eHealth Strategies

Country Brief: Romania

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About the *eHealth Strategies* study

The eHealth Strategies study analyses policy development and planning, implementation measures as well as progress achieved with respect to national and regional eHealth solutions in EU and EEA Member States, with emphasis on barriers and enablers beyond technology. The focus is on infrastructure elements and selected solutions emphasised in the European eHealth Action Plan of 2004.

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Executive summary

In Romania the Health Reform Law 95/2006 established the re-organisation of healthcare. The law requires the Ministry of Health to create an integrated information system for public health management. Requirements are expressed for information on communicable diseases, emergency care, community assistance, hospital information, health insurance cards etc. In its *Strategic Plan for 2008-2010*, the Ministry of Health (MoH) implements these requirements. Several "eHealth strategies" have been proposed by MoH workgroups or independent experts, all of which took into account the main provisions of the EU eHealth Action Plan (2004), none of these have yet been officially adopted.

In order to consider Romania's position regarding eHealth interoperability objectives the following eHealth applications have been examined: patient summaries and electronic health records, ePrescription and telemedicine. In overview Romania's situation is as follows:

An EHR project was launched in 2009 by the MoH, in the frame of an ICT Policy Support Programme, but the realisation of the project was suspended due to overrun deadlines and issues with solving technical demands. In 2010 the National Health Insurance House (NHIH) announced the intention to realise, by the end of 2011, a national EHR project, in connection with its Unique Integrated Information System (SIUI) system. The Health Reform Law foresees that the National Health Insurance Card will be used to access electronic health records and will contain a kind of patient summary.

Until now, ePrescription services in Romanian have been concentrated on computerised procedures for prescriptions (e.g. transmission of prescriptions) which have been used mainly in hospitals, between physicians and internal pharmacies. In 2010 NHIH announced the intention to realise by the end of 2011 a national ePrescription project, in connection with its SIUI system. NHIH has the support of the Ministry of Communications and Information Society for this project.

Telemedicine has various directions of development in Romania. The more usual ones are: data exchange in emergency situations, consulting and/or giving a second opinion in remote places, education and training for medical staff and helping the population with medical advice. Since 2001, The National Communications Research Institute (INSCC) from Bucharest has coordinated several National Telemedicine Projects. Telemedicine projects are underway in the areas of: tele-radiology, tele-pathology, tele-consulting, tele-diagnosis, tele-monitoring.

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1   Introduction to the report

1.1   Motivation of the eHealth Strategies study

Following the *Communication* of the European Commission (EC) on "eHealth – making healthcare better for European citizens: An action plan for a European eHealth Area",[1] Member States of the European Union (EU) have committed themselves to develop and issue national roadmaps – national strategies and plans for the deployment of eHealth applications addressing policy actions identified in the European eHealth Action Plan.

The *2004 eHealth Action Plan* required the Commission to *regularly monitor* the state of the art in deployment of eHealth, the progress made in agreeing on and updating national eHealth Roadmaps, and to facilitate the exchange of good practices. Furthermore, in December 2006 the EU Competitiveness Council agreed to launch the *Lead Market Initiative*[2] as a new policy approach aiming at the creation of markets with high economic and social value, in which European companies could develop a globally leading role. Following this impetus, the Roadmap for implementation of the "eHealth Task Force Lead Market Initiative" also identified better coordination and exchange of good practices in eHealth as a way to reduce market fragmentation and lack of interoperability.[3]

On the more specific aspects of electronic health record (EHR) systems, the recent *EC Recommendation on cross-border interoperability of electronic health record systems*[4] notes under "Monitoring and Evaluation", that "in order to ensure monitoring and evaluation of cross-border interoperability of electronic health record systems, Member States should: consider the possibilities for setting up a monitoring observatory for interoperability of electronic health record systems in the Community to monitor, benchmark and assess progress on technical and semantic interoperability for successful implementation of electronic health record systems." The present study certainly is a contribution to monitoring the progress made in establishing national/regional EHR systems in Member States. It also provides analytical information and support to current efforts by the European Large Scale Pilot (LSP) on cross-border Patient Summary and ePrescription services, the epSOS - European patients Smart Open Services - project.[5] With the involvement of almost all Member States, its goal is to define and implement a European wide standard for such applications at the interface between national health systems.

Earlier, in line with the requirement to "regularly monitor the state of the art in deployment of eHealth", the EC already funded a first project to map national eHealth strategies – the eHealth ERA "Towards the establishment of a European eHealth Research Area" (FP6 Coordination Action)[6] - and a project on "Good eHealth: Study on the exchange of good

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[1] European Commission 2004

[2] European Commission 2007

[3] European Communities 2007

[4] European Commission 2008

[5] European Patients Smart and Open Services (epSOS)

[6] eHealth Priorities and Strategies in European Countries 2007

practices in eHealth"[7] mapping good practices in Europe - both of which provided valuable input to the present *eHealth Strategies* work and its reports. Member States' representatives and eHealth stakeholders, e.g. in the context of the *i2010 Subgroup on eHealth* and the annual European High Level eHealth Conferences have underlined the importance of this work and the need to maintain it updated to continue to benefit from it.

This country report on Romania summarises main findings and an assessment of progress made towards realising key objectives of the eHealth Action Plan. It presents lessons learned from the national eHealth programme, planning and implementation efforts and provides an outlook on future developments.

1.2 Survey methodology

After developing an overall conceptual approach and establishing a comprehensive analytical framework, national level information was collected through a long-standing Europe-wide network of national correspondents commanding an impressive experience in such work. In addition, a handbook containing definitions of key concepts was distributed among the correspondents to guarantee a certain consistency in reporting. For Romania Dan Farcas, chief of the eHealth strategy office in the National Center for Health Statistics and Informatics, provided information on policy contexts and situations, policies and initiatives and examples for specific applications.

The key tool to collect this information from the correspondents was an online survey template containing six main sections:

- A. National eHealth Strategy
- B. eHealth Implementations
- C. Legal and Regulatory Facilitators
- D. Administrative and Process Support
- E. Financing and Reimbursement Issues
- F. Evaluation

Under each section, specific questions were formulated and combined with free text fields and drop-down menus. The drop-down menus were designed to capture dates and stages of development (planning/implementation/routine operation). In addition, drop-down menus were designed to limit the number of possible answering options, for example with regard to specific telemedicine services or issues included in a strategy document. The overall purpose was to assure as much consistency as reasonably possible when comparing developments in different countries, in spite of the well-know disparity of European national and regional health system structures and services.

Under Section B on eHealth implementation, questions regarding the following applications were formulated: existence and deployment of patient and healthcare provider identifiers, eCards, patient summary, ePrescription, standards as well as telemonitoring and telecare.

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[7] European Commission; Information Society and Media Directorate-General 2009

The data and information gathering followed a multi-stage approach. In order to create a *baseline* for the progress assessment, the empirica team filled in those parts of the respective questions dealing with the state of affairs about 3 to 4 years ago, thereby drawing on data from earlier eHealth ERA reports, case studies, etc. to the extent meaningfully possible. In the next step, national correspondents respectively partners from the study team filled in the template on recent developments in the healthcare sector of the corresponding country. These results were checked, further improved and validated by independent experts whenever possible.

Progress of eHealth in Romania is described in chapter 3 of this report in the respective thematic subsections. The graphical illustrations presented there deliberately focus on key items on the progress timeline and cannot reflect all activities undertaken.

This report was subjected to both an internal and an external quality review process. Nevertheless, the document may not fully reflect the real situation and the analysis may not be exhaustive due to focusing on European policy priorities as well as due to limited study resources, and the consequent need for preferentially describing certain activities over others. Also, the views of those who helped to collect, interpret and validate contents may have had an impact.

1.3   Outline

At the outset and as an introduction, the report provides in chapter 2 general background information on the Romanian healthcare system. It is concerned with the overall system setting, such as decision making bodies, healthcare service providers and health indicator data.

Chapter 3 presents the current situation of selected key eHealth developments based on detailed analyses of available documents and other information by national correspondents and data gathered by them through a well-structured online questionnaire. It touches on issues and challenges around eHealth policy activities, administrative and organisational structure, the deployment of selected eHealth applications, technical aspects of their implementation, legal and regulatory facilitators, financing and reimbursement issues, and finally evaluation results, plans, and activities

The report finishes with a short outlook.

2   Healthcare system setting

2.1   Country introduction[8]

In 1949 the government introduced a new state dominated healthcare system which meant universal cover and the elimination of private healthcare. This system remained for the following four decades and continues to have influence on the system today.

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[8] Information source:Vlădescu C; Scîntee G; Olsavszky V; Allin S; and Mladovsky P 2008

In between there have been many modifications to the healthcare system. In 1983 there was the introduction of upfront payment for some ambulatory services. After the collapse of communism in 1989 the government and the ministry of public health set about modifying the financing and organisation of the healthcare system. However, the frequent changing of government and ministers has made it difficult to maintain a defined action plan or ensure continuity. As a result transformation of the system has been hindered.

The present government introduced a healthcare reform, outlined by a health reform law in 2006. This aims to improve on the current performance of the healthcare system, which is, at present, struggling. Key areas of improvement outlined by the government include accessibility, quality of healthcare services and improving the health of the nation to bring it closer to the EU level.

Healthcare statistics for Romania have improved since 1994. In 2008 the infant mortality rate stood at 17 (of every 1,000 live births), and life expectancy is 73.4 years. Tuberculosis incidences are high and hospital funding indiscriminate. Romania's other concern is the distribution of services: there are stark differences between rural and urban areas. Nearly half of Romania's population live in rural areas and 1,102 pharmacies were registered in rural areas compared to 3,759 in urban areas[9].

There is suspicion of corruption within the healthcare system from among the country's population further fueled by the media. The media also highlights the problem of Romania's supposed brain drain whereby qualified healthcare professionals are leaving the country in order to seek better paid work elsewhere. Issues which the current government is attempting to amend by creating greater transparency and funding, although the management of these improved finances is still to be perfected. Romania's circumstances are not easy, but healthcare is now being placed higher on the political agenda[10].

The box below summarises the key facts about the Romanian healthcare system:

Key facts about the Romanian healthcare system:[11]

Population: 21,504,442

Life expectancy at birth: 73.4 years

Healthcare expenditure as % of GDP: 5.5% (WHO 2008)

Public sector healthcare expenditure as % of total healthcare expenditure: 81.7% (OECD 2007)

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[9] Data from: World Health Organisation 2010

[10] Vlădescu C; Scîntee G; Olsavszky V; Allin S; and Mladovsky P 2008

[11] Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

2.2   Healthcare governance

Decision making bodies, responsibilities, sharing of power[12]

The head of the current healthcare system is the government, which conducts most of its steering through the Ministry of Public Health. The National Health Insurance House (NHIH) has most control of the finances and creates a framework contract through which healthcare services are contracted by the District Health Insurance Funds (DHIF) to healthcare service providers, both public and private.   The Romanian College of Physicians, with which all Romanian physicians must register, also has influence over the framework contract at a national level.

At the district level district public health authorities (DPHAs), DHIFs, district councils, district public finance departments and district colleges of physicians ensure the delivery of healthcare services.

While the bodies at the national level are responsible for creating healthcare policy and objectives, it is the organisations at the district level that have an important impact on the modelling of services.   District councils are the owners of nearly all public healthcare facilities. DPHAs, of which there are 42, are district subdivisions of the Ministry of Health and oversee the organisation of healthcare provision, public health programmes and monitor the status of public health. It controls a third of public funds the rest is under the management of DHIFs which administers the contracting of healthcare service providers.

Healthcare service providers

Primary healthcare services are mainly delivered by family doctors: independent practitioners contracted by the (public) health insurance fund but operating from their own offices. The reforms assigned family doctors to be gatekeepers of the system.

A network of hospital outpatient departments, centres for diagnosis and treatment and office-based specialists delivers ambulatory secondary care.

Inpatient and tertiary care are provided in hospitals; most are publicly owned and administered by the state.

Although some initial reforms have been started in public health, the current public health services aiming to protect and promote health and prevent disease are awaiting improvement and further integration into all levels of healthcare as part of the health system. Health promotion practices are not yet adequate. The individual and population-based public health services need to be further streamlined, upgraded and strengthened[13].

Since 1999, the main third party-payers are the DHIFs (District Health Insurance Funds), which are also entitled to make contracts with private providers. This is particularly important in primary healthcare, where family practitioners has been assigned a new role. These doctors are no longer state employed; they are paid on a contractual basis by the

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[12] Information source: Vlădescu C; Scîntee G; Olsavszky V; Allin S; and Mladovsky P 2008

[13] World Health Organisation 2007

DHIFs, mainly according to the number of people registered on their lists (capitation payment).

As concerns specialist care from ambulatory facilities, the former polyclinics, these are also in a process of transformation, into independent medical facilities. The medical services are paid by the DHIFs on a contractual basis. Fee-for-service arrangements are used for ambulatory care and global budgets and salaries for hospitals[14].

Figure 1: Important features of primary healthcare organisation in Romania

Political/administrative unit responsible for primary healthcare	Organisational and regulatory: The Ministry of Health. Delivery: District Public Health Authorities. Financially: National Health Insurance House.
Consumer Choice	Patients can choose their dispensary and GP, and can change after a minimum of three months after initial registration.
Financing	Mandatory social health insurance scheme. Primarily funded by citzen's social insurance contributions(6.5 % of income paid by the insured, 6% by the employer) and tax. There are numerous exemption categories that mean citizens receive insurance without contributions. Some out of pocket co-payments between the insurance and the patient. Informal "under-the-table"payments also occur, especially in hospitals.
Public or private providers	The majority of hospitals are public. Private specialist care and physicians are available for higher wage earners. GPs privately operate their practices and are contracted by NHIH.
Gatekeeping function of the GP	The gatekeeping role of the GP strengthened by introduction of direct payments at hospitals without referral. Patient will be charged if sees a specialist without referral. Emergencies are referred directly to hospital by emergency care system.
Integrating health: initiatives for coordination	Ministry of Health creates objectives and regulations at a national level. DPHAs (a decentralised subsidary of MoH) ensures implementation and adherence at district level.

2.3 Recent reforms and priorities of health system/public health

Currently ongoing reforms in the health and social care systems[15]

For the period 2008-2010 the Ministry of Health plans to restructure the public health authorities, with greater emphasis on the eight regional authorities, as part of the decentralisation plan for the health system. In these eight regions there will be: regional agency for programmes, a state regional sanitary inspection, a regional agency for medical assistance and a regional institute for public health. Two new public health institutes are to be created in Constanta and Craiova.

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[14] Vlădescu C; Scîntee G; Olsavszky V; Allin S; and Mladovsky P 2008

[15] Vlădescu C; Scîntee G; Olsavszky V; Allin S; and Mladovsky P 2008

The Ministry of Public Health has elaborated a new comprehensive health law (Health Reform Law.95/2006). The 17 titles in this law relate to, among other things, social health insurance, private health insurance, hospitals, community care, primary healthcare, pharmaceuticals, emergency services, public health, national and European health cards, national health programmes, professional liability, and establishment of a national school of public health and management. In conjunction with this law was the reallocation of budgets, however eHealth strategies did not figure. Individual and population-based public health services and their further integration into the practice of primary healthcare are the focus of the current reforms.

2.4   ICT use of general practitioners

This section will give a brief overview of important ICT related infrastructure and services data. It draws on earlier studies conducted by empirica, notably the Indicators eHealth study[16]. Although the results of this study date from 2007 and may therefore not reflect the latest changes, a more recent pan-European survey is not available.

In terms of infrastructure, 66% of the Romanian GP practices use a computer. However, only about half of those practices with a computer are connected to the Internet as well. In Romania, broadband connections have not yet arrived; they are used in only 5% of GP practices.
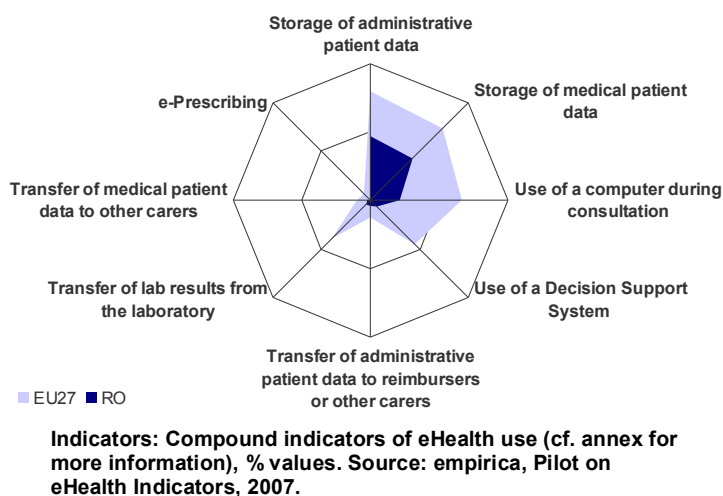
Romania displays its best eHealth performance in the area of patient data storage and the use of a computer for consultation purposes. Half of Romanian practices register administrative patient data and about one-third of GP practices store at least one type of medical electronic patient data.

In Romania, computers are used in consultation with the patients by 22% of GP practices. The use of Decision Support Systems (DSS) is also rather the exception than the rule. They are used for diagnosis or prescribing purposes in only 11% of Romanian GP practices.

The electronic transfer of individual patient data has not yet arrived on the agenda of Romanian GPs. Only 6% of Romanian GP practices exchange medical data with other carers and only around 2% of the practices transfer administrative patient data to reimbursers via networked connections. The exchange of medical data via networked connections is equally little established: only 2% of the GP practices participating in the survey reported having exchanged medical data with other care providers while 4% received results from laboratories this way.

None of the GPs who participated in the survey for Romania reported using ePrescribing.

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[16] ICT and eHealth use among General Practitioners in Europe 2007

Figure 2[17]: eHealth use by GPs in Romania

Indicators: Compound indicators of eHealth use (cf. annex for more information), % values. Source: empirica, Pilot on eHealth Indicators, 2007.

The rather low level of eHealth use in Romania can be attributed to the fact that this policy field is relatively new in Romania. A first and very basic eHealth strategy was only drafted as late as 2005.

In addition to the study results, and before entering into the core of the survey, the following eHealth projects should be mentioned to illustrate the overall situation in Romania:

In the 70s and 80s of last century, hundreds of IT applications were realised in Romanian healthcare. With few exceptions, they were isolated, local achievements, mainly for research purposes. Starting in the late eighties several, mainly administrative, hospital information systems were implemented. In the 90s, a boom of PC oriented commercial eHealth applications occurred, developed mainly by local private companies.

As of 2010 all public hospitals (427) and all family doctors (over 11500) have a minimal IT endowment. A survey conducted in 2008[18] showed that 411 public hospitals subordinated to the Ministry of Health had an average of around 8 hospital beds per computer, half of them used in clinical and pre-clinical fields. Also, the reporting of all hospitals, medical offices, and pharmacies to the National Health Insurance House (NHIH)[19], for reimbursement of services and products, is completely computerised. Not all reporting is done through the network, CDs and memory sticks are being used too.

The most important eHealth project in Romania in recent years, started in 2003 and still in progress, is the Unique Integrated Information System (SIUI) of Social Health

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[17] The notion of „compound indicator" designates an indicator build from a set of other indicators/survey questions regarding the same topic. The compound indicator reflects an average calculated from different values. (see Annex) The final results of the study on eHealth Indicators is available at www.ehealth-indicators.eu.

[18] Dr. mat. Dan D. Farcaş and Progr. Eugenia Crăciunescu 2009

[19] in Romanian: Casa Nationala de Asigurari e Sanatate (CNAS)

Insurances[20] realised by the companies HP and SIVECO Romania[21], and funded by NHIH. The SIUI addresses all hierarchical structure of the Social Health Insurance System of Romania: the National Health Insurance House, the County Houses of Health Insurance, and the medical and pharmaceutical service and products suppliers. The SIUI has components for finance, accounts, investments, inventory, purchase, payroll, human resources, buildings and appliance maintenance etc. as well as a planning system with "what if" type simulations. Among the benefits, the elimination of double registered insured persons or double reporting of services, rapid statistical reports, better monitoring and control of the resources, eliminating waiting times etc. are expected. The system is in use in almost all counties of Romania, but some double registrations and other inconsistencies have not yet been eliminated.

SIUI was thought to become, in future, the all encompassing national health information system, a questionable target, as the National Health Insurance House does not cover all citizens and all healthcare activities of Romania and has no contacts (e.g. contracts) with all physicians.

Another important project, funded by Phare programme[22] was the "Improvement of accountability and transparency in the allocation and use of healthcare resources through implementation of a computerised monitoring system for hospital morbidity and a hospital case based financing system", based on the Australian classification AR-DRG (Diagnosis Related Groups) version 5[23]. The project was realised between 2005 and 2007 and is now in operation in all Romanian public hospitals, but only for monitoring the expenses, not for reimbursement.

3   eHealth Strategies survey results

The following sections present the results of the eHealth Strategies country survey. In the first section, the eHealth policy actions undertaken in Romania are presented. This is followed by a presentation of administrative and organisational measures taken. Section 3.3 presents results on key eHealth applications. Section 3.4 focuses on the technical side of eHealth, namely the role of patient and healthcare provider identifiers and the role of eCards. Legal and regulatory facilitators as well as financing and reimbursement issues are presented in the following chapters, 3.5 and 3.6. The report concludes with evaluation activities (3.7) in the country and an outlook (4.).

3.1   eHealth policy action

The eHealth strategies of EU and EEA countries are not always labelled as such. Some countries may indeed publish a policy document which refers to the ICT strategy in the healthcare sector. Other countries such as France and Germany have enshrined the

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[20] National Health Insurance House (NHIH) – Casa Nationala de Asigurari e Sanatate (CNAS) 2010

[21] SIVECO Romania 2003-2010

[22] A pre-accession instrument financed by the European Union to assist the applicant countries of Central and Eastern Europe in their preparations for joining the European Union. Europa summaries of EU legislation 2007

[23] Scoala Nationala de Sanatate Publica si Management Sanitar (SNSPMS) [National School of Public Health and Health Management] 2007

central eHealth activities in legislation governing the healthcare sector. In Germany, the relevant law is the law on the modernisation of healthcare; in France the introduction of an electronic medical record is included in a law concerning social security.

Sometimes, also documents from domains such as eGovernment or Information Society strategies may contain provisions which concern eHealth. In cases where the healthcare system is decentralised, i.e. where power is delegated to the regional level, there may even be strategy documents regarding eHealth from regional authorities.

3.1.1 Current strategy/roadmap

In Romania the Health Reform Law 95/2006[24] establishes the organisation of healthcare, institutions, financing, organisation of health insurance, personnel (doctors, dentists, pharmacists etc.), their responsibilities and official organisations etc. The law thus continues the transformation of the Romanian from a state financed model to an insurance based healthcare system as started by the Health Insurance Law in 1997. The law requires the Ministry of Health to establish an integrated information system for public health management. Requirements are expressed for information on communicable diseases, emergency care, community assistance, hospital information, health insurance cards etc.

In its Strategic Plan for 2008-2010[25], the Ministry of Health (MoH)[26] implements these requirements underlining in particular the necessity of a new integrated health services information system, including patient monitoring and registries for non-communicable diseases. However, this was not followed by an official eHealth strategy or formal eHealth national roadmap. There is also no legislative act to enforce an eHealth strategy and no organisation to monitor compliance with such a strategy.

Several eHealth strategies were proposed in the last 20 years by MoH workgroups or independent experts[27]. After 2000 they were made in cooperation with the Ministry of Communications and Information Society[28] (MCIS, responsible for a greater eGovernment project named eRomania[29]. For example, in September 2008 The MoH organised a workgroup for "a strategy of Ministry of Health in informatics". In the group were representatives of main stakeholders, including: MCIS, National Health Insurance House (NHIH)[30], College of Physicians[31], the Romanian Society of Medical Informatics[32], HL7 Romania[33] and other interested parts. In November 2008 the group drafted an

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[24] PARLAMENTUL ROMÂNIEI (Romanian Parliament) 2006; PARLAMENTUL ROMÂNIEI [Romanian Parliament] 2006

[25] Ministerului Sanatatii [Ministry of Health]

[26] Ministerul Sanatatii [Ministry of Health] 2010

[27] Phare Project: RO 97/12/L002: Reform of Health Sector Financing in Romania – Information Strategy Framework – 2002

[28] Ministerul Comunicațiilor şi Societății Informaționale [Ministry of Communications and Information Society] 2009

[29] Ministerul Comunicațiilor şi Societății Informaționale[Ministry of Communications and Information Society] 2009

[30] National Health Insurance House (NHIH) – Casa Nationala de Asigurari e Sanatate (CNAS) 2010

[31] Colegiul Medicilor din Romania [College of Physicians in Romania] 2008

[32] Romanian Society of Medical Informatics 2008

[33] Health Level Seven International 2007-2010

eHealth strategy. Even though this strategy was used in some projects, it was not endorsed by the Ministry of Health as an official document (in December 2008 the Minister of Health and his top staff were replaced due to the change in Government after elections). In 2009 another National eHealth Strategy for Romania was worked out by a private company, as a result of a project funded in the framework of the European programme "Phare" at the Ministry of Health. This strategy has also not been endorsed. But in May 2010 the MoH took the initiative to organise a new working group to realise a national information strategy for the healthcare system. This group has not met to date.

As the country still has a tightly centralised government system, no regional eHealth strategies were considered in Romania.

A "Feasibility study for the implementation of an Integrated Health Information System", was realised for MoH, in 2009, by a local company through a dedicated project[34]. They worked in close consultation with the main Romanian eHealth stakeholders, but the study has remained until now only a paper. The main objective of the new information system proposed ought to be: the integration of the main Romanian health information systems, the inclusion of the existing solutions, a citizen focused approach towards public health and a patient-focused approach for curative medicine. European interoperability was considered also important.

Besides the MoH, strategic eHealth documents were initiated by some other national institutions too, such as: The National Health Insuring House (NHIH)[35], and College of Physicians[36]. But these organisations do not have all encompassing competence regarding Romanian healthcare issues and the solutions proposed were not endorsed by the MoH.

All eHealth strategies proposed took into account the main provisions of the EU eHealth Action Plan (2004)[37]. They emphasised the necessity of a single computerised information system, organised around a cluster of national databases (population, healthcare units, healthcare professionals, drugs, coding, standards etc.). This central cluster would be used by the information systems of MoH, healthcare units, health insurance, professional organisations etc., avoiding double data gathering, and facilitating interoperability with other information systems, as well as diversity of technical solutions.

In the absence of agreed strategies for Romania, the issues which should have been included had an erratic trend. Several endowments of IT equipment (hospitals, family doctors) were made by individual projects, without a strategic vision, without evaluating the real needs and without taking into account other projects in progress. Publicly funded projects for specific applications (hospital management, health records, ePrescription etc.) have been launched, sometimes in parallel by different public bodies, without taking into account any existing applications and disregarding each other. Only essential coding (e.g. ICD-10 or the ID code for the population) was commonly used as standards. An attempt of several companies to use HL7 for data exchange arrived only at the level of a private initiative in progress.

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[34] Media Net Design- ClubAfaceri 2006

[35] National Health Insurance House (NHIH) – Casa Nationala de Asigurari e Sanatate (CNAS) 2010

[36] Colegiul Medicilor din Romania [College of Physicians in Romania] 2008

[37] Commission of the European Communities 2004

Although there were proposals, no initiative was taken in this direction.

Figure 3: Romanian policy documents related to eHealth
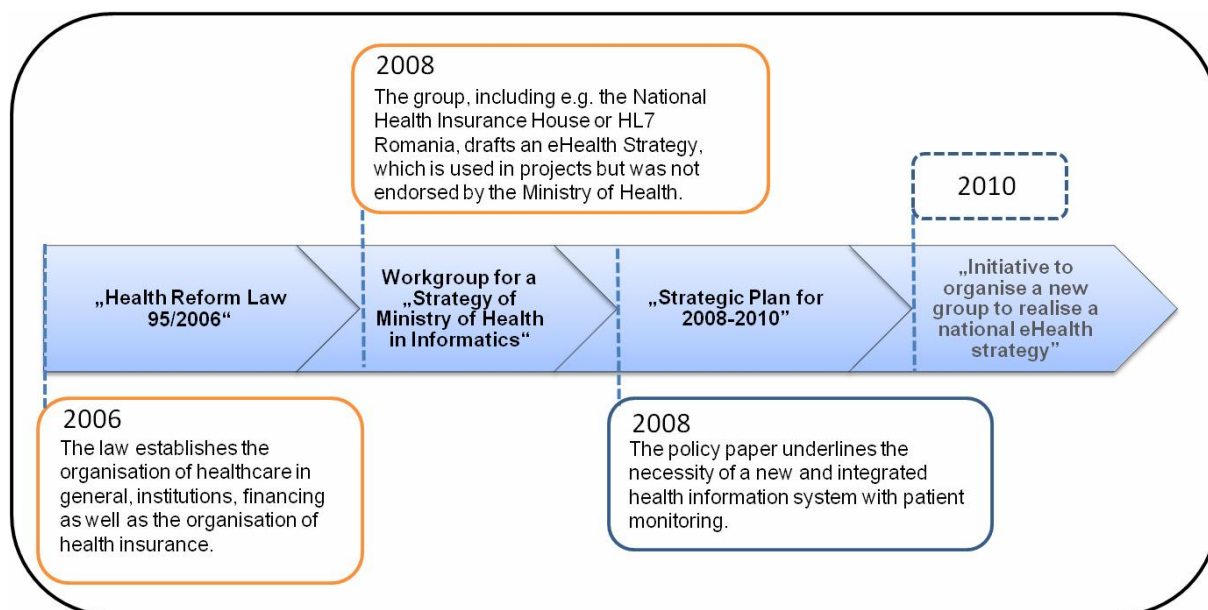
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3.2   Administrative and organisational structure

Currently Romania has not a clearly appointed authority to coordinate the national eHealth policy and to be a technical partner of the European Commission for common targets, as, for example, eHealth interoperability.

The Ministry of Health is the only institution connecting together all health related activities of the country. But MoH had in the recent years a limited and more administrative interest in eHealth, following some IT projects. The driving force behind the implementation of eHealth applications and concepts has really been the IT community rather than MoH. Of the four ministers in the last three years, none have had any discussion with IT professionals subordinated to MoH about issues of eHealth, even less about eHealth strategy. For some periods of time, one of the advisers of the minister was in charge of the IT projects in progress. In response to requests to attend eHealth initiatives issued by European Authorities, the MoH used to send randomly selected persons, who were unable to ensure continuity of commitments. For example, in August 2007 the Minister of Health signed, on behalf of Romania, the "Letter of Intent" for the participation in the eHealth Initiative for initiating the preparation of a successful proposal for a Large Scale Pilot on interoperability, without being followed by deeds. The frequent changes of MoH officials are a partial explanation for the situation.

The Ministry of Health, during the last 20 years, had an office including IT (with 1-3 IT professionals). It is now the "Service for patrimony and informatics"[38] but its IT activities

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[38] Ministerul Sănătăţii [Ministry of Health] 2010

used to be oriented mainly toward servicing internal IT issues of the MoH. Lately this office has taken some initiatives towards national eHealth (organising some representative eHealth committees) but this activity is still inconclusive.

The main eHealth competence centre in Romania was, between 1970 and 2006, the Centrul de Calcul si Statistica Sanitara (Centre for Health Computing and Statistics – CHCS), subordinated to the MoH. It had the great advantage of being a stable structure of IT professionals, not influenced by government changes. CHCS was also responsible for the health coding and health statistics for Romania. Starting in 1972 CHCS realised national electronic databases (healthcare organisations, healthcare professionals, endowment, registers of chronically ill persons etc.) and coordinated Romanian healthcare IT policy. After 1995, with the reform and decentralisation of the Romanian health system, the IT function diminished and the number of (underpaid) IT employees was gradually reduced.

In 2006 CHCS was restructured as the "National Centre for Organizing and Ensuring the Health Information System"[39](NCOEHIS - "Centrul Naţional pentru Organizarea şi Asigurarea Sistemului Informaţional şi Informatic în Domeniul Sănătăţii") with the same attributes. In NCOEHIS there are several IT departments, including a small Office for eHealth Strategies and Projects, involved in all strategies exposed above, and another small office for eHealth research and standardisation. Therefore NCOEHIS could be a permanent focal point to gather stakeholders to develop a strategy agreed by all and to ensure the technical body to evaluate and approve the correspondence of the publicly funded eHealth projects proposed and the eHealth strategy. Also NCOEHIS could ensure the connection with the EU eHealth technical bodies.

Due to budgetary restrictions on July 1st, 2010, the NCOEHIS was abolished as an organisation with legal personality. The activity of the NCOEHIS was acquired by absorption, by the National Institute of Public Health[40]. Also MoH is expected to ask that the little existing staff of NCOEHIS be further reduced. This is in spite of the need for a central body to support the development of eHealth strategies, and to certify the spending of public money only for projects coherent with this strategy, and although NCOEHIS was the only IT unit subordinated to the MoH and with national vocation.

Due to lack of authority within eHealth strategies and projects for public funding described above, in the last decade in Romania different actors launched their own health information systems, creating "parallel" coding, data gathering, circuits and files leading to waste of the scarce resources, inconsistencies and interoperability problems. These actors also organised their own, small eHealth competence centres. One example is the National Health Insurance House (NHIH)[41]. In Romania there are several health insurance companies both in the public (Army, Justice, Railways etc.) and private sector, but because NHIH covers the majority of the population it now claims the right to control IT projects (EHR, ePrescription, health cards) for the entire population of the country. Another small but active competence centre belongs to the College of Physicians[42].

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[39] National Centre for Organizing and Ensuring the Health Information System 2009

[40] MINISTERUL SĂNĂTĂŢII [Health Ministry] 2010

[41] National Health Insurance House (NHIH) – Casa Nationala de Asigurari e Sanatate (CNAS) 2010

[42] Colegiul Medicilor din Romania [College of Physicians in Romania] 2008

Two professional organisations: The Romanian Society of Medical Informatics (SRIM)[43], affiliated to EFMI and IMIA, and HL7 Romania[44], affiliated to the HL7 network, have also the authority to gather around them specialists with competence in eHealth, but they cannot act effectively lacking official support.

3.3 Deployment of eHealth applications

3.3.1 Patient summary and electronic health record (EHR)

In this study, the epSOS project's definition[45] of a patient summary was used as a general guideline. There a patient summary is defined as a minimum set of a patient's data which would provide a health professional with essential information needed in case of unexpected or unscheduled care (e.g. emergency, accident), but also in case of planned care (e.g. after a relocation, cross-organisational care path).

Lacking a standard definition, a patient's electronic health record (EHR) is here understood as an integrated or also interlinked (virtual) record of ALL his/her health-related data independent of when, where and by whom the data were recorded. In other words, it is an account of his diverse encounters with the health system as recorded in patient or medical records (EPR or EMR) maintained by various providers like GP, specialists, hospitals, laboratories, pharmacies etc. Such records may contain a patient summary as a subset. As of yet, fully-fledged EHR systems rarely exist, e.g. in regional health systems like Andalucia in Spain or Kronoberg in Sweden, or in HMOs (health maintenance organisations) like Kaiser Permanente in the USA.

It should be noted that in most policy documents reference is made simply to an "EHR" without any explanation of what is meant by it, thereby in reality even a single, basic electronic clinical record of a few recent health data may qualify. As a consequence, this section can only report on national activities connected to this wide variety of health-related records without being able to clearly pinpoint what (final) development stage is actually aimed for or has been reached so far.

The necessity of a patient oriented health information system project, based on Electronic Personal Health Record (EPHR), was included in all drafts for eHealth strategies, but no application development has been started till now in this direction. The discussions about EPHR conceived a central database containing a short health data summary, and pointers toward the patient records of the same person, in other databases. The central database would be accessible from emergency centres, ambulances etc. in future even from abroad. The national 13 digit ID number, available for all citizens as a general identifier and used also in healthcare, could assure this connection.

No legislation or regulatory framework is in act in Romania concerning Electronic Health Records specifically. The Health Reform Law does however foresee that the National Health Insurance Card will be used to access the electronic health records and will contain a kind of patient summary, including minimal information on the vital risk medical

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[43] Romanian Society of Medical Informatics 2008

[44] Health Level Seven International 2007-2010

[45] European Patients Smart Open Services

diagnosis, blood type. General medical law furthermore foresees a right of the patient to a medical record, stored and updated by the healthcare professional. According to the National Archive law[46] these records need to be stored for 30 years. The Order no. 1782 of 2006 on Registration and Statistics Reports of Patients who receive Healthcare Services in Hospitals concretizes this right to a medical record. It specifies that medical records of hospitalised patients should be kept both in paper and electronic format and be structured according to the approved General Health Record for patients staying overnight and according to the Daily Health Record for day-care patients.

An EHR project was launched in 2009 by the MoH, in the frame of an ICT Policy Support Programme, and funded by the European structural funds[47], but the realisation of the project was suspended due to overrun deadlines and lack of involvement of MoH officials in solving contradictory technical demands.

In 2010 the National Health Insurance House (HNIH) announced the intention to realise, by the end of 2011, a national EHR project, in connection with its SIUI system. NHIH has the support of the Ministry of Communications and Information Society for this project, but NHIH does not seem the best solution as its competences do not cover all Romanian healthcare.

We should also mention, regarding the Romanian experience in electronic health records, the activity of the ProRec Romania society[48], member of the European Institute for Health Records (EuroRec). ProRec is a partner in the Q-Rec project - European Quality Labelling and Certification of Electronic Health Record systems (EHRs) in the frame of FP6 programme.

Under the Patient's Rights Law, patients have the right to access their medical records[49].

Figure 4: Patient summary in Romania
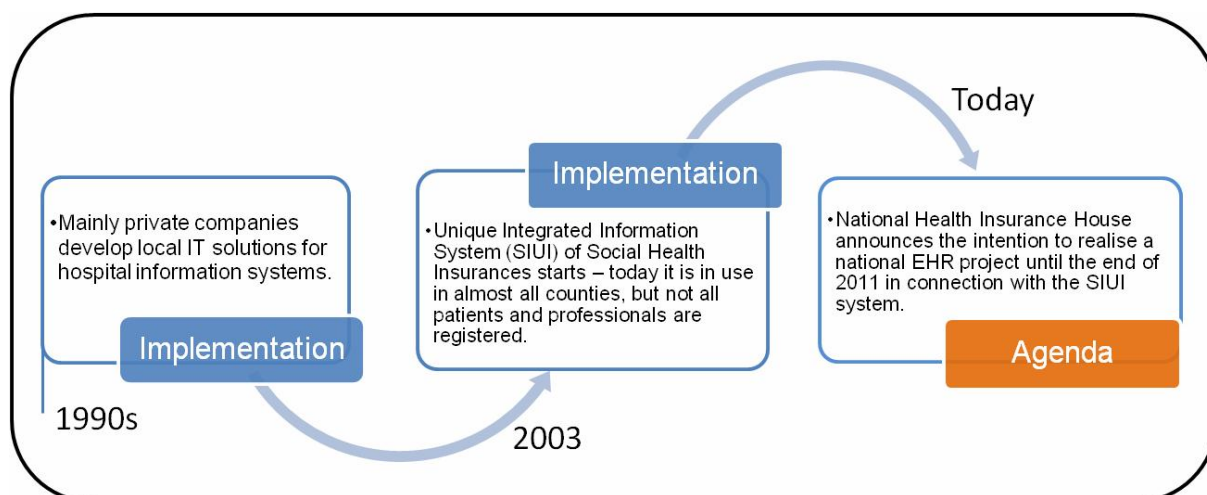
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[46] National Archive Law nr16, 1996.

[47] dgMarket-Auctions Worldwide 2009

[48] ProRec Romania: Asociatia Romana pentru Evidenta Electronica a Datelor Medicale [ProRec Romania: Romanian Association for electronic health Records] 2010

[49] National Archive Law nr16, 1996.

3.3.2 ePrescription

In the framework of this study and following work in epSOS[50], ePrescription is understood as the process of the electronic transfer of a prescription by a healthcare provider to a pharmacy for retrieval of the drug by the patient. In this strict sense, only few European countries can claim to have implemented a fully operational ePrescription service.

In Romania, the competent authorities in the field of medical products for human use are the Ministry of Health and the National Medicines Agency (NMA)[51]. The Health Reform Law 95/2006[52] establishes how the prescriptions are made. The Social Health Insurance Houses reimburse, in part or entirely, the pharmacies the cost of drugs prescribed by physicians, as it is established in the framework contract or in subsequent government ordinances.

ePrescription is seen as a set of at least three types of application, namely: electronic medication records, decision support systems, electronic transmission of prescriptions. Till now, computerised procedures for prescriptions (e.g. transmission of prescriptions) have been used mainly in hospitals, between physicians and internal pharmacies, but mainly for administrative purposes (e.g. consumption, stock management) and not, let us say, for recording medication to control incompatibilities (however it is possible to have some such local IT applications, but they were not rolled out).

The IT applications for pharmacies outside hospitals are made by private companies and used mainly for the stock management or for reimbursements from Health Insurance.

In the frame of ICT Policy Support Programme, and funded by the European structural funds, an ePrescription project was launched in 2009 by MoH[53]. The project was intended in its first phase to control the drug flow. Due to organisational flaws and legislation infringement issues, the realisation of the project was shut down.

In 2010 the National Health Insurance House (HNIH) announced the intention to realise by the end of 2011 a national ePrescription project, in connection with its SIUI system. NHIH has the support of the Ministry of Communications and Information Society for this project.

Legally no specific provisions on ePrescription are foreseen in Romanian Law. Order no. 832/302/2008 does specify the model of the medical prescriptions, but this mainly entails that prescriptions need to be signed, dated and stamped with the physicians' code.

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[50] European Patients Smart Open Services

[51] National Medicines Agency 2010

[52] PARLAMENTUL ROMÂNIEI [Romanian Parliament] 2006

[53] DgMarket-Auctions Worldwide 2009

Figure 5: ePrescription progress in Romania
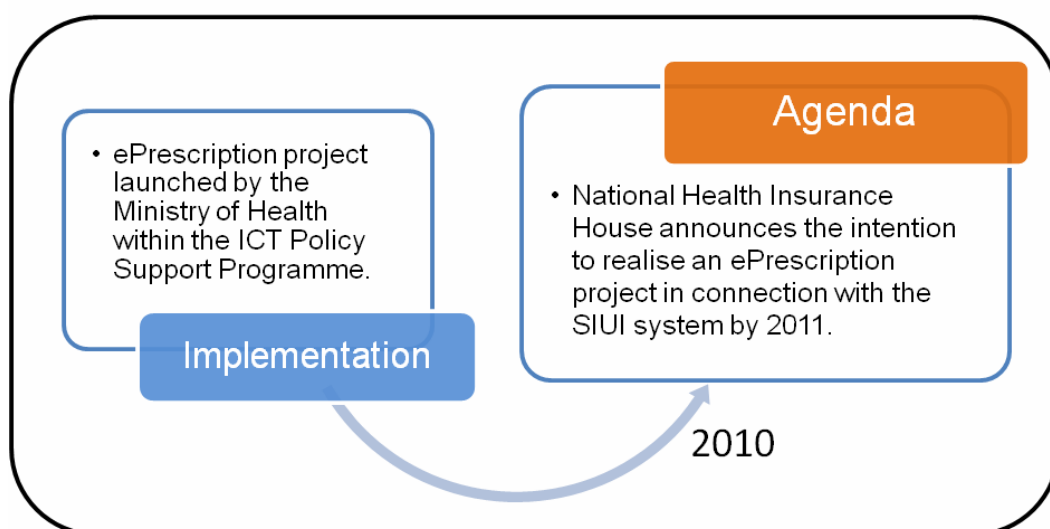
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3.3.3 Telemedicine

The use of telemedicine applications is recognised as beneficial to enable access to care from a distance and to reduce the number of GP visits or even inpatient admissions. Commission services define telemedicine as "the delivery of healthcare services through the use of Information and Communication Technologies (ICT) in a situation where the actors are not at the same location"[54]. In its recent communication on telemedicine for the benefit of patients, healthcare systems and society, the Commission re-emphasises the value of this technology for health system efficiency and the improvement of healthcare delivery[55].

The law 95/2006 establishes Centres for remote medical expertise and coordination, furnishing, by the call number 112 or other channels, speciality information for emergency teams and/or to the emergency hospitals. In all county capitals and in most cities public and private emergency centres are organised, with computerised ambulance dispatching applications. At least 600 ambulances are equipped with voice data-image transmission devices connected to the emergency hospitals. Even the applications are of different origin, all are accessed by the Unique Call Number 112[56].

Telemedicine has various directions of development in Romania. The more usual ones are: data exchange in emergency situations, consulting and/or giving a second opinion in remote places, education and training for medical staff and helping the population with medical advice.

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[54] Europe's Information Society

[55] European Commission 2008

[56] Serviciul de Telecomunicatii Speciale [Special Telecommunications Service] 2010

Since 2001, The National Communications Research Institute (INSCC) from Bucharest has coordinated several National Telemedicine Projects, among them: Implementation of a Multimedia Platform for Complex Medical Teleservices (TELMES) with two pilot regional tele centres at Pitesti and Lasi for tele-radiology, tele-pathology, tele-consulting, tele-diagnosis, tele-monitoring and afterwards the project European Telecentre Networks for Integrated Medical Services (EUTELMES).

In 2001, the Fundeni Telemedicine Pilot Project was started, under the National Programme AEROSPATIAL with the aim of implementing a complex Telemedicine applications environment. The partners were: Fundeni Clinical Institute (the greatest Romanian hospital), the Institute for Spatial Sciences, four other Romanian Hospitals, as well as, from USA, MedITAC (Virginia), University of Maryland and University of Bethesda (Maryland). The applications were in Radiology (Digital Image Communications in Medicine DICOM), Anatomico-pathology, Dermatology, Medical Education etc.

In 2007-2009 Romania was a partner in the eHealth European interoperability project "Health Optimum" – Healthcare delivery optimization through telemedicine[57] [17] – together with Italy (coordinator) and the other participants: Public health authorities of Regione Veneto, Gobierno de Aragon – Health Department, Region Syddanmark, County of Uppsala, and the County Emergency Clinical Hospital Timisoara; technological and business expertise partners: InfoWorld (Romania), AST (Spain), TeSan (Italy), Health Information Management S.A. (Belgium).

None of the above projects were rolled out on a national or regional level.

In Romania the personal wearable telemonitoring systems are only at a stage of infancy. Personal wearable telemonitoring systems have been proposed by some commercial companies on foreign solutions. The National Communications Research Institute (INSCC) from Bucharest is involved in projects aiming to implement a national telemedicine network able to offer valuable telemedical services, such as telemonitoring, remote elderly home care, etc. This is included in the Strategic Plan 2008-2010 of the MoH and is being completed by using the possibilities offered by the newest telecom technologies and as much as possible from the existing infrastructure.

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[57] Health Optimum

Figure 6: Telemedicine services in Romania
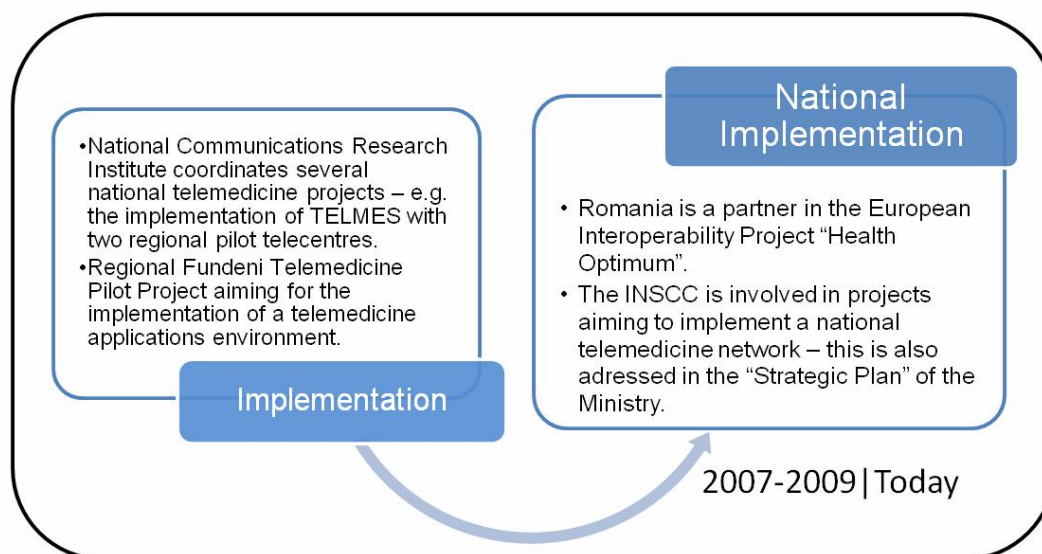
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3.4   Technical aspects of implementation

A key prerequisite for the establishment of an eHealth infrastructure is the ability to uniquely identify citizens/patients and healthcare professionals. This part of the survey deals with identifiers and how they are stored. This section does not deal with the tokens through which identification can or will take place. One such possibility would be via an eCard. This topic is dealt with in the following section. The current section focuses solely on whether or not unique identifiers are in place in Romania and for which purpose.

3.4.1   Unique identification of patients

For more than 20 years a centralised national 13 digit ID citizen number (Code Numeric Personal – CNP) has been available for practically all Romanians. It is given in the first days of life to newborns (therefore not appropriate to identify the newborns in the first moments of their life). The general purpose national citizen ID number contains the gender, date of birth, county of issue and some other data. It is now used in: passports, ID cards, population databases, elections, banking, insurance etc. The same ID is used in hospitals, and by GPs.

3.4.2   Unique identification of healthcare professionals

In Romania, in 1972, a computerised database of physicians and other high-level healthcare professionals was created and operated. The database is still in use in a reduced form. For this purpose, all doctors were granted a six-digit code, used to date on the medical stamp. No such identifier was created for nurses or middle level healthcare professionals. But for them the national citizen ID number could be used.

No special social insurance or health insurance ID was introduced for national or regional use and is not yet intended to be introduced. Some small private local health insurance companies or healthcare organisations issued special identifiers, but only for their customers.

As the above described CNP citizen ID seems too transparent, some specialists asked for a randomly generated code, but till now in Romanian society no significant adverse reactions were reported towards this 13 digit ID, therefore no initiative to change the present national citizen ID was triggered.

3.4.3 The role of eCards

Till now, in Romania no national electronic cards for citizens, patients or healthcare professionals have been issued. But electronic cards are in general use for banking, commercial operations and public transport. Also some private companies issued electronic health cards, but only for their customers.

The need for a National health insurance card and a European health insurance card was mentioned in the Health Reform Law 95/2006 and in other regulations of the Ministry of Health and the National Health Insurance House. Adopting a general purpose electronic ID card was considered at government level several years ago. One of the options provided would have introduced medical data also on this card. Until now there has not been any decision made on the card or its medical data.

In Romania discussions and several projects proposed targeted a unified health card, including both health data (blood types, pathologies, treatments, needed in emergency) and health insurance data (health insurance house, employer, payments needed for billing). It was not clear if this card targeted only the NHIH or other health insurance companies too.

The NHIH planned to issue such an electronic national health insurance card beginning at the end of 2007, with the cost supported by the national health insurance fund. The project was suspended and now the target is the year 2011. The minimal data on such a card (or immediately accessible from this card) is expected to be: ID number (13 digits) and other identifying data including blood group, proof that the social health insurance contribution has been paid, some medical services requested in the past and the code of the provider, medical diagnoses implying vital risks, and consent to donate tissues and organs. The technical solution could be a chip-card but it is not yet firmly established for the health cards electronic signature has not been considered. Also, a solution was not discussed for high profile security mechanisms to prevent fraudulent use of the electronic cards.

No proposals were made for eCards identifying healthcare professionals.

In Romania there is also a European health insurance card – a (non-electronic) document[58], issued to Romanian citizens staying temporarily, for less than 6 months, abroad in EU countries, and conferring them reimbursement for some medical services.

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[58] Casa Nationala de Asigurari de Sanatate [National Health Insurance House] 2010
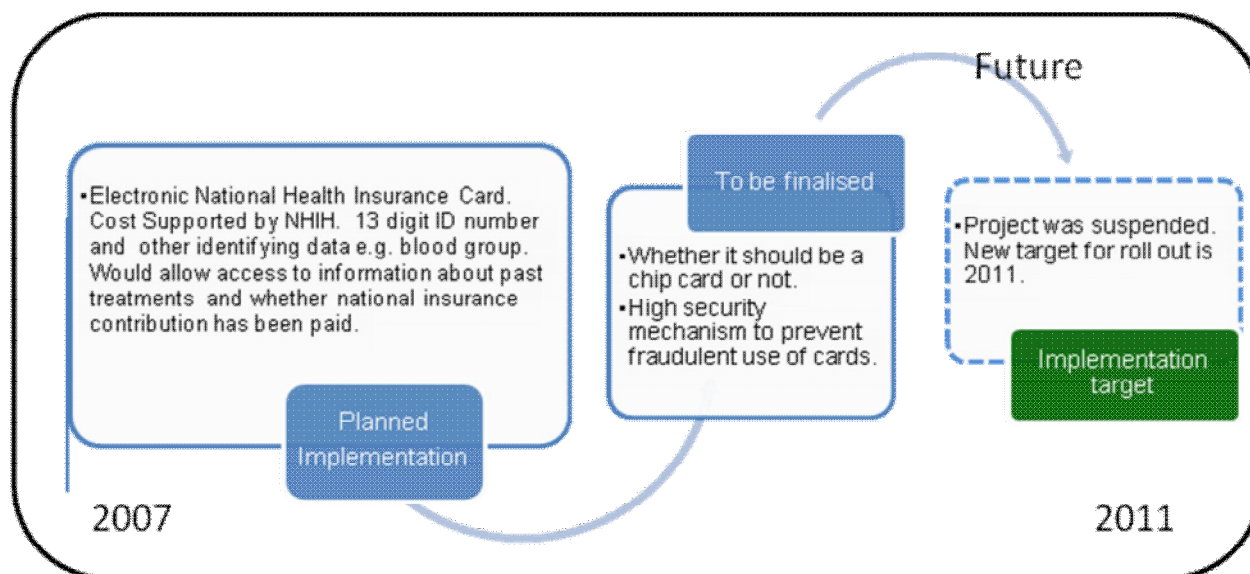
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3.4.4 Standards

Standards are not only crucial to enable interoperable exchange of meaningful information in the healthcare system; they also ensure secure access to patient records by healthcare providers and citizens. This study aims to identify, among other usage, standards related to the domain of health informatics, such as the SNOMED Clinical Terms or the LOINC terminology.

In Romania, the national competent authority dealing with standards is the Romanian Standards Association (ASRO)[59] – a non lucrative association, a Romanian private legal entity of public interest, non governmental and apolitical, set up and recognised as a national standardization body by several laws and Government Decisions. ASRO has been, since 1995, a workgroup for "medical informatics" but the activity of this group was almost absent, mainly for financial reasons.

The National Centre for Organising and Ensuring the Health Information System (NCOEHIS) was responsible for introducing a set of regulations and standards into the Romanian healthcare environment, mainly for coding, and to recommend them for eHealth projects. For example, Romania introduced ICD-10 for mortality in 1994 in a shorter form, since 1998 in full form, and since 2000 also for morbidity. In a similar manner other coding proposed by the World Health Organization (WHO) was adopted. NCOEHIS cooperated also with the standards introduced by the DRG reporting systems for hospitals. NCOEHIS also has a dedicated office for eHealth standards.

The NCOEHIS was legally enabled to propose standards and benchmarks for the Romanian Healthcare System, but the process was bottlenecked and deadlocked due to the lack of funding by MoH for the process of purchasing standards and benchmarks (as ASRO is a private company), as well as for meetings and logistic process of adoption.

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[59] ASRO Romanian Standards Organisation 2007

Some essential coding (e.g. the ID code for the population) was commonly used as a standard by all eHealth applications.

NCOEHIS also identified, through a dedicated project (2001-2003), funded by the VIASAN National health-oriented R&D Programme, a set of eHealth standards, posted them on a dedicated site and distributed them in hard-copy form. For a while NCOEHIS ensured the updating of this site, as well as certifying that some eHealth applications were compliant with the standards required[60].

In October 2006 the HL7 Romania organisation was set up [61][27]. The mission of HL7 Romania is entirely complementary with that of the parent HL7 organisation, supporting the development, promotion and implementation of HL7 standards in ways which meet the needs of healthcare organisations, health professionals and healthcare software suppliers in Romania. Among the HL7 Romania members there are: public institutes, the main medical and technical universities and the most important IT companies interested in eHealth. Besides activities such as providing information or bringing together interested parties, the HL7 Romania intends to carry out some pilot eHealth projects promoting the HL7 standards.

EU Member States have expressed the need to support actions addressing the interoperability of eHealth systems, because patients and health professionals are becoming increasingly mobile within the European Union, and the cross border circulation of e Health services are of growing importance.

In 2006-2008 Experts from the Ministry of Health (NCOEHIS) and the Ministry of Communication and Information Society participated in the activities of the eHealth working group and the eHealth interoperability expert group organised by The European Commission – Information Society and Media Directorate General, contributing to the Commission Recommendation on cross-border interoperability of electronic health record systems[62].

In August 2007 the Minister of Health signed, on behalf of Romania, the Letter of Intent for the participation in the eHealth Initiative, as stated in the Memorandum of Understanding signed in April 2007 for the preparation of a successful proposal for a Large Scale Pilot, under the Competitiveness and Innovation Framework Programme, ICT – Policy Support Programme of the European Commission (patient summary and ePrescription, experience sharing and consensus building in eHealth), as well as for European structural funds.

An eHealth interoperability project with Romanian participation is the Health Optimum – healthcare delivery optimisation through telemedicine[63] [17] – continuing the "Near to Needs" project achievements, with Italy (coordinator), Spain, Denmark, Sweden, and Belgium in the consortium. The Romanian contribution started in January 2007 through County Emergency Clinical Hospital of Timisoara

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[60] National Centre for Organizing and Ensuring the Health Information System 2009

[61] Health Level Seven International 2007-2010

[62] Viviane Reding for the European Commission 2008

[63] Health Optimum

3.5   Legal and regulatory facilitators

Legal and regulatory issues are among the most challenging aspects of eHealth: privacy and confidentiality, liability and data-protection all need to be addressed in order to make eHealth applications possible. Rarely does a country have a coherent set of laws specifically designed to address eHealth. Instead, the eHealth phenomenon has to be addressed within the existing laws on professional liability, data protection etc.

In all Romanian eHealth applications the generally accepted data protection and confidentiality rules are used. The access to the personal health data in eHealth applications is regulated under the Law on the Protection of Individuals with regard to the Processing of Personal Data and on the Free Movement of such Data[64] and the Law on the Rights of Patients[65]. It is permitted only to entitled persons, upon locally established rules, mainly using passwords. The law severely punishes the leaking of such data.

For long distance health data transmission the secure encrypted government network is used, but for short distances, as within the same city, the internet is often the solution. Another problem is that health databases seldom have a properly conceived disaster recovery solution.

Under the Law 102/2005, the National Authority for the Supervision of Personal Data Processing in Romania[66] came into existence. In 2007 all persons handling personal data in the healthcare area had to declare in a written statement why they are using this data, how they ensure confidentiality and the manner in which they destroy the records when they are no longer necessary. It is expected that the Romanian legislation in this field will be gradually harmonised to the EU Directives concerning other legal aspects too.

To this date, the digital signature is only exceptionally used in Romania, and not in the healthcare environment, mainly for high cost reasons. The Health-IT product liability was not imposed or controlled by a special regulation.

3.6   Financing and reimbursement issues

Until 1990, in the Romanian healthcare environment a unique investment framework was in place, the state budget allotted to the Ministry of Health. After 1990, no special annual budget was provided for eHealth activities. The central public IT endowment was realised mainly through dedicated IT projects and the rest through local initiatives. Among the many public health problems, IT was not a priority. The wages of IT professionals in healthcare units were much lower than the average paid by private companies. Additionally, in July 2010 the salaries in public organisations were reduced by 25% provided that in the private sector they remained unchanged. Due to lack of money, it was almost impossible to outsource, which had a negative influence upon the quality of eHealth activities.

No incentives were provided for healthcare organisations or professionals for using eHealth solutions.

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[64] Law no. 677 on the Protection of Individuals with regard to the Processing of Personal Data and on the Free Movement of such Data, November 2001.

[65] Law no. 46 on the Rights of Patients of 2 January 2003.

[66] ANSPDCP Dataprotection Romania 2010

Immediately after 1990 public health units, hospitals in particular, found different ways, including donations, of procuring IT equipment. Basic software was sometimes copied without a license and dedicated healthcare applications were made nearby by small, local companies. After 20 years the situation has improved, however the IT acquisition for public healthcare units is funded, even today, mainly from within their own budget and only occasionally by eHealth projects.

In the years 1992-1994 and 1996-2000 two phases of a Health Management Information System project were realised, with a World Bank loan, supplemented with funds from the state budget System (IHIS)" was funded in the same way. Other eHealth projects were financed by the FP6 programme or by international cooperation.

In the late nineties the Unique Integrated Information System of Social Health Insurances (SIUI) project was set up, funded directly by the National Health Insurance House, containing a sizeable hardware and basic software endowment component. For several reasons, the realisation of the project only started in 2003 and is still in progress.

More recently, proposals were made for eHealth projects in the frame of ICT Policy Support Programme (patient summary and ePrescription, experience sharing and consensus building in eHealth), funded in 2007-2013 by the European Commission, through European structural funds.. The main beneficiaries were the Ministry of Health, the County Health Authorities and a small number of pilot healthcare units.

In the last ten years, several smaller eHealth projects were funded by Phare programme The most important of such project was, between 2005 and 2007, that for a „Computerised monitoring system for hospital morbidity and a hospital case based financing system", introducing a DRG based reporting system in all public hospitals. The project "Feasibility study for the implementation of an Integrated Health Information

Smaller eHealth projects were funded by the FP6 programme or by Romanian national R&D programmes (as an example, the VIASAN programme, for research in life and health). Some eHealth research projects were made with their own funding by some universities, or small scale international cooperation. Also several IT companies financed their own pilot eHealth projects to promote more evolved products on the market.

The funding for eHealth research projects is found from within the budget of the beneficiary institution (as in case of the National Health Insurance House), or of the research unit (as sometimes is the case for Medical or Technical Universities, or for some IT companies preparing pilot applications). Several small projects are funded by joint venture. A limited number of eHealth projects gained grants from Romanian non-eHealth programmes; an example is the VIASAN ("Life and Health") programme.

There are many other smaller eHealth projects in progress for Hospital information systems, telemedicine etc. Their funding comes from the budget of the beneficiary institution, or of the research institution. A number of eHealth projects gained grants from non-eHealth or from EU programmes.

3.7 Evaluation results/plans/activities

From a public policy perspective, evaluation is a key activity in the policy-cycle. It provides insights into the success or failure of a policy or project and leads to new policy goals and new methods of implementation. The need for evaluation of eHealth policies and projects has been stressed time and again by the EC, not least in order to further the spread of eHealth in the process of healthcare delivery.

The only public organisation which made evaluations of eHealth endowment and activities in Romania is NCOEHIS. These evaluations were made mainly on behalf of MoH.

Thereby among the tasks of the NCOEHIS was the periodic evaluation of eHealth activity in public healthcare units. As an example: in 2005 and 2008 surveys were made about public hospitals IT endowment and use of IT facilities[67]. As an example, from a national average of almost 15 hospital beds per computer, in three years the figure dropped to 8 beds per computer, and from a majority of computer use for administrative purposes, in 2008 half of the computers had a clinical or preclinical use. But even in 2008 only slightly more than half of the computers were connected to the Internet and only 52% of hospital physicians were using computers on a regular basis. Also there are big disparities between the great university hospitals and small remote units.

Several other similar eHealth indicators were evaluated for hospitals and county health authorities. Also, NCOEHIS collected figures about endowment from public funds for all of about 11500 family doctors (GPs) for hardware and software.

4 Outlook

As health has now reached a place on the Romanian government's priority list which is shown by the increase in resources and finances, it is likely that developments in eHealth will follow. Romania has coordinated its legislation with EU requirements which appears to be a tentative step in the right direction for eHealth. However, the gap between legislation and implementation has yet to be breached.

As has been found in this report there are several small eHealth projects in existence, but what is needed is a clear strategy to bring them together in a way where progress can really be made. This is where the lack of real organisation and poor communication between institutions becomes clear. The absence of commitment to any eHealth strategy and the multitude of possible strategies available do not make the situation any easier, added to that the erratic previous allocation of resources, then it starts to appear ridiculous. If legislative aims are to become a reality then a lucid approach to eHealth needs to be created and a map put in place.

Despite its problematic history with eHealth the government does appears to be preparing its healthcare system for such a scheme. It cooperates extensively with various international organisations and countries. International partners provide significant technical and financial support to Romania in various health areas, with a

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[67] National Centre for Organizing and Ensuring the Health Information System 2009

special focus on health policy and health system development[68]. It has stated the objective to further improve legislative and administrative framework as well as increasing funding, so long as this does not further complicate the issue it means that an eHealth strategy could be rolled out in the not too distant future.

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[68] World Health Organisation 2007

5   List of abbreviations

DRG	Diagnosis Related Group
DSS	Decision Support System
EC	European Commission
EEA	European Economic Area
EHR	Electronic Health Record
EMR	Electronic Medical Record
EPR	Electronic Patient Record
epSOS	European patients Smart Open Services
ERA	European Research Area
EU	European Union
GDP	Gross Domestic Product
GP	General Practitioner
HCP	Healthcare Provider
HL7	Health Level Seven International
HPC	Health Professional Card
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IHTSDO	International Health Terminology Standards Development Organisation
IT	Information Technology
LSP	Large Scale Pilot
MoH	Ministry of Health
NCOEHIS	National Centre for Organizing and Ensuring the Health Information System
NHIH	National Health Insurance House, or in Romanian Casa Nationala de Asigurari e Sanatate (CNAS)
OECD	Organisation for Economic Co-operation and Development
PHS	Personal Health System
R&D	Research and Development
SIUI	Unique Integrated Information System
SNOMED	Systematized Nomenclature of Medicine-Clinical Terms
WHO	World Health Organisation

6   Annex

6.1.1   Annex 1: Compound indicators of eHealth use by GPs

Compound indicator name	Component indicators	Computation
Overall eHealth use	- Electronic storage of individual medical patient data - Electronic storage of individual administrative patient data - Use of a computer during consultation with the patient - Use of a Decision Support System (DSS) - Transfer of lab results from the laboratory - Transfer of administrative patient data to reimbursers or other care providers - Transfer of medical patient data to other care providers or professionals - ePrescribing (transfer of prescription to pharmacy)	Average of component indicators
Electronic storage of individual medical patient data	- A2a - Symptoms or the reasons for encounter - A2c - Medical history - A2c - Basic medical parameters such as allergies - A2d - Vital signs measurement - A2e - Diagnoses - A2f - Medications - A2g - Laboratory results - A2h - Ordered examinations and results - A2i - Radiological images - A2j - Treatment outcomes	Average of component indicators
Electronic storage of individual administrative patient data	- A1 - electronic storage of individual administrative patient	A1 value
Use of a computer during consultation with the patient	- B2 - Computer use during consultation	B2 value
Use of a Decision Support System (DSS)	- B3a - Availability of DSS for diagnosis - B3b - Availability of DSS for prescribing	Average of component indicators
Transfer of lab results from the laboratory	- D1e - Using electronic networks to transfer prescriptions electronically to dispensing pharmacists?	D1e value
Transfer of administrative patient data to reimbursers or other care providers	- D1a - Using electronic networks to exchange of administrative data with other healthcare providers - D1b - Using electronic networks to exchange of administrative data with reimbursing organisations	Average of component indicators
Transfer of medical patient data to other care providers or professionals	- D1c - Using electronic networks to exchange medical data with other health care providers and professionals	D1c value
ePrescribing (transfer of prescription to pharmacy)	- D1d - Using electronic networks to transfer prescriptions electronically to dispensing pharmacist	D1d value

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