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The Computerization of Healthcare in Romania

An Experiment in Progress

Author

Marius Stupu

is IT Manager of

SUUB, the University

Hospital of Bucharest.

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

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

A Longstanding Tradition

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

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

From Academics to the Real-World

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

The transition of Romanian healthcare IT out of an academic space, with a largely theoretical focus, into the real-world of practical implementations has had its share of problems and difficulties, and no small level of frustration. On the theoretical side, as discussed above, there were few problems for Romanian researchers, although funding was (and still remains) a major challenge. Paradoxically, in spite of an unremitting series of declarations showing universal agreement about the importance (indeed necessity) of healthcare IT, the situation in real life has been rather different (both in terms of acceptance and involvement in making the requisite investments).

The Challenges of Transfromation

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

The country's political transition from a socialist system established on a high (indeed excessive) level of centralization to a capitalist one based

on an equally high level of decentralization has taken far longer than necessary. In turn, this has led to a slackening in the design of unified management structures to achieve the objectives of a healthcare IT system in harmony with that evolving in Europe.

Politics and Problems

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

Potholes on the Path to Perfection

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

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

A Mixed Picture

As a result, the picture is not entirely bleak, but neither is it wholly straightforward. For example, mandatory requirements to report performance indicators have made hospitals and other public healthcare organizations implement a variety of modern IT applications. However, the costs of such applications are relatively high, and have often entailed shelving/discarding other initiatives.

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

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

Lessons from the University Hospital in Bucharest

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

History

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

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

The Current IT System

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

One of the key challenges has been preparation, training and end user awareness on the importance of correct implementation and use. Indeed, the University Hospital of Bucharest's experience broadly reflects those encountered elsewhere about the human factor being critical in providing

value to investments and ensuring continuity and consistency in information flow – the organic nervous system of any meaningful IT architecture.

The usual war between paper and computers at the University Hospital of Bucharest was brief but intense. Over time, all those involved in the process however began to agree that the benefits of centralization of information and structuring this into a coherent whole would provide greater overall benefits for the entire hospital – once again, an illustration of the age-old adage about the whole being greater than the sum of its parts.

Strategy and Philosophy

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

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

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

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

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

Lessons Learned

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

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

The Future …

In the future, the University Hospital of Bucharest intends to continue with initiatives to modernising its IT systems. One core objective is migration to a more scalable platform and the ensuring of stability, portability and mobility. The Hospital IT Department's investigation, undertaken jointly with software providers, has shown that application portability is one of the key factors providing value addition to the system. Expanding data storage is another, along with the introduction of telemedicine as a means of pooling information and taking faster and more accurate decisions. Supported by the IT Department, the medical school at the University Hospital has also made significant efforts to consolidate theoretical and practical knowledge by supporting e-learning and distance education projects.

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

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

Romania's Half Century Tradition of Computing

It is not widely known that, while most other countries in the Soviet sphere of influence decided to centralize computing in the USSR, the Romanian government decided to go it alone, assigning key Romanian universities (and groups of outstanding engineers and mathematicians known well beyond the country's borders) to design and build their own computers. The first Romanian computer, the Masina Electronica de

Calcul a Institului Politehnic Timisoara (MECIPT-1) was built at the University of Timisoara as long ago as 1959.

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

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