
INTERIM REPORT NO. 2

**Strengthening of Statistics Health
Information System and its Harmonization
with EU Requirements**



Information System of Health Indicators

Contract No. 200300499503-0601-0003

Elaborated by:

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Softec

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|  | INTERIM REPORT NO. 2 Strengthening of Statistics Health Information System and its Harmonization with EU Requirements Information System of Health Indicators Contract No. 200300499503-0601-0003 |  |
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Approved by recipient's Project Manager

| Name | Signature | Date |
|-----------------|-----------|------|
| Zuzana Škublová | | |

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Used abbreviations

| Abbreviation | Description |
|--------------|---|
| ASCII | American Standard Code for Information Interchange |
| AU | Announced Unit |
| CCTA | Central Computer and Telecommunications Agency |
| CFCU | Central Finance and Contract Unit |
| CRHCP | Central Register of Health Care Providers |
| CRMS | Central Register of Medical Staff |
| CSV | Comma Separated Value |
| DMZ | Demilitarized zone |
| DRY | Don't Repeat Yourself |
| EU | European Union |
| GUI | Graphical User Interface |
| HCP | Health Care Provider |
| HCSA | Healthcare Supervision Authority |
| NHIC | National Health Information National Centre |
| IHIS | Institute of Health Information and Statistics, since 01. 03. 2005 transformed into National Health Information Centre. |
| ISO | International Organisation for Standardisation |
| ISHI | Information System of Health Indicators |
| J2EE | Java 2 Platform Enterprise Edition |
| LAN | Local Area Network |
| MIS | Managerial Information System |
| MS | Microsoft |
| ODBC | Open DataBase Connectivity |
| OECD | Organisation for Economic Co-operation and Development |
| OLAP | Online Analytical Processing |
| OMG | Object Management Group |
| PPN | Public Private Network |
| RU | Reporting Unit |
| SAD | Small Auxiliary Database |
| SR-MH | Ministry of Health of the Slovak Republic |
| SR | Slovak Republic |
| SRU | Set of Reporting Units |
| STN EN ISO | Slovak Technical Standard for the Quality Management System |

| Abbreviation | Description |
|--------------|-----------------------------|
| SW | Software |
| UML | Unified Modelling Language |
| WHO | World Health Organisation |
| XLS | Microsoft Excel File Format |
| XML | Extensible Markup Language |

1. Introduction

1.1. Document objectives

The submitted document contains the Interim solution status report of the project **Information System of Health Indicators** (hereinafter referred to as ISHI) as compared to the goals and project schedule approved within *the Inception Report* of the project after the closing of the project stage **Training**.

Formally, delivery with ID 2 under *2.4 Project outcomes is concerned*.

1.2. Document contents

In the first document chapter, document specification, its contents, references to other documents and the list of terms and abbreviations are provided.

The second chapter contains goals, stages, detailed working plan and overview of project deliveries according to the approved *Inception Report*.

The third chapter provides the description of the closed stage *Training*, summarizes results of the stage, describes major issues being solved within the stage as well as resulting modifications in the project scope and working plan.

The fourth chapter depicts the modified project working plan.

In the fifth chapter, requirements laid on recipients cooperation, providers obligations and limits of remaining project stages are outlined.

In the last sixth chapter, risks potentially affecting successful and timely project closure are being identified.

1.3. Document references

This document refers to the documents listed in the following table:



| Document ID | Document name |
|-------------|--|
| CR | Competition requisites |
| CON | Contract |
| OFR | Offer of the company SOFTEC s.r.o. |
| INREP2 | Inception Report of the ISHI project, version 2.0 |
| Mi | Minutes of the i-th analytical meeting, i being 1 to 16 |
| DesignV2 | Design of the ISHI system, version 2.0 – referred to as approved design of the ISHI system in the document |
| IR1 | Interim Report No. 1 of the ISHI project, version 2.0 |

1.4. Terms and abbreviations



The following list of terms provides the terms in alphabetical order which may be differently interpreted. For each term the detailed explanation is provided. Abbreviations with definitions are also included. In the definition part, single standing terms are indicated in bold.

For the sake of completeness, the list contains terms and abbreviations defined in the requirements analysis and new terms and abbreviations used in this document are added.



| Term | Definition |
|-----------------------|---|
| Announced Unit | Part of RU about which RU gives reports according to its reporting duty to the given statistical survey. |
| Application function | Named part of the programming code with defined inputs and outputs providing specific functionality of software system for the respective application / objective field, as opposed to technologic functionality. |
| ASCII | American Standard Code for Information Interchange |
| Attribute | Basic element of the class. |
| AU | Abbreviation for Announced Unit. |
| CCTA | Central Computer and Telecommunications Agency |
| CFCU | Central Finance and Contract Unit |
| Class | Complex data type with structure consisting of basic elements. Basic elements are attributes (synonym for items). Database table is the mostly used data entity in conventional relational database. In more modern technologies, data structure can be more complex and may include functionality. |
| Component | Term introduced in SAD. Statistical data serving for the calculation of statistical indicator. Majority of HI is represented by just single component. |
| Cost centre | Part of the organization being monitored and evaluated for economic data. |
| CRHCP | Abbreviation for the Central Register of Health Care Providers. It contains licence data for healthcare provision completed by data resulting from statistical survey. |
| CRMS | Abbreviation of the Central Register of Medical Staff. |
| CSV | Comma Separated Value – type of a text file containing items separated by agreed separator. Following separators are assumed within this project - comma, semicolon or tabulator. |
| Data diagram | Diagram containing data entities and relations between them. In the UML language it is called class diagram (or static structure diagram). |
| Data element | Status of data entity within the given attribute, individual data for a statistical unit; this can be also sorting character, e.g. items in reports. |
| Demilitarized zone | Part of computer network separated from the internal organization network as well as from the internet. It shall provide safe separation of internal computer network from the internet. |
| Design | Stage of the software system development. In the RUP methodology, it follows after the stage <i>Analysis</i> . The goal of this stage is to specify the system architecture in detail as well as use cases for the selected programming environment. |
| Diagram of activities | UML language diagram. Often used for graphic presentation of <i>Process</i> . |
| DMZ | Abbreviation for demilitarized zone. |
| DRY | Don't Repeat Yourself – a slogan being principle of WAFT framework which is applied for the design of ISHI web application. |
| EPIS | Infectious Disease Monitoring Information System for Public Health Offices |

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| Term | Definition |
|----------------------------|--|
| EU | European Union |
| External Interface | Interface to the other software system. In the case of conventional software systems, data structure for sending data from the one system to the other was assumed. For modern systems, also another aspects can be added such as the name of called service / function etc. |
| FAAST (FAAST C++) | Framework developed by the company Softec for the design of client/server applications featuring thick client. |
| FK | Foreign Key. |
| Framework | Supporting structure applicable for the development of software systems. Typically its consists of code libraries, auxiliary software and scripting languages helping the developer to design and interconnect software system components. |
| GUI | Graphical User Interface |
| HCP | Abbreviation for Health Care Provider. |
| HCSA | Healthcare Supervision Authority |
| Health Care Provider | a) NP or LP providing healthcare based on permission under the Act No. 578/2004 § 3 Section 4 b) or b) NP, providing licensed healthcare under the Act No. 578/2004 § 3 Section 4 c) or the Act No. 578/2004 § 3 Section 4 d). |
| Health Indicator | Numeric data item of the ISHI system being object of outputs which are provided to various users. |
| HI | Abbreviation for Health Indicator. |
| NHIC | National Health Information Centre. The organization, the original project recipient ISHI – IHIS was transformed into. |
| HTU | Higher territorial unit. Self-governing body with the competence to approve operation of the medical facility. |
| IDMIS | Infectious Disease Monitoring Information System for Public Health Offices (also abbreviated as EPIS) |
| IHIS | Institute of Health Information and Statistics |
| Indicator | Aggregated statistical data. |
| ISO | International Organization for Standardization |
| ISHI | Information System of Health Indicators |
| Item | Synonym for attribute. |
| J2EE | Java 2 Platform Enterprise Edition |
| LAN | Local Area Network |
| Logical collection | It is defined by single form – and by reporting duty of the RU towards the form. |
| LP | Legal Person. |
| Manager information system | Software technology based on data storage in the form of multidimensional cubes. It is primarily applied for complex or ad hoc data analyses. |
| ME | Abbreviation for Medical Employee. |
| Medical Employee | Physician, dentist, pharmacist, nurse, midwife, laboratory technician, assistant, technician, other medical staff. |

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| Term | Definition |
|--------------------------------|--|
| Medical Facility | Facility in which healthcare is provided on the basis of licence granted by SR-MH or HTU. Field of activities provided in the respective facility shall be specified in the licence. Relation between medical facility and its special departments is not exactly regulated. |
| MF | Abbreviation for Medical Facility. |
| MIS | Abbreviation for Manager Information System |
| MS | Microsoft |
| NP | Natural Person |
| NUTS | Categorization system of regional and statistical units (according to the French name Nomenclature des Unités Territoriales Statistiques) elaborated by Eurostat which serves for purposes of social, economic and structural analyses of territorial units. |
| ODBC | Open DataBase Connectivity |
| OECD | Organisation for Economic Co-operation and Development |
| OLAP | Online Analytical Processing |
| OMG | Object Management Group |
| Permission holder | NP or LP granted permission by competent administration body to operate health facility. |
| PGSS | Abbreviation for Program of Governmental Statistical Surveys. |
| Physical collection | For the respective RU it is defined by any forms having reporting duty to RU. |
| PK | Primary Key |
| VPN | Virtual Private Network |
| Process | Sequence of work activities applied in the respective organization/enterprise in line with the mission of the organization/enterprise usually leading to production or provision of services. Activities can be both non-automatized and automatized (supported by software system). |
| Rational Unified Process (RUP) | Methodology developed by the company Rational (at present, part of IBM) for the development of software systems. This methodology is based on the application of UML language for the specification of system architecture, utilization of use cases and iterative/incremental system design. |
| Report | Status of statistical unit provided by reporting unit within single collection. It contains cumulated statistical data. |
| Reporting (report or message) | It includes data of a single person – patient or insured person or HCP, ME. |
| Reporting Unit | Person (natural person or legal person) (e.g. HCP, drug dealer, HCSA, Statistical Office of the SR etc.) or ME's employer. Only a person (natural person or legal person) can be obliged to reporting duty. RU is regulated by the following Acts: the Act No. 540/2001 Coll. on State Statistics and the Act No. 576/2004 Coll. on healthcare, services related to healthcare provision and on amending and supplementing certain acts. |
| Role (user's role) | Type of the software system user. Usually, it is equivalent to the working position in the organization. In the case the working position comprehends several different types of activities, multiple roles are being created. With the organization, one role can be assigned to more employees. |
| RU | Abbreviation for Reporting Unit. |

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| Term | Definition |
|----------------------------|--|
| SAD | Abbreviation for Small Auxiliary Database. Database of health indicators which was part of procurement documents. |
| SD | Abbreviation for Special Department. |
| Set of Reporting Units | Set of reporting units which are obliged to submit report/message within the respective collection. |
| SGML | Standard Generalized Markup Language |
| Specialized department | Part of medical facility providing specialized activity which is the object of statistical monitoring (e.g. ward, outpatients, workplace, etc.). The term has not its own legislative definition. |
| SR | Slovak Republic |
| SR-MH | Ministry of Health of the Slovak Republic. |
| SSU | Abbreviation for Set of Statistical Units. |
| Statistical Unit | Elementary unit, element of statistical survey. |
| STN EN ISO | Slovak Technical Standard for the Quality Management System |
| SW | Software |
| SU | Abbreviation for Statistical Unit. |
| Testing procedure | Sequence of steps to verify certain system functionality. |
| UML | Abbreviation for Unified Modelling Language |
| Unified Modelling Language | System of graphical languages for the specification of software systems from various perspectives. It is standardized by the OMG consortium and is applied de facto as an industrial standard for software graphic specification. |
| Use case | Sequence of activities exercised by system user and software system during system utilization by user. |
| Variable | Within this document, it has the meaning of the synonym to data entity item. |
| W3C | World Wide Web Consortium |
| WAFT | Framework developed by the company Softec for the development of web applications. |
| WHO | World Health Organization |
| XLS | Microsoft Excel File Format |
| XML | Extensible Markup Language – standard of the W3C consortium representing simplification of the markup language SGML. Due to its extensibility, XML language is mainly applied for defining interfaces between software systems. Definition of parameters of flexible systems represents another common XML language application. |

2. Project goal, stages, plan and deliveries

In this Chapter, project goal, stages, plan and deliveries are specified as they were approved according to the *Interim report No. 1* to this project.

2.1. Project goals

The goal of the project *Information System of Health Indicators* (hereinafter referred to as ISHI) is the development of the information system supporting standardized solution process of requirement of new health indicators. ISHI shall standardize and automatize the whole process, from the collection of necessary data via statistical reports and messages, appropriate data storage, calculation of health indicators up to the availability of indicators data in the form required by international and domestic institutions and analysts in respective fields.

2.2. Project stages

According to the *Inception report*, project goals shall be attained in the following stages ([after completion of stages **Development of SW solution and Documentation elaboration**](#))¹:

| | |
|------------------------------------|---|
| Development of SW solution: | Development of the information system in the following steps: requirements analysis, system design, programming and internal testing in the environment of the company Softec. |
| Implementation and testing: | Implementation of developed information system in the recipients environment (NHIC and SR-MH) as well as acceptance testing of the information system functionality during the pilot run in the recipients environment. |
| Documentation elaboration: | Delivery of system and user documentation to the information system. |
| Trainings: | Training of administrators, operators and advisers to the information system. |
| Handover: | Project handover. |

¹ Completed stages are marked in colour.



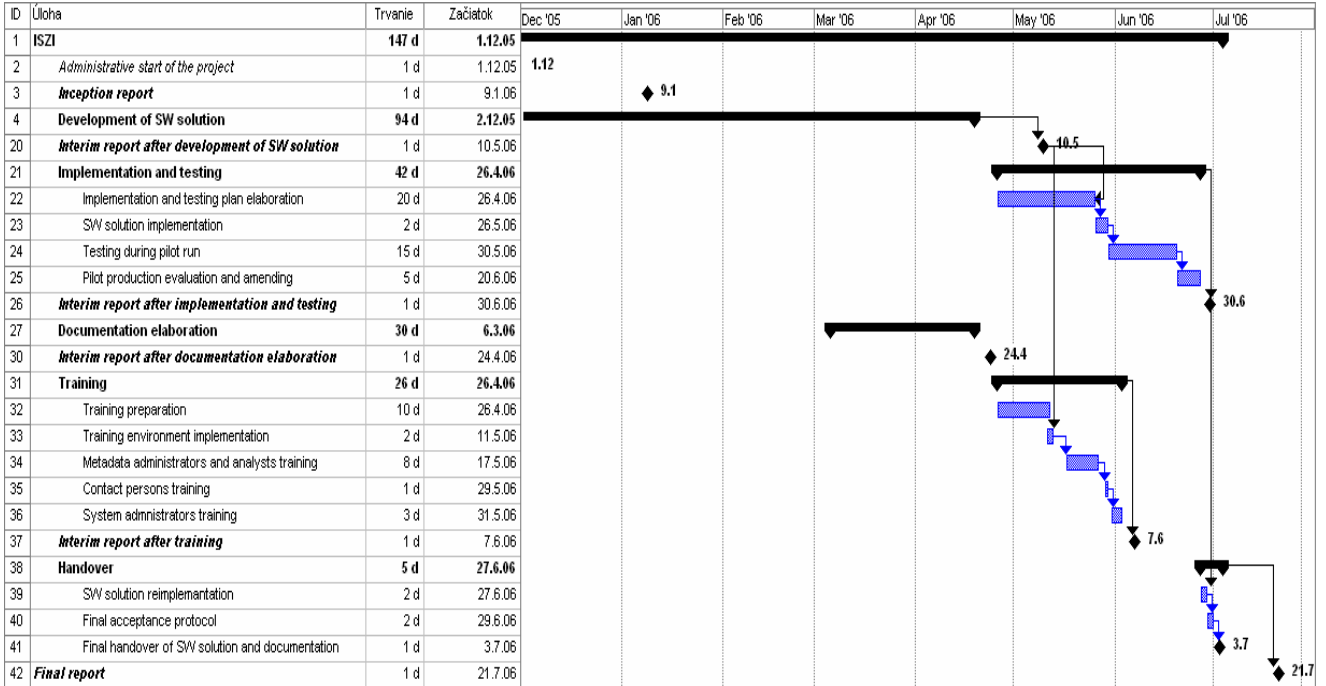
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2.3. Detailed project working plan



The stage *Training* the results of which are discussed in the present report and stages yet not realized, is provided in detail.



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2.4. Project outcomes

2.4.1. Overview of deliveries

| ID | Name ² | Contents | Deadline |
|----|--|--|--|
| 1 | Inception report (document) | <p>Detailed working plan including list of activities and time schedule of the contract performance.</p> <p>Identification of potential risks, limits, requirements and list of persons intended for the contract performance by Softec, if already known.</p> <p>Conclusions resulting from the analysis of current state.</p> <p>Clear defined functions of designed system of the software application of health indicators according to the Softec's offer to ISHI.</p> <p>Detailed design of working plan of the contract performance including detailed description of project stages, procedures, rules and methods applied during the contract performance with exact definition of contents and acceptance of processes for each provided procurement object.</p> | 09.01.2006 |
| 2 | Interim report (document) | <p>Important information of works progress allowing check of tasks fulfilment resulting from the working plan of the inception report.</p> <p>Identification of important modifications, problems and ways of solutions arisen in the course of contract performance.</p> | Within 5 workdays after closing of each stage |
| 3 | Final report (document) | <p>Realization summary of the contract performance.</p> <p>Strong and weak points of the project.</p> <p>Effectiveness of project application and project efficiency.</p> <p>List of seminars and meetings (if appropriate).</p> <p>Critical study of main problems (also operation-related) with recommendation how to avoid future similar situations.</p> | Within 30 days after the contract performance handover |
| 4 | Requirements analysis (document) | <p>Reconsidering of system requirements, requirements for international reporting, identification and description of relevant processes, data formats and tools, information resources and contents, future system users with their specific needs and abilities, evaluation of available infrastructure of hardware environment.</p> | 09.01.2006 |
| 5 | Requirements analysis after amendment procedure (document) | Same as ID 4 | 16.01.2006 |
| 6 | System design (document) | <p>ISHI architecture design including design of databases replication between IHIS and SR-MH, elaboration of data model which will include health indicators data, as well as necessary metadata.</p> <p>Functional description, Web application screen flows, menu system of internal application, definition of interfaces, defining the control set of indicators and its subset whose metadata will be filled by Softec, fulfilling requirements of the requirements analysis by designed system functionality and initial metadata filling.</p> | 31.01.2006 |
| 7 | System design after amendment procedure (document) | Same as ID 6 | 08.02.2006 |

² Administrative delivery with ID 1 has been realized, objective delivery ID 9 has been realized within closed project stages which are being evaluated in the present report.

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|---|---|---|



| ID | Name ² | Contents | Deadline |
|----|--|--|-------------------------|
| 8 | Implementation and testing plan (document) | Time schedule of SW solution installation, databases and metadata filling. Testing scenarios, acceptance criteria of SW solution, plan of acceptance testing during pilot run. | 26.05.2006 |
| 9 | Training of administrators, analysts and officers | Training of all types of staff including delivery of related documentation. Technical documentation will include: <ul style="list-style-type: none"> ✓ architecture description, ✓ description of conceptual and physical system design, ✓ description of database structure, ✓ description of metadata and mechanism of application, ✓ technical description of defined indicators and OLAP cubes. Administrator documentation will include system administration manual and manual of system filling by other metadata, new indicators, new input forms and interfaces. User documentation will include system user manual also available on-line when using the application. | 17.05.2006 – 02.06.2006 |
| 10 | Handover of the contract performance object to customer. | Under presence of recipient's project manager and customer, Softec performs acceptance and control tests. Upon handover of the contract performance objective Softec shall submit results of executed tests providing fulfilment of requirements of realized contract performance to recipient's project manager. | 30.06.2006 |
| 11 | Protocol handover of project solution (SW product + documentation) | Developed SW solution on CD carrier in two identical copies. Developed SW solution shall be delivered in the form allowing eventual further modification. Installation tools for the developed SW solution shall be part of the delivery. System (operational) documentation in two identical printed copies and in two identical electronic copies for any partial documentation. User (instruction) documentation in two identical printed copies and in two identical electronic copies for any partial documentation. | 03.07.2006 |

Reports are project administration deliveries, other deliveries are of objective character.

Takeover and approval of administration project delivery including items 10 and 11 shall be confirmed by recipient's and provider's project manager upon signing the reports and completion certificate with indication of takeover and approval date.

Takeover of other project deliveries shall be confirmed by recipient's and provider's project leader upon signing the completion certificate with indication of handover date. One copy of completion certificate of other project deliveries shall be given to recipient's project manager (SR-MH).

Completion certificates shall be elaborated in three copies: one copy is given to customer, recipient and provider.

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2.4.2. Process of orders acceptance

| ID | Order name | Process of order acceptance |
|----|--|--|
| 1 | Inception report (document) | By approval of recipient's project manager. Comments on the report shall be submitted within 15 days. Should no opinion on the report be submitted within 45 days since the date of report submission, the report shall be regarded as approved. |
| 2 | Preliminary report (document) | Same as ID1 |
| 3 | Final report (document) | Same as ID1 but the period for submission of project manager's opinion on the report is 30 days instead of 15 days. |
| 4 | Requirements analysis (document) | Provider presents the contents of the document Requirements analysis to recipient's project solvers at a special meeting being a place of discussion of respective document issues, and makes an agreement on those issues. Recipient shall deliver comments to provider within terms set out in the detailed project working plan. |
| 5 | Requirements analysis after amendment procedure (document) | Upon signature of completion certificate by the recipient's project leader. |
| 6 | System design (document) | Provider presents the contents of the document System design to recipient's project solvers at a special meeting being a place of discussion of respective document issues, and makes an agreement on those issues. Recipient shall deliver comments to provider within terms set out in the detailed project working plan. |
| 7 | System design after amendment procedure (document) | Upon signature of completion certificate by the recipient's project leader. |
| 8 | Implementation and testing plan (document) | Upon signature of completion certificate by the recipient's project leader. |
| 9 | Training of administrators, operators, trainers and system users | Upon signature of completion certificate of delivery of training attendance lists. |
| 10 | Protocol acceptance of the contract performance object. | Upon signature of acceptance protocol by recipient's project leader immediately after fixing all registered critical issues of the contract performance objective (those preventing the product from utilization). Other issues shall be removed within the warranty period being not later than 30 days since the protocol acceptance of the contract performance objective. |
| 11 | Protocol handover of project solution (SW product + documentation) | Upon signature of handover protocol. |

Acceptance protocols shall be elaborated in three copies: one copy is given to customer, recipient and provider.

3. Project solution status



This Chapter provides information on the training plan, the way of its implementation during the training realization, identification of important changes, issues and solution ways which emerged in the course of the stage **Training**.

3.1. Training plan

3.1.1. Training participants

Future system users will be trained according to the roles they should occupy on their workplaces. User roles were specified in the document *System design*. The collection of user roles was extended by the role Code Lists Manager during the initial phase of the stage **Implementation and testing**.

- ✓ **System administrator** (system technical administration) – internal user. Mastering of the used operating system, database system, network architecture and ISHI system components is required.
- ✓ **Code lists administrator** (creation and import of international and national code lists, creation and maintenance of departmental code lists, supervision of internal code lists) - internal user. Command of ISHI metadata system, creation of hierarchies (dimensions) of code lists and understanding the way of code lists application in the ISHI system are applied.
- ✓ **Data elements and indicators administrator** (configuration of indicators, management of data elements) - internal user. Detailed knowledge of the ISHI system functionality and metadata structure, the role of data elements and indicators, understanding of their effect on system behaviour, knowledge of objective problems of input data processing to output indicators are required.
- ✓ **Data import administrator** (build-up of data imports, necessary XSLT transformations) - internal user. Knowledge of ISHI system functionality, structure and contents of metadata of data elements, knowledge of XML language and XSLT transformations are required.
- ✓ **Metadata collection administrator** - internal user. Detailed knowledge of ISHI system functionality, metadata of data elements contents and metadata structure of surveys by data collection through individual form types, understanding of their effect on system behaviour are required.
- ✓ **Output views administrator** - internal user. Detailed knowledge of ISHI system functionality, metadata of data elements contents and administrative registers, metadata structure of output views, understanding of their effect on system behaviour, knowledge of objective problems of input data processing to indicators are required.
- ✓ **Metadata registry administrator** - internal user. Detailed knowledge of ISHI system functionality, metadata structure of administrative registers, understanding of their effect on system behaviour are required.
- ✓ **Standard reports designer** (creation of standard print outputs) - internal user. Knowledge of ISHI system functionality, knowledge of structure and contents of defined output views and knowledge of defining print outputs in MS Access are required.

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- ✓ **Registry administrator** (data update in administrative registers) - internal user. Command of operation and data structure of administrative registers in the system is required.
- ✓ **Contact person** (data processing) - internal user. Command of operation of a part of data collection, especially recording of reports and determination of unsubmitted or not planned reports, retrieval of data from administrative registers for purposes of reporting verification is required.
- ✓ **Data collection administrator** (data collection closing, approval of extra corrections after the collection closing) – internal user. Command of operation of the subsystem for the realization of survey by collection is required.
- ✓ **Analyst** (data viewing and analysis) – Excel (OLAP) - internal user. Command of the work with contingency tables and multidimensional cubes in Excel as well as of the structure of saved multidimensional cubes is required.
- ✓ **External user** – reporting unit (recording of reports). Completion of report over the web interface is required.

Training participants were delegated by recipients organisations and nominated for the roles by recipient's project leader.

Nomination of training participants for individual roles.

| Participant | Job position | Data elements administrator | Metadata collection administrator | Data collection administrator | Metadata registry administrator | Registry administrator | Output views administrator | Data import administrator | Analyst | Standard reports designer | Contact person | System administrator |
|-------------------------|--|-----------------------------|-----------------------------------|-------------------------------|---------------------------------|------------------------|----------------------------|---------------------------|---------|---------------------------|----------------|----------------------|
| Alexieiová Ľubica, Mgr. | IS engineer and analyst | | x | x | x | x | | | | | | |
| Balázsová Tamara, Ing. | Specialist in informatics | | | | | | | | x | | | |
| Baranovič Jozef, Ing | Specialist in informatics | | x | x | | | | | | | | |
| Bernátová Alena | | | | | | | | | | | | x |
| Bobovská Michaela, Ing. | IS engineer and analyst | | | | x | x | | | | | | |
| Brišiak. Jozef, Bc. | VT specialist | | | | | | x | | | | | |
| Búda Jozef, Bc. | Specialist in informatics | x | | | | | | | | | | |
| Čáp Ján, PharmDr. | Head of Information Department (international) | | | | | | | x | | | | |
| Čechvalová Milada, Ing. | IS engineer and analyst | | x | x | | | | | | | | |
| Činčura Štefan, Ing. | IS engineer and analyst | x | | | | | | x | | | | |





INTERIM REPORT NO. 2

Strengthening of Statistics Health Information System and its Harmonization with EU Requirements

Information System of Health Indicators
Contract No. 200300499503-0601-0003

SOFTEC

| Participant | Job position | Data elements administrator | Metadata collection administrator | Data collection administrator | Metadata registry administrator | Registry administrator | Output views administrator | Data import administrator | Analyst | Standard reports designer | Contact person | System administrator |
|-------------------------------|---|-----------------------------|-----------------------------------|-------------------------------|---------------------------------|------------------------|----------------------------|---------------------------|---------|---------------------------|----------------|----------------------|
| Dovičovič Roman, Ing. | Specialist in informatics | | | | | | | | x | | | |
| Fandáková Katarína, RNDr. | Head of Department of ISZ Standards | x | | | | | | | | | | |
| Flimmel Ladislav, Ing. | | x | | | | | | | | | | |
| Habalová Eva, Ing. | IS engineer and analyst | | x | x | | | | | | | | |
| Hajnaliová Jarmila, Ing. | Head of Information Department (national) | | | | | | | | x | | | |
| Hinterschusterová Mária, Ing. | Head of Department of Medical Reports | | x | x | | | | | | | | |
| Horváth Kamil, RNDr. | IS engineer and analyst | | | | x | x | | | | | | x |
| Hudecová Viera | IS engineer and analyst | | | | x | x | | | | | | |
| Chmelová Mária, MUDr. | Specialist in informatics | | | | | | | | x | | | |
| Kiss Roman, Ing. | Specialist in informatics | | | | | | x | x | | x | | x |
| Kondelová Margita, Mgr. | Specialist in informatics | | | | | | | | x | | | |
| Konečná Mária, Mgr. | Head of Department of Health Statistics | | x | x | | | | | | | | |
| Kopanicová Jana, RNDr. | IS programmer | | | | | | x | x | | x | | x |
| Kozma Gabriel, Ing. | IS engineer and analyst | x | | | | | | | | | | |
| Kříž Radovan, Ing. | | | | | | | x | | x | x | | x |
| Krnáč Ján | IS programmer | | | | | | | x | | x | | |
| Lehotská Iveta | Specialist in informatics | | | | x | x | | | | | | |
| Lesay Peter, RNDr. | Head of Department of Registry Central Administration | | x | x | x | x | | | | | | |
| Lesayová Jana, Ing. | Head of Department of Data Base | x | | | | | | | | | | |
| Ružek Stanislav, Ing. | Head of Department of Health Economics | | x | x | | | | | | | | |
| Slovík Ján, Ing. | Head of Department of Health Informatics | | | | | | | | | | | x |
| Valachovič Miroslav, Ing. | | | | | | | x | | x | x | | |
| Vallová Zuzana, Mgr. | Head of Department of Data Warehouse | | | | | | x | | x | | | |
| Zimová Zdenka | VT specialist | | | | | | | | x | | | |

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| Participant | Job position | Data elements administrator | Metadata collection administrator | Data collection administrator | Metadata registry administrator | Registry administrator | Output views administrator | Data import administrator | Analyst | Standard reports designer | Contact person | System administrator |
|----------------------|--------------|-----------------------------|-----------------------------------|-------------------------------|---------------------------------|------------------------|----------------------------|---------------------------|---------|---------------------------|----------------|----------------------|
| Data input into ISHI | | | | | | | | | | | x | |

3.1.2. Training contents plan by days



The training was content-oriented on the roles of system users.

Training program

| Role name | Role description | Number of days | Date | Topic |
|--|--|----------------|--------|--|
| Data elements and indicators administrator | Configuration of indicators, metadata management of data elements | 0,5 | 17.05. | Control of ISHI meta application, code lists, data elements. |
| Code lists administrator | Management of code lists and dimensions | 0,5 | | Code lists management Dimensions management Import of code lists |
| Metadata collection administrator | Collection metadata management: type of reports, forms, collections, reporting duty | 1 | 18.05. | Control of ISHI meta application, data elements, indicators, code lists (abridged) Record type (input form) |
| Metadata collection administrator | Forms metadata management: type of reports, forms, collections, reporting duty (application of view) | 1 | 19.05. | Recapitulation of the stuff from 18.05. Form definition Language of checks |
| Metadata collection administrator | Forms metadata management: type of reports, forms, collections, reporting duty (application of view) | 1 | 22.05. | Control of ISHI web application Collections: Defining new collection Generation of reporting duty Notification of reporting units Recording reports |

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| Role name | Role description | Number of days | Date | Topic |
|---------------------------------|--|----------------|------------------|---|
| Collection administrator | Collection closing, approval of extra corrections in the collection | | | Determination of the collection status Collection closing Approval of additional corrections in the collection |
| Metadata registry administrator | Administrative registers metadata management | 1 | 23.05. | Control of ISHI meta application Principles of registry metadata Description of current registry metadata Control of ISHI web application Registry update |
| Registry administrator | CRHCP and CRMS data update | | | |
| Output views administrator | Output views metadata management | 1 | 24.05. | |
| Data import administrator | Build-up of data imports, necessary XSLT transformations. Imports into administrative registers. | 1 | 25.05. | XML as an input and output data format (theory) XSL transformation (theory) Presentation of XSL transformations applied for data input of the survey realized by the collection through L1 form for the year 2004 |
| Analyst | Data viewing and analysis Excel (OLAP) | 0,5 | 26.05. morning | Data analysis of output views tables through OLAP functions in MS Excel |
| Standard reports designer | Creation of standard print outputs | 0,5 | 26.05. afternoon | In MS Access environment, accessing the table of view in Oracle database Creation of and query of the type Crosstable Query Creation of report |
| Contact person | Data processing | 1 | 29.05 | Control of ISHI web application Functions for data extraction from administrative registers Functions for recording of reports for unclosed collections. |

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|---|---|---|

| Role name | Role description | Number of days | Date | Topic |
|----------------------|---------------------------------|----------------|----------------------------|--|
| System administrator | System technical administration | 3 | 31.05. 01.06. 02.06. | <p>User management</p> <p>Server:</p> <ul style="list-style-type: none"> - Solaris and Samba administration for possible configuration of shared directory for files with reports to be imported - Oracle installation/administration - Java installation - Tomcat installation <p>Client computers:</p> <ul style="list-style-type: none"> - installation of Oracle drivers - installation of ISHI Meta application <p>Installation of web application</p> <p>Installation of the new version of web application</p> <p>Web application configuration (user logon to Windows domains, logon to mail server)</p> <p>Web application monitoring - logs</p> <p>Configuration of the access from the Internet</p> <p>Backup</p> <p>Replication from NHIC to SR-MH</p> |

Trainings procedure



Provider's analysts were trainers for users, provider's chief designer and provider's system administrator were trainers for system administrators.

Within the initial training part, following information was provided to the employees assigned to any role:

- ✓ competencies of the respective role from the viewpoint of the whole process supported by the system,
- ✓ control of ISHI meta application and/or ISHI web application,
- ✓ basic terms and principles applied in the system, irrespective of the role.

In the next part, functions to be utilized by users for the trained role were demonstrated emphasizing the application of the following general rules for discussing single topic:



- ✓ first, explanation of theory (slides, data model, flipchart on-line drawing),
- ✓ demonstration of pattern solutions – usually in the form of metadata created by provider for the pilot run,
- ✓ demonstration of all functions of the respective field,

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- ✓ active practicing of participants during solution of the given issue (all exercises were oriented on surveys applying the A19 form within the year 2005 collection and on related outputs).

Training plan of participants for individual roles:

| Role name | Role description | Number of days | Date | Employee |
|-----------------------------------|--|----------------|----------------------------|--|
| Data elements administrator | Configuration of indicators, metadata management of data elements, code lists | 1 | 17.05. | Ing. Jana Lesayová Bc. Jozef Buda RNDr. Katarína Fandáková Ing. Gabriel Kozma Ing. Ladislav Flimmel Ing. Štefan Činčura |
| Metadata collection administrator | Forms metadata management: type of reports, forms, collections, reporting duty (application of view) | 3 | 18.05. 19.05. 22.05. | Mgr. Mária Konečná Ing. Mária Hinterschusterová RNDr. Peter Lesay Ing. Eva Habalová Ing. Milada Čechvalová Ing. Jozef Baranovič Mgr. Ľubica Alexieiová |
| Collection administrator | Collection closing, approval of extra corrections in the collection | | | Ing. Jana Lesayová Ing. Stanislav Ružek |
| Metadata registry administrator | Administrative registers metadata management | 1 | 23.05. | RNDr. Kamil Horváth RNDr. Peter Lesay Ing. Michaela Bobovská Viera Hudecová |
| Registry administrator | CRHCP and CRMS data update | | | RNDr. Peter Lesay Ing. Michaela Bobovská Mgr. Ľubica Alexieiová Iveta Lehotská |
| Output views administrator | Output views metadata management | 1 | 24.05. | Mgr. Zuzana Vallová Bc. Jozef Brišiak Ing. Roman Kiss RNDr. Jana Kopanicová Ing. Radovan Kríž Ing. Miroslav Valachovič |
| Data import administrator | Build-up of data imports, necessary XSLT transformations. Imports into administrative registers. | 1 | 25.05. | Ing. Roman Kiss RNDr. Jana Kopanicová Ján Krnáč |
| Analyst | Data viewing and analysis Excel (OLAP) | 0,5 | 26.05. morning | Mgr. Zuzana Vallová PharmDr. Ján Čáp Ing. Tamara Balázsová Mgr. Margita Kondelová Zdenka Zimová Ing. Roman Dovičovič |

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| Role name | Role description | Number of days | Date | Employee |
|---------------------------|------------------------------------|----------------|----------------------------|--|
| | | | | Ing. Jarmiala Hajnaliová Ing. Štefan Činčura MUDr. Mária Chmelová Ing. Radovan Kríž Ing. Miroslav Valachovič |
| Standard reports designer | Creation of standard print outputs | 0,5 | 26.05. afternoon | Ing. Roman Kiss RNDr. Jana Kopanicová Ján Krnáč Ing. Radovan Kríž Ing. Miroslav Valachovič |
| Contact person | Data processing | 1 | 29.05 | 8 employees |
| Administrator system | System technical administration | 3 | 31.05. 01.06. 02.06. | Ing. Ján Slovík RNDr. Kamil Horváth Ing. Roman Kiss RNDr. Jana Kopanicová Ing. Radovan Kríž Alena Bernátová |
| | | 12 | | |

Along with the training of system administrators, the SR-MH staff (yellow-coloured) participated only in the trainings of output views administrators, analysts and standard reports designers.

Recipients' project leader was trained to enter issues into the issues tracking application ECHO and he was assigned the login name to the application. The ECHO application should serve for storing users issues to the ISHI system during the pilot run as well as for subsequent normal operation.

3.2. Course of training

3.2.1. Participation in training



Some other NHIC employees were interested in participation in the training beyond the scope of the training schedule. They were allowed to participate. Some of the employees assigned to other roles participated in additional trainings to get overview of the whole functionality or to intensify the knowledge of mastered parts within their own trainings.

Neither of recipient's staff participated in all user trainings due to the large scope of system functionality and variability of competences of the individual user roles. To train new staff, employees assigned and trained to the respective role were recommended to use standard working procedures according to the user manual.

Attendance lists will be enclosed to the acceptance protocol which is the outcome No. 10 of 2.4.1 *Overview of deliveries.*

3.2.2. Training environment

The training took part in the NHIC conference room equipped with 6 client PC not connected to NHIC LAN. They were interconnected and connected to the server *ilias* of the ISHI system. The executable

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code of the ISHI meta application was stored on one of training PC. Users for the training were anonymous (“nczi1“ to “nczi6“).

Equipment for projection of applications and presentations, projection screen, trainers notebook, flip chart stand were available.

3.2.3. Approach of training participants

Most of the trained users were strongly motivated to participate in the training because control of the system means considerable advantage for them with respect to other coworkers. Training took part at the time of high workload of NHIC staff related to the processing of the 2005 annual collections of surveys.

Trained users did not have any experience working in a single system with multiple users which is based on transaction principle, where results of any user’s work are visible and available for other users.

Unlike the current practice where any survey was designed and realized separately from other surveys, efficient use of the system requires the cooperation of individual roles. Therefore, it is important to understand the system as a cooperation where individual users can share code lists, data elements, input data of various surveys and can create outputs from them. Such approach allows not only application but also verification and discussion of the decisions taken by employees in charge which contributes to the development of interconnected surveys of better quality. Currently, e.g. various surveys assign different names to identical quantities. In the ISHI system, data element unambiguously defining the meaning (by name) and data type will be assigned to any inspected quantity (by collection or calculation).

Therefore, emphasis was laid to strengthening the importance of the common database, common code lists and data elements, as well as to responsibility of individual employees because the system is storing information about the author and the date of an object creation and last modification.

Advantages of the design of most general code lists as a tool of interconnection of data from different surveys were thoroughly discussed. It is difficult to get rid of old habits. E.g. it is usual to design new code lists by copying subsets of items of original code lists and developing new code lists separately from the old ones. Later independent development of them results in the loss of information. New code lists shall usually allow availability of subsets of codes in a certain context (e.g. specialization of ambulances, specialization of departments, specialization of workplaces, or acute specializations, psychiatric specializations etc.). Following this experience gained from the training as well as the knowledge resulting from the evaluation of the new code lists within the HIS Standardization Commission, the following option was added to the data model as well as to the SW solution. It allows to define subsets of code lists via classification of dimensions as well as to define the subset of code list items available for the respective item values, during data collection through survey and during data record in administrative registers by using metadata.

The issues of what is regarded as a data element, how to define data element correctly, what is an indicator, were strongly discussed. Based on the discussion at the training (with participants not present during the system analysis and design), the indicator in the data model was moved from the data element to the output view item. To allow supervision of data elements by data elements administrator, the function of data element confirmation was added for users at this role. Now, the record type (for collection, output and administrative register data) cannot be confirmed by the respective metadata administrator until all applied data elements are confirmed.

Focus was given to the comprehension of *metadata layers* which include the hierarchy of *data elements*, *code lists*, *data types* and *forms* as well as to the ways of their dependencies. Hierarchy of

metadata layers represents an unifying principle for the design of metadata of collection, administrative registers as well as output views. In the course of the training, trainers interactively created a series of graphic expressions of this hierarchic relation of metadata layers. After the training, documentation to the working procedures was extended by the most complex one (Fig. 1 Metadata).

ISHI metadata layers

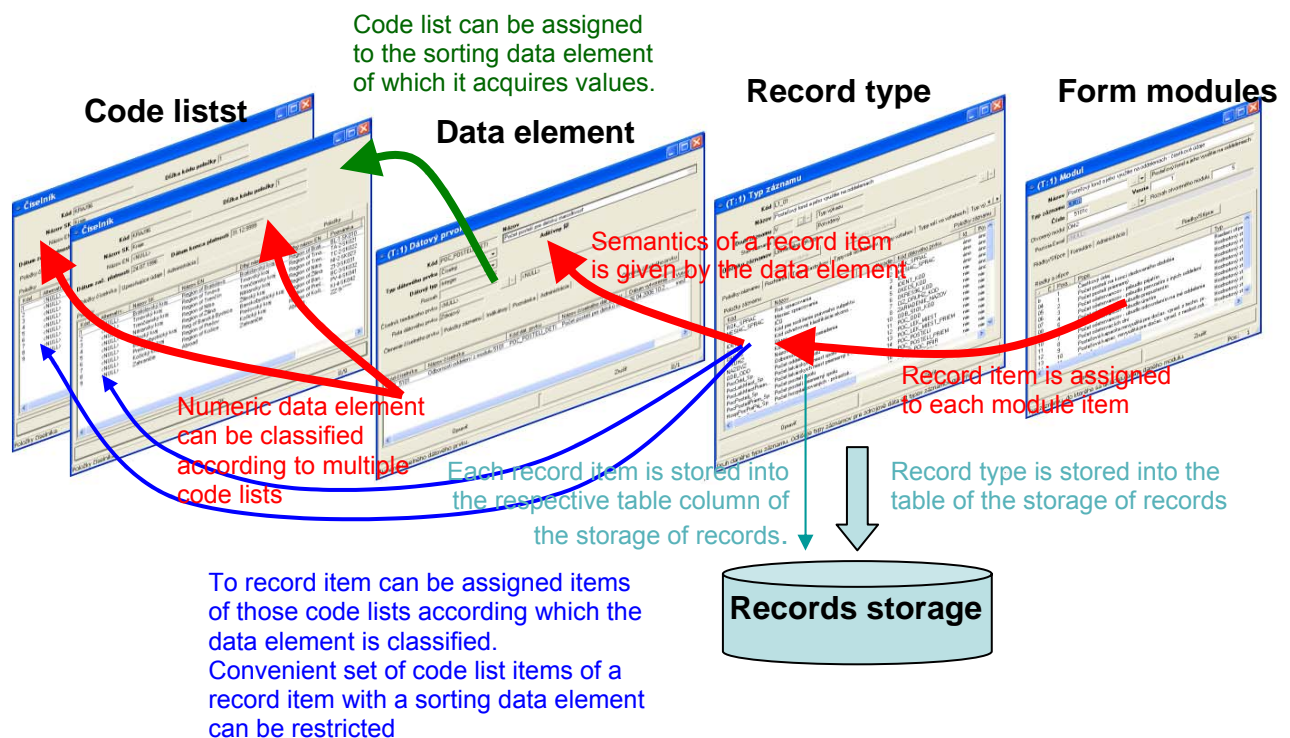


Fig. 1 Metadata layers

It was necessary to lessen expectations of the staff responsible for the design of metadata of collection data through survey, on the expert system being able to handle everything. Couple of trainers supervised almost each training, directly providing possible solutions and stating their advantages and deficiencies. The goal was to show that metadata contents shall be handled by responsible staff taking advantage of qualified discussion. It is necessary to take decisions practically at any stage of the metadata design: which code lists shall be applied, which data elements shall be applied (the most general ones, classifying code lists providing basic additive data (not calculated data, they should be calculated from collected ones) shall be added, how to group collected items into modules (if collected data from the most reporting units are sparse because they depend on e.g. the performed activity, an open module shall be applied which requires respondent's input stating the activity for which data are provided).

In metadata administrators' opinion, the input of collection metadata was too complicated. Especially, the separation of the record type defining the contents of the statistical survey and the statistical form being the view of the survey contents valid for the actual year, was, from the viewpoint of current practice, redundant. History view of collected data had to be developed when some items became

and uninteresting new items are required on a year-to-year basis. The record type remains invariant, in which items excluded from the survey are closed and new items are added with the effective date from the year they are first time collected. The new form valid for the next year will serve as the view only for items being in force and collected in the respective year of survey. Some of trained metadata collection administrators required input of metadata by programmers.

Input of description of rows and columns of form modules was especially difficult for metadata collection administrators. Project solvers proposed user-friendly simplification, however, at the cost of the repeated input of identical text parts of neighbouring rows or columns.

Reward for metadata collection administrators was the display of the web form for the report input in the ISHI web application based on metadata entered by trained staff in the ISHI meta application during the foregoing days of the training. At this moment, the requirement of metadata input by programmers became pointless.

3.2.4. Training time schedule

Training of system administrators was reduced from 3 to 2 days providing that users knowledge during the pilot run will be extended by user input and mechanism of user rights as well as database update after import and installation of the new system version.

Training of registry metadata administrators and registry administrators was set to single day which turned out to be insufficient as compared with the metadata collection administrators training duration of 3 days which was also the training duration of collection administrators and contact persons. Supplemental training was carried out informally within system testing stage by recipients staff during the pilot run.



Due to the lack of time, output views administrators were not trained for creating the view of reporting duty. They were also informally trained during the pilot run (data model of administrative registers, mapping of record types of administrative registers into database tables, SQL queries to registry tables, creation of a stored procedures, defining of views calculated by stored procedures). Supplemental training in SQL programming language, which was supposed to be mastered by training participants, is required (by self-instruction process or taking the respective course).

3.2.5. Issues resulting from the training course

Employees intended for the real work with the system, participated in the training. Those taking part in the system analysis and design within the stage Development of SW solution, were much ahead. They were prepared for the work with a metadata-based system. The other users – metadata administrators - experienced much more difficulties when entering the world of metadata layers hierarchy. The difficulties were related to high expectations of an expert system, as it was mentioned above.

Trained employees were thinking of the way of implementing activities within their roles utilizing system functions and they provided new views of specific system functions which were based on their experience. Using these views and making some generalization, trainers entered the following new *feature requests* into the issues tracking ECHO application:

| Issue number | Abridged text | Author (external) | Type | Priority | Solution status | Found in | Date |
|--------------|---------------------------------|-------------------|-------------------|----------|-----------------|-----------|----------|
| 174 | Record the confirmation of data | Ambrošová Mária | 4 Feature request | 2 Medium | 1.1 Filed | ISHI meta | 4.6.2006 |



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| | element and record type | | | | | | |
|-----|--|-----------------|-------------------|----------|---------------|-----------|-----------|
| 164 | Checks for blank items in reports | Ambrošová Mária | 4 Feature request | 3 High | 4.3 Closed | ISHI web | 31.5.2006 |
| 158 | Allow additional replacement of data element in the record item. | Červeň Juraj | 4 Feature request | 2 Medium | 1.1 Filed | ISHI meta | 31.5.2006 |
| 157 | Transfer of indicators from data elements to the record item, data element domain. | Ambrošová Mária | 4 Feature request | 2 Medium | 4.3 Closed | ISHI meta | 31.5.2006 |
| 155 | Add further information and links to the collection detail | Ambrošová Mária | 4 Feature request | 2 Medium | 4.3 Closed | ISHI meta | 30.5.2006 |
| 152 | Add automated creation of descriptive items to the views wizard | Červeň Juraj | 4 Feature request | 2 Medium | 1.1 Filed | ISHI meta | 30.5.2006 |
| 151 | Add AF syntax check | Červeň Juraj | 4 Feature request | 2 Medium | 1.1 Filed | ISHI meta | 30.5.2006 |
| 146 | Allow more user-friendly input of code list items for the report input | Ambrošová Mária | 4 Feature request | 2 Medium | 4.3 Closed | ISHI web | 30.5.2006 |
| 145 | Add row and column numbers in the report detail | Ambrošová Mária | 4 Feature request | 4 Urgent | 4.3 Closed | ISHI meta | 30.5.2006 |
| 144 | Detail of planned report: add the list of reports | Ambrošová Mária | 4 Feature request | 2 Medium | 4.2 Submitted | ISHI web | 30.5.2006 |
| 134 | Use of source data elements for the wizard-defined output view | Ambrošová Mária | 4 Feature request | 3 High | 4.3 Closed | ISHI meta | 25.5.2006 |
| 132 | Cancellation of output view | Ambrošová Mária | 4 Feature request | 2 Medium | 4.2 Submitted | ISHI meta | 25.5.2006 |
| 129 | Code lists – initial filling and verification of item validity | Ambrošová Mária | 4 Feature request | 4 Urgent | 4.3 Closed | ISHI meta | 24.5.2006 |
| 128 | Interface - Creation/correction – limitation to the record type | Ambrošová Mária | 4 Feature request | 2 Medium | 4.3 Closed | ISHI meta | 24.5.2006 |
| 119 | AF for deleting code list | Ambrošová Mária | 4 Feature request | 2 Medium | 4.3 Closed | ISHI meta | 22.5.2006 |

Some of feature requests were solved prior to the pilot run.

For the pilot run, ISHI meta application structure intended for the use by metadata administrators was modified on the basis of training experience. Users of single role will execute the active work with the system which will be forbidden for users from other roles within a single item of the main menu.

During the training, *ISHI application errors appeared*. If they could not have been removed immediately with the help of provider's staff, they were entered in the issues tracking ECHO application by trainers as issues of the type *Incident*. All incidents were solved prior to the pilot run.

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| Issue number | Abridged text | Author (external) | Type | Priority | Solution status | Found in | Date |
|--------------|--|-------------------|------------|----------|-----------------|-----------|-----------|
| 159 | Verification of record items, code lists items for validity | Ambrošová Mária | 6 Incident | 2 Medium | 1.1 Filed | ISHI meta | 31.5.2006 |
| 140 | After entering the district for the new planned report critical error message appeared | Ambrošová Mária | 6 Incident | 4 Urgent | 4.2 Submitted | ISHI meta | 29.5.2006 |
| 139 | Again, very slow operation | Ambrošová Mária | 6 Incident | 4 Urgent | 4.2 Submitted | ISHI web | 29.5.2006 |
| 138 | Creation of report | Ambrošová Mária | 6 Incident | 4 Urgent | 4.2 Submitted | ISHI meta | 27.5.2006 |
| 121 | After participant modification application crashed | NHIC | 6 Incident | 4 Urgent | 4.2 Submitted | ISHI web | 24.5.2006 |
| 120 | After application of extended filter for searching participants application crashed | Ambrošová Mária | 6 Incident | 4 Urgent | 4.2 Submitted | ISHI web | 24.5.2006 |
| 117 | Manual input of SJ in the collection does not work | Ambrošová Mária | 6 Incident | 4 Urgent | 4.2 Submitted | ISHI web | 22.5.2006 |

Gradual “freezing” of the ISHI web application (comment No. 139) after it was operated by 7 users for some time, turned out to be very annoying. This fault was removed by increasing the internal memory capacity for Java as a result of more detailed error logging and application behaviour.

In the Slovak version of MS Excel installed at the NHIC, OLAP function could not be applied. Instead, function of contingency tables was applied.

SR-MH staff – system administrators – expressed their doubts about the purpose of data replication in the separate database at the SR-MH with respect to the assumed system utilization at the SR-MH: access to data of views defined and calculated at the NHIC and their analysis in Excel or creation of standard outputs in MS Access. They suggested to link directly the ISHI system at the NHIC through a safe channel and to carry out the same activity there.

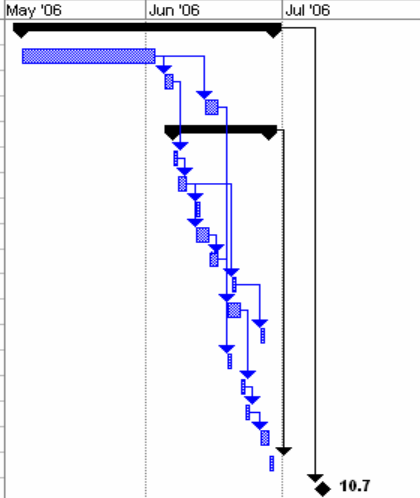
3.3. Project changes

3.3.1. System architecture

During preparation of the pilot run, recipients at the NHIC decided that ISHI (ilias) server will not be situated in the demilitarized zone, as suggested and approved in the *System design*, but it will be placed in the NHIC LAN and provided for external users via the reserved communication channel from the Internet.

3.3.2. New dates of related stages

Within the preparation of the pilot run, the following time schedule of (re)installation of SW solution and pilot run procedure was approved at the stage **Implementation and testing** in the document *Implementation and testing plan*:

| ID | Úloha | Trvanie | Začiatok | May '06 | Jun '06 | Jul '06 |
|----|---|-------------|---------------|--|---------|---------|
| 21 | Implementation and testing | 38 d | 5.5.06 |  | | |
| 22 | Implementation and testing plan elaboration | 20 d | 5.5.06 | | | |
| 23 | SW solution reimplementatation in NCZI | 2 d | 5.6.06 | | | |
| 24 | Implementation of SW environment and SW solution in MH-SR (database conf | 3 d | 14.6.06 | | | |
| 25 | Testing during pilot run | 15 d | 7.6.06 | | | |
| 26 | 01 - NHIC: Pilot run kick-off: schedule, users registration | 1 d | 7.6.06 | | | |
| 27 | 02 - NHIC: ORACLE client and ODBC on usres PC are installed, Code Isit | 2 d | 8.6.06 | | | |
| 28 | 03 - NHIC: Examined code lists, data elements and indicators from L1, Z | 1 d | 12.6.06 | | | |
| 29 | 04 - NHIC: Defined record type and reporting duty for A3, regsiter data t | 3 d | 12.6.06 | | | |
| 30 | 05 - NHIC: Defined modules, checks for A3. defined collection and gene | 2 d | 15.6.06 | | | |
| 31 | 06 - NHIC: Examined indicators of views form L1 and Z1 data. | 1 d | 20.6.06 | | | |
| 32 | 07 - NHIC: Executed collection of A3 data (reports written by RU, by imp | 3 d | 19.6.06 | | | |
| 33 | 08 - NCZI: Verified outputs from L1 and Z1 data | 1 d | 26.6.06 | | | |
| 34 | 09 - SR-MH: Registered users, completed Oracle client and ODBC install | 1 d | 19.6.06 | | | |
| 35 | 10 - NHIC: Database back up and recovery executed, new version ISHI | 1 d | 22.6.06 | | | |
| 36 | 11 - Data replication form NHIC to SR_MH completed | 1 d | 23.6.06 | | | |
| 37 | 12 -SR-MH: Outputs from A3, L1 and Z1 analysed in Excel and reports c | 2 d | 26.6.06 | | | |
| 38 | Pilot production evaluation and amending | 1 d | 28.6.06 | | | |
| 39 | Interim report after implementation and testing | 1 d | 10.7.06 | | | |

Following date changes of remaining stages resulted from this plan:

| Stage / Phase | Start date | End date | Duration in days |
|--|---------------------|---------------------|------------------|
| Implementation and testing | 05. 05. 2006 | 27. 06. 2006 | 42 |
| Implementation and testing plan development | 05.05.2006 | 02.06.2006 | 20 |
| SW solution reimplementatation at the NHIC | 05.06.2006 | 06.06.2006 | 2 |
| Implementation SW environment and SW solution at the SR-MH | 14.06.2006 | 16.06.2006 | 3 |
| Testing during pilot run | 07.06.2006 | 27.06.2006 | 15 |
| Pilot run evaluation and amending | 28.06.2006 | 28.06.2006 | 5 |
| <i>Interim report after implementation and testing</i> | 10.07.2006 | 10.07.2006 | |
| Handover | 29 06. 2006 | 11. 07. 2006 | 5 |
| Reimplementatation of SW solutions | 29. 06. 2006 | 30. 06. 2006 | 2 |
| Final acceptance testing | 06. 07. 2006 | 07. 07. 2006 | 2 |
| Final handover of SW product and documentation | 11. 07. 2006 | 11. 07. 2006 | 1 |
| Final report | 31. 07. 2006 | 31. 07. 2006 | |

4. Modified project working plan

4.1. Remaining project stages

One development stage is to be yet realized within the project:

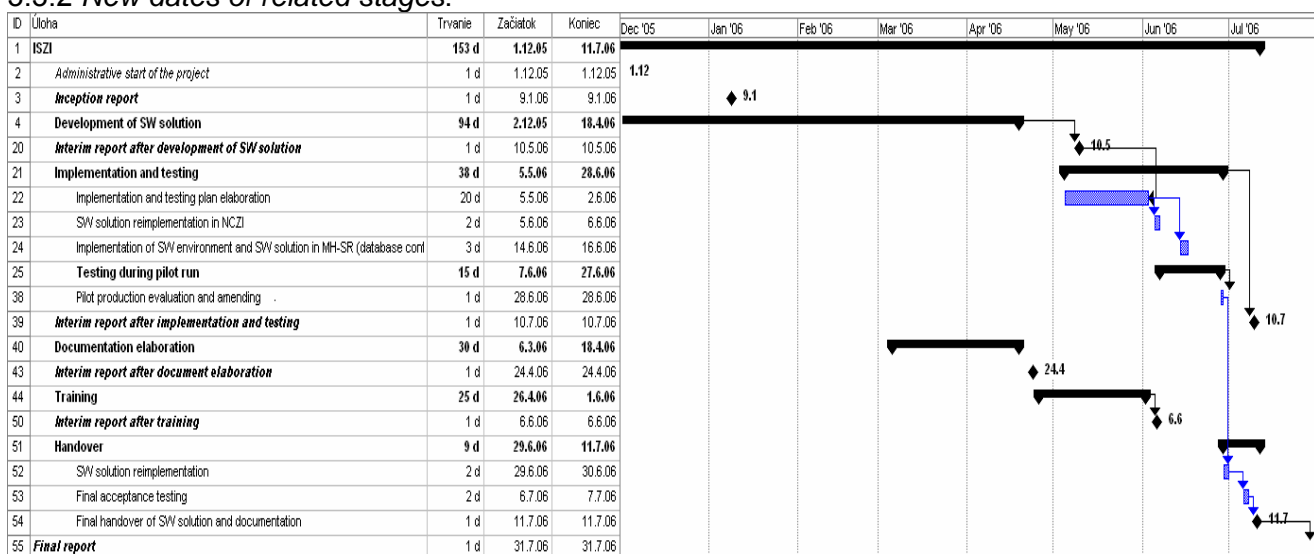
- ✓ Implementation and testing

and one handover stage:

- ✓ Handover

4.2. Detailed project working plan

Detailed project working plan of remaining stages after the modification of dates proposed in the part 3.3.2 *New dates of related stages:*



4.3. Project monitoring

After closing the stage *Implementation and testing*, the interim report is to be elaborated and the final report will be elaborated after the project closure.

To monitor communication by delegated recipients and providers team members, an e-mail address iszi@softec.sk was established on providers side.

5. Requirements and limitations

Realization of remaining project stages requires fulfilment of necessary requirements on customer's side. It results, however, in certain limitations.

5.1. Requirements laid on recipient

- ✓ Close cooperation of recipient's staff during the stage *Implementation and testing*.
- ✓ To enter issues on the pilot run into the issues tracking ECHO application by recipients project leader.
- ✓ To provide workplaces for provider's staff during the pilot run.
- ✓ To organize participation of recipients' staff in the pilot run according to the time schedule of meetings settled within the document *Implementation and testing plan*.
- ✓ To provide standard administration of ISHI operational and database system at its own cost.

5.2. Provider's guaranteed tasks

- ✓ To fill data of administrative registers being in force for the year 2004 from the data supplied by NHIC to the extent necessary for the determination of reporting duty.
- ✓ To help trained recipients users to fill metadata during the pilot run in the scope agreed in the document *Implementation and testing plan*.

6. Identification and elimination of risks



For remaining project stages, the following project risks were identified:

| Risk description | Risk evaluation | Measures of risk mitigation |
|--|-----------------|--|
| Short term of realization | high | Consequent project management, timely indication of possible delays, immediate implementation of corrective measures and providing information to recipient's project manager. |
| Requirements of changes during development | high | To discuss requirements going beyond the project scope at a meeting of project management. |
| Recipient's cooperation | medium | Eventual delay in the provision of recipient's cooperation shall be discussed at the project management meeting. |
| Insufficient cooperation of professionals in a field | medium | Elimination of this risk shall be based on motivating experts and in illustration of practical usefulness of the developed solution. |
| Cutt-off key experts | low | Consequent planning of capacities, application of motivation factors, education of full-valued deputies. |

6.1. Risk management

Well-proven risk management of the Softec company allows to control the project risks. The project shall be monitored: from the viewpoint of risk priority changes, new risks occurrence as well as events leading to possible risk and indicating the need of taking adequate steps. Risk management shall be regular part of the implementation process. It will be reapplied in any event of project change, issue or risks related to important decisions on project progress. Methods of risk management shall include:

- ✓ Identification of risks.
- ✓ Evaluation of risks.
- ✓ Defining measures of risk management.
- ✓ Introduction of resulting tasks in the project schedule.
- ✓ Regular monitoring of each risk status.

| | | |
|---|---|---|
|  | <p style="text-align: center;">INTERIM REPORT NO. 2</p> <p style="text-align: center;">Strengthening of Statistics Health Information System and its Harmonization with EU Requirements</p> <p style="text-align: center;">Information System of Health Indicators</p> <p style="text-align: center;">Contract No. 200300499503-0601-0003</p> |  |
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