

A Roadmap towards Healthcare Information Systems Interoperability in Greece

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Keywords: Interoperability, Regional Networks, HL7

Introduction

It is paradoxical that, although several major technological discoveries such as Magnetic Resonance Imaging, Nuclear Medicine and Digital Radiology, which facilitate improvement in patient care, have been satisfactorily embraced by the Medical community, this has not been the case with Healthcare Informatics. Thus, it can be argued that issues such as Data Management, Data Modelling and Knowledge Management have a long way to go before reaching the maturity level that other technologies have achieved in the Medical sector.

A variety of reasons could be proposed for this issue [1-2], though with a short analysis it becomes rather clear that modern ICT present integration problems within the Healthcare sector because of the way the latter is organised. Healthcare is a strongly people-centred sector in which ICT has been considered more as an intruder, as a “spy” to the healthcare professionals’ way of doing things and as a competitor to this people-centred model. Thus, if ICT intend to prove its advantages towards establishing an information society, or even more a knowledge society, it has to focus on providing service-oriented solutions. In other words, it has to focus on people and this has not been the case in most of the circumstances.

Methods

The Greek E-business forum (www.ebusinessforum.gr) initiated a new focus group regarding e-health and interoperability, which took the codename Z3. This focus group gathered more than 150 decision makers, medical informaticians, healthcare practitioners and other individual involved in healthcare. The focus group in 2005 prepared an exhaustive questionnaire that was filled by the focus group members. The following list of open issues was depicted from those questionnaires:

1. Political issues are strongly biasing the government’s decision making strategy. In that sense, politics tend to change continuously, creating a lack of high level strategy.
2. There is no national strategy for medical terminology, information systems security, disaster recovery, data interchange protocols, etc.
3. Greek medical institutions are understaffed regarding their need for the successful adaptation to new information and communication technologies.
4. As the public sector is concerned, the Focus Group noticed that procedures do not comply to the introduction of ICT, thus creating a draw-backing inertia of the National Healthcare System.
5. High level leadership mostly focus on day to day management than towards introducing the necessary structural changes to support ICT.
6. There is a strong lack of vision amongst leadership, starting top down from the high level administration.

7. The Greek medical ICT market is very small to enforce correct bottom up solutions, thus existing solutions simply follow the complex and bureaucratic way of doing things in the Greek public medical institutions.
8. The user requirements and technical specifications proposed to the implementers often lack of severity, clarity and business scope.
9. There is no follow up of other worldwide best practices, and visionaries are restricted to deploy strategies that never succeeded to overpass the design phase.
10. The proposed time management of government ICT project is unrealistic and do not take into consideration the complexity of the healthcare sector.
11. Fund management and human resources management is not clear and are both mostly spent in unrealistic projects that to not promote ICT as success cases.
12. The high level leadership lacks of ICT knowledge and cannot focus correctly upon the benefit of the correct introduction of integrated information systems in Greek medical institutions. A large majority of questionnaire reported a techno phobic approach of the political and administrative leadership.
13. The Greek healthcare sector has four decision making groups (Ministry of Health, Ministry of Education, Ministry of Social welfare and Ministry of Defence) thus making the business rules extremely bureaucratic creating a business environment that lacks of homogeneity in matters of terminology and procedures.
14. The social security sector is also extremely complex and not homogenised in procedures, insurance coverage, and support to citizens. This is due to the separate route that each ministry has followed for its institutions. Even today with the operation of a general secretariat for social security, the Greek Government has not succeeded yet to create the correct environment for the citizen, despite the efforts of the last years.
15. The human factor lacks of expertise and training in ICT, thus making almost impossible to locate the correct amount of key users or early adopters to promote ICT.
16. It is extremely difficult to implement business reengineering projects in the public sector. Nevertheless, many efforts are in the process of implementation.
17. The reaction to change is quite large, since techno phobia has passed from top management to a large number of employees, thus creating a hostile environment for ICT visionaries

Results

The integration of existing and forthcoming information systems represents one of the most urgent priorities in order to meet the increasing clinical, organisational and managerial needs [3]. In that context, the use of standards is essential since data processing needs vary widely in the complex regional healthcare environment. All RHA have a major concern in evaluating the existing operational hospital information systems (HIS) and other information system infrastructure in order make a decision on whether to maintain or replace them. In Greece, more than ten distinct vendors have installed healthcare IT related products (Hospital Information System - HIS, Laboratory Information System – LIS, Radiology Information System – RIS, etc) that mostly work independently as IT niches. It is known that the lack of healthcare information standards

is one barrier to the broad application of IT in health care units. The inability to share information across systems and between care organizations is just one of the major impediments in the health care business's progress toward efficiency and cost-effectiveness, as well as, the absence of a unique national or even regional patient identifier in Greece. Integration of these existing diverse systems with the future information systems to come remains problematic with a number of competing approaches, none of which alone represent the perfect solution. Current practice shows that the most promising approach to achieve a Regional Healthcare Information System is to use, where applicable, a HL7 message-based communication system implemented by an asynchronous common communication infrastructure between healthcare sites. Another important feature of the proposed solution is that it creates an interoperability framework that can be replicated from one healthcare institution to another. In that sense, common interoperability messages can be used to interconnect heterogeneous information systems within a healthcare institution or even at a regional healthcare level if a centralised information system is in place, as depicted in Fig.1.

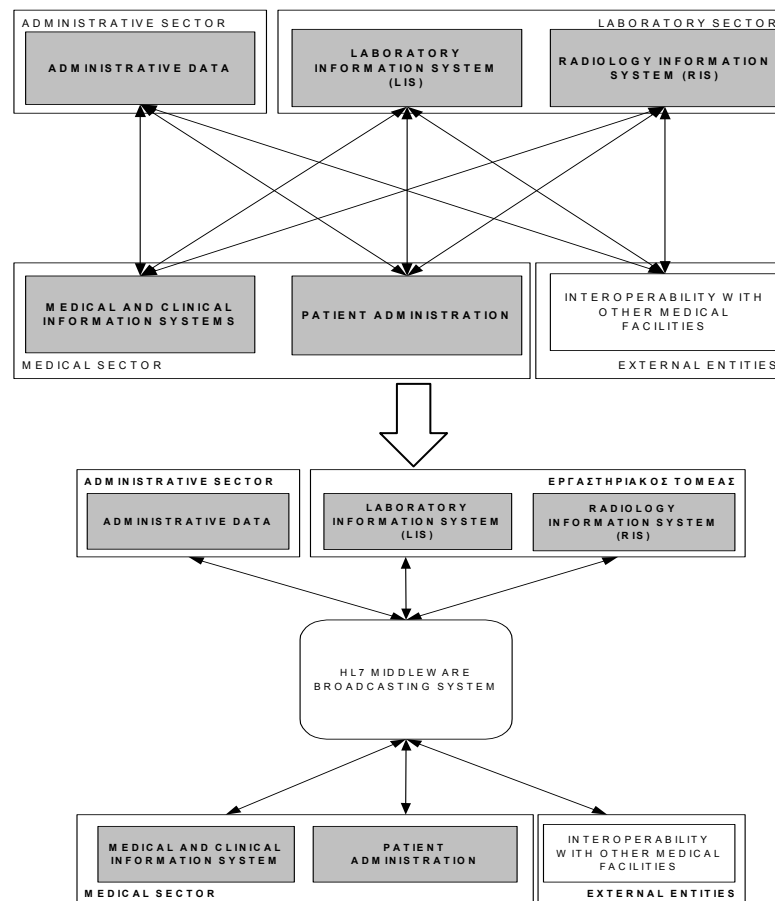


Figure 1. Creating an Interoperability Framework

Discussion

The Focus Group reached consensus regarding the establishment of an interoperability roadmap described in ten recommendations:

1. Deployment of an interoperability framework based upon common communication interfaces.
2. Assessment and sustainability of existing information systems in medical institutions, based upon a specific scorecard methodology.
3. The Healthcare informatics market should strongly focus towards standards conformance and standards maintenance. Consensus based processes for the deployment of the basic standards functionality are of critical importance (i.e. implementing integration labs).
4. HL7 is mature enough to solve most of the interoperability issues in Greek and many more than simple data interchange.
5. HL7 standards should be refined to meet peculiarities of the Greek healthcare system if such issues exist.
6. HL7 Hellas can assist the Greek ministry of health in the required standardisation process that is needed to implement a national interoperability platform (terminologies, processes, workflows, performance indicators, etc).
7. Specific task forces, standardisation teams should be established immediately, under the umbrella of an information authority or of an independent scientific society such as HL7.
8. National interoperability conformance statements must be implemented based upon the work done by IHE (Integrating the Healthcare Enterprise) with the use of HL7 and DICOM conformance statement templates and methodologies.
9. Greece should follow the work done by international task force created by standardisation bodies such as ISO, CEN/TC 251, HL7, openEHR, etc. This is especially valuable as the creation of a national EHR is regarded.
10. Immediate involvement of Greek experts and knowledge workers in international standardisation processes.

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