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## The Irish eHealth Sector

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### Abstract

*As in many other sectors, information technology has permeated into the Health Sector. This has brought about changes, some intended, some unintended, some welcomed, some not as much. People may know what they want from a healthcare system, but when they face a shift in the way health services are delivered such as the one that follows the eHealth initiative in Europe, they may be unclear about what to expect. This paper reviews how the initiative originated at European level and how it spread to the Irish health sector.*

### 1. Introduction

As our society is moving from the industrial era into the information era, the use of information technology (IT) has permeated into many of the activities that make up part of everyday life. The way we communicate, learn, shop, vote, etc., has been dramatically changed. As this trend develops, there is growing potential for new electronic applications to be used in the delivery of all sorts of services. In particular, health ministries in European countries are seriously engaged in taking advantage of new media such as mobile telephony, the internet and digital interactive television (Tremblay, 2000) to improve their quality and capacity when providing health services to the general public.

In the case of The Department of Health and Children (DoHC) in Ireland, its engagement is twofold. On the one hand it participates in European Union (EU) policy formulation; it must comply with, and implement EU guidelines and requirements; and develop unique aspects of national and local health services delivery. On the other hand, at the national level, implementation of new technology is regarded as vital part of the latest health strategy (DoHC, 2001) aiming at dramatically improve health services in the country.

Can we expect that innovative changes in the healthcare system will emerge from policy-making at government level? What is the background for such innovation? Who is involved? What is expected of it? Have implementation of the new technologies spread wide enough to identify outcomes?

Before answering any of these questions the field of eHealth has to be explored for clues about where the initiatives are coming from and what they are aiming at. A picture of

how the new technologies are deployed, or are meant to be deployed, will do as a starting point for further explorative and descriptive research as well as assessment.

## 2. Method

The work presented in this paper is an early stage of a larger study in which the HS is studied for systemic consequences of change brought about by technology innovation which affects different levels within the system. In this early stage, the eHealth initiative is considered for the role of the technology innovation producing change in the HS.

The state of development of the eHealth initiative is explored in order to determine if its progress is such that implementation efforts have permeated to all, most or some levels in the system; to observe which actions have followed policy and if any tangible results have been produced after those actions; and to determine if enough time has elapsed since its conception to make it a consolidated phenomenon worth of a case study.

This paper reviews official communications and reports made by and for the EU and the Irish government concerning the upgrading of infrastructure; deregulation of markets; promotion of research; and other actions taken to procure the conditions needed for the development of eHealth applications. In the same way, technical sheets and reports of independent projects are included.

Information from this review is to be complemented with empirical findings gathered by means of unstructured interviews with key informants currently working on the implementation of eHealth applications at the organisation (hospitals), regional and national (health authorities) levels. Being this an ongoing work, not enough empirical information could be included in this paper at the time of submission to conclusively test policy against the actual state of the initiative. However, as an explorative work, maps the way for future, more descriptive findings.

## 3. eHealth

When the issue was brought for consideration by Irish society prior to development of the National Health Strategy in 2001, several groups were set up within a Consultative Forum. The purpose of one was to consider eHealth and its opportunities over the following five years (Perry et al., 2001). This is the definition they used:

*The use, application and development of information and communications technologies to enhance and promote health.*

However, the one we will use in this paper is Eysenbach's (2001), leading authority on the subject, who defines eHealth as:

*...health services and information delivered or enhanced through the internet and related technologies. In a broader sense, the term characterises not only technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve healthcare locally, regionally, and worldwide by using information and communication technology.*

This one clearly addresses not only the operational aspects, but also the organisational environment surrounding the technology. This same definition was adopted by the European Commission for its eHealth chapter (EC, 2002c) of the 'Information Society'

initiative (EC, 2000b), and by Prospectus Ltd. (Mathews & Vincent, 2002) when reporting the state of eHealth in Ireland to the DoHC.

Covered here is a broad spectrum of different applications and no difference is made between 'eHealth' and some other alternative concepts that have recently emerged such as 'tele-health' and 'health informatics'; both of which will be considered here to be synonymous with eHealth.

Other related concepts worth defining at this stage are:

- *Telemedicine*. Refers to systems that help to bring medical attention to someone who is far away from where the GP or consultant giving the service is.
- *Online services*. Web-based applications through which citizens can apply for services without having to go to public offices where the service is based.
- *Patient records management systems*. Database suites developed for the specific purpose of managing and communicating records containing not only patient details but clinical history and clinical tests results.

All are under the umbrella of eHealth but refer to different features of the IS. Later in the paper the role of each of these categories in the Irish eHealth sector is explained. However some examples...

#### **4. eEurope**

The so called 'new economy', emerging during the information era, has tremendous potential for growth, employment and inclusion. Recognising this, the European Commission launched the 'Information Society' initiative (EC, 2000b) in which this potential is to be fully exploited and promoted by taking several measures:

- Advancing the liberalisation of telecommunications.
- Setting a clear legal framework for eCommerce (e.g. privacy, authentication, security).
- Supporting content industries and R&D.

Along with this initiative an Action Plan was issued (EC, 2000a) with a detailed description of actions and actors to be involved in the project. Actors constitute member states and other bodies above them at the European level, such as The European Commission, European Investment Bank, and European Parliament. In terms of actions, they aim at reducing the cost to the general public of having access to the internet, making it safe, and promoting the availability of web applications.

Cost of connecting to the internet is reduced by deregulating the telecommunication sector and promoting competition among suppliers. Security while using the electronic environment is achieved by means of legislation.

In time, by the year 2005 according to the European Commission (EC, 2002a), every citizen, home and school, every business and administration, will have come into the digital age and be online. If everybody has a reliable internet connection then it makes sense to bring public services onto the digital platform and exploit the inclusiveness and 'distancelessness' of this technology. Under these circumstances bureaucratic and tedious processes give way to modern online public services such as eGovernment, eLearning, and eHealth.

What results from these actions is that full exploitation of IS potential is addressed from two opposite fronts: The policy front (1) –from the top down-, where member states are advised to work towards legislating and developing the infrastructure to support the technology. And, the research front (2) –from the bottom up-, in which money is allocated in the form of grants to fund and promote research and development of applications among universities, research centres, and high technology firms.

## 5. Irish eHealth: from the Top Down

In this section, the actions taken by the Irish government are described. These actions start at the EU level with participation in workshops that address important issues for infrastructure and legislation; and go all the way to the organisation level, dealing with more operational aspects such as IS implementation.

The European Commission recognises that the first thing to do towards exploitation of the power of IT in the health sector, is to provide user-friendly, validated and interoperable systems for medical care, disease prevention, and health education through national and regional networks which connect citizens, practitioners and authorities on-line (EC, 2003). This means that primary and secondary care providers must be provided with the necessary health informatics infrastructure. Member states are required to address a number of issues in preparation.

- **Quality criteria for health related Websites.** Ireland participated in the EC workshop and consultation through the Systems Unit of the DoHC. No representatives from industry, industry interest groups, academia, special interest groups or non governmental organisations participated. A report of this workshop has been published and guidelines for health related websites have been developed (EC, 2002b).
- **Best practices (benchmarking)** in eHealth have to be identified and disseminated, in order to assist purchasing departments in decision-making. On going projects in this area include 11 multinational partnerships. Irish organisations are not participating in any of them.
- **A series of data networks** need to be established to assist with informed healthcare planning in Member States (No action has been reported after this statement).
- **A communication on legal aspects of eHealth** will be drafted which will clarify which existing legislation has an impact on eHealth in order to remove some of the uncertainties expressed by industry about the legal aspects of such commercial activities. (No further action has been reported after this statement).

Coming down to the national level, the Irish government by means of the DoHC recently published the National Health Strategy for 2001-2005 (DoHC, 2001). In this strategy, one of the tools proposed to tackle deficiencies in quality and capacity is IT. So much importance is given to this issue that a complete separate strategy is being developed for this purpose: The National Health Information Strategy (yet to be released). Part of the works for this strategy included a Consultative Forum in which all sectors of Irish society participated. eHealth and its opportunities were considered during this consultation, resulting in a report (Perry et al., 2001) concluding that:

*‘The forum sub-group believes that there is huge potential for e-health in the improvement of health services generally and in achieving the goals and objectives set out earlier. E-health permeates all aspects of the health strategy*

*and each other sub-group should be asked to consider an e-health dimension. Many of the technologies which are considered to be 'e-health Technologies' are no longer new technologies and it is incumbent on health service providers to implement them now.'*

Apart from the actions just described, some others, more tangible for the general user of the healthcare system, include the group of websites maintained by the DoHC ([www.doh.ie](http://www.doh.ie)), each one of the Regional Health Boards (8 websites), and the Eastern Region Health Authority. They all are predominantly informative resources where reports, press communications, statistics and general information about the healthcare system can be found. A more interactive application already in use and linked to these websites is *reachservices.ie*, which is a broad eGovernment initiative that allows the user to fill in online application forms for government services. Health services provided through this website are only three: domiciliary allowance, registration in the drugs payment scheme, and home improvement for the elderly.

Another category of applications include those related to certain groups of interest within the healthcare system. These applications aim to empower individuals so they can either perform better or make better use of the system. All of these applications are at different stages of development and none is fully implemented yet.

- **Hospital Information Systems Project.** Coordinated by the Health Boards Executive (HeBE) and aimed to provide a comprehensive suite of core hospital systems to address current operational and management information requirements. For this project, current and future state analysis has been carried out to produce a detailed statement of requirements which has been advertised as a call for proposals from software developers. Proposals have been received and short-listed.
- **HealthLink.** Funded by the DoHC, this is a prototype healthcare communication network with specific reference to General Practitioner-acute Hospital relationship of data exchange (Mathews & Vincent, 2002). What it does is allow the exchange of clinical and administrative patient data between GP's, hospitals and health boards. All three parties can rely on accurate updated data. Only two hospitals in the Dublin area are participating in the project at the moment and work is in progress to extend the network nationwide.
- **National GP IT working group.** Established by the DoHC to co-ordinate activities and promote progress in electronic knowledge management and communications for general practice and primary care (Mathews & Vincent, 2002). This group works on issues such as homologation of practices to facilitate networking; IT training for GP's; and certification for providers developing general practice software. The main objective is to prepare GP's to work with in an electronic environment.

## 6. Irish eHealth: from the Bottom Up

The bottom up process of promoting eHealth initiatives was led by the allocation of EU resources to R&D. European research activities are now organised into consecutive five-year programmes called Framework Programmes. The 5<sup>th</sup> (1998-2002) and the 6<sup>th</sup> (2002-2006) are dedicated to developing The Information Society. Grants are offered to universities, research centres and high technology firms to develop applied technologies at the heart of the knowledge economy.

In particular, one of the key actions of the 5<sup>th</sup> Framework Programme (FP5) was ‘Systems and Services for the Citizen’, within which the field of eHealth is covered. Projects were clustered around issues such as Intelligent Systems for Health Professionals (1), Intelligent Environment for the Health of Citizens (2) and Intelligent Systems for Patients (3). Only two Irish organisations, however, worked on projects funded by this programme:

- **The North Eastern Health Board (NEHB)** together with organisations from Italy, Belgium, and Spain works on a project for Comprehensive Assistance and Resource Management (CHARM). It is a networking effort to cut across the barriers between the healthcare and social sector at the regional level. It has resulted in the NEHB developing some ‘direct access services’ and an extranet for GP.
- **General Medical Services (Payments) Board:** Another networking project, Professional and Citizens Network for Integrated Care (PICNIC) is aimed to facilitate the interaction between GP’s, pharmacist, and dentists in terms of payments (and reimbursements) by means of a secure web-based network.

Irish organisations also participated in the previous European research programme (FP4) and worked on projects related with healthcare. It was mostly preparatory research prior to the introduction of networked technology and no tangible application has yet resulted from these projects.

There are some other developments on eHealth which have little to do with incentives coming from the research programmes, but find motivation within market forces. For instance sites such as *Irishhealth.com* and *newlifelearning.com* are founded to satisfy the growing interest people are showing on health related issues. The former has the format of an electronic magazine while the latter resembles more a virtual learning institute. Another similar portal is *vhihealth.com*, although it provides the same type of information the latest examples do, the reason is different. It provides health advice as a complement to the national health insurance scheme to which an important fraction of the citizens are subscribed to.

Groups of interest within the health sector have also taken advantage of the internet to strengthen their group relationship and provide services to the members. Such is the case of the Royal College of Surgeons ([www.rcsi.ie](http://www.rcsi.ie)), whose website supports online surgical training.

## 7. Analysis

In the above description applications and actions have been organised according to the institution/organisation the initiative comes from. In this arrangement, applications and actions in each category share a general common motivation for putting forward the initiative. Actions taken by the Irish government are driven by its participation in the EU policy-making and national politics; research centres are competing with each other for funding; regional and local authorities are looking forward the better use of their resources to enhance capacity; and some private firms have recognised a growing market for health related information.

More common ground can be found when looking at the purpose of the applications that have already been implemented, even if they still are in an early stage. Four main functions can be identified: patient records management, online public services, telemedicine and online training, as shown in table 1.

A tendency can be observed for focusing on IS that deal with patient records management, the reason being that this feature is directly related to the efficiency and quality of health services whereas the other capabilities, such as telemedicine and online training are only desirable features, at least for the moment. Besides that, important actions have to be taken in order to bring some minimal standardisation required for all of these features to work properly. Among the most important is the standardisation of patient records coding and keeping, so they can be transferred and managed across IS based in different locations. Although this standardisation is happening at the same time some software applications are being implemented, the whole aggregated system is still in a young stage and its full potential will not be reached until all of the information kept on paper inside file cabinets is put in electronic format.

It is evident, nevertheless, that for the government agencies in charge of promoting and implementing the new technology, there is no turning back. Eventually all of Europe society will be online and the DoHC along with other ministries will have to do what is required to comply with guidelines. It is also an important political issue, since the healthcare system is always under close public scrutiny. Therefore the question is not ‘*what is going to happen?*’ but ‘*how?*’ and ‘*how quickly?*’ It is the DoHC duty to assess and make sure that any new resources attached to the healthcare system are for the best. Failing to do so could result in an enormous political cost. On the other hand if the process is controlled too closely, it may take too long to unfold, resulting in the healthcare system falling behind due to a lack of innovation.

Major eHealth initiatives	Patient Records	Online Public Services	Tele-medicine	Online Training	Other
Hospital Information Systems Project.	√				
HealthLink	√				
National GP IT working group	√			√	√
SHB website (eSHB)	√	√	√		√
NEHB website	√	√			√
National Health Information Strategy	√	√	√	√	√
IS in Mater Hospital	√				
IS in St. James’s Hospital	√				
IS in Tallagh Hospital	√				
General Medical Services (Payments) Board	√				
Irishhealth.com					√
newlifelearning.com					√
vhihealth.com					√
Royal College of Surgeons website				√	

**Table 1:** eHealth Applications Implemented in the Irish Health Sector and Their Purpose.



## 8. Conclusions

Most of the information gathered for this paper is taken from communications and reports made by and for the EU and the DoHC. It explains the transition from a traditional health sector to an eHealth sector as planned at the supranational, national, regional and local levels. In the same way independent emergent eHealth initiatives are also described.

Part of the bigger plan, as it is shown, is to promote the adoption and development of the new technology by addressing issues such as upgrading the infrastructure needed; setting the economic conditions to keep low costs; and nurture the techno-scientific sector to boost the development of applications. Next in the plan would be starting the consumption of those IS in a massive scale by using them for healthcare purposes, as well as in other sectors, such as eGovernment, eLearning, eCommerce, etc.

So, will governments and companies use technologies such as the internet to deliver their services because everybody is connected? Or will everyone have to connect to the internet because it is the only way to get those services? From the technical point of view, the approach taken by the EU makes sense since it provides the foundations as well as the motivation for the actors to complete the network themselves and benefit from it, even at the individual level. The strategy aims at setting a virtuous circle resulting in the system itself 'pulling' the innovation. Should it not happen this way, 'pushing' the usage of the new technologies against the inertia of practices not needing it and not being able to visualise its benefits in the short and long run, would be extremely expensive.

Coming down to the particular case of the Irish eHealth sector, the picture shown by the official literature tells a story of widespread efforts trying to lay down the foundations for a reliable technological platform. Parallel to that, in a scattered manner though, other actions are taking place such as user training, practice standardisation and development of patient records management systems; all of them preconceived as subsystems of a future bigger overarching national system.

Other purpose applications such as telemedicine are still making their way into the everyday practice of medicine since they are still in an experimental stage before being fully adopted in every day practice. This observation is congruent with research done by Currell et al. (Currell, Urquhart, Wainwright, & Lewis, 2002) who did a comprehensive literature review on telemedicine versus face to face patient care. Two conclusions were particularly interesting about the study: one is that very little evidence of clinical benefits can be attached to telemedicine care; and the other is that further research is needed. All the studies, the authors could find, were looking for clinical benefits and all of them used physiological variables to measure these benefits. What is surprising is that they could not find any reference to economical or social benefits. On the one hand, this means that from some points of view, telemedicine is still young and the only way in which such technologies can make a real breakthrough, is to have them created, tested, ordered, paid for and implemented, and after that they have to be updated and/or upgraded so they can complete their cycle (Gul & Darzi, 1998); in order to achieve this there must be an important critical mass of projects at the R&D phase, as well as an attractive market to aim at. On the other hand, eHealth applications in general seem not to have been tested enough for economic and social benefits. Probably because these aspects of the healthcare system in conjunction with the new technology, are still not fully understood due to a shortage of exploratory research. In the future, homogeneity will play a mayor roll in allowing more controlled research, if by that time eHealth has been adopted as a general practice and applications are developed under a single overarching set of protocols.

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