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Healthcare IT in Germany

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

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

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

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

Politics and Technology

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

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

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

Security and Privacy: First principles

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

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

Three-Stage Rocket

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

Stage I: Open Technologies Show The Way

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

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

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

Some examples are given below:

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

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

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

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

Stage II: Agreement On Semantic Standards And Interfaces

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

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

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

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

Stage III: Politics Again

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

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

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

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

The Future

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

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

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

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

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

More magical things have happened before.

When operational, and at full speed, Germany's new health IT infrastructure will connect 100,000 GPs to the country's 2,000-plus hospitals, 200 sickness funds and 21,000 pharmacies.

The national healthcare IT infrastructure will deliver a wide and growing number of national E-Health applications, principally a compulsory national electronic prescribing record (EPR), alongside voluntary EHRs and personal emergency data.

Its architecture, essentially, is a decentralised model, with regional eHealth networks of different providers. This entails high demands for common semantic standards, standardised interfaces and secure interoperability – especially at the server level, for managed care scenarios.

Core to this philosophy is the segregation of patient data – with authorised data sharing between hospitals, physicians, patients and the sickness funds.

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