

HEALTHCARE IT MANAGEMENT

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THE OFFICIAL JOURNAL OF THE EUROPEAN ASSOCIATION OF HEALTHCARE IT MANAGERS

ON-DEMAND IT SERVICES

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- > Matching Talent and Jobs
- > Healthcare IT in the Gulf
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Dear Reader,

As you are well aware, the *IT@ Networking Awards 2009* is fast approaching. 79 excellent submissions have exceeded our expectations by far. Only 30 could make it into the first round MINDBYTE Sessions as NOMINEE, leaving us with top quality projects and an astounding rejection rate of over 60 percent for a first-time event.

Please show your support for HITM by attending the most innovative healthcare IT event. The peer-to-peer electronic voting system allows you to judge, on the spot, if a presented solution can help you to overcome today's challenges, one of HITM's main objectives.

You still have time to take advantage of our special members rates. We look forward to seeing you on 29 -30 October in Brussels.

BE PART OF HEALTHCARE IT INNOVATION!

The ongoing debate about US healthcare reform seems marked by dated stereotypes. Many supporters of reform speak about the need for a European-style healthcare system in the US. Opponents frequently refer to the damages wreaked by Europe's supposedly-socialist economic system, which is seen to penalise efficiency and entrepreneurship. Universal health insurance coverage, guaranteed by the State, is considered part and parcel of such a problem.

In reality, both the US and Europe already share significant common ground. Though one in five Americans under 65 lacks coverage, the US Medicare system (for the elderly) and Medicaid (for the poor) is one of the world's largest public-funded health insurance systems. Meanwhile, much of Europe's old State-run health insurance system has brought in American-style reforms, not only in terms of growing involvement by the private sector, but also an increase in rewards for performance and a penalisation of inefficiency.

Indeed, one of the strongest drivers of visible convergence between the European and US healthcare systems may well be healthcare IT, which enhances efficiency and frees up resources for greater equity. Our Cover Story, about on-demand healthcare IT services, shows how a transfer of

operational responsibility to vendors could permit a strategic focus by hospitals, to improve IT processes and drive new healthcare initiatives - in other words, encourage efficiency.

This issue of Healthcare IT Management provides a feature on the Colorado Hospital Association's DATABANK Programme, which has allowed US hospitals to create and compare performance criteria across peer groups, and thereby measure efficiency. There are, however, similar initiatives in Europe. Indeed, the so-called Kiesbeter project in the Netherlands, not only permits such comparison, but goes further in providing Dutch citizens with a tool to select hospitals and affiliated insurance schemes. Such user choice (and freedom) could resonate powerfully with those Americans opposed to Mr. Obama's reforms.

However, Kiesbeter is unlikely to be familiar to either the Colorado Hospital Association or hospital management elsewhere in the US. But it offers a good example of why both American and European healthcare IT managers need more mutual awareness.

And yet, the role of IT in healthcare reforms is not straightforward. Our UK Country Focus covers the troubled NHS National Programme for IT (NPfIT), billed as the world's most ambitious and expensive civilian IT initiative. The seven-year old programme, originally scheduled for completion by 2010, has been postponed to 2015. It has also failed to meet many of its technical objectives, and been the subject of intense political and public criticism. Still, in my point of view, it is a commendable programme.

Overall, the NPfIT may provide a foretaste of developments in the US and elsewhere in Europe, as both seek to leverage IT to grapple with soaring healthcare costs.

Yours truly,

Christian Marolt

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

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References

References cited in this journal are available upon request to: editor@hitm.eu.



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DATABANK: A TIMELY DATA SOURCE FOR HOSPITAL MANAGEMENT

The Colorado Hospital Association's DATABANK Programme is a unique solution for timely data. Now used by several other US states, it offers hospitals a unique tool for creating and comparing performance criteria across peer groups. The American Hospital Association relied on DATABANK to assess the impact of the US economy on community hospitals across the country.

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MATCHING TALENTS AND JOBS

There are several common appointment mistakes which lead to sub-optimal performance by healthcare leaders and managers. In reality, the average healthcare organisation creates leadership alignment (the right people in the right roles) approximately 55% of the time. The difference of having the right leaders in place can show as much as a 75% increase in operational performance over time.



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BIOMEDICAL ENGINEERING AND HEALTHCARE IT

Both regulatory and business requirements are driving biomedical engineering (BME) and IT executives to re-think their way of cooperation. An intensive discussion on this convergence would already prove beneficial to any hospital. Its tenets include new job roles and finding the right balance between standardising processes and maintaining specialist structures.

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TRANSFORMING CLINICIANS' WORKFLOW

The Kosice Children's Teaching Hospital is widely regarded as a centre of excellence for Eastern and Central Slovakia. The hospital was keen to explore whether a mobile point of care solution (MPoC) would improve workflow and influence levels of care in its Oncology Department.

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The UK



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ON-DEMAND IT SERVICES

Common IT service issues can be more effectively addressed and operational excellence achieved through on-demand IT services. This frees organisations to focus resources on improving IT processes and driving new healthcare initiatives while the vendor experts maintain and administer their application.



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COUNTRY FOCUS: UK

Healthcare IT in Britain, symbolised by the troubled NHS National Programme for IT (NPfIT), is billed by some as the world's most ambitious and expensive civilian IT initiative. The NPfIT programme was launched in 2002 and originally scheduled for completion by 2010. It has since been postponed to 2015 and subject to sustained volleys of political and public criticism, alongside the departure of its Chief Executive. Overall, the NPfIT may provide a foretaste of developments in the US and elsewhere in Europe.

READER'S COMMENTS



IT@Networking Awards

Sir,

I am heartened that your publication is sponsoring an award explicitly targeting European healthcare IT. I am particularly happy that you highlight that our part of the world produces "a number of world-class jewels ... by unsung heroes", and that many remain unknown, even to Europeans themselves.

I am also encouraged by the fact that peers will judge what is good, better and best, rather than experts with hidden agendas.

I am looking forward to attending this event and strongly hope that the example you are setting is endorsed and supported by the guardians of Europe's healthcare IT future, who sit in their faraway towers and occasionally come down to see the hard work done by us mortals and the achievements we continue to make.

Kurt Alpsteg,
Geneva, Switzerland



Value Modelling

Sir,

Congratulations to Paul Johannesson and Martin Henkel for their thought-provoking feature on Value-Based Service Innovation in Healthcare (Issue 3, 2009).

I believe that much efforts in understanding cost-benefits in designing or procuring health technology (IT included) use models that are not built bottom up on real-life business cultures or practices.

I was particularly impressed by their Goal Models which could be tailored to address transition-to-implementation-to adoption/maturity challenges in any new system. In the case of any new technology or system, early stages are marked by surplus capacity and the need for intensive learning curves, while later stages are marked by capacity bottlenecks and the possibility of transferring best practices (both internally within an organisation, and externally to late adopters). Somewhere in between is a task few organisations proactively address – to start developing benchmarks. This is probably because of the lack of appropriate value models.

David Graham
Glasgow, Scotland



DICOM and France

Sir,

In your sidebar on DICOM: Healthcare's Must-Have IT standard (Issue 2, 2009), it is incorrect to say that "the trailblazers" for open digitised medical imaging were the American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA).

Although many healthcare IT professionals here are aware of ACR-NEMA 3.0 (which was vended quickly to a large user base), very few know that Germany's Institute OFFIS and Oldenburg University, Germany supported by France's CERIUM at Rennes also developed a DICOM implementation, which was demonstration in 1993 at RSNA.

Though the Upper Layer Protocol used software from the US, the rest was developed independently by the Franco-German team.

This was then further improved in 1994 and 1995 and demonstrated in 1994 at EuroPACS (Geneva) and at CAR (Berlin) the next year – where a large number of imaging vendors showcased interoperability.

Dietmar Kurherr
Frankfurt, Germany



Interoperability Challenges

Sir,

Philip Scott ('Meeting the Challenges of Interoperability', Issue 3, 2009) is right to conclude that healthcare IT standards are crucial for effective interoperability, and that widespread adoption matures the standards.

This is indeed the crux of a virtuous circle. The Americans also seem to understand that such a happy world requires real money to be kicked into life, as per the Obama HITECH Act, which the author begins with. However, I am curious why he does not name other countries, when he says that "the American programme" will "support and enhance the work" done by other countries such as "Canada and England".

Is this because there is no work going on elsewhere? Or because it is not going anywhere? Or because it will be bulldozed by the Anglo-Saxon global machine – supported no doubt, by their legionnaires in places like India and China?

Alex Boulanger
Paris, France

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)

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HUNGARY

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SERBIA

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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)

ITA@NETWORKING

The IT @ Networking Awards 2009 will select outstanding European healthcare IT solutions in hospitals and healthcare facilities and bring them to the pan-European stage.

WHERE AND WHEN

Brussels, the centre of European decision-making, will be the location for the IT @ Networking Awards 2009 (*IT @ 2009*). It will be held 29 - 30 October 2009 during the European Summit at Square, Brussels' hottest new meeting centre, ensuring international attention.

WHO

The event will be organised by the *European Association of Healthcare IT Managers* (HITM) and the *European Association of Hospital Managers* (EAHM), the largest interest representations of their kind in Europe.

Attendees will include the most ambitious and forward thinking healthcare IT managers, hospital CEOs, CIOs, CMIOs, hospital managers and other professionals with an interest in healthcare IT.

ROLLOUT: FROM MINDBYTE TO WORKBENCH

WHAT WILL BE PRESENTED

IT @ 2009 introduces successful IT implementations in departments, hospitals and in healthcare networks.

All presentations will demonstrate:

- Minimised administration costs;
- Enhanced quality and security, or
- That the implementation has eased workflow.

FIRST DAY: MINDBYTE

The following outstanding projects will be presented during our first round MINDBYTE sessions on 29 October 2009:

MINDBYTE Session 1: 10:30 - 12:30

- An interoperability platform for telemedicine services in the Veneto Region;
- Integral healthcare information system of Montenegro;
- The health information system of the Rhône-Alpes region (SISRA) and the shared and distributed patient record (DPPR);
- The national PACS programme in England - building on the successful roll-out of PACS in England and moving forward with image sharing between hospital trusts;
- Premier health - medical imaging and the French medical electronic record (DMP);
- Digitisation of the nationwide breast cancer screening programme in The Netherlands;
- From free text to standardised language - the national development project of nursing documentation in Finland;
- Health-e-Child – an e-health platform for European paediatrics.

ORGANISERS:



MEDIA PARTNERS:



G AWARDS 2009

MINDBYTE Session 2: 14:00 - 16:00

- Enabling the best lifecare;
- Hospital information system SPP - a short introduction;
- JEMYS - Hospital Information Management System;
- Paper free patient care;
- PAPT - Patient Admission Prediction Tool;
- Shared web-based electronic patient record for the hospital, general practitioner and patient.

MINDBYTE Session 3: 16:30 - 18:30

- A simulator for head and neck surgeons;
- CitoScreen - data management system for organised cervical cancer screening programmes;
- Computerised surveillance and alerting of nosocomial infections, antimicrobial resistance and antibiotic consumption in the Intensive Care Unit;
- Orthopaedic web-based fracture healing telediagnostic decision support system;
- The BioSig project - getting a grip on biosignals.

Submissions exceeded 70 projects, 21 are currently under review, only 9 will make it into the MINDBYTE session.

SECOND DAY: WORKBENCH

The five finalists of the *IT @ 2009* will be given 45 minutes to provide an in-depth presentation, followed by a 1/4 hour Q & A session with the specialist audience.

THE IT @ Networking Awards 2009 CEREMONY

Out of the finalists, the 3 top rated IT solutions will be awarded a prize.

The winning project will receive the IT @ Networking Awards 2009 trophy, have a detailed presentation of their solution in Europe's leading healthcare management media, and be awarded a cash prize of Euro 5,000.

SPECIAL REGISTRATION FEE FOR MEMBERS OF HITM

- | | |
|---|-------------|
| - Full Members of HITM - please register as Invited Association Guest (IAG) | Euro 150,- |
| - Other healthcare IT managers, CEOs, CMIOs, CIOs and hospital managers | Euro 400,- |
| - Other industry professionals not employed by a healthcare facility | Euro 1000,- |

REGISTRATION PROCESS

For registration please visit www.conftool.com/itawards2009/ and include the following code HIT05-09-4352 to qualify for the special price of Euro 150. For further information on the *IT @ Networking Awards 2009* please visit our website www.hitm.eu, contact the organisers via email awards@hitm.eu or call +32 / 2 / 286 8501.

Siemens

CENTRE HOSPITALIER DE LUXEMBOURG CHOOSES BILINGUAL IT SOLUTION FROM SIEMENS

Centre Hospitalier de Luxembourg (CHL) is in the process of installing the basis module of the hospital information system (HIS) i.s.h.med by Siemens for more than 1,400 users. The i.s.h.med software solution is a hospital information system fully integrated into SAP for Healthcare.

The Centre Hospitalier de Luxembourg includes 31 wards with a total of 579 beds. Per annum 25,000 patients are treated on an inpatient and approximately 400,000 on an outpatient basis. The hospital's clinical processes will be supported by the hospital information system i.s.h.med by Siemens. A special request was that HIS should operate in both German and French. "Because Luxembourg has two official languages, we want to provide our employees with the possibility of working with the system in both languages", explains Jean Paul Freichel, Directeur administratif et financier at CHL. The basis module provides transparent order and report communications that prevent double examinations.

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

Orion, Cisco

NEW MEDICAL DATA EXCHANGE SOLUTION BY ORION HEALTH AND CISCO

The two companies recently unveiled a new medical data exchange solution to integrate, share and report public health data at the Centers for Disease Control and Prevention's Public Health Information Network PHIN Conference 2009, in Atlanta. Rhapsody AXP has been created to address current challenges in public health reporting and to improve the early detection, tracking and rapid response to possible disease outbreaks such as seasonal or H1N1 flu. Integrating the Cisco Application Extension Platform (AXP), Cisco Integrated Services Routers (ISRs) and the Orion Health™ Rhapsody® platform, the solution provides a pre-configured and highly secure public health reporting solution.

Rhapsody AXP automates public health reporting by enabling the secure and efficient interchange of medical data between organisations. Healthcare providers will utilise standards based transactions from the solution to quickly and accurately transmit and share data between public health agencies, partners, and healthcare information exchanges for improved disease monitoring and response.

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

InterSystems

JERSEY CHOOSES INTERSYSTEMS TRAKCARE FOR ISLAND-WIDE INTEGRATED CARE RECORD

Jersey Health and Social Services Department has selected InterSystems TrakCare™ to facilitate an island-wide Integrated Care Record supporting its acute, community, mental health and social care services.

Key deliverables within the first phase of this project include the TrakCare Patient Administration System, Maternity, Accident and Emergency, Theatres modules and Mental Health Law Administration. Pharmacy will be provided by InterSystems' partner, JAC.

The scope of the project also includes integrating data from 15 different departmental systems, including Laboratory, Radiology and PACS, and the existing Child Health application using InterSystems' rapid integration platform, Ensemble. When completed, Jersey's Integrated Care Record will be one of the first in the UK to allow its Health and Social Services Department to provide full support for all patients wherever and whenever they need care. TrakCare will allow for the creation of a single patient index for all the island's residents and facilitate better communication between care providers across all sectors.

For more information, please visit: www.intersystems.co.uk

IBM

IBM SOFTWARE TO PROTECT PATIENTS IN THE EVENT OF MEDICAL DEVICE RECALLS

Implanet, a manufacturer of implantable medical devices, has selected IBM sensor technology as the foundation for BeepN'Track, a new service that traces the movement of Implanet's products - including knee and hip implants - across its supply chain to hospitals.

The products are completely traceable allowing the easy identification of patients whose implanted medical devices are the subject of a recall. The company's BeepN'Track service uses Radio Frequency Identification (RFID) tags to track medical devices from Implanet to hospitals. Prior to shipping, Implanet affixes an RFID tag bearing a unique serial number to the packaging of each individual device.

Before a surgical procedure takes place, a hospital uses a handheld device to scan the tag from the medical device being implanted and stores that information along with the patient's records. The tag is given to the patient after surgery so he or she will have all available information concerning the implant in the event of future concerns.

The information stored on the tags is gathered by IBM's WebSphere Sensor Events software and transmitted to IBM's InfoSphere Traceability Server software. This allows Implanet to manage and share information with the systems of any trading partners that adhere to GS1 EPCglobal's Electronic Product Code Information Services standard for capturing and sharing sensor data.

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



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NEW ASSOCIATE MEMBER:

ESEM, the European Society for Engineering and Medicine

HITM is proud to announce a new Associate Member: ESEM, the European Society for Engineering and Medicine "Educating students and professionals in bridging the disciplines".

Focus of ESEM:

1. Educating professionals in bridging healthcare and engineering by:
 - Organising discussion symposia on controversial topics in BME,
 - Organising engineering workshops at medical congresses, and
 - Realising textbooks, like the Primer that contains basic engineering knowledge for medics.
2. Educating professionals in bridging the disciplines within the broad area of Biomedical Engineering by:
 - Organising workshops, focused on a problem area like ventilation;
 - Showing all available technologies, and
 - Organising congresses showing the latest developments in the broad area of Biomedical Engineering.
3. Educating students in bridging healthcare and engineering by:
 - Organising summer schools for medical and engineering students, focused on teamwork,
 - Offering a consortium of high-quality universities with excellent Bachelor's and Master's programmes that facilitates the exchange of students, and
 - Offering a consortium of high-tech industries that facilitates students in finding traineeship, Master's project or job.
4. Educating students in bridging the disciplines within the broad area of Biomedical Engineering by:
 - Organising workshops where MSc- and PhD-students present their work;
 - Feedback from the ESEM board members, and
 - Organising an Erasmus Mundus European Masters in Biomedical Engineering.

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

GERMANY

Ten Point Plan for Medical Technology

BVMed has published a ten-point plan for the care of patients with advanced medical technology as a basis for health policy discussions due to take place in the coming months along with the German Bundestag election campaign.

The ten points are:

1. The quality rating of medical devices must be demonstrated by means of the CE quality mark;
2. Access to medical-technical innovations should be designed to be unbureaucratic and flexible;
3. It must be possible to introduce medical-technical innovations into hospitals without restrictions;
4. We advocate an innovation pool to accelerate the introduction of medical-technological innovations into the SHI;

5. We campaign for a tax-advantaged innovation savings scheme (Steuer-begünstigtes Innovations Sparen, SIS);
6. We consider health services research a useful and necessary joint task for all players in the healthcare system;
7. Cooperation between medical institutions and industry is desired and essential for the improvement of patient care;
8. Emphasis must again be on the quality of medical devices (e.g. regarding aids and appliances). Patients must be able to freely choose their service provider and their products;
9. Homecare should become regular part of SHI, and
10. Telemedicine should become part of regular care.

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

SWEDEN

Public Procurement of Innovation

Public Procurement of Innovation conference will take place in Stockholm, Sweden on 13 October 2009. The conference will discuss and illustrate Public Procurement of Innovations, PPI, within the Life Science sector. The aim is also to inform about the possibilities with PPI and show a more advantageous way to make use of public means. Due to the changes in population and the added strains these put on European health systems new technologies and solutions are needed.

Some of the required improvements are so technologically demanding that either no commercially stable solution exists yet on the market, or existing solutions exhibit shortcomings which require new R&D. By developing forward-looking procurement strategies that include R&D procurement to develop new solutions that address these challenges, the public sector can have a significant impact on the mid to long term efficiency and effectiveness of public services, as well as on the innovation performance and the competitiveness of European industry.

The purpose of the conference is to describe the situation in EU in comparison to the rest of the world, to explain the legal framework and highlight points for discussion, to share experiences with stakeholders on identified hurdles, needs and possibilities and to promote good examples, to illustrate how these can be used to meet the challenges mentioned above and at the same time improve competitiveness.

For more information, please visit:
<http://www.vinnova.se>



29 -30 OCTOBER 2009

IT@NETWORKING AWARDS 2009

The IT@ Networking Awards 2009 (IT@2009) aims to select outstanding European healthcare IT solution in hospitals and healthcare facilities and bring them to the pan-European stage. The event will take place in Brussels from 29 - 30 October 2009.

The attendees will consist of CEOs, CIOs, hospital and healthcare IT Managers, physicians with an interest in IT, members of the European Parliament, civil servants from the EU and individual European countries whose mandates cover healthcare IT, as well as members of the specialist healthcare and IT press.

The aim of IT@ 2009 is to give recognition to pioneers from the European healthcare IT field, who provide efficient, cost-effective solutions. The lessons learned can help both to avoid mistakes

and transform healthcare IT challenges into opportunities and success stories.

What makes this event different from the others is that IT@2009 is built on the principles of best-of-breed and peer-to-peer networking. The European Association of Healthcare IT Managers believes that peers will make the wisest decisions in respect to their own needs. An on-the-spot, one-person one-vote electronic system will be used to enable attending CEOs, CIOs and healthcare IT managers to decide which project is the most innovative and best solution for them.

The programme will consist on the first day of 'Mindbytes', or short presentations of all successful submissions for IT@ 2009. Each presenter will have 10 minutes to convince the public why their solution is special and what differentiates it from the others. Voting will take

place after each mindbyte and the projects with the most votes make it through to the next day. After the votes have been counted and verified, the finalists will be announced by the Chair of the Organising Committee.

The second day will have the finalists take part in a workbench, where they will present their project in detail. The final voting will take place immediately after the presentations, followed by the awards ceremony.

The winning project will receive the IT@Networking Awards 2009 Trophy, have a detailed presentation of their solution in Europe's leading healthcare management media and be awarded a cash prize of 5,000 Euros.

For more information, please visit: www.hitm.eu/awards



18-21 NOVEMBER 2009

MEDICA

MEDICA, one of the world's largest medical trade fairs and congresses will take place 18-21 November in Dusseldorf in Germany. 2009 is extra-special as MEDICA celebrates its fortieth anniversary. 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.

Focal themes at MEDICA are: Electrical Medicine/Medical Device Technology, Laboratory Technology/ Diagnostics, Physiotherapy/Orthopaedics, Medicinal Products (commodities and consumables), Information and Communication Technology, Textiles, Medical Furniture, Furnishings and Building Management. MEDICA is the leading trade event for medical IT with its es-

tablished Forum for Telemedicine and IT, MEDICA MEDIA.

The accompanying in-depth congress is organised by the German Society for Interdisciplinary Medicine. This year the congress will be accompanied by specialised training sessions held in English. There will be three half-day sessions, at which leading experts will present medical background information on some of the key innovations and developments presented at the trade fair. A traditional fixture of the event, the German Hospital Day will again be held at MEDICA 2009.

COMPAMED, the trade fair held in parallel with MEDICA since 1992 also promises great things. This fair (18-20 November) focuses on high-tech solu-

tions for medical technology with 500 exhibitors from over 30 countries. Complex developments in the field of nanotechnology and microtechnology will also be presented.

The COMPAMED Forum, under the banner of "High-tech for Medical Devices", will also provide exciting insights into the latest trends in the industry. Highly qualified specialists and leading experts from the medical supplies industry will give informative lectures on new developments in the fields of materials, production techniques, nanotechnology and microsystems engineering.

For more information, please visit: <http://www.medica.de>
<http://www.compamed.de>



22-23 JUNE 2009, BRUSSELS, BELGIUM

SEMANTIC INTEROPERABILITY WORKSHOP

The ontology-driven Semantic Interoperability Workshop in e-health was organised on June 22-23 in the framework of the epSOS project. The goal of this meeting was to advance the evolution of e-health systems in the direction of semantic interoperability. The use and integration of terminologies and associated coding systems as well as ontology-based knowledge representation were two key topics of the workshop.

The aim of the event was to work out how to ensure that health information will be accessible over geographic distances (for instance when patients move between hospitals) and over long periods of time (at least from birth to death). The European epSOS project is a major initiative to address these questions in their practical dimensions, and the epSOS Patient Summary Scenario was used as a starting example. Recommendations of the EU RIDE and SemanticHealth projects were also taken into consideration. Day one featured an introduction to the workshop and its objectives by Ilias Iakovidis from the European Commission.

He stressed that the issues addressed are important not only for reasons of efficient data exchange, but also for industry, in light of the possibility of arriving at commonly agreed-upon standards for certification and interoperability testing ("test once use everywhere"). This was followed by presentations entitled "A roadmap from epSOS Patient Summary Services to Electronic Health Record Services" and "Walking Together along the Road to Semantic Interoperability".

Two other sessions took place on day one discussing the pathways to semantic interoperability and reporting on ongoing efforts towards advancing semantic interoperability. Day two again featured speakers from across Europe. The topic for discussion this time was the impact of semantic interoperable services on medical care.

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



15-16 SEPTEMBER 2009, HAMBURG, GERMANY

BALTIC CONFERENCE ON E-HEALTH

The European Association of Healthcare IT Managers (HITM) and their official journal, Healthcare IT Management were proud supporters of the third Baltic Conference on e-health that took place this September under the patronage of Ulla Schmidt, German Federal Minister of Health. The theme was cross-border healthcare and the event made possible a cross-sector forum for healthcare providers from Germany, Poland, Lithuania, Estonia, Latvia, Russia, Finland, Norway, Sweden, and Denmark. The aim was to learn from one another and work with one another and that was certainly achieved.

Participants at the event included representatives from hospitals, governments, health insurance organisations, service providers and the media. The main topics for discussion were:

- Cross border healthcare: experience and knowledge transfer, best practices, interoperability/interconnectivity, globalisation, business intelligence/consulting and quality management;
- Optimisation of clinical and business processes as well as of hospital information and communication systems

in order to increase the quality and economics of patient care;

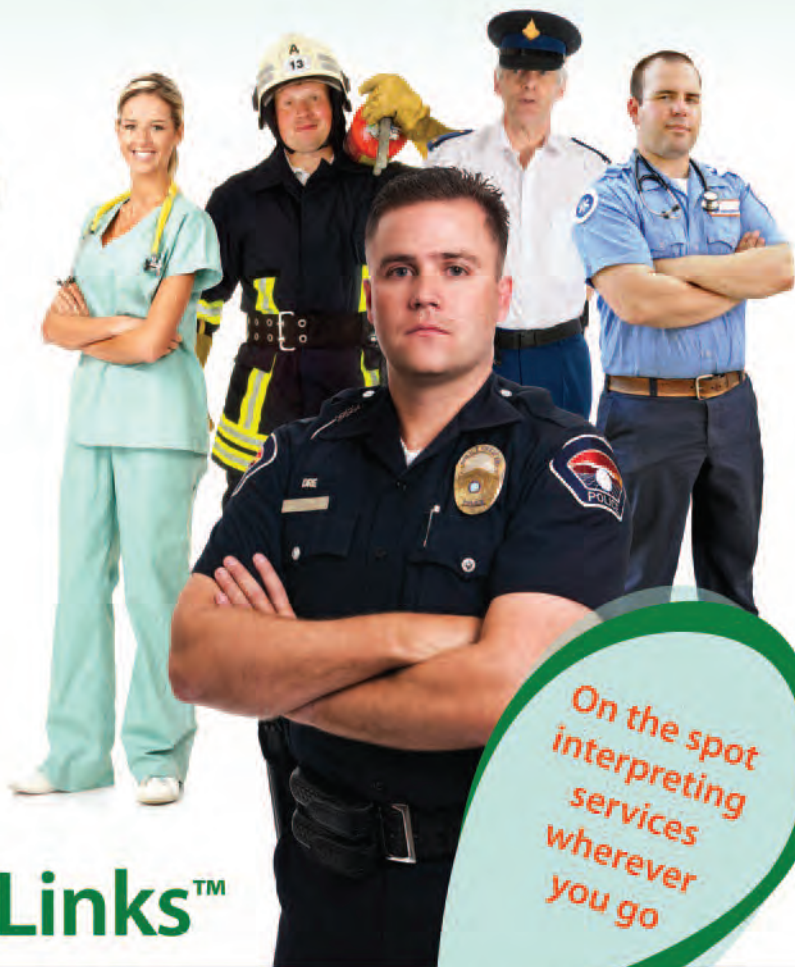
- Telemedicine, and
- The link between e-health and medical engineering.

The 15th of September saw the Pre-Opening Session take place at the University Medical Center Hamburg-Eppendorf (UKE). The UKE is the largest hospital in Hamburg and is Europe's most advanced hospital. The session featured guided tours of the different departments in the hospital and presentations on the challenges of health tourism in EU cross border healthcare and a panel discussion on cross border healthcare and the official reception for the international and national attendees.

As well as the numerous presentations and workshops the 3rd Baltic e-health conference also featured an exhibition of international IT solution providers.

For more information, please visit:
www.baltic-conference-on-ehealth.com

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THE “VIRTUAL HUMAN” HEALTHCARE MODEL

A pan-European personalised healthcare project entitled the Virtual Physiological Human (VPH) Human Network of Excellence (NoE) may be about to revolutionise healthcare treatment and diagnosis.

The 72 million euro project is funded under the ICT Theme of the Seventh Framework Programme (FP7). It aims to help support and progress European research in biomedical modelling and simulation of the human body. In the hope of improving our ability to predict, diagnose and treat disease, if successful it could have a dramatic impact on the future of healthcare, the pharmaceutical and medical device industries. Success, for example, could significantly limit the need for animal testing and patient drug trials. This will be achieved through the creation of an entire framework to deliver personalised patient computer models for the predictive healthcare of the future.

13 institutions from seven countries are involved in the VPH network. Once the network is up and running it is hoped doctors, scientists and researchers from across Europe will be able to use it to virtually investigate the human body as a single complex organism.

The project also includes constantly updated and expanding database of knowledge to be used to develop better patient diagnosis and treatment.

A postgraduate VPH training programme at the University of Nottingham in the UK will help scientists from diverse disciplines to carry out collaborative studies across the EU. Mathematicians and medical researchers who use mathematical modelling will work together to find solutions to complex biomedical problems, for example.

The VPH project may revolutionise medical healthcare in the future. Employing emerging technologies such as genomics means that researchers in all areas can make use of enormous amounts of crucial and detailed physiological data. At the same time, advances in computer and information technology will make it easier for this information to be used to create genetic profiles of patients. It is hoped that over the next 10 years these advances will include treatments for both cancer and HIV/AIDS.

For more information, please visit:
www.vph-noe.eu

E-HEALTH ON TRACK ACCORDING TO THE EUROPEAN COMMISSION

The European Commission has published an update on its Lead Market Initiative (LMI) for e-health. The report indicates that it is too early to notice any market growth as a result of the LMI activities.

E-Health was chosen to be one of the six markets of the LMI due to its market potential in terms of growing demand and market growth opportunities, changing demographics, disease patterns and healthcare capabilities. It is believed that e-health can help to deliver better care for less money within citizen-centred health delivery systems. It also has strong potential for encouraging innovation and leveraging other market segments such as pharmaceuticals and medical devices.

The LMI strategy was aimed at accelerating the growth of the e-health market in Europe by promoting interoperability and removing legal and regulatory barriers. Barriers delaying successful market growth include market fragmentation, lack of legal certainty, lack of financial support and procurement issues. These four main obstacles are addressed by 20 measurable actions; the report assesses their progress so far.

Projects include the development and launch of epSOS3 (Smart Open Services for European Patients) pilot and the launch of the Calliope network, which promotes interoperability in e-health. Other initiatives focus on e-health benchmarking and procurement issues.

The report concludes: “Most of the foreseen activities have been initiated and deadlines have been respected, with no particular need to change or adapt the action plan” and adds: “It is still too early to notice any market growth as a result of the LMI activities.” The Commission’s efforts to adopt a market-focussed approach to the development of e-health have, however been welcomed by industry and user stakeholder groups and by the Member State Contact Group (i2010 sub-group in e-health) and a more favourable political environment has been created.

It is hoped that the remaining two years of the LMI action plan will significantly contribute to market growth and increased employment in the field, despite the current economic climate.

For more information, please visit:
http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/ehealth/index_en.htm

REQUIREMENTS AND OPTIONS FOR RFID IN HEALTHCARE

The European Commission commissioned a "Study on the requirements and options for Radio Frequency Identification (RFID) application in healthcare". The final report provides an assessment of the main drivers, obstacles and uncertainties surrounding the deployment of RFID in healthcare in Europe. It identifies the most promising RFID applications in the healthcare delivery domain by reviewing the costs and benefits, as far as possible, and assessing enablers and obstacles to full deployment of RFID. Finally, the report provides an evaluation of the current market for RFID in healthcare in Europe and its future potential.

The analysis is based on a thorough review of academic and grey literature and available data sets, a Delphi survey of experts followed by semi-structured key informant interviews, and seven case studies of RFID applications across Europe and the US.

The report, prepared by C. van Oranje, R. Schindler, L. Valeri, A.-M. Vilamovska, E. Hatziandreu, and A. Conklin outlines favourable drivers for the development and implementation of RFID technology to be:

1. Patient safety and quality of care (improvements and cost savings)
2. Organisational and financial needs and benefits (supply chain management, process transparency and traceability)
3. Advocacy and leadership (commitment of leadership, publicity and hype of this new technology and capacity of healthcare system for success)

Numerous obstacles were also identified:

1. Technological issues (wireless infrastructure problems, electromagnetic interference, limited portability)
2. Data management, security and privacy (errors in system integration)
3. Organisational and financing issues (high costs compared to competing technologies)

The report highlights thirteen uncertainties affecting the future of RFID development including problems using common standards, identifying and addressing privacy concerns, fostering change management and supporting healthcare processes with RFID.

The initial objective of conducting a full scale cost-benefit analysis (CBA) of RFID deployment in healthcare in Europe was abandoned due to a lack of relevant data but economic

evaluations were conducted based on the chosen case studies. These case studies concerned hospitals in Italy, UK, the Netherlands, Germany, Switzerland and the US. The costs and benefits for economic evaluation of in-hospital RFID applications include:

- Implementation costs (hardware, software, installation, training etc);
- Maintenance costs (software, hardware, data back up etc);
- Efficiency gains (capital expense reduction, labour savings, increased patient throughput etc);
- Quality gains (elimination of wrong patient/wrong medication and wrong patient/wrong procedure errors, patient satisfaction, infection control capacity), and
- Other gains (improved regulatory compliance, reduced insurance premiums).

Applications were assessed to determine their ability to reduce costs and improve quality of care. The most promising functionalities were found to be tracking assets, tracking patients, the identification of patients, automatic data collection and transfer and the monitoring of patients through sensing.

The report concludes that the potential of RFID in healthcare is nuanced. Although there are many advantages to the application of this technology in healthcare there are still many obstacles, some quite considerable. The report reaches technical, organisational, financial and political/policy conclusions.

From a technical point of view, RFID is not unique in many of its functionalities, there are other, more consolidated technologies; RFID applications must be integrated into existing technological systems and interference and physical constraints are important factors to consider. Organisationally, RFID is not just about IT, it must be embedded within the whole healthcare organisation stressing the need for the strong commitment of the senior management. From the financial side there must be appropriate attention and resources allocated to the technology itself. There are also political factors to consider. There must be open, transparent discussion about the implementation of the technology and regulations must be supported by appropriate national and international policies.

For more information, please visit:

http://ec.europa.eu/information_society/activities/health/docs/studies/rfid/200907rfid-final-report.pdf



ON-DEMAND

IT SERVICE MANAGEMENT FOR HEALTHCARE IT

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Software-as-a-service (SaaS) is disrupting the status quo in the software industry while delivering real benefits to support the unique requirements of healthcare IT. Software applications using the Internet as the exclusive development and delivery platform are proving to be easier to consume and administer, while providing notable reductions in technology ownership costs.

According to Sarah Friar of Goldman Sachs, "Software-as-a-Service is the most impactful trend in software currently. SaaS solutions solve many of the problems that traditional software faces, including large upfront license fees, long time to implementation, and access issues by a mobile workforce, outside of the company network. Over the next several years it will become pervasive in almost all areas of the software market." (Friar, 2007)

Help for the Service Desk

Core to every large healthcare IT organisation is IT service management technology to help automate and manage a myriad of IT services and processes. At a growing number of businesses, service desks need help themselves.

For years, companies needing to resolve IT incidents and problems have relied on traditional service desk systems. No doubt, HP and BMC own the majority of the enterprise IT service desk application market with their Service Manager and Remedy products respectively.

However, with the advent of modern Web technologies and delivery mechanisms, many healthcare organisations are realising significant business benefits from technological innovation in the enterprise IT management market. Initiatives such as shared services, service-oriented architecture and cloud computing promise to help by consolidating, integrating and reducing overall complexity of enterprise IT and business infrastructures.

For the IT service professional, the ability to continually improve IT Infrastructure Library (ITIL) processes and the IT service management application in tandem, without a huge capital investment, is a common desire but not always possible considering tool limitations. Modern ITSM applications use the latest technologies to be agile, not fragile, while focusing on the needs of IT users and their processes.

Today, IT management application alternatives are emulating modern Web technologies used by B2C vendors like Amazon.com, Yahoo!, Google and Apple while providing ac-

cess to the same benefits delivered by established SaaS vendors like Salesforce.com and NetSuite.

One such ITSM application alternative from Service-now.com, offers extensive functionality, flexibility and aggressive cost-effectiveness that adapts to users' specific needs and grows with their processes. These modern solutions are built on the Internet and delivered via SaaS to eliminate the high implementation and management costs and complexities associated with traditional client / server software.

Despite existing perceptions, IT service management tools can be easy to implement, adapt and afford. Why aren't the application vendors managing and maintaining their own products? Application vendors should be actively engaged in helping IT organisations focus on core competencies of developing efficient processes, providing great IT service, transforming the business, and creating excellent patient care.

NHS London Programme for IT

Lee Rucker, the head of service management for the NHS London Programme for IT, has caught the vision of on-demand IT service management technology and predicts several benefits of the model as applied to a healthcare environment.

First, implementation costs for small or large NHS organisations are kept to a minimum considering the fact that no hardware or network infrastructure needs to be configured or application installed. This "no footprint" policy aligns with an NHS strategy to focus healthcare resources directly on patient care rather than the management of IT resources. A modern SaaS application is ready on demand when the people, process and culture are ready to consume it.

Second, what UI is more pervasive than the browser? An on-demand IT self service tool allows a healthcare IT organisation to more quickly and easily reach the broadest set of end users and IT workers, where they want and on the device they prefer. Rucker will be able to reach multiple NHS organisations with differing requirements through a common self-service portal.

On a related note, the versatility of an on-demand application allows for streamlined change management process coordination. The NHS can use the application to gather change requirements and approvals for various NHS Trusts (such as Acute Hospitals, Mental Health Hospitals and Primary Care) across London. IT change will be more quickly, consistently and efficiently affected throughout the healthcare organisation.

Finally, seamless ticketing with the NHS Trust's main healthcare system supplier will help reduce the cost of coordination during the life of the relationship.

A Brief History of SaaS

IDC recently projected that the 2009 market for software-as-a-service (SaaS), would grow 40 percent compared to the 2008 market. (Mahowald, 2009)

These findings combined with research published by ThinkStrategies and Cutter Consortium found that year-over-year SaaS adoption doubled. The reasons cited by most survey respondents were elimination of additional infrastructure costs, deployment acceleration, and the pay-as-you-go subscription pricing model.

The market trend spotters agree, SaaS is the next big step in the logical evolution of software. Just as healthcare providers constantly innovate, IT has moved beyond the sneakernet, fat fingers, software patches, license keys and installation CDs.

But not every alternative to traditional software includes all of the benefits of true SaaS. It is important to understand the differences between traditional software, traditional software hosted by application service providers (ASPs), and modern SaaS.

The Status Quo: Traditional Software

In functional areas like customer relationship management, accounting and IT service management the new economy has marginalized the value of legacy software applications.

Traditional software involves significant up-front acquisition costs and requires recurring maintenance, support and upgrade costs that are multiples of the initial acquisition costs.

Organisations soon find that while traditional software can be customised, doing so often leads to version-lock as changes can't be preserved through an upgrade. Even the most-simple upgrades become costly, resource-intensive reimplementations. To alleviate upgrade woes, traditional software vendors often recommend organisations refrain from customizing the application and adhere to the vendor's out-of-the-box configurations. But shrink-wrapped software can't realistically support the specific needs of today's unique healthcare organisations.

Tosh Sheshabalaya in his article, "Customising Healthcare IT," in the June – August 2009 issue of *Healthcare IT Man-*

agement succinctly summarises the issues around IT application customisation.

These hurdles are burdensome to the customer and often are no longer tolerated in this new economy. Realising as much, many traditional software vendors are beginning to pay lip service to the SaaS model. But current traditional software development, support and delivery channels, in addition to legacy revenue streams and company investor expectations, severely limit the ability of these vendors to offer customers a truly viable alternative.

"Modern SaaS technologies also allow the application to be customised on the fly by the customer while those customisations are preserved through upgrades and new releases."

Application Service Providers (ASPs): From Hope to Meltdown

At the turn of the century, ASPs tried to provide an alternative to on-premise software. ASPs became brokers of legacy software that businesses didn't want to own or manage on premise. ASPs were responsible for buying and maintaining the legacy application while making it available to customers from data centres owned and operated by the ASPs. In theory, customers were to receive a one-size-fits-all application without the burden of owning and managing it on premise.

However, the ASP model was doomed to failure from the start. As ASPs began to proliferate, the cost and challenge of delivering client / server applications efficiently and successfully became more difficult, time-consuming and expensive than even their on-premise predecessors. The significant cost of maintaining legacy applications did not magically go away and the end users were left holding the bag.

ASPs were challenged by extensive and expensive maintenance, support and upgrade requirements. These issues usually resulted in a poor user experience for the business and rapidly escalating costs for the ASP. Because of the inherent limitations of traditional software, the ASPs eventually failed.

The Future: Modern SaaS

The advent of SaaS offered significant improvements over ASP-hosted software, thanks in part to newly available Web



technologies developed and used by a handful of innovative software vendors. These SaaS vendors built their new Web applications from scratch on the Internet and for the Internet. These new technologies also kept the cost of infrastructure and associated maintenance low so vendors could create viable business models while passing savings to the customer.

In this new world of agile application development, new product releases are scheduled throughout the year and upgrades are completely automated and transparent for the customer.

Modern SaaS technologies also allow the application to be customised on the fly by the customer while those customisations are preserved through upgrades and new releases. Since the more-efficient application is hosted by application vendor experts, the healthcare customer can expect predetermined levels of application performance, availability, data security and compliance.

Basically, the ASP meltdown occurred because hosted legacy applications were a fish out of water. Old software was not built to be delivered via the Internet and still had all of the same maintenance costs associated with a traditional deployment. The work to upgrade and customise didn't go away, it was just outsourced. The ASP model broke under the weight of dated technology.

In stark contrast, modern SaaS applications are built on Web-based technologies and services that are highly configurable and always current. These key differentiators provide SaaS and its users a flexible, economical and dynamic environment in which software can be delivered where and when it is needed, and readily configured to meet specific business requirements. Modern SaaS solutions can be demonstrated, delivered and deployed rapidly, via simple and predictable subscription-based licenses.

When SaaS Makes Sense

SaaS solutions are broadly applicable across multiple business functions in many types and sizes of companies. Healthcare providers now more than ever need the IT organisation for IT service strategy and process execution. Why not leave the dirty work to the vendors? Let somebody else deal with the onerous task of keeping the infrastructure and application lights on.

While many traditional IT management software vendors have jumped on the SaaS bandwagon, few are offering modern SaaS. Some are merely providing the same client / server technology via an ASP delivery model and calling it SaaS.

A few well-placed, probing questions for vendors quickly separate the SaaS contenders from the pretenders:

- Can you provide a customer reference for your SaaS offering?

- Can you immediately provide a proof-of-concept or trial application instance?
- What is the upgrade process like for your SaaS offering?
- How often is your SaaS offering updated and upgraded? Is it tied to the same development cycles as your legacy offering?
- Does your SaaS offering provide all of the same functionality of your client / server offering?
- Is your SaaS offering a stop-gap or stepping stone for customers you eventually hope to have move to your traditional on-premise application?
- Can your SaaS offering be administered and consumed by the IT organisation and end users in any browser connected to the Internet.
- What underlying technology is the SaaS application built on?
- What is included with your SaaS subscription license?
- What does it take to customise your SaaS offering?

In the end, the ASP model and SaaS impostors do not have the best interests of the customer in mind. End users tend to know it when they see it.

Benefits of SaaS to Healthcare IT Organisations

The healthcare industry shares a number of unique business problems that can be addressed by on-demand IT service management. Specific benefits include:

- Instantaneous support for non-technical, highly intelligent mobile healthcare professionals;
- More automation for line of business and IT workloads;
- Users on shared workstations can access applications and data anytime, anywhere;
- More effective and efficient change control collaboration and audit measures;
- Compliance with regulatory requirements for data handling and storage, and
- Improved IT service response times and first-call resolution rates provide medical professionals more time for patient care.

IT management applications should help healthcare providers focus on and achieve service delivery goals while not creating extra work for the IT organisation. On-demand application vendors do just that in assuming responsibility for the application. However, myths and questions remain in the minds of many IT organisations considering a switch to SaaS.

Is it scalable?

SaaS isn't just for small businesses anymore. SaaS scalability today has been proven to support some of the largest and most complex healthcare environments in the world, including many global organisations with thousands of IT users and hundreds of thousands of tickets and configuration items in the system. Subscription licensing and application modular-

ity allow large organisations to adopt on-demand applications modules in phases.

Can it really be customisable?

Many modern SaaS applications were built to be customised. Customisations such as form design, field behaviour, database extensions, and workflow designs are all accomplished with a mouse right-click within the Web browser interface. Healthcare organisations can customise their unique application instance to meet business process needs with the assurance that customisations will never disappear.

Can I make upgrades the vendor's problem?

The SaaS upgrade process is an extreme departure from traditional applications. Using agile methods, a SaaS vendor's development work is iterative and continually builds on the most recent version. Most SaaS applications are kept new and relevant with major functionality released several times per year and automatically applied to the customer's instance.

Auto-upgrades are non-disruptive and all SaaS customers are kept on the latest version with the latest functionality. Again, all customisations are kept completely intact.

How important is application security?

When providing an on-demand service, the business hinges on customer confidence. SaaS vendors are inherent security experts and must be able to deliver compliance with the myriad of data privacy regulations facing healthcare organisations today.

Legitimate SaaS vendors have world-class infrastructure technology with built-in security to ensure customer data is protected. SaaS vendors should be able to provide proof that applications are hosted in certified SAS-70 Type II data centres. These on-demand applications are also secured with a depth and breadth of the latest security features available including comprehensive defence and response systems, redundancy, regular backups and data replication, and application access control and auditing.

Can I integrate?

Modern SaaS applications were built using the latest Web services and open APIs with the realisation that every healthcare organisation will have unique application integration requirements. An application built with integration in mind, not as an afterthought, facilitates integrations in days or weeks, not months or never. For example, Service-now.com provides approximately 50 integrations free of charge to most notable 3rd party applications and data sources including Microsoft SMS, HP OpenView, Tivoli TEC and Oracle Financials.

How quickly can it be implemented?

SaaS implementations don't get hung up on application installations. They are as ready as the customer's people and process-

es. Core system setup and configuration begins on day one, not after weeks of struggling with an implementation.

Are costs predictable and will I save money?

SaaS licensing, implementation and consulting services fees are predictable unlike costs associated with legacy applications. A simple subscription license is a set annual price for the length of the contract. And simplified subscription licensing, combined with zero maintenance or operating costs, means that users not only enjoy ROI, but return before investment. Many IT organisations report that an annual SaaS subscription license is about the same or less than the maintenance fees of traditional software vendors.

“Legitimate SaaS vendors have world-class infrastructure technology with built-in security to ensure customer data is protected.”

Can SaaS help reduce soft costs?

Healthcare IT organisations continue to spend close to a third of their total IT budgets on ongoing software-related costs for maintenance, operations and development. These soft costs are significantly reduced with SaaS through the elimination of upgrades, patch deployments, integrations, disaster recovery and application monitoring.

On-Demand IT Service Management is Here Today

Common IT service issues can be more effectively addressed and operational excellence achieved through modern SaaS that helps to automate ITIL best practices. Now organisations can focus resources on improving IT processes and driving new healthcare initiatives while the vendor experts maintain and administer their application.

Service-now.com, for example, is an application that was born on the Internet and lives on the Internet. Its founder and CEO, Fred Luddy, spent decades in the legacy enterprise software market and intimately knows the difficulty old technologies cause for end users. He started Service-now.com from scratch to build a better IT service management application based on modern Web technologies and delivered via SaaS. Since the first Service-now.com customer in July 2005, there are now hundreds of global enterprise IT organisations and dozens of large healthcare providers reaping the benefits of SaaS in IT. On-demand IT service management is here today.

PICTURE ARCHIVING AND COMMUNICATION SYSTEMS (PACS)

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.



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Footnotes

- <1> These recommendations are the opinions of ECRI Institute's technology experts. ECRI Institute assumes no liability for decisions made based on this data.
- <2> Multiple interrupt sessions, instant messaging, key images, MIP/MPR and teaching files, flexible image management and archiving
- <3> PowerScribe, Lanier, Dictaphone, Fusion, WinScribe, SoftMed, eScription, Vianeta, Speech Q, Talk Technologies, DEWS, RadWhere, Fusion Expert
- <4> Leading teaching file management solution with Horizon Study Share Architecture can scale to handle large regional enterprise PACS distributions Extensive clinical tools & efficient workflow tools on the Radiologist workstation
- <5> Open architecture allowing a variety of scalable storage solutions for non-DICOM and DICOM, including long-term media: linear table-open and 9840; spinning disk, DVD juke, tape juke, remote storage services; EMC Centera, enterprise solutions (EMC, Hitachi, IBM, others)
- <6> Varies based on volume; number of procedures, storage, and concurrent user requirements supported through flexible license schemes.
- <7> 2008: software versions 10.1 and 10.2, May 2009: software version 11.0, Q4 2009: software version 11.2
- <8> Native document scanning for paperless operations; optimal workflow integration with peer review, discrepancy reporting and teaching files with peerVue (optional); scalable for university hospitals, imaging centers and physician offices of all sizes; teleradiology solutions with tight integration to ThinAir Data; Centricity RIS/PACS/Postprocessing for imaging centers and hospitals; comprehensive solutions for referring physician access; Boost referring physician marketing program.

ECRI INSTITUTES
RECOMMENDED
SPECIFICATIONS <1>



MODEL	PACS	FUSION PACS GL (EMEA)
Where MARKETED		Europe
FDA CLEARANCE		
CE MARK (MDD)		WIP
SYSTEM CONFIGURATION		
Architecture	Single server cluster	Smart-clients, 64-bit processing, centralized, distributed, and redundant servers
Hardware	Hardware-independent	Dell servers, Dell workstation
Operating Systems		
Image server	Windows or UNIX	Windows
Web server	Windows or UNIX	Windows
Security	128-bit SSL	SSL
Database server	Windows or UNIX	Windows
Management	Experienced database company	Sybase
Long-term storage		
Media	Hardware independent	NAS, SAN, DVD, tape
Max capacity, TB	Unlimited	Unlimited
On-demand storage		
Hardware	RAID (SAN)	RAID (SAN/NAS)
Max capacity, TB	Unlimited	Unlimited
Multiple remote servers capable	Yes	Yes
DIAGNOSTIC WORKSTATION		
Independent login	Yes	Yes
Admin-controlled worklist	Yes	Yes
Ad hoc patient search capability	Yes	Yes
Auto notification of prior exams	Yes	Yes, priors can be automatically loaded
Prior reports (without images)	Yes	Yes
User-definable hanging protocols	Yes	Yes
Session interruption function	Yes	Yes, up to 5 sessions
Colour and grayscale display	Yes	Yes
Key image select	Yes	Yes
Teaching file selection	Yes	Yes
3-D image processing	Yes	Yes
Tools		
Patient search	Name or MRN. Automatic based connection bandwidth	<2> Yes
Image compression		Lossless and lossy, JPEG 2000
IMAGE SHARING		
Patient manage	Yes	Yes
Hardware manage	Yes	Yes
Auto failover of critical comps	Yes	Yes
Back-up		
SYSTEM ADMIN		
Power	UPS standard	UPS
Dbase frequency	Every hour	Configurable
IHE conformance	Year 5	Limited Profiles
RIS	Brokerless, bidirectional	HL7, ADT/ORM/ORU messaging
Electronic patient record	Yes	Yes, direct access via Web link
Report dictation	Yes	Optional
INTERFACES		
Query/retrieve SCP	Yes	Yes
Query/retrieve SCU	Yes	Yes
Worklist management	Yes	Yes
Performed procedure step	Yes	Yes
DICOM JPEG 2000	Yes	Yes
DICOM 3.0		
Price structure	Hardware and software separate, based on number of exams	Flexible
Hardware		Not specified
Software		Not specified
Alternative		Not specified
OTHER SPECIFICATIONS		http://www.merge.com
LAST UPDATED		May 2009

HORIZONTAL MEDICAL IMAGING	CARESTREAM PACS	CENTRICITY WEB-PACS
North America, Europe	Worldwide	Worldwide
Yes	Yes	Yes
Yes	Yes	Yes
Multitiered, centralised, or distributed infrastructure serves dedicated, smart, or Web clients HP, IBM, Lenovo, Dell	Distributed or centralized configurations including high availability and business continuity solutions. Sun, Dell, HP, IBM, EMC	Web-based, all on-demand Dell, IBM, HP, EMC, Nexsan
Windows 2003, 2008	Sun Solaris 8, Windows server 2004	Windows 2003 server; clients include Pentium IV, 3 GHz or greater
Windows 2003, 2008	Sun Solaris 8, Windows server 2004	Windows 2003 Server
128-bit SSL, VPN	VPN, SSL, HTTPS, lightweight directory access protocol (LDAP), 128-bit SSL, RC 4 algorithm	
Windows 2003, 2008	Sun Solaris 8, Windows server 2004, Oracle Database	SSL, VPN
Oracle 10g, 11g	Oracle	SQL Server 2005 SQL Server 2005
AIT, DVD, MO, Enterprise integration	<5> Spinning disk (Multitiered), DVD and tape juke boxes, remote storage services; supports EMC Centera and Enterprise, IBM Enterprise storage	RAID, DAS, NAS, SAN, long term; tape and Nexsan, EMC Centera
Unlimited	Unlimited	Unlimited
RAID (NAS/SAN)	Yes	
RAID (NAS/SAN), Enterprise integration	RAID (SAN/NAS), EMC Centera	RAID, DAS, NAS, SAN, tape, EMC Centera, Nexsan
Unlimited	Unlimited	Unlimited
Yes	Yes, including load balancing	Yes
Yes	Yes	Yes
Yes	Yes	Yes, and user controlled
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes. Stored as non-DICOM images	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Native MIP/MPR; Optional Integrated GE AW Server for advanced postprocessing. Barco (Voxar) 3d can be Integrated
Name, MRN, accession number, date range	Yes	Comprehensive and on-the-fly for complex searches use Boolean logic
Yes	Yes, configurable	DICOM standard JPEG 2000
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes, optional with cluster configurations (active-active)	Yes, clustered environment, business continuity
Yes	Yes. Many configurations available including a meta data backup option for user configuration	
Daily and hourly incremental	Yes, UPS options	UPS
http://www.mckesson.com/static_files/McKesson.com/MPT/Documents/HMI110-IHEIntegrationStatement.pdf	Yes, frequency configurable	Configurable
Brokerless, bidirectional	Yes. View details at http://ihe.carestreamhealth.com	Comprehensive, most conformant Web-based
Yes	HL7 integration with third-party RIS, no broker required	Bidirectional and brokerless, HL7
Optional; <3>	URL activation, enterprise storage integration, XDS repository, patient-centric clinical content viewing	Yes, via HL7, URL, Web services, applet, others
Yes	Optional	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Roadmap
Yes	Yes	Yes
Hardware and software are quoted separately	Software, hardware, professional services, service agreement	Customer choice: turnkey and software-only capital purchase, per study, lease, others
See above	Varies; multiple configurations dependent on size with business continuity and disaster recovery options	Configuration dependent
See above	<6>	Configuration dependent
See above	varies	Not specified
<4>	http://www.carestreamhealth.com/superPACS	<8>
October 2009	<7>	Ma 2009



THE DATABANK PROGRAMME

A Timely Data Source for Hospital Management

AUTHOR

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Senior Director,
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Association, USA.

During last autumn's economic crisis, the American Hospital Association (AHA) turned to the Colorado Hospital Association's (CHA) DATABANK Programme for timely data not available from any other sources in the country. The database of monthly hospital information helped the national trade association publish two executive briefs on the impact of the worsening US economy on community hospitals across the country. Without the timeliness of the DATABANK Programme, AHA would have had to rely solely on an ad hoc survey.

The story was quite similar in the mid-1980s, but certainly more on a local scale. CHA advocates on behalf of all the hospitals in the state of Colorado but again, we did not have as much information about our members as we needed to effectively talk to state legislators about the issues affecting Colorado hospitals.

Genesis

The genesis for the DATABANK Programme was born, vetted with councils and finally the Board of trustees. Data collection from Colorado hospitals began in 1985, starting very simply with discharges, patient days, a few outpatient data elements, charges, contractual allowances, charity care, expenses and gross patient accounts receivable. By 1988, three state hospital associations were using the database for management of their hospitals. One of the main stumbling blocks for data programmes during that period was lack of timeliness. Hospital administrators and their staffs were often frustrated when they received reports that were months old. One of the driving goals for DATABANK was to be timely and give hospital managers as much relevant, current and complete data as possible.

Outbound from Colorado to 16 other States

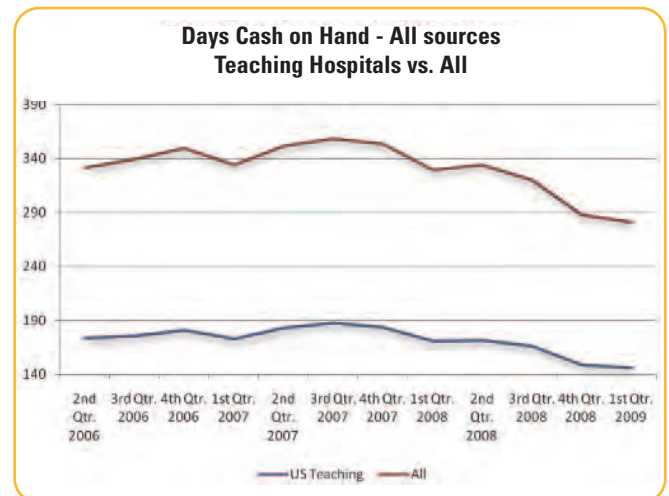
Other states with similar issues soon found DATABANK to meet their needs. By the end of the 90's, DATABANK was in 17 states. However, acquiescing to states' individual needs had compromised uniformity. In 1998, CHA presented a case to the state members to standardise on a common data set and move the platform to the Internet. The group was enthusiastic about the advantages of what the Internet could offer them and their member hospitals.

Along with the move to the Internet, AHA and CHA formed a partnership to move the database in a new direction where more US hospitals and state associations could take advantage of DATABANK's virtues. By 2001, more than 30 states were using the web-based programme.

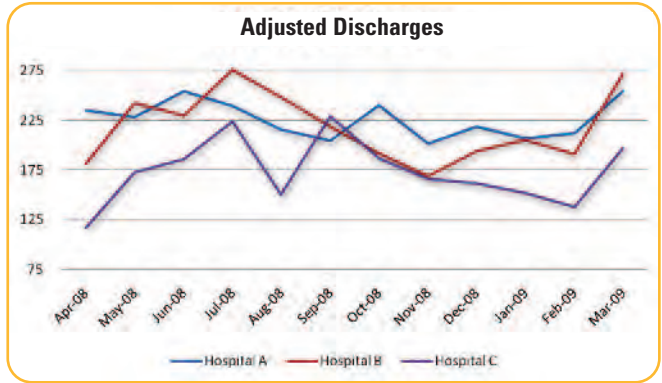
Many of the initial issues were solved by moving the database to the Internet; the hospital administrations were then able to design their own reports with their own peer comparisons, the information was available as soon as hospitals entered their data and hospital associations had more information at their fingertips in which to advocate on behalf of their members, the number one reason a hospital pays association dues.

Making Comparisons

Hospital administrations, primarily the Chief Financial Officers, have found the DATABANK information to be especially effective when comparing their hospital's performance with other "like" hospitals. DATABANK not only offers hospitals a tool for creating local peer groups but also a cross-state search tool that builds peer groups from the entire national database. A manager can search for large urban, teaching hospitals with beds between 500 and 750. Or, a small rural hospital can build a group of hospitals with an average daily census between 16 and 30 days. Then, that peer group can be used instantly in a variety of reports.

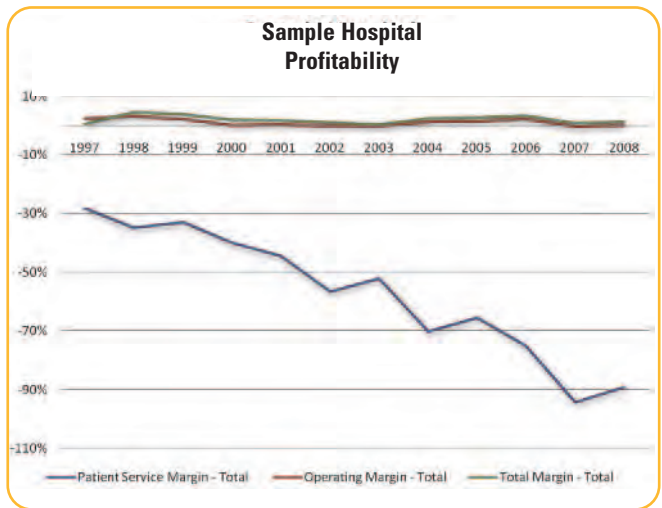


Online DATABANK reports are accessible to hospitals that submit monthly data. If a hospital falls behind, they only have access to the time periods they have entered data for; the DATA-



BANK philosophy is “you get what you give”. If a hospital participates in the Balance Sheet module, introduced in 2003, they get 18 financial ratios.

CFOs and their staff use the data at their monthly Board meetings to present various cases on a variety of issues. Board members depend on their hospital managers to apprise them on how their hospital is performing compared to peer hospitals.



The above graph is an example of a typical DATABANK use for hospital managers to demonstrate utilization trends of hospitals in their immediate service area. The programme allows managers to chart their hospital performance on many utilization and financial trends. Monthly, quarterly and annual graphs can be produced on one entity and multiple variables or multiple entities and one variable as shown above.

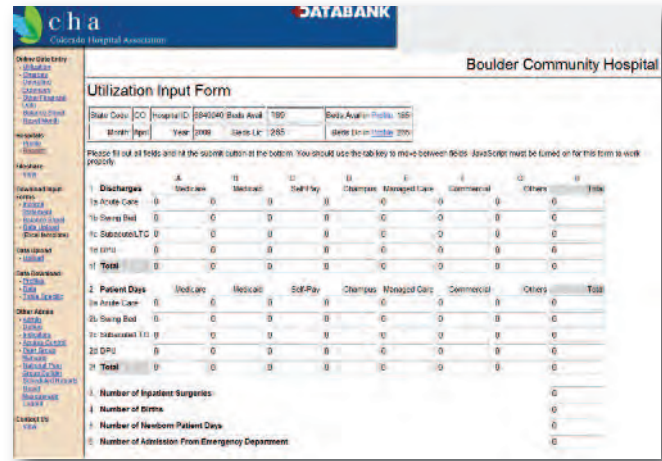
The hospital managers of the sample hospital already know they don't make money on patient care.

What DATABANK can tell them is where they've been so they can map a strategy as to turn their patient service margin around.

Confidentiality Issues

Confidentiality of the data has been a mainstay of the programme throughout the years. It should be noted that certain states share data amongst hospitals. Other states keep it strictly to peer group comparisons of five hospitals or more.

DATABANK allows the hospital association to set the confidentiality rules for how the programme operates in their state and how the hospitals will be able to access data. One rather extreme example is a hospital association that does not allow their members to access data unless 100% have reported for the time period. However, most states allow their hospital managers to not only create their own comparisons but they also encourage them to give feedback about what they'd like to see from the programme.



Above: A DATABANK Screen shot of the Utilization data entry page prior to the hospital entering its own data for April, 2009.

The benefits of participating in the DATABANK Programme far outweigh the time required to collect and enter the data on a monthly basis. A few of these benefits for the hospital managers are:

- Timely data;
- Comparable data;
- Custom peer group creation;
- Scheduled reports, graphs sent to their email every month
- Requires 1-2 hours of work every month, and
- Enables hospital associations to use current, accurate and complete data for advocacy.

The DATABANK Programme has been a success in the states that have committed the resources and made a concerted effort in making sure their state is represented in any national debate using current healthcare data. Not participating has been compared to not voting in an election. DATABANK has always been an easy programme to participate in and reap many benefits, either at the local and state level or even in the nation's capitol.



MATCHING TALENT AND JOBS

Programmed to under-perform?

AUTHOR

Tom Olivo
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Performance Solutions,
USA

This is how some healthcare IT managers may feel when they go home after a typical day at the hospital, according to a recent white paper 'What Does Being in Over Your Head Look Like'. In reality, the average healthcare organization creates leadership alignment (the right people in the right roles) approximately 55% of the time. Realistic expectations for leadership appointment should target 85% alignment, by using a structured approach to determining their future leaders. The difference of having the right leaders in place can show as much as a 75% increase in operational performance over time.

There are several common appointment mistakes which lead to sub-optimal performance, one where both healthcare leaders and managers are literally 'in over their heads.'

The easiest way to describe the condition is where a department's complexity (degree of difficulty) exceeds the threshold at which a manager has higher odds of success (typically above a 50% rate).

For a 'C' level ability, this is virtually any management job, since the chances of success are at best just 40% (in the lowest complexity positions). The decision to appoint a 'C' level manager to such positions is justified only when challenges are easily managed, or if the manager has an exceptional ability to manage day-to-day operations.

Also, if a 'C' manager begins to struggle, the reasons are usually very apparent: they are beginning to be in over their heads.

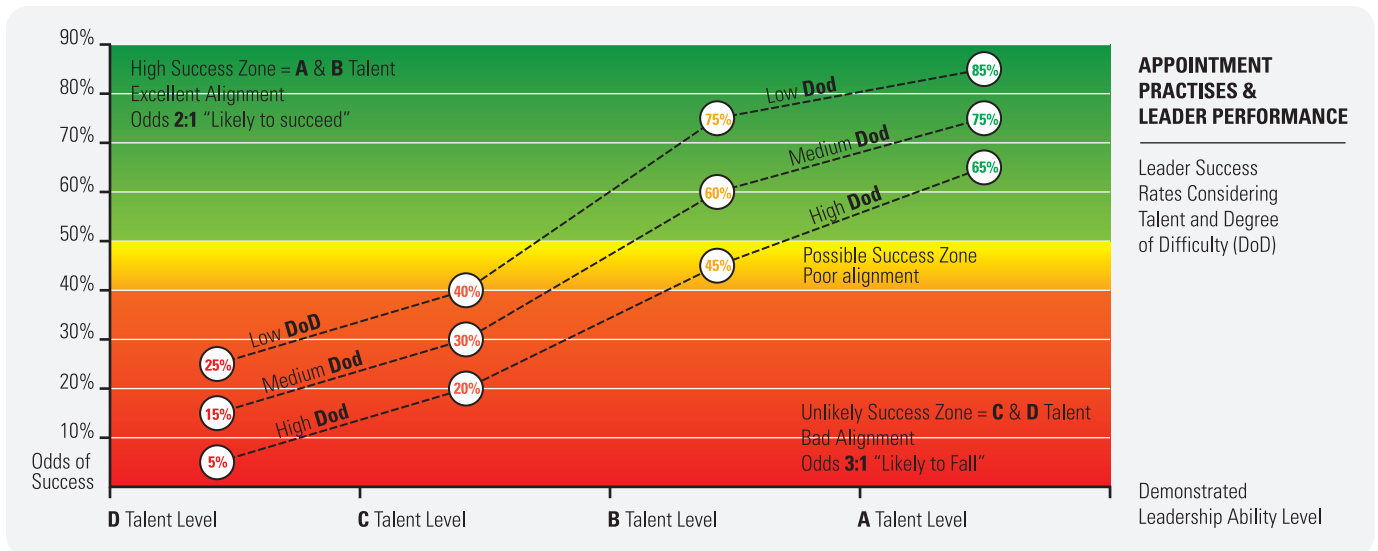
How about 'B' level managers? As cited by Thomas J. DeLong and Vineeta Vijayaraghavan in their 2003 'Harvard Business Review Article', 'Let's hear it for B players', managers at the 'B' level are solid, consistent performers. They are competent, experienced, consistent and loyal.

These managers make up the backbone of any organisation, and typically account for between 50% and 55% of executives. In our research, the bulk of healthcare IT managers are usually at the 'B' level.

For 'B' level leadership talent, the ability to manage low and medium complexity tasks produces favourable results, respectively, 75% and 60% of the time (see Figure 1). The only cases with low odds of success (and are 'in over their heads') is when they are appointed to complex assignments or departments, accompanied by a high degree of difficulty. It is here that the chances of success dip to 45%. This is not to say that they cannot be successful; it is just less likely.

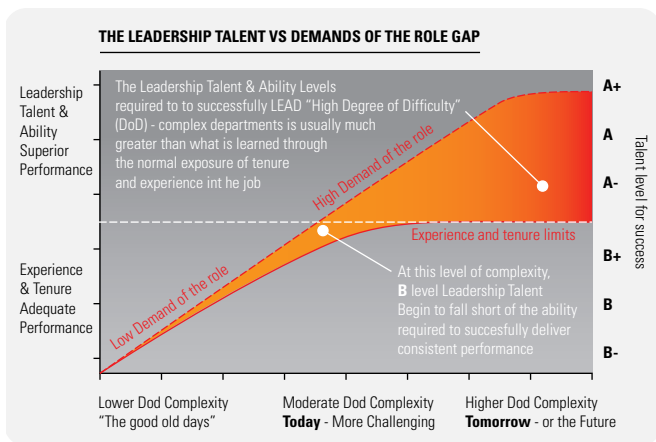
If a decision is made to appoint 'B' level IT managers to such a level of complexity, it is crucial for CIOs to ensure that they 'over achieve'. Other attributes of "B" level leaders are:

- They are talented but not usually as ambitious and driven;
- They are interested in advancement but not at all costs or a steep price;
- They define success differently (not purely financially or status motivated);



- While they may work hard (while at work) they prioritise “life-work” balance to work 50 hours per week instead of 80 or more;
- They are usually excellent team players (avoiding the spotlight of self promotion);
- They may have been “A” level performers at one time and have dialled back their career focus (due to other outside – personal priorities or possibly “throttling” down to semi-retirement);
- They have longer tenures in organisations because they are less likely to leap from job to job to fast track or advance their careers, and
- They contain a significant amount of an organisation’s intellectual capital due to their experience and tenure levels.

5. Not taking due account of leadership talent or ability. Assigning a ‘C’ or ‘D’ level leader in any role has low odds of success: average 30% for a ‘C’ player and 15% for a ‘D’.
6. Low acceptance rate of a new leader/manager by the staff because of an ‘old school’ mindset about the importance of prior tenure in a particular department. It can be extremely difficult for some people to handle this situation long enough to persevere. Odds of success = < 33%
7. Competency Alignment: Sometimes, even the most talented leaders (‘A’ players) can be out of alignment technically, with regard to business models, culturally/behaviourally or in terms of pure maturity or experience. Odds of success = < 33%.



In such a light, there are seven typical appointment mistakes which organisations make:

1. Appointing a “B” level ability person to a high degree of difficulty management role based upon their tenure period or technical competency (clinical expertise); the ability to lead others does not correlate with either. Odds of success = 45%.
2. Appointing a lower level “supervisor” into a manager position in a bottom quartile department out of convenience. They are usually unsuccessful because of their lack of manager experience. They tend to be part of the previous culture and are less likely to act on the low performers (or make tough decisions). Odds of success = <20%.
3. Failure to recognise that a high degree of difficulty department in the bottom quartile will require a ‘turnaround’ specialist used to making tough decisions quickly, with responsibility to stakeholders outweighing personal interests. Most ‘B’ level managers do well in maintenance roles. Odds of success = < 20%.
4. Waiting too long to act and failing to set hard (measurable) performance targets and milestones for the first year. If new managers fail to immediately make heavy-lifting decisions (especially in terms of dealing with negative, disruptive, poor performers), turnarounds take longer, are usually more painful and have a lower overall success rate. Odds of success = < 20%.

LEADERSHIP ALIGNMENT FACTS

- A structured approach to appointment practices helps ensure the Right People are in the Right Roles.
- A and B level leaders usually exhibit high levels of success when assigned to roles that do not exceed their threshold Degree of Difficulty (DoD).
- “A” level talent is usually successful in assignments of all Degrees of Difficulty (Dod), but “B” level leaders exhibit high odds of success only in assignments of Low and Medium Degrees of Difficulty (DoD).
- “C” and “D” level leaders have very low odds of success when assigned to lead in any situation.
- When leadership talent is appointed appropriately, the odds of success are 2:1 in your favour. However, when leadership talent is poorly aligned the odds of failure are 3:1.
- The average organisation properly aligns leadership talent with Degree of Difficulty (Dod) only 55% of the time.
- Misalignment of leadership contributes to more sub-optimal performance than any other factor.

REVIEW

The talent and leadership ability of the front line manager is a direct predictor of the performance in that department, driving results and desired outcomes.

Numerous consultants promote the hiring of only ‘A’ players to leadership and/or total employee positions. If less than .01% of healthcare organisations can achieve this level of human capital recruitment, hiring and appointment, how realistic is it as an aspiration? The last organisation that tried to create a culture of all ‘A’ players was Enron.

Another name for this business practice is ‘Top Grading’, where selection only screens for the best talents, while the performance management practices cut a percentage of the total employment base (GE is famous for cutting 10% of its bottom performers every year).

Such a philosophy will simply not work at healthcare organisations. In the final analysis, the healthcare business, like others, is a team sport.

HEALTHCARE IT IN THE GULF

AUTHOR

Tosh Sheshabalaya,
HIT

Rising affluence in the Gulf region over recent decades has been accompanied by a dramatic increase in healthcare IT implementations at a growing number of hospitals. The reasons for this are similar to those in the Western world – to increase the quality of healthcare services. Such a trend is perceptible at both public, State-owned as well as private facilities.

Meanwhile, additional impetus to IT adoption has been provided by the global economic crisis, which has not spared even this oil-rich region. The recession has forced hospitals and healthcare providers across the region to rethink their business strategies. IT and medical technology adoption is moving across the spectrum, from being driven by bells and whistles-plus-performance to an assessment of its overall impact on cost and organisational performance.

Such a process is anchored by both global players as well as local firms. Many of the latter are staffed at senior levels by expatriates, principally from the West and India. These globetrotting executives have brought awareness of best practices and other benchmarks to their operations in the region.

Nevertheless, personal relationships do matter in the Gulf and healthcare IT, like other activities, is very much a people business. In spite of the presence of some dominant local IT solutions providers, the healthcare segment continues to be marked by the presence of small, specialised resellers as well as independent consultants.

Compared to a decade ago, a perceptible change is the absence of demos and road-shows made by global vendors to enraptured audiences in a hospital ward. Instead, it is quite common today to witness IT professionals doing the rounds of hospitals with physicians and nurses, interacting with patients and following up with detailed dialogue, rather than glitzy PowerPoint presentations.

One good example of the systemic foundations of this new approach is in new technology strategies adopted by regional hospital groups such as Zulekha, which have implemented e-health facing solutions across the Middle East.

In recognition of such efforts, Zulekha Hospitals Dubai and Sharjah received accreditation in 2008 from the Joint Commission International (JCI), the largest American healthcare technology standardisation body, which focuses on improving the safety of patient care (from admission to discharge) through rigorous certification services. JCI accreditation is considered to be the 'gold standard' for healthcare performance. Underlining its rigorous requirements is the fact that only 220 healthcare organisations in fewer than 35 countries across the world have been accredited by JCI.

On its part, the IT industry has responded to the new opportunities in the region presented by high-demand environments such as healthcare. In November 2008, IBM and Intel inaugurated the Dubai Competence Centre for Industry-Standard High-Performance Computing at IBM's Dubai Internet City (DIC) building.

A sample of healthcare IT implementations and projects in the region over the past two years is provided below:

Bahrain: Microsoft and Sun

Although Bahrain has long been at the forefront of per capita spending on healthcare technology, its IT backbone has been marked by considerable fragmentation. In fact, Bahrain is one of the few States which has more or less officially opposed the idea of Open Source as yet another addition to the heterogeneity of its IT architecture.

With a healthcare network centred on the huge Salmaniya Medical Complex, seven smaller hospitals, 22 health centres and scores of clinics spread across a cluster of 33 islands, Bahrain's Ministry of Health has sought to increase collaboration between medical teams at decentralised locations. The contract for this was won by Microsoft partner IDEAS IT, which developed a Web-based content management system and Intranet portal using Microsoft Office SharePoint Server 2007. The benefits claimed by the new system: "policy approval time cut from months to days."

Microsoft rival Sun Microsystems, has also not been idle. However, its strategy has been to mount a wider campaign aimed beyond healthcare. It recently announced an overhaul of its support capability through a new alliance with Computer World, by virtue of which the latter will resell and integrate Sun's server and open storage offerings, as well as promote solutions around virtualisation in Bahrain. Some of the latter will no doubt be targeted at e-health infrastructure.

Kuwait: Importing A Turnkey Hospital And Know-How From Germany

Routine technology upgrades and new deployments continue in a country which hosts one of the region's oldest healthcare networks. The Kuwaiti Health Ministry's AfyaNet LAN/WAN net-

work dates back to the 1990s, allowing for the combination of voice, data, and video and forming the foundations of a National Health Information System and a National Patient Database.

More recently, Kuwait has decided to do something entirely new. In January 2009, it signed up UMC, the consulting arm of Hamburg's renowned University Medical Centre (UKE) to draw up plans by year end for a brand-new 150-200 bed hospital complex (with rehabilitation facilities, a hotel, apartments and a shopping mall). The hospital is designed to match standards at UKE. One of its key objectives will clearly entail heavy investments in distributed, real-time IT systems, in order to provide quick turnaround health check-ups, including a radiation-free MRI body scan, within four hours.

Saudi Arabia: Getting e-Health Ready

One of the most ambitious IT projects in the Gulf region in recent memory also involves Nortel's Unified Communications architecture. King Fahad Medical City is one of the biggest healthcare facilities in the Middle East, with four hospitals and 270 primary clinics servicing almost 2,000 patients each day. The group has deployed a state-of-the-art, clinical-grade healthcare communications solution, built atop. This includes the Nortel Media Processing Server 500 (automated routing and multi-language speech capabilities) and the Communication Server 1000, which provides IP and legacy telephony services for more than 5,000 extensions. It also includes Nortel's Contact Centre with skills-based routing and management reporting capabilities and for a more efficient and personalised customer experience.

The solution, which constitutes a futuristic foundation for e-health applications, integrates IP Telephony and interactive voice response (IVR) capabilities with legacy voice systems to promptly provide patients with responsive, personalised care from the appropriate physicians.

Other Saudi Arabian hospitals have also recently made major IT investments. EBH (Dr. Erfan-Bagedo General Hospital) recently rolled out the Millennium PathNet solution from Cerner. The PathNet solution is connected to the hospital information system, and is part of EBH's strategy to automate the managerial and operational aspects of its laboratory and provide faster, more accurate lab services for the more than one million patients it serves each year.

United Arab Emirates:

Nortel's Unified Communications solution has been implemented at the spanking-new Sharjah Teaching Hospital in the UAE (210-beds), to give its 700 physicians mobile (from anywhere at any time) to MRI, ultrasound and CT scan data as well as mammograms.

The equipment in the solution includes Nortel WLAN 2300 Series switching and access points for mobile voice and data capability, its WLAN Handset 6140 for roaming communica-

tions as well as the Ethernet Routing Switch 4500 and 8300 for full redundant 10 gigabit Ethernet connectivity and the Communication Server 1000 for VoIP and unified messaging. As a teaching hub for colleges at the University of Sharjah, the new solution is also aimed at providing students with secure access to clinical notes and health information from anywhere on campus, and participate in virtual classrooms. The solution delivered to Sharjah Teaching Hospital includes Nortel Ethernet Routing

“Additional impetus to IT adoption has been provided by the global economic crisis”

Meanwhile, at Sharjah's sister Emirate, Al Ain, Tawam Hospital (a 468-bed tertiary care facility affiliated with Johns Hopkins University in the US) has implemented Cerner Millennium, the solution's first implementation of its kind in the UAE. The hospital is owned and run by the Abu Dhabi Health Services Company (SEHA), one of a total of SEHA's 14 medical facilities and over-50 primary health and ambulatory clinics.

The Cerner solution connects radiology, pathology, pharmacy, surgery, emergency, and front-desk departments. By the end of 2009, another four hospitals and 12 clinics are due to also deploy the Millennium solution as part of a roadmap to create a unified electronic medical record (EMR) for hospitals and clinics across the UAE and create a closed-loop medication administration process, to enhance patient safety.

Strengthening Tawam Hospital's claim as a first-mover in the region's public hospital system is another recent deployment, of latest iSite PACS (Picture Archiving and Communication System). Tawam is also the first public hospital in the Middle East to implement Philips' fee per study' model, by virtue of which it pays a monthly fee to view, distribute and store medical images, instead of paying a large upfront price. In return, Philips guarantees 99.99% uptime and all the latest features to the workstation (currently consisting of fully interactive real-time volumetric reading delivered to the PACS workstation via its iSyntax advanced rendering and scalability technology).

Dubai, too, has recently rolled out HP's latest generation Blade servers and storage solutions at American Hospital Dubai (AHD). The key goal is to enable the hospital implement a backbone integrated healthcare information system. HP has provided service-level agreements (SLAs) to guarantee the highest possible uptime. AHD's CIO is explicit on the motives behind the deployment: to create "a new standard of services similar to that in the US healthcare system."

TELECARDIOLOGY

Applications in Italy

AUTHOR

Paolo Zanaboni,
 Politecnico di Milano,
 Department of Management,
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 Industrial Engineering.

Cardiovascular illness is the leading cause of mortality due to chronic diseases. In 2005, it accounted for over 17 million out of 35 million deaths worldwide, according to the World Health Organisation. In spite of the high economic burden that ensues, the global response by public health is not always appropriate.

In this context, telemedicine (the use of IT to exchange health information and provide healthcare services across geographic, time, social, and cultural barriers), represents a good solution for the management of patients with cardiac problems. Telecardiology, in fact, guarantees a correct continuity of care and the creation of integrated networks between acute hospitals and primary care, with a more rational and quicker management of patients, also at home. Additionally, telemedicine is particularly implemented where geographical barriers avoid the equity of access to health services for all the citizens.

Italy, for example, is characterised by a high population density (approximately 200 inhabitants/km²). However, it is rich in isolated, rural areas (especially in mountain communities and islands) which suffer from a scarcity of healthcare resources.

Telecardiology Applications In Italy

Italy has had experience in telemedicine applications across the country since the late 1990s. The most widespread telemedicine services include telemonitoring of people with chronic conditions and teleconsultation for specific cardiac events. In particular, the main applications cover the following areas: telemonitoring of patients affected by chronic heart failure or hypertension, patients implanted with cardiac devices, teleconsultation for General Practitioners and for Emergency. A brief description of recent studies in the above areas is provided below.

Fig. 1. Telemedicine Studies

STUDY	PURPOSE	POPULATION	MANAGEMENT	FINDINGS
Antonicelli et al. 2008	To study the effects of home telemonitoring on mortality, hospitalisation rate, compliance, quality of life and costs.	57 patients randomised to standard care or to telemonitoring care.	Patients followed for 12 months. Monitored subjects received weekly reports on their clinical status and their management was modified accordingly.	Improvements in the composite endpoint of mortality and rate of hospitalisations. Better compliance with therapy and quality of life.
Giordano et al. 2008	To determine whether home-based telemanagement (HBT) decreased hospital readmissions and costs in comparison with the usual care (UC).	460 patients. 230 patients in HBT and 230 in UC. Five hospital departments in different Italian regions.	Follow-up programme over a one-year period. A scheduled transmission every week or every 15 days.	The rate of heart failure-related readmission was 19% in HBT group and 32% in UC group. Mean cost for hospital readmission was significantly lower in HBT group (€ 843 euros) than in UC group (€ 1298).

Chronic Heart Failure (CHF)

After a cardiovascular related hospital discharge, patients can be followed through a telemedicine programme. This model implies use of a portable device for the ECG execution and subsequent transfer, by an analog or mobile telephone, to a Call Center which stores it and keeps in contact patients with hospital nurses and cardiologists. Hospital staff are responsible for the clinical management of patients, providing consultations or nursing triage, whereas the Call Centre provides technological and organisational support and, if requested, offers clinical support 24 h/day, 365 days/year. All patient data is stored on a web-server, allowing general practitioners to stay informed and support future investigations.

Hypertension

Self blood pressure (BP) monitoring has been acknowledged to have an essential role in the prevention and treatment of hypertension, with benefits both for clinical outcomes and for therapy optimisation. Inadequate BP control could be due to incorrect management of patients. The usual model for managing patients with hypertension through telemedicine systems implies the adoption of a home BP monitoring device for daily BP measurement and the transmission of results via mobile or analog telephone. Data are then reviewed by physicians, who can communicate the clinical conditions to both patients and GPs, and modify therapy during ambulatory visits (e.g. every three months) based on daily data from the previous period.

Cardiac Devices

The rise in new cardiac implantations leads to a consequent increase in the number of follow-up visits in hospitals for patients implanted with Pace Maker (PM) or Implantable Cardioverter Defibrillator (ICD). Remote monitoring of cardiac devices is an alternative to intermittent visits. It allows early identification of device-related problems and changes in rhythm and symptoms and avoids unnecessary visits. These patients are well known by their specialists who, through the receipt of device data remotely transmitted by patients at home, can quickly and appropriately decide whether the patient needs a visit for device reprogramming, an emergency admission, a change in therapy or nothing, with a consequent optimisation of healthcare resources.

General Practitioners

Teleconsultation to support General Practitioners (GPs) is one of the most diffused applications. It allows for specialised support directly at the GP's office with a lower use of hospital resources, and also avoids trips by patients to a hospital (espe-

cially pertinent for patients in remote and isolated areas, or whose conditions make the trip difficult).

For example, the Telemaco project in Lombardia Region is currently testing a GP teleconsultation service in small mountain communities. Traditionally, this model involves GPs who, provided with a portable electrocardiographer, tele-consult with specialists via a trans-telephone transmission of ECG recordings and a clinical request. The network often involves a Call Center with cardiologists available 24 h/day offering ECG reporting and interactive teleconsultation with GPs.

Emergency

Cardiac emergency management through telemedicine is provided by healthcare networks which involve ambulances, headquarters of 118 Rescue Service and Coronary Care or Cardiology hospital units. Transmission of a patient's ECG and clinical parameters allows for early and accurate diagnosis and the assessment of risk profile with a consistent reduction in time to treatment and mortality rate.

Fig. 2. Self Blood-Pressure Monitoring Studies

STUDY	PURPOSE	POPULATION	MANAGEMENT	FINDINGS
De Luca et al. 2005	To test the effectiveness on BP and total cardiovascular risk (TCVR) control of a network of specialists and GPs.	CampaniaSalute (CS) Network composed by 23 clinics and 60 GPs. 4,024 patients.	Two-year follow-up per patient. 1,979 patients in the CS Network (telemedicine group) and 2,045 patients outside the network (control group).	Telemedicine group obtained a better control of BP and TCVR than control group.

Fig. 3. Cardiac Devices Studies

STUDY	PURPOSE	POPULATION	MANAGEMENT	FINDINGS
Lunati et al. 2008	To characterise the management of patients and the potential impact of remote follow-up.	270 patients. 1,959 device interrogations.	Analysis of device-stored data from patients implanted with biventricular defibrillators (CRT-ICD).	Six months after implant, reprogramming is significantly less frequent, making remote follow-up a practical alternative.
Masella et al. 2008	To assess the feasibility of a remote monitoring service for the follow-up of ICD.	Five hospitals. 67 patients. 267 ICD recordings. Period: January - May 2007.	Patients observed for three months. Three scheduled remote visits and unscheduled remote visits whenever requested. Data Reviewed by hospital clinicians.	Success rate of transmissions: 99%. Time savings for physicians and patients. Reduced inappropriate hospital admissions. High acceptance by all the users.

Fig. 4. Studies of GPs

STUDY	PURPOSE	POPULATION	MANAGEMENT	FINDINGS
Scalvini et al. 2005	To describe patients with atrial fibrillation (AF) followed by GPs using a telecardiology service.	655 GPs. 7,516 patients. 23 cardiologists. 1 call centre. Period: 2001.	GPs were encouraged to use the service (ECG reporting and interactive teleconsultation) for patients with cardiac problems.	AF detected in 719 patients. Problem solution by TC in 66.3%, further investigations in 9.9%, ED admission in 23.7%.

Fig. 5. Studies in Cardiac Emergency Management

STUDY	PURPOSE	POPULATION	MANAGEMENT	FINDINGS
Marzegalli et al. 2005	To shorten the time between the ambulance intervention and the transport to the hospital.	6,821 patients, 89 with acute ST-elevation myocardial infarction (STEMI). Period: 2001 - 2005.	Patients with suspected heart attack were rescued and their ECG transmitted by advances life support (ALS) ambulances.	In patients with STEMI the service shortened the time of delivery of therapy, helped to recover complications and allowed the triage for primary angioplasty.

CONCLUSION

Cardiology management models supported by telemedicine have demonstrated benefits in terms of better follow-up, support to GPs daily activities, prevention of clinical changes, stimulation of self-management of the illness, improvement of quality of life, reduction of rehospitalisation costs and quicker

treatment in cardiac emergencies. Telecardiology in Italy is, however, still at the project stage and the scientific community aims to provide decision makers with further evidence. A preliminary step, for example, consists in an experimental reimbursement provided by Lombardia Region in ongoing projects (e.g. the Nuovi Reti Sanitarie project).

CLOUD COMPUTING

Will It Rain Benefits for Healthcare Organisations?

AUTHOR

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It has been more than 40 years since the Internet was invented. Over the years there has been an exponential increase in the amount of information and complexity of IT infrastructure. This is the era of supercomputing with usage widespread from universities and healthcare organisations to life sciences companies and governments worldwide. There has been constant pursuance across the globe to use computing powers to the fullest. A product of those efforts is the concept of cloud computing.

The power of computing, measured in terms of tens of trillions of computations per second, is now applied to delivering personalised medical information, computational chemistry and biology over the web. With increasing demand for quality and cost efficient healthcare services for a growing range of patients the need to adopt an innovative computing model such as cloud computing has risen.

The idea behind the concept is to network large groups of servers that have low cost PC configuration to do distributed data processing activities across the network using specialised connections. Cloud computing would help in providing access servers, software, data centre and a networking platform. The industry has been always uncertain whether they need software that is located centrally or have software that resides on the user's system. With the development of high speed networks on one end and highly sophisticated, ever evolving, economical server technology on the other, the computing capabilities are being shifted to data centres. Cloud computing is quite similar to grid computing but a hybrid, more powerful and safer computing arena. While grid computing involves dividing large tasks into smaller tasks and running those in a num-

ber of parallel systems, cloud computing architecture is a collection of resources which are managed dynamically and can be provisioned, de-provisioned, monitored and maintained at any point of time. Cloud computing can in fact be defined as a set of virtual servers working in tandem over the internet.

In cloud computing IT services can delivered over the web to perform trillions of computations per second and it can considered as a blend of Software as a Service (SaaS) and Infrastructure as a Service (IaaS). In the recent times European healthcare IT vendors have evolved to provide Software as a Service as a cost efficient model for software delivery. However, cloud computing could now be seen as a next generation model of providing IT Services. In a scenario where healthcare providers are looking at automating processes at lower cost with higher gains, cloud computing can provide an ideal platform. Instead of an SaaS-style subscription model (SaaS) for applications, cloud computing vendors provide both infrastructure and applications as a service on a pay-per-use model.

Cloud computing could be seen as a boon to healthcare IT services as a number of hospitals could share infrastructure

with vast number of systems linked together and reduce operational costs but increase efficiency. This also means real-time availability of patient information for doctors, nursing staff and other support services not within the country but possibly across various countries as medical professionals can access patient information from any internet enabled device without installing any software.

For instance, in the cloud computing setting, the EMR software or the CPOE software and information are located in the central server and not on the users or computer. Patient information and data can be accessed globally and resources can be shared by a group of hospitals rather than each hospital having a separate IT infrastructure. The use of cloud computing architecture helps in eliminating the time and effort required to roll a healthcare IT application in a hospital.

Benefits to Healthcare Organisations

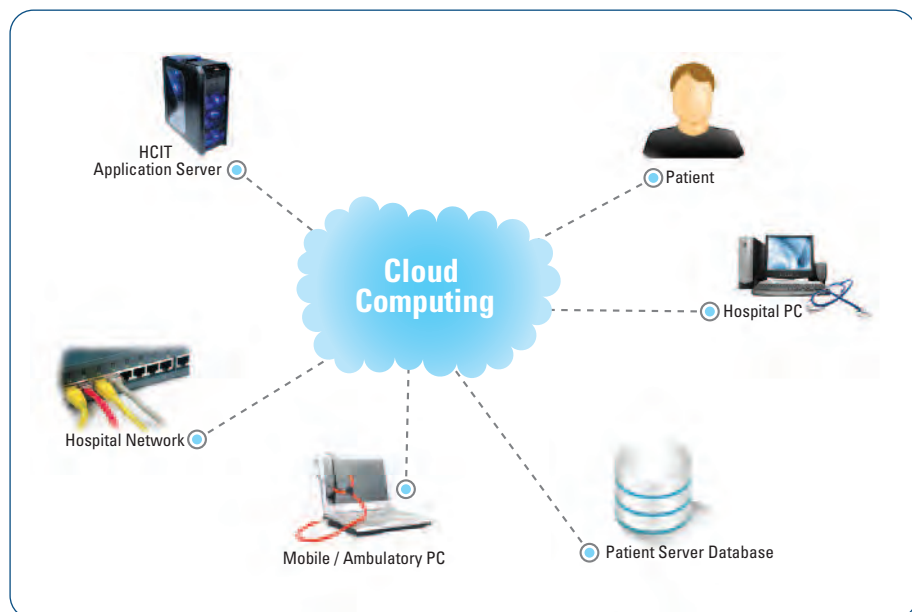
- Cloud computing would help hospitals to achieve more efficient use of their hardware and software and increase profitability by improving resource utilisation to the maximum. By pooling the various healthcare IT resources into large clouds, resources are delivered only when they are required.
- While adopting a healthcare IT application such as Electronic Health Records or any other clinical information system, the hospitals need to invest heavily on servers and applications. In the long run, these have to be constantly upgraded or replaced by the latest configuration, resulting in additional expenditure. A cloud computing architecture avoids such investments. The cost saving advantage of cloud computing can be experienced over a period of time with more users signing up. It can be considered as an economical model for managing overhead cost as software licenses, data storage and infrastructure upgrades. In addition,

the healthcare IT vendor can place the infrastructure in any part of the world, including geographies such as India, Africa, Brazil and China, where overheads are lesser. This in turn would benefit the hospitals, operationally and economically and is an ideal model for business continuity and disaster recovery.

- The hospitals would be in greater control over the service provided by the vendor. They would have greater freedom and flexibility to end the contract whenever they want if the quality parameters are not met.
- One of the most significant benefits of cloud computing is that it provides a scalable architecture for the hospitals to continuously add applications which may run on the cloud architecture and as well expand in terms of infrastructure.
- Cloud computing costs are dependent on the usage of IT resources by hospitals. The service provider can provide a detailed cost break up and this can help hospitals control costs.

Clouds Which are Most Suited for Healthcare Organisations

There is lot of importance given to patient data security and privacy across Europe. Considering this aspect, Private Cloud would be most suited for hospitals, which are based on internal networks. Using a private cloud the hospitals can maintain a secure computing environment for its doctors, nurses, pharmacist, radiologist and patients. The main advantage of being on a private cloud is that the hospital has a greater control on the overall information processing systems and processes. Private clouds are most suited for large hospitals and large hospital groups, which would gain from the flexible computing environment, quality of service and advanced security.



The majority of medium sized and large hospitals would prefer a combination of in-house and external IT resources. Thus Hybrid Cloud would be the most preferred type of cloud among such organisations. Since the hybrid cloud is a mix of private and public clouds, it would allow a healthcare IT manager to switch applications back and forth between the clouds. Hybrid clouds provide a high level of interoperability and meet the dynamic data requirements of hospitals.

Issues and Challenges of Cloud Computing in Healthcare

One of the major concerns over cloud computing in healthcare is jurisdiction and access to patient data. Firstly, the companies providing cloud computing services to a European hospital may have their servers located in another part of the world.

This could raise issues in applying European data protection laws to the country in which the server resides. Even though there are regulations such as safe harbour programmes, to comply with, it is not considered as a possible solution. In addition, there should be a clear definition of the set of users across the cloud who could access patient data. Currently, there are no clearly defined views or laws for sharing patient data across the clouds and access to patient data in a cloud architecture. This is a key challenge that must be overcome in order to create a wider level of adoption among European hospitals.

IT vendors, who provide cloud computing services, must ensure maximum security for sensitive patient data and also guarantee this to hospitals and IT managers. To address the highly dynamic healthcare data environment and constantly changing IT requirements, cloud architecture is extremely appropriate. However, these services should not jeopardise patient data security. It is also the responsibility of the hospital that adopts the cloud computing services, to assure the patients and regulators that patient data is protected and all processes comply with European privacy laws.

In addition to the above, another major challenge for cloud computing service providers is the accountability of patient information and the need to constantly audit all processes and systems, to ensure their compliance with the European Laws and Regulations.

Constant Evolution

Cloud computing capabilities have evolved over the last couple of years in areas such as application programming interface (API), computing, storage etc. The capabilities of cloud computing service offerings have also developed along these lines. However, infrastructure capabilities still have a long way to go. Currently there no clear cut level of standards for cloud computing offering and this is another hurdle which has to be overcome.

Healthcare IT vendors need to evolve and introduce cloud computing infrastructure as it would prove a cost efficient model for automating hospitals, managing real-time workload, reducing IT complexity and introducing innovative solutions and updates. The versatile architecture makes it possible to launch web 2.0 applications quickly and also upgrade healthcare IT applications easily, when required. With hospitals across Europe cutting costs, there is a clear need for innovative solutions,

which can be easily implemented and maintained. A cloud computing architecture can help healthcare IT vendors prioritise innovation of their applications, while reducing the implementation time of healthcare IT solutions. The automated framework of cloud computing would provide increasingly cheaper and innovative services.

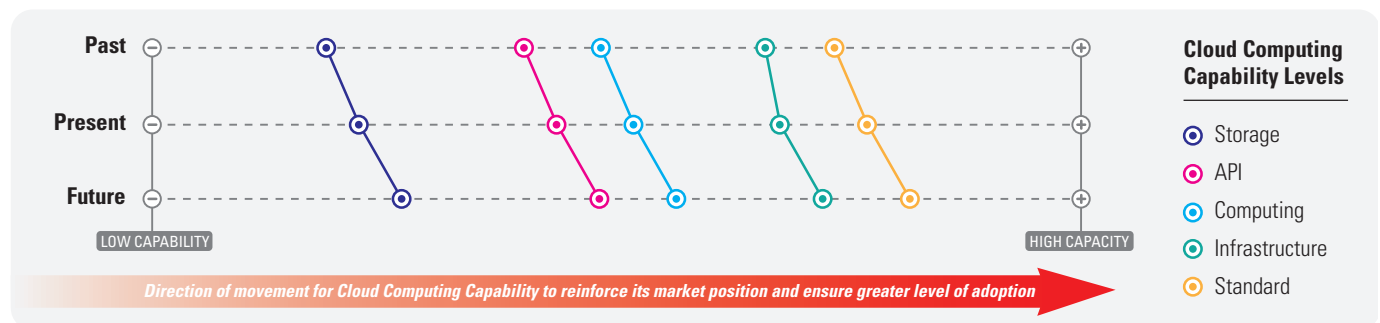
Recently, Microsoft Corporation, with their Health Vault, has partnered with Kaiser Permanente in the United States. Google Health has partnered with The Cleveland Clinic to provide cloud computing services.

The adoption of cloud computing would help standardise the infrastructure for healthcare IT solutions, in what is now a highly heterogeneous environment. In addition, vendors get to specify the kind of infrastructure and leverage the implementation to its best. Since a lot of hardware servers are virtualised, the installation and maintenance costs are tremendously reduced. Vendors could also offer the hospitals, the option of pay by use of resources in CPU hours, or gigabits consumed and transferred, which would be easily affordable.

Given its pay-per-use foundations, cloud computing helps hospitals hesitant to sign long-term healthcare IT services contracts. At the same time, the clouds can support almost any type of healthcare IT application which a hospital might want to implement as long as it does not require any specialised or customised hardware. Applications such Electronic Medical Records (EMR), Computerised Physician Order Entry (CPOE) systems, e-prescribing solutions, financial and administrative systems etc., can run on cloud architecture.

In a highly competitive healthcare market, it is important to healthcare IT vendors and hospitals to adopt innovative solutions, in order to reduce cost and increase efficiency. Cloud computing would help in enhancing capabilities and provide tremendous value, through efficient use of software and hardware investments. This kind of infrastructure drives profitability by improving resources utilisation and increasing their scalability. Though only a few companies such as Microsoft and Google are now dabbling in cloud computing technology, many other players are expected to join the bandwagon, given its long-term potential.

In brief, there is tremendous potential for cloud computing infrastructure in the healthcare industry and it could be an ideal tool to leverage computing power at low cost.



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BIOMEDICAL ENGINEERING AND HEALTHCARE IT

Visions For Sustainable Cooperation

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Both regulatory and business requirements are driving biomedical engineering (BME) and IT executives to re-think their way of cooperation. Based on our experiences at acute treatment hospitals in southern Germany, we present a vision of an internal medical technology service provider that provides high-quality, cost-effective and sustainable solutions for users and patients. The cornerstones of this are new job roles, an integrated helpdesk organisation, and finding the right balance between standardising processes and maintaining specialist structures.

Legislation Requires Cooperation, Medical And Economic Needs Make It A Must-Have

Typical database applications like cardiac information systems have long been used without taking account of German regulatory reforms, which could lead the manufacturer to classify it as a medical product. As a result, such an application would have to comply with regulations set up for products like a patient monitoring system in an ICU. From the IT perspective, this is wholly new terrain. If a software application is classified as a medical product (MP), only vendor-certified patches can be applied. A non-certified patch would transform the hospital into a vendor, accompanied by the inheritance of liability.

In addition, the DIN ISO 80001 standard requires hospital management to establish a risk management system for an MP. This constitutes additional compliance challenges. For example, an ICU application tracking vital data and medication relies on a conventional IT network. Although the latter is designed with inbuilt industry-standard redundancies, there is no guarantee of 100% uptime. Should the network be down, DIN ISO 80001 requires the presence of a risk coordinator. At the moment, this opens up a glaring question: who will fit such a role, competently?

Rethinking Paradigms for BME and IT

Unfortunately, regulations rarely motivate people. However, it is becoming essential to rethink the way in which BME and IT co-operate: medical services in hospitals require it, and the hospital business needs it, too. Given below is a real-life example from acute treatment hospitals at Göppingen, which underlines the need to think proactively.

The implementation of a digital ECG MP (and its accompanying IT application) demonstrated that the methodology of project-based cooperation, practiced successfully over years, no

longer sufficed to create sustainable solutions. Intensive research failed to identify a solution which could be integrated with the existing cardiology information system, with reasonable effort. Usually, vendors offer proprietary applications with their own databases, different user interfaces, a separate DICOM worklist server, and additional HL7 interfaces.

Such an approach in the various fields of MP, from anaesthesiology to surgery, would result in a zoo of technologies. Sooner or later, this would collapse under its own weight. On the one hand, users would face a variety of disparate applications in even a single domain such as cardiology - an evident obstacle to efficiency. On the other hand, BME and IT would also need to invest significantly more and boost staffing for the ever-growing range of IT systems and MP.

To compensate for the lack of industry standards and the inability to currently integrate MP and applications across different vendors, BME and IT executives need to think holistically and create overarching hospital-wide concepts for MP and IT applications. This requires conceiving innovative technological architectures, product catalogues, standard digital archiving procedures, and standardised technical anti-failure plans. Such an approach is not feasible in traditional project-based cooperation. Instead, it requires BME and IT to join forces and interact, both mutually and with users, in imaginative new ways.

The Visionary Processes: Taking Care of Both BME and IT

To take a deeper look at cooperation between BME and IT, a good starting point consists of the typical problems faced by their users. In the most basic of scenarios, there are (and always will be) 'classical' cases, where the issue is clearly either an IT or BME case (applicable to all three phases of operation, plan, build, and run). For example, a defective drug pump is easily identified by the nurse as a BM problem, with no attention sought from IT specialists. In the IT scenario, a

user who has forgotten his password for a hospital information system (HIS), or one facing problems with a new SAN storage component, would call IT support, with no requirement for a BM engineer.

However, our experiences at Göppingen reveal a wide range of problems faced by users, which cannot be exclusively mapped to either the BME or IT domains.

For example, when a physician seeks support to retrieve digital ECG records missing from the HIS, it appears at first to be an IT problem. On the other hand, there is a long chain of information processing behind an HIS, any of whose links might provoke the missing ECG data.

At the start of the chain, an ECG is recorded by an MP. This might have failed to transmit the data. Or the fault may lie in the receiving database, a client/server application (to make things worse, this could be a MP or 'just' a regular IT application, depending on law and the vendor declaration). From here, a HL7-based communication server transports the ECG documents to the HIS, clearly part of the IT domain, and again one which may have failed. So then, who should respond to the physician's problem? BM or IT? Or both?

Another example: an operating theatre surgeon's requirement for technologies to capture and save digital pictures in a patient's record, and then used by the transcription department in the surgeon's letter. Here again lies a chain of information systems, starting with the picture-taking equipment, clearly a medical product, with the pictures then transferred to the HIS by HL7 interfaces to the word processors of the transcription staff. So who should take care of this request? BM, IT, or both?

The Göppingen environment has yielded numerous such situations. Their incidence is expected to rise after the introduction of new MPs equipped with digital interfaces, which require integration with the HIS or other IT applications, in order to benefit from lean workflows and high quality.

Our answer to such a challenge is to simplify the working environment for medical staff by means of a single point of contact for users. This will act as a dispatcher, be it for planning or running systems, to find out what know-how is needed to service a request, and co-ordinate the efforts of all involved in resolving the challenge.

In practice, a single contact point has two major consequences:

Firstly, as far as planning for MPs and IT systems is concerned, all requirements for new technology or changes to existing products and applications should be the responsibility of one job position – proactively supporting standardisation, integration, and sustainable technologies.

The second consequence is related to the run phase. This concerns the implementation of a joint BME and IT helpdesk to receive and dispatch responses to all user problems, in-

cluding assigning tasks to BM and/or IT specialists and collecting their input.

In terms of the case mentioned above, on missing ECG records in the HIS, the helpdesk would firstly engage a business analyst to track the system disrupting the information flow. Should an MP be found to have caused the problem, a BM engineer will be assigned. On the other hand, if a Windows-based interface service has stopped working correctly, an IT administrator would take care of the issue.

“It is becoming essential to rethink the way in which BME and IT co-operate”

While it is clearly necessary to integrate the work of BME and IT, one needs to account for the sometimes-fundamental (and potentially-irreconcilable) differences between them. These may make it impossible to educate helpdesk staff to efficiently serve as a single contact point and make an early identification of a given problem, as being exclusively or principally in the BME or IT domain.

Our approach to this, to reconcile integration and differentiation, is three-fold:

- First: A direct channel for users having an IT problem, such as a dedicated telephone number or email address, or even dedicated staff in smaller organisations.
- Second: The same scenario for obvious BME issues.
- Third, and most importantly, is the need for a channel to take care for all issues which are not clearly assignable to either BME or IT.

For this, hotline workers with a sound overview of the inter-operation of MP and IT applications will be required. Such personnel would analyse the roots of a problem and act as a dispatcher for their co-workers. A closer look at some of the issues and challenges in such a case are discussed later.

The Structural Vision: Merging BME and IT

Building on the workflows above allows us to outline an organisational structure for our vision. A well-known approach for thinking hospital-wide involve interdisciplinary but more-or-less loose committees that coordinate IT, BME, and medical departments. In turn, they also contribute to homogenize products and vendors. However, they are fundamentally ad-hoc in nature. Although suitable to take decisions, they have proven to be increasingly limited in inventing (and re-inventing) long-term concepts and approaches.

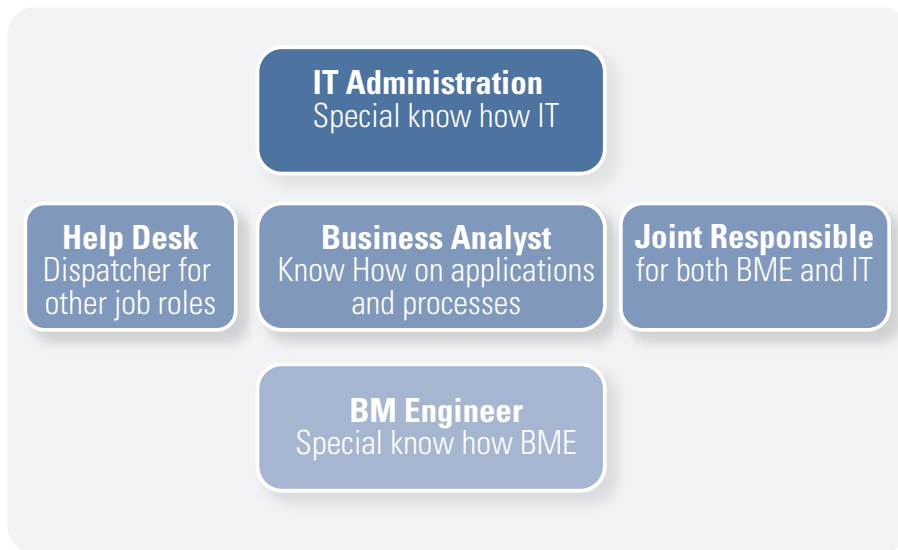


Figure 1: BME and IT need five job roles.

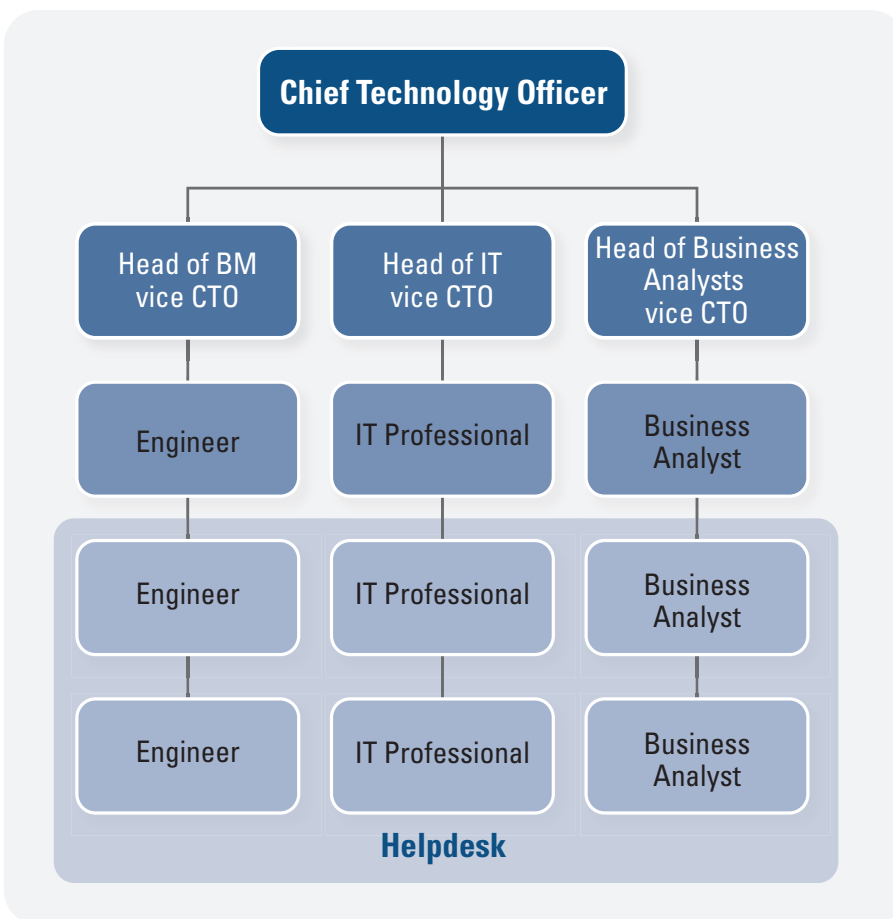


Figure 2: Organisational chart of a future joint BME and IT organisation

For such continuity, structural changes are necessary. In our vision, the quintessential change would lie in the form of five job roles which need to be lived by BME and IT (Figure 1).

Starting with the planning phase for MP, applications, and infrastructure, there needs to be an executive with an overarching joint responsibility for both BME and IT who could be called a Chief Technology Officer (CTO). CTOs are, of course, common in large businesses, with the ultimate responsibility for a company's technological assets and operations.

Furthermore, business analysts are of major importance for all three phases of planning, building, and running. They know business processes well and are experienced with the available functions offered by MP or IT applications. Business analysts specify needs for new functionalities not yet available in the hospital, map users' requirements to existing functionalities, and are also crucial for implementing solutions as project leaders or application specialists.

The building phase of course requires classical BME and IT roles. BM engineers and IT administrators provide the core, specialised know-how of the two fields.

Last but not least is the need for a helpdesk function within the merged BME and IT organisation. Following the helpdesk process described above, such support functions make use of all the job roles mentioned previously.

For SME-size hospitals whose merged BME and IT teams have 25 or fewer employees, a matrix organisation for the helpdesk would be a flexible way to include the necessary know-how from all three domains: BME, IT, and business analysis.

An organisational chart incorporating the five job roles above is provided in Figure 2. All functions are integrated into one line of reporting. Naturally, this can create the sensitive question: who to appoint CTO.

One obvious approach is to make either the former IT team leader as CTO and the former BME head as vice CTO or vice versa.

This principle of deputising dovetails well into the joint responsibility for BME and IT since vice CTOs cannot act for their domains only, but must always take account of their responsibility for the other field, too.

The Essentials: A Strong BME and IT Governance

Processes and organisation charts will be effective only if they are supported by suitable decision structures. The latter would make it clear who decides on BME and IT questions, purchases, and projects. Following P. Weill ('Don't Just Lead, Govern: How Top-Performing Firm Govern IT', MIS Quarterly Executive, Vol. 3, No. 1, pp. 1 – 17, 2004), we propose the governance model depicted in Figure 3.

Decisions are categorised into three subjects. First, on principles such as a catalogue of preferred technologies or access rights to users of different applications. Second, hospitals need to choose concrete medical products and IT applications from the corresponding market, e.g. a X-ray modality or an IT application for the laboratory. Finally, somebody has to prioritise investments within the given budget frame.

Decision	BME and IT principles, architecture and infrastructure	Medical products, business applications	BME and IT investments and prioritisation
Decision Maker	> General Manager > CTO	> Heads of Medical and Business Department > CTO	> General Manager > CTO

Figure 3: BME and IT Governance

Following Weill's proven and highly-regarded approach, the decisions should generally be made by two decision makers. Starting with principles, this should be the sovereignty of the CTO, together with the general management. MP and IT applications should be chosen by the person responsible on the business or medical side of the subject (typically the head of a department) and CTO. Again, prioritisation of investments should be done by general management and the CTO.

The experiences in Göppingen in the recent years strongly support this governance model for the IT sector.

The Most Important Factor: Know-How of BME and IT Professionals

Finally, processes, structures and governance are only the foundations for the most important resource in the BME and IT business: the employees. In the medieval era, there were universal scholars, proficient in many domains of knowledge like astronomy, and mathematics, and medicine. Without a

doubt, this is no longer feasible due to the immense and unremitting growth in know-how in each domain.

Our vision therefore contains no universal BM and IT employee but one who is open-minded regarding both domains – regardless of origin. Such persons would be aware about the intersection of BME and IT and strive to constantly improve their knowledge about such intersections. In turn, this would boost their capacity as analysts and their ability to dispatch support calls quickly. Utilizing another image, we currently see BM engineers with the Leatherman tool on their belt and the IT people with USB sticks in their hands. Our visionary employee would use the latest Swiss army knife, incorporating both knife and USB memory, more ingenious than either knife or USB stick alone, but well aware of what can be done with the knife. The question arises: how is such a 'Swiss USB knife' being built. In other words, where are employees being educated in such a way. Starting with academia, our vision shows computer science programmes including elements of BME or vice versa are already available today in fields such as mechatronics. These joint programmes could build valuable know-how for young experts.

In practice, teams are not built from scratch but people need to adapt their knowledge to a changing environment. We believe that employees are able to do so, for example, by sitting in on the other team's job. There are enough examples of IT employees temporarily join a BM expert to work on concrete issues and vice versa. This is an opportunity with low hurdles, but one which nevertheless requires stamina. Employees will also strengthen their intersection know-how by attending formal courses, for example IT experts studying FDA approval procedures or topics such as galvanic isolation, while BM engineers do the same with regard to terminal services or IT systems interoperability.

Empowering the single point of contact for the customer, in the shape of the helpdesk, is a major element for making the Swiss USB knife a reality. Visionary structures and processes will be the third way of making it real. Ideally, there would be special hotline teams for BME problems and IT issues. All further inquiries, not directly assignable to one of these two domains, would entail the two teams working closely together in one larger room to enable both formal and informal contacts. A less futuristic approach could be a 'red telephone' in the BME and IT support offices to speed up analysis of user problems and reach solutions on the inevitable increase likely in intersection problems.

The Way Ahead

The vision introduced above leaves plenty of room for implementation details. It is doubtful whether there are universally fitting 'best practice' answers to these details, or 'best fit' approaches for each hospital to decide upon. However, decisions will begin to look like. An intensive discussion on the convergence of BME and IT will already prove beneficial to any hospital, its BME and IT teams, and users.

TRANSFORMING CLINICIANS' WORKFLOW

The Case for Mobile Point of Care

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The Košice Children's Teaching Hospital is widely regarded as a centre of excellence for Eastern and Central Slovakia. Children with serious and debilitating conditions such as leukaemia, cancer and malignant tumours receive first-class healthcare, delivered through extensive and detailed treatment programmes. The hospital was keen to explore whether a mobile point of care solution (MPoC) and tablet PCs, used in the Oncology department, would improve workflow and whether this would also influence levels of care.

The conclusions were straightforward: MPoC supports clinician decision making and reduces scope for error by providing accurate information on medication interactions

Unexpected Benefits: Reduction in Stay

The pilot at the hospital substantially reduced some workflow areas, enabling physicians to spend more time with patients and improve the quality of care. Significantly, this also led to a reduction in the length of time a patient stayed in hospital. Though this was not the aim of the pilot it revealed how the benefits of healthcare IT, if applied thoughtfully and with clear objectives, can cascade through an organisation.

A wireless network, five tablet PCs, two server-based applications and a tablet PC-based application replaced the traditional paper-based processes used for haematology test results, medication interaction and psychological testing. The tablet PCs were given to four paediatric oncologists and a paediatric psychologist.

The mobile point of care pilot began in April 2007 with the implementation of a Cisco wireless network, the selection of end-user devices and the commissioning of the system.

Deployment in Less Than one Week

The implementation and commissioning of the Wi-Fi network was achieved in a remarkably short time – approximately one week. This also included the installation of 15 bedside wireless internet access points, one for each of the beds in the Oncology department.

It was recognised that the Internet access points could be used by the patients when the MPoC trial was completed and regardless of the results.

Targeted at Three Areas

The overarching aim of the implementation was to determine whether the MPoC solution would improve workflows in three areas:

- **Haematology test results:** The effect of medication to the blood is central to the treatment of patients and they are subject to constant haematology testing. The results of these tests are used by the physician to assess whether the medication has been successful or not, enabling them to modify the medication in response to the progress of the patient.
- **Medication interaction:** The physician has to monitor the potential danger of a negative reaction between the various medications being prescribed to the patient as part of the oncology treatment or the effect if the patient suffers from other conditions, for example, asthma.
- **Psychological testing:** The psychologist monitors the psychology of patients undergoing oncology treatment. Each new patient undergoes a set of exams examining four areas of the psyche: intelligence, personality, emotion and psychomotor (movement of muscular activity associated with mental processes).

The pilot involved five physicians; four paediatric oncologists and one paediatric psychologist. The paediatric oncologists were each given a Fujitsu Siemens Computers' LIFEBOOK T4215* tablet PC powered by Intel® Core™ 2 processors. The paediatric psychologist was given a Fujitsu Siemens Comput-

Mobile Solutions In Europe HITM Analysis

In spite of an increase in the computerisation of Europe's healthcare, deployments in wireless technology to enhance quality and efficiency remain scattered. Nevertheless, the situation is changing, largely due to the growing popularity of handheld devices and pressure from patients, according to new analysis from researchers Frost & Sullivan. In a recent report ('Mobile/Wireless Healthcare Technologies in Europe'), analysts estimate 2008 revenues from mobile/wireless technologies in Europe at 1.48 billion USD. However, the market is growing at a dizzying pace and is forecast to reach 6.8 billion USD in 2015.

ers' LIFEBOOK P1610* tablet PC also powered by the Intel® Core™ 2 processor. Cisco wireless network was deployed.

Three applications were made available to the tablet PCs:

- A server-based application enabling the paediatricians to remotely access and examine the latest haematology test results;
- A server-based application allowing the paediatricians to examine the potential interactions between medications prescribed to patients, and
- A PC-based application enabling the psychologist to carry out four different types of psychology tests and calculate the results of those tests.

Time Savings and More

The MPoC pilot led to 2.5 hour saving each day for the paediatric oncologists, resulting in a nine per cent productivity increase, and a saving of one hour each week for the psychologist, resulting in a two per cent productivity increase.

However, the deeper value of the MPoC pilot was also evident in increased patient safety, greater patient and staff satisfaction, and improved quality of care. For example, keeping parents informed about the condition and treatment of their children is an important psychological factor. The clinicians not only had more time to spend with the patients but they were also able to provide more accurate information to parents. This enhanced quality of care led to a reduction in the average length of stay from seven days to 6.5 days.

Economic Factors

From an economic perspective, the MPoC pilot proved a Net Present Value of EUR 44,145 1, a breakeven within six months and a return on investment of 629 per cent. While the NPV may be relatively low, the benefits must be viewed in the context of much lower wage and cost structures in Slovakia compared to Western European countries.

In turn, by using the same measures the MPoC start up costs could be viewed as relatively high. However, the MPoC pilot established that even greater value could be gained by loading more applications onto the tablet PCs and utilising the unused wireless network capacity.

The pilot demonstrably revealed that MPoC solutions can have a positive and far-reaching role in improving clinician workflows which in turn not only modernises the delivery of healthcare but enhances the quality of care. The MPoC pilot also clearly revealed how healthcare organisations can establish benchmarks, evaluate the value of their IT investments and gain a clear understanding of how technology can help improve the delivery of care.

System

- Mobile devices to support data capture and access from a patient's bedside or trolley;

- Mobile infrastructure such as a secured, wireless LAN network. Many hospitals are likely to seek enterprise-class wireless solutions, with uniform coverage/signal strength and high bandwidth. The aim would be to provide a single managed platform which hosts a full range of services (3G cellular, Wi-Fi, medical telemetry, along with a wide range of mission- and life-critical wireless applications) and is delivered to a diverse range of wireless devices, and
- Mobile applications which support access to patient data to authorised personnel, throughout the hospital and beyond.

In the medium-term, one of the key trends likely to shape the MPoC industry will be intelligent, decision support for medical information delivered via mobile devices.

Advocacy Groups Step In

MPoC has received a powerful boost in the shape of mHealth Initiative (mHI), a Massachusetts, US-based non-profit advocacy group, supported by the Medical Records Institute (MRI), and open to vendors, groups and individuals with an interest in the field.

The mHealth Initiative is headed by MRI Vice President Claudia Tessier, formerly with the Mobile Health Care Alliance (MoHCA). Through mHI, she noted, "we will create a roadmap for the new health ecosystem based on mDevices, new software, new interoperability solutions and secure wireless transmission."

Designing Pilot projects: Tips and Tricks

According to interviews conducted with MPoC advocates, benchmarks to assess the value of a mobile system would consist essentially of both quantitative and qualitative factors.

Quantitative factors would consist, for example, of:

- Improvements in the accuracy of EMR data;
- Reduced in clinical data latency (time between capturing vital sign data and entering it into the EMR);
- Increase in point of care charting beyond automated vitals sign acquisition and reduction in vital signs documentation time;
- Reduction in the number of data items that needed to be transcribed and a consequent reduction in transcription error
- Reduction in number of clinician logins per shift, and
- Time savings per shift.

Qualitative advantages would principally concern nursing satisfaction:

- Enhanced patient interaction;
- Lightness and portability of equipment;
- Easier transit/passage in built-up or otherwise-constrained areas, and
- Reduction in administrative tasks such as login and note-taking or compiling and accessing documentation.

HEALTH IT STIMULUS

Obama's Dream Or Nightmare

AUTHOR

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University Hospital Center
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In two previous issues, HIT presented an overview of plans by President Barack Obama concerning stimulation of health IT implementation in the US. To recap, the Obama vision relates to governmental support for IT adoption in health sector, and is worth some 15 billion Euros until the year 2013.

The quintessence of the US President's approach to this subject can be obtained in his statement on January 8, 2009: "To improve the quality of our healthcare while lowering its cost, we will make the immediate investments necessary to ensure that within five years, all of America's medical records are computerized."

Principal Challenges

Current developments show that the key challenges related to the US health system reform concern its very foundations. The American public is clearly concerned about the huge additional financial burden of offering healthcare to some 40 million Americans without insurance or governmental health coverage (apart from the very limited services provided by Medicaid or Medicare).

Healthcare reform proponents, on their part, are directly targeting IT as a catch-all panacea for such concerns: health IT, in their view, should bring control to the whole healthcare system. We have no right to think that the then-Senator Obama's statement made back in 2005 at the Pritzker School of Medicine commencement is no more valid today. On that occasion, he emphasised, "too much care is still provided with a pen and paper."

To summarise: there are simply no means to efficiently control a huge system which affects 300 million people, using pen and paper! Poor control results in lower quality of services and increased costs. These drawbacks are substantially higher than the cost of stimulating healthcare IT adoption, and even the costs of broadening healthcare coverage!

This is the essence of the arguments which Obama and his team are now using to try to persuade and win over opponents of his proposed reforms.

HITM Analysis

In spite of healthcare reform being Obama's top domestic priority, controversies about its cost to taxpayers and its impact on the US budget deficit have cut into the President's approval ratings. Public disapproval of the President's handling of healthcare has leaped to 52 percent, according to an Associated Press-GfK poll in early September.

Three reform bills have been approved by committees in the lower House of Representatives, but no Republicans have backed them. At the time of going to press, progress in the Senate on the reforms has been completely stalled.

Another controversy is the near 'genetic' disagreement that Americans have with governmental interventions in business, especially if it is paid from the taxpayers' purse. Given this, the idea behind the stimulation package was set somewhere half-way, and seems to be acceptable to the broader US public: that there will be no direct stimulation to the industry. Instead healthcare service providers (from GPs and clinics to hospitals) are the targets to be stimulated to adopt IT. The American public, it is believed, can digest such governmental interference because the money goes "to my physician or to the ward in my hospital and not to some IT company, which has enough profit anyhow"!

What are (and will be) the most important lessons for Europe from such a healthcare IT stimulation exercise in the US?

1. The US approach seems to be sounder and more efficient compared to other possible models for development in health IT: A strict market approach, direct investments in development projects (e.g. FP7 or EAHC), insurance company based developments or governmental ones.
2. Planned computerization of medical records is a condition which is necessary, but not sufficient. What is sought is integration, so as to avoid millions of "islands of automation". The stimulus bill here is very clear, as noted in section 300 (2): The term 'enterprise integration' means the electronic linkage of healthcare providers, health plans, the government, and other interested parties, to enable the electronic exchange and use of health information among all the components in the healthcare infrastructure in accordance with applicable law, and such term includes related application protocols and other related standards.
3. Threat for Europe. The adoption stimulation for healthcare providers will anyhow eventually flow into the purse of US IT manufacturers, primarily in the field of application software. This new challenge of a strengthened presence by US manufacturers in EU health IT markets can, however, be converted into an opportunity: European companies have to enter the US market more aggressively, primarily taking care of compliance issues and thus piggy-backing themselves on the Obama strategic initiative.

HEALTHCARE IN THE UNITED KINGDOM

AUTHOR

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The United Kingdom (UK) is comprised of England, Scotland, Wales and Northern Ireland and is situated within the British Isles. A constitutional monarchy governed from Parliaments in London and Edinburgh, and Assemblies in Cardiff and Belfast, the UK is a stable and mature democracy. Indeed, the current constitutional monarch Queen Elizabeth II, traces her direct descent from the last successful invasion of England in 1066.

The national Parliament at Westminster has been controlled since 1997 by a Labour Party administration, and the Prime Minister changed to Gordon Brown in 2006. A sign of the political stability is that Mr. Brown is just the fourth Premier since 1979.

The Labour administration has sought to increase funding from taxation for the welfare state, and in particular has funded significant increases in healthcare to bring the UK healthcare spend to the European national average by 2010.

Healthcare in England reports to the national Parliament at Westminster via the Secretary of State for Health (currently the Rt. Hon Alan Johnson MP), while for Scotland it reports to the local Parliament and in Wales to the Assembly. Social care is funded and managed through the local authority system of Councils.

Population, Demography and Languages

In 2006, the total UK population topped 60 million, with 50.7 m living in England, 5.1 m in Scotland, 2.9 m in Wales and

1.7 m in Northern Ireland. The average age was 39.0 years, having risen from 34.1 in 1971. Today, one in five in the UK is aged under 16, and one in six is over the age of 65. The population has grown 8% in the last 35 years.

Death rates have continuously fallen in the UK, and in 2006 502,599 deaths were registered with rates per million of the population being 7,123 for men and 4,989 for women. In 1900 around half of all deaths were for people aged 45 or under, and by 2006 this had been reduced to 4%. Life expectancy at birth is now 81 for women and 76 for men. At age 65, male life expectancy is now 81, and female life expectancy 84.

English is the main native language, with Welsh being a second official language in Wales. However, the UK is a highly cosmopolitan country. In London, some 300 languages are spoken and there are some 50 non-indigenous communities with a population exceeding 10,000. Around 40% of London's population are from an ethnic minority group, and nearly 30% was born outside the UK.

The Economy

The economy is strong, with a gross domestic product of GBP 1.209 billion (1.522 billion euros) in 2005 and an annual GDP growth in 2007 of 3.1%. This makes the UK the fifth largest economy in the world on the basis of market exchange rates.

In 2006 average income in England was GBP 34,197 or 43,064 euros (within a range from London at GBP 46,228 to GBP

27,405 in the North East). However, first home prices start from 2.8 times average income in the North East but 4.8 times average income in London.

The employment rate in 2006 was 74.9%, and the unemployment rate 5.3%. 819,300 unemployment benefit claimants were chasing 678,600 vacancies in May 2008. Inflation for consumer prices currently stands at 3.3%.

Public Health

In 2005, 239,000 new cases of malignant cancer were diagnosed in England, more than half of which were breast, lung, colorectal and prostate. One in three of the UK population will develop cancer during their lives, and one in four will die from it. In 2005 126,600 people died from cancer in England. Five year survival rates range from 3-16% for cancers of the pancreas, lung, oesophagus and brain, 50% for colon cancer and 81% for breast cancer. Survival rates for most cancers improved during the 1990s.

Regarding health risk factors, 24% of adults in the UK smoked cigarettes in 1974. The Government aims to reduce this to 21% by 2010. 35% of adults exceed the Government safe drinking guidelines, with 72% of men and 57% of women having consumed an alcoholic drink within the past week in 2005.

Drinking is higher in younger adults, with 42% of men aged 16-24 having exceeded the safe drinking limit on at least one day during the previous week.

Just 14% of men and 27% of women consume the recommended five portions of fruit or vegetables a day, and 67% of men and 58% of women are overweight.

Sexually transmitted diseases have significantly increased, with there being a 5% rise of Chlamydia diagnoses at sexual health clinics between 2004 and 2005. Some 63,500 people in the UK live with HIV infection with 2005 showing a record increase of 7,450 new cases.

The National Health Service (NHS)

In the United Kingdom, all British subjects are entitled to access healthcare free at the point of delivery from the National Health Service (NHS). Founded in 1948 and this year celebrating its 60th anniversary, the NHS is a unique national institution.

The NHS is the largest employer in Europe with just over 1.3 million staff. There were in 2005, 679,157 professionally qualified clinical staff in the NHS, including 122,345 doctors, 404,161 nurses and midwives and 18,117 ambulance support staff. There were 39,391 managers and senior managers. Pay accounts for around 65% of the NHS budget.

Focussing on England, healthcare is funded by taxation at GBP 92.2 billion (116.1 billion euros) for 2007. Some 83% of this is controlled by the 152 Primary Care Trusts (PCTs). PCTs are responsible for managing through contracts with general practitioners and secondary care organisations the healthcare needs of their local resident populations. Currently, PCTs also have some directly managed community services.

General practitioners are self-employed, working under national or local contractual arrangements to provide primary care to local patients registered with them.

Other primary care providers, in part funded by the NHS through contracts, include community pharmacists, opticians and dentists. Patients of working age generally make co-payments to access these non-medical clinical professionals. In 2003, there were 10,683 general practices in the UK

with 39,920 individual general practitioners. The average list size per practice was 5,891 in England, 5,885 in Wales and 5,095 in Scotland. In 2005, 87% of general practitioner consultations took place in the surgery, 9% over the telephone and 4% in the patient's home.

“The majority of all secondary care is provided by NHS organisations”

Though there is a small private healthcare insurance and provision sector in the UK, the majority of all secondary care is provided by NHS organisations.

In England these are termed NHS Trusts or NHS Foundation Trusts, the latter having in creasing earned independence from central control, this being achieved on the basis of sustained good financial management and good quality ratings from the regulator.

The 570 Trusts tend to divide into those specialising in acute secondary care and others for mental health services. The intent is that over the coming few years all NHS Trusts migrate to becoming NHS Foundation Trusts. The NHS runs a number of central programmes to support local delivery. These include NHS Direct, a unique national telephone helpline open 24 hours a day which can offer immediate nurse-led advice to callers, or arrange for a doctor to call the patient.

This helpline provides detailed information and advice to callers, including details of local service access arrangements, advice on self care and on those cases where the patient needs to access more immediate care.

The NHS has invested heavily in quality in the last decade, and in England all healthcare services are regulated by the Healthcare Commission. This institution rates NHS organisations on an annual ba-

sis, registers private healthcare establishments and conducts investigations into service failures.

It is planned that in 2009 this organisation will merge with the comparative social care inspectorate and form the Care Quality Commission.

Other central quality initiatives include the National Patient Safety Agency (NPSA), which aims to support the NHS reduce the number and significance of clinical errors.

The National Institute for Health and Clinical Excellence (NICE) provides advice on good health and the prevention and treatment of ill health. Taking a thorough and robust evidence-based approach, NICE provides guidance on health technologies and clinical practice, taking into account both proven benefits to patients and cost effectiveness.

Managing the Healthcare System

In the UK, healthcare managers come from a variety of professional backgrounds. As far as NHS chief executives (CEOs) are concerned, a minority will have clinical backgrounds (mostly nursing) while most will be from general management or finance backgrounds. CEO pay for local healthcare organisations has increased 70% in the past decade.

The average pay for acute hospitals was GBP 112,500 (141,670 euros) with the top paid hospital CEO earning GBP 215,000 (270,000 euros). CEO earnings average around GBP 92,500 (116,000 euros).

With managers coming from a variety of professional backgrounds there are different professional development and career options open to aspiring healthcare leaders.

The uni-professional healthcare management organisation is the Institute of Healthcare Management (IHM), which was founded in 1902. With around 6,000 members IHM works to develop healthcare managers in the UK through training, accreditation schemes and a code of managerial ethics.

HEALTHCARE IN THE UNITED KINGDOM

An Overview

Population (million)	61.4	mid-2008
Live births/1,000 pop	12.7	2007
Deaths/1,000 pop.	9.9 (males) and 10.6 (females)	2003
Life expectancy (years)	79.1 (total): 77.2 (male) and 81.5 (female)	Average 2005-2007
GDP (billion EUR)	1,816.1	2008
Total healthcare expenditure (% GDP)	9.4%	2006
Total healthcare expenditure per capita (GBP)	2,166	2007-2008 (est.)
% of healthcare system financed by public funds	87%	2005
Number of CT scanners (per million inhabitants)	7.6	2006
Number of MRIs(per million inhabitants)	8.2	2007
Number of acute care hospital beds (per 1,000 inhabitants)	2.6	2007
Length of stay (average in days)	4.4	2005
Number of practising physicians (per 1,000 inhabitants)	2.48	2007
Number of practising nurses (per 1,000 inhabitants)	10.02	2007
Number of Internet users	48.76 million (79.8% of population)	Dec. 2008
Percentage of households with broadband access	13.96 million (23.1% of population)	March 2007
Percentage of individuals using the Internet for interacting with public authorities	18.8%	2003

Source: British Medical Journal, Compendium of Health Statistics, OECD, Eurostat, Eurobarometer, WHO, National Statistics Online, Nielsen and International Telecommunications Union (for Internet statistics).



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HEALTHCARE IT IN BRITAIN

NHS National Programme for IT (NPfIT)

Healthcare IT in Britain is today symbolised, rather starkly, by the troubled NHS National Programme for IT (NPfIT). This ambitious initiative was meant to catapult Britain into pole position in the global e-health readiness league. It sought to link more than 30,000 GPs to nearly 300 hospitals, provide comprehensive e-prescribing and develop a centralised medical records system for 50 million patients. The NPfIT's initial budget of GBP 2.3 billion over three years was officially revised to GBP 12.4 billion over 10 years. Some sources claim that spending will eventually pass GBP 20 billion. As a result, it has also been billed as the world's largest civilian IT programme.

Volleys of Criticism

The NPfIT programme was launched in 2002 and originally scheduled for completion by 2010. It has since been postponed to 2015.

It has, meanwhile, also been subject to sustained volleys of political and public criticism, along with attacks on its alleged over-ambitiousness by respected physicians. 2008 saw the departure of its Chief Executive. This followed the sacking by the government of one of its key contractors Fujitsu, which was installing the programme in the south of England. Previously, in 2006, Accenture, which was delivering the system in the north, had walked away.

A Taste of Things to Come – Beyond Britain

Overall, the NPfIT may provide a foretaste of developments in the US and elsewhere in Europe. Fragmented healthcare IT systems are universally accepted to be a barrier to improving the quality of healthcare services. However, users face the classic IT systems modernisation challenge of unravelling the back-of-fence spaghetti, while continuing to deliver ready-to-eat meals up front.

Benefits "Still Theoretical"

In January 2009, the House of Commons Public Accounts Committee (PAC) published a scathing report on NPfIT, and on Connecting for Health – the agency

charged with running the programme. Other than cost-overruns, the PAC also raised concerns about the about data security and confidentiality of patient records, and noted that for many staff, the benefits of the Programme were "still theoretical."

As a political watchdog, one of the PAC's most telling comments was the "little or no consultation" which NPfIT had with physicians – a topic covered in depth in a previous issue of Healthcare IT Management. Finally, the PAC cast doubts about whether the 2015 deadline would – or could – be met.

No Real Yardsticks

NPfIT proponents, on their part, point out that the PAC had little to say about technical issues, most crucially about performance parameters of the NHS's modernised IT infrastructure, measured against realistic benchmarks for similar endeavours elsewhere, or roughly similar ones given the sheer scale of the NPfIT project.

Indeed, the PAC only briefly overviewed the tension between vendors and system integrators responsible for security, and NHS staff who are ultimately responsible for the security of data which they access are briefly explored.

It also briefly passed over one of the most crucial ethico-legal issues and technical challenges with respect to electronic records, about the change-over to a "consent to view" approach.

IT Managers Dismiss "Idle Chatter"

One senior IT executive associated with the NPfIT was especially dismissive about what he called the PAC's idle chatter on such issues. Access to records, according to the PAC, "are not yet in use in all Trusts because early releases of the care records software in London and the South do not support them." What did the PAC expect, he asked HITM: "that millions of access cards are rolled out of a newspaper kiosk on a Saturday morning?" It is clear that the NPfIT project has become a hot potato.

The PAC report noted that the (new) completion target of 2014-15 (as mentioned itself delayed by four years) "must now be in doubt." It injected a further dose of politics by noting that the project cost taxpayers GBP 12.7 billion, "although this figure remains uncertain."

Party Politics and Muddleheadedness

A growingly partisan undercurrent to the debate is underscored in comments by Edward Leigh, the PAC chairman (and Member of the opposition Tory Party). Leigh said that if there was no improvement to the situation within six months, "then the Department (of Health) should consider allowing Trusts to apply for funding for alternative systems."

Richard Bacon, another Tory member of the PAC, said the NPfIT programme was now "in deep trouble from which it is un-

likely to recover." In a stark example of the difficulty faced by politicians in understanding the complexities of IT in general (and healthcare IT in particular), Bacon concluded that "hospital trusts should now be free to buy the systems they want, subject to common standards...". His advisers had obviously failed to point out that (the lack of) common standards in healthcare IT are exactly at the root of the problems faced by NPfIT and likely to remain so for some years.

In August, the Tories left no room for any more doubt about the politics of the NPfIT problem.

In an official statement by Party leader David Cameron, the Tories said that, if elected, they would "dismantle Labour's central NHS IT infrastructure" and instead use local systems for local areas. Worse was the announcement that contracts signed under NPfIT would be halted and renegotiated.

Such a stance raises the chance of an incoming Tory government becoming embroiled in legal disputes with BT and CSC, the two IT firms with local service provider (LSP) contracts for NPfIT. The UK government has been locked in legal dispute with Fujitsu since terminating its LSP contract in April 2008.

Echoing Bacon's muddle-headedness, the statement reiterated the Party's commitment to open standards, and insisted that local systems should be "rigidly interoperable".

Microsoft, Google and the Tory Party

More telling was an NHS IT review, commissioned by the Tory shadow health minister Stephen O'Brien, whose authors compared Microsoft's HealthVault with

Fragmented healthcare IT systems are universally accepted to be a barrier to improving the quality of healthcare services. However, users face the classic IT systems modernisation challenge of unravelling the back-office spaghetti, while continuing to deliver ready-to-eat meals up front.

Google Health for potential use in the UK health system. Neither application is currently available for British citizens.

The report endorsed HealthVault, which has greater privacy and security safeguards than Google Health's "relatively simplistic" design, which they observed, was primarily deployed for personalised advertising in the US, a claim immediately rebutted by Google.

Needless to say, the Tory statement was enthusiastically endorsed by Microsoft. "We are pleased," said Mark Treleaven, healthcare strategic marketing manager for Microsoft UK, "that this area is being looked at seriously in the UK, as we believe strongly in patient empowerment.... We have seen huge benefits in the US and, while the healthcare system is different, patient needs are the same."

No Big Bang, nor Chorus of Little Bangs

While the politics of healthcare IT is never far beneath the surface, the UK is showing just how far it can interfere with serious technology decision-making and roll-over into the realms of Big Business, above all from the US.

And yet, the inability to implement technical modernisation (and in some cases, muster adequate staff) to perform a Big Bang rollout, or achieve a planned but functional phasing-in of new systems (a chorus of Little Bangs ?), has meant that the NHS currently runs on a patchwork

of IT systems, and will continue to do so for a few more years.

Painful Transition, Slowdown

As a result, not a few British hospitals have been forced to bring in their own bespoke electronic software to replace existing ageing systems which cannot connect to modernised systems elsewhere. For some

critics, such a transition is more painful than having an older system, but one which worked.

Worse still is a slowdown in the pace of implementation, almost entirely due to the exit from the project by major vendors such as Accenture and Fujitsu.

Illustrating this is the fact that the new care records system was installed in only six NHS trusts in the first five months of 2008-09, taking the total number of installations to 133 out of 380.

Users Sanguine, but See Tough Decisions Ahead

Major user groups, meanwhile, remain sanguine. According to Nigel Edwards, policy director of the NHS Confederation: "NHS organisations have already had to work around the delays by putting alternative IT systems in place. Everyone recognises the potential of the programme and is frustrated at the delays, however, we are getting to the point where, having spent so much money both in funding the system and keeping it running, the time is quickly approaching to make tough decisions on what the future of the project should be."

Dr Vivienne Nathanson, Head of Science and Ethics at the British Medical Association, concurs: "Despite the problems we must not lose sight of the potential benefits that could be delivered in terms of patient safety, by the National Programme for IT."



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26 - 27 October 2009
Dubai, UAE
www.healthcaretechme.com

IT@ NETWORKING AWARDS 2009

29 - 30 October 2009
Brussels, Belgium
www.hitm.eu/awards

November

TELEHEALTH AND ASSISTIVE TECHNOLOGY 2009

04 - 06 November 2009
Cambridge, Massachusetts, USA
www.iasted.org/conferences/home-663.html

E-HEALTH INSIDER LIVE

09 - 10 November 2009
Birmingham, UK
<http://www.ehealthinsiderlive.com/>

HEALTH IT LEADERSHIP SUMMIT

15 - 17 November 2009
Muscat, Oman
<http://himssme.org/summit/>

MEDICA

18 - 21 November 2009
Dusseldorf, Germany
www.medica.de

HISI

19 - 20 November 2009
Dublin, Ireland
www.hisi.ie

TELEMED AND EHEALTH 09

23 - 24 November 2009
London, England
<http://www.rsm.ac.uk/telemed09>

RSNA 2009

29 - 04 December 2009
Chicago, US
www.rsna2009.rsna.org

December

DISKOBOLOS 2009

22 December 2009
Belgrade, Serbia
www.jisa.rs

January

HEALTHINF 2010

20 - 23 January 2010
Valencia, Spain
<http://www.healthinf.biostec.org/>

HEALTHCARE IT EXCHANGE

31 - 02 February 2010
UK, venue TBC
<http://www.healthcareitexchange.co.uk>

March

TELEHEALTH 2010

02 - 06 March 2010
Hanover, Germany
www.telehealth.de

ECR

06 - 10 March 2010
Vienna, Austria
www.myesr.org

WORLD OF HEALTH IT 2010

15 - 18 March 2010
Barcelona, Spain
<http://www.worldofhealthit.org/>



ISSUE 5, 2009

COVER:

Health Records and Clinical Research

SPOTLIGHT:

IT@Networking Award

FEATURES:

Health 2.0
Managing hospital care from a desktop
Offshoring healthcare IT
Open source and e-Health: possibilities and reality checks
Security in e-Health

MANAGEMENT:

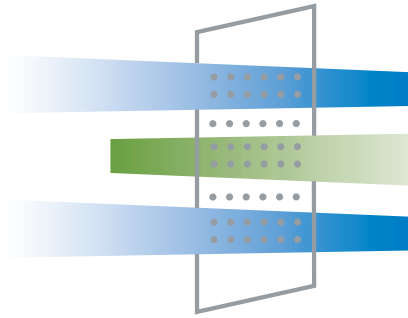
Staffing in Healthcare IT

PRODUCT COMPARISON:

Patient ID and security

COUNTRY FOCUS:

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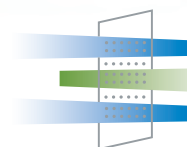
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