

**The eHealth Strategy of the Vysočina
Region**

2012 – 2015

Version 1.0

The present document outlines the Vysočina Region's strategic plans relating to eHealth. It was prepared as the basic strategy for the activities of the working group within the Department of Health and the Information Technology Department for 2012 – 2015.

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| Activities – The 2012 Action Plan: see a separate document | Chyba! Záložka není definována. |

List of terms and acronyms

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| eHealth | The application of information and communication technologies in healthcare |
| ICT | Information and communication technologies |
| DASTA | The data standard of the Ministry of Health of the Czech Republic, versions 3 and 4 (abbreviated as DS3 and DS4, respectively, and generally as DASTA) serves for transmitting data among healthcare information systems. It has been used in everyday practice for more than a decade, and is integrated into all major existing healthcare information systems. |
| PACS | Picture Archiving and Communication System – A system for acquiring, storing, distributing and presenting medical image data. It is comprised of several parts: a modality for acquiring data, a control centre, an archive, and imaging stations. |
| HIS | The Hospital Information System – An information system that is designed to improve the efficiency of medical work processes. The HIS contains all important patient data. |
| RIS | The Radiology Information System – A system that is used by the department of radiology for storing, handling and distributing patients' radiological and image data. It includes the history and scheduling of examinations as well as the reporting of results. Sometimes it is integrated into the HIS. |
| DICOM | Digital Imaging and Communication in Medicine – A comprehensive set of standards for the processing, storage and transmission of medical image studies. It has two components: a communication protocol and an image data format. |
| HL7 | Health Level 7 – A standardised data format that is used for text information within hospitals. As soon as the data is encoded into HL7, it should be transparent to all other medical systems that use this standard. |
| IHE | Integrating the Healthcare Enterprise – A joint initiative of experts and companies aiming to improve the way information is shared among medical systems. It promotes the harmonised use of established DICOM and HL7 standards in order to provide optimal patient care, including any specific needs. A system that has been developed in line with IHE communicates better with other systems, is easier to implement, and allows for information to be used more efficiently. |
| modality | A general term for medical devices that are used to acquire images of the body. Examples include ultrasound, X-ray, magnetic resonance and others. |
| HCF | Healthcare facility |
| HCFVR | Healthcare facility set up by the Vysočina Region |
| PMR | A patient's medical record |
| EPMA | European Project Management Agency – Established by the Vysočina Region and the BMI association in 2004, the agency aims to support project cooperation with European regions. |
| ROWANet | The project for the public administration backbone optical data network in the Vysočina Region. |
| IOP | Integrated Operational Programme – one of the Czech Republic's structural funds for 2007–13 |
| IRF | Integrated rescue forces |

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| ITD | The Information Technology Department of the Regional Authority |
| DoH | The Department of Health of the Regional Authority |
| HIC | Health insurance company |
| DRG | A system to classify cases into certain groups |
| SAN | Storage Area Network – A dedicated data network for connecting external data storage devices (disk arrays, back-up equipment etc.) |
| MMSF | Medical material storage facility |
| ERP | Enterprise resource planning systems integrate internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc. ERP systems automate this activity with an integrated software application. |

The eHealth strategy

eHealth addresses the application of information and communication technologies across a wide range of functions that affect health and healthcare. The area of eHealth includes instruments and solutions (including products, systems, and services) that go beyond the scope of regular Internet applications. These mainly include tools for medical administration, healthcare facilities and all types of healthcare professionals, as well as public and personalised healthcare information systems for patients and the public.

The document entitled **The eHealth Strategy of the Vysočina Region** aims to describe the situation in selected areas of eHealth relevance and to propose changes that would lead to significant improvements in those selected areas. The strategy is based on several documents, in particular *The Analysis of Selected eHealth Areas* and *The Legal Analysis of eHealth Plans for the Vysočina Region*.

This strategy has been prepared for the 2012 – 2015 period, with an annual action plan that is regularly updated.

The strategy serves the following purpose:

- It sets the key development priorities for the digitization of healthcare in the Vysočina Region.
- It is one of the basic documents for preparing projects that are financed by the EU Structural Funds, and the Region's grant policy in ICT and healthcare.
- It is a basic document for the ICT development strategies of healthcare facilities within the Vysočina Region.
- It is a key document that serves as an umbrella for the activities of the eHealth working team of the Department of Health of the Regional Authority.

The target groups:

- The Department of Health of the Regional Authority
- The Council and Assembly of the Vysočina Region
- Organisations set up by the Region – hospitals, emergency medical service
- Suppliers in ICT and healthcare
- The residents of the Vysočina Region

1. An analysis of eHealth issues in the Vysočina Region

The current situation in the Vysočina Region's healthcare requires an ever-increasing deployment of advanced ICT resources, i.e. due to the changes that take place primarily as part of pursuing the Regional Healthcare Plan and the missions of both individual healthcare facilities and the Region as their founder. Implemented in the Vysočina Region between 2008 and 2011, there were several large-scale projects centralising (or integrating) certain healthcare facility services that were an important impulse for the systematic planning of eHealth issues at the regional level.

To better illustrate the current situation in terms of the environment that is relevant to eHealth, we provide the following SWOT analysis:

Strengths:

- Support for the development of modern information and communication technologies, telemedicine
- Very good personal contact with professionals from various areas
- The role of information technologies in healthcare has strengthened over recent years
- A significant position at both national and European level
- The high quality of the knowledge and professionalism of human resources
- Existing coordination of activities with regional entities and professionals from other sectors
- Frequent involvement in national projects and advisory committees
- The Region's grant policy – FV, the use of the EU Structural Funds, regional subsidy mechanisms
- The existence of solid ICT infrastructure within the Region (ROWANet, the Region's Data Centre, a regional SAN)
- The existence of design capacity within the Region – EPMA, ITD, DoH
- The successful implementation of large ICT projects in the Region's healthcare (emergency medical service, ERP, PACS)

Weaknesses:

- Differences in the level of equipment and knowledge at various HCFs within the Region
- Considerable differences in the quality of ICT staff and the position of ICT at HCFs
- A lack of human resources in the Region – the labour market, financial resources
- At healthcare organizations, ICT projects have a low priority within the organizations' financial plans and budgets
- A dysfunctional mechanism for capital and operating financing of ICT in healthcare
- Lacking or inadequate legislation
- Non-existing coordination of the activities of Regions in a given area
- The coordination of activities with the national level that is responsible for eHealth development

- Inadequate ICT literacy among healthcare staff

Opportunities:

- Maintaining and strengthening the team of qualified staff
- Possibilities for creating positive good practices and influencing the trends in the industry at the national level
- The Region is a significant reference
- The centralisation of the management and services of the Region's allowance organisations
- Cooperation (PPPs, municipalities, Regions, European regions, universities, the Region's HCFs)
- The popularisation of ICT in healthcare
- Growing support for mobile communication
- Knowledge transfer – best practices, white papers
- Maintaining the multi-source financing model for ICT projects in healthcare
- Focus on and pressure for innovation
- Improving computer literacy among healthcare staff
- eHealth as a development priority for the Vysočina Region
- An increasing priority of ICT projects within healthcare financing

Threats – risks:

- The loss of key employees
- Rapid development (emphasis on the new), high demands on human resources
- The incomplete transformation of regional healthcare
- A growing gap between the technology level and the knowledge of the users
- Increasing volumes of information that are processed in healthcare
- An increasing volume of activities related to project management and an increasing number of projects – the overburdening of project teams
- A change in the region's strategy towards other priorities – reduced amount of financial resources
- Legislative changes
- The management of healthcare facilities fails to provide support for modern technologies – incentives, motivation, financial resources
- Lacking ICT coordination at the national level

The description of the current situation in respect of ICT and eHealth in the Vysočina Region is addressed by a separate document entitled *eHealth Projects – The Vysočina Region – 2011* – that is annexed hereto.

2. Resources to accomplish the strategy's priorities

Human resources – Human resources are very important to accomplishing the strategic plans. Professional teams of experts – sufficiently competent to perform their tasks – need to be set up at each HCFVR. The current situation in this area is very unsettling within the Region. The following areas appear to be of key importance:

- The standardisation of ICT personnel in the different HCFVRs – job description, workload, remuneration, professional profile
- Strong emphasis on the education system for both ICT staff at the different HCFVRs and ICT users From the long-term perspective, this is a critical issue
- The organisational structure – sufficient ties to strategic management – timely information sharing between the management of a given organisation, the ICT department, and the founder
- A motivating system of financial and non-financial remuneration for professionals at HCFVRs who responsible for ICT development

Financial resources – The eHealth working team aims to use a multi-source financing mechanism, depending on the nature of the project, the partners, and the investment and operating requirements of a specific activity. Financial sources include:

- The European Structural Funds
- National subsidy programmes
- Resources from the budget of the Vysočina Region (DoH, ITD)
- Resources from individual HCFVRs
- Resources obtained on the basis of cooperation with other entities, Regions and countries

The necessary preconditions for the efficient implementation, operation and sustainability of eHealth projects include not only securing capital resources for their implementation, but also their operating stage and, by extension, the related capital expenditure. In this context, the issue of the systematic financing of ICT investments and operation in each HCFVR needs to be addressed swiftly. The current model of ad-hoc financing is untenable.

Technologies – The accessibility and the reliable and safe operation of the necessary technologies are critical to successfully implementing the following eHealth plans. The Vysočina Region has a robust telecommunication infrastructure (ROWANet) and – as long as the Region's Technology Centre project (IOP) is implemented – it also has sufficient facilities for operating centralised systems. In addition, there are also quality analytical facilities in the form of the Region's Data Warehouse. In implementing the various activities that are part of the strategy, the following aspects of the technology accessibility need to be kept in mind:

- Sufficient increase in server, storage and archiving capacity
- The continued implementation of the fully redundant ROWANet network
- The implementation of the Vysočina Region Technology Centre project
- Systematic ICT security management

3. Priority areas and key activities within the eHealth Strategy for 2012 – 2015

- **The e@mbulance regional appointment system** – Following the creation of a regional portal for scheduling patient appointments for all specialised out-patient offices at HCFVRs, support needs to be provided for expanding the system to all hospitals within the Region. Possibly, the system could be expanded to include general practitioners.
- **The digitization of medical records** – Support for the digitization of primary and secondary medical records at each HCFVR. This includes support for the digitization of text (HIS), image (PACS), audio and video documentation. This point is absolutely crucial to most eHealth projects.
- **The introduction of the electronic signature** – Introducing the electronic signature (as an authorisation and authentication tool) at each HCFVR is an essential part of healthcare digitization. It is an auxiliary instrument to other eHealth activities, without which certain projects would not be feasible at all, i.e. given the current legislation.
- **The storage and archiving of PMRs in digital form** – A project that builds on the digitization of medical records. Reducing the requirements and financial costs for archiving “paper documentation” at each HCFVR. High speed and accessibility in working with archived documents and legal necessity.
- **Teleconference** – Within HCFVRs and the various departments of the Vysočina Region, there is frequent need of mutual communication with respect to both ongoing projects and regular or operational meetings. For these purposes, a teleconferencing system appears to be a highly suitable solution, as it allows for efficiently improving the communication capacity of all parties involved, while also reducing the costs required for travel (including time savings due to reduced travel time etc).
- **A single HIS** – The systems for acquiring and maintaining patients’ medical records at the Vysočina Region’s hospitals are very heterogeneous. Moreover, some of them have or soon will reach a phase when their development will be terminated. These are but some of the reasons why work needs to be started on replacing and unifying hospital information systems at the Vysočina Region’s hospitals – this was preceded by the project entitled “The analysis of existing hospital information systems in hospitals that have been established by the Vysočina Region and market research for a new hospital information system solution”. Laboratory systems (LIS) and food-service systems form an integral part – these are often closely integrated with HIS.

- **The exchange of PMRs within the region through the eMeDocS system** – The exchange of patient medical records between different hospitals, and between hospitals and the Vysočina emergency medical service. Supporting the development of the eMeDocS system to include additional portions of documentation, such as outpatient reports, discharge reports, an order-card system. Supporting the expansion of the system outside the Vysočina region, general practitioners and outpatient clinics in the field.
- **Quality and efficiency management for the medical and nursing care provided** – The proper functioning of healthcare services in the Region requires that the quality and efficiency of the care provided should be monitored. Such monitoring includes for example the tracking of decubitus ulcers and falls in each HCFVR.
- **Quality management for economic indicators** – The unification of economic, operational and technical agendas at all HCFVRs. Connection to a the Vysočina Region's data warehouse.
- **Security** – A project describing and addressing possible threats that are related for example to the movement of persons and materials, user authentication, data network security, safe access to information, the monitoring of operational anomalies etc. In addition, the systems' easy accessibility to staff in performing their tasks within HCFVRs is also an important feature.
- **ICT standardisation at HCFs** – The above projects are not practically feasible and sustainable unless there is harmonised and sufficiently standardised equipment with technologies, staff, data, and related processes. Above all, the main concerns include fulfilling the existing standards for ICT equipment, a change in the system of ICT financing at HCFVRs, and education in ICT.
- **Mobility** – Building on a successful project that involved fitting all emergency medical service vehicles with mobile devices for crew support and medical record storage, the project was continued to provide support for setting up wireless networks at the Region's hospitals. Subsequently, this has provided a basis for implementing projects such as PC tablets for the patients, public Internet, records of the medication applied to the patient, patient education etc.
- **Education** – Providing education for HCFVR staff is a necessary part of the entire eHealth strategy. It would be useful to map the computer literacy of employees at each organisation and to subsequently develop an education system (including eLearning technologies).
- **Patient services** – Improving services to patients at the Region's hospitals through making ICT services available. Improving services for the patients' leisure time by



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offering digital TV and radio reception, telephone connection, Internet connection, and possibly also video-communication with families and doctors. The aim is to offer high-quality services to patients during their stay at in-patient facilities, thereby improving their often poor mental condition.