

eHealth strategy and implementation activities in Hungary

Report in the framework of the eHealth ERA project

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The European Commission, Directorate General Information Society and Media, supports this project to contribute towards greater transparency across Member States and other participating countries on eHealth strategies as well as innovation-oriented research and technology development (RTD) initiatives, including the coordination of Member States' eHealth strategy formulation and implementation. Thereby the project aims at fostering the establishment of an effective European Research and innovation Area (ERA) in eHealth. All project results are available on the internet and can be accessed at the *eHealth ERA* website: www.ehealth-era.org.

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Country Report: *Hungary*

1 Executive Summary

The main role in the area of the development of eHealth policies is assigned to the Ministry of Health in Hungary. The Ministry prepared the eHealth programme under the general guidelines for the information society development issued by the Ministry of Informatics and Communication (the competencies of this Ministry were moved to Ministry of Economy and Transport afterwards). In 2002 the Hungarian Government published the Hungarian Information Society Strategy (HISS), followed by HISS-Health and Social Affairs in 2003 and National eHealth Programme in 2004. This Programme aims to comply with the EC eHealth Action plan (2004-2010). The Ministry of Health set up also eHealth Programme Management Unit under the umbrella of its National Institute for Strategic Health Research.

The mid-term activity plan (2004-2006) indicates the following priorities: implementing a comprehensive health and social monitoring system, establishment of telephone and online health information and advice service, regional demonstration pilots of integrated health information systems, modernisation of health and social information system and the implementation of eBusiness foundations for health services

The process of implementation of the eHealth Programme started in January 2004. The Programme identified 11 activity groups which covered about 25 projects complying with the Programme objectives. Key areas covered with these projects included maintenance of the information strategy, eApplication data models and communication standards, ontology management standard, introduction of digital signatures, electronic public certified registries, access to health-related information and advice services and evidence-based medical knowledge bases.

2 Basic facts

The surface area of Hungary is 93 000 km² and its population of about 10 mln. people. Hungarian make nearly 99% of whole population. The trend for decrease of population is observed in Hungary from early 1980-ies. There is also a trend for increase of a share of elderly people in the society. Hungary joined European Union on May 1, 2004 in cluster of 10 countries.

3 Healthcare System Overview

3.1 Basic facts & features of the healthcare system

The current structure of the health care system in Hungary is the result of considerable changes which were introduced since 1989.[10] The National Assembly remains on the highest level of decision-making in public policy, also in healthcare. By appropriate laws passed by the National Assembly, the dimensions of the Health Insurance Fund budget are established every year. The National Government is responsible for development of health policies. Established in 1999 the National Health Council advises the Government on health priorities. From the year 1988 when the Social Insurance Fund was separated from the central budget, the role of the National Government in financing health care services was meaningfully narrowed. It includes currently such areas like highly expensive, advanced interventions, public health activities, emergency ambulance and blood supply services, health sciences education and research, co-payment of certain medicines, medical aides and prostheses for citizens with low incomes and partial coverage of capital costs provided to local authorities for renovating health care facilities or purchases of a new equipment.

National level of the organisational structure of the health care system comprises Ministry of Health, other ministries relevant to the issues of health care delivery, the National Health Insurance Fund Administration and the cluster of national bodies involved in health care domain, like the National Public Health and Medical Officer Service, the National Ambulance Service as well as professional organizations. Local level is based on county and municipal authorities responsible for management of health care institutions, chapters of the Insurance Fund administration and local offices of the public health service.

The main responsibility of the Ministry of Health and other central institutions covers regulation, policy and planning. Local authorities are involved in the management of health care facilities. The functions of the local offices of the public health services include mainly monitoring of public health and responding to public health issues.

Government supervises and monitors the health care delivery system, even if the ownership of the health care facilities is mixed. From the moment of the change of health care financing system, the investment expenditures are covered by government or local authorities and health care services are reimbursed through the Health Insurance Fund. The Fund is administered by the National Health Insurance Fund Administration (NHIFA).

Local offices of the Insurance Funds administration are involved in the process of health care services contracting from state owned and private health care providers.

In summary, main players in the health care scene are institution and organisations involved in the management or ownership of health care providers (central government with Ministry of Health, Ministry of Education, other relevant ministries, count and municipal authorities), health services delivery (national Emergency Ambulance Service, National Blood Supply Service, clinical departments of medical faculties, specialist hospitals, county-owned or municipal hospitals and polyclinics, primary care surgeries, private providers like pharmacies, private clinics and hospitals), financing (National Health Insurance Fund Administration, County Offices, patients) and public health domain (National Public Health and Medical Officer Service, with county and municipal offices).

The Social Insurance Fund was divided into the Health Insurance Fund and the Pension Insurance Fund in 1992. The social insurance system is obligatory and covers all citizens. The scope of additional insurance is quite narrow. The payment for health insurance system is made by employer and employees as percentages of the total income of the employee. The range of services eligible within the health insurance comprises primary, secondary and tertiary care and emergency medicine. In case of the medicines, medical aids, dental care and rehabilitation, costs are shared between insurance coverage and the patient.

Direct medical services are reimbursed on the basis of the performance. In primary care, funding for services is related to patient capitation. Outpatient services are reimbursed depending on the services delivered. Finally, inpatient care is reimbursed through the use of the system based on the diagnosis-related groups.

The type of services which should be provided by the local authorities was defined by the Act CLIV of 1997 on Health. Health care services delivery is organized on the basis of the principle of territorial responsibility. It means in general that municipalities should provide primary care for the local inhabitants with the border of the municipality and county authorities are supposed to assure specialist health care service for appropriate county. Municipal authorities may also provide outpatient specialist and inpatient care, provided that they are willing to accept it.

Primary health care encompassing family doctor services, dental care, out-of-surgery hours service, mother and child health nurse services and school health services is available for the local inhabitants. After the reforms of the state-socialist health services which took place from 1989, the emphasis in the range of primary care delivery was put on the family physician services and family medicine became a new specialization. The referral from family physician became obligatory to obtain specialist care which is in line with the concept of the family physician as a gate-keeper. The number of family physicians was 5125 and family paediatricians 1579 in 2002 in Hungary. Currently, the options of employment for family physicians include:

- the employment on the basis of a monthly salary by the municipality
- contract with the municipality as private providers for a primary care district, but ownership of the surgery is on the side of a local authorities

- the position of independent private provider within no municipal contract and no territorial supply obligation, depending only on the patients' choice
- freelance medical doctor status (contracting with the health care provider and ability to negotiate fees)

The secondary and tertiary care is assured by several players: municipal and county authorities, the national government, and in small range, by private providers. Large multi-speciality hospitals are usually owned by county authorities. They assure secondary and tertiary care both on inpatient and outpatient basis. Polyclinics, dispensaries, smaller local hospitals providing secondary care are commonly owned by municipal authorities.

Some hospitals are also owned by the national government. They are assigned to appropriate ministries. The Ministry of Education is responsible for university hospitals and the Ministry of Health for single-speciality providers, the National Institute of Health providing usually specialized tertiary care.

Private providers remain a significant group in primary care (functional privatization of family physician service and private ownership of pharmacies). The majority of specialist care providers are owned by local authorities. Hospitals are primarily owned by local governments, and secondly by the state, on behalf of which the Ministry exercises the ownership right over university clinical departments and national institutes. In Hungary a large number of hospitals are run by churches, foundations and private owners, although the number of beds in such hospitals is low

Total expenditures on health (as % of gross domestic product) were equal 7.1% in 1990 and 8.45% in 2003 in Hungary. Total health expenditures per capita expressed in US\$ PPP reached 1269 in 2003. Public expenditures on health as % of total expenditures on health were equal 72,4% in 2003. [7]

3.2 National level health goals

The main strategic programme titled "Johan Béla National Programme for the Decade of Health" was developed with the main general goal of decreasing the significant difference between the life expectancy at birth between the EU average and Hungary.[1] The programme was passed by the Parliament in 2003 – its results are also monitored by the Parliament. The main assumption of the programme is introduction of successful preventive measures of various levels. They include promotion of healthy lifestyles and environment, prevention and decrease of the burden of most frequent chronic diseases (cardiovascular diseases, tumours, mental and locomotor diseases), involvement of healthy setting programs, development of the human resources in Public Health, monitoring and communication of the Public Health Program.[18]

The Programme will focus on four areas: youth issues, problems related to ageing, creation of equal opportunity and development of an environment that will be support health maintaining in everyday life. Important target is primary prevention. It will be realized through following activities: control of cigarette smoking, prevention of alcohol and drug use, promotion of health dietary habits, improvement of food safety, promotion of physical exercise and activity, enhancing public hygiene and epidemiological safety and

supporting a healthy physical environment. The priorities in the domain of preventing premature and avoidable death, illnesses and disabilities include:

- reduction of the mortality caused by coronary heart disease and cerebrovascular disease
- reversing unfavourable trends of increasing mortality caused by neoplasms
- strengthening mental health protection
- decreasing locomotor diseases and its complications
- prevention of AIDS and other sexually transmitted diseases.

To achieve all these goals, the system of healthcare must be advanced in the area of screening tests, the efficiency of the health care delivery to society-wide range and public health complexity as well as development of appropriate monitoring mechanisms.

4 Strategic eHealth Plans/Policy Measures

4.1 National-regional eHealth policy

4.1.a Main actors

The ministries which play main role in shaping national eHealth policy are the Ministry of Health and the Ministry of Informatics and Communication. The Ministry of Health is involved in the development and supervision of the e-health program under general guidelines related to the area of information society development prepared previously by Ministry of Informatics and Communication.[10][11] The Ministry of Informatics and Communication was established in 2002. Its central mission was to seek solutions to the challenges in the new information age as well as aid and facilitate the emergence of the knowledge economy and knowledge society. It was also active in development of guidelines on the development of sectoral component strategies for an information society.[11] Currently, the competencies of this Ministry were moved to the Ministry of Economy and Transport.

4.1.b eHealth Roadmap

The Hungarian Government published the Hungarian Information Society Strategy (HISS) in 2002.[8][12] From the July 2003, the Hungarian Information Society Strategy – Health and Social Services is available.[8] In 2004 the Ministry of Health prepared the eHealth Program on the basis of the health and social information society strategy approved by the Government and professional community earlier in 2003.

Furthermore, the Ministry of Health set up an eHealth Program Management Unit (PMU) under the umbrella of its National Institute for Strategic Health Research (<http://www.eski.hu>) in 2004. PMU website contains information relevant to program activities and projects.

The steps undertaken within the eHealth program include: information policy strategy building, setting up and using proper health and delivery system indicator sets, building

reliable health information content, inducing health IT standard building, and to reach these goals, running and coordinating a set of health IT system development projects.

The main role in drafting of the eHealth Programme was on the side of the Information Strategy Task Force of MoHSFA and MoIC. The tentative "implementation chain" for eHealth Programme in Hungary includes: National Assembly – Government – Ministry of Health + eHealth Program Management Unit + other central bodies– (County and Municipal Authorities) – specific project e.g. the Hungarian Health Portal.

The Hungarian Information Society Strategy - Health and Social Services was issued in July 2003. Afterwards Mid-term Activity Plan (2004-2006) became available. The eHealth Programme launched in January 2004 is the framework for the implementation of the information strategy

Priority initiatives identified within Mid-term Activity Plan (2004-2006) were as follows:

- implementation a comprehensive health and social monitoring system
- establishment of a telephone and an online health information and advice service
- regional demonstration pilots of integrated health information systems (as part of the National Development Plan (Action 4.4 of Human Resources Development Operational Programme)
- modernisation of health and social information systems
- implement foundations of eBusiness for health services

The assessment of the progress in the implementation of the national eHealth roadmap shows that only some of previously designated milestones were reached. A prestandard of health data communication has been prepared, but its implementation in the regional health information systems is still underway. A number of projects aimed at a terminology services produced incomplete or rather technical results which have moderate impact on the status of the whole system. The information dissemination for the general public (Dr Info Portal) as the public health data repository (IMEA) at the National Institute for Strategic Health Research (<http://www2.eski.hu/8080/IMEA/index.html>) were quite successful. The field of social care has been excluded from eHealth activities recently.

4.1.c Dissemination and co-ordination activities

Dissemination activities launched in relation to eHealth Programme were conducted mainly by the Ministry of Health and dependent institutions and included:

- foundation of Information Strategy Task Force of MoHSFA and MoIC
- expert group consultations, workshops, other (see below)
- inclusion of the e-health related activities within the scope of National Institute for Strategic Health Research
- preparation of the website with relevant information on eHealth Programme (also abbreviated version in English; www.e-egeszseg.hu)
- publication of leaflets
- presentation during the meetings and conferences addressed to various audience groups

- participation in e-health related initiatives on various levels

Dissemination activities on eHealth policies were offered to general audience with electronic media. The “Dr Info” Portal supports bidirectional communication and may be used by general public for expressing their opinions on eHealth policies.

4.2 Investment and Reimbursement framework

There is no specific source for the investment for implementation of eHealth systems and applications. However, considerable investment in hospital information systems was made through the World Bank financing. Some project in the health care IT domain were made conducted under PHARE project.[3][15] Furthermore, there are project for development of eHealth related infrastructure and services within the Structural Funds available for Hungary as one of new member states.

No specific reimbursement schemes to support the diffusion and implementation of eHealth applications was identified. The reimbursement for provision of eHealth services could be available on the basis of bilateral agreement between providers.

5 eHealth deployment status

5.1 eHealth infrastructure

5.1.1 Physical networks

There are diversified types of physical networks which could be used for eHealth services implementation in Hungary. Available data show that 99% of hospitals and 65% of pharmacies, but only 33% of GP surgeries have Internet access. In the area of inpatient care, DRG-based financing data are transmitted electronically by 170 institutes. However, they are usually not connected with each other. Institutions providing outpatient services report data electronically (using ICD-10 diagnostic and national ICPM procedure codes) The National Public Health Service initiated the introduction of a nationwide integrated network with centralized services in 2003. There are also plans to built dedicated network for Public Health Service offices.

The project which could be relevant example in the area of health care networks building is initiative recognized under the title “IT Development in Health Care in the Regions Lagging Behind”.[4][9] It is carried out within ERDF financed Human Recourses Development Operative Programme (HRD OP). It focuses on the development of a pilot inter-institutional ICT system among healthcare providers in three underdeveloped regions of Hungary: Northern Hungary, Northern Great Plains and Southern Transdanubia. The system is supposed to connect all levels of health care, e.g. hospitals, clinics and general practitioners. The system will provide 'eHealth' services (such as eHealth Record, eConsultation and ePrescription) for all participants using modern, Internet-based, but secure communication channels.[20]

5.1.2 Legal and regulatory framework

There is national legislation in Hungary addressing the following issues: data protection, telecommunications (with regard to data protection and confidentiality) and digital signatures. Relevant legal acts are enlisted below:

- Act LXIII of 1992 on Protection of Personal Data and Disclosure of Data Public Interest, includes changes made by Act XIX of 2005. English version available on the website: http://abiweb.obh.hu/dpc/legislation/1992_LXIIIa.htm
- Telecommunication Act (LXXII) of 1992 which installed major regulatory changes
- Electronic Signature Act, May 2001

National bodies and authorities that have the responsibility of overseeing and/or co-ordination of the development and enforcement of the legal requirements in respective domains are:

- Data Protection and Freedom of Information Commissioner
- the Minister of Transport, Communication and Water Management (KHVM)
- the Communications Authority Hungary (HIF)
- the Office of Economic Competition
- Telecommunications Interest Reconciliation Forum (TEF)
- Information Technology and Telecommunications Committee (ITTC)
- National Board for Communications and Informatics (NBCI)
- Telecommunications Engineering Qualifying Committee (TMMB)
- Ministry of Finance

Under the provision of the 1992 Telecommunications Act, the Minister of Transport, Communication and Water Management is responsible for:

- laying the foundations for communications strategy decisions,
- developing the government's communications policy,
- preparing the rules appropriate to sectoral policy decisions and their issue as legal regulations,
- performing the tasks necessary for the international coordination of Hungarian communications,
- preparing concession contracts,
- ensuring the active participation of social interest groups and the reconciliation of their views within the process for the development of regulatory rules and decisions

The harmonization process in relation to EU-level regulations including Data Protection Directive and eCommerce Directive was targeted with the Acts enlisted below:

- Act LXIII of 1992, amended by Act No XLVIII of 2003
- Act on Electronic Commerce and Information Society Services, adopted on 18 December 2001

Feasibility Study Enumerating Legal Conditions of Creating a Computer System by which Patient's Data can be Collected from Different Institutions - in Hungarian

Within E-health Program, legal experts were employed to prepare the proposal for analysis of the legal condition influencing the implementation of all initiatives planned. The scope of responsibilities of the legal team encompass: input for the preparation of the individual contracts related to the subprograms of e-Health, development of the special rules for the use of the electronic signature in the health sector, preparation of draft regulations, determination of the detailed rules for the interinstitutional cooperation, participation in the development of the framework system for the Authentic Electronic Public Registries On Health and preparation of the relevant regulatory concepts and draft regulations.[4]

5.1.3 Education and training on ICT

Education programmes available on the national or regional level promote the acquisition of necessary general ICT skills by the general population. Annually, about 20000 students participate in IT training in Hungary. They pass computer technology exams with certificates (70% of them obtain basic computer operator skills, 25% of the acquire medium-level computer technology software operator degree).

In relation to basic IT skills, the "Sulinet" (Schoolnet) Program was launched in September 1, 1996, focused on the provision of every secondary school with a direct access to Internet by September 1, 1998 and all primary school by 2002.

The network of MultiCentres was developed in the country; they are computerised educational-development centres for children, teenagers and adults who complete multimedia toolkit during their activities there. They are maintained by the Federation of Technical and Scientific Societies (MTESZ) and local municipalities.

Hungary joined European Computer Driving Licence Foundation in June 1997. The right to introduce and monitor the examination systems and grant certificates was acquired by the John von Neumann Computer Science Society. By 2001 there were nearly 150 accredited ECDL centres. One of a long-term goal was to ensure that public administration workers will obtain the certificate. ECDL was accredited by the Ministry of Education and declared as one of facultative courses in the inland teacher extension-training program since 2000.[13]

5.2 eHealth applications & services

5.2.1 e-Prescription

The activities related to e-Prescription covered development of a prestandard for ePrescription messages. Independently from this, a pilot project for ePrescription is led by the National Health Insurance Fund.

5.2.2 Health Cards

The project was prepared within the National Health Insurance Fund that aims development of the solution for approval of insurance coverage and identity confirmation

based on smart cards. The project includes also the use of professional cards by physicians.

Other projects and initiatives related to the area of the use of health cards carried out in Hungary include:

- Dialysis and Transplant Card System: developed to improve monitoring of patients undergoing dialysis as well as patients waiting for or who underwent kidney transplantation. The chip card was planned as an additional data storage and management tool (emergency data, patient's medical history data). It is also used as a communication tool enabling the connection between provider PC with the whole network of cooperating institutions.

- Multifunctional Smart Card for Doctors (MSDC): introduced as a medical licence of Hungarian Medical Chamber Members, it combines the functions of payment credit card with other options like practice licence, storage of educational and qualification data, digital signature, insurance and health services related functions. Cards of this type are used by 40000 medical professionals. MSDC is perceived as a starting point for a new card system planned within future Hungarian Health Care Projects.[20]

- Voluntary Health Fund Card: the MediSmart Service application is installed in the facility of the medical service provider enables the connection between the hospital medical software and the MediSmart Card.[6] The application executes the card control, and import the data necessary for identification, the service provision and the settlement. Its basic function is the authorization which insures the patient's right to control the settlement and checks the balance; also the support for the accounting functions related to the service, and the screening out of the unrealistic transactions. The software, according to the insurance companies' specification, is handling balances and limits, creates settlement files and sends those to the insurance companies. It creates settlements toward the service providers about their claims against the various insurance companies

5.2.3 Health Portals

There are several health-related portals available in Hungary. Hungarian Health Portal is being developed under the auspices of the Ministry of Health, with participation of relevant Units. It was started in 2003 as is a central gateway to health and healthcare related information supporting the information needs of the health professionals. It encompasses a mixed implementation of B2B and B2E type models with opportunity for interactions between health professionals and businesses; support for teamwork over the Net; access to medical databases and certified registries, access to EBM (CE-online) resources, drug information and medical e-books in Hungarian. The plans for future include the development of electronic transactions.

"Dr.Info" project is focused on the Internet and call center based service providing health care information for citizens. It is also developed by the Ministry of Health of Hungary. Currently, the service includes information on: - availability of health care services (in and out-patient institutions, pharmacies, addresses, opening hours, doctors on duty), - information about medicines, - general information about structure, availability and function of different health care providers, - a phone number collection of different aid

organizations, - popular medical electronic books about illnesses and home-care. The telephone service is available 16 hours per day in the weekdays and 10 hours per day in the weekends. Calls are charged at local rates, all calls are recorded. The next step is the migration of this services to the Hungarian Health Portal. Further development phase will include adaptation of a self-help guide book.

The Disability Portal was started in 2005 as a comprehensive Internet portal which collects specialised information and useful services for all the people involved in the disability issue as an information database, sources of daily updated news and media for forming a community. Main functions of the Disability Portal include: - information service for disabled people involved, - information service for the non-disabled on disability issue, - information service for surroundings of the disabled, - database service, - presentation of life stories, - counselling, - forming relationships among disabled people - making contacts with those involved in the disability issue, - community relationships, - supporting labour issues, - web marketing

5.2.4 Patient Identifiers

All insured citizens were assigned a health insurance number (this identification system covers nearly the whole population). The insurance number was currently printed on paper-based insurance cards in 2006.

5.2.5 Other ICT tools assisting prevention, diagnosis, treatment, health monitoring, lifestyle management

The programme titled "Dissemination of Evidence-Based Knowledge in Hungarian Health Care Institutions" is focused on the provision of free access to Clinical Evidence Online through the Portal of the Ministry of Health. It is assumed that the initiative will support the dissemination of evidence-based best practice to Hungarian healthcare institutions.

Two hundred health care organisations in two consecutive grant application procedures became eligible for the use of Clinical Evidence Online from 15 July 2004, after a 3-months trial period, for one year until 15 September 2005 Password-protected access to the database is provided via the MoH's portal

National Institute for Strategic Health Research maintains an on line database that contains about two thousand public health indicators and another that retrieves customised statistical tables from reports of hospitals and outpatient units.

Project Modular Digital Picture and Archiving and Communication System (MD-PACS) was initiated in June 2000.[2] The main objective of the project is development of filmless radiological units. Within the project radiological data are gathered. In the years 2000-2003, five radiology departments in Hungary were included in the common system. It is estimated that in this period more than 6.0 mln. images were stored in the archive of the system.

5.2.6 Telemedicine services

Virtual Information Space for Health Care is a telemedicine system developed and implemented by the Company Applied Logic Library. The main objective of this system is

provision of health care providers with unified virtual information space and a virtual distributed telemedicine services. The basic concept behind the system is the Virtual Electronic Patient Record. It seems that current implementation scope is limited.[5] [20]

5.3 Interoperability and standards

5.3.1 Technical and Semantic Interoperability

The eHealth Programme encompasses a synchronized, coordinated set of projects to develop and distribute eHealth data models and communication standards (accepted as prestandards "MSZE 22800-1,2,3,4,5,6" by Hungarian Standardization Committee) with thesaurus and ontology method and technique based on a shared, common data model.

For the "unified health-professional language" a top-level ontology is under development, based on reference ontologies of anatomy, physiology and histopathology.

The next step is the DB based formal ontologies for the professional code systems, classifications (eg. ICD and WHO origin national classifications).

The application development for the targeted standardized electronic data interchange will include a two-level validation possibility: syntactically (XML-XSD) and semantically (archetypes).

Another work will start at the field of standardization: creation of the common element set of the institutional care- and workflow, minimum requirements using the international workflow recommendations (WfMC).

Until 2004 the Institute responsible for healthcare coding and classification systems was GYOGYINFOK. Temporarily, this area is under the responsibility of the National Health Insurance Fund and it is monitored also by the Ministry of Health. Nationally maintained, localised and updated versions of WHO coding systems are in use: ICD-10 for diseases, two subsets of ICPM for surgical and outpatient procedures, and ICF for functional problems.

5.3.2 Interoperability of Electronic Patient/Health Records

There is no common EPR architecture available on national level in the country.

5.3.3 Accreditation procedures

No specific conformity testing or accreditation scheme for eHealth systems and applications is available. The attempts of scientific associations to introduce accreditation system undertaken some years ago, were not successful.

6 eHealth RTD status

6.1 General information on RTD structure

The main actors in RTD policy setting in Hungary are: the Ministry of Education, the National Office for Research and Technology, the Science and Technology Policy Board, The Science and Technology Advisory Committee, the Research and Technology Innovation Fund, the Agency for Research Fund Management and Research Exploitation as well as the Hungarian Academy of Sciences.

National Office for Research and Technology is supervised by the Minister of Education. Science and Technology Policy Board is chaired by the Prime Minister; its Vice-Presidents are the Minister of Education and the President of the Hungarian Academy of Sciences).[17]

The Research and Technology Innovation Fund is created through payments on the level of 0,25% of turnover delivered by all enterprises apart from the micro- and small enterprises. Furthermore, the Hungarian government contributes to the Fund with an equivalent amount.

The key programmes defined in National Development Plan include[14]:

Program 1 - Improving the quality of life (main program fields: biomedical research, pharmaceutical research using molecular techniques, functional genomics, research into social hygiene, health policy and economic aspects of healthcare, sustainable mobility)

Program 2 - Information and communications technologies (integrated intelligent sensors, development of devices and methods for human language technologies, mobile and integrated telecommunications networks, application of analogue computation techniques and telepresence, application of molecular-level information technologies, telematics for intelligent transportation systems)

Program 3 - Environmental and materials research (ecological research, detection and neutralization of environmentally polluting materials, utilization of raw materials found in Hungary, utilization of new energy resources and energy-saving technologies, production of new materials and research into environmental-friendly materials, nanotechnology, research on environmental aspects of transportation and water management)

Program 4 - Research on agribusiness and biotechnology (animal and plant breeding, animal hygiene and plant protection, competitiveness in agribusiness, development concerning food industry technologies and food safety)

Program 5 - Research on national heritage and contemporary social challenges

6.2 Research Programmes

The main areas specified in the Science and Technology Policy 2000 which are related to eHealth domain encompass: ICT applications, genomics, proteomics, nanotechnologies, new materials (incl. biomaterials).[14]

6.3 RTD Funding - National

The major national funding sources for RTD is the Research and Technology Innovation Fund.[19] The information on the amount of annual funding available for eHealth related activities was not found.

6.4 Technology transfer & Innovation Support

The activities carried out on national level in the area of promotion and support for technology transfer in eHealth is included in scope of responsibilities of the National Institute of Strategic Health Research.[4],[16]

The activities provided for promotion of technology transfer in eHealth include conferences, seminars, studies-analyses, working/expert groups as well as information and communication activities

Most active research centres in the field of health informatics

- Pannon University, Department of Information systems (<http://www.mik.vein.hu/en/index.php?func=news&main=114>)
- University of Szeged, Department of Medical Informatics (<http://www.szote.u-szeged.hu/dmi/indexe.htm>)
- National Institute for Strategic Health Research (http://www.eski.hu/index_en.html)

National-ownership companies active in the area of eHealth and related RTD were not identified.

7 References

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