HEALTHCARE IT MANAGEMENT

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eHEALTH:
Crossborder Challenges
Isolated Communities

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Summer 2007

Hospital Modernisation

The NHS IT Overhaul

Offshore IT

Speech Recognition

COUNTRY FOCUS: The Nordics

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Meeting Today's Healthcare Challenges Using an Information Management Solution

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The escalating volume of medical data challenges healthcare enterprises in two ways: to find means for long-term and cost-effective data storage, and to exploit its clinically-rich content to improve services and patient care.

This article describes how a clinical data repository configured as an Information Management Solution can address such challenges.

THE COST CHALLENGE FOR LONG-TERM STORAGE SOLUTIONS

The healthcare industry's first challenge is the cost of storing data. Key factors for an effective long-term storage solution are given below:

CONSOLIDATING ISLANDS OF STORAGE

Duplicated archiving systems raises acquisition and maintenance costs for hospitals. A consolidated data repository is clearly preferable to dedicated departmental systems. However, should a single storage solution be unfeasible, different systems should at least share a common infrastructure.

ACCESS TO PATIENT DATA ACROSS THE ENTERPRISE

Legacy architectures based on storage silos make it difficult to access patient data scattered across a hospital. Images, for example, may be located in one or more PACS (radiology, cardiology etc.) while HIS/RIS applications provide related documentation. Such systemic disparities directly impact on 'time to diagnosis'.

USING BUSINESS RULES TO ADAPT DATA LIFECYCLE

Information Lifecycle Management (ILM) aligns the business value of information with appropriate infrastructure. The lifecycle begins when information is created and ends at its final disposition. ILM from business environments is directly relevant to a clinical data repository. A Clinical Information Lifecycle Management (CILM) capability uses clinical attributes such as patient age, modality, body part, etc. to determine the site and duration of data storage, and optimises return-on-investment of storage infrastructure.

SCALING TO MEET CUSTOMER NEEDS AT DECREASING MARGINAL COST

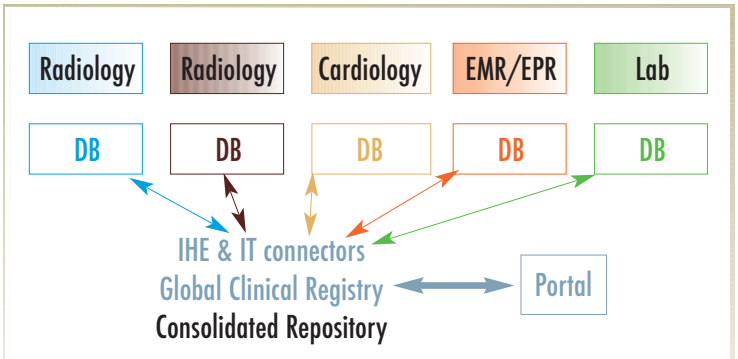
Storage for an Information Management Solution must accommodate change such as growth in data volumes, in the number of data sources after consolidation, and in patient count. The addition of storage, computing power and connectivity hardware should, in turn, entail constant or diminishing unit costs.

RESTRUCTURING OF THE HEALTHCARE INDUSTRY

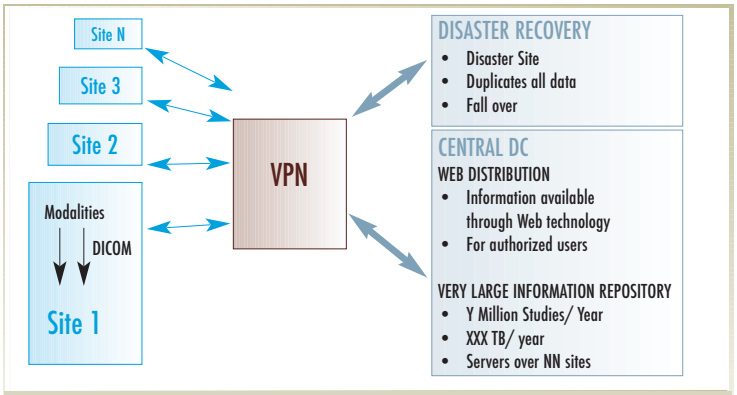
Like other industries, healthcare is under restructuring through M&A, large private consortiums and officially-inspired medical archiving projects. This increases the need for large-scale solutions that integrate a greater number of participating sites, alongside related features such as information distribution, support for very large volumes of data, multi-site synchronisation, disaster recovery, etc.

MANAGING OBSOLESCENCE

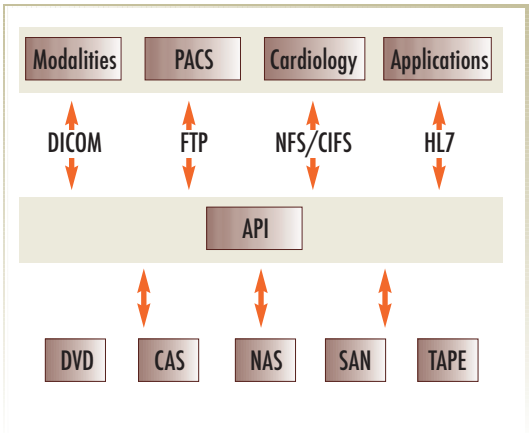
Medical data is typically retained for several decades, while IT/storage technologies are replaced every 3-4 years. As a result, medical data requires recurrent migration to newer technologies. To control such costs, storage solutions must integrate next-generation hardware and be able to migrate data in a managed, automated, and secure manner. The alternative - manual migration – is always costly.



An Information Management Solution transforms departmental islands of storage into a consolidated repository. In addition to cost savings, the enterprise benefits from a unified registry (clinical index) and a repository featuring shared storage hardware.



Because of today's trend toward mergers and consortiums in healthcare, the Information Management Solution must be easily scalable not only to manage very large increases in data volume, data sources, patients, storage, computing power, etc., but also to integrate regional and national participating sites over a virtual private network (VPN). For such site integration to succeed requires sophisticated information distribution, multi-site synchronization, and disaster recovery capabilities.



A global Information Management Solution should support a full range of healthcare and IT standards as well as storage technologies.

TRANSFORMING LONG-TERM STORAGE INTO AN INFORMATION MANAGEMENT SOLUTION

Cost control is but one aspect of the data storage challenge. Like two sides of a coin, the cost of data is juxtaposed with its value, and the best long-term archive solutions permit maximising value in stored data.

Though not directly involved in medical treatment, long-term archiving systems provide healthcare professionals with comprehensive clinical information about patients. This permits superior diagnosis and quality of care – the key objective of all healthcare institutions.

Vendors currently offer an array of solutions for long-term storage of fixed content data. Though some provide advanced features such as automated replication of data or lifecycle management, they do not qualify as a true global solution.

A clinical data repository expands conventional archiving systems to function as an Information Management Solution. This meets the following high-level requirements:

- Collects information from all sectors of an institution (or multiple institutions)
- Consolidates patient-specific information in a single logical record
- Maintains information in a secure, usable and up-to-date manner
- Shares information with clinicians and the applications they use

COLLECT INFORMATION

Effective information management requires collection of information from diverse clinical systems. New healthcare industry initiatives such as IHE (Integrating the Healthcare Enterprise) and public standards like DICOM, HL7 and Web services permit more efficient integration between otherwise disparate systems.

An effective Information Management Solution should support such initiatives and their related IHE profiles, alongside general industry-standard interfaces like FTP, CIFS and NFS.

CONSOLIDATE INFORMATION

A value-added storage solution has to automatically recognize relations between documents and systems and consolidate all patient-specific information in a single record. The "electronic patient record" contains documents from multiple specialties, created in different formats, and acquired using a variety of protocols.

Consolidating infrastructure level data allows the building of a central data repository. By consolidating information (data plus metadata), the storage solution creates a clinical data repository, with far greater value.

However, consolidation faces serious barriers in terms of regional/national archives, which rarely have common patient identification domains. Another hurdle is to communicate with a Master Patient Index system that reconciles patient identifiers and their documents.

MAINTAIN INFORMATION

Updating information and maintaining accessibility requires the synchronisation of information in several, interconnected systems. The recommended methodology is to define master reference systems – usually the hospital information system (HIS) or the radiology information system (RIS), from which participants receive and mirror updates. An Information Management Solution must support such workflows.

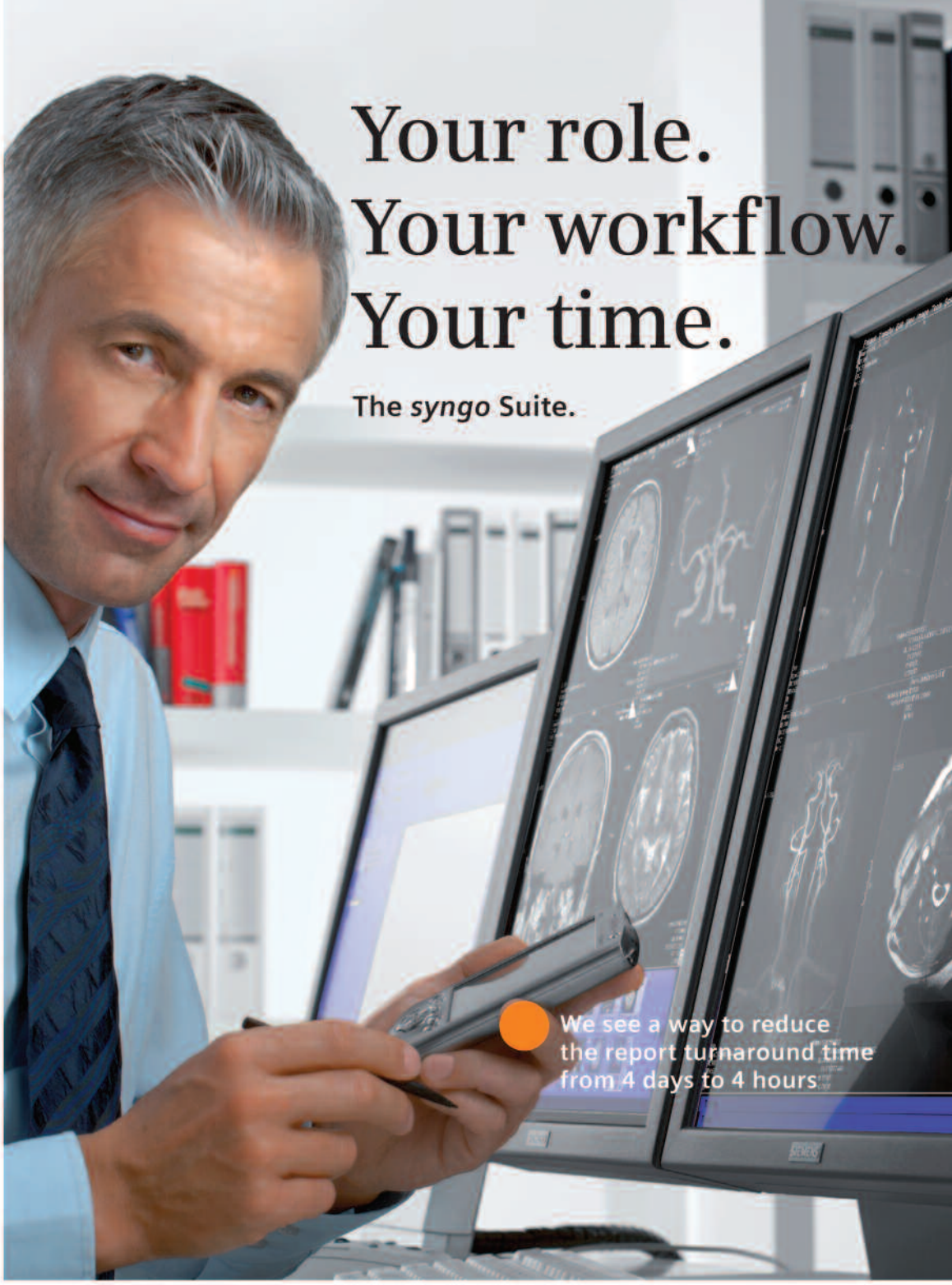
SHARE INFORMATION

An effective storage solution should share information with a multitude of clinicians and users. However, a clinical data repository does more: it shares consolidated information with all applications, with systems that produce parts of it, and those that merely present data. Here again, integration via IHE standards is crucial.

CONCLUSION

A suitably designed clinical data repository can be an effective and integrated Information Management Solution. This saves time and money, improves data access and reliability, and meets the needs of an ever-changing healthcare environment.

For more information visit:
www.carestreamhealth.com



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Dear Reader,

Isolated communities pose a special challenge for the European model – to provide access and deliver high-quality healthcare to everybody, everywhere. Telemedicine already offers some solutions. As revealed by our Cover Story, the emerging e-Health wave promises far more.

e-Health projects such as the Baltic Health Network demonstrate the inherent connection between cross-border and borderless, and potential links between new, pervasive IT technologies and universal healthcare. These, in turn, will build the foundations of the future healthcare eMarketplace. Alongside the strengthening of investment in innovation and healthcare IT research, such a vision is integral to the European Union's i2010 program.

Meanwhile, what will be the real-world impact of such frameworks and super-structural trends ? In other words, how does a healthcare IT professional's experience of ground realities square with such visions ?

This issue of HITM provides expert opinions on the challenge of tomorrow's digital hospitals, in the face of today's healthcare concerns. Included are features on the strategic challenges facing healthcare IT, a management analysis of intelligent infrastructure at Belfast City Hospital, the outsourcing of a Helsinki hospital's IT infrastructure, as well as an in-depth review of a modernisation program at Norway's St. Olav's Hospital. St. Olav's is the largest-ever IT project in the Nordic Region – known as much for its world-class healthcare as its high-technology infrastructure, and the subject of this issue's Country Focus.

One everyday gadget in tomorrow's e-Health-friendly digital hospital will no doubt consist of speech-recognition devices, which are reviewed in our Product Comparison section. Speech-recognition technologies have leaped leagues ahead over the past decade. They are not only convenient but also boost the accuracy of information gathering and sharing - whether this is used for patient care, or in administrative operations such as billing and reimbursement.

Big, as everyone knows, is not necessarily beautiful. Neither is it always so. In fact, the line between grand and grandiose is sometimes quite thin. The world's largest non-military IT programme, to overhaul the British National Health Service (NHS), currently faces considerable controversy. A Parliamentary Committee has questioned whether the programme will meet its targets – on cost, schedules and clinical benefits. Dr. Jan K. Melichar, a British physician, explains why.

In parallel, we provide an interview with a key IT contractor in the NHS overhaul, Indian IT services giant Tata Consultancy Services, and an HITM assessment of India's presence in the world IT league table. This has so far been underestimated in Europe. It may however have particular implications for healthcare IT, especially since few have so far taken serious account of the complexity, skills and manpower requirements of the European e-Health program.

In his critique of the NHS IT modernisation project, Dr. Melichar calls it a "top-down grand plan" that "will not deliver" since it has not involved "those on the ground".

Does this scenario also extend to Europe's e-Health plans, especially in the context of some of the hyper-ambitious projects likely to be part of the Seventh Framework Programme (FP7) ?

It may be too early to make a guess on this question. However, it will evidently be crucial to have an answer in the years ahead.

At HITM, we plan in our forthcoming issues to focus upon a potentially major threat to such grand visions - namely, the looming problem of legacy IT systems in Europe's healthcare environment.

Yours faithfully,

Christian Marolt

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UNDERPINNING EUROPE'S 21ST CENTURY ASPIRATIONS

The European Union's i2010 initiative aims to lay strong foundations for the incipient digital economy, and is accompanied by a new ICT plan for the EU. i2010 has several implications for e-Health, which overlap with other facets of the initiative, such as e-Skills, e-Government, e-Business and e-Inclusion.

Page 14
E-HEALTH AND ISOLATED COMMUNITIES

e-Health opens a boundless vista of possibilities for healthcare to all concerned. In spite of continuing challenges, e-Health has begun to already close the gap between imagination and reality, especially in areas like delivery of healthcare to isolated communities and across borders.

Page 17-20
SPEECH RECOGNITION

One of the strongest facets of current hospital reforms is a growing drive to raise the efficiency of information generation and dissemination at the point-of-care. Driven relentlessly forward by new technologies, speech-recognition is likely to be an ubiquitous aspect of next-generation hospitals.

Page 22
CHALLENGES OF HEALTHCARE AND IT

IT offers a way to both contain the rising costs of healthcare and, via next-generation mobile and pervasive infrastructure, to pave the way for future digital hospitals.

HEALTHCARE IT MANAGEMENT

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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.

With membership in HITM steadily growing, the first annual General Assembly is planned for late 2007. HITM is strategically based in Brussels, for easy access to the European institutions and associations.

HITM'S MISSION

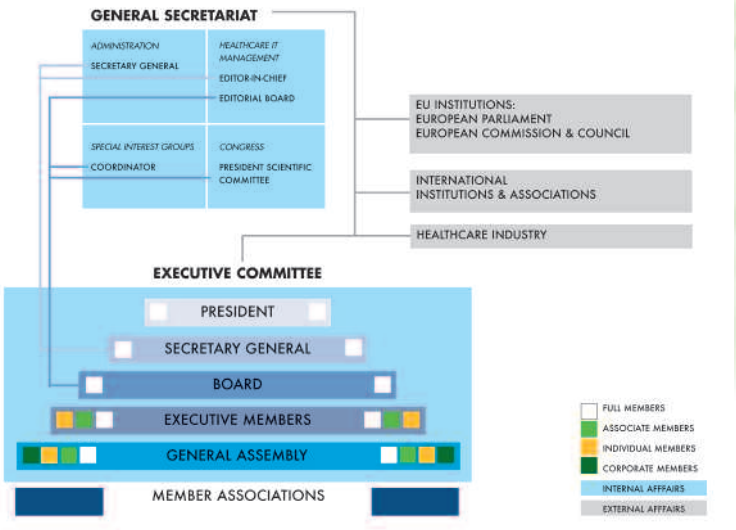
- To establish common healthcare IT standards, best practices, cross-border collaboration, unifying policies and strategies at EU and international levels
- To increase the visibility, role and importance of IT management in healthcare facilities
- To educate key policy-makers, industry players and the 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

HITM'S MEMBERSHIP OPPORTUNITIES

- Participate in advocacy groups that impact healthcare IT legislation
- Share knowledge with peers
- Learn about, and contribute to, industry best practices and standards
- Attend the HITM Annual General Assembly and network with colleagues

For more on HITM and information about membership, please contact Catalina Ciolan, Project Director, at c.c@hitm.eu

ORGANISATIONAL STRUCTURE



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The Luxexpo Exhibition and Congress Centre at Luxembourg was, once again, host to the 5th Med-e-Tel conference (April 18-20), which attracted more that 400 participants and 40 exhibitors. One of its most popular sessions - "Mobile e-Health Solutions" - featured the World Health Organization's "mHealth" strategy. This covers the use of mobile phones, personal digital assistants (PDA), microcomputers, remote diagnostic and monitoring devices, and GPS/GIS mapping equipment to enhance the achievement of health care objectives. Patients with both infectious and chronic diseases are meant to find benefits from remote treatment and support (mobile telemedicine), health service delivery and coordination, as well as mLearning.

Other topics on the agenda included ageing and the maintenance of quality of life for the elderly, for the disabled and for people with special needs through the use of telemedicine and e-Health tools and services.

This year's symposium focused on "How Information Technology can Improve Performance and Quality." Featured here was an overview of IT solutions offered by the industry with presentations from Alcatel-Lucent, Cisco, Hippocad, IBM, IRIS, and real-life experiences from hospitals on subjects such as datawarehousing, electronic archiving of patient records, nurse planning, emergency services, call centres, mobile solutions, secure wireless networks and more.
Med-e-Tel also featured an exhibition on some practical developments in this area, with products and technologies on offer from companies such as A&D Medical, Aerotel Medical Systems, Alcatel-Lucent, AMD Telemedicine, Card Guard, Cisco, Hippocad, Honeywell HomMed, IBM, Impact Care, IRIS, ISIS, Omron, Robosoft, RTX Healthcare, t+ Medical, Vitaphone, Viterion TeleHealthcare etc.

Photo credit: Med-e-Tel.

Some companies presented cutting-edge innovations. RTX Healthcare showcased its new RTX3370 Telehealth Monitor – an interactive and easy to use device, designed specifically to improve the way of providing healthcare to patients outside hospitals suffering from chronic diseases such as heart failure, COPD, diabetes and other chronic diseases. Other products presented at Med-e-Tel were Estele (a robotics system for tele-ultrasound tests) from France's Robosoft as well as a telehealth platform from Impact Care in the Netherlands which allows Dutch elderly care organizations to significantly reduce home visits via self-management services for patients with chronic diseases.

As Frederic Lievens, the Forum's International Coordinator concluded: Med-e-Tel again offered "unique opportunities to discover telemedicine and e-Health products, services and innovative technologies, to gather updated information through the extensive conference programs, to network with contacts from around the world, and to establish new partnerships."

Photo credit: www.health-it.fr/presse/banque-images.asp

EHEALTH CONFERENCE 2007

Berlin's International Exhibition and Conference Centre (Messe Berlin) held a high level e-Health Conference as part of the e-Health Week (April 17-19).

A joint project of the European Commission, Germany's Federal Health Ministry, the Berlin regional government and the Association for Social Security and Research (GVG), the conference had the theme: "From Strategies to Applications", and sought to provide a forum for policymakers, health insurance organisations, service providers and users across Europe. The Conference also offered an opportunity for representatives of EU Member States and the European Economic Area to adopt a common Declaration on cross-border electronic health services sector in Europe. This covers six key issues:

- National and well-organised e-Health infrastructures are a pre-requisite for cross-border solutions
- European standardisation will open up market opportunities
- Existing national roadmaps must be taken into account

MIEUX SOIGNER, MIEUX GÉRER, MIEUX DECIDER WITH HIT PARIS 2007

France has witnessed a sea-change in awareness about healthcare IT, with two of three establishments saying they are "highly dependent" on information systems (against just one of five in 2005, according to CLUSIF - Club de la Sécurité de l'Information Français).

Such a transformation in perceptions was apparent at the Hit Paris Congress (May 22-24, 2007), a Grand Tour on the real-life impact of recent healthcare reforms and actions in France and beyond. Hit Paris was organised as a "2-in-1" event – in other words, as both a trade fair and a conference on healthcare IT. Attendance (by representatives of State institutions, standardisation bodies, hospital decision-makers, healthcare IT manufacturers, buyers and users, as well as financial/consulting companies) was on par with the expectations of the organisers: 1,400 professional participants and 4,000 visitors. About 50 exhibitors presented their healthcare IT solutions.

Hit also saw 60 training sessions coordinated by the Fédération Hospitalière de France (FHF) and the Organization for the Modernisation of French Hospital Information Systems (GMSIH). The sessions were devoted to the following key themes: governance and performance, data-sharing, security, network, telemedicine, patient services, standardisation and interoperability, prescription, planning and innovation.

For further information, please visit www.health-it.fr

Photo credit: Mesago Messe Frankfurt GmbH

- Implementation of e-Health services require greater synergies with research and education
- Agreement on common standards by all EU Member States and stakeholder involvement is essential for the e-Health industry

In the words of Frans de Bruïne, Director at the European Commission's Directorate-General for the Information Society and Media: "The 2007 e-Health Conference has deepened the co-operation among the Member States and all stakeholders. The Commission welcomes the Declaration on European co-operation in the field of Europe-wide electronic health services. The European Commission is supporting the first steps towards their concrete implementation by means of Large Scale Pilots".

ITEG 2007

As part of Berlin's eHealth Week, ITeG 2007 (International Forum for Healthcare IT) was so far one of this year's most prominent healthcare industry events (alongside Telemed, eHealth Conference 2007, KIS Conference and IHE Connectathon). In comparison with last year's figures, ITeG 2007 saw exhibitor numbers rise from 273 to 288; however, visitors to IteG this year fell slightly to 3,552, from 3,678.

The ITeG trade programme is organised by a producer-independent program advisory board with its core target group comprised of IT directors, physicians and healthcare IT professionals. According to Jens Naumann, chairman of VHitG (Association of Manufacturers of IT Solutions for the Health System), what was "especially positive was the high number of participants in our certified lecture and discussion program" with 60 practicing doctors from Berlin-Brandenburg discussing efficiency enhancements to their practice from IT solutions. Although VHitG's first initiative of the kind at ITeG, the level of response means that we "will certainly organise such a program in the future," Mr. Naumann concluded.

The VHitG Award for "IT-concepts of the year" was won by the University Clinical Centre of Freiburg with their concept on "IT-supported release management for in-patients shown by the example of ELMA". The two runners-up were MTG Malteser Trägergesellschaft GmbH for its "IT-industrialising and process orientation" concept, and HMM Germany's "ZHP-online-platform for additives management in the compulsory health insurance".

ITeG will take place next year from April 8-10 at the same location. More information at www.mesago.de.

i2010 – UNDERPINNING EUROPE'S 21ST CENTURY ASPIRATIONS

HEALTHCARE IT MANAGEMENT
ANALYSIS

WHAT IS I2010 ?

The European Union's i2010 initiative aims at providing teeth for the digital economy of the future. Launched on June 1, 2005, i2010 is comprised of a framework of regulatory instruments, research programs and industry partnerships. Viviane Reding, EU Commissioner responsible for the Information Society and Media, explains both the underlying context and vision behind i2010. For many years, she said, "experts have been talking about digital convergence of communication networks, media content and devices. Today, we see digital convergence actually happening. Voice over IP, Web TV, online music, movies on mobile telephones – all this is now reality. To enhance investment in this promising sector of the economy, we must provide a coherent regulatory framework for Europe's digital economy that is market-oriented, flexible and future-proof. And we must focus our research spending on key information and communication technologies, such as nanoelectronics".

PRIORITIES: SOCIAL, ECONOMIC, INDUSTRIAL – AND EXISTENTIAL

i2010 is accompanied by a new ICT plan for the EU. This seeks to promote the use of information technology by governments and citizens in order to improve industrial competitiveness, support growth, create jobs and address new societal challenges across Europe.

The EU Commission has set down three priorities as part of this vision:

1. To create a Single European Information Space, promoting an open and competitive internal market for information society and media services.

For the period 2005-2007, the Commission proposed several action plans in order to intersect the axes of "policy convergence" and "technological convergence". Specific topics covered are the modernisation of rules for audiovisual media services, creation of a regulatory framework for electronic communications, the securing of an Information Society – alongside means to make the management of digital rights effective and interoperable.

Priorities over subsequent years include an assessment of policy needs for media literacy, approaches to RFID and mobile TV, the development of high quality innovative content, actions in the direction of security strategy etc.

2. To strengthen investment in innovation and research in ICT.

At only 80 Euros per capita, EU investment on ICT research pales in comparison to Japan and the US, with figures of 350 and 400 Euros respectively. Such a state-of-affairs made a strategic reappraisal of Europe's position inevitable.

These efforts follow three broad pathways.

The first: to sharply boost European research funding through the FP-7 Seventh Research Framework Programme (see *Healthcare IT Management* Volume 2, Issue 1 for a detailed overview). One of the key facets of this consists of means to better integrate small- and medium-sized enterprises in EU research projects.

The second and third pathways consist of policies to promote eBusiness as well as ways to buttress the efficiency of research policies and innovation. During 2007-2008, key priorities here include a review of ICT standardisation, an assessment of actions in the areas of eSkills and employability as well as improvement in the quality and performance of public services and innovation.

3. To promote an inclusive European society, better public services and quality of life by using ICT.

The Commission's efforts focus on an Action Plan on e-Government for citizen-related services, with several steps taken in 2006.

For the period 2007-2008, the top issue on the Commission's agenda are three "quality of life" ICT initiatives - technologies for an ageing society, smarter, safer and cleaner intelligent vehicles and digital libraries to promote a European culture for all citizens. In order to prevent a "digital divide" (resulting from unequal access to broadband Internet connections), the Commission has put its weight behind a European initiative on e-Inclusion.

Health IT is part of the direct purview of programs aimed at e-Accessibility, e-Government and of course e-Health interoperability.

All i2010 actions implemented between June 2005 and March 2007 have been compiled within annual reports on i2010 strategy. The 2006 balance sheet has been widely considered to be positive. (CC)

HEALTH-EU PORTAL FOR HEALTHIER CHOICES

Taking responsibility for one's own health is a fundamental challenge for EU citizens.

This is a key reason for the launch of the Health-EU Portal in May 2006. It aims at raising public awareness about health-related issues and providing information on health developments and events across Europe. Its target group includes healthcare professionals as well as scientists, policy makers and members of the general public interested in health issues.

In the initial stage, information on the Portal was restricted to English. However, since the start of 2007, its content is provided in twenty official European languages.
The Health-EU Portal is an initiative of the EU Public Health Programme 2003-2008. It is financially supported by the EU programme 'Interoperable Delivery of European e-Government Services to Public Administrations, Businesses and Citizens'. It also matches the aims of the e-Europe Action Plan by providing citizens with simple, concise and scientifically sound online information and promotes greater involvement of both the public and private healthcare sectors.

The Health-EU Portal has been structured into six thematic areas, which bring its relevance to the doorsteps and into the day-to-day lives of EU citizens. The themes are as follows:

- My Health: prenatal health monitoring, nutrition and physical activity, food and product safety, people with disabilities
- My Lifestyle: nutrition, alcohol, drugs, tobacco, travel, sports and leisure, and sex
- My Environment: social environment, environmental health and consumer safety, physical, biological and chemical risks, road safety, and bioterrorism
- Health Problems: mental health, HIV/AIDS, influenza, cancer, heart disease and other non-communicable diseases
- Care for Me: patient safety, mobility, quality assurance, long-term care, treatment, and careers
- Health in the EU: policies, programmes, research, prevention and promotion, health indicators, and statistics

Markos Kyprianou, the EU Commissioner responsible for Health and Consumer Protection, sums up the scale and scope of ambitions behind the initiative. The EU-Health Portal, he notes, "is a very large project bringing together all EU Member States as well as EFTA nations, international organisations and NGOs. Web surfers will have access to over 40,000 links to trustworthy sources. The translation of the Portal into all 20 official EU languages means that up to 1.5 billion people worldwide can use it to help them to make healthy choices". (CC)

i2010 AND THE LISBON STRATEGY

Since its inception, the Lisbon Strategy has acknowledged the central, and in some senses, over-arching, importance, of IT. In March 2000, the Lisbon Summit of the European Council established an ambitious raft of objectives aimed at higher growth, more and better jobs and greater social inclusion.
In order to build a meaningful knowledge society, a certain level of prosperity is required to re-anchor the European social model in economic reality – especially given demographic ageing and growing international competition in what has been depicted as a Flatter World.

> 'i2010 is expected to boost productivity and innovation...'

As part of such thinking, it is accepted that more sustainable social systems require a greater use of ICT for delivering more efficient public services and to reduce their implementation costs. Indeed, the ICT sector is estimated to be contributing almost one fourth of the EU's GDP growth.
According to EU Information Society Commissioner Viviane Reding, "investment in ICT accounts for about 40% of EU labour productivity growth over the second half of the 90s. But it accounted for 60% in the USA, which shows that there is an opportunity for Europe to do better, because recent evidence suggests that Europe's productivity gap with the USA is closely linked to the production and use of ICTs".
Consistent with the objectives of the Lisbon Strategy, the i2010 initiative is expected to result in more productivity, better capacities, new opportunities and increased innovation.

Through the Lisbon Strategy and in particular i2010, the European Commission has identified the following areas as politico-strategic priorities:

- Updating of regulatory frameworks for electronic communications, information society and media services, in order to exploit to the full the internal market
- Stimulation of investment in strategic research to overcome bottlenecks in the diffusion of ICT innovation
- Promotion of e-Inclusion and quality of life.

On their part, EU Member States were expected via the October 2005 National Reform Programmes to define Information Society priorities in line with the Integrated Guidelines for growth and jobs. Specifically, attention was directed at ICT uptake, ICT infrastructure and ICT for jobs and education.

- These programs were targeted at:
- transposing the new regulatory frameworks affecting digital convergence with an emphasis on open and competitive markets
- increasing ICT research in national spending
- developing modern and interoperable ICT-enabled public services

- using their considerable purchasing power as a force for innovation in ICT
- adopting ambitious targets for development of the Information Society at national levels.

i2010 FINANCING

A key question within i2010 concerns the European Commission's financing of such complex and ambitious projects. Several sources need to be mentioned in such a context:

- 9.1 billion Euros via the Seventh Framework Programme (FP7) for the period 2007-2013. The efforts are directly targeted at enhancing the competitiveness of European industry, and led to the creation of this research theme, the largest in FP7
- 755 million Euros, underwritten through the MEDIA 2007 program and aimed at boosting the European film industry in the 2007-2013 period
- 728 million Euros from the ICT Policy Support Programme, which, once again, runs through the period 2007-2013. These outlays are aimed at stimulating innovation and competitiveness through the use of ICT
- 45 million Euros in investment for four years channelled through the Safer Internet Program and aimed at combating illegal or harmful Internet content.

i2010 HIGH LEVEL GROUP

On March, 20 2006, EU Member States, under the umbrella of an i2010 High Level Group, met for the first time to discuss the future of the i2010 initiative.

Established by a Commission Decision and composed of one representative per Member State at Director General level, the Group decided to work on key priority areas such as convergence and content issues and ways to continue building trust and confidence, aside from continuation of efforts in e-Government, e-Health, e-Inclusion etc..
The Group is also open to observers from both EFTA (European Free Trade Area) and EU candidate countries. Its mission and mandate is to analyse strategic ICT policy-related issues in the context of the i2010 initiative as well as the wider spectrum of the Lisbon Agenda. Reviews and advice on the effectiveness of the i2010 initiatives as well as the use of benchmarks to monitor the implementation process are parts of its 'to do' agenda.

CONCLUSIONS

A key theme anchoring the i2010 initiative is 'convergence'. According to EU Commissioner Viviane Reding, convergence is a process: it's still happening, and there are still huge opportunities. If we work together and invest in growth, we will reap the benefits together. (CC)
For further information, please visit:
http://health.europa.eu

CROSS-BORDER HEALTHCARE

EU Drives For Common, Improved and Meaningful Standards

HEALTHCARE IT MANAGEMENT ANALYSIS

CHARTER ON PATIENT RIGHTS

On March 15, 2007, the European Parliament adopted a resolution on cross-border healthcare, insisting on the EU's obligation to guarantee absolute protection of health and reinforce patients' rights. Alongside, Parliament also noted the need to establish a legal framework for cross-border healthcare arrangements. This was in acknowledgement of three factors: the diversity of healthcare systems in different Member States, European Court judgements on the free movement of patients; as well as conformity with the overarching principles of solidarity, equity and universality. MEPs also underscored the need for common principles and core guidelines in healthcare in order to ensure patient safety. They noted that increased collaboration between the Member States has resulted in improving information about cross-border mobility for patients. Such processes, however, need to be accompanied by a common charter of patients' rights in the future EU framework, and should underpin the system of responding to complaints by patients.

The issue of patients' rights and entitlements is considered to be fundamental in relation to cross-border healthcare, given that the mobility of patients throughout Europe raises an important question:

Can EU citizens be assured of receiving high-quality of care and of having their rights respected if they need medical treatment beyond their national frontiers?
In such a perspective, it has increasingly become politically unacceptable that patient rights sometimes differ substantially from one Member State to another.

NEW STANDARDS WILL ALIGN BEST PRACTICES

The Parliament also urged the creation of a network of European Centres of Reference as well as incorporation of a "mechanism for data collection and exchange of information" between healthcare providers and national authorities.

The legal framework would ensure that EU patients are fully aware and informed about treatments available in other Member States and reimbursed by their national health insurance systems. It will not only make access to treatment quicker and less costly, but also boost healthcare standards by progressively aligning them with best available practices.

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THE EUROPEAN INVESTMENT BANK AND HEALTHCARE FUNDING

HEALTHCARE IT MANAGEMENT ANALYSIS

With a balance sheet of 289 billion Euros at the end of 2006, the European Investment Bank (EIB) is no minnow. And yet, few outside the inner corridors of the EU and the world of Big Finance are aware of its reach, influence and impact.

The Luxembourg-based EIB was created by the EU's founding Treaty of Rome in 1958. Its shareholders are EU Member States, whose Finance Ministers constitute the Bank's Board of Governors. Officially, the EIB's mission is to "further the objectives of the European Union by making long-term finance available for sound investment."

The EIB achieves this through own lending, coupled to its Triple-A rated blue-chip credentials which enable it to attract other secondary financing. Its widespread borrowing activity has also been a catalyst for the broader development of Europe's capital markets. Crucially, the EIB is neither dependent on the EU budget or on European taxpayers.

FUNDING ELIGIBILITY

To receive EIB money, projects must be viable in four contexts: business/economic, technical, environmental and financial, and also contribute to "furthering the policies" of the EU. The EIB concentrates on long-term lending (+/- 30 years) to both private and public sectors in five priority areas: economic and social cohesion; research, development and innovation; trans-European transport, telecommunications and energy networks; environmental protection; and support for SMEs. It also participates outside the Union in the implementation of development aid and cooperation policies – with a recent focus on candidate countries – above all, in the Balkans (where it coordinates lending with the World Bank and the European Bank for Reconstruction and Development).

THE EIB AND HEALTHCARE

As it happens, the EIB is very much an influential player in Europe's healthcare agenda, especially since the 1997 Amsterdam European Council highlighted the need for an intensification of investment in human capital (health and knowledge) as a key driver of economic growth. Such a stance was boosted further by the Lisbon Strategy in 2000, which targets a competitive knowledge/innovation-based EU economy by the end of the decade.

Since January 1997, the EIB has lent over 10 billion Euros to the healthcare sector. The bulk of this lending has been for building new hospitals, and modernising older ones (not least for overhauling equipment and IT systems).

The Bank also has a soft but crucial mandate to bring poorer parts of Europe up to speed in the interests of "economic and social cohesion." Consequently, the financing of health infrastructure in less developed regions of the EU has been one of its priorities (including new Member States such as Hungary, Poland, Romania, the Czech Republic and Cyprus). The Bank prefers public-private partnerships (PPP) as a means to both achieve increased efficiency in facilities management and transfer design and construction risk to the private sector.

An overview of its activity in the healthcare sector over the past two years is provided below.

SPAIN: TOLEDO AND ASTURIAS

In March 2007, the EIB granted a 205 million Euro, 30-year loan for the construction and equipping of a new general

... continued from page 13

E-HEALTH AND ISOLATED COMMUNITES

Perspectives From The Real World

As the European Union continues to removes barriers between its Member States for the movement of goods and services, it is natural that healthcare delivery should also breach borders.

e-Health today offers a boundless landscape of possibilities for healthcare to all concerned. In spite of continuing challenges, e-Health has begun to already close the gap between imagination and reality, especially in areas like delivery of healthcare to isolated communities.

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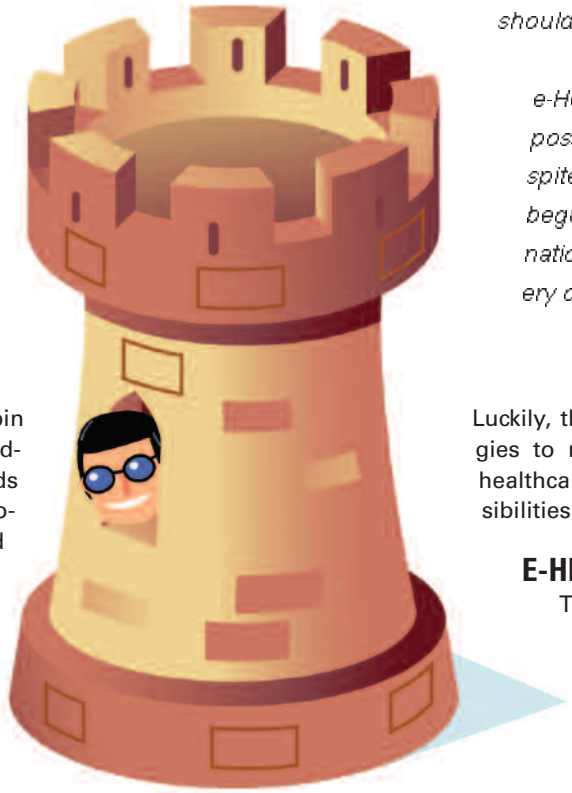

Several trends underpin the challenge of providing healthcare to islands and other sparsely populated or isolated communities.

Firstly, there is an underlying gap in requirements for professional healthcare staff in much of Europe. For some decades, it has also been difficult to access qualified medical doctors in areas distant from university towns or large cities – let alone, on isolated islands.

Meanwhile, medical specialisation itself has been growing relentlessly; this, ceteris paribus, calls for a larger population within which more specialised physicians can justify their skills. Last but not least, physicians (like others in the healthcare profession) have sought to more efficiently combine their private and working lives; this often entails a need to be at home but 'on call'.

Luckily, these trends are accompanied by new technologies to move capacities and competencies within the healthcare arena, by means of e-Health, whose real possibilities are only now starting to open up.

E-HEALTH ACROSS THE AGES

The process of new technological possibilities being harnessed to cope with old challenges is however hardly 'new'. Already in the late 19th century, a revolutionary enabler of telemedicine (as it was then understood) was the telephone.

In 1879, Britain's 'The Lancet' reported a case study about a doctor who declined to make a house call in the wee hours of the night – after hearing a sick child coughing on the telephone, and determining that it was not 'the croup', a barking cough also known as laryngotracheobronchitis.

When talking about telemedicine and technological progress, it is therefore useful to keep relative contexts in mind. [1879, incidentally, was when Albert Einstein, the founder of the Theory of Relativity, was born. It was also the year when milk was first sold in glass bottles and when

Edison demonstrated the electric bulb – in other words, quite a long while ago].

And yet, even today, in parts of Africa, Asia and Latin America, the humble telephone could bring about a revolution in access to healthcare, and would be very much a form of e-Health.

THE NORDIC EXPERIENCE

The rollout of e-Health in isolated communities in Denmark and elsewhere in the Nordic region has been multifaceted and not necessarily synchronous or even.

As is known, a great deal of general healthcare information is available on the Internet. To counter the possibility of bias, Danish public health care providers have since 2002 operated a non-sponsored Internet portal www.sundhed.dk, to provide impartial information on a variety of diseases and their treatment. Given the high Internet penetration in the Nordic regions, this information is of course accessed routinely by patients and families in isolated communities.

Such users (as well as those on vacation) can also use the Internet interactively, to explain their health concerns, enter into an e-mail consultation and obtain an answer from physicians within 24 hours. If required, they can then book an appointment for a face-to-face consultation.

In general, many e-Health initiatives for isolated communities naturally interface with those directed at travellers. For example, in the Health for Regions project in the Baltic Sea (partly financed by the EU), we have worked on a pilot project to make it possible for travellers to carry medical information relevant to any acute care emergencies. This is based on USB-stick-technology (see www.ehealthforregions.net).

REALITY CHECKS AND REAL-LIFE STORIES

The data on the USB would seem more futuristic had it been in the shape of smart cards. However, the key point with technology in general, and more particularly healthcare technology, is to maintain a reality check and focus on what really works, now, and does so anywhere.

A USB stick simply requires a personal computer with a USB port, and this is more widespread than smart card readers. Indeed, in real life, the USB stick made a difference for a group of retired Germans, who fell ill while on vacation in Vietnam. Their on-site Vietnamese physician was able to use the USB stick and view their personal data (allergies, medication, former treatment history) and not only consult with their doctor in Germany, but update the information to reflect what happened in Vietnam. Such situations can indeed be useful far from home, and across language barriers. However, one does not have to visit Vietnam to encounter language challenges. Right around the Baltic Sea are 10 different official languages!

Indeed, one may well advice EU countries to agree to build up their citizens' health information in their own official language – as well as a version in English with all key data from the Electronic Health Record (EHR). This could be put on a USB stick to permit real-life interoperability just about anywhere.

MOVING CAPACITIES AND COMPETENCIES ACROSS SPACE AND TIME

In the area of professional-to-professional and/or organisation-to-organisation interaction, there are several examples of moving healthcare capacities and competencies across space and time. There also is great potential to extend standard practices used in everyday health care service to new frontiers.

The Baltic Sea e-Health for Regions Project, for example, has featured a pilot project in eCardiology. Its aim is to enhance health care provision in remote areas, increase patient comfort (confidence, security, mobility) and optimise the treatment and management of patients.

As part of this pilot project, patients and nurses are equipped with mobile ECG devices. ECG recordings are sent via telephone to a multilingual server (in Germany) and then forwarded to specialists to decide appropriate treatment.
As a follow-on phase, the TT Ferry Line is now equipped with ECG devices and has their staff trained to monitor acute heart episodes at sea and to render the best possible treatment.

eRadiology, too, offers several interesting cases. X-ray pictures, for example, are taken by a nurse on an island. Through secure networks, these are despatched to a specialised centre for interpretation, and then combined with in site directions from the latter to the nurse.

On a larger scale, this may become a means for an international division of labour. It would bring required capacity without requiring a medical practitioner to move physically, for example, from Lithuania to Sweden.

As part of all this, however, there are some immediate issues to overcome in order to make establishment simple and reliable.
Legal aspects should always be taken care of as a standard practice. So too should questions arising from language (with English as the option for cross-border 'dialogue' – rather like it is the case with airlines and air traffic). Last but not least is the question of payment.

As a next step in the Baltic Sea area, the e-Health for regions project has organized a Political Steering Board. It is presently considering a e-Health project which specifically targets the challenges of the growing proportion of elderly and chronically ill patients in our societies.

CROSS-BORDER E-HEALTH

From point-to-point to eMarketplace

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Point-to-point cross-border e-Health has been initiated and tested in the Baltic e-Health project, a project part financed by the European Union under the BSR INTERREG IIIB programme, and, so far, the results are promising.

The limitation of the system is, however, that only organisations and institutions that are linked to the Baltic Health Network are able to benefit from the cross-border e-Health services. The next step in the development of cross-border e-Health is to establish an eMarketplace for healthcare services on a European level and this is the vision of what is known as the R-Bay project.

POINT-TO-POINT E-HEALTH

Traditional eRadiology, often referred to as tele-radiology, is provided using point-to-point connections between clients and providers.

The Baltic e-Health project has proved that the establishment of an IT network allowing point-to-point cross-border e-Health services is an important step in the direction of securing adequate access to healthcare services in sparsely populated areas/regions as well as preventing brain drain from the same areas/regions.

However, there are restrictions of this structure: due to the nature of the pilots in the Baltic e-Health project which only allow point-to-point cooperation, based on bilateral contracts between the partners.

THE EUROPEAN E-MARKETPLACE

The reality in Europe today is that some regions experience a shortage of radiologists while others have a surplus. A new vision is therefore that traditional eRadiology is extended by creating an eMarketplace, in line with other online marketplaces, that will act as a commodity brokering and exchange service.

On one side, there are sellers with products that they make available at a price and for standardised specifications (speed of response, value added options etc), and on the other side there are customers willing to buy the services over a trusted and secure network. The eMarketplace will enable the viewing and consulting of images from other organisations, regions or nations, thus enabling the sharing of healthcare resources on a pan-European basis.

R-BAY

The R-Bay project aims to establish this eMarketplace and thus it paves the way for the creation of an internal market for the exchange of e-Health services. The clinical services will be exchanged across European borders as anonymised images and will be the first in Europe that are based on market terms. In the project, image processing and analysis methods, which have been developing rapidly during the past years, and tools for efficient 3D visualisation, segmentation and image fusion will be market validated based on a "pay per click" model.

GOALS AND OBJECTIVES

R-Bay aims to create a virtual and secure exchange for the provision and consumption of radiology services. The new working environment for health professionals uses interoperable, secure and trusted Internet technologies to move all media and data types. Thus R-Bay modifies healthcare working environments by making available specialist capacity, and generating new business models and business streams.

CRITERIA FOR SUCCESS

As a market validation project, the main criterion of success is that the market potential of the R-Bay service is found and clarified for all involved parties (clinical providers, customers, and technology provider).

> 'In an eMarketplace, traditional eRadiology images can be bought and sold.'

The project will attempt to accurately identify the demand of the service and determine the value of the different elements of the service. Because the data will be generated by informed users, the conclusions will be highly credible. Consequently, it will subsequently be possible to build a financial business case that will justify the commercial viability of the different models of eService provision.

PARTNERS COMING TOGETHER

The R-Bay project is led by the International Office at the Region of Southern Denmark and is expected to be launched in August, when all 11 partners meet in Tallinn, Estonia, for the kick-off meeting.

More information about the R-Bay project is available via email to Consultant Janne Rasmussen jar@cfst.dk

SPEECH RECOGNITION:

Bauble or Key to Babel ?

HEALTHCARE IT MANAGEMENT ANALYSIS

One of the strongest facets of current hospital reforms is a growing drive to raise the efficiency of information gathering and sharing at the point-of-care. Speech-recognition technology is a good case in point. It is convenient for healthcare professionals, who have traditionally relied on jotting down notes or speaking into a cassette recorder; these were then transcribed for filing in a computer database. The process was cumbersome and error prone.

Speech-recognition technology also helps a core function of the modern hospital – correlating medical records quickly, and now, increasingly, in real-time. Deployed at the front-end of data generation, speech-recognition increases the efficiency of medical reporting and documentation, on the quality of treatment, and on the accuracy of information – whether this is used for patient care or administrative operations such as billing and reimbursement.

Healthcare professionals began using speech-recognition systems in the mid-1990s. However, the initial response was one of scepticism. Technology was in its infancy, and processing power limited (486-class CPUs were considered state-of-the-art). Background noise cancellation was elementary, dictionary sizes small, and overall accuracy left much to be desired. The high cost of the early systems (in many cases, above $25,000) were also a barrier.

Neither were the first wave of speech-recognition systems user friendly. Known as discrete speech systems (rather than today's continuous speech systems), they required users to pause between each word (instead of speaking at a normal pace of dictation). Overall, users had to learn how to 'talk' to a computer rather than having the latter 'listen'. For the typically conservative physician, this was asking for the moon.
As technology advanced through the 1990s and the current decade, the speech-recognition industry has adapted its offerings to the specific requirements of hospitals – seen as a potentially massive market. Increase in processor speeds and database size has been accompanied by dedicated subsystems for speech-recognition (regardless of accents, timbre or the occasional head cold).

Current continuous speech-recognition systems can handle over 150 words per minute, with accuracy levels of more than 98 percent. Aside from pure dictation, they can also be used for managing e-mail, launching programs and calling up files or records. In general, they increase productivity and reduce delays in tasking and information turnaround.
The reduction in errors from transcription makes one of the most powerful cases for wider acceptance of speech-recognition. So too do data protection standards in the healthcare sector. Unlike handwritten notes (or cassettes), patient information is enveloped within the ICT security umbrella and protected against unauthorised access. Yet another evident benefit for workflow efficiency is the fact that speech data can be accessed round-the-clock, from anywhere.

Electronic Medical/Health Record (EMR/EHR) projects will, however, play the most significant role in driving demand for speech-recognition technologies – as a closely associated, paperless facet of the emerging (and technologically seamless) healthcare system. Within EMR/EHR, voice-recognition technology can be integrated into search and query functions, document compilation, form filling, prescription and order writing.

In the near future, speech-recognition technology is expected to benefit the upcoming wave of pervasive, digital hospitals, with documentation created at patient's bedside terminals (or for that matter, in an ambulance). Conversely, the spate of investments in new ICT infrastructure at hospitals also makes them primed for integrating speech-recognition systems – and to leapfrog intermediate solutions such as digital dictation. (TS)

In March 1980, a futuristic version of the US Air Force's F-16 warplane was unveiled to showcase cutting-edge innovations. These included an automated manoeuvring attack system and a full-authority triplex digital flight control system.
Demonstrated too was what some observers billed a very "unusual" item - in the shape of a VCID (voice-controlled interactive device) for the warplane's avionics.
The VCID claimed a "staggering" 90% success rate. However, the technology of the period limited its repertoire to 256 one-word commands. So too did real-world requirements: humans can hardly conduct intelligent discourse under the 5G-plus forces common to a fighter jet.
As always, the unkindest words came from a US Army soldier; few Air Force pilots, he said, had a vocabulary of more than 256 words.

Speech Recognition Technology

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

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

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

For more information, visit www.ecri.org

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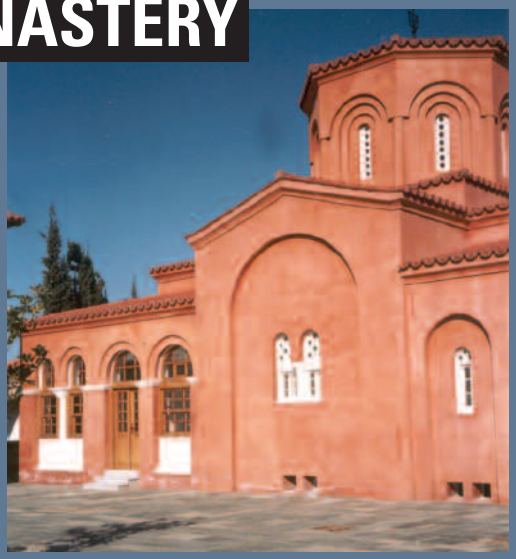
	ECRI-RECOMMENDED SPECIFICATIONS	AGFA HealthCare	DICTAPHONE
MODEL	**DIGITAL DICTATION SYSTEMS**	**DIGITAL DICTATION / SPEECH RECOGNITION**	**ENTERPRISE EXPRESS VOICE and TEXT**
Voice mail/ Remote access		Supported by SpeechMagic, but not integrated	No/Yes
Other		Both front-end and back-end speech recognition	Handheld, portable device (Olympus/Dictaphone/iPAQ PDA, handheld), PC based dictation/telephone dictation
SPEECH RECOGNITION	Yes		Yes
Required hardware	Pentium III, 300 MHz equivalent or higher, RAM 128 MB or higher, 500 MB free HD space, CD-R drive, 16-bit or higher soundcard, noise-cancelling microphone with headphone or speaker (for text-to-speech)	Input device: Philips SpeechMike Speech servers: P4/1GHz/512MB RAM/1GB HD Speech clients: P3/800MHz/256MB RAM/500MB HD	Pentium III 1 GHz, 256 MB RAM, PowerMic
Speech engine		Philips SpeechMagic	Dragon
Speciality vocabularies	General medical	Radiology, Cardiology, ER, Pathology, Surgery, Orthopedics, Internal Medicine, General Medicine, etc. (non-exhaustive)	NA
Text-to-speech/ Continuous speech	Yes/Yes	No/Yes	No/Yes
Voice-enabled processing	Yes	Soon to be released	NA
Batch processing	Yes	Back-end (server-side) speech recognition in batch	Yes
Macros/templates	Yes	Fully customizable macros and templates	Yes
SYSTEM CONFIGURATION			
Architecture	Client/ server	Client/ server	Client/ server(s)
Processor	Pentium or equivalent	Client: P3 or higher, Server: P4 or higher	Pentium III or better
Operating system	Windows 98 SE/ 2000/ XP/ NT or equivalent	Client: Windows 98/Me/NT4.0/2000/XP Server: Windows NT4.0/Server 2000/2003	Windows 2000 Svr/ XP Client
Storage			
Hard drive		Server: 100MB/user	18, 36, 72, 140 GB, hot spare, RAID 5, SCSI
Memory		Client: >256MB, Server: >512MB	256 MB-2 GB
Number of ports	Unlimited	NA	Unlimited
Number of users		Limited to 15000 in total (both authors and correctionists/transcriptionists)	
Dictation	Unlimited	Yes	Unlimited
Transcription	Unlimited	Yes	Unlimited
VOICE QUALITY			
Sampling Rate, bps		19.2 kBit/s (other formats also supported)	64,000
Sampling method		Philips CELP or PCM	PCM
VOICE STORAGE, hr		NA	Unlimited (hardware dependent)
INPUT TYPE	Microphone (handheld, headphone), digital recoreder, telephone	Philips SpeechMike (generation I and II)	Hand mic, hand mic combined scanner data mic, PC dictate, digital mobile, PDA, telephony input
REPORT TYPES			Integrated report generator
Customizable	Yes	Yes	Yes
PRINTER TYPE		NA	Windows compatible
FAULT TOLERANCE			
UPS		Yes	Optional
Redundancy	Yes	Yes	RAID 1, 5, 10
SYSTEM SECURITY	Multilevel pasword	Yes	Mulitlevel security, built-in NT security
INTERFACES	HL7 compatible	HL7 compliant	HL7, customizable, serial
REMOTE DIAGNOSTICS			Yes
24 hr monitoring		24 hr support	No
POWER REQUIREMENTS, VAC, Hz		NA	110-220, 60
SOFTWARE UPGRADES			
Frequency		Yearly	Quarterly
Cost		Determined by service contract	Included with valid service maintenance agreement
SERVICE PROVIDER			
Hardware		Agfa HealthCare	Dictaphone direct or local supplier
Software		Agfa HealthCare	Dictaphone and local supplier
TRAINING PROGRAM		Yes	On-site implementation
OTHER SPECIFICATIONS			VERSION 6 enterprise wide digital dictation and document management; TCP/IP network-compatible using standard network hardware and software.
SUPPLIER FOOTNOTES	These recommendations are the opinions of ECRI's technology experts. ECRI assumes no liability for decisions made based on this data.	Agfa HealthCare has partner agreements with Philips Dictation Systems (SpeechMikes) and Philips Speech Recognition Systems (SpeechMagic)	
MODEL FOOTNOTES			

	ECRI-RECOMMENDED SPECIFICATIONS	DICTAPHONE	R-TAS SYSTEMS
MODEL	**DIGITAL DICTATION SYSTEMS**	**POWERSCRIBE**	**RTAS iSERIES<1>**
Voice mail/ Remote access		No/Yes, replay	Yes/Yes
Other		Handheld, portable device (Olympus/Dictaphone/iPAQ PDA, handheld), PC based dictation/speech recognition	Web-CPR
SPEECH RECOGNITION	Yes	Yes	Optional
Required hardware	Pentium III, 300 MHz equivalent or higher, RAM 128 MB or higher, 500 MB free HD space, CD-R drive, 16-bit or higher soundcard, noise-cancelling microphone with headphone or speaker (for text-to-speech)	Pentium III 1 GHz, 256 MB RAM	Pentium IV, 512 MB RAM, SoundBlaster compatible sound card
Speech engine		Dragon	Dragon
Speciality vocabularies	General medical	Radiology, interventional radiology, orthopedics (trauma), pathology, pediatrics, general surgery, cardiology, general medicine, emergency medicine, mental health, oncology, general practice	Radiology, pathology
Text-to-speech/ Continuous speech	Yes/Yes	Yes/Yes	Optional/Yes
Voice-enabled processing	Yes	Yes	Optional
Batch processing	Yes	Yes	Yes
Macros/templates	Yes	Yes	Optional
SYSTEM CONFIGURATION			
Architecture	Client/ server	Client/ server	Windows 2000
Processor	Pentium or equivalent	Pentium III or better	Pentium
Operating system	Windows 98 SE/ 2000/ XP/ NT or equivalent	Windows 2000 Svr/ XP Client	Windows 2000
Storage			
Hard drive		18, 36, 72, 140 GB, hot spare, RAID 5, SCSI	9 GB min
Memory		256 MB-2 GB	128+ MB min
Number of ports	Unlimited	4 for dial-in replay	Unlimited
Number of users			
Dictation	Unlimited	Unlimited	999,999
Transcription	Unlimited	Unlimited	9,999
VOICE QUALITY			
Sampling Rate, bps		11 kHz, 176,000	16,000-64,000
Sampling method		Vianix MASC	ADPCM
VOICE STORAGE, hr		Unlimited (hardware dependent)	Unlimited
INPUT TYPE	Microphone (handheld, headphone), digital recoreder, telephone	Hand mic, hand mic combined scanner data mic, PC dictate, digital mobile, PDA	Conference mic, handheld mic, barcode/radiology mic, laser mic, Palm recording, PC dictation
REPORT TYPES		Integrated report generator	Listings, summaries, multivariable reporting
Customizable	Yes	Yes	Yes
PRINTER TYPE		Windows compatible	Universal
FAULT TOLERANCE			
UPS		Optional	Yes
Redundancy	Yes	RAID 1, 5, 10	Total redundancy
SYSTEM SECURITY	Multilevel pasword	Mulitlevel security, built-in NT security	9-level password
INTERFACES	HL7 compatible	HL7, customizable, serial	HIS, RIS, LIS, PACS, chart tracking and transcription system
REMOTE DIAGNOSTICS		Yes	Yes
24 hr monitoring		No	Optional
POWER REQUIREMENTS, VAC, Hz		110-220, 60	110, 60, 15 A
SOFTWARE UPGRADES			
Frequency		Quarterly	Quarterly, anually
Cost		Included with valid service maintenance agreement	Varies
SERVICE PROVIDER			
Hardware		Dictaphone direct or local supplier	Sudbury or local affiliate
Software		Dictaphone and local supplier	Sudbury or local affiliate
TRAINING PROGRAM		On-site implementation	User-defined, comprehensive
OTHER SPECIFICATIONS		VERSION 4 digital dictation, speech recognition and document management; TCP/IP network-compatible using standard network hardware and software.	Partitioning; DOCbox; Statcall; clustering capacity; computerized patient record integration; unlimited options for all applications. UL listed; FCC approved.
SUPPLIER FOOTNOTES	These recommendations are the opinions of ECRI's technology experts. ECRI assumes no liability for decisions made based on this data.		
MODEL FOOTNOTES			Model listed is currently marketed; specifications current as of June 2004.

THE HIGH-TECHNOLOGY MONASTERY



Home to the legends of Asclepios and the birthplace of Western medicine's founders, Hippocrates and Galen, Greece is a living museum of modern Europe's heritage. It is also a place where ancient and modern converge, and effortlessly co-exist.

Such perspectives stare visitors in the face at Panagia Philanthropini, an e-Health center in northern Greece, near Ormylia in Chalkidike. Part of the Sacred Convent of the Annunciation of the Mother of God (a majority of whose 120 nuns hold university degrees), the Byzantine architecture of Panagia Philanthropini is also testimony to an exquisite incongruity. Inside lie gleaming Silicon Graphics workstations, state-of-the-art spectroscopy, biological and chemical analytical equipment and cytology systems based on artificial intelligence and virtual reality. These are coupled to a 2 x 622 MB/s asynchronous transfer mode backbone and a 155 MB/s local area network.

At Panagia Philanthropini, some 7,000 women undergo free-of-charge cancer screening every year. Since 1991, Panagia Philanthropini has organized high quality medical services in cooperation with a variety of national, EU and international agencies. Its mainstay activities concern breast, cervical and ovarian cancer screening (it is a member of the European Network of Reference Centers, and representative for the development of pilot projects for early cancer detection in Eastern Europe). These have since been extended to pediatrics, geriatrics, AIDS and environment health. It is also involved in training programs for nurses and physicians from a variety of countries in eastern Europe, north Africa and Turkey.

In keeping with its eclectic nature, Panagia Philanthropini's high-technology equipment rarely lies idle. When not being used for healthcare, some of them are deployed to examine antiquities or artwork. (TS)

... continued from page 11

A CHALLENGE AND AN OPPORTUNITY

In Commissioner Markos Kyprianou's view, this is less an issue about a Commission initiative on a new concept than "how we in the Commission, together with Parliament and the Member States, can make this concept, this reality, work for the benefit of patients without being to the detriment of the national healthcare systems, their viability and their operation."

This, he underlined "is a big challenge for us but I think it is a big opportunity as well, and we can make it work for the benefit of citizens."

COOPERATION ON E-HEALTH

Member States of the European Union and the European Economic Area adopted a declaration on April 19, 2007 on their commitment to cooperate on cross-border e-Health services across Europe, within the cross-border healthcare framework.

e-Health applications such as electronic prescriptions, electronic patient files and health cards are implemented with the aim of delivering safer, more efficient and better quality of care. Dr Klaus Theo Schröder, State Secretary at Germany's Federal Ministry of Health explained that the aim was "to give patients access to their medical records and patient summaries from everywhere within the EU. This not only serves (in providing) ... continuity of care but also affords safety in an emergency".

Indeed, one key aspect of the Declaration at Berlin's e-Health Conference 2007 was the need to ensure that development of electronic health services is not limited to national frontiers but incorporate future facets of cross-border cooperation, and do this on an upfront and proactive basis.

CHECKLIST FOR MEANINGFUL CROSS-BORDER E-HEALTH

In light of the above factors, it is clear that EU-wide cross-border electronic health services will be meaningful only if they conform to the following criteria:

- The nuts-and-bolts of national e-Health infrastructures continue to be established
- EU Member States work collectively on common standards
- European standardization, in turn, opens up new market opportunities
- e-Health implementation provides greater synergy with research and education
- The e-Health industry and other stakeholders (including healthcare IT managers) are closely involved in the process

Franz de Bruine, Directorate-General of the Information Society and Media, noted that "the Commission welcomes the Declaration on European co-operation in the field of Europe-wide electronic health services.

The European Commission is supporting the first steps towards their concrete implementation by means of Large Scale Pilots. The co-operation on e-Health services will help build a European health information space for the benefit of Europe's citizens." (CC)

CHALLENGES OF HEALTHCARE AND HEALTH ICT

Modern hospitals offer a wide variety of services within a broad field of clinical care, specialties and research, as well as medical support services. Diagnosis, treatment and care therefore, tend to consist of complex processes involving multiple individuals, technologies, procedures, and application of knowledge and expertise.
The development of knowledge, technology and skills has been explosive, and makes modern healthcare dependent on teamwork with complementary professional expertise. The reliability, quality and precision of such complex teamwork need real-time and unobstructed flow of data and information to the point-of-care for optimal results.
Meanwhile, the existing volume of published research and knowledge in medicine is, for practical purposes, much too large for paper-based handling. Moreover, the growth of knowledge is exponential.

AUTHOR
Kjell Borthne
Chief Medical Officer of CARDIAC as.

Rising Healthcare Costs: The Role of ICT

The cost of healthcare has been growing fast over the last couple of decades. In the period 1990-2004, healthcare spending has outstripped GDP growth in every member country of the Organisation for Economic Cooperation and Development (OECD) except Finland. With personnel accounting for 65-75 percent of hospital costs, healthcare spending is closely connected with the need for professionals. The complexity of services and the need for emergency capacity within a multitude of specialties – on a round-the-clock basis – explain the rising need for professionals, and thus the high cost.

Hospital ICT expenditure, on the other hand, is lower than it is in other economic sectors – typically within 1-3 per cent of budgets. Despite efforts and political will to improve healthcare, the overall picture in many healthcare organisations today is one of insufficiency and inefficiency – with long waiting times and queuing by patients.

Historically, expectations of return of investments (ROI) and real benefits linked to healthcare ICT projects have often not been met. The failure of ROI is often connected with too narrow a focus on the ICT project. It is therefore a growing priority to restructure work processes and workflow for professionals to remove waste and increase value. To optimise ROI, what is required is real-time flow of information to support professional operations in restructured workflows, both within and between departments, hospitals and primary healthcare.

To obtain a lasting effect from such restructuring, what is imperative are close management involvement and focused processes involving healthcare workers. So far, ICT solutions have, to a large degree, focused on documentation rather than workflow and work processes, and have usually failed to support mobility and point-of-care operations. The paucity of universal standards and architecture supporting integration has usually led to islands of information rather than easy information flow.

Next-Generation ICT Infrastructure

The key elements for a good cost-benefit profile are investments in infrastructure to support broad real-time data acquisition, alongside adequate database and storage capacity. The ICT infrastructure needs to include wireless access by IP-enabled, handheld digital devices to support mobile professionals and point-of-

care operations. The systems, applications and equipment need to be integrated to support flows of information in parallel to the clinical workflow.

Given increasing demand for clinical decision support and knowledge extraction at the point-of-care, investments in pervasive ICT infrastructure and integration must be combined with careful re-engineering of work processes and planning of detailed workflow. These, in turn, will add a positive value stream for the patient through the entire pathway of care, and provide the backbone for extracting systemic performance indicators to support management and clinical governance.

Most hospital laboratories and imaging departments have implemented laboratory information systems and picture archiving and communications systems with radiology information systems. Electronic patient records and computerized physician order entry systems are also under increasing implementation. Such individual systems are important to improve patient safety and increase efficiency. However, the basic ICT infrastructure will determine how such systems can be extended to support workflow and mobile professionals, at the point-of-care.

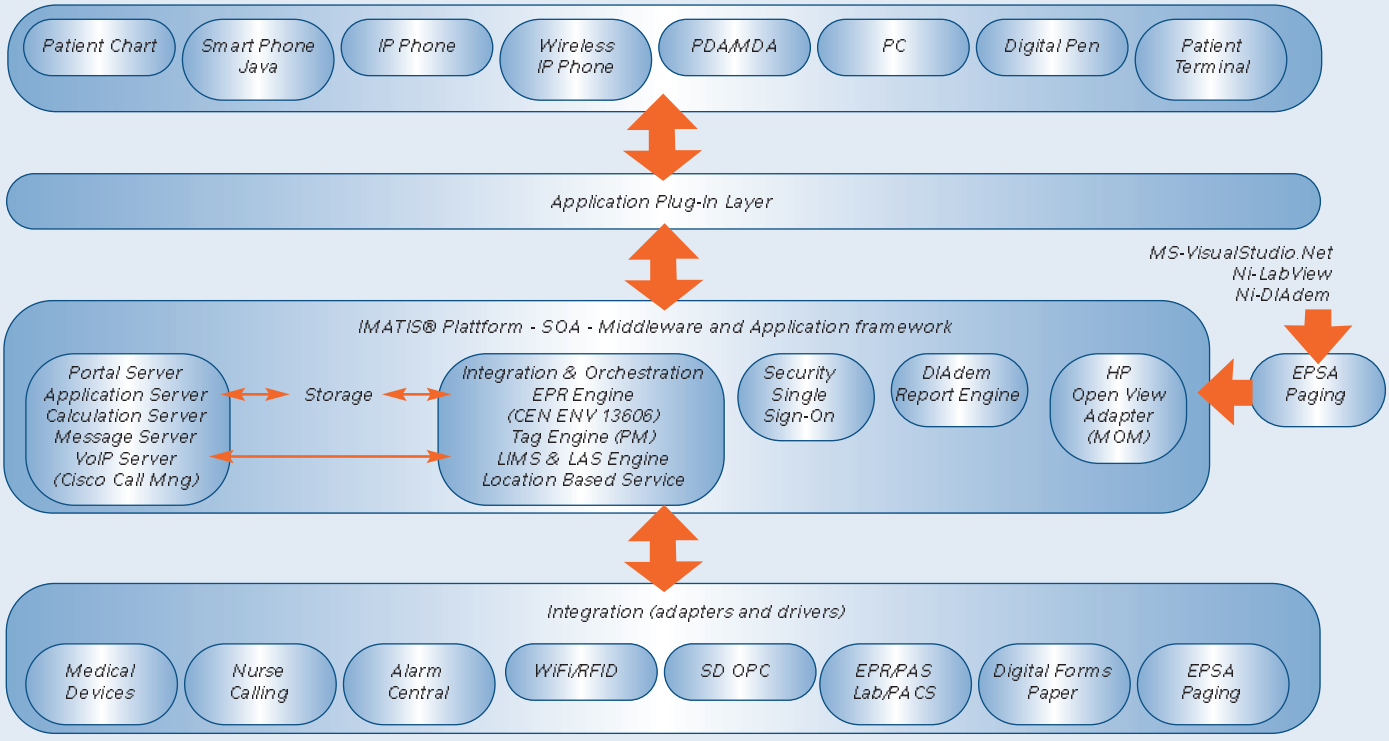
The Pervasive Digital Hospital

Two large University Hospitals in Norway, St. Olav's Hospital in Trondheim and Nye AHUS near Oslo, have chosen a major IT infrastructural overhaul which lays the foundation for a true, pervasive digital hospital. Under the leadership of Telenor, St. Olav's is already operating the departments of the first phase, and has started construction on the second phase. Nye AHUS is under construction and will open in 2008. Using network appliances from Cisco Systems and middleware from Norway's Cardiac, HP built a highly distributed network which exploits the latest mobile and wireless technology.

A major part of the project focuses on Nurse Call - a patient monitoring application that allows nurses to receive direct alerts via PDA, PC or IP phone, on their patients' status. Innovative patient terminals developed by Cardiac deliver hospital services, nurse calling, Internet, entertainment and telephone service to the patient's bedside, while also giving clinicians secure access to electronic patient records and other data, information and support.

Nurses and other clinicians are also able to communicate directly with their patients via the patient terminal, and with colleagues, no matter where they are. If there is no response within seconds, the patient's request automatically routes to another nurse until someone responds. An intelligent system for location based services is able to track physicians, nurses and porters by their IP-enabled devices throughout the hospital, so they can be found at a moment's notice in an emergency. The system also allows tracking of assets by the same system utilizing RFID or ultrasonic tags.

The new revolution in healthcare is not only about medicine, but also about using technology to deliver real-time information which drives safe and efficient patient-centric care. Integrating a hospital's medical devices, instruments and data/information systems to steadfast and immediate communications underscores the hospital of tomorrow.



Architecture of Cardiac's IMATIS middleware for messaging, integration and orchestration of services.

THE UK NHS IT PROGRAMME

The most expensive patient administration system ever?

AUTHOR
Dr. Jan K Melichar
NHS Consultant.

The UK public healthcare IT programme [National Programme for IT (NPfIT)] is a classic example of a top-down grand plan for a public IT system that will not deliver but will cost up to £20 billion.

This is due to the familiar inability of these 'grand projects' to actually involve those on the ground at the initial planning stage and to subsequently believe all remains well until it is too late to turn back.

Here I will recollect my personal involvement in the project, which reflects the bigger picture reported elsewhere. I was extremely keen to be a clinical champion of IT that works and have ended up as someone who is deeply saddened that an opportunity to bring UK healthcare into the 21st century has been squandered.

Shiny, New and Hardly Efficient

The plan for NPfIT arose from the desire to bring together all the potential benefits of having a country-wide joined-up healthcare IT system, with shared patient records and the ability to transfer information rapidly between, for example, the family physician and the hospital. In the predominantly public healthcare system in the UK, this could have delivered truly great efficiency gains. Unfortunately it was dreamt up by IT management consultants employed by the Labour Government without any real understanding of how things actually worked. They delivered a shiny new project that the politicians loved - a centralised, top-down, big, bold and, critically, brand-new IT system.

Prior to the project, the IT that existed in the UK healthcare system was piecemeal but very efficient - each family practice had had approximately a decade to implement IT systems specific to their needs and hospitals also had the freedom to choose systems according to need.

Because of the complexity involved in hospital care, the majority of hospital systems were Patient Administration Systems, with clinical records being paper-based. In primary care (family practice), however, great steps had been made in designing and refining IT systems that could deliver both administrative and clinical roles. These IT systems, in some practices, truly delivered (and continue to deliver) a paperless clinical and administrative system. Though not compatible with one another, there were examples where novel open-architecture solutions (e.g. XML) could deliver useful communication between family practices and hospitals.

A PowerPoint Tour-de-Force

I attended one of the first conferences on this new IT system in 2002, prior to any of the contracts being awarded.

> Imagine a busy Intensive Care Unit or Emergency Department, where clinical staff would be going from the computer to the patients many hundreds of times per shift: the card forces a log-off as you have to take it with you....
>
> We, as a clinical advisory group, were very clear that the log-on time had to be less than 2 seconds, otherwise this system would be nothing more than a glorified administrative system.... It still remains at 20-25 seconds.

I believe, of the 300 or so delegates, I was the only clinician there. At the end of the conference, which was a PowerPoint tour-de-force of vague 'big ideas', I asked Richard Granger, who became the Director General of NHS IT, what involvement there had been from the end-users i.e. the clinicians such as myself who would actually have to use the system.

His reply - that he had discussed the project with the heads of the clinical Royal Colleges and that was more than enough involvement - filled me with concern.

Subsequently, it has been shown that even this clinical engagement was not followed through - for example, the main hospital system specifications were developed without any further meaningful clinical engagement or scrutiny.

The main hospital system specifications were developed without any further meaningful clinical engagement or scrutiny.

Core Competency = Domain Knowledge

Following on from the conference, the announcement of the various franchises to design and deliver this project were revealed. There was a very clear decision to start afresh - all the IT knowledge that had gone into making the family practices have effective IT systems would be ignored and the plan was to go for a top-down new system, which would be custom-designed. England was to be split into 5 franchise areas, called Clusters.

Each franchise would have a sole supplier (service provider) who would deliver a combination of hardware and software that would be built to work according to NpfIT's still-to-be-clarified specifications.

The suppliers were Accenture (twice), BT, CSC and Fujitsu, none of which, frankly, had much experience of delivering clinical IT systems in the UK. However, they were big corporations who could deliver big solutions, knew how to converse with politicians and were adept at delivering profitable contracts for their shareholders. As can be seen from the subsequent delays and problems with software suppliers such as iSoft, they did seem to have problems with delivering anything worthwhile.

Still keen to help, I joined one of the so-called Clinical Advisory Groups that were designed to provide some clinical input to each cluster. We were approximately 20 IT-minded clinicians and met every 2-3 months to give feedback to the plans of the Southern Cluster (primary supplier Fujitsu), relating to our own sub-region. None of us were paid to do this and our employing hospitals allowed us leave on the understanding that it would bring future benefit - there never was any funding for real clinical input.

Nonetheless, we were praised along the way - the Southern Cluster was acknowledged as having the most involved clinical input. Given the non-funding of the clinical input, it was unsurprising to learn that there was no meaningful clinical input in the 3 Northern Clusters and only some input in our Southern Cluster and in the London Cluster. Our involvement proved very frustrating over the years - we would be asked to review large documents with very little notice to sign them off as being fine, from a clinical point of view.

Teething Problems or More

The best example though, exposed the fact that the project was not merely going through some initial difficulties but had deep-seated defects in its design. This was the log-on for the system. For the project, each user would have a log-on card and PIN number, to be keyed in at every log-on.

Imagine a busy Intensive Care Unit or Emergency Department, where clinical staff would be going from the computer to the patients many hundreds of times per shift: the card forces a log-off as you have to take it with you. We, as a clinical advisory group, were very clear that the log-on time had to be less than 2 seconds, otherwise this system would be nothing more than a glorified administrative system, with clinical records being kept on 'instant-access' paper. ++++++++++++++++++++++++++++++++

The initial log-on times they delivered, which fulfilled all the contracts agreed at the outset, were of the order of 90 seconds! After a lot of work, it still remains at 20-25 seconds and so I fear that the system will never really work. It should be noted that the suppliers were very proud of the log-on times that they had, reflecting their complete ignorance of the clinical realities.

Parliamentary Committee Issues Warning

Subsequently, our Clinical Advisory Group has been disbanded following a recent NHS re-organisation with a promise that 'clinical engagement would be by a new mechanism'. This was over seven months ago and the new mechanism remains unfunded and still to be delivered. Thus the possibility of using clinicians to inform this system, to support patient care, safety and clinical governance, is now on hold. Sadly, the powers-that-be still remain intent on pursuing this to the bitter end, rather than admitting that there are great problems with the system and trying to fix things, which can only be done if an admission is made that there are problems.

This may seem to be an excessive review of the project but it reflects both my own experience and the April 2007 report of the UK House of Commons Committee of Public Accounts. The Committee, an independent arm of the UK Parliament, put it very clearly: there is no clear date for delivering a patient clinical record, there is no control over expenditure, there is poor communication with clinicians and 'it is unlikely that significant clinical benefits will be delivered by the end of the contract period.'

INDIAN IT AND EUROPE

First Date, Blind Date or Timid Courtship ?

HEALTHCARE IT MANAGEMENT ANALYSIS

Offshore IT is principally about India. Indian IT firms pioneered the offshore IT delivery model – not the Americans, as is often assumed.

Secondly, for over 15 years, Indian IT has involved much more than low-end coding (or, for that matter, contact call centres, which account for barely 5% of Indian IT revenues). Indeed, by the mid-1990s, IT firms in India claimed more US Defence Department-inspired Capability Maturity Model (CMM) certifications – the software industry's highest quality standard - than America and Europe; they continue to do so.

Thirdly, India has leveraged a strong presence in the heart of the American IT industry. A Duke University report in January 2007 stated that "Indians have founded more engineering and technology companies in the US in the past decade than immigrants from the UK, China, Taiwan and Japan combined."

The above factors have had a significant and lasting impact, in several ways.

Comparative Perspectives: Indian IT and the World

Indian IT exports are rising at 25-30% a year. Already about 30 billion Euros, this figure is leagues ahead of its rivals. Indeed, India's offshore IT industry is larger than all its competitors put together. It is seven times the size of China, 20 times that of Russia and 60 times Romania's.

More startlingly, individual Indian companies like Infosys, Wipro and Tata Consultancy Services (featured in an HITM interview in this issue) have revenues equivalent to China's entire offshore IT industry; in recognition of this, the Chinese gave TCS majority holding in Zhongguancun, their first offshore software park (with Microsoft also a partner).

The Americans and the Indians

As a result, the real battle lines being drawn by Indian IT firms concern their American competitors, such as CSC, EDS, Accenture, and, above all, IBM. American financial markets strongly endorse the Indians. Since several years, large listed Indian IT firms boast valuations higher than EDS or Accenture, and many times more than their principal European competitors Cap Gemini or Atos Origin.

This, however, does not mean that American IT is sitting still. Driven mainly by Indian-American technology professionals (some 60,000 of who have returned home in the past few years), US firms have steadily beefed up their Indian presence. Accenture will soon join GE, the symbol of America Inc., in employing more in India than the US. Overall, according to IT industry publication Computer Business Review, the 50 largest IT services firms already have 430,000 of their total staff of 1.7 million employees located in India, or more than 80% of their entire non-Western workforce.

Europe and Game India: Too Little, Too Late ?

By and large, Europeans have been late entrants to Game India. Cap Gemini's recent acquisition of Kanbay, a medium-sized IT firm, will mean an eventual Indian workforce of 12,000. This is four times lower than IBM's 50,000 (targeted to rise to 85,000 - as part of a $6 billion investment), and well below staff strength at any of the Big Indian IT firms.

Such numbers have significance for Europe in the light of a real-world example. Europe's first end-to-end bank outsourcing contract, from ABN-Amro in 2005, was marked by the absence of any European player, not even the bank's fellow Dutch firm Atos Origin. The order was carved up by Indian IT firms, plus IBM and Accenture.

More significant was the award to Indian firms of some of the highest-value chunks of the order: application development and re-engineering, rather than facilities management.

From SoA to Packages: A Growing Indian Face in World IT

In short, there are now major qualitative/strategic factors at play in the world IT landscape. After opening a high-end Indian R&D centre, IBM announced the shift of global development and delivery for its emerging Service Oriented Architecture (SOA) to Bangalore.

Even the package option has an increasingly Indian face. Since 2003, Oracle has consolidated development and delivery for its own products plus those of PeopleSoft and J.D Edwards – which it acquired - to its 15,000-strong (and growing) India operation. Partly in response, Europe's SAP has followed suit. By 2010, SAP plans to double Indian headcount from the current 3,500 (its largest outside its home market, Germany) to 7,000 (larger than Germany).

The imperative of an Indian presence for companies like Oracle is highlighted by its billion dollar buyout of India's i-Flex (the world's largest vendor of banking packages for the fifth year in a row). The acquisition is aimed at positioning Oracle against IBM and Sun in the future banking back-office modernization space. Oracle's corporate Website notes that India is home to "the highest number of certified (Sun) Java architects in the world."

Indian Healthcare IT in Europe

The years ahead will see Indian IT firms seeking entry into Europe through several channels.

The first will be via acquisitions – mainly of mid-sized European IT firms in the 50-200 million Euro space. Another will be to leverage the high-capacity/quick turnaround (rather than low-cost) card – especially for projects with political/strategic mandates. Europe's engineering blue chip, Alstom, for example, has invested more than one third of its global R&D budget in a facility at Indian IT giant Infosys. Troubled Airbus is also following, though not yet on the scale of Boeing which has outsourced its 777 Dreamliner project to India's HCL Technologies. In Britain, some industry sources expect that recent delays with the NHS modernisation programme may see TCS' huge offshore capacity deployed in a rescue act (see previous article and accompanying interview).

Such last-minute Save Us scenarios (along the lines of Year 2000 and Euro conversion projects) may again provide pickings for Indian IT firms, or for US and European firms with a strong India presence. This would be especially true if there is a mismatch between skills availability in Europe and the objectives of large-scale IT projects such as those in e-Health.

Indian IT firms are also seeking European healthcare opportunities with new products and solutions. iMedOne, for example, is a successful India-developed hospital information system (HIS), now being implemented at German, Dutch and Nordic hospitals by TietoEnator.

Evidence of the scale of Indian healthcare IT ambitions was at the 2007 Med-e-Tel conference in Luxembourg, when a small Indian firm called Sobha Renaissance announced launch of ACTchange, an Integrated Health Care Exchange (iHCx) framework designed to work securely and flexibly with existing systems in hospitals - including legacy platforms. Sobha has deployed and tested modules for oncology, neurology, cardiology, pathology and radiology. ACTchange's biggest plus point, according to the company, is that it is platform-independent, cost-effective and patient-centric. Its services driven model eliminates the need to constantly keep up with a technology market in permanent flux.

To conclude, Indian IT already has a foot in the European healthcare market, and can count on its inherent strengths (above all in terms of balance sheets, management and manpower, as well as cost and proven delivery models) to grow further. The challenge for European healthcare IT managers is to find ways to leverage this imaginatively to their advantage. As HITM's interview with Indian IT giant TCS shows in the following pages, the Indians seem ready and able, as long of course as the Europeans are willing.

HOW DO GLOBAL FINANCIAL MARKETS RATE INDIAN SOFTWARE FIRMS ?

Market Capitalisation in US dollars: May 31, 2007

Indian	
Tata Consultancy	28.50 billion
Infosys	28.13 billion
Wipro	23.74 billion
Cognizant Technologies	11.29 billion
Satyam Computer	8.45 billion
US and European	
IBM	158.28 billion*
Accenture	24.30 billion
EDS	14.66 billion
CapGemini	11.03 billion
Computer Sciences Corp.	9.60 billion
Atos Origin	4.25 billion
Unisys	2.89 billion

* - includes hardware

Source: HITM

Interview with India's Tata Consultancy Services

Though Europe's healthcare market has posed cultural barriers to entry by Indian IT service firms, there are exceptions –some of them subtle. In the UK, for example, India's Tata Consultancy Services (TCS) is a key member of the Fujitsu Alliance modernising the National Health Service (NHS) under the so-called National Programme for IT. The TCS contribution, through its 2,500-strong UK workforce, involves clinical application implementation, systems integration and data migration. Some industry sources expect that recent delays with the NHS modernisation programme may see TCS' huge offshore capacity deployed in a rescue act.

HITM's Catalina Ciolan interviewed Navin Sahadeo from TCS' London office.

THE TATA GROUP

Founded in the middle of the 19th century, the Tata Group is one of India's largest business conglomerates, accounting for about 3% of India's GDP. The Group comprises 96 companies operating in 54 countries in a wide range of business sectors. Aside from ICT, these include engineering, materials, energy, consumer products, hotels and chemicals.

Other than TCS, listed Tata firms include Tata Steel (recently in the news after the takeover of Anglo-Dutch steel giant Corus and Singapore's NatSteel), Tata Tea (which owns Britain's Tetley) and Tata Motors (which acquired Daewoo Commercial Vehicles), is due to launch a new car priced at below $2,500, and has recently been named as one of the frontrunners in te race to buy Jaguar and Land Rover.

HITM: The Tatas are very much now in the news (especially after their takeover of Anglo-Dutch steel giant Corus), and are probably one of India's best known companies abroad. Can you tell us a little more about Tata Consultancy.

Navin Sahadeo (NS): Tata Consultancy Services has been in existence since 1968 and operated as a division of the Tata Group until 2004 when an IPO led to it becoming an independent company. TCS is today one of the fastest growing IT and services companies globally. We employ 85,000 worldwide, excluding our subsidiaries.

HITM: What are your revenues ? How much of this is from Europe ?

(NS): Revenues for the year ending March 2007 were 4.3 billion US dollars. Europe accounts for 28.5% of our revenues. We have 28 offices in 14 European countries.

HITM: We know you are Ferrari's technology partner. Do you have any other such high value brands in your clients ?

(NS): Yes, to name a few - British Airways, Nokia, Aviva, ABN Amro, BT.

HITM: The UK NHS order made you the first Indian IT company to get a major health IT contract in Europe. Can you give us some details ? What are the other companies in the NHS IT modernization consortium doing ?

(NS): TCS is one of the partners to Fujitsu Services providing the Cerner Solution to the Southern Programme for IT (SPfIT) as part of the National Programme for IT (NPfIT) for the NHS in England. TCS's role is mainly in the areas of Solution Deployment, Integration and Data areas. Fujitsu is the Prime Contractor and Cerner is providing its Millennium Solution to the programme.

HITM: Is healthcare a new market segment for you ? Do you do health IT work elsewhere in Europe - or in the US ?

(NS): The Healthcare Practice in TCS has been in existence since 1997. It is currently one of our key focus industries. Currently, we do not provide services to other healthcare institutions in Europe but the US is a large market for TCS. Our clients in the US in this area include the Department of Defence Military Healthcare Systems.

HITM: How big is your healthcare IT business ? What is your work in this area in India ?

(NS): Life Sciences & Healthcare represents 4.3% of TCS's total revenues and are growing rapidly. In India, TCS provides solutions to hospitals and regional governments. These solutions include:

- Hospital Management Systems (Patient Administration, Clinicals, etc)
- Health Management Information Systems (Disease Surveillence, Family Welfare)
- Opthalmic EMR
- Waste Management

HITM: Why were you selected for the NHS contract - rather than other Indian firms such as Infosys ?

(NS): The consortium had a compelling proposition which the NHS found attractive. TCS' contribution was

the ability to leverage its full services play - Domain Knowledge, Global Network Delivery Model and world class delivery capabilities. Also important was our ability to partner with other organisations to ensure the consortium had the capacity and skills to deliver the programme.

HITM: We also know about another Indian company in health outsourcing in the UK, named Xansa. What is the difference between their work and yours ?

(NS): Xansa provides Shared Services to the NHS for Payroll and F&A. TCS is providing services supporting the implementation of the National Programme for IT solution in the Southern Programme for IT (SPfIT).

HITM: We know there are lot of difficulties with the NHS project. A top manager from Fujitsu resigned, saying that the project was simply too big ? Do you agree ?

(NS): Any programme of this size and complexity will have challenges and this programme is no different. I believe the programme will deliver significant benefits to the NHS and to healthcare in general. Lessons are being learnt on a daily basis, and more importantly, systems are being implemented and used by the NHS.

HITM: Do you think such questions (of scale) would be best handled out of India ? In other words, should the NHS have not bothered taking Fujitsu and others, but simply given everything to India ? This has already happened in banking. For example, ABN Amro chose to avoid European firms entirely. Do you see something similar happening in the NHS ?

(NS): This is the largest IT programme, outside of the defence industry, that has ever been undertaken. No single company has the breadth and depth of capabilities necessary to delivery it. Indian firms clearly bring significant large-scale quality delivery capabilities and can play a major role but it is not practicable for them to deliver everything from offshore.

Indian firms already have more leverageable capabilities than are currently being utilised in the NHS programme. The NHS could benefit from bundling some of the common activities across the programmes and re-using components and skills. Testing and integration are two that come to mind.

HITM: What do you see as the future of health offshoring? For your company ? For other Indian IT firms ?

(NS): Healthcare can benefit significantly from offshoring as other industries have done already. However, some of the constraints around Information Governance are key to exploring the benefits of this. Any process where patient identifiable data is not used can be offshored. Some of the areas which I believe could benefit from offshoring are Application Development, Application Maintenance, Assistive Technologies, New Care Delivery Models, Systems Management, Business Intelligence and Reporting, as well as BPO Services such as F&A, HR, Clinical Data Management.

The rising cost of healthcare is a global concern and creating new healthcare delivery models and leveraging global expertise is key to managing these costs. TCS would like to expand the services currently provided to the global healthcare industry, and bring significant benefits.

HITM: Here in continental Europe, we sometimes get bills for half a Euro. It is obviously not very efficient, to have this kind of system, where administering the bill costs more than the amount billed. Do you think this is a part of the European healthcare culture - with the welfare state, universal access and all of that ? Would you expect this to change with time ?

(NS): Everyone is concerned about the rising costs of healthcare. This is a global challenge - not just one within Europe - and it is important that we learn from each other. After all, we all want the same outcome, improved healthcare for everybody. Any system that is 'free at the point of delivery' will have challenges since the demand will always be greater than supply capability. Changing this culture will be extremely difficult. It will take a long time and be politically challenging. However, most people also recognise that the status quo cannot be maintained indefinitely - as increased funding means higher taxes. Being innovative in how care is delivered and moving care into the community are some of the strategies to managing these rising costs.

There will be an increasing move to a mixed economy in healthcare with time and using the private sector may be the only way to provide needed capacity. Perhaps utilising spare capacity in other countries may also be beneficial, as long as quality of care is maintained.

HITM: On a personal note, what do you feel about Europe in general, and its healthcare system in particular ?

(NS): The cultural diversity here appeals greatly to me. It is possibly one of the main reasons I have lived here for 32 years and also worked extensively across Europe. In general, I have found the people to be very friendly, warm and helpful. There is a lot more of Europe for me to visit and I hope I have the same opinion in the future.

In terms of healthcare, as I mentioned, I believe that essential healthcare must be free to everyone. However, this must be balanced against the cost of provision and the burden on the public purse. In reality, a mixed public-private system may be the only workable solution for the long term. I also believe that we as individuals must take more responsibility for our personal health.

REUSING CLINICAL INFORMATION IN EHR AND MESSAGE STANDARDS

Many countries currently develop their national strategic projects to achieve a safe and unified exchange of patient information in healthcare. Such developments and projects demand sector wide use of international standards.
The challenge in such development is to combine the information needs at a national level, for instance for national vital health statistics, with the patients' wishes to health record access and control, and the needs of clinicians for very detailed discrete and complex health data and process management.

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The strategic mindset: standardisation and efficiency

As such, these national strategies require a mindset which spans a range of issues from the standardisation of a single atomic data item concerning one individual patient, to the determination of outcomes and necessary resources at the national - and even international - level. Based on a five-level strategic information model covering individual data, results of clinical reasoning, aggregating on group level for different purposes, aggregation on population level, and finally the international data comparison, the perspective of clinicians are presented here.
The assumption is that correct and efficient data capture at the point of care, including data entry by patients themselves, gives the most reliable collection, provided that standards are used in every step along this strategic information model.

A multitude of standards and choices

From a clinician's perspective, there are several types of standards available and necessary for sensible and useful application of information and communication technology (ICT) in Health Care. This contribution presents a typology of relevant standards for use in electronic health records and electronic messages, including for quality care, vocabulary, information modelling, workflow and technical. Once it is clear what information needs to be documented, stored, managed, and exchanged, the modelling of clinical content with use of standards for the electronic health record and electronic messages can be addressed.
The use of care information models (such as clinical templates or archetypes) to structure clinical information and to define the technical specifications leads to the conclusion that this is a feasible and economic approach to developing and applying standards that combine all clinical and technical requirements for use of ICT in Health Care.

It is further assumed that the care information models are standardised in such a manner that reuse is possible, including for aggregation for quality assurance, billing, policy making, and national health statistics, without having to ask clinicians for additional data collection activity.
Semantic interoperability between EPR (electronic patient record) systems in health care has been defined by this author as 'the electronic exchange of clinical patient information in such a format that the intended meaning of the information from the sender can be interpreted by the receiver without changes or loss'. The addition of 'intelligence' to this definition implies that clinically relevant knowledge is applied to the content, structuring and processing of the electronic documentation and of the information exchange.

The Dutch approach

In the Netherlands, the activities of the National ICT institute for Health Care (www.nictiz.nl) lead to the emergence of standards for electronic message exchange and development of EPRs. The Netherlands have based their 'information for health care' strategy on the message paradigm, applying the international Health Level 7 version 3 (HL7 v3) standard for the safe exchange of patient information to authorized users via a national infrastructure called AORTA.

HL7 v3 is used in about 20 projects now as a method to determine (clinical) user needs, modelling these needs, and implement clinical content in electronic messages. In addition, several vendors base their electronic patient record systems on the HL7 v3 models. A key part of the developments include the HL7 v3 messages for continuity of care: the care provision domain. This care provision message is meant for referrals, record exchange, discharge summaries and so on.

Five types of standards to achieve semantic interoperability

Five core areas of standardisation are identified: clinical, vocabulary, models, workflow, and technical standards.

Clinical standards for professional patient care are often guidelines, analysis of evidence, outcome indicators, assessment scales, and programs for disease management. These contain domain knowledge which must be represented in the applications and messages, and data entry for the required data must be supported.

A second type of standards concerns health care terminology. Terminologies consist of very different formats and are usually developed for a specific purpose, such as clinical

documentation, comparison of data, or statistical reporting. Terminology gives clinicians the appropriate words to describe what they see and hear from the patient and define what they do.

The third type focuses on information models for the electronic recording and exchange of information in health care information systems. For instance, CEN 13606 (from the European Committee for Standardisation) and HL7 provide standard models for designing the recording, exchange, management and integration of data that support patient care.

The fourth type of standards deals with workflow or processes management, and describe how the care for patients evolves, who is involved and when, who interacts with whom, and what needs to be done in what order.
Finally, the technical standards are numerous, and include infrastructure, networking, system technical aspects and certainly the security measures and legal issues for data security and privacy protection.

Integration of standards in care information models: one effort, multiple use

Sorting out what standards exactly fit together to achieve the desired semantic interoperability on the national level is a huge effort. Billions of Euros are invested in this, so any method to make the development quicker, transformation between standards feasible, and the reuse possible, is considered an asset.

One of the projects of Nictiz concerns an EPR system for stroke patients. In stroke care a wealth of clinical knowledge, assessment instruments, data and vocabularies needs to be included in ICT for continuity of care. In a combined effort of the author and a Dutch company, developer of the stroke system, the care information models were developed to serve as a reusable building block within the framework of HL7 v3 Care Provision messages. The concept of a care information model was introduced to achieve a manageable approach to HL7 messages that also could be used for EPR development.

Care information models combine different standards materials and create valuable content for intelligent semantic interoperability. They are a communication bridge between clinicians and technicians and facilitate inputs into the technical development of electronic messages and EPR systems. The document structure for the care information models consists of meta-information, detailed description of the clinical instrument, including variables, values, coding and data specifications, and the reason and method for its application in practice. It specifies the clinical data for use in the HL7 v3 message standard and maps every variable to its exact position in the message model and in the technical XML message specification. In addition, items like copyrights of source materials, disclaimer, and intended use of the care information models are addressed.
An overview of care information models for stroke are available at the Website www.zorginformatiemodel.nl.

Many of these care information models have been reused elsewhere. For instance, the vital signs panel is necessary in almost every clinical area. The Glasgow Coma Scale was modeled for stroke care, but could also be implemented in a system for the trauma registration for national statistics.

We are currently in the process of developing these care information models for different clinical areas and different health care sectors. It started in curative medicine, and is now moving to care for ageing and handicapped and to social support. The work is carried out in such a way that the results also function as the clinical description and vocabulary binding in the archetype framework of the CEN 13606-2 standard.

Thus, the care information models bridge and combine the different standards paradigms necessary to achieve semantic interoperability and allow the collection of a discrete data item and, along with the five layer strategic model for health data aggregation, its reuse for national statistics.

THE EHR: A BACKGROUNDER

The Electronic Health Record (EHR) is the centrepiece of efforts by regulators and industry to integrate healthcare IT/information systems at both the national and international levels. Its overriding purpose is to improve the quality of patient care and reduce healthcare costs. Nevertheless, several barriers remain to be overcome before EHRs are adopted on a large scale.

HEALTHCARE IT MANAGEMENT ANALYSIS

Firstly, there are major technology challenges accompanying the design and deployment of secure, high-quality EHRs. This is emphasised further by the lack of interoperability between legacy healthcare IT systems and the process of continuing – sometimes relentless – technology change. In addition, two crucial human factors need to also be taken into account: the need to ensure that patients trust and accept their EHRs, while healthcare professionals see it as a convenience rather than a hindrance to established workflow patterns.

As noted in the previous article by Dr. Goossen (*Reusing Clinical Information in EHR and Message Standards*), there are two principal models to design the recording, exchange, management and integration of data for the support of patient care.

These are Europe's CEN 13606 and HL7 messaging standards from the US.

CEN and HL7 have signed a memorandum of understanding to pursue both harmonisation as well as convergence, as far as possible. This is evidently a critical factor for future interoperability of healthcare information systems, given that CEN and HL7 are the two key organisations involved in the forumation of such standards. Many CEN experts participate actively in HL7 developments and vice-versa. Areas of harmonisation include data types, reference models and archetypes.

A brief overview of the efforts of both organisations in the area of EHRs is provided below.

CEN

CEN 13606 – from the European Committee for Standardisation – is titled 'Electronic Health Record Communication'. It was first published in 1999, but saw limited deployment, largely owing to implementation problems associated with its single-level modelling approach. In November 2001, CEN decided to update 13606, based on the openEHR archetype methodology. Towards this, it signed a memorandum of understanding with the London-based openEHR Foundation.

The revised CEN EN13606 is a five-part standard consisting of a Reference Model, Archetype Interchange Specification, Reference Archetypes and Term Lists, Security Features and Exchange Models.

'Several barriers remain before EHRs are adopted on a large scale and thereby serve their principal purpose - to integrate healthcare IT systems, improve patient care quality and control costs. These include both challenges from technology as well as human factors: to obtain the trust of both patients and healthcare professionals.'

HL7

Health Level Seven (HL7) is the principal US healthcare IT standards organisation, and is accredited to the American National Standards Institute (ANSI). The 'Level Seven' refers to the highest/application level of the ISO (International Organisation for Standardisation) communications model for Open Systems Interconnection.

With an original mandate limited to messaging standards, HL7 has over time become increasingly involved in standardising decision support and terminology.

In late 2001, HL7 decided to set up a SIG (Special Interest Group) on the EHR.

HL7's first EHR standard was a System Functional Model and Specification Draft Standard for Trial Use. Though not an explicit EHR standard, the widely-known HL7 Clinical Document Architecture (CDA) forms an important sub-component of an EHR harmonised with CEN 13606/ openEHR. A second EHR focus of HL7 is the Templates SIG which is working with openEHR and CEN representatives on archetypes and templates.

HL7's latest launch is an EHR System Registry, which provides for submission and listing of EHR System Functional Profiles in conformity with the ANSI-approved EHR-S FM (functional model) standard. At the time of publication of this issue of *HITM*, it had two registered profiles: the Emergency Department Information Systems Profile and the Legal EHR profile. (TS)

From GEHR to openEHR

It remains little known that the first international EHR initiative originated in Europe.

In the early 1990s, the EU funded the GEHR (Good European Health Record) to develop specifications for a meaningful EHR based on clinical, legal and technical requirements. The GEHR led to a formal object-oriented IT model (as well as 2,000-plus pages of documentation). However, it proved tough to implement, largely for reasons of technology.

Follow-up to GEHR is one of the principal mandates of openEHR (www.openehr.org), a non-profit organisation based in the UK and founded by University College London and Australia's Ocean Informatics. openEHR sees itself as an international, on-line community to promote and facilitate progress towards high-quality EHRs and support needs of patients and clinicians. It has committed to publish the theoretical foundations and evaluations of its work in the public domain and make available relevant source programs and datasets under an OpenSource license.

openEHR, however, does not see itself as a standards organisation. Its members, instead, work through CEN and HL7 to contribute to the development of standards, and feedback such efforts to their own specifications and software. (TS)

THE EUROPEAN INVESTMENT

HEALTHCARE IT MANAGEMENT ANALYSIS

With a balance sheet of 289 billion Euros at the end of 2006, the European Investment Bank (EIB) is no minnow. And yet, few outside the inner corridors of the EU and the world of Big Finance are aware of its reach, influence and impact.

The Luxembourg-based EIB was created by the EU's founding Treaty of Rome in 1958. Its shareholders are EU Member States, whose Finance Ministers constitute the Bank's Board of Governors. Officially, the EIB's mission is to "further the objectives of the European Union by making long-term finance available for sound investment."

The EIB achieves this through own lending, coupled to its Triple-A rated blue-chip credentials which enable it to attract other secondary financing. Its widespread borrowing activity has also been a catalyst for the broader development of Europe's capital markets. Crucially, the EIB is neither dependent on the EU budget or on European taxpayers.

FUNDING ELIGIBILITY

To receive EIB money, projects must be viable in four contexts: business/economic, technical, environmental and financial, and also contribute to "furthering the policies" of the EU. The EIB concentrates on long-term lending (+/- 30 years) to both private and public sectors in five priority areas: economic and social cohesion; research, development and innovation; trans-European transport, telecommunications and energy networks; environmental protection; and support for SMEs. It also participates outside the Union in the implementation of development aid and cooperation policies – with a recent focus on candidate countries – above all, in the Balkans (where it coordinates lending with the World Bank and the European Bank for Reconstruction and Development).

THE EIB AND HEALTHCARE

As it happens, the EIB is very much an influential player in Europe's healthcare agenda, especially since the 1997 Amsterdam European Council highlighted the need for an intensification of investment in human capital (health and knowledge) as a key driver of economic growth. Such a stance was boosted further by the Lisbon Strategy in 2000, which targets a competitive knowledge/innovation-based EU economy by the end of the decade.

Since January 1997, the EIB has lent over 10 billion Euros to the healthcare sector. The bulk of this lending has been for building new hospitals, and modernising older ones (not least for overhauling equipment and IT systems).

The Bank also has a soft but crucial mandate to bring poorer parts of Europe up to speed in the interests of "economic and social cohesion." Consequently, the financing of health infrastructure in less developed regions of the EU has been one of its priorities (including new Member States such as Hungary, Poland, Romania, the Czech Republic and Cyprus). The Bank prefers public-private partnerships (PPP) as a means to both achieve increased efficiency in facilities management and transfer design and construction risk to the private sector.

An overview of its activity in the healthcare sector over the past two years is provided below.

SPAIN: TOLEDO AND ASTURIAS

In March 2007, the EIB granted a 205 million Euro, 30-year loan for the construction and equipping of a new general hospital in Toledo, the capital of Spain's Castilla-La Mancha region. The new hospital will have over 1,000 beds and 36 operating theatres, and replace three obsolete healthcare centres which now constitute the Toledo Hospital. This is the EIB's biggest-ever loan for a hospital project in Spain.

BANK AND HEALTHCARE FUNDING

Previously, in August 2005, it had lend 165 million Euros for the Central University Hospital of Asturias in Oviedo, the capital of Asturias (one of Spain's seventeen autonomous regions), with the aim of creating a regional facility for both high-quality care (principally by reducing services duplication and emphasising ambulatory care) as well as medical education

FRANCE AND THE UK

Healthcare sectors in two other major EU Member States, France and the United Kingdom, are also recipients of significant EIB lending.

In November 2006, the EIB granted a 350 million Euro loan to the Assistance Publique des Hôpitaux de Marseille (APHM) to upgrade facilities, implement an in-depth restructuring of hospital services and introduce innovative therapies in its hospitals. The EIB loan to the APHM (whose 3,500 beds make it France's third largest hospital complex) supports the country's 2007 Hospitals Plan, part of an 8 year programme running through to 2011 and envisaging total investments of over 1 billion Euros. Focus areas for the Hospitals Plan are maternal and paediatric care, emergency care and care for the elderly. One of the most innovative projects at the APHM consists of a novel integrated nephrology and kidney transplant centre, which would be France's first to use a pioneering water-treatment technology for haemodialysis, itself the outcome of an EIB-financed research programme in Sweden. Overall, in France, the EIB has so far provided 1.5 billion Euros for individual investments at 10 hospitals: Fort de France, Lyon, Strasbourg, Toulouse, Tours, Arras, Nantes, Clermont-Ferrand, Nice and Marseille. In addition, to boost the 2007 Hospitals Plan, the EIB – in partnership with four banking groups - has also advanced another 1 billion Euros to French hospitals for medium-scale projects (budgeted at 25 to 150 million Euros)

Hospitals in the United Kingdom are also significant beneficiaries of EIB lending. In June 2006, the EIB provided GBP 250 million for a new acute hospital and mental health facilities at South Birmingham – within the existing Queen Elizabeth Hospital premises. The EIB also lent GBP 149 million during the same month for redevelopment of hospital services at the two main sites of the St. Helens and Knowsley Hospitals NHS Trust – including a major expansion and redevelopment of the existing Whiston Hospital at Knowsley, and the creation of an elective and intermediate care facility (with state-of-the-art diagnostic equipment) at St. Helens.

The South Birmingham project matched the scale of the EIB's largest lending activity in the UK until then – in terms of another GBP 250 million project for redevelopment of The Royal London Hospital in Whitechapel and for providing new, refurbished buildings at Barts Hospital at West Smithfield. The overhauled Royal London Hospital will comprise the City's leading trauma and emergency care facility, its second largest paediatric service and one of Europe's largest renal departments, while the Barts Hospital is set to become a Cancer and Cardiac centre of excellence, incorporating services from The London Chest Hospital.

Other EIB-financed healthcare projects in the UK over the past two years include redevelopment of the Freeman Hospital and the Royal Victoria Infirmary in Newcastle-upon-Tyne (to rationalise acute hospital services within Newcastle from three to two sites), and the redevelopment of services at Central Manchester Hospital and Manchester Children's University Hospital. The Manchester project followed the pattern of earlier EIB-funded initiatives at the Dudley Group of Hospitals, Blackburn Hospitals and North East London Hospitals – all of which were based on public-private partnerships.

THE EIB AND NEWER MEMBER STATES

Newer member states targeted for EIB healthcare sector lending include Austria, where the Carinthian region's principal hospital at Klagenfurt has been granted 50 million Euros for the construction of new buildings (among them a psychiatry wing) and the modernisation of medical services. Part of the outlays cover the costs of new hospital equipment, including a new centralised, state-of-the art logistics centre. Other EIB-funded projects in Austria's health sector include modernisation of hospitals in Styria and Steyr, the construction of a regional mother-and-child clinic at Linz, and the upgrading of technical equipment in Vöcklabruck.

HIGHLIGHTING IT IN THE 21ST CENTURY HOSPITAL

While a significant number of the above efforts have involved IT modernisation elements, the highest-visibility EIB-funded project in such a context involves the futuristic Orbis Medical Park in Sittard, the Netherlands. The Bank's 180 million Euro loan (its second in the Netherlands, after one for a hospital at Heerenveen) will largely be devoted to the construction of the new Maaslandziekenhuis hospital, which is also referred to as The Hospital of the 21st Century.

The Orbis Medical Park marks a Schumpeterian shakeout of traditional approaches to healthcare. Instead, prevention, cure and care are combined. The new Maasland Hospital will be set up alongside a Care Promenade, a Centre for mental healthcare as well as a rehabilitation and recovery centre. All workflow, care and treatment processes have been redefined, redesigned and agglomerated around a patient-centric concept. Making such a vision possible is IT-rich intuitive/intelligent care-related logistics, alongside an Electronic Patient Dossier and a distributed ICT planning and healthcare delivery system.

THE US HEALTHCARE SYSTEM

Of European Models, Lessons and Enhancing Healthcare IT

HEALTHCARE IT MANAGEMENT ANALYSIS

In June 2003, a landmark study in the New England Journal of Medicine showed that American adults received appropriate medical treatment only 55% of the time (or just about once on every two occasions).

In the years since, a private organisation called The Commonwealth Fund has routinely conducted an X-Ray on expert perspectives about the US healthcare system. In the form of a survey of a cross-section of opinion leaders, its views are held in high regard not only by healthcare professionals but also by lawmakers and the media. The Fund is chaired by Dr. Samuel O. Thier, a respected professor at Harvard Medical School and former president of Partners Healthcare System and the Institute of Medicine. The latest (11th) Commonwealth Fund Health Care Opinion Leaders Survey finds that the current US health system is neither achieving, and moreover, does not seem to be designed to encourage high quality.

By and large, Europeans tend to look wistfully across the Atlantic to the US as The Place for Healthcare Technology. Ironically, some of the Survey's key conclusions seem to suggest that Americans, on their part, are looking at Europe in just such a light.

Responses to the Commonwealth Fund Survey indicate strong support for a greater leadership role by government, the creation of a new public–private entity to boost quality, reforms in payment mechanisms for healthcare providers as well as steps to promote medical homes – in other words, various aspects of what passes for the archetypal continental European model.

Strategies to Improve Healthcare in the US

- Accelerating adoption of healthcare IT: 66%
- Public reporting of provider performance on quality: 59%
- Financial incentives for improved quality of care: 51%
- Stronger regulatory oversight of providers: 50%

Source: Health Care Opinion Leaders' Views on the Quality and Safety of Health Care in the United States. Katherine K. Shea, Anthony Shih, and Karen Davis, The Commonwealth Fund, July 2007.

One of the Survey's findings was that just 19 percent of primary care doctors in the US have advanced information capacity in their practice, compared with more than 80 percent in both the Netherlands and the United Kingdom.

Indeed, accelerating the adoption of healthcare IT is seen in the US as the best way to deliver efficient, high-quality and cost-effective healthcare (see box). Other strategies for improvement include public reporting of providers' performance on quality-of-care measures, alongside financial incentives for improved care. Some of these steps, as we described in the previous issue of HITM, are already being methodically implemented in the Netherlands.

On the other hand, few believe that legislation can improve patient safety. In 2005, the US Congress passed the Patient Safety and Quality Improvement Act, which calls for a new system of voluntary and confidential reporting of "patient safety events". By a massive margin, healthcare leaders doubt the efficacy of such legislation – no more than 7% believe the Act will improve patient safety. More interestingly, 60% of respondents believe that information about patient safety events should not be confidential.

CHALLENGES TO BOOST HEALTHCARE IT IN THE US

By a large margin, healthcare opinion leaders see healthcare IT as the key to improving quality and safety. Advanced health information systems providing decision-support tools and enabling clinicians to monitor and assess care can improve outcomes and foster more innovative, efficient use of resources.

The main challenge to expanding healthcare IT is cost - of implementation and operations. In several cases, healthcare providers receive only a small share of the financial benefits derived from greater adoption of healthcare IT. The bulk of the benefits is instead passed on to payers.

The Survey also found that large practices were far more likely to use EHRs (electronic health records) than small practices, which often lack the requisite infrastructure, funds and other resources. As a solution to this, 70% of respondents said that the federal US government should play a leading role in assisting providers with healthcare IT financing, while almost six of 10 felt that linking pay-for-performance bonuses to the use of healthcare IT would directly help providers pay for the technology. 90% of respondents believed a good way to kickstart such a trend would be to compel Medicare, the largest purchaser of healthcare services in the US, to require use of EHRs by all providers participating in its programmes.

For smaller physician practices, respondents suggested that the best way to optimise healthcare IT investments would lie in networks for the exchange of patient information across providers and provider settings. And although mushrooming, none of the current plethora of emerging health information exchange networks (HIENs) have established opera-

ST. OLAV'S HOSPITAL

Improved Patient Care and Hospital Logistics Underpins the Nordic Region's Largest-Ever ICT project

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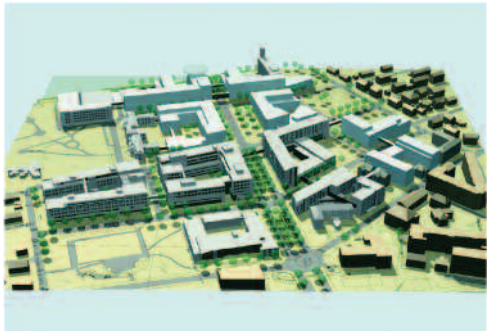

In an ambitious two-phase project, the new 220,000 m2 St. Olav's Hospital is being built on the site of the existing hospital near downtown Trondheim, Norway.

Telenor was chosen as the main supplier of ICT infrastructure and integration services. The Oslo- and US NASDAQ-listed company is one of the world's fastest growing providers of mobile communications services (with over 115 million subscribers) and the largest provider of TV services in the Nordic region.

For the St. Olav's project, Telenor adopted an integrated approach to ICT infrastructure solutions.

ACCOMMODATING NEW PATIENT-CENTRIC VISIONS

The vision for the new hospital is 'Building for Health'. It aims at making the physical and services infrastructure of the hospital reflect the centrality of patients in the scheme of things. St. Olav's will be Norway's first hospital to be based on individual patient rooms (organised in clusters called 'Sengetun'). St. Olav's will also be an integrated hospital, with equal rights to accommodation for patients and their relatives, healthcare and service personnel, students, teachers and researchers. Last but not least: the new hospital is also designed to be a model for healthcare in the region, in Norway and internationally.

As part of this vision, ICT solutions at the hospital will have to serve three main purposes: patient care, research and education. In turn, this implies that ICT solutions must integrate different user environments: the hospital itself (with its variety of user groups and needs) as well as the Medical Faculty at the Norwegian University of Science and Technology (NTNU). To ensure close cooperation between treatment/care and education/research needs, ICT solutions have to feature strict security requirements.

DEMANDS ON ICT

The Hospital Development Project for Central Norway has specified the following ICT objectives:

- Efficient and secure communication access: Ease of access by staff to ICT solutions need to be accompanied by equivalent attention to security, making information accessible only to authorized personnel.
- Increased availability – always fast access: ICT systems availability is required to be 99.999%, putting extremely high demands on the design of the ICT solution, in particular the data network.
- Increased digital interaction and communication: Medical records will have to be stored electronically and made available for medical staff where and when required. The hospital will not be paper-free, but paper use will be minimised.
- Always up-to-date patient information: As part of its patient-centric focus, patient information will be continuously updated, and effected by medical staff from PCs, from patient terminals as well as through mobile units.
- Everything over IP, IP everywhere:

ST. OLAV'S HOSPITAL

St. Olav's Hospital is centrally located in Trondheim, Central Norway. It employs 8,170 people and treats 413,000 patients a year. The new St. Olav's Hospital, being built atop the older one, is among the largest building projects in Norway. It is also, by far, the most ambitious ICT project in the region. By the time it opens for business in its new incarnation, the project would have entailed investments of over NOK 11 billion.

The first phase lasted from autumn 2003 to August 2006. The second, now ongoing, is due to be completed in 2014. More than 80% of the existing hospital (100,000 m2 will be demolished), while the hospital is in full operation. The new hospital will have a distributed layout consisting of a number of separate centres, creating special requirements for ICT solutions with regard to mobility and flexibility. In addition, locations for some facilities such as the Psychiatric Centre have not yet been decided (a challenge in its own right for the ICT infrastructure).

In February 2004, Telenor and its partners were awarded the ICT infrastructure contract for Phase 1, followed in December 2005 by a three-year contract for its operation. In January 2007, Telenor and its partners won the contract for delivery of the ICT infrastructure for Phase 2.
The total value of the contracts is in the region of 1 billion NOK (112.5 million Euros).

All data and voice communication will require to run on the same IP-network.

AN EASIER WORK-DAY WITH WIRELESS TECHNOLOGY

Wireless data-and telephony is available throughout St. Olav's hospital, indoors and outdoors. The staff is provided wireless IP-phones, used for both voice and messaging services. There are plans for providing medical staff with tablet PCs or PDAs for medical use (MDA – Medical Digital Assistant), which would be used for ordering medicines, lab tests or X-Rays and scans.

Alongside, there also are plans to use the MDA as a telephone, pager and for message services. The wireless network will give access to the patient care journal and to wireless IP-phones everywhere in the hospital, except specially sensitive areas.
The extensive use of wireless technology is aimed at providing hospital employees with a more efficient work-day, freeing up time for patient treatment and care.

Surveys by The Gartner Group indicate that hospital staff with patient contact can save 30-90 minutes per day through the use of wireless systems. Even more conservative estimates of 10 minutes a day translate into large efficiency gains.

However, these figures have yet to be confirmed since the new hospital has been in operation for less than a year.

TELENOR'S ROLE

As the principal ICT infrastructure contractor, Telenor is responsible for both design and implementation of the solution at St. Olav's. This includes:

- Total responsibility for systems integration, interface coordination and design and implementation of a totally functional ICT infrastructure.
- All cabling and network electronics, wireless networks, patient signal, IP-telephony, security (logon/authentication) solutions.
- Patient terminals, wireless IP-phones, portable and stationary PCs, alarm and positioning system, central equipment for TV-distribution, AV-equipment as well as other peripheral equipment.

Telenor's partners deliver their components for the ICT solution and take part in solution design and project administration. However, Telenor has overall responsibility for the ICT contract with regard to functionality, quality, delivery and profitability. In other words, it is responsible for ensuring the interoperability of all components, and the functioning of the solution according to customer expectations.

IDEAS THAT SIMPLIFY

The new St. Olav's hospital provides patients with individual rooms. Aside each bed is a patient terminal which can be used as a phone, TV or radio. Eventually, it may also be possible to use it to order food and control lighting. On their part, doctors can use the terminal to access and update the patient's medical journal from the bedside. If security regulations permit, patients too may access their own medical journal.

The ICT inventory envisaged for Phases 1 and 2 of the Hospital Development Project for Central Norway

- 5,250 PCs
- 3,200 wireless phones
- 2,600 wired phones
- 150 servers
- 180 Cisco switches
- 1,100 wireless access points
- 930 patient terminals
- 130 multifunction printers
- 650 laser printers

All employees are issued their own multifunctional smart card with a digital signature. This is used for logon/authentication for PCs, as a non-contact admittance card, as a credit card in staff restaurants, to permit withdrawal of staff uniforms from dispensers, to print documents, to sign for blood tests and for identification at pneumatic dispatch stations.

STATE OF THE ART COMMUNICATIONS

The communications systems are the most modern in any Norwegian hospital and hosted on the same IP-based network. This, of course, puts very high demand on network capacity and quality. A flexible, portable profile is the key element in the Telenor solution. Screen displays are automatically transferred to fixed or wireless IP-phones. The phones themselves are programmable, with a soft-phone solution available as an option. The phones may also be used for paging. At a later stage, this solution is also primed to enable exchange of screen displays and for integration with calendar/email and other data systems.

FAST AND SECURE ALARM CALL SYSTEM

An alarm call system is also part of the ICT solution at St. Olav's Hospital.

When an incident occurs and an employee needs assistance, he or she can press a pre-set button on the fixed or wireless IP-phones to set off an alarm. The ICT system routes the alarm to the appropriate person or persons, based on its nature and location.

Though much emphasis has been put into making the phone alarm capabilities a simple feature, it is based on a complicated technological solution whose key components also comprise a message server handling messages according to predefined rules, an identity management system with coverage of all employees, and their roles and responsibilities, as well as a patient signalling system.

TECHNOLOGICAL CHALLENGES: SECURITY AND FUTURE-PROOFING

Several different institutions are using the Telenor ICT solution. Apart from St. Olav's Hospital itself, these include the Medical Faculty at the Norwegian University of Science and Technology (NTNU), South Trøndelag Regional College and the Central Norway Regional Health Authority.

Concerns in such a context about data security have been answered in the shape of a Network Security Architecture and authentication solution, which will give St. Olav's Hospital strict access control to the ICT solution.

The solution delivered in Phase I is designed to have a long life time, and will be the basis for the Phase II solution due for delivery by end 2009. Much effort has therefore been put into making the solution future-oriented and flexible, in order to accommodate forthcoming developments in technology.

The ICT solution at St. Olav's consists of several different elements functioning as one solution with regard to implementation and operation. In order to make this possible, a huge effort has been put during development into identifying and coordinating a large number of interfaces between the various elements. These are interfaces both inside the ICT infrastructure and interfaces with systems such as the central control and monitoring system, pneumatic dispatch system, electro systems, lift systems etc...

In Phase 1 alone, approximately 120 various interfaces were identified.

LESSONS LEARNED

The main challenge when implementing new ICT solutions at organizations such as hospitals – where the key focus is patient care – is to find enough time for staff training. At St. Olav's, each employee has on average received 2.5 hours of formal education. This was augmented by having on-site support personnel available during the transitional process. Another lesson learned is that there should be greater focus on organisational development alongside ICT, and more information to employees (since new solutions have to be sold to the employees). Also, we believe in the need to focus more on individual departments prior to implementation.

Technically, there were problems in the first 3 months with wireless phones; these will be replaced with new units. There are still some hardware problems. There have also been some breakdowns with the alarm systems as well as one major breakdown of the network in June last year.

On the whole, however, these problems are not more than could be expected when implementing such a complex ICT solution.

Future-proofed hospital modernisation places major demands on ICT systems for efficiency and security, increased availability (benchmarked at 99.999%), enhanced digital interaction and real-time updates to patient data as well as everything-over-IP, everywhere.

INTELLIGENT INFRASTRUCTURE MANAGEMENT

AT BELFAST CITY HOSPITAL

Most network issues have an impact on the efficiency of an organisation, but occasionally they can directly affect human lives. This was a key consideration in the planning of Belfast City Hospital's new oncology building, a state of the art centre employing the latest equipment for cancer diagnosis and therapy.

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AMP NETCONNECT Business Unit, Tyco Electronics.

Computer simulation of Belfast City Hospital's new oncology building.

Belfast City Hospital (BCH) is Northern Ireland's leading university teaching hospital, with a strategic focus on the development of regional cancer and renal services, working in partnership with the National Cancer Institute of the United States.

HOSPITAL EXPANSION: IMPACT ON ICT STAFF ROLES AND RESPONSIBILITIES

The addition of a new six-floor building represented a major expansion in the responsibilities of the hospital's ICT team. However, it was anticipated that the existing team of two would also have to find time for the additional network development and day-to-day servicing of the new building. This would not only mean over 3,200 additional network outlets, but would also involve maintaining network connection to the medical equipment. Any downtime is usually inconvenient and expensive, but in this case the effect on patient care could be catastrophic.

PUBLIC-PRIVATE PARTNERSHIP

Another key element in the project was a partnership between the public and private sectors, requiring clear measurement of each party's performance. The ICT team would therefore need highly visible, objective records to be readily available if any connectivity problems needed investigating.
BCH identified a range of key needs:

- Management of risk
- Resilience to failures
- Rapid recovery from faults
- Future-proofing
- Minimisation of data errors
- Flexibility to support multiple operational technologies
- VoIP capability

BELFAST CITY HOSPITAL began life as a workhouse in 1841. Originally, it provided beds for poor patients who lacked access to government healthcare services. In spite of limited resources, it grew to become one of the largest general hospitals in the region.

The Hospital has an intimate connection to two major crises of those years. The first was the potato famine, while the second was Belfast's rapid industrial development into a linen center. Both saw a massive influx of poor and hungry people from the countryside. In the Victorian period, Belfast's population was 350,000, 12 times higher than at the turn of the century.

Much of the credit for the Hospital's early development is given to a young physician named Thomas Andrews, who was appointed as its head at the age of 26. (TS)

From an operational point of view it became clear that, to maintain service levels whilst meeting targets for commissioning the new building, the ICT team staffing levels would have to be increased from two to five. To save this cost whilst satisfying the key network needs of the enlarged hospital, technological improvements were investigated, and an Intelligent Infrastructure Management System (IIMS) was identified as the solution that could make the difference. A business case was written detailing the choices available and, after this was analysed by the finance department of the Department of Health, the AMPTRAC system from Tyco Electronics was selected as the preferred IIMS solution.

INTELLIGENT INFRASTRUCTURE MANAGEMENT SYSTEM

The AMPTRAC system manages nearly 4,000 outlets, including four outlets per workstation in the new building, in addition to the medical equipment required for cancer diagnosis and treatment. There are also a further 600 outlets in other areas, including a remote location. ICT Development Manager Darren Henderson commented: "The initial cost of the AMPTRAC system was about 25% more than that of a standard Category 6 system, but this is offset by considerable operational savings, even in the first year. The commissioning process involved constant changes, yet the two of us in ICT were able to manage. We simply could not have commissioned the system by the target date without AMPTRAC, and we would not have been able to manage the ongoing support process since then."

The efficiency gained from AMPTRAC is in particular a result of its ability to discover and monitor physical end-to-end connectivity in real-time, as well as the tracking of IP devices to their physical location on CAD floor plans – rather than having to send someone to verify them in person.

Asset utilisation is now much easier to determine: users have to check the AMPTRAC displays in either text or graphics. For example, a user can see a report showing the percentage utilisation in a particular cabinet, and then any moves, additions or changes can be planned from the user's desk with complete confidence. Operations teams and help desks can also access the system to answer questions on the functioning of the network.

The high degree of visibility has proved a key benefit. In the view of Keren Moleon, Systems Specialist at BCH, 'To maintain the network and telephony for 4,500 staff, as well as the changes required by the new cancer centre, we could not rely on paper-based documentation, which is usually out of date. AMPTRAC provides a trusted source of information that has freed us from enough donkey-work for us to do the rest of our work, which includes the development of other new projects.'

VLANs are run for each medical specialist division and system. In addition to the VLAN for email, file shares and access to hospital systems, there are separate VLANs for the machines delivering radiotherapy treatment to patients and also for cancer centre imaging; medical groups can also access remote systems elsewhere in the region.

Throughout the network all physical changes, both authorised and unauthorised, are monitored and are easily visible to the ICT team.

In conclusion, Darren Henderson comments: 'We would not consider any new development without including AMPTRAC in the specification.'

ISO/IEC 27799

What's In This Standard for Healthcare IT Managers ?

HEALTHCARE IT MANAGEMENT ANALYSIS

Even as European healthcare IT professionals brace themselves to understand the shifting contours of the emerging e-Health wave and cope with its implications, regulatory developments in yet another sphere are appearing on the horizon.

The ISO (International Standards Organisation)/ IEC ((International Electrotechnical Committee) 27799 standard concerns Security Management in Health. It is based on applying the more catch-all ISO 17799 information security standard to the specific (and sometimes 'special'/'unique') security management needs of healthcare.

AN EMERGING STANDARD

Officially, the ISO/IEC 27799 standard is known as "Health informatics – Information security management in health using ISO/IEC 17799". At the time of *HITM* going to press, it is officially classified as being "under development".
The ISO 27000 series – of which 27799 will form another new facet – is already used as a 'common language' for best practices in IT security management, and lays the frameworks for emerging European and international information security laws. It has moved to the top of the executive agenda after the growth in global compliance requirements, above all in the shape of the 2002 US Sarbanes-Oxley Act, which followed the gush of corporate and accounting scandals at Enron, Tyco International and WorldCom earlier in the decade.

HEALTHCARE FACETS DRIVEN BY WIDER BUSINESS CONCERNS, SCANDALS

This, in turn, led to a rapid rise in the profile of previous healthcare sector-specific initiatives such as HIPAA (the Health Insurance Portability and Accountability Act), which was enacted in 1996. Although, HIPAA was aimed at providing job security in the US health sector, the Act's Title II (known as Administrative Simplification provisions) covers standards for electronic

health care transactions, alongside national identifiers for providers, health insurance plans and employers. Crucially, the Administrative Simplification provisions also address the security and privacy of health data.

PERSONAL CERTIFICATIONS: PROACTIVE OR DEFENSIVE

Such an environment evidently gives healthcare IT professionals a strong motive to pursue certifications like CISSP (Certified Information Systems Security Professional), which is itself based on another ISO standard (17024). They have also provided senior managers at healthcare institutions the incentive to move information security to the top of their agendas. In theory, ISO/IEC 27799 is designed to furnish a "minimum set of requirements" to provide adequate information security in healthcare, in terms of its integrity and availability. However, it is also directed at protecting personal health information –which is a relatively 'soft' but nonetheless crucial objective within the panoply of emerging e-Health rules.

ISO/IEC 27799: WHO AND WHAT

ISO/IEC 27799 is being developed by ISO committee TC215 (see box), which is separate from the SC27 committee mandated with the development of other ISO 27000 standards. This has allegedly led to inefficiencies (such as duplication, lack of fit and clarity) as well as personal frictions. The Secretariat is US-led, which also controls two of eight working groups. Of the remainder, one still lacks a convenor, while the others are split as follows: Canada (two), Australia (one), Netherlands and Germany (one each).

Given below is a structural overview of ISO/IEC 27799:

1. Information security within information governance.
2. Information governance within corporate and clinical governance.
3. Health information requiring protection:

a. Personal health information
b. Pseudonymised data derived from above
c. Statistical/research data, including anonymised data.
d. Clinical data not related to specific patients (for example, on adverse drug reactions)
e. Data on health professionals and staff
f. Data concerning public health surveillance
g. Audit trail data generated by HIS containing personal health information or data about user actions in regard to such information
h. System security/configuration data – access control, and other security-related data for HIS.

4. Threats and vulnerabilities in health information security.

a. Description of over 20 threats to health information security. (TS)

INTERNATIONAL STANDARDISATION:

Three bodies are responsible for the planning, development and adoption of all International Standards:

ISO (International Organization for Standardization) is responsible for all sectors except Electrotechnical, which comes under **IEC** (International Electrotechnical Committee) and Telecommunications under **ITU** (International Telecommunication Union).

ISO is a legal association. Its members are the National Standards Bodies (NSBs) of some 140 countries (organisations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

THE ISO/IEC 27799 STANDARD

ISO/IEC 27799 is being developed by ISO committee TC215.

Secretariat:
ANSI (American National Standards Institute)
230 East Ohio Street, Suite 500
Chicago, IL 60611-3269
US

Secretary: Ms. Audrey Dickerson (USA)
Chair (to end-2009): Dr. Yun Sik Kwak (Korea)
Scope:
Standardisation in the field of Information for Health, and Health Information and Communications Technology (ICT) to achieve compatibility and interoperability between independent systems. Also, to ensure compatibility of data for comparative statistical purposes (e.g. classifications), and to reduce duplication of effort and redundancies.

Working groups (WG):

WG 1	Data structure	Convenor: SCC (Standards Council of Canada)
WG 2	Data interchange	Convenor:ANSI (American National Standards Institute)
WG 3	Semantic content	Convenor:ANSI (American National Standards Institute)
WG 4	Security	Convenor: SCC (Standards Council of Canada)
WG 5	Health cards	Convenor: DIN (Deutsches Institut für Normung)
WG 6	Pharmacy/medicines	Convenor: NEN (Nederlands Normalisatie-instituut)
WG 7	Devices	Convenor: (Not assigned)
WG 8	Business requirements for Electronic Health Records	Convenor: SA (Standards Australia).

OUTSOURCING MANAGEMENT OF ICT INFRASTRUCTURE

The Case of the Hospital District Of Helsinki And Uusimaa

AUTHOR
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The Hospital District of Helsinki and Uusimaa (HUS) is a federation of municipalities established in the year 2000 in Finland's southern coast. Its 1.5 million inhabitants are serviced by 21 hospitals, which employ close to 20,000 health care professionals and treat approximately 475,000 patients each year. All major medical specialties are represented at HUS hospitals. Acting as a part of HUS, Helsinki University Central Hospital has the responsibility for teaching health sciences within the hospital district.

HUS ICT and Medical Engineering is responsible for the HUS information systems as well as ICT infrastructure. There are a total of 190 ICT and medical engineering professionals of which 20 work for the ICT infrastructure and 50 for user support.

In 2005, HUS began implementing a new patient information system together with an electronic patient record. The software was developed in collaboration with Finland's other four university hospital districts. After implementation, all Finnish university hospitals will have a uniform information system for patient care.

In HUS, this project required transition from a system developed and installed in the 1980s, and the replacement of thousands of 'dumb' terminals by workstations.

The process also entailed an overhaul of its entire ICT infrastructure which was until then managed internally, and the need to find an external supplier for a wide range of ICT services and support.

HUS's priorities for the latter included the ability to provide comprehensive IT on-site support, reliable server management and top-notch monitoring solutions. HUS also required that its outsourcing partner coordinate ICT collaboration with third-party application vendors and developers, given that it has several concurrent development projects in different levels of progress at any time.

In 2006, HUS made a decision to outsource its ICT infrastructure services to outsourcing partner Fujitsu. The implementation project included the following steps:

- Creating the data connections to the outsourcing partner
- Cataloguing and marking the work stations and other assets
- Designing and setting up user support services
- Integration of control and management of HUS servers with those of the outsourcing partner
- Designing the information system services
- Setting up the asset management
- Designing the logistics for workstation acquisition and installation
- Organising the maintenance of workstations, printers and servers
- Documentation of responsibilities concerning data security and privacy
- Defining the principles of collaboration between HUS and the out sourcing partner
- Making a communication plan for internal information

The implementation project was a huge effort, and tailored according to the specific needs and HUS requirements. It lasted six months and involved considerable contributions from HUS's own personnel.

Several project groups were established to perform the necessary tasks. All service functions were listed and their processes documented, and work stations catalogued on site. Several information events were arranged, alongside articles in print and on the Intranet.

By end April 2007, the service was launched at Helsinki University Central Hospital area, in other words at 15 of the 21 HUS hospitals. The service initially covers 12,000 workstations. Within a period of three years, Fujitsu will be managing a total of 14,500 HUS workstations.

The round-the-clock 24 x 7 service covers on-site support services as well as the monitoring and management of about 250 servers. The outsourced services work is implemented in close collaboration with HUS's own functions. For example, HUS has its own call centre which is connected with the outsourcing partner's help desk. End-user support has also grown with 40 new persons who take care of on-site services.

HEALTHCARE IN THE NORDIC COUNTRIES

HEALTHCARE IT MANAGEMENT ANALYSIS

Health systems in the Nordic countries have a long heritage. They are principally financed by public funds or compulsory health insurance schemes. All countries, however, require co-payments by patients for hospital care and medicines.

The Nordic healthcare system is especially well-established with regard to primary and preventive healthcare. These couple into sophisticated occupational health standards which are held in the highest esteem around the world. All Nordic countries also have highly-developed hospital services.

In spite of a generally high-level of commonality, there are some important differences in the Nordic region with regard to healthcare. Some of these are, moreover, growing as each country seeks to adapt to budgetary pressures and an aging population. Explicit moves to cut down waiting times and improve hospital productivity have been made in Denmark and Finland. Variable user fees for hospitalisation are also charged in Finland and Sweden.

A brief description and overview of such issues in the four principal Nordic countries is provided below.

OVERVIEW OF THE PRINCIPAL NORDIC COUNTRIES

	DENMARK	FINLAND	NORWAY	SWEDEN
Population (million: 2005):	5.45	5.23	4.61	9.02
Live births/female:	1.74	1.73	1.78	1.66
Deaths/1,000 live births:	4.51	3.55	3.67	2.76
Life expectancy (years):	77.79	78.5	79.54	80.51
GDP (billion Euros: 2005):	208.5	157.4	214	287.7
Total healthcare expenditure (% GDP: 2004)	8.9%	7.5%	9.7%	9.1%
Total healthcare expenditure per capita (PPP dollars: 2004)	2,881	2,235	3,966	2,825
% of healthcare system financed by public funds: 2004	82.30%	76.6%	83.5%	84.9%
Number of hospitals	NA	NA	28	NA
Number of CT scanners (per million inhabitants: 2004)	14.6	14.2	NA	NA
Number of MRIs (per million inhabitants: 2004)	10.2	14	NA	NA
Number of acute care beds (per 1,000 inhabitants: 2004)	3.3 (2003)	3	3.1	2.2
Length of stay (average in days: 2004)	5.5	4.3	6	5.5
Number of physicians (per 1,000 inhabitants: 2004)	3.0 (2003)	2.4	3.5	3.3 (2003)
Number of nurses (per 1,000 inhabitants: 2004)	7.0 (2003)	7.6	14.9	10.3 (2003)
Percentage of households with Internet access	75% (2005)	54% (2005)	69 % (2006)	77% (2006)
Percentage of individuals using the Internet for interacting with public authorities	Obtaining information 42,5%, Downloading forms 16,4%, Returning filled forms 13,9% (2004)	Obtaining information 44,6%, downloading forms 21,5%, returning filled forms 11,2% (2005)	Obtaining information 52,1%, downloading forms 30,1%, returning filled forms 28,2% (2006)	Obtaining information 48,7%, downloading forms 30,7%, returning filled forms 21,4% (2005)

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

DENMARK

Management of the health service is decentralised, with the State responsible for legislation and supervision, while counties and municipalities are charged with operating health services (the former for hospital service and health insurance, and municipalities for other areas of health care, as well as nursing and child/school health care). The counties own most hospitals.

Some private hospitals have contracts with their county, while a handful of mainly small private hospitals operate outside the public hospital system. Specialist hospitals are not organized separately. Neither does Denmark have health centres with hospital beds.

GPs are the primary point of contact for patients except in an emergency, when they directly use hospital services. Specialist physicians work based on an agreement with a health insurance scheme, and most patients are referred by general practitioners.

To cut down waiting times, the Danish Government has been making supplementary allocations to health services since the turn of this decade. The sum has averaged DKK 1.2 billion a year, and has been rising steadily (it was DKK 1.4 billion in 2006).

This has been combined with opening up possibilities for patients to receive treatment at private hospitals or (more controversially) certain accredited hospitals in foreign countries, should waiting times be more than one or two months, respectively.

The reforms have had a significant impact. Waiting times for 18 major surgical procedures fell from 27 weeks in 2002 to 21 in 2005.
In addition, an estimated one of eight non-acute patients are now already treated outside Denmark.

As significant is a move since 2004 to expand own management of funding by hospitals, with an eventual target of 50% of overall hospital allocations. Though this has led to some uncertainty about hospital budgets, it has contributed to increased efficiency and reduced waiting times.

FINLAND

Municipalities are responsible for providing health services, according to the Public Health Act of 1972. Groups of municipalities run specialised central and regional hospitals. Municipalities are also responsible for providing health and social services for elderly people, including assisted living.

The Finnish National Public Health Institute and the National Institute for Occupational Health are presently investigating the healthcare sector on issues concerning the structure and division of roles and responsibilities between the State, county councils and the municipalities.

General medical treatment is provided by health centres, at in-patient departments or as home nursing care.

In the public health service system, patients need a referral for specialist treatment, except in the case of emergency. At private clinics, patients need no referral to visit private specialists. Physicians working in private clinics can refer their patients either to public or private hospitals.

From March 2005, bar injury, patients are required to be examined and treated within a specified time. Appointments have to given within three working days. Treatment assessments have to be made within three weeks of referral to a hospital.

In cases where treatment cannot be given at the first visit to the health centre, it is required to be started within three months, and within six months for specialised treatment.

If a patient's own health centre or hospital cannot provide treatment within the specified time limit, it has to be offered at another municipality or a private institution, at no extra cost to the patient.

Finland's National Research and Development Center for Welfare and Health is establishing a single, accessible, Web-enabled repository for healthcare indicators gathered from healthcare providers across the country.

NORWAY

In this non-EU Member, the State is responsible for healthcare policy and capacity issues as well as the quality of healthcare through budgets and laws.

The State is also responsible for hospital services through regional health authorities – who organise hospitals as health trusts. Municipalities have responsibility for primary health care, including both preventive and curative treatment. Regional health authorities and municipalities are free to operate public health services as they deem fit, although budgetary factors limit choices in the real world.

SWEDEN

Primary health care is run by three regions and 18 counties.
Primary services include health centres with general practitioners, mother and child centres, as well as nursing, physiotherapy, and dental facilities.
School health services, preventive healthcare and environmental health are earmarked as the specific responsibility of municipalities.

The region/county authorities and municipalities share responsibility for nursing and at-home services, and increasingly since 1995, for psychiatric services.

Hospitals are run by both county and regional authorities. The former include specialised hospitals covering the entire county and general hospitals covering a part of the county.

Medical treatment is provided at both hospitals and outpatient clinics. Specialised treatment is provided by the regional hospital service.

There is a small presence of private (but publicly-financed) health care in Sweden, along with political controversy. About one-third of medical consultations are with private medical practitioners.

Sweden imposes hospitalisation charges for patient, ranging up to SEK 80 per day. In addition, patients under 40 pay only half the cost for the first 30 days of each sickness period. (TS).

IT AND NORDIC HEALTHCARE

HEALTHCARE IT MANAGEMENT ANALYSIS

Drivers of healthcare IT in the Nordic countries follow the general pattern in the OECD – in terms of the need for patient-centricity, service-orientation and cost-effectiveness.

All Nordic countries rank high in terms of e-Health readiness indicators, as well as healthcare and IT/Internet infrastructure. Indeed, the World Economic Forum's Network Readiness Index for 2006/07 is dominated by the Nordic countries, with Denmark and Sweden in the first and second slots, Finland in fourth and Norway in tenth. The Index is based on a combination of factors: ICT penetration and usage, e-government and e-business environments as well as government vision, education, R&D and a talent for pioneering high-technology applications.

In other words, they have the necessary infrastructure in place for effective e-Health as well as political will – from the point of view of the demands of an aging society, the need for individualisation and customisation of healthcare delivery as well as requirements for increasing healthcare efficiency.
Buttressing the above is the high R&D spend in the Nordic region. Unlike their EU-12 peer group, which spend 1.9% of gross domestic product on R&D, the figures are 2.6% for Denmark, 3.5% for Finland and 3.7% for Sweden. Only Norway ranks below the EU-12 average, with 1.6%. This can be explained by the relatively high GDP due to its oil and gas revenues. Indeed, in Euros per person, Norwegian R&D spending is higher than the EU-12.

Nordic countries are global leaders in terms of e-Health readiness indicators, as well as healthcare and IT/Internet infrastructure

While all Nordic countries make clear their commitment to deliver on the key e-Health enabling electronic health record, there are, however, some differences in priority.

Denmark, home to several cutting-edge medical electronic firms, sees sensors and intelligent medical equipment as part of its national mission. It is also one of the few countries to have an explicit policy on healthcare IT, in terms of a 'National IT Strategy of the healthcare system 2003-2007' from the Ministry of the Interior and Health. This provides a framework for choices and priorities on healthcare IT, in terms of general technology and public policy.
Finland and Sweden, on the other hand, have a very strong interest in mobility aspects of e-Health – an understandable factor given that they are home to mobile telephony giants Nokia and Ericsson.

Finland also places considerable priority on bioinformatics, and is among the first EU Member States to have a specific IT policy for addressing the needs of the elderly.

Norway has long been identified as a telemedicine pioneer, largely due to its scattered population clusters. The country has operational telemedicine solutions in place at a variety of medical disciplines and facilities.

Norway also has assigned official/State-supported R&D institutions with a mandate to investigate healthcare IT and e-Health, grouped under the cross-Ministry Norwegian Centre for Informatics in Health and Social Care.

The Centre operates the Volven database which contains coding, classifications, terminologies and definitions for a coherent e-Health infrastructure.

Another interesting initiative in Norway – especially given its status as a non-EU Member – is IKTHELSE (ICT in Medicine and Health Care). This programme which ran from 2001-2005 sought to map current and future healthcare ICT technologies and needs, and to develop Norwegian competencies, some of which have since become eligible for government financial support. (TS).

THE EUROPEAN INVESTMENT BANK AND HEALTHCARE FUNDING

... continued from page 13

hospital in Toledo, the capital of Spain's Castilla-La Mancha region. The new hospital will have over 1,000 beds and 36 operating theatres, and replace three obsolete healthcare centres which now constitute the Toledo Hospital. This is the EIB's biggest-ever loan for a hospital project in Spain.
Previously, in August 2005, it had lend 165 million Euros for the Central University Hospital of Asturias in Oviedo, the capital of Asturias (one of Spain's seventeen autonomous regions), with the aim of creating a regional facility for both high-quality care (principally by reducing services duplication and emphasising ambulatory care) as well as medical education

FRANCE AND THE UK

Healthcare sectors in two other major EU Member States, France and the United Kingdom, are also recipients of significant EIB lending.

In November 2006, the EIB granted a 350 million Euro loan to the Assistance Publique des Hôpitaux de Marseille (APHM) to upgrade facilities, implement an in-depth restructuring of hospital services and introduce innovative therapies in its hospitals. The EIB loan to the APHM (whose 3,500 beds make it France's third largest hospital complex) supports the country's 2007 Hospitals Plan, part of an 8 year programme running through to 2011 and envisaging total investments of over 1 billion Euros. Focus areas for the Hospitals Plan are maternal and paediatric care, emergency care and care for the elderly. One of the most innovative projects at the APHM consists of a novel integrated nephrology and kidney transplant centre, which would be France's first to use a pioneering water-treatment technology for haemodialysis, itself the outcome of an EIB-financed research programme in Sweden. Overall, in France, the EIB has so far provided 1.5 billion Euros for individual investments at 10 hospitals: Fort de France, Lyon, Strasbourg, Toulouse, Tours, Arras, Nantes, Clermont-Ferrand, Nice and Marseille. In addition, to boost the 2007 Hospitals Plan, the EIB – in partnership with four banking groups - has also advanced another 1 billion Euros to French hospitals for medium-scale projects (budgeted at 25 to 150 million Euros).

Hospitals in the United Kingdom are also significant beneficiaries of EIB lending. In June 2006, the EIB provided GBP 250 million for a new acute hospital and mental health facilities at South Birmingham – within the existing Queen Elizabeth Hospital premises. The EIB also lent GBP 149 million during the same month for redevelopment of hospital services at the two main sites of the St. Helens and Knowsley Hospitals NHS Trust – including a major expansion and redevelopment of the existing Whiston Hospital at Knowsley, and the creation of an elective and intermediate care facility (with state-of-the-art diagnostic equipment) at St. Helens.

The South Birmingham project matched the scale of the EIB's largest lending activity in the UK until then – in terms of another GBP 250 million project for redevelopment of The Royal London Hospital in Whitechapel and for providing new, refurbished buildings at Barts Hospital at West Smithfield. The overhauled Royal London Hospital will comprise the City's leading trauma and emergency care facility, its second largest paediatric service and one of Europe's largest renal departments, while the Barts Hospital is set to become a Cancer and Cardiac centre of excellence, incorporating services from The London Chest Hospital.

Other EIB-financed healthcare projects in the UK over the past two years include redevelopment of the Freeman Hospital and the Royal Victoria Infirmary in Newcastle-upon-Tyne (to rationalise acute hospital services within Newcastle from three to two sites), and the redevelopment of services at Central Manchester Hospital and Manchester Children's University Hospital. The Manchester project followed the pattern of earlier EIB-funded initiatives at the Dudley Group of Hospitals, Blackburn Hospitals and North East London Hospitals – all of which were based on public-private partnerships.

THE EIB AND NEWER MEMBER STATES

Newer member states targeted for EIB healthcare sector lending include Austria, where the Carinthian region's principal hospital at Klagenfurt has been granted 50 million Euros for the construction of new buildings (among them a psychiatry wing) and the modernisation of medical services. Part of the outlays cover the costs of new hospital equipment, including a new centralised, state-of-the art logistics centre. Other EIB-funded projects in Austria's health sector include modernisation of hospitals in Styria and Steyr, the construction of a regional mother-and-child clinic at Linz, and the upgrading of technical equipment in Vöcklabruck.

HIGHLIGHTING IT IN THE 21ST CENTURY HOSPITAL

While a significant number of the above efforts have involved IT modernisation elements, the highest-visibility EIB-funded project in such a context involves the futuristic Orbis Medical Park in Sittard, the Netherlands. The Bank's 180 million Euro loan (its second in the Netherlands, after one for a hospital at Heerenveen) will largely be devoted to the construction of the new Maaslandziekenhuis hospital, which is also referred to as The Hospital of the 21st Century.

The Orbis Medical Park marks a Schumpeterian shakeout of traditional approaches to healthcare. Instead, prevention, cure and care are combined. The new Maasland Hospital will be set up alongside a Care Promenade, a Centre for mental healthcare as well as a rehabilitation and recovery centre. All workflow, care and treatment processes have been redefined, redesigned and agglomerated around a patient-centric concept. Making such a vision possible is IT-rich intuitive/intelligent care-related logistics, alongside an Electronic Patient Dossier and a distributed ICT planning and healthcare delivery system.

HEALTHCARE IT POLICY IN THE NORDIC COUNTRIES

HEALTHCARE IT MANAGEMENT
ANALYSIS

To obtain an overview of policymaker's perspectives on healthcare and IT in the Nordic countries, HITM's Catalina Ciolan interviewed Pentti Itkonen and Daniel Forslund from the Health Ministries of Finland and Sweden, respectively.

HITM: The Nordic region is seen to have some of the most advanced healthcare systems in Europe. What do you think are the reasons for this ?

Pentti Itkonen (PI): Nordic systems are taxation based, locally administrated and every citizen has equal access to services. The markets have only a little influence on the functions of health care systems. At the political level, equity and equality are important priorities. At the same time, productivity and efficiency are coming to the political agenda.

Daniel Forslund (DF): It is true that the Nordic region has a very good reputation for having very developed healthcare systems. This is the reason why we are talking about the 'Nordic model'. Here, in the Nordic region, the health service is a public matter, all countries having well-established healthcare systems. The Nordic approach based on a large tax-funded public healthcare sector today is undergoing a dynamic chance, which provides many new opportunities for the free choice of patients within the system. At the present moment, our key priorities are, on the one hand, patient empowerment and patient involvement, and on the other, increasing availability by encouraging new private healthcare providers. New e-Health tools are vital in this renewal process.

HITM: What is the future of the Nordic healthcare model – in terms of financing, organizing and delivering healthcare? Will there be more convergence between Nordic countries, and between them and the EU – speaking specifically about Norway?

PI: In the main aspects, the models are already close to each other. I don't see reasons for more convergence in organizing, or delivering health services. In the eHealth sector, common standards will be one important issue for co-operation between the Nordic countries and the EU.

DF: The classic Nordic model has historically been comprised of a large public sector, active labour market policies, high reimbursements levels for social welfare as well as high taxes, and a general commitment to social equality. For this reason, the patients must have equal rights as far as access to health treatment is concerned. Alongside, another priority on our agenda is efficiency-related.

So, if the healthcare system must be an efficient and modern one, we must introduce new ways for patients to access and communicate with healthcare as well as introducing a new approach for patient involvement amongst healthcare professionals.

Moreover, though we are still talking about a strong public financed system, the strongest possible participation of private healthcare providers is also highly encouraged. At the present moment, the healthcare system is characterised by a wide variety of private and public providers/actors. This is

especially strong in the primary care sector. What is important is that increased market competition accompanies an increase in the quality of care. As a consequence, an increase in competition triggers both efficiency at the governance level as well as patient satisfaction.

In terms of convergence between the Nordic countries and the EU, it should be stated that there is increasing cooperation. In the context of the ongoing discussions about the possible need for a EU Directive on Patient Safety and Mobility, such a cooperation is also becoming more necessary. Patients must be ensured access to healthcare treatment in all Member States as ruled by the European Court of Justice. On the other hand, this increased interconnection raises many health policy issues, including quality and access in cross-border care, information requirements for patients, health professional and policy-makers and how to reconcile national policies with European obligations. All in all, I have to acknowledge this this is a good trend. Even though the healthcare systems within the EU may differ, we have similar visions for improvement and also meet similar challenges to realise that vision. The benefits of a closer cooperation is self-evident.

As far as convergence between different Nordic countries is concerned, there is already a strong tradition of collaboration between different hospitals in many regions between Sweden and Finland, Sweden and Norway, and Sweden and Denmark. We have formal cooperation in areas such as medical devices (eg. telemedicine services) with the aim of reducing long waiting lists for certain treatments.

HITM: In Sweden, we know there has been political debate about privately run hospitals (like St. Göran's Hospital in Stockholm). They serve the public but are run for profit, and could not continue in their present form. What is the status of this today ?

DF: Since October 2006, there has been a major change in policy towards for-profit private healthcare providers. The law has been abolished. Now there is a free market for healthcare providers, so generally there is a change in policy. We have a more open approach to competition and , all in all, the situation is better. Privatising hospitals is a way to increasing availability for patients and encourage a positive competition based on quality between public and private healthcare providers.

HITM: Hospital IT departments are at the centre of many changes – e-Health and e-business are new developments alongside their traditional roles in administration and operations. Are these forces having an impact on hospital IT departments in the Nordic region?

> European healthcare IT managers should be both more visible and active.
> When taking decisions at governmental level, we need their competence and advice in order to choose the best solutions for the e-Health

PI: In the future, every hospital is unlikely to need a traditional IT department, with their own strategic management and strategic objectives. The 'hospital' itself, as we know it, will become part of a larger and broader strategic implementation of new services for citizens and healthcare professionals.

DF: e-Health is a renewal force and it is successful in establishing a new era of cooperation. For this reason, the new National Coordination Secretariat for eHealth (in Sweden) deals on ways to implement the National Strategy for e-Health. I will talk more about this later, but it should be kept in mind that all new investments follow now the basic principles set out in the National Strategy. The IT departments at the local level are strongly encouraged to follow recommendations coming from the national level.

HITM: What are the key challenges and priorities for healthcare IT in the Nordic countries ? For example, interoperability and new standards, legacy systems, skills availability, budgets ....

PI: Strategically, the key challenge is to move from an organization-centred strategy to a citizen-centric one. We need a nationwide basic infrastructure with national specifications, legacy framework and a framework for a new communication model between citizens and the health care system. For such an effort, all the issues you mention are clearly very important. Interoperability, standards and demographics have already been under extensive study for years. In Finland, for example, a new law coming into force on July 1 provides a legal framework for basic infrastructure and for new communications with citizens.

In the wake of these issues, we also need new innovation processes to create new service models and new working patterns for professionals. Only in this manner can we have some returns on IT investment. The new government in Finland also has identified service innovations for social- and healthcare issues inside the government's own programme. This will focus on new innovations, sift the winners and spread them to hospitals and health centres.

Meanwhile, hospitals have always had a need for new and modern equipment. e-Health programs will give us new opportunities to utilise all equipment in innovative new ways in a centralised and shared services environment, and do it jointly and cost-effectively with several hospitals.

DF: Sweden's National Strategy for e-Health has several ambitions. On the one hand, all stakeholders in healthcare need to have a common vision on how to use e-Health to renew and improve the healthcare sector and on the other hand, at the political level, we need to see e-Health as a way of changing healthcare. E-Health often appears as a technical solution not as a tool for organisational change. For this reason, we have identified six action areas where we need to work in parallel:

1. Strong foundation for e-Health (including laws and regulations, creating a semantic interoperabili-

ty). We need a terminology system like SNOMED CT to improve healthcare and use information systems in a more efficient way
2. Developed technical infrastructure (systemized information is required in order to make decisions regarding individual patients and facilitate administration, control, follow-up, development of research)
3. Usability and user friendly systems for healthcare professionals
4. Interoperability (easy to exchange data)
5. High quality information exchange (uniform and unambiguous definitions and agreements on terms and concepts crucial to ensure patient safety, high quality of treatment and follow-up)
6. Patients involvement (creation of a national web portal and advisor telephone number)

As for the skills of the IT professionals, we pay special attention on their education as well. We support the creation of medical informatics departments/ courses within the Swedish universities and we also support 'continuing education'. Through such continuing education in healthcare, I mean teaching/explaining to IT professionals how to use the new devices. Because of new solutions and developments in e-Health, there is a need to shift to new technologies. Advanced usage of ICT in healthcare is conditioned by several factors, especially the fact that most ICT systems in healthcare are built for storage of data and not exchange of data. Moreover, the current structure with self-governing regions makes national decision-making challenging. As a consequence, interoperability and co-operation between all relevant stakeholders in healthcare is a matter of high political priority at the moment. In my opinion, investments in both equipment and software are equally important.

HITM: One of the most promising hospital information systems from the Nordic region is TietoEnator's iMedOne. This was developed in India, and is likely to be supported and enhanced from there. In other words, do you believe globalization is bringing up new technology competitors, especially from India and China ?
Do you believe the EU should open up research cooperation with such countries, at least to match what the US is doing ?

DF: International cooperation is very important. We should be open. Our focus shouldn't be on where the product has been developed as long as it follows internationally agreed high standards and quality. We need a dynamic market for IT solutions in healthcare. Moreover, the EU should have the same approach as we will all gain. A large market for e-Health providers and competition will only bring profit for both patient safety, cost-efficiency and interoperability.

HITM: In the face of all these changes in the Big Picture, do you think European IT managers need a common voice ?

DF: Of course. But the problem is that IT managers are not very visible on the European arena. As e-Health is on the EU agenda now, the IT managers should be both more visible and active. When taking decisions at governmental level, we need their competence and advice in order to choose the best solutions for the e-Health.

HEALTHCARE IT MANAGEMENT

AUTUMN ISSUE

The next edition of HITM will continue our coverage on the **modernisation of EU hospitals**, especially in the context of emerging e-Health programs and growing pressures to transform hospital IT departments into value accelerators for healthcare delivery.

Specific issues for analysis include the challenge of **legacy IT systems**, alongside strategies being adopted to retain their sometimes-invaluable repository of business rules and logic. There still are quite a few IT managers who believe that nothing is better than that which has been tried and tested, and moreover, has withstood the test of time.

In terms of modernisation, an enduring dilemma for many healthcare IT managers is whether to go for incremental, **piecemeal upgrades or resort to a Big Bang overhaul**. Such questions are complicated further by questions of platform choice, not least in terms of the battles between Java and DotNet, Unix and Linux, new package deployments, as well as the IBM-led shift towards Service Oriented Architecture. Whether in terms of RoI or the tradeoffs between scalability, performance, availability and security, there are clearly many questions for which answers still lie some years away. As part of this, we also intend to look at whether there are formal or informal fora where hospital IT managers share their experiences with modernisation, or plan to.

Yet another topic of interest is the choice of **vendors and external/outsourcing solution providers** for hospital modernisation projects. We also believe it worthwhile to explore existing methodologies for aligning requirements with budgets, in-house IT teams with external consultants, and above all, ways to avoid that bane of many large-scale IT projects, namely scope and mission creep. We will also investigate whether there are likely to be pressures to unbundle and outsource IT departments in the hospitals of tomorrow.

Alongside, HITM plans to devote space to case studies and real-life expert perspectives on the deployment of **wireless applications**, **Web-based data storage** and the use of **RFID for asset management**.

Our country focus for the Autumn issue is **Austria**.

Readers interested in contributing articles and commentaries, or participating in future panel discussions on any of the above topics, are invited to contact editor@hitm.eu.

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Healthcare IT Events

July

EGEH '07
e-Government and e-Health
4th International Conference and Exhibition
9 – 10 July 2007
Milan, Italy
www.aitim.net/pdf/Eventi_2007/eGeH07.pdf

August

IEEE EMBS 2007
29th Annual International Conferece of the IEEE Engineering in Medicine and Biology Society
23 – 26 August 2007
Lyon, France
www.embc07.ulster.ac.uk/

IASTED 2007
13th IASTED International Conference on Robotics and Applications
29 – 31 August 2007
Würzburg, Germany
www.iasted.org/conferences/home-563.html

October

MEDNET 2007
12th World Congress on the Internet in Medicine
7 – 10 October 2007
Leipzig, Germany
www.mednet2007.com/content/

ECEH 07
European Conference on e-Health 2007
11 – 12 October 2007
Oldenburg, Germany
www.eceh07.offis.de/

WORLD OF HEALTH IT 2007 CONFERENCE AND EXHIBITION
Connecting Leaders in Technology and Healthcare
22 – 25 October 2007
Vienna, Austria
www.worldofhealthit.org/

November

MEDICA 2007
39th World Forum for Medicine
14 – 17 November 2007
Düsseldorf, Germany
www.medica.de

TELEMED & E-HEALTH 2007
Supporting Self Care
14 – 17 November 2007
London, UK
www.rsm.org.uk/telemed/

December

CEHR INTERNATIONAL CONFERENCE 2007
E-Health: Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics to the Edge
2 – 5 December 2007
Regensburg, Germany
www.cehr.de

PATIENT SAFETY: 'INFORMATION CAN SAVE YOUR LIFE,' SAYS COMMISSION OFFICIAL

AUTHOR
Ilias Iakovidis
PhD, will be a speaker at the EU eHealth Agenda and Activities on Patient Safety Educational Session at The World of Health IT Conference in Vienna on 24 October
www.worldofhealthit.org

Patient safety is a growing cause for concern in the EU. Recent studies have shown that healthcare errors occur in around 10% of extended hospital stays in an increasing number of countries.

Dr. Ilias Iakovidis of the European Commission believes that co-operation on patient safety is needed to improve care for all EU citizens, whether they are seeking treatment in their home country or other member states.

"Systemic approaches to ensuring patient safety will help to increase the overall quality of healthcare," says Dr. Iakovidis. As deputy head of the Commission's ICT for Health Unit, he is responsible for research activities in eHealth and biomedical informatics, and is also working on the follow-up to the EU eHealth Action Plan [COM (2004) 356] of which he was the main co-author.

"ICTs can have a massive impact on all aspects of healthcare. All Europeans want the best healthcare for themselves and their families. Yet Europe is ageing, putting immense pressure on healthcare systems which already account for around 9% of EU GDP."

The highly information-intensive nature of the health sector means that advanced ICTs can directly improve cost-effectiveness, allowing more funds to be spent on healthcare, and less on administering it.

But, Iakovidis adds, eHealth systems are not just about replacing paperwork with computers and smartcards: "ICTs also enable healthcare to be personalised. This not only makes treatments more effective; it enables doctors to diagnose problems more quickly, predict them before they occur, and avoid diagnostic errors." And, because ICTs allow patients to be monitored in real-time, both in their homes and on the move, improving illness prevention, and saving money spent on diagnosis and treatments, they also enable other parts of the healthcare sector to develop more powerful solutions, such as using supercomputers and grids to help discover new medicines.

Iakovidis concludes: "Patient safety depends on effective and sustained policies and programmes being in place throughout Europe. Patient safety has recently been given special support by the ICT for Heath R&D programme. On the policy front, EU Member States have established a mechanism to discuss and promote patient safety issues as a healthcare priority.

A working group was set up under the High Level Group on Health Services and Medical Care to identify priority areas for action. Reports and learning systems in this field would permit information on problems and solutions to be shared throughout Europe. While we all know that people (well trained professionals) save people, it is clear that timely access to relevant information increases the odds dramatically.

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• **The European Association of Healthcare IT Managers** supports and encourages the emergence of common healthcare IT standards at both EU and international levels.

• **The European Association of Healthcare IT Managers** believes that the European Healthcare IT sector needs a common voice - especially in the face of rapid technological change and growing socioeconomic pressures.

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