior to the end of the time period. In one sense this is a simple problem to solve, but in reality the manager needs to balance the following parameters and constraints, as well as many others:

- How many patients need to be treated for their elective surgery needs if the target is to be met?
- What capacity is there to treat these patients, or in other words, what competition is there for operating theatre, inpatient bed and other resources required to treat these patients – for example, from emergency patients likely to require treatment in the given time frame?
- Who needs to be communicated to with regard to the devised management plan in order to achieve the desired outcome - for example, operating theatre managers and staff, the responsible surgeons and others?
- What are the financial implications of the operationalisation of the established management plan – and are these implications palatable to the manager and the organisation?
- If the management plan established to deliver the desired outcome is ineffective – what contingency plans are in place, and what actions need to be performed in light of the inability to achieve the desired outcome?

Another facet to this example is that in an automated environment, it is not unreasonable to expect that the manager may want to be able to choose one preferred option to manage the situation from a range of plausible but competing options. This, in turn, could require the following key elements of functionality:

- Access to archived information on similar decisions made previously and their outcomes, and
- Access to predictive information about the likely outcome in this case given various decision scenarios (or at least some automated guidance about possible decision options – akin to clinical decision support).

We know from our own experience that there are lessons learned in the area of clinical decision support which need to be heeded in order to provide effective management decision support in healthcare.

In turn, the existence of these systems implies that managers, IT architects and developers, experts in optimisation and decision science, graphical user interface (GUI) designers as well as economic and financial experts, have to collaborate closely. Only then can the business knowledge and IT requirements of such systems be aligned to support management decisions by a desktop-based workflow, rather than traditional paper based systems.

So What's the Answer – a Dream Come True?

This article is not intended to be an exhaustive examination of such issues, which would ideally be the topic of a major research programme, an entire journal and much debate. Rather, I have attempted to highlight some of the issues to be considered and dealt with, if one has to seriously broach the possibility of managing hospitals from the desktop.

Irrespective of the necessary advances in management thinking and knowledge, technology, skills, collaboration and organisational cultures highlighted above, whilst this proposition is an attractive one, I think the undeniable truth is that like other areas of IT usage and uptake in healthcare – we are still a long way still from an ideal state.

INNOVATION MANAGEMENT IN HEALTHCARE IT

AUTHOR
Miroslav Madjaric,
is Chief Information Officer and Advisor to the CEO at University Hospital Centre Zagreb

Innovation is, without doubt, one of the central challenges faced both by healthcare IT professionals, and senior management. Its benefits are often, but not always, clear – depending on the yardsticks chosen to measure them. In addition, the pathways to innovation are rarely straightforward. Innovation is both art and science. One instantly recognises a 'good' innovation. But how does one qualify those that are 'less good', but which might be made better ?
Last but by no means least is the question of cost – both direct costs and opportunity costs. And yet, as we shall see, innovation can be a question of survival, even in healthcare. It cannot be brushed aside.

Structuring the Process of Managing Innovation in Healthcare IT

In order to provide a schematic structure, we might start by conceptualising the pyramid which underlines the issue of this voluminous and complex area. Each and every out of these four complex notions has its own essence and its own dynamics. Their mutual interconnectivities are however key to understanding what innovation management in healthcare IT is about. The classic engineering approach is to thus cut the content into pieces, aimed at providing both an overview and insights and facilitating understanding.

1. IT
2. Innovation
3. Management
4. Healthcare

Of outmost importance is to understand, that we are not dealing here with innovation itself: We are dealing with IM (Innovation Management), i.e. with the methods, processes and organisation, how to foster innovation activity in healthcare organisation.

In addition, we are focused on IM in healthcare IT. Bare in mind that IT in healthcare can be helpful in IM, but also vice versa: Every IT project is in innovation in healthcare, thus has to be managed properly!

Objectives of an Innovation-Friendly Culture

For healthcare IT management, some of the objectives of building an innovation-inspirational culture would be as follows (applicable in every organisation):

- To identify innovation opportunities in their organisations (green-field or improvement);
- To evaluate benefit pools (the profit portfolio) of innovations;
- To communicate effectively the innovation potential of specific projects (buy-in), especially aimed at sustainable growth – and more innovation;
- To organize effective innovation processes, mainly in terms of improving the business culture and efficiency of an organisation;
- To provide talent leadership by informing, coaching and motivating people to harness their best capabilities;
- To develop a clear, collaborative and integrated operating innovation management model, and
- To 'infect' other people in the organisation with their innovation vision and commitment.

Whats, Hows, Whos, Whens, Wheres, Whys, and How Much?

Before delving further, it may be a good idea to summarise seven fundamental questions related to innovation management:

WHAT IS INNOVATION?

Keywords: New, useful, idea, improvement, creating, final value, new/better ways, novel, change, introduce, commercialisation, R&D, conversion, diffusion, application, beneficial …

HOW TO INNOVATE?

The process of innovation essentially marries an element of structure and discipline with simple rules. Management guru Peter Drucker puts it concisely: "Innovation is not a seizure of geniality, but merely a discipline, with its own, fairly simple rules. Just as entrepreneurship is!". Contemporary innovation guru Guy Kawasaki labels this topic as: "Art of Innovation" (look for his lecture on YouTube!).

WHO INNOVATES?

Everyone in the organisation (from the Chief Executive Officer through the IT manager to the nurse – all the way to the cleaning lady). The litmus test of innovation culture is indeed how motivated everyone is to innovate – (as mentioned above), to

bring about improvements to the working of an organisation – in ways both big and small.

WHEN TO INNOVATE?
Literally, all the time. "Before it is too late"! This of course collides with another common sense maxim – that employees should not neglect their everyday responsibilities while they are preoccupied with innovation. However, the typical attitude of a boss "You are here to work and I am here to think!" can ruin an organisation. The means to fight such inertia are as follows:

- Planning innovations as an integral part of making out a business plan;
- Benchmarking, and
- Fostering a strategic innovation-friendly culture

WHERE TO INNOVATE?
Again, everywhere in an organisation. "Innovation ghettoes" destroy innovation, kill the spirit. This is because of the very nature of the ghetto mindset: Innovation is for us. Outsiders are not welcome.

WHY TO INNOVATE?
To survive! Whether companies or institutions, all organisations which ignore such a question do so at a great cost.

HOW MUCH THE INNOVATION COSTS?
This is, of course, literally, the million dollar question. It involves issues of costs, of making clear and transparent business cases. Innovators have to be encouraged to demonstrate the business-case elements in their approach, or, if this is not possible, at least have a feel for it; in other words, an innovative cleaning lady should not be discouraged in her drive for innovation by asking to demonstrate a rigorous business case.

What is Innovation?

There are literally hundreds of definitions.
On www.thinksmart.com alone, there are no fewer than 22. One of the most succinct, according to this author, is that "innovation is every intentional novelty bringing sustainable advantage to an organisation." In healthcare IT it can be, e.g: Integrating drugs prescription in hospital with Internet portals for drugs interactions.

How to Innovate?

The above question was (and in this author's belief, remains) best answered by Peter Drucker. With his usual perspicacity, he stated that the key to successful innovation management is to combine discipline with a set of 10 simple rules.

Interestingly, among 1.5 million documents on the Internet related to innovation management or innovation leadership, it was not possible to find many applicable "cookbooks" about how to manage innovation in an organisation. There is a riptide of definitions, principles and characteristics, but nothing much on concrete process and workflow, which innovation management activities require to be performed and how they are interconnected. Understandably, successful organisations are reluctant to disclose their "innovation back-office". They just market their "innovation credos" and pertinent achievements.

HOW TO INNOVATE: TEN COMMANDMENTS

1. Analyse the opportunities
2. Both perceive and conceive
3. Innovate in a simple and focused (not diffused) way
4. Start with small innovations
5. Aim at leadership
6. Aim at average, ordinary customers
7. Innovate for the present
8. Innovation is work: It is more important to know than to be smart
9. Successful innovations are made by strong innovators
10. Innovation has to have an effect on both the wider economy and society (not merely on technology)

Who Innovates?

Literally, everyone in an organisation, from the Hospital General Manager (i.e. CEO) to the cleaning lady! At first sight, this may seem to be in opposition to Peter Drucker's statement about hard work and discipline combined with simple rules.

The truth is, however, different. Innovation and innovation management itself need both effort, and rules.

The first rule is that every member of the organisation has to have his/her role defined within the innovation process:

- … beginning with strategy, and
- ending in looking for everyday opportunities.

Closely associated with the above is participation in the innovation process, which is composed of a large number of single discrete activities, and where different members of a healthcare organisation have very different roles. For instance, it is not to be expected that a hospital CEO thinks about detailed opportunities in production, sales or a back-office operation. On the contrary, a summer intern will surely not be a substantial contributor to the key segments of defining or executing innovation strategy.

In other words, the primary goal of fostering an innovation-friendly culture is to clearly state and communicate roles and responsibilities in the innovation process, for each and every member of the healthcare organisation.

To sum up, as far as the question about 'who innovates' is concerned – the answer is "each and every member of the organisation" – but according to his/her role in the innovation process.

When to Innovate?

Innovation is a permanent process, which must be central to the business-cultural dynamics of a healthcare organisation. Indeed, postponing decisions to innovate (or at the management level, to generate strategic/systemic support for the innovation process) is an all-too-common excuse.

The forces of darkness, which resist innovation, are stronger, subtler and often more insidious than most people imagine! They tend to prevent any changes, the use of new or simply different methods. Their simple mantra is: "Not invented here!". Of course, many such resisters are secretive. They seem to be in favour of change and pay whatever lip service is required to show that they support innovation. However, in reality, they find every possible excuse to stall every initiative for change – while it is in the gestation process, or put spokes in the wheels of an ongoing innovation process.

One of the most frequent and widespread methods for such rearguard actions is to find arguments to postpone a part of the innovation process. Given the organic, cross-synergistic and often-invisible nature of the latter – at least as far as the 'process' is concerned – this serves to strangle the innovation infant in its cradle.

There are several indicators of such stratagems: It is hardly rare, for example, to hear statements such as the ones below:

- "This is perfect idea for back-office efficiency boosting, but our focus is now on company growth by merging, aimed at increasing market share!"
- "Your innovation proposal is promising, but can't be approved now, because our actual financial situation doesn't allow the level of investment proposed!"
- "We can file this idea on our future improvement list, which will be evaluated in detail during preparation of our next Five Year Business Plan!"

How do innovators and supporters of innovation fight against the kind of excuses above? Luckily, there are some guidelines.

1. Active defence: Innovation should be an integral part of all Business Plans. Its performance should be subject to quarterly evaluations, too, long the lines of what healthcare managers use for other areas of their business. In addition, innovation should be subject to similar metrics, such as the number of innovations accepted, the innovation budget, innovation performance etc. Along with evaluation on a quarterly basis, such an approach would represent a forceful and evidence-based counter-attack against innovation blocking.

It would also carry its own momentum. For example, an Innovation Manager can simply say: "We made a plan to have a 10% increase in innovations and a 20% supplement for our innovation budget, as compared to the previous year". Under such a scenario, (subtle or overt) actions to block innovations would come to a stop and yield instead to the beginning of a discussion on priorities and portfolios.

2. Benchmarking is another leverageable tool. An Innovation Manager could, for example, emphasise: "Our business intelligence says that our competition is well ahead with innovations, as compared to us," and quantify its business impact. This should ideally be done on a medium-term basis: Short-term scenarios put too much pressure on evidence collection, while longer-term goals are rarely an antidote against day-to-day pressures to kill innovation.

3. Lastly, simple **'airline magazine'** statements can help: "Make changes before you must do it!"

In brief, a simple answer to the question 'When to innovate?' is as follows: "Not tomorrow, start now. A pity that we have not achieved it yesterday."

Where to Innovate?

As mentioned previously, "innovation ghettoes" kill the creative spirit. They confine the mandate for an area as freewheeling and borderless as innovation, and thereby serve to keep out the creativity of 'outsiders'.

Key principles, therefore, are as follows:

- There is no monopoly on innovation;
- Innovation is for everyone, not just R&D, ICT or even marketing, and
- Even back-office functions are prone to innovation.

The labelling of only a few departments or divisions as 'innovative', in turn, has two serious shortcomings:

- Other units work forever "as usual", and
- "Innovative departments" have no proper innovation management, innovation becomes their routine.

The remaining question on innovation is about its sources. The main elements here can be classified as follows:

- Internal: Rotating within an organisation;
- External - health: Through business intelligence, regulatory and technology trends;
- External - other industries: Find the process outside heath industry applicable to the hospital! E.g.: Henry Ford invented assembly belt after visiting slaughter house, and
- Patients: Complaints and suggestions.

Why Innovate?

An organisation should take advantage of the inherent creativity of its employees aimed to boost effectiveness and efficiency. This is a self-perpetuating cycle. The creativity and motivation of the employees will also get dampened, in parallel.

A failure to innovate is not just a question of success. Given the pace of development in technology, it is also a question of survival.

The threat consists both of the unforgiving forces of a market, and secondly in equally-unforgiving governments, treasuries and healthcare policy managers thus valid for healthcare providers on the market or publicly owned.

The Cost of Innovation

Innovators have to be encouraged to demonstrate the business-case elements in their approach. One dilemma which is often encountered is how much to invest in an innovation, and thus avoid two kinds of errors:

Error Type I: accept an innovation where the bottom line will be red, or
Error Type II: reject an innovation which would bring a positive net effect if it had been accepted.

A rule of thumb under such circumstances is that experiments, prototypes and pilots are welcome and, if feasible, should demonstrate innovation viability and sustainability, thus reducing business risks to a reasonable level. Nevertheless, here too lies a double sided coin:

Innovation has the potential to bring advantage for the company, but it costs 'some' money or other resources to be implemented. Within a strong innovation management process, activities related to this issue could be defined as follows: Assessment, risk, business cases, budgeting, portfolio management, innovation effects measurement.

These can help make a case for justifying the costs of innovation. However, innovators and the CFO will inevitably stay at opposite ends of the spectrum. Decision makers, in turn, will always be in trouble, fearing the two possible errors they can make – mentioned above (to accept an innovation with a red bottom line or reject an innovation which would yield positive results had it been accepted). This seeming Mission Impossible is, in reality, even worse. To the two types of errors listed above, we can add yet another.

Error Type III: Accept an innovation, but restrict its budget, resulting in poor effects, and then landing in negative territory as far as the bottom line is concerned. Had the full budget request been approved, the net outcome could have been positive, in spite of the higher investment entailed.

> Example: Hospital innovates putting its procedures in video form on YouTube. There are 100 such procedures, one 5 minute video should cost 10.000 euros. CFO says: Oho, too much, I made bargain with local Film Academia for 200.000 euros in total, saving 800.000 euros! Amateur videos were produced, there was no public acceptance of this innovation, it ended in red!

In reality, there is no golden rule, just rules of thumb, experience, and in some cases, imagination and a willingness to take reasonable risks. This, as we have seen, is in any case, integral to an innovation-friendly organisation.

Classifying Innovation

Given below is this author's view of how innovations can be classified:

Categorisation of Innovations

GRASP: Some old thing (already in existence), which we have, but do not yet use. E.g: Pivot table in MS-Excel, Service Desk for FM, Task Management for working time recording.

EXTERNAL: We have seen or otherwise obtained information from elsewhere about some thing that fits an opportunity; e.g. telemedicine for islands in Croatian Adriatic sea.

CORRECTION: If there is a problem with equipment or a process, there is an opportunity to fix it, such as shortcomings in software which consumes unnecessary time or generates errors. Try to "sell" this innovation to the mannufacturer, like Cleveland Clinic does it within their Innovation Center!

PERFECTION: If everything works well, but there is a better way (based on some changes, this kind of innovation could be called 'opportunity-driven improvement'.) Here we are answering the question HOW? (efficiency).

INVENTION: This is the highest level of innovation. If we discover something completely new, it should be considered as an invention and be protected for the benefit of an organisation, and provide rewards to the innovator(s), to continue innovating – and inventing. Here we are answering the question WHAT? (effectiveness).

Levels of innovations

1. Useful idea.

2. Process efficiency improvement.

3. Technical advance.

4. Industrial design.

5. Discovery/Invention.

IT @ NETWORKING 2009

KEYNOTE SPEECH ON GLOBALISATION AND THE CHALLENGE FOR EUROPEAN HEALTHCARE IT

AUTHOR
Christian Marolt,
Secretary General,
European Association for
Healthcare IT Managers,
Brussels, October 29, 2009.

Ladies and Gentleman,

They say the world is globalising. One may like this, or one may not. But it is clear that our world is fast becoming borderless – whether it is in terms of goods and services, innovation, travel and television, or even money. It may seem a bit of a cliche, but the current financial crisis spread like a pandemic – only because of the 'borderlessness' of the world. Indeed, it seems to have spread even faster than Swine Flu.

Today, as we are gathered here, few will argue that healthcare IT is driving healthcare to become borderless. But even fewer, it seems, are prepared to accept that some of us will have to pay a price for this.

Whether we call it a borderless world or a globalising world, one fact is clear: There is a challenge from the East. And this does not concern small countries like Singapore, South Korea or even Japan. The rise of their populations – 40 million here, 140 million there, or just a handful like Singapore – did not mean any zero sums for the rest of the world.

But when we speak of China and India, we are talking of two thousand six hundred million people – give or take a few hundred million. We are referring to more than one third of the world's population.

Who will pay the price for their rise?

And then take a quick look how they complement each other: China the world's factory, India its back-office, with both moving to new frontiers, every day.

Ladies and gentlemen, how many of us expected that almost 20 billion dollars of intelligent money – private equity and venture capital – has flowed into India and China since last October. And healthcare IT is no exception, accounting by one estimate for almost a billion dollars in such investment, over just the past 12 months.

Is this in spite of the financial crisis, or because of it? - I would argue that it is the latter.

Where intelligent money leads, dumber money follows: China and India are today also the world's second and third largest recipients of foreign direct investment.

Again, healthcare, and healthcare IT, are no exceptions. Where, for example, is IBM piloting its Healthcare Superhighway? Where are the headquarters of its global healthcare SOA design and delivery teams? Where is GE building a 25 million dollar virtual hospital, to test-bed its new medical technology applications? No guesses: In India.

Indeed, John Dineen, the CEO of GE Healthcare says that the Indian lab is – let me quote – "the biggest engineering lab for GE Healthcare, and the first of its kind in the world today." And if India is where new healthcare IT applications are designed and developed, where will the new products be manufactured? No guesses: In China, of course.

I spoke moments ago about China and India being in second and third positions in the global foreign direct investment league. But, then, who is first? No mystery here. The United States. America, we must underline, is symbolised by the spirit of Captain Ahab, by The Great Gatsby. It has always proved ready to reinvent itself, whatever the price. It is doing so again, now.

And healthcare IT is still no exception.

The new American Recovery and Reinvestment Act, or ARRA, is one of the most ambitious commitments to healthcare IT – anywhere, anytime.

Through ARRA, President Obama plans to kick-start the US economy via massive, enabling investments in healthcare, and to jumpstart healthcare itself, by means of IT. This, Ladies and Gentlemen, is the policy equivalent of a positive-displacement supercharger.

The funds earmarked by Mr. Obama for healthcare IT are not insignificant - about 20 billion US dollars. Indeed, if Mr. Obama's plans work out, they could well do to healthcare IT what the Apollo programme did for space exploration, or the Manhattan Project for nuclear technology.

And where is Europe here? Aside from the sums committed to ARRA, there is another crucial factor which differentiates the US initiative from those like the EU's RTD Framework Programme. The Obama gameplan involves spawning, catalysing and growing a critical mass of users. This will both push and pull healthcare IT, and do so in the real world of here and now. It does not concern itself with technology for technology's sake.

In this respect, the US is headed towards launching the era of i-Health (for individual, personal e-health). Incidentally, this term, coined by one of my former colleagues, was featured as a cover story in one of our past issues.

But to return to where I was: Today, as the US revs up its healthcare IT engines, we in Europe must ensure that we do not get stranded in an island of demonstrations and pilots, ensnared by one-shot wonders, seduced by the policy equivalent of a one-night stand.

To me, it may be a good idea, an urgent one, for European leaders to give some thought to extending initiatives like the Framework Programme.

These have demonstrated cutting-edge concepts. In the realms of imagination, they are truly world class. As Clint Eastwood would say, they are legendary in our own minds.

But when it comes to the real world of use, of being promoted, publicised – and sold – of being known as 'global' healthcare IT solutions, we in Europe have a long way to go. And time is of the essence.

Between the breaking dawn of e-health and the high noon of i-Health, there is that iron law of the market: First come, first served.

This is because the US will develop masses of healthcare IT users, alongside healthcare IT protocols and standards – out of the labs of US companies like IBM and GE in India.

It will then manufacture them in China, ship them to Europe. These will be called global products, based on global standards. And we may have no choice but to lie down and wag our tails.

But should we? Don't we, here in Europe, also have world-class healthcare IT jewels, meticulously designed, painstakingly crafted and found to work in the real world? You know the answer. Yes, we do.

This is the simple explanation for why, Ladies and Gentlemen, we are here today: To see working examples of world-class healthcare IT solutions, made in Europe.

Thank you.

IT @ 2009 TROPHY - Winners and Runners-Up

On October 30, a French team led by Dr. Pierre Biron from the Centre Léon Bérard in Lyon won the IT @ 2009 Trophy at Europe's top event for healthcare IT innovation. Dr. Biron's team showcased their SISRA Health Information System and DPPR Shared and Distributed Patient Record, which has been implemented in the Rhône-Alpes region of France (see page 6 and 7 for more details).

The two runners-up in the competition, which drew a total of 50-plus applicants from across Europe, were:

Digitisation of the Dutch Nationwide Breast Cancer Screening Programme.

This solution was presented by Bart Verdonck from the Netherlands, with the support of Philips Healthcare and RIVM (the National Institute for Public Health and the Environment).

In the Netherlands, RIVM provides a free nationwide breast cancer screening service for all women in the 50-75 years age group. Close to one million women are examined per year, representing more than 80% of the target group, the highest percentage worldwide.

The Dutch government has sought digitisation of the screening programme. RIVM assigned Philips and a consortium of specialised suppliers to handle all the IT aspects of this mega-project referred to as DigiBOB. The Philips iSite PACS forms the heart of this nationwide service, allowing radiologists to access new and historical patient data, including multiple mammograms, in seconds.

Screening mammography examinations are performed in 67 units, out of which 57 are mobile units (buses). The project was kicked off in early 2008 and by July 2010 all mobile screening units are expected to be integrated in the new system.

For patients, the system will enable a faster response time after the mammography examination and a faster scheduling of follow-up examinations, if required. The system needs to guarantee at least the same high quality standards as the current screening programme. And the expectations are that digital imaging will further improve the clinical quality of the programme. This is the first nationwide digital mammography screening installation in the world.

From Free Text to Standardised Language – The National Development Project of Nursing Documentation in Finland

This solution was presented by Kaarina Tanttu, from the Hospital District of South West Finland.

In 2002, Finland made a decision to have a nationally interoperable electronic health record (EHR) by the end of the year 2007. Furthermore, the decree launched in 2007 requires public health care organisations to join the national patient record archive by the end of the year 2011. The development process started in 2004 when the core data elements of the national EHR were introduced.

The Nursing Minimum Data Set (NMDS) is a part of the core data elements. The national nursing documentation model and the Finnish Care Classification (FinCC) were developed in the national nursing documentation project 2005-2008. The national NMDS and FinCC were integrated during 2005-2007 into eight health recording systems in 33 health care organisations (piloting in 106 units/wards / three university hospitals, 11 district hospitals, 19 health care centres).

An education model and an eEducation environment were also developed to support the implementation. Based on the experiences and evaluation results the Finnish Care Classification can be implemented and used among all kinds of wards.

Overall, the quality of the nursing documentation is more uniform, patient-centered and in interdisciplinary use. The information concerning the wellbeing of the patient during the care episodes until discharge improves the care process and pathway. The data of nursing documentation can be used for managerial and administrative purposes.

FinCC has been also implemented in CDA R2 format by Health Level 7 Finland. The information on nursing process and the nursing discharge summary can be transformed and stored in the national archive of EHRs. The healthcare professionals can, by patient consent, search and reuse the same information in all EHR systems.

After the results of the national project, the nationwide implementation process started in Finland in October 2007 and will end in 2011.

DUTCH HEALTH SYSTEM REMAINS EUROPE'S TOP RANKED

AUTHOR
Tosh Sheshabalaya, HIT

For the second year in a row, the Netherlands has been judged to have Europe's best healthcare system, according to the annual Euro Health Consumer Index. With a strong performance across all evaluation categories, the Dutch scored an even larger margin than the previous year (when 3-5 countries were clustered close to it at the top).

Denmark, edged out of top slot in 2008, was in second position this year. Though it remained at the top of the league in terms of providing access to information and enforcing patient rights, it fared weakly on the issue of waiting times.

One interesting finding: The Netherlands has shown a rise in healthcare spending to the highest per capita levels in the European Union (excluding Luxembourg, or non-EU members Norway and Switzerland – all of whose per capita GDPs are far higher than the EU average).

The annual Euro Consumer Index, the fifth so far, provides a "user-focused, performance-related" comparison of health services in 33 European countries. The Index, traditionally based on evaluating criteria such as patient rights, waiting times, outcomes, range of services offered, and access to medicines, introduced the criterion of e-health last year - essentially, in terms of electronic medical record usage and healthcare data exchange; this year, it added a new sub-criterion under the e-Health rubric: e-solutions for communications to patients.

The origins of the Euro Health Consumer Index (EHCI) date back to 2004, when Sweden's privately-owned Health Consumer Powerhouse (HCP) introduced an index comparing Swedish county council responses to the care consumer (Vårdkonsumentindex - VKI). The success of the VKI led to Swedish authorities developing their own set of indicators for performance comparison, significantly improving transparency in the healthcare system.

HCP extended the concept to a pan-European level in 2005 with its first Euro Health Consumer Index (EHCI). Indices of performance in specific healthcare needs (diagnoses, illness groups, care needs) are an added in offering in its mission of "strengthening the position of the healthcare consumer."

There is, nevertheless, an issue of semantics involved in the indices, and rankings. HCP takes great pains to point out that EHCI does not measure the best healthcare system, but rather the most consumer-friendly one.

The Netherlands was singled out by HCP due to recent reforms, which have led to a central, strategic role for the patient/health consumer. The reforms blend competition for funding and provision within a regulated framework. This separates financing of hospitals from their operation, and removes decision-making from amateurs and transfers it to professionals. Alongside, information tools (such as Kiesbeter – covered in a previous issue of Healthcare IT Management) support active choice among consumers.

Indeed, the above recipe is more or less a model for countries in the top quintile of rankings.

HCP said its league table serves as 'a reality check' for governments who can use the data to benchmark themselves against Europe's best-performing health systems.

HCP is critical of countries with GP gatekeepers, requiring patients to visit family doctors before accessing specialist health services. This leads to longer waiting times and does nothing to reduce costs. It is in this respect that accessible information on hospital performance and greater patient choice together lead to improvements in the efficiency of healthcare delivery.

Ironically, one of the countries that relies fairly heavily on GPs as gatekeepers is EHCI's top-ranked Netherlands. Not surprisingly, the country shows a relatively mediocre performance in terms of waiting times and access.

As mentioned above, in 2009, the EHCI added 'solutions for communications to patients' as a new metric. However, the choice of making online comparisons of hospital outcomes is so far confined to a handful of EU countries; apart from the Netherlands, they include Germany, Denmark and the UK.

In the near future, the wider availability of such data will become an increasingly important issue, after patients travel across European borders for treatment, in line with the new EU directive on patient mobility.

According to the EHIC and other research, healthcare in Europe is improving each year. However, public perceptions of health services remain poor in several EU countries (not least Spain, Ireland and Greece), despite better EHCI scores.

Given below is an analysis by Healthcare IT Management of the performance of different countries by key EHCI category:

Patient rights and information
Sub-criteria: Healthcare law based on patient's rights, patient organisations involved in decision making, no fault malpractice insurance, right to second opinion, access to own medical record, physician registry, Interactive 24/7 helpline, cross-border care finance from home, provider catalogue with quality rankings.

LEADERS: Denmark, followed by the Netherlands.
GOOD PERFORMERS: Austria, Finland, France, Iceland and Slovenia.
LOSERS: Bulgaria, Czech Republic, Greece, Spain.

Waiting time for treatment
Sub-criteria: Same day GP access, direct access to specialist, major non-acute operations in less than 90 days, cancer therapy in less than 21 days, CT scan in less than 7 days.

LEADERS: Albania, Belgium, Germany and Switzerland, followed by Austria, France, Iceland and Luxembourg.
GOOD PERFORMERS: Cyprus, followed by Greece, Hungary and the Netherlands.
LOSERS: Portugal and the UK, slightly behind Finland, Spain and Sweden.

Outcomes
Sub-criteria: Heart infarctus case fatality, infant deaths, ratio of cancer deaths to incidence, preventable years of life lost, MRSA infections, rate of decline in suicide, % of diabetics with hihj HbA1c levels.

LEADERS: Sweden, followed by the Netherlands, Norway and Iceland.
GOOD PERFORMERS: Finland and Iceland, followed by Germany, Italy and Switzerland.
LOSERS: Albania, Bulgaria and Slovakia.

Range and reach of services provided
Sub-criteria: Equity of healthcare systems, cataract operations in elderly, infant 4-disease vaccination, kidney transplants per capita, inclusion of dental care in public health system, rate of mammography, payments to physicians.

LEADERS: Belgium, Luxembourg and Sweden, followed by the Netherlands.
GOOD PERFORMERS: Czech Republic, Denmark, Finland, Norway and the UK.
LOSERS: Bulgaria, slightly behind Albania.

Pharmaceuticals
Sub-criteria: Prescription drugs subsidy, layman-adapted pharmacopeia, novel cancer drugs deployment rate, access to new drugs (time to subsidy).

LEADERS: Denmark and the Netherlands, followed by Austria, Germany, Spain and the UK.
GOOD PERFORMERS: Ireland, Slovakia, Sweden and Switzerland.
LOSERS: Albania, Bulgaria and Lithuania.

e-Health
Sub-criteria: EPR penetration, e-transfer of medical data between health professionals, lab test results communicated directly to patients via e-health solutions, on-line booking of appointments by patients, on-line access to check how much doctors/clinics have charged insurers for, e-prescriptions .

LEADERS: Denmark and the Netherlands, followed by Croatia, Iceland, Sweden and the United Kindom.
GOOD PERFORMERS: Austria, Finland, Macedonia and Norway.
LOSERS: Greece, slightly ahead of Albania, as well as Belgium, Cyprus, Czech Republic and Slovakia.

[The nascent/emerging status of e-health is indicated by a much lower rate of divergence between the leaders, losers and the median].

Overall, rankings and points out of a maximum of 1,000 in EHCI 2009 were as follows:

1. Netherlands:	875
2. Denmark:	819
3. Iceland:	811
4. Austria:	795
5. Switzerland:	788
6. Germany:	787
7. France:	778
8. Sweden:	762
9. Luxembourg:	760
10. Norway:	740
11. Belgium:	732
12. Finland:	721
13. Ireland:	701
14. United Kingdom:	682
15. Italy:	671
16. Slovenia:	668
17. Czech Republic:	667
18. Estonia:	638
19. Cyprus:	637
20. Hungary:	633
21. Spain:	630
22. Croatia:	627
23. Greece:	600
24. FYR Macedonia:	576
25. Portugal:	574
26. Poland:	565
27. Malta:	565
28. Slovakia:	560
29. Lithuania:	546
30. Albania:	542
31. Latvia:	512
32. Romania:	489
33. Bulgaria:	448

A GLIMPSE OF HEALTHCARE'S SUSTAINABLE FUTURE

NEW KAROLINSKA SOLNA HOSPITAL, SWEDEN

AUTHORS
Paul Whaley, *is Communications Coordinator for Health Care Without Harm Europe, and Editor of Health & Environment*

Sustainability concepts are taking root in healthcare, the subject of more and more discussion as the spectre of climate change looms larger. The pressure to reduce environmental impact is being felt all the way through healthcare operations, in purchasing, waste management, water and energy use, energy generation, transport, food service and building design. It may not be long before everyone in the healthcare profession will need to understand what these concepts are and how they apply to the hospital environment.

So What Does Sustainable Healthcare Look Like?

Though there is much interest and work on sustainability in projects all over Europe, hospitals have yet to embrace environmental principles in quite the way as that envisaged at New Karolinska Solna (NKS), a new hospital due to open in 2015 in the heart of Stockholm, Sweden.

In 2001, an investigative committee determined that patching up the old Karolinska University Hospital site at Solna, with its disjointed, aging structures, was neither economically nor physically compatible with the intention of Stockholm Regional Council (SLL) to provide better care to patients in a better structured hospital.

"The current Solna site is comprised of around 50 buildings and is spread out, so it is hard to have modern healthcare in them," explains Anders Göransson, Environment Coordinator for NKS. Instead, the committee laid the foundations for a departure from the conventional concept of the modern university hospital, envisaging a new facility which would:

- Hold 800 beds, all private rooms with en-suite bathrooms (excluding day-patient beds)
- Anticipate 1600-1800 patient visits per day of which 10-20% will be emergency cases, and
- Cost 1.3 billion EUR [2007 valuation] and be the size of the Wembley Stadium in the UK.

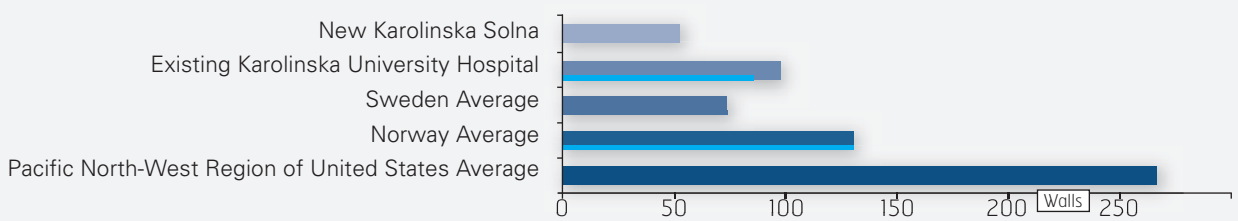
Being built to supercede the already environmentally-committed Karolinska University Hospital, sustainability is a top priority from the outset for this huge new development. The concept runs through the work environment for staff and employees, the patient environment for optimised care and the public environment for just about anybody in or near the hospital.

The plans encompass environmentally-friendly building techniques, materials and alternative energy sources; from a literal "greening" with grass and trees of the asphalt boundary between the new site and the Karolinska Institute, to NKS being designed to run on less than half of the existing hospital's energy requirements. Most ambitious of all is the ultimate aim of zero carbon dioxide emissions.

"We really want it to be outstanding compared to international standards - to be a big landmark. The energy goal is very low and still in the planning phase – getting that would be really good." says Göransson.

All the materials to be used in construction and during the hospital's operational life-cycle will be resource-efficient. This goes for everything from the concrete in the foundations to the walls, floors, ceilings to the lighting fixtures, bulbs and switches. Regardless of the actual systems employed, the ultimate requirement is that all energy purchased by the hospital will come from a renewable source. Even the backup power generators are held to this requirement.

Figure 1. Energy Use in Hospitals by Country EUI (KBtu/SF/year)



Source: American Society of Healthcare Engineering (2009)

"Since we have only just entered the tender evaluation phase we haven't yet decided the ways in which we are going to meet the goal of zero emissions, but boreholes and heat pumps for cooling and heating and buying renewable energy are obvious ways in which this could be done," says Göransson.

"It is harder to cool than heat the hospital, especially in the spring and summer, because medical equipment and people generate a lot of warmth. The arrangement of facades and use of glass can make a huge difference to heating and cooling costs."

NKS will also utilise district heating powered by a biomass plant and waste incinerator - although incineration is not necessarily favoured by environmental groups. District cooling is also supplied by water from the sea, which is fed to the hospital, meaning less electricity needs to be used on cooling equipment.

To ensure a favourable indoor environment, suppliers are being asked to provide a material inventory checked-off against the environmentally sustainable guidelines used throughout the building. A life-cycle approach is critical to the material assessments, with pitfalls from production all the way through to recycling being assessed.

"We are looking at all the materials, paint and everything, to avoid all the harmful chemicals. 30-40,000 products are being bought - it is hard work to check all of those for harmful substances," says Göransson.

The existing Karolinska site solves the problem of day-to-day operational use of potentially harmful chemicals with a database called KLARA. KLARA allows the environment management team to keep track of how much of each chemical is being bought by which departments, making it easy to measure their success in phasing out chemicals prioritised for substitution with less toxic alternatives.

Another database system for construction materials is in use at NKS, which pulls in information from suppliers and allows NKS to evaluate whether or not the materials meet the sustainability standards set by the hospital.

"Of course, the producers don't like to give the information, but by using the same criteria for all building projects across Sweden, the purchase volume is high enough to be able to make these demands," says Göransson.

Practices at NKS will also take into account SLL's research over the last years into the environmental effects of pharmaceuticals. SLL now has a near-complete set of persistance, biocumulation and toxicity (PBT) profiles for the active compounds in prescription drugs. This information allows doctors to prescribe, when other factors are equal, the least environmentally-harmful drug appropriate for the treatment of a given condition.

Additionally, NKS will continue with purification of nitrous oxide, which is estimated to be 300 times more potent than carbon dioxide as a greenhouse gas. Karolinska University Hospital in Huddinge was the first worldwide to introduce the recapture of nitrous oxide.

To verify its environmental achievements, NKS will be designed to meet three main environmental certifications: The international environmental management standard ISO 14001, the US LEED standard and the EU GreenBuilding Programme standard. NKS will be among a short list of hospitals that will have made an effort to earn any of these and be likely unique in achieving all three.

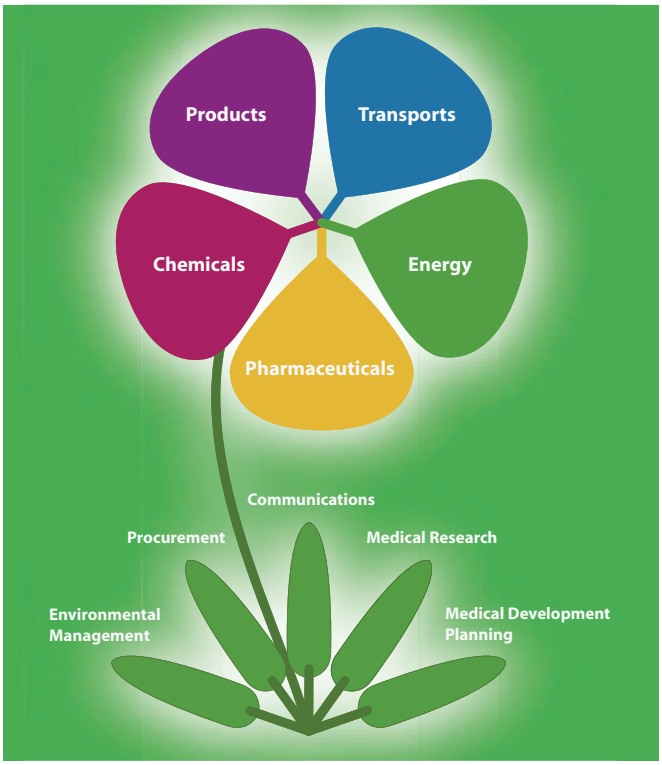


Figure 2. SLL's environmental programme

How New Karolinska Solna's Environmental Objectives are Defined by Stockholm Regional Council's Own Ambitious Sustainability Goals

It is no accident that one of the world's most ambitious healthcare projects is sited in Stockholm, whose Regional Council (SLL) has a leading position in the sustainability revolution in economy and society.

Symbolised by a five-petalled, five-leafed flower, SLL's environmental programme is in its fifth phase. Each petal represents a component of SLL's vision of a sustainable society. There is a petal each for transport, energy, pharmaceuticals, chemicals and products. Some of the goals SLL has set itself for the end of phase five in 2011 include:

- At least half of the County Council's passenger and goods transports operating on renewable fuel;
- All electricity and cooling to come from green energy sources and at least 75% of heating to be derived from renewable sources;
- The levels of the most eco-toxic pharmaceuticals in discharge from wastewater treatment plants or in surface water to be lower than in 2005;

Picture 1. The corner of main building

- 25% of the chemicals and chemical products which SLL identifies as having a serious effect on health and the environment to have been phased out, and
- 25% of the County Council's meals to be based on sustainably-produced products.

Cutting Carbon: How a UK Trust Showed That an Environmental Vision Isn't Just for Swedes

On May 11 2009, Norfolk and Waveny Mental Health Partnership NHS Trust opened Justin Gardner House, a psychiatric intensive care and low secure unit acknowledged as one of the best mental health facilities in the UK.

Designed as a statement building which would beat NHS energy targets, the unit exemplifies many of the low-carbon principles which will be on display at New Karolinska Solna, including rainwater harvesting, ground source heat pumps, grid-connected photovoltaic arrays, natural light and ventilation, and high levels of insulation.

The commitment to a minimal carbon footprint means approximately 70% of the building's heating is free, while its use of renewable energy should save 49 tonnes of carbon per year. But how, in a cash-strapped NHS, did the facilities team convince the Trust to invest in the project?

Corporate consciousness and the support of the Financial Director are often cited as key for a hospital having strong environmental performance.

Norfolk and Waveney is no different: The former Chief Executive, who recently retired, and her incoming replacement both have a strong commitment to the environment.

"This gives us the confidence to propose environmental components to projects. In general, if there is a corporate consciousness of environmental issues, the Board and the Chief Executive will follow that sensibility," says Jonathan Stewart, Strategic Estates Manager for the Trust. "At the end of the day, if your organisation says 'yes' then you can press ahead, but if it says 'no' then progress will be impossible."

The Financial Director is a particularly important figure, because it is generally the case that exceeding the norm on environmental performance means spending more money.

"This is beginning to be seen as a short-sighted view, as capital costs look increasingly irrelevant next to true life-cycle costs," says Stewart.

Stewart also advises that cost/benefit calculations should not be approached too straightforwardly. Photovoltaic arrays, for example, take a very long time to pay for themselves and on a pure capital payback analysis would appear much less attractive than the true environmental benefits they provide.

However, the installation of photovoltaics can be supported by capital funding, which is still generally more available than revenue funding in the ever tightening budgets of the NHS. So if capital funding can be used in such a way as to reduce pressure on revenue funding it makes sense to do that - even if the capital spend is not fully recouped in the short term.

Investing in this way in renewable energy in the form of ground source heat pumps and photovoltaic cells means the mental health unit has an energy bill of only 900 GBP [1100 EUR] per year - about the same as a suburban house, which allows scarce revenue funds to be invested in ways which more directly benefit patients.

The support of the Executive, Board and Financial Director have reaped dividends for the Trust. Stewart is regularly invited to conferences to present on the project as a leading example of sustainable healthcare design, even if he is personally modest about their achievements. The fact that the project acts as a beacon for the Trust is also important for distinguishing itself from its competitors in an increasingly business-minded NHS.

Lessons

- If there is no corporate consciousness of environmental issues, then address this before integrating environment considerations into a project - otherwise, the environmental aspects will just get thrown out.
- Approach cost/benefit calculations carefully: It's not just about quantities of money, it's also about what you spend the money on and how readily available money is for those purposes.
- Don't forget that strong environmental performance goes hand-in-hand with a hospital's duty of care: Good environmental performance tends to create a better work and healing environment.

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FIRE PREVENTION IN i-HOSPITALS 2.0

AUTHORS
Lars Holbein,
is a Research Assistant at the Universität Kassel Technische Informatik, Germany.

Active risk management starts before a crisis occurs. In spite of precautions, fire accidents occur often in hospitals. Even large-scale operation of rescue teams cannot always save lives. Preventive fire protection is a matter of importance to avoid fire accidents, especially in big public buildings. Instruction in fire protection is regulated by law and aimed of preventing casualties and damages of assets.
In reality, such instructions are not always feasible due to many reasons, such as shift-working, manpower-shortage, and so on. One means to solve this problem is the integration of learning from simulations about fire protection. The project described below is carried out in cooperation with partners from hospitals and the fire brigade.

The Concept

Fire protection is a duty: The law obliges employers to instruct employees about safety, health protection and fire protection in the workplace. In reality, such instruction takes place either once a year or not at all because of lack of control. The implementation is accordingly more or less effective. Instructions in fire protection, which are normally conducted by a qualified fire safety engineer in front of the employees, is very similar to a teacher-centred lecture.

One of the main problems in such a procedure is that not all employees can take part in every instruction. The reason for that can be illness or shift-working. Therefore, not all the employees are sufficiently well-trained to handle the cases of emergency.

In order to solve this problem, we generated learning simulations, which deal with the core subject - preventive fire protection.

In order to make the training more interesting and easy-to-understand, a story was developed in cooperation with experts from the fire brigade and nursing staff. The story presents a typical situation of daily life in a hospital. In the story, a birthday is celebrated in a patient's room. Due to an open flame, a fire breaks out and catches the interior furnishing of the room very quickly. The fire is noticed and the nursing staff demonstrate a suitable handling of the situation. This was compiled in cooperation with nursing experts and fire protection experts.

A Real Virtual Hospital

Modern learning methodologies and case studies point out that it is very important for e-learners to be trained in a familiar environment. In this case, it means that hospital employees must be provided e-learning instructions in an environment which represents their own hospital, instead of a fictional one.

Figure 1. Comparison of the original and virtual hospitals

A realistic model was created in a close cooperation with the hospital ''Diakoniekliniken Kassel''. As the first step, a 3D-model based on 2D architecture plans from the building was generated. With help and support of the Diakoniekliniken, important areas such as patient rooms, operating rooms, and intensive care units were added into the 3D hospital-model. After this, more details – such as diagnostic equipment, interior fittings and furnishings were added to make the model complete.

All interior settings must be integrated in order to make it possible to develop a realistic 3D-model. For this purpose the architecture plan was combined with the 3D model. Then it was possible to integrate equipment of the 3D-models at the right position in a patient room, intensive care unit or operating room.

Within this 3D model, there are various possibilities for different actions in separate perspectives. For example, one can look into a hospital floor from a bird's eye view and see the reaction of people by an emergency.

The actors in the story are virtual persons. As a representative of a real person, a virtual person, however, has to be provided with a real person's properties, for example to move, to speak or act.

Virtual persons can be varied in body size, features, appearance and voice. Different populations as well as special virtual persons can be generated. Besides, movements can be connected with the virtual persons, which means that it possible to create animation. In addition, the movements are saved in a database and can be recorded individually through special Motion-Capturing processes. Special movements, such as the operation of a fire drencher, are also presentable. What is more, virtual persons also have a voice output. The voice output in this context means not only the animation of the face, but also the output of the voice through an audio system and/or the output in a speech bubble. The words to be spoken can be provided by means of a text.

The first virtual persons based on anthropometric data were created. They present a cross section of the entire population. These virtual persons correspond to exact measurements, such as body height, length of legs, length of the arms, perimeter of the head or belly etc.

Further more, doctors, nurses and firefighters were already modelled for the project. Their clothes correspond to the original uniform of the hospital, or of the German fire brigade.

The Course

The first step for a better understanding of fire prevention is an e-learning platform: 'Fire prevention for employees in public buildings'.

To improve the knowledge transfer process, we set up an e-learning course which deals with special subjects with respect to emergency management. Videos of emergency management scenarios, produced in a virtual reality environment, improve the visualisation and comprehensibility of the knowledge acquired. Through such visualisation, the quality of the instruction is increased, leading to a better awareness of the seriousness of a fire emergency. Users of this course, in turn, obtain precise instructions and can better handle the cases of a fire emergency or disaster.

The course is developed with an open source e-learning software, moodle.

Figure 2. Screenshot from the e-learning course: 'Fire prevention for employees in public buildings'

Moodle permits the handling of a numerous variety of applications and hundreds of users/employees. It contains many activity-modules (such as forums, wikis, databases and so on), not only to establish collaborative learning-communities in diverse learning-subjects, but also to evaluate the learning effect through homework or tests.

With such tests, it is possible to instruct all employees in the subject of fire protection and certify them after successful completion of the course. In this way, one can have a cost-efficient-training module for employees.

The Course in Future

One of our goals is to develop a serious game about fire prevention, in order to increase the efficiency of learning. A serious game may be a simulation which has the appearance and feel of a game, but consists of non-game events like fire prevention. The advantage of a serious game is that the users do not learn only from interactive course materials, but learn by practising in a virtual 'save' environment. Therefore, we will integrate our 3D-models into a game environment called Delta3D.

Conclusion

Through the above e-learning course, it is possible to instruct the employees of public buildings in preventive fire protection. Fire does not spare anyone, and each and every employee can take part in such a course to get a better understanding and more knowledge about preventive actions against fire.

E-learning does not depend on time and place. Every employee can learn anywhere at a time of his or her choosing.

Until now, fire prevention courses give learners a task – such as to extinguish a fire in a patient room or call the fire brigade. We are working on a more complicated game.

THE HEALTHCARE SYSTEM IN GERMANY

AUTHOR

Tosh Sheshabalya
HIT

Reunification in 1990 transformed Germany, by a significant margin, into Europe's largest country, with 16 states (Länder) and an area of over 350,000 square kilometers. With 83 million people, Germany has Europe's largest population and its biggest economy. The country lies in the heartland of the European landmass, bordering the Baltic Sea and the North Sea. Its western neighbours are Belgium, France, Luxembourg and the Netherlands. Poland and the Czech Republic lie on the east, Denmark on the north, while Austria, Liechtenstein and Switzerland are on its south.

Healthcare delivery in Germany is decentralised. Each State shares responsibility with the federal government for maintenance and modernisation of hospitals. On their part, State health insurance funds have some rights over operational costs.

Of Germany's 2,083 hospitals, about 40 percent are public, and 60 percent private. Roughly two-thirds of the latter are non-profit. There are some 400 private for-profit hospitals in the country.

In addition, there are about 1,240 rehabilitation facilities.

Compulsory Insurance

Germany has the world's oldest universal healthcare system. Its origins date back to Bismarck's Health Insurance Act of 1883. Although originally designed to serve low income workers and certain categories of civil servants, over 92 percent of the population is currently covered by a 'Statutory Health Insurance' plan. This provides a standardised level of coverage through any one of approximately 1,100 sickness funds, which are both public and private.

The basic insurance package is financed by a combination of employee and employer contributions, as well as government subsidies determined by a beneficiary's income level. All German workers pay about 8 percent of their gross income to a sickness fund of their choice, until they reach the retire-

Population (million)	82.3	mid-2008
Live births/1,000 pop	8.3	2007
Deaths/1,000 pop.	10.1	2007
Life expectancy (years)	77.2 (male) and 82.4 (female)	2006
GDP (billion EUR)	2,458	2008
Total healthcare expenditure (% GDP)	10.4%	2007
Total healthcare expenditure per capita (EUR)	3,070	2007
% of healthcare system financed by public funds	76.9%	2007
Number of CT scanners (per million inhabitants)	16.7	2006
Number of MRIs (per million inhabitants)	7.7	2006
Number of hospital beds (per 1,000 inhabitants)	6.1	2007
Length of stay (average in days)	8.3	2007
Number of practising physicians (per 1,000 inhabitants)	3.48	2007
Number of practising nurses (per 1,000 inhabitants)	7.8	2006
Number of Internet users	50.43 million (61.1% of population)	2007
Percentage of population with broadband access	29.6%	April 2009
Percentage of individuals using the Internet for interacting with public authorities	NA	

Source: Statistisches Bundesamt Deutschland, OECD, Eurostat, Eurobarometer, WHO, National Statistics Online, Nielsen and International Telecommunications Union (for Internet statistics).

Hospitals And Rehabilitation Facilities: 2008

	Number of facilities	Number of cases	Days of care	Length of stay (days)
Hospitals total	2,083	17,519,579	142,534,888	8.1
General hospitals	1,781	16,993,276	129,423,617	7.6
Other hospitals	302	526,303	13,111,271	24.9
Rehabilitation facilities	1,239	2,009,526	50,886,304	25.3
Total inpatient facilities	3,322	19,529,105	193,421,192	9.9

Source: Federal Medical Registry, Federal Statistical Office, 2009

ment age of 65. Their employers pay about the same amount. Some large corporations offer in-house insurance plans.

Others, notably those with jobs in small firms, as well as people working in universities or R&D facilities, often opt into the so-called Ersatzkassen (or self-governing plan).

The government covers health insurance contributions for the unemployed and those with low income.

This income-linked contribution system, which lies at the heart of the Welfare State, is known in Europe as 'solidarity'. Its eventual purpose is to make sure that everyone receives the same level of care, regardless of income or social status, and that no one is left out.Payments to sickness funds stops after retirement, although coverage continues until death.

Moreover, unlike the US, the German health insurance system lacks 'deductibles', for instance, before coverage kicks in.

Private Insurance

Nevertheless, Germans in higher income groups (as well as the self-employed) have the choice of paying a tax, and opting out of the basic plan in favour of 'private' insurance. In addition, public sector employees such as teachers, firemen and police are partly reimbursed by the State, with coverage of the balance provided by subscriptions to private insurance.

Private insurance premiums are linked to health status rather than the level of income. Another key difference is that contributions for 'private' insurance continue, even after retirement.

The government strictly regulates the private insurance sector. Insurers cannot hike premiums, for example, if a beneficiary gets sick or older.

Reimbursement

Both sickness funds and private insurance provide coverage for physician fees, acute and chronic care hospital costs, as well as part of dental care. Patients within the former may consult any general practitioner or specialist accredited to their sickness funds, which then settles the fees directly with the healthcare provider. Hospital bills for diagnostic tests, treatment, and drugs are also settled directly between the funds and the hospitals.

Privately insured patients, however, are billed directly by physicians and hospitals, and have to then file for reimbursement by the insurance companies.

Although reimbursement of providers is on a fee-for-service basis, the actual sums are determined retrospectively, in order to ensure that spending targets are not exceeded. These kind of budgetary concerns began in 1975 and have since intensified.

Physicians: Service Provision

According to World Health Organization (WHO) statistics, Germany has an average of 358 physicians per 100,000 inhabitants.

Private physicians provide ambulatory care, and independent hospitals (many not-for-profit) provide the majority of inpatient care. Some categories of specialists have 'reserved' beds at specific hospitals, where they perform operations, leaving aftercare to the hospital staff.

Although some physicians accept only private patients, most require accreditation by all insurance providers. Some physicians charge higher fees for private patients and it is at the insurer's discretion to refuse to cover unreasonable amounts.

Hospital Stay on the Decline

The average length of hospital stay in Germany has decreased in recent years to about eight days, largely driven by the fact that hospital reimbursement is based on the number of hospital days spent by a patient as opposed to diagnosis or procedures or diagnosis.

Healthcare Expenditures

Contributions to State-regulated sickness funds cover about 68 percent of overall healthcare costs. Income taxes, contributions from private health insurance and co-payments (above all for medicines where insurance covers only 90 percent of the price) cover the remainder.

In spite of efforts at cost containment, healthcare expenditures in Germany have risen relentlessly, from 179.3 billion euros in 1995, to 204.1 billion euros in 2000 and 236.2 billion euros in 2005. In 2007, spending on healthcare reached 244 billion euros.

On the other hand, as discussed under the 'Cost-containment' heading below, health spending as a share of GDP is showing some signs of success.

A breakdown of spending for the years 1992, 2000 and 2007 is provided on p. 42, in order to permit both an analysis of key expenditure categories in 2007, and assess medium- and longer-term trends.

Based on the figures above, it is clear that just over half spending today is dedicated to

Hospital Interventions And Length Of Stay: 2001-2007

	2000	2001	2002	2003	2004	2005	2006	2007
Number of cases (in millions)	17.19	17.26	17.36	17.31	17.23	17.03	17.14	17.57
Short visits: 1 to 3 days (in millions)	4.71	4.90	5.07	5.26	5.41	5.40	5.63	5.94
Average length of stay (days)	9.7	9.4	9.3	9	8.6	8.6	8.4	8.3

Source: Federal Medical Registry, Federal Statistical Office, 2009

HEALTH EXPENDITURE IN GERMANY (million euros)

	1992	2000	2007	shares	shares	shares
Total spending (excluding capital commitments)	150 997	204 163	243 981			
Services of curative and rehabilitative care	88 174	112 882	130 678	58	55	54
Services of long-term nursing care	13 301	24 815	30 307	9	12	15
In-patient long-term nursing care	9 719	14 808	19 287	73	60	64
Day cases of long-term nursing care	-	81	111		0	0
Long-term nursing care: home care	3 582	9 926	10 909	27	40	36
Ancillary services to health care	6 134	9 287	11 392	4	5	5
Clinical laboratory	2 281	2 893	3 588			
Diagnostic imaging	2 190	3 415	4 172			
Patient transport and emergency rescue	1 663	2 979	3 631			
Medical goods dispensed to out-patients	30 113	38 963	49 233	20	19	20
Pharmaceutical and other medical non-durables	23 183	28 868	38 184	77	74	78
Therapeutic appliances and other medical durables	6 930	10 095	11 049	23	26	22
Prevention and public health services	5 463	6 617	8 914	4	3	4
Health administration and health insurance	7 812	11 599	13 457	5	6	6
Other	0	0	0	0	0	0

Source: Federal Medical Registry, Federal Statistical Office, 2009

curative and rehabilitative care. About one-fifth is accounted for by medical products in out-patient settings and a sixth on long-term nursing. The bulk of the balance consists of prevention/public health services and health administration (together with a tenth of spending) followed by ancillary services (five percent); roughly equal shares in the latter are held by clinical lab services, diagnostics and transport/emergency rescue.

The trends however, indicate that the greatest economies are being sought in the largest spending category – curative and rehabilitative care, whose share of total spending has declined from almost 60 percent in 1992. However, much of this saving was achieved in the 1990s. Between 2000 and 2007, the share of curative and rehabilitative care dropped only marginally, from 55 percent to 54 percent.

The share of out-patient medical goods in spending has also been constant since 1992, at 20 percent, with approximately even breakdowns between pharmaceuticals and appliances. This is also the case with prevention/public health services and health administration, at about 10 percent, and on ancillary services (five percent).

In contrast, the savings made on curative and rehabilitative care have been transferred to long-term nursing, whose share has gone up steadily, from nine percent in 1992 to 12 percent in 2000 and 15 percent in 2007. Within this category, home nursing has shown gains at the expense of in-patient care, although not steadily. Its share of total spending on long-term nursing, rose by almost half from 27 percent in 1992 to 40 percent in 2000, but has since fallen to 36 percent - possibly due to correcting an excessive speed of transformation.

Cost-Containment

Traditionally, reimbursement rates for specific health provision services were determined through negotiations between sickness funds and regional associations of medical professionals. Since the mid-1970s, hospitals have had to contend with overall spending targets, based on government budgets and negotiated annually through a commission which is composed of representatives of the funds and physicians as well as hospitals, pharmacies, insurance funds and the healthcare industry.

In order to keep costs down, ceilings on hospital expenditures have been linked to the average age of the local population (serviced by a specific facility) as well as caps placed on wage increases. The government has also sought to force drugs firms to provide sickness insurance providers a higher discount on medicines. Co-payments have been introduced to encourage rational use of medicines and services and control costs.

Overall, after climbing from 9.6 percent of GDP in 1992 to 10.6 percent ten years later, the share of healthcare spending peaked at 10.8 percent the next year and had declined to 10.4 percent in 2007. Per capita expenses have however risen, from 2,770 euros in 2002 to 3,070 euros in 2007.

Nevertheless, the key facet of such cost-containment - government moves to impose limits on hospital expenditure and the number and type of medicines that physicians are allowed to prescribe - has fuelled fears of a lowering in the standards of healthcare.

HEALTH EXPENDITURE IN GERMANY (million euros)

	2000	2001	2002	2003	2004	2005	2006	2007
Health spending as share of GDP in %	10.3	10.4	10.6	10.8	10.6	10.7	10.5	10.4
Health expenditures per inhabitant in Euros	2,590	2,680	2,770	2,830	2,830	2,900	2,970	3,070

Source: Federal Medical Registry, Federal Statistical Office, 2009

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HEALTHCARE IT IN GERMANY

In spite of being over two years behind schedule, Germany's national healthcare IT infrastructure project is inching forward to a roll-out.

Still, some hurdles lie ahead. In the near future, what is likely is akin to the kaleidoscopic effects of an electronic salad bowl.

Hospitals and physicians will continue to use local electronic medical records for day-to-day practice. These local systems will (and are being) connected by a variety of solutions on different levels, regional and national, at different speeds.

Some require a patient smart card for access, others do not. Meanwhile, Web-based personal health records, accessible only with authorisation by a patient's smart card, are completing the picture.

Politics and Technology

The reasons for the two-year delay in launching the national healthcare IT infrastructure have been more political than technical. The country's federal system proved a roadblock to the establishment of what appeared as top-down 'national' standards. However, the increasing demands of patients for efficient E-Health services, and the possibilities opened up by new technologies, have converged to make a national infrastructure imperative.

The politics of such a delay involve both inter-Lander (State) competition as well as a turf war between professional associations of GPs and specialist physicians, pharmacists and health insurance funds – both private and public, and at federal and regional levels.

This confrontation had sought to be contained within the cross-sectoral German national health IT organisation called 'gematik', but was unsuccessful. At the end of 2005, the federal Ministry of Health took over the mandate for the healthcare IT infrastructure. Since then, 'gematik' has effectively become a government agency, although both officially and legally, it remains autonomous.

Security and Privacy: First principles

Unlike most other EU members, Germany has chosen to start by tackling security issues, head-on, and from the outset. Its approach to E-Health is based on the most proven foundational technology, as far as privacy and security are concerned. The German E-Health network will be enabled by personal smart cards.

The so-called 'elektronische Gesundheitskarte', issued by the compulsory sickness funds, will provide both physicians and pharmacists with access to patient data. Medical professionals, too, will have to use smart cards - separate 'health professional cards' – to access e-prescriptions and other patient data.

Three-Stage Rocket

In perspective, the German e-Health project has the look and feel of a three-stage rocket.

Stage I: Open Technologies Show The Way

The first-stage of the launch dates back to 2007. One of the key enabling developments concerned the connectors through which data would be transferred. In May, InterComponentWare AG (ICW) and network equipper Cisco sought provisional licensing from 'gematik' (the cross-sectoral German national health IT organisation) for their co-developed health card connector 'Cisco Healthcare Router', which was designed to 'gematik' specifications, and for the first time, allowed modern SICCT (Secure Interoperable Chipcard Terminals).

The Router was subsequently deployed and tested (with the final version of the health card) in several test regions – which had previously been using MKT+ card readers directly linked to a physician's desktop without a connector.Tests with the new Router were however conducted in offline mode, but the purpose was to ensure equal or a higher degree of data integrity.

Meanwhile, in spite of the lack of a federal standard on shared EMRs, a variety of actors – including private hospitals, sickness funds, regional health authorities and IT companies – rolled out scores of projects onwards from mid-2007 to demonstrate secure medical data exchanges, through a variety of different routes.

When operational, and at full speed, Germany's new health IT infrastructure will connect 100,000 GPs to the country's 2,000-plus hospitals, 200 sickness funds and 21,000 pharmacies.
The national healthcare IT infrastructure will deliver a wide and growing number of national E-Health applications, principally a compulsory national electronic prescribing record (EPR), alongside voluntary EHRs and personal emergency data.
Its architecture, essentially, is a decentralised model, with regional eHealth networks of different providers. This entails high demands for common semantic standards, standardised interfaces and secure interoperability – especially at the server level, for managed care scenarios.
Core to this philosophy is the segregation of patient data – with authorised data sharing between hospitals, physicians, patients and the sickness funds.

Some examples are given below:

Personal smart card: Bundesknappschaft, an insurance firm, rolled out a regional EMR for 25,000 patients in the State of North-Rhine Westphalia. Known as 'prospeGKT', the principal technology vendor T-Systems, was joined by Siemens, Hewlett Packard and Oracle. prospeGKT provides access to medical documents from one physician to another, only via authorisation with the patient's personal smart card.

Health professional card: Asklepios, Germany's leading private hospital group, supported by Intel and Microsoft, launched a nation-wide EMR project, based on research and development conducted at the Fraunhofer Institute. The Asklepios project, in its first phase, underscored the KISS principle by avoiding patient electronic health cards (an approach also taken by other regional network pilot projects from the likes of Siemens, ICW and others). Instead, doctors used a smart card (the 'health professional card' mentioned above) to obtain real-time access to available hospital data via a Web browser.

Web-based personal health records: One of the biggest endorsements to the Asklepios project came a few months later, after DAK, Germany's second largest public health insurance fund, signed up to complement the health professional card in the project by offering Web-based personal health records to its six million members, and to link these to the Asklepios-EMR. The DAK personal health record has been developed by IBM, and provided further ballast to Asklepios's already heavyweight industry partners, Microsoft and Intel.

Another pilot, using Web-based personal health records, was run by CompuGROUP in Trier. This project has specific relevance: Nearly half of Germany's physicians run CompuGROUP-solutions for their local documentation.

Stage II: Agreement On Semantic Standards And Interfaces

The second-stage of the German e-health project launch took place at the end of 2007/early 2008, when 30-plus health IT companies (including heavyweights such as Agfa, IBM, ICW, Microsoft, Siemens and T-Systems) reached agreement, ahead of schedule, on common semantic standards, as well as a new open standardised interface for electronic patient records.

The agreement covered use of a standardised format for medical referral letters (prescriptions, lab tests and diagnoses) – critically, as a component of emerging EPR solutions and standards. On its part, the new interface permits sharing of personal medical data between EPR solutions from different vendors. It is a web service, designed by the Fachhochschule Dortmund, a German technical university, and based on the HL7 V3 CDA release 2 as its communication standard.

The agreement provides a first-of-its-kind solution in Germany for the exchange of medical data (both EPR and health records) across a secure but non-proprietary system. It was also the first time that the e-health industry in Germany demonstrated a firewall between EPR records for routine use by medical professionals and long term medical data controlled by patient. As mentioned, an integral aspect of Germany's emerging e-Health system is that the country sought to start by tackling security and privacy issues, head-on, unlike many other EU countries.

Through 2008, major vendors such as T-Systems and Siemens, implemented the interface and the standardised, EPR-facing referral format, at pilot projects across the country.

Stage III: Politics Again

Technically, all that is now required to make German e-health a reality is politics.

The first issue is growing resistance from the traditionally-conservative medical profession, mainly with regard to fears about privacy and regulatory loads, above all in terms of the digital signature requirement for e-prescriptions. 'Deutscher Aerztetag', a yearly conclave of German physicians, has rejected the electronic health card by 111 to 78 votes.

To make the proposed German e-health system a reality, physicians are expected to upgrade their existing IT systems. The KBV physicians association estimates this to cost 3,000 euros per GP. Although the money would be reimbursed, the process would be transaction-based, which few doctors find fair.

Indeed, some studies have shown that there is zero RoI from the e-health infrastructure for at least "a few years".

The Future

Although legally non-binding, the resounding Nein from the 'Deutscher Aerztetag' to the electronic health card remains a major challenge.

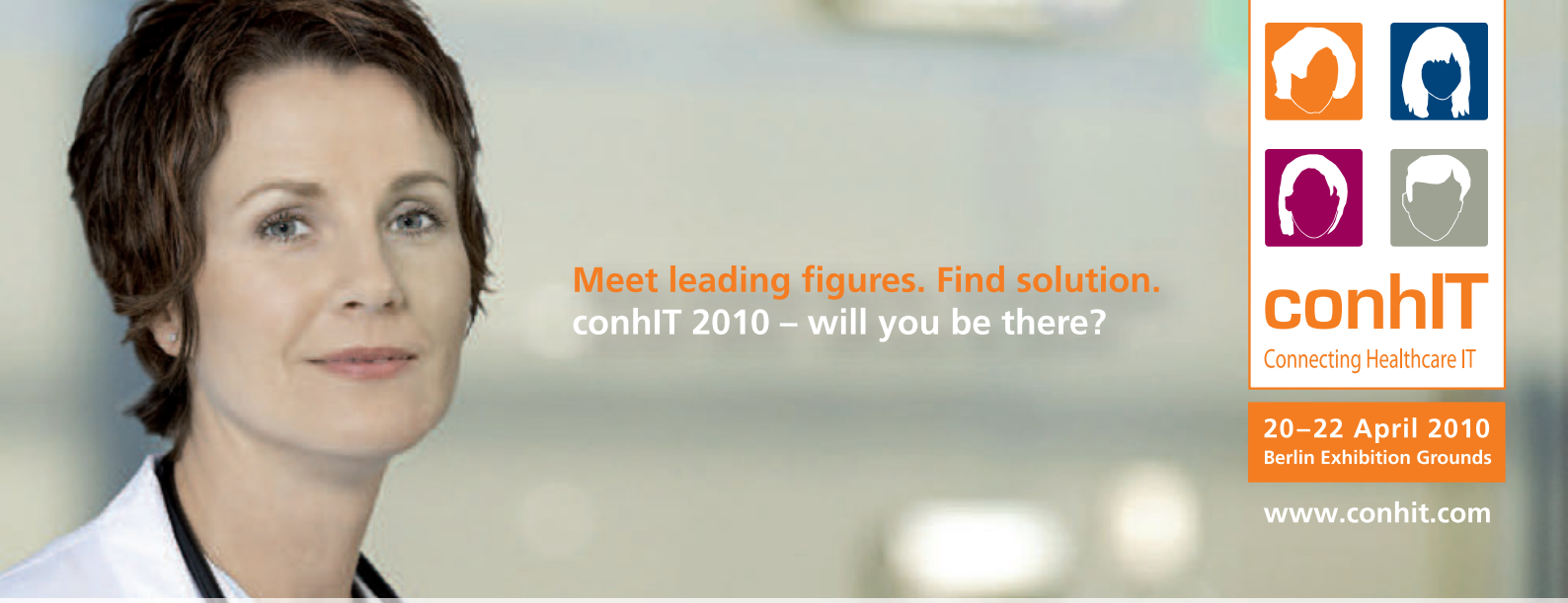
As a result, industry has to still make an even-stronger case than it has so far, and it is counting on the federal government to lend a helping hand.

Meanwhile, money remains a major problem. For 'gematik', investments on the smart card infrastructure alone are pitched at 1.5 billion euros. Overall, investments on the e-health project are estimated to rise to about 15 billion euros by 2016-2017, but some experts interviewed by Healthcare IT Management point to the British experience with NPfIT and the steep escalation in costs. To them, 25 billion euros is a more likely figure.

The source for such investments is also controversial. Much of the moneys for the infrastructure are due to be paid by public health insurance companies.

As discussed at the beginning, it is likely that there is going to be more and more e-health in Germany, but the landscape will remain fragmented. Individual hospitals and physicians, backed by vendors, will continue to deploy their own solutions – up until it blends into the official national healthcare IT infrastructure project.

More magical things have happened before.



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