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Kyiv 2019

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Kyiv 2019

Description of Requirements for the Information System

Description of Requirements for System Introduction Works

Integrated Process Automation System

for the National Health Service of Ukraine

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# Acronyms

API – application programming interface

DRG – diagnostically related groups

WBS – work breakdown structure

IS – information system

HSP – hardware and software package

AWS – automated workstation

DB – database

IIS – internal information space

STU – State Treasury of Ukraine

SDS, State Drug Service – State Drugs and Medications Control Service of Ukraine

SS – state service

EDS – electronic digital signature

IT – information technologies

NHS IS – Information System of the National Health Service of Ukraine (see interpretation in *2. Glossary*)

ECC – expenditure classification code

CSIP – Comprehensive System for Information Protection

MIS – medical information systems

MOH – Ministry of Health

RI – regulatory information

NPSAS – National Public Sector Accounting Standards

NHS – National Health Service of Ukraine

EIS – electronic interaction system for executive authorities

DMS – document management system

DBMS – database management system

SpS – specialized software

ToR – Terms of Reference

(eHealth) CC – central component (of eHealth)

DPC – data processing center

# Glossary

**Authorization, authentication** – verification of user access rights by the username and password entered, and obtaining access to resources according to the rights granted.

**Database** – large structured collection of data organized with a view to obtain analytical reports to support managerial decision making. Such a data collection is integrated, consistent, pertains to some particular subject and contains time references.

**Suggested text**

**Contractor** – legal entity or consortium of legal entities that perform design, development, testing, piloting and commissioning of an automated information system (AIS), provides maintenance and support for the AIS at the initial stage of system operation.

**Software Platform Vendor** *–* company that developed the platform on which the NHS IS will be implemented. This company is not directly involved in the implementation of the NHS IS, but provides its platform on the conditions of licensing or transfer of ownership.

**Customer** – organization that commissions and accepts the AIS, and effects payments according to the project contracts.

**Global Budget** is a health care service financing model whereby services provided by a health care facility are procured by the National Health Service within a set general limit, regardless of the quantity and cost of each of the services provided.

**Diagnostically Related Groups (DRG)** – health care financing model whereby all the treatment cases are grouped together according to certain criteria.

**Query** – message received through various communication channels, which demands taking certain action: providing information, eliminating the incident, providing administrative service, official response, etc.

**Information object** – content information in one of the permitted data types (for instance, personal data of the user, publications, etc.) consisting of metadata (descriptive information) and the full text of the material to which the metadata contains a link. In some cases, the full text may be missing. Only metadata is integrated and stored in the IIS. The full texts are stored in the data warehouse.

**Information resources** – subject-matter information units, functional services, and software.

**Information system (IS)** – a set of software, hardware; informational, organizational, technological tools and personnel, intended for the collection, initial processing, storage, retrieval, further processing and issuance of data in a given form to solve a variety of professional problems of the users of the system.

**Capitation –** compensation amount calculated as the product of the capitation rate and the number of declarations signed with primary care physicians (taking into account age groups and other factors).

**Categorization** – distribution of information into subject-matter units.

**(NHS) Customers** – legal or natural persons who submit their requests/demands as part of the implementation of the Medical Guarantee Program.

**Key user** (of an information system) – an employee of an organization specializing in his/her functional area, as well as processes or software modules automated by means of the information system. The key user maintains the depth of expansion and integration, and represents professional interests of his/her department in the project team. He/she also serves as a contact person between the colleagues in his/her department, the software vendor, and the project manager. The key user can independently provide the necessary training to his/her colleagues. **Comprehensive System for Information Protection (CSIP)** – a set of organizational, engineering, and technical measures designed to protect information from disclosure, leakage and unauthorized access (this status is awarded by the State Service of Special Communications and Information Protection of Ukraine).

**Consolidated Information** – information that undergone some preliminary preparation (taken from various sources, analyzed, evaluated and structured) to meet the information needs of users. By some definitions, it comprises open knowledge that is difficult to access in its original form and is distributed between many sources.

**Contact Center** – a specialized organization or dedicated unit in an organization that is responsible for processing queries and providing information through voice, electronic and other communication channels for the benefit of the parent organization.

**(NHS) Contractors** – health care providers (working under the Medical Guarantees Program) and medicine retailers (working under the Affordable Medicines Reimbursement Program). See: *(NHS)* *Suppliers*.

**Medical Providers (including primary care providers)** – health care institutions of all forms of ownership and individual entrepreneurs licensed for medical practice, which have signed an agreement on public health care with the NHS.

**National Health Service of Ukraine (NHS) –** central executive body implementing state policy in the field of state financial guarantees for public health care.

**National Public Sector Accounting Standards (NPSAS)** – a regulation approved by the Ministry of Finance of Ukraine, which defines the principles and methods of accounting and financial reporting in the public sector in Ukraine.

**Omnichannel** **Approach** – a combination of all incoming information channels, systematization of requests, and unification of their processing.

**Fee-for-Service** is a health care service financing model that implies setting a fee for each instance of the health care service provided.

**Personalization** – special tools enabling customization of the user interface and determining the content of its workspace.

**Suggested text**

**Payer** – organization that makes step-by-step payments under a project, in accordance with the terms and conditions of the project contract

**Suppliers –** providers of goods and services for administrative and support processes of the NHS. See: *(NHS) Contractors*.

**Customer Project Library** – the bulk of the project documentation that is created during the preparation, implementation, and completion of a project, including the Terms of Reference, Project Charter, architecture of the IS and its subsystems, requests for amendments of the Project Charter, minutes of meetings of the project team and project working group, etc.

**Reimbursement** – full or partial reimbursement of the cost of medicinal products to economic entities licensed for retail of medicinal products.

**Service** – software module implementing data submission or processing.

**Knowledge management system** – multifunctional set of information and technologies providing unified approach to the creation and maintenance of information resources and services, unified procedures for knowledge acquisition and retention, knowledge sharing and learning, teamwork, as well as personalized access to resources and services. A knowledge management system integrates different types of information and documents into a single information space and enables them to be shared.

**Knowledge management** – systematic processes that ensure creation, storage, distribution and application of knowledge necessary for the success of an organization.

**Functional System Administrator** – a user of the NHS IS who configures and administers the existing business functionality of the system and other users' access rights.

**Central Component of the Electronic Health System (eHealth** **CC)** – information and telecommunications system enabling automation of accounting for medical services and management of health information through creation, placement, publishing, and sharing information in the electronic form. It consists of the central database and electronic medical information systems, which can automatically exchange information, data, and documents through an open application programming interface (API).

**Task queue** – set of requests to a person or a group, sorted by responsibility, priority, and urgency.

Business Process – sequence of actions and operations performed in case of a certain event or on demand, aimed at obtaining the outcome in the form of as a document/entry in the system for internal or external users.

Business event – event initiated by a user of a system or reaching a certain time limit that entails change of status, change of data, or start of a procedure within a business processes.

# General Information

## Purpose of the Document

The purpose of this document is to provide a concise description of the required functionality of the integrated system for NHS process automation to the extent necessary to understand the functional needs of the NHS software, namely:

* provide a description of the automation object
* outline the general design principles and architecture requirements for the NHSU IS
* describe requirements for system introduction works
* provide functional requirements for:
  + specific NHS functionality
  + general functionality of the central executive authority
  + data analysis functionality
  + integration with other information systems
* describe the non-functional requirements of the NHS IS, in particular:
  + security and reliability requirements
  + output requirements
  + administration capability requirements, etc.

## System Name

### Full System Name

Integrated Process Automation System for the National Health Service of Ukraine

### Abbreviated System Name

Information system of the National Health Service of Ukraine – NHS IS

## Basis for the Works

The health care reform in Ukraine implies the creation of an electronic system to account for medical services and payments for them from the state budget of Ukraine. The necessary operation procedures are regulated by the following documents:

* CMU Resolution of December 27, 2017 No. 1101 on Establishment of the National Health Service of Ukraine
* Law of Ukraine 2168-VIII of January 30, 2018 on State Financial Guarantees of Public Health Care
* CMU Resolution of April 25, 2018 on Some Issues of the Electronic Health Care System of Ukraine

## Customer Name

National Health Service of Ukraine (NHS)

## Scheduled Start and End Dates

The works are planned to start in the fourth quarter of 2019; the desired completion date is the fourth quarter of 2020. The final completion date will be determined in agreement with the Contractor, while setting the project schedule.

## Financing Sources and Procedure

The financing of procurement, introduction and maintenance for the first year is funded by the USAID Health Reform Support project, which is the **Payer** in the **NHS IS project**. The source of funding for system maintenance after the first year of operation will be determined after introduction.

The procurement is financed within the framework of the implementation of international technical assistance projects, which are exempt from VAT in accordance with the resolution of the Cabinet of Ministers of Ukraine of February 15, 2002 No. 153 “On Creating a Unified System for Attracting, Using and Monitoring International Technical Assistance” and in accordance with Article 197, item 197.11, of the Tax Code of Ukraine, in particular under the program "Assistance for the development of electronic health care infrastructure in Ukraine", registered by the Ministry of Economic Development and Trade of Ukraine on February 15, 2019, No. 4035-01, and its procurement plan under the Agreement of September 28, 2018 No. 72012118CA00002 with financial support from the US Agency for International Development.

## Procedure for Registration and Presentation of the Outcomes of the Works

The contractor selected through the procurement procedure shall, after the conclusion of the contract, deliver and install the software, and provide the IS (system components) introduction and configuration services based on the proposed NHS software in accordance with these technical requirements and the software introduction methodology.

This section describes the requirements for documenting and presenting the project outcomes, including:

* The Contractor project team
* Project Charter
* Work breakdown structure (WBS)
* Detailed work plan
* Project responsibility matrix
* Communication plan
* Project Risk Register
* Project documentation
* Completion of works by project stages and overall
* Acceptance of works for operation

### The Contractor Project Team

After signing the contract for the supply of software, licenses for components and services for installation/introduction of software, the Contractor shall submit for approval the list of members of the Contractor project team, including the Contractor project manager, leaders of functional teams, and team members.

The list of the Contractor project team members is submitted for approval to the Customer project manager. The attachment to the list contains each project participant's CV describing the Contractor employee's specialization, professional experience, experience in similar software introduction projects, education, additional knowledge and skills (with attachments confirming the level of education and qualification: certificates, diplomas, etc.)

### Project Charter

The description of introduction methodology, distribution of works between the Contractor and the Customer in the process of software implementation, project boundaries, project scope, the procedures of interaction between the Contractor and the Customer during the implementation of the system shall be specified and agreed on in the Project Charter. The Project Charter is drafted by the Contractor and submitted for approval to the Customer project manager. The project charter is approved by the Customer project manager, the Director of the Information Technology Department, and the CEO of the NHS, and the Contractor CEO or acting CEO.

Suggested text:

between the project team of the Contractor and the working group of the Customer, which will be created through a separate order for the duration of the project

The project charter shall specify, but not contradict, the requirements set out in this document.

### Work Breakdown Structure (WBS)

The Contractor shall draft a detailed list of works concerning the introduction of the system in the main areas for each functional field (section 2) according to the following list of requirements:

* Project Management
* System (Settings)
* Documentation
* Users
* Processes
* Testing
* The detailed list of works is drawn up as an annex to the Project Charter and constitutes its integral part.

### Detailed Work Plan

The Contractor shall draft and agree with the Customer a detailed work plan for the project in accordance with the structure of works (paragraph 1.7.3). The woks shall be planned according to the methodology provided by the software platform manufacturer and the Contractor.

The detailed project plan is drawn up as an annex to the Project Charter and constitutes its integral part. It is approved by the Contractor and the Customer in the same way as the Project Charter.

### Project Responsibility Matrix

The Contractor drafts and gets approval for the responsibility matrix (RASCI) describing the distribution of the key project works between the project team roles/participants. The matrix is an annex to the Project Charter and constitutes its integral part. It is approved in the same way as the Project Charter.

### Communication Plan

The Contractor prepares and agrees with the Customer project communication plan, which describes the types of communication, participants (role in the project team), appointments for meetings, how the meetings happen (place, format), what is their timing and frequency, and who is the organizer. The Communication Plan is an annex to the Project Charter and constitutes its integral part. It is approved in the same way as the Project Charter.

### Project Risk Register

The Contractor prepares and agrees the Risk Register, which provides:

* Description of potential risks
* Probabilities of risks
* Strategy to prevent, minimize and eliminate risks.

The Project Risk Register is an annex and an integral part of the Project Charter. The risk register should be updated throughout the life cycle of the project.

### Project Documentation

The Contractor prepares a list and templates of the project documentation containing descriptions of all the necessary settings and information necessary for the introduction of the system, namely:

* Detailed description of business requirements
* Description of the implementation of business requirements
* Functional and technical architecture
* Description of settings
* Description of system adaptations (functional design)
* Description of system adaptations (technical design)
* Description of data conversion
* Functionality testing scenarios
* Capacity Testing Scenarios
* Documentation for training of administrators and users
* Description of the database tables structure and their relationships
* Instructions for the users

Project document templates are agreed upon by project managers. The project documents from the above list should be processed and prepared at the corresponding stages of project implementation. The project documents are agreed upon by the project managers of the Contractor and from the Customer, and also signed by the heads of the working groups responsible for the content of the document. At the end of each stage of the project, if the document has been revised and modified during that stage, such a document must be agreed upon once again, in the new version or index. The numbering is determined by the methodology provided by the Contractor and is described in the Project Charter.

### Completion of Works by Project Stages and Overall

The completion of works on each stage is confirmed by completion certificates, which are signed off by the project managers of the Contractor and the Customer, and then signed by the Director of the NHS Information Technologies Department, the CEOs of Contractor and the NHS.

Completion certificates are drafted by the Contractor at the end of each stage of the project in accordance with the project plan (Section 5). The completion certificate should include:

* the list of works that have been completed and documented in accordance with the methodology agreed upon by the Customer and the Contractor at the current stage of the project
* The list of open issues that have not been resolved or works that have not been completed at the current stage of the project – in case the Customer agrees to postpone such works.

### System Acceptance for Commercial Use

The acceptance of the system is confirmed by the acceptance certificate. The certificate is agreed upon and signed by the acceptance commission consisting of representatives of the Customer (NHS), the Contractor that provided and introduced the system, and the System Buyer (if necessary). Acceptance of the system takes place after system stabilization, according to the introduction plan (Section 5).

Suggested text:

The certificate is signed, signed by the Acceptance Commission consisting of representatives of the Customer and the Contractor, and is agreed upon with the representative of the Payer.

## The Main Beneficiary and Potential Users of the System

The owner (beneficiary) of the system is the NHS. The organizational structure of the NHS envisages one legal entity without separate legal units, but with separate departments in different territories.

The users of the system are the staff of the NHS, namely:

* System Administrators (maintenance and development): 2 persons
* System maintenance and development specialists: 40 persons
* Key system users (one for each functional area): 10 persons
* Developers: 2-5 persons
* Ordinary users (viewing and editing in the UI) – Approximately 740 people, including the following roles:
* Master Data management – 10 persons
* Payroll and personnel records – 40 persons
* Knowledge management and training – 10 persons
* Account management – 30 persons
* Forecasting and pricing – 55 persons
* Budget planning and financial support – 11 persons
* Accounting – 35 persons
* Contract management – 114 persons
* Billing management – 10 persons
* Contractors relationship management (CRM) – 736 persons
* Inventory – 35 persons
* Marketplace – 30 persons

The aforementioned numbers of ordinary users imply that one and the same person will perform several functions, which means, an employee can use two or more components of the system.

The number of system users should be specified while defining the roles and users of the system modules.

Within the scope of this procurement, the licenses are expected to be obtained in 2 (two) stages:

1. Delivery of a minimum number of licenses for system deployment and introduction work – at the beginning of the project.
2. Delivery of the final number of licenses according to the list of users specified while defining the roles and access rights of users.

# Goal and Purpose of Creation of the System

## Purpose of the System

The NHS's comprehensive information system is designed to ensure systematic, regular and coordinated activities to optimize management ensuring the proper regularity, reliability, adequate costs, risks, and resource utilization throughout their lifecycle in order to achieve the strategic goals of the NHS, including the creation of the NHS IS in line with the legislation requirements described in paragraph 1.3.

## The Goal of Creating the System

The goal of creating the system is to create a single environment retaining complete information on the operational, financial, and economic activities of the NHS and complying with the following principles:

* ensuring timely settlements with health care providers and pharmacy facilities within the reimbursement program;
* forecasting the amount of budgetary resources necessary to pay for medical services provided by medical and pharmacy institutions;
* ensuring the reliability of data, transparency of the NHS management process;
* improving the efficiency of the NHS by optimizing and automating the organization management business processes, namely: planning, monitoring and analysis of the NHS, risk and change management, personnel management, procurement management, customer and supplier relationship management, etc.

## System Tasks

To achieve the goal of creating the system, the following tasks should be ensured:

* Introduction of a forecasting/modeling system to forecast the volume and prices of medical services based on the analysis of large data sets;
* Timely provision of the information necessary for informed managerial decision making by the NHS, which depends on the following preconditions:
* Development and introduction of budgeting and planning system for current activity in order to ensure implementation of the budget process, financing of tasks and activities implemented by the NHS under its budget programs;
* Introduction of a system for managing relationship with customers (contractors) – legal or natural persons who submit their requests/demands as part of the implementation of the Medical Guarantees Program.
* Introduction of a knowledge management system;
* Implementation of claims management system, which includes contract management, billing, and automation of planning and procurement of health care services;
* Development of managerial reporting types and data visualization formats;
* Introduction of an accounting system, ensuring integration with the remote access system for clients of the State Treasury of Ukraine ;
* Implementation of a system for payroll and personnel records enabling planning and monitoring of KPIs (key performance indicators);
* Implementation of a system for administrative tasks and office communication;
* Implementation of an internal document management system for the NHS;
* Planning and implementation of information security measures.

## System Design Principles

The NHS information system should provide automation of all the NHS processes and functions outlined in this document. At the same time, the requirement to implement all the automated functional control of the NHS on one IT platform is not mandatory. It is allowed to implement automation through a set of integrated IT solutions.

The design of the NHS IS is based on the following principles:

* Compliance with the legislation of Ukraine;
* Flexibility, scalability of architecture, use of parametric settings wherever possible;
* Possibility of flexible use of united reference information (RI) for all implemented modules and components of the NHS IS. The directory structure should enable adding new records while maintaining the existing relationships between directories and business rules. Two and more levels of nesting should be supported;
* If the proposed software uses any default RI values, their definition must be implemented in the form of a flexible parametric setting;
* Wherever possible, the processes, business rules, integration mechanisms, etc. should be open for modifications by the administrators without the need to interfere with program code;
* The standard functionality of the IT-solution should be used as much as possible; there should be no need interference with mechanisms that are maintained directly by the Contractor;
* The users of the NHS IS are the NHS staff. Provisions should be made for granting access to individual users with a defined list of powers (performing certain functions, creating and viewing different levels of forms and reports);
* possibility to obtain (if necessary) the CSIS status for the NHS IS as a whole and for its individual components;
* In case of a heterogeneous architecture (using multiple integrated solutions), there should be ability to provide:
  + - a level of integration sufficient for the functioning of business processes;
    - updating or substitution of any one of the solutions should not require adaptation of the other solutions comprising the NHS IS;
* Documenting, adaptations, and settings of the NHS IS, and the settings of the NHS IS at the level necessary to further support the NHS IS by the NHS staff.

## Key Aspects of NHS IS Design

* Modular: each part of the NHS IS is self-sufficient. After its introduction, it can work separately and independently of any other, while other modules are not introduced yet.
* Integrated: all elements of the NHS IS are planned and implemented in such a way that they can be easily integrated with the eHealth CC or any other NHS IS module (component).
* Analytical and predictable: the system should contain all the statistical information necessary for the forecasting of costs and volumes of services in different scenarios.

# Description of the Automation Objects

The automation object is a set of business processes and mechanisms that necessary to ensure the continuous and high-quality performance of the NHS functions in accordance with the legislation, as well as its functioning as a central executive body:

* the set of the specific business processes of the NHS required to fulfill its function of the single state customer and payer for health care services and reimbursement of medicines;
* the set of model business processes of the central executive body that ensure management and reporting in accordance with the legislation of Ukraine;
* processes and approaches to multidimensional data analysis for the analytical support of the NHS;
* related administrative and technical processes necessary for the proper functioning of the NHS IS.

In order to perform its functions, the NHS IS must be integrated with the eHealth CC, either directly or through DWH.

Currently, some transitional systems are introduced and used for the automation of managerial activity and monitoring of financial and economic indicators of the NHS based on the *Ua:Budget* platform, *Askod* Document Management System, and *Kadry WEB* personel records system. The listed systems only partially cover the requirements described in this document, so the implemented IS should optimize the automation of management processes, fill in the functional gaps wherever possible, and replace *UA:Budget* and *Kadry WEB*.

In addition, tendering procedures are currently underway to purchase the Business Analysis System (BI + DWH) and the Contact Center System. IS must integrate with these systems.

The server and infrastructure capacity for the IS is provided by the NHS. This document does not contain requirements for servers and other hardware.

Thus, it is necessary to introduce a modern integrated system consisting of specialized components, each of which will be responsible for its share of the functionality of the integrated NHS IS.

NHS IS is an integral part of the MoH IT infrastructure, and its purpose is automation of the NHS functioning to ensure its operation.

## Functional Units of the Future System

A general diagram of the relationship between functional modules is added in Annexes 1 and 2 (Section 3.2). Depending on the architecture of the future system, the Contractor provides either the complete system or certain subsystems. Those can be either separate modules of a single system, or separate systems integrated with each other. Integration of the systems provided under this procurement, and services for their introduction are performed by the Contractor. In any case, standard interfaces, system integration interfaces and approaches provided by the platform vendor must be used. After the introduction, the system should function as a unified software package.

Below there is a brief description of its functional units. The description of requirements for each functional unit is provided in Section 4.

### Master Data Management (MDM)

* This functionality serves for maintaining any catalogs, RI directories with the possibility of synchronization between different systems and individual modules;
* This module should be the main catalog of the organization and the reference directory for other systems;
* It must support synchronization and updating of the reference directories with data from other systems.

### Forecasting (STAT)

* Data analysis on the actually provided services, their quantitative and qualitative characteristics (price, quantity, geography, demographics, etc.);
* Creation of mathematical models and their use for forecasting future needs for medical services, volumes of drug reimbursement and the associated costs, spending of funds, budget forecasting;
* Search for correlations and making assumptions about service providers' behavior patterns, with further verification of such assumptions with the purpose of fraud detection;
* Quality control of forecasting, providing recommendations for correction of forecasting models;
* Setting rates, modeling of potential impact of rate changes at the macro level (budget impact, market response) and micro levels (service provider, availability of the service for the patient);
* The calculations should be based on the data analysis obtained from DWH with the possibility of connecting other data sources (other databases, CSV, Excel, etc.).

### Budget Planning and Financial Support (BAP)

* Ensuring budget planning process and financial support for the NHS operation, which is regulated by the budget legislation.

### Customer Relationship Management (CRM)

* Functionality of interaction with the client from the first contact to the tracking of contract terms fulfillment.
* Automatic monitoring of the providers' activity based on DWH data and flexible tracking algorithms, manual response to trigger events based on specified parameters, including assumptions made in the process of fraud detection, generation of service messages on suspicious events and the need for additional check;
* Adjustment of monitoring stages, defining trigger events, scheduling of actual (on-site) audits, generation of standard document packages for audits (lists of deviations/breaches, check-lists, etc.), documenting of audit results (rating system), tracking of activities of structural units (monitoring, communications, contracts, accounting, etc.) at all stages of the audit, remediation monitoring;
* Possibility to assign a rating (status, category) to contractors, both overall and to separate functional units, which can be used as input to apply correction factors when paying for services;
* Tracking of contact center requests in a single tool, without having to access the transaction units of the system.

### Contractor Relationship Management

* The Contractor Directory, which displays all the information on each contractor, including volumes of services provided, funds received from the NHS, contract status and history (links to additional contracts/agreements, invoices, payments, information on mergers, acquisitions, transformations of the contractor, etc.);
* The Contractor Directory must contain contact information of the main signatories of the contract, as well as other persons taking part in the communication between the Contractor and the NHS. It can also include the history of the health care provider's calls to the contact center, and any other information that the the employee of the health care provider considers relevant to include, e.g. scheduled events, correspondence, etc. The functionality should enable customization of the process from the first contact with the health care provider (Contractor) to the agreeing upon the text of the contract, to checking the information on the contractor in the Unified State Register and the License Register.

#### **Contract Management (CNT)**

* + Functionality unit for setting up and using contract interaction processes with Contractors. It enables the use of contract templates, basic and additional terms (for instance, changes of the Divisions in reimbursement contracts), that can also be used in the account management functionality unit;
  + The functionality unit for contract management functionality should be able to display the current status of the contract and the payments under it.

#### **Billing Management (BIL)**

* + Generation of electronic records on ~~arrears~~ amounts payable for medical services rendered to the NHS contractors based on the services registered in the eHealth CDB and transmitted through the DWH of the NSA system;
  + This functionality unit should enable the possibility to recalculate the costs to be paid (or the ones already paid for previous periods) to health care providers and business entities operating in the retail of medicines, due to updates in the actual numbers of services they provided;
  + The data on service payments are transferred to the DWH and further to the eHealth CC to generate contractor reports;
  + This functional unit should be integrated with functional units on contract management, payments, and accounting.

#### **Payment Management** **(PAY)**

* + Generation and control of payments to contractors for the services provided, with the ability to schedule payments based on the amounts payable, which are calculated in the billing management unit;
  + Automatic import of budgetary commitments, budgetary financial commitments and payment orders to the Customer – Treasury Remote Service System (Treasury RSS).
  + Transfer of payment data to the Treasury RSS. Getting statements from the Treasury RSS on registered budgetary, budgetary financial commitments, and payments made;
  + The unit should be seamlessly integrated with the units of billing management, contract management, and accounting, in order to ensure real-time monitoring of payments under each contract for any period (not including the archived data).

### Knowledge and Skill Management (KM)

* This functionality unit should support staff training and knowledge control;
* It should enable uploading of educational materials or the use of the organization’s existing Sharepoint server for storage and display of the existing educational materials;
* Planning of training and knowledge control.

### Accounting (ACC)

The main functions of accounting automation are:

* Primary accounting;
* Keeping records of ~~material flows and~~ fixed assets, intangible assets and inventories;
* Keeping records of cash, revenues and expenses;
* Maintenance of accounts receivable and payable;
* Keeping records on settlements with contractors, other suppliers, and the budget;
* Preparation of the mandatory regulated financial statements;
* Providing data for analytics;
* Ensuring integration with the budget planning and financial support system, the account and payment management system, personnel records, and the payroll system.

### Personnel Records (PS)

The main functions of personnel records automation:

* Creation, maintenance, and management of the staffing list – appointments, transfers, setting position salaries, etc., generation and printing of reports (staff book, vacancies, vacations, etc.);
* Maintaining an electronic personal file for each employee; maintaining a database of personal records of the staff;
* Control functions and search tools as regards to the employee status, state and departmental personnel reports (automation of personnel reporting);
* Search and sampling of database information by the necessary parameters;
* Current periodic staff evaluation;
* Automation personnel registration and record-keeping, as well as organization of current work with orders (drafting, implementation, archiving of orders for hiring, dismissal, transfers, etc.);
* Evaluation of candidates for vacancies;

### Salary (SAL)

* Automation of all processes of calculation and payment of salaries and remuneration to all categories of personnel;
* The unit should provide communication with accounting regarding the generation of accounting entries by expenditure items in the balance accounts.

### Marketplace (EMP)

This functionality unit should enable:

* pre-bidding/agreeing upon the procurement object and prices with suppliers/holders of medicinal product registration certificates, processing of bidders' preliminary bids and reverse auctions, thus determining the minimum price for the reimbursement program and other NHS needs;
* Generation of announcements on calls for applications for the Register of drugs to be reimbursed, and its publications
* Receiving application from applicants
* Possibility to verify if the applications are technically compliant with the announced conditions (QES, correctness and fullness of the data in the form, date, necessary attachments, etc.)
* Communication of the technical verification results to the applicants
* Application Tracker (Status)
* Drafting of the Register, including: verification if the medicinal product in the application is on the National List, conversion of the DDD value of the drug formulation for each medicinal product, and verification of the DDD price for compliance with the Registry of Maximum Wholesale EXW Prices, calculation of the full coverage price for each drug formulation + DDD, determination of compensation prices and supplemental payments for each medicinal product
* Submitting proposals to the Ministry of Health for inclusion of drugs into the Register.
* Publication of preliminary reverse auction results.
* Applicants can resubmit their applications after corrections of nonconformities or price reductions, provided that the DDD cost of their drugs is no more than 10%
* Submitting proposals to the MoH concerning amendments to the Register.
* Possibility of external reviewing procedure;
* Possibility of conducting reversed auctions or classic tenders for procurement of services, works, goods, etc., for the benefit of the NSA, or determination of reimbursement to medicine retailers.

### Inventory Management (INV)

* Providing control of records of movement and inventory of commodities and materials, intangible assets, PP&E of health care institution in terms of quantity and value. Includes supply, transfer, storage, issue, and write-off transactions.

## Conceptual Diagrams of Interactions Between Functional Units and Systems



***Diagram 1. Conceptual IT infrastructure of the health care system of Ukraine (system boundaries). Integration and information exchange between the NHS IS and the eHealth CC takes place bilaterally. There is no direct interaction between a MIS and the NHS IS.***



***Diagram 2. Conceptual diagram of information flows. The existing functional units are shown in green. The units that are being procured and the ones that are going to be introduced under the project are shown in grey.***

# System Requirements

## Requirements for the System as a Whole

* The NHS IS shall be developed based on modern information systems of different classes in the form of functional units (based on ERP principles), each of which meets the approved functional requirements and successfully integrates with other functional units for effective use with the application of the international best practices.
* The NHS IS shall be built on the client-server architecture. The system shall be accessed through a browser interface or a thin client.
* The NHS IS shall provide user access through the existing Internet network, without the use of any additional software or services.

### Requirements for System Structure and Functioning; List of Subsystems

|  |  |  |
| --- | --- | --- |
| **Components** | **Component code** | **Process codes** |
| **Functional requirements** |  |  |
| 4.2.1. Master Data management | MDM | MDM |
| 4.2.2. Forecasting, statistical analysis, pricing, fraud detection | STAT | STAT |
| 4.2.3. Budget planning and financial support | BAP | PB |
| 4.2.4. Customer (counterparties) relationship management | CRM | CRM |
| 4.2.5. Accounting for payments under contracts for medical services and reimbursement of medicines in accordance with the Law of Ukraine on State Financial Guarantees of Public Health Services. | CM | BIL – Billing Management  PAY – Payment Management  CNT – Contact Management |
| 4.2.6. Accounting for payments under contracts of the institution | BA | BIL – Billing Management  PAY – Payment Management  CNT – Contact Management |
| 4.2.7. Accounting and bookkeeping | ACC | ACC |
| 4.2.8. Personnel records and KPIs of the staff | PS | P – Personnel records  KPI – KPIs of the staff |
| 4.2.9. Payroll Accounting | SAL | SAL – Salary |
| 4.2.10. Knowledge management, distance learning system | KM | KM – Knowledge Base  DLS – Distance Learning (NHS Academy) |
| 4.2.10. Inventory | INV | INV – Inventory  FA – Fixed and intangible assets |
| 4.2.11. Marketplace | EMP | EMP |
| **Non-functional requirements** |  |  |
| 4.3.1. General requirements (user interface, support, maintenance, information security, technical support, standardization and unification, etc.) | G | UI – user interface  PE – personnel requirements  EP – training requirements  S – support requirements  PE – software requirements  SM – changes requirements  SP – other special requirements |
| 4.3.2. Integration requirements | I | I |

## Requirements for System Functions (Tasks)

### Requirements for Master Data Management (MDM)

The system should provide centralized storage and provision of reference information to all the NHS IS users, both directly through the user interface, and to other applied systems, through interfaces/APIs/services.

|  |  |  |
| --- | --- | --- |
| Code | Description of requirements | Priority |
| MDM.01 | The central catalog of the NHSU IS directories, which is the only source of elements used by all the functional units of the NHS IS | High |
| MDM.02 | Possibility to create rules for fetching directory entries from other sources (extension of descriptions, parameters, correction of misspelled names, surnames, etc.) | High |
| MDM.03 | Integration with internal systems via a table interface or with external directories, data sources via services/API/data buses | High |
| MDM.04 | Directory data protection by means of limiting access rights depending on the role. Data encryption, different types of user verification | High |
| MDM.05 | Any number of catalogs/sections/directories | High |
| MDM.06 | Any number of parameters in the description of a directory item | High |
| MDM.07 | Hierarchical structure of directories | High |
| MDM.08 | Encoding directory items manually or using built-in algorithms | High |
| MDM.09 | Using multi-criteria search to work with user directories, including:   * The values of the calculated attributes remain in the DB and are searchable; * The options for the set of search criteria can be stored in the database and associated with a certain user group; * Search options associated with a certain category, catalog; * Values of search criteria from the selection list or any other, defined by the user | High |
| MDM.10 | The architecture of the system shall be three-tier, with a browser or thin client user interface | High |
| MDM.11 | Web interface for working with the directory:   * Copying and moving objects from one branch to another using Drag & Drop; * Drag&Drop of files to Explorer, etc.; * Logging of user actions,   exchange of comments concerning directory elements | Medium |
| MDM.12 | Compressing directory documents while saving to the DB; | Low |
| MDM.13 | Finding and processing of duplicates (deletion, merging, etc.) | High |
| MDM.14 | Possibility of composing names of directory elements from the names of the directory hierarchy elements (for instance: accessories\_bucket\_plastic\_ blue\_23456) | High |
| MDM.15 | The ability to mass-process changes, batch load of data of certain nomenclature | High |
| MDM.16 | Within the existing attributes, any user with the necessary rights is entitled to create a new nomenclature (if it has not been created yet. The system should check if certain elements already exist in the system: contractors, contracts, and other records in the relevant registers/directories) | High |
| MDM.17 | Search for existing database entries based on text query in any form (without categorization and other form restrictions) | High |
| MDM.18 | Mapping of elements similar to the main entry of the directory | High |
| MDM.19 | Flexible control of access to master data change:   * the prcess of attribute creation should be customizable; * any user should be able to suggest a new attribute and have whil the data officer responsible for the category will either approve or reject it; * possibility to independently manage the procedure of change; * possibility to document changes to directories for further audit | High |
| MDM.20 | Possibility to upload files (for instance, for further initial download or for analysis). | High |
| MDM.21 | Blocking or terminating an existing object. | High |
| MDM.22 | The system should be able to synchronize its directories with other directories of other state institutions, such as the directory of Single State Register of Legal Entities (through integrated system mechanisms), etc. | Medium |

### Forecasting and Statistical Analysis Requirements (STAT)

The system shall provide forecasting and statistical analysis functionality with the following requirements.

|  |  |  |
| --- | --- | --- |
| Code | Description of requirements | Priority |
| STAT.01 | Possibility of scenario analysis | High |
| STAT.02 | Availability of what-if analysis | High |
| STAT.03 | Availability of cluster analysis | High |
| STAT.04 | Availability of the statistical analysis functionality and diagnostic tests | High |
| STAT.05 | Availability of semantic text analysis functionality | High |
| STAT.06 | Support of linear regression models | High |
| STAT.07 | Support of panel regression models | High |
| STAT.08 | Support of quantile regression models | High |
| STAT.09 | Support of logistic regression models | High |
| STAT.10 | Support of time series models (VAR, SVAR, ARIMA, etc.) | High |
| STAT.11 | Creation of processes of forecasting volumes of services and medicines, calculation of forecast amounts/prices of reimbursement per patient or per primary care service based on historical data, analyst forecasts (external calculations), forecasts for 1, 5 years with possibility of further breakdown of the period | High |

### Functionality for Budget Planning and Financial Support of the NHS (BAP)

The functional requirements for the NHS IS concerning budget planning and financial support of budget programs within the NHS scope of responsibility are shown in the table below.

| Code | Description of requirements | Priority |
| --- | --- | --- |
| BAP.PB.1 | Possibility to create the documents necessary for budget planning and financial support of the NHS:   * temporary budget estimate; * temporary [allocation plan (excluding budget loans) of the general budget fund](https://zakon.rada.gov.ua/laws/show/z0086-02); * project [budget estimate](https://zakon.rada.gov.ua/laws/show/z0086-02); * draft [allocation plan (excluding budget loans) of the general budget fund](https://zakon.rada.gov.ua/laws/show/z0086-02); * [budget estimate](https://zakon.rada.gov.ua/laws/show/z0086-02); * [allocation plan (excluding budget loans) of the general budget fund](https://zakon.rada.gov.ua/laws/show/z0086-02); * [juxtaposition of the special fund indicators of the budget estimate](https://zakon.rada.gov.ua/laws/show/z0086-02); * statement on amendments to the budget estimate for the general fund of state budget; * statement on amendments to [the allocation plan (excluding budget loans) of the general budget fund](https://zakon.rada.gov.ua/laws/show/z0086-02); * statement on amendments to the budget estimate for the special fund of the state budget; * statement of receipt in kind; * budget program passport; * budget program passport progress report; * budget request forms; * forms for submission of information for the budget declaration | High |
| BAP.PB.2 | Support for key budget planning processes at the NHSU:   * drafting of proposals for the budget declaration * updating of proposals for the budget declaration * drafting of proposals for the budget request * updating of proposals for the budget request | High |
| BAP.PB.3 | Possibility to designate structural units responsible for drafting of costs for the planned budget year and the 2 subsequent budget years for each budget program within the scope of the NHS responsibility (or for a separate allocation of budget funds) | High |
| BAP.PB.4 | Possibility to configure complex approval routes | Low |
| BAP.PB.5 | Generating budget estimate calculations for each budget program and enabling their approval by responsible structural units. | High |
| BAP.PB.6 | Generation of excerpts from the calculations for budget estimates by structural units with the possibility of adjusting initial calculations | High |
| BAP.PB.7 | Possibility of generating directories of purposes of budget funds use by goods, works, services, with the possibility of maintaining their hierarchical structure | High |
| BAP.PB.8 | Possibility of amending budget estimates, allocation plans, budget program passports for all budget programs of the NHS, and keeping a log of such amendments | High |
| BAP.PB.9 | Possibility to generate budget estimates, allocation plans, and budget program passports, taking into account the amendments made. Possibility to display modifications history | High |
| BAP.PB.10 | Generation of consolidated indicators of the special fund of the state budget | High |
| BAP.PB.11 | Possibility to generate reports on the implementation of budget program passports and comparative tables on the amendments made to passports for all the NHS budget programs | High |
| BAP.PB.12 | Locking the volume of allocations of all the NHS budget programs, by ECC, in order to monitor remaining allocation that where not opened, by the reduced expenditure classification | High |
| BAP.PB.13 | Possibility to monitor unregistered allocations and unused open funds, by all budget the NHS budget programs and by ECC, taking into account the approved procurement plan (taking into consideration all the amendments made throughout the year) | High |
| BAP.PB.14 | Possibility to create and maintain registers of information on amendments made to the general and special funds of the allocation plans for each of the NHS budget programs | High |
| BAP.PB.15 | Possibility to analyze the progress of completion of the NHS budget programs, taking into account the payments that have already been made under contracts  both for a specific period and in total | High |
| BAP.PB.16 | Possibility for the user to configure the rules for selection, sorting, selection of measurement units, computation of indicators and factors for selection (e.g. percentage structure, unit costs, etc.) when creating analytical, reporting and other tables | High |
| BAP.PB.17 | Availability of a report designer tool for end users. Possibility for the users to save their own report settings. | Medium |
| BAP.PB.18 | Possibility to visualize data both in the form of tables and diagrams | Low |
| BAP.PB.19 | Possibility to export data to external files in machine-readable formats (.xlsx, .csv, .xml, etc.) | High |
| BAP.PB.20 | Possibility to obtain explanation of any parent value (data cell) by clicking on such a value (drill-down) | Low |
| BAP.PB.21 | Possibility of flexible configuration of periods for which the data are generated | Low |
| BAP.PB.22 | Possibility to track changes in documents, both to individual values and overall (tracking the authors and time of the change) | Low |
| BAP.PB.23 | Possibility to enter information in the form of tables, either in Microsoft Excel or through web interface | High |
| BAP.PB.24 | Possibility to establish data validation rules that are used when entering information in a form while simultaneously checking if the data are consistent with other forms | High |
| BAP.PB.25 | Possibility to add items to existing dictionaries. Possibility to create attributes of dictionary items | Medium |
| BAP.PB.26 | Possibility of simultaneous work of two or more users with with different budget fund areas of the same budget program, with maintaining of data integrity | High |
| BAP.PB.27 | Possibility to copy budget allocations for the current year to the budget estimate for the planned year, as the basis for the budgeting process | Low |
| BAP.PB.28 | Possibility of flexible configuration of the NHS budget funds structure, with the hierarchy of expenditures and the possibility of its configuration by the user | High |
| BAP.PB.29 | Possibility to set up automatic notifications on exceeding the forecast amounts and allocation plans while making amendments, as well as on opening of financing | Low |
| BAP.PB.30 | Integration with accounting, billing, payment management modules | High |
|  |  |  |

### Requirements for the CRM System Management Function

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Description of requirements | Function | Priority |
| CRM.01 | Possibility to register and store multi-level master data of the contact person | Contact data management | High |
| CRM.02 | Possibility to link contacts together, and to other NHS IS master data | Contact data management | High |
| CRM.03 | Possibility to classify appeals coming through the standard channels (e.g., phone calls, text messages, emails) and enable users to configure their own channels (e.g., social media or messengers) | Tracking of incoming queries | Medium |
| CRM.04 | Possibility to classify incoming queries: – automatically, by means of certain rules (for each channel separately, or for all of them together) – manually, by the supervisor of the contact center | Tracking of incoming queries | High |
| CRM.05 | Possibility to configure first and second lines of support, including the necessary contact center roles (possibility to automatically bring up certain roles from the contact center) | Tracking of incoming queries | Low |
| CRM.06 | Possibility to integrate with existing software of the contact center IVR system | Tracking of incoming queries | Low |
| CRM.07 | Possibility to link a query to a contact card | Tracking of incoming queries | Medium |
| CRM.08 | Possibility to add notes while processing an incoming query from a contact, and view related notes concerning the query in the same window | Tracking of incoming queries | Medium |
| CRM.09 | Possibility to get queries by phone, including possibility to control the telephone equipment of the contact center | Tracking of incoming queries | Low |
| CRM.10 | Possibility to receive email queries from external clients. Possibility to integrate the NHS IS with a mail client | Tracking of incoming queries | High |
| CRM.11 | Possibility to get queries through Android and iOS mobile apps | Tracking of incoming queries | Medium |
| CRM.12 | Possibility to get queries through the feedback form on the NHS website (including development and embedding of such a form) | Tracking of incoming queries | High |
| CRM.13 | Possibility to receive and process queries through social media and messengers, including, but not limited to: – Facebook (including initiation of a query in response to comments)  – WhatsApp  – Telegram  – Viber  etc. | Tracking of incoming queries | High |
| CRM.14 | Possibility to get process queries (or notices on any changes in contracts/declarations) in paper form, through the document management system | Tracking of incoming queries | High |
| CRM.15 | Possibility to classify outgoing queries. The system must have standard query channels (e.g., telephone calls, emails) and enable users to configure their own channels, create query subjects and sub-subjects (e.g., levels: doctor, patient; sub-levels: getting a sick leave certificate, signing a declaration) | Tracking outgoing contacts and communication | High |
| CRM.16 | Possibility of automated scheduled communication (scheduled feedback time, communication type) | Tracking outgoing contacts and communication | High |
| CRM.17 | Possibility to link an outgoing query or communication to a contact card | Tracking outgoing contacts and communication | High |
| CRM.18 | Possibility to communicate through social media channels, with automatic logging into CRM, and integration with the chat-bot functionality, including, but not limited to: – Facebook  – Telegram  – Viber, etc. | Tracking outgoing contacts and communication | Medium |
| CRM.19 | Possibility to configure the knowledge management module with settings for processes, reporting forms, quick search by subjects and keywords | Knowledge management | High |
| CRM.20 | Possibility to customize all elements of the Knowledge Management module functionality (document search principles, document types, download and upload processes) | Knowledge management | High |
| CRM.21 | The contact center staff should have access to the knowledge management module to support processing of incoming and outgoing contacts | Knowledge management | High |
| CRM.22 | Possibility to configure Frequently Asked Questions (FAQs) either automatically (based on case history) or manually | Knowledge management | High |
| CRM.23 | Possibility to configure the document creation process in the knowledge management module (with the following statuses: Draft, Submitted for Validation, Published) | Knowledge management | High |
| CRM.24 | Possibility to categorize documents of the knowledge management module | Knowledge management | High |
| CRM.25 | Possibility to configure user groups to access categories or individual documents | Knowledge management | High |
| CRM.26 | Possibility to configure workflow management in the system through the graphical interface | Setting up processes in the system | High |
| CRM.27 | Possibility to create triggers to start processes | Setting up processes in the system | High |
| CRM.28 | Possibility to configure branching in processes | Setting up processes in the system | High |
| CRM.29 | Possibility to perform automated actions in processes (for instance, launching automatic email distribution) | Setting up processes in the system | High |
| CRM.30 | Possibility to use multilevel processes (combining steps in processes) and combining processes with each other (ending one process can trigger another process) | Setting up processes in the system | High |
| CRM.31 | Possibility to log (record) execution of processes and view the history of their execution. Possibility to track the activities of individual units (monitoring, communications, contracts, accounting, etc.) at all stages of audits | Setting up processes in the system | High |
| CRM.32 | Possibility to attach one or more files to the case (system record) that is linked to a query | Working with files | High |
| CRM.33 | Possibility to add descriptions of attached files, and to use categories (tags) for quick search | Working with files | High |
| CRM.34 | There is no limit to the number and size of files that can be attached to a case | Working with files | Medium |
| CRM.35 | Availability of open source data exchange API for uploading data to external systems. Such an interface should support open data formats and protocols, as well as the format of the Electronic Interaction System for Executive Authorities (EIS) | Integration with other systems | High |
| CRM.36 | Possibility to configure two-way integration with the NHS IS data warehouse (uploading and downloading data) | Integration with other systems | High |
| CRM.37 | Integration with Microsoft Office software, as well as exporting data to external files (CSV/TXT, XML, or other files with separators) | Integration with other systems | High |
| CRM.38 | Integration with the most common social media and messengers (Facebook, WhatsApp, Telegram, Viber, etc.) | Integration with other systems | High |
| CRM.39 | Integration with the document management system of the NHS IS | Integration with other systems | Medium |
| CRM.40 | The system must provide access via the Internet browser both from the NHS network and remotely (thin client) | Access requirements | High |
| CRM.41 | Secure access to the system via mobile devices (tablets and mobile phones) | Access requirements | High |
| CRM.42 | Secure access to the system with Active Directory username and password | Security requirements | High |
| CRM.43 | Possibility to configure two-factor authorization for access to the system | Security requirements | Medium |
| CRM.44 | Possibility to use a "white list" and "black list" of IPs for access to the system | Security requirements | Medium |
| CRM.45 | Possibility to restrict access to some system records for individual users and/or groups of users | Security requirements | High |
| CRM.46 | Possibility of flexible configuration of access to system records: the rights to read, write, create and delete | Security requirements | High |
| CRM.47 | Possibility to configure the available system functionality depending on the group of the user (role group, etc.) | Security requirements | High |
| CRM.48 | Support of change management functionality: when any changes are made to an information object in the system, a new version of such an object must be created, and the system should enable viewing of all the versions of such objects | Administration requirements | High |
| CRM.49 | The Contractor shall install, configure and transfer to the Customer: – the development environment for customization and adaptations of the system – the test environment for testing settings and adaptations of the system – the productive environment for end users to work in | Administration requirements | High |
| CRM.50 | The system shall have application lifecycle management (ALM) tools meeting the following requirements: – possibility to administer system update versions – possibility to administer the process of transferring settings and adaptations between system environments – possibility to support operational tasks of system administration – possibility to automatically generate messages for the system administrator on issues and errors – possibility of real time system performance monitoring | Administration requirements | High |
| CRM.51 | Users are granted access to the system via browser, using HTTPS protocol and SSL | Administration requirements | Low |
| CRM.52 | The system shall comply with the DSTU ISO/IEC 27002:2015 information system security standard | Administration requirements | High |
| CRM.53 | Access to system objects must be granted using flexible access control lists (ACLs) | Administering requirements | High |
| CRM.54 | The system shall enable parameterized rules for the complexity and length of passwords | Administration requirements | High |
| CRM.55 | Users who sign-on to the system and have access to multiple modules are provided with single sign-on (SSO) authorization, with the possibility to use AD of their facility. | Administration requirements | High |
| CRM.56 | The system must have the "audit trail" functionality, which means that the system automatically logs (records) all user operations in the system. No changes can be made to such a log | Administration requirements | High |
| CRM.57 | The contractor must provide technical support for the system in the Ukrainian language | Administration requirements | High |

### Requirements for Contractor Management (CM)

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Description of requirements | Function | Priority |
| CM.CNT.01 | Possibility for system users (NSA staff) to quickly access contacts, status of settlements with Contractors they are working on Possibility to integrate with Customer (Contractor) Relationship Management (CRM) or exchange data through one of the standard interfaces | Contracting | High |
| CM.CNT.02 | Possibility to maintain and record contacts and interactions with health care providers / reimbursement – or integration with (Contractor) Relationship Management (CRM) with the ability to import results of these procedures | Contracting | High |
| CM.CNT.03 | Possibility to control the compliance of health care providers with the qualification requirements according to the criteria determined by the NHS while developing the Terms of Reference | Contracting | High |
| CM.CNT.04 | Possibility of bilateral signing of contracts, completion certificates and other documents (by the NHS and Contractors) with electronic digital signatures and online verification of the EDS validity | Contracting | High (depends on the approved EDS procedure) |
| CM.CNT.05 | Automatic generation of documents according to predetermined templates (calculations for generation of completion certificates, invoices) and export to the accounting and reporting system | Contracting | Medium |
| CM.CNT.06 | Possibility to initiate the monitoring process: – on schedule – on trigger – manually | Contracting | High |
| CM.CNT.07 | Possibility to use (through integration or import) of certain elements of the Customer business intelligence (DWH+BI) in the monitoring subsystem interface | Contracting | High |
| CM.CNT.08 | The "audit trail" functionality (tracking of all user actions) for the monitoring process | Contracting | High |
| CM.CNT.09 | Possibility to generate a document based on the monitoring results, which are stored in the Customer data warehouse | Contracting | High |
| CM.CNT.10 | Possibility to sign documents containing the outcomes of the monitoring process with EDS | Contracting | High |
| CM.CNT.11 | Possibility to create and configure a list of indicators for monitoring of compliance with contract conditions, including: – setting up the process of creation and approval of indicators – using formulas to calculate indicators – using different degrees of tolerance for certain indicators | Contracting | High |
| CM.BIL.12 | Availability of a flexible mechanism for calculating the capitation amounts for primary care, taking into account: – specific factors for age groups and other factors (e.g. the age group factors) – possibility to adjust the calculations with the audit function | Billing | High |
| CM.BIL.13 | Flexible adjustment of schemes, rates, expiration dates, postponement of scheduled changes to terms of payment by groups and types of medical services – by adjusting system parameters without the need for programming | Billing | High |
| CM.BIL.14 | Possibility to differentiate user access to setting up schemes, rates, terms of payment | Billing | High |
| CM.BIL.15 | Possibility to track status of each of the billing documents (sending status, signing status, payment status, etc.) | Billing | High |
| CM.BIL.16 | Flexibility in selecting and adjusting approaches to payments for medical care / reimbursement of medicines. Possibility to combine payment models in any proportions by adjusting percentages or setting absolute values in numbers of services. In such a case, the NHS still remains the direct payer | Billing | High |
| CM.BIL.17 | Possibility to establish different reimbursement schemes for each of the models of payment for medical services:  – Fee-for-Service, in particular by diagnostically related groups (DRGs) – Global Budget | Billing | High |
| CM.BIL.18 | Possibility to charge and pay health care providers additional incentive payments or penalties based on performance indicators (Pay for Performance) | Billing | Low |
| CM.BIL.19 | Possibility of flexible configuration by the Functional System Administrator (rules, rates, limits, deadlines) of incentive payments and penalties for certain roles | Billing | Low |
| CM.PAY.20 | Calculation of amounts to be paid by the STU, by health care institution and individual contracts | Payments | High |
| CM.PAY.21 | Possibility to generate payment documents automatically, on schedule, based on the electronic documents available (report, invoice) | Payments | High |
| CM.PAY.22 | Integration with the Treasury RSS for automatic transfer of payment registers | Payments | High |
| CM.PAY.23 | Possibility to create primary payment-related documents or data for generation of primary documentation based on the NHS IS and the eHealth CC data | Payments | High |
| CM.PAY.24 | Possibility to link the services provided to payments, and to generate reports on the services paid and services to be paid | Payments | High |
| CM.PAY.25 | Possibility of advance payments | Payments | High |
| CM.I.28 | Possibility of integration with external systems through API | Integration | High |
| CM.I.29 | Integration with DWH DB or other DBs (eHealth) to ensure exchange of the following data:  – verification of the medical care contract status (primary, specialized, reimbursement, etc.) – provision of information on the status of payment for medical services | Integration | High |
| CM.I.30 | Possibility to integrate or import registers, dictionaries, etc. from the accounting and reporting system for settlements with Contractors by: – PССs (budget program classification codes)  – ECCs (expenditure classification codes)  – Contractors (health care providers and medicine retailers)  – Contracts (with annexes, supplementary agreements, etc.) – Settlement documents | Integration | High |

### Requirements for Interaction with Contractors (BA)

Additional requirements for management of contracts with the NHS Suppliers. The requirements can be implemented as a system comprising three separate functionality units: contract management, billing, and payments. In any case, it is necessary to ensure seamless integration with the use of standard system interfaces, enabling instant use of information from different units in transactions.

| Code | Description of requirements |  | Priority |
| --- | --- | --- | --- |
| BA.CNT.1 | Possibility to keep a register of contracts concluded with suppliers of goods and services to the NHS, with a list of basic contract parameters (contractor, terms, duration, etc.) | Contracting | High |
| BA.CNT.2 | Possibility to view the history of settlements under the contract, and the history of amendments of contract terms and conditions | Contracting | Medium |
| BA.CNT.3 | Possibility to track contract performance in accordance with terms conditions | Contracting | Medium |
| BA.CNT.4 | Possibility to link the project plan stages to the terms and conditions of the contract (in cases where the contract is linked to project obligations – for instance, the payment is made under the condition of proper execution of the relevant project stage, which is confirmed by a specified procedure) | Contracting | Medium |
| BA.CNT.5 | Possibility to track the partial/phased execution of the project and partial payment under the contract with connection to the volume of work performed | Contracting | Medium |
| BA.CNT.5 | Tracking of contract duration and timely warnings before deadlines | Contracting | Medium |
| BA.BIL.6 | Downloading and processing of primary information from the eHealth CC for the period determined by the responsible system user to calculate the due amounts payable according to the report/bill – by settings according to the types of payment in the current process | Billing | High |
| BA.BIL.7 | Recalculation of cost of services provided in the previous periods, in case of changes in the volume of services, and generation of adjustments in the system | Billing | High |
| BA.BIL.8 | Generation of reports and/or reports payable by contractors, contracts, budget programs according to the established rates and payment methods, in particular:  1) global rates, which imply paying fixed amounts to health care providers for a certain number of services or a certain period;  2) capitation rates, e.g. a fixed amount per patient;  3) rates per case of treatment;  4) rates per medical service provided;  5) rates based on health care performance under public health care contracts;  6) other possible mechanisms to pay for services provided | Billing | High |
| BA.BIL.9 | Calculation of reimbursement amounts to pharmacies for the dispensed prescription drugs from the list of authorized medicinal products (in accordance with the Unified Medicines Directory) | Billing |  |
| BA.BIL.10 | Use of unified directories of medical services (medical events), medicines, etc. for detailing the calculation. | Billing | High |
| BA.BIL.11 | Integration with state registers (SSR, SDS register, etc.) to control the correctness of the information provided | Billing | High |
| BA.BIL.12 | Monitoring of status of the generated invoices/reports | Billing | Medium |
| BA.BIL.13 | Analysis of fulfillment of budgetary commitments, taking into account budgetary commitments paid by the NHS – by budget programs, health care providers and individual contracts | Billing | High |
| BA.BIL.14 | Integration with the accounting system for operations related to balance sheet recognition of budgetary commitments, budgetary financial commitments, and payments | Billing | High |
| BA.BIL.15 | Transmission of generated reports to the eHealth CC, synchronization of data concerning the status of settlements and volumes of services actually provided between the CC and the billing and payment management system | Billing | High |
| BA.BIL.16 | Possibility to generate initial reports or data for generation of primary information based on the data from the NHS IS and the eHealth CC | Billing | High |
| BA.BIL.17 | Possibility to inform a contractor (via the eHealth service) of the invoices/reports and/or reassessment generated | Billing | Medium |
| BA.BIL.18 | Possibility to filter the generated documents by budget programs and areas of funds use | Billing |  |
| BA.BIL.19 | Monitoring compliance with deadlines set for processing of the generated reports and/or invoices | Billing | High |
| BA.BIL.20 | Analysis of invoices / reports compared to prior periods for non-standard deviations (above the level specified in the methodology). Possibility to display such deviations by analytic indicators | Payments | Medium |
| BA.PAY.21 | Possibility to generate budget commitments within the contract amount and/or supplementary agreements and the amount of approved estimates. Ensure control over timely accounting | Payments | High |
| BA.PAY.22 | Possibility to make adjustments to budget commitments | Payments | High |
| BA.PAY.23 | Control over the creation of budget commitments within the approved annual budget allocations under budget programs | Payments | High |
| BA.PAY.24 | Possibility to generate budgetary financial commitments | Payments | High |
| BA.PAY.25 | Possibility to generate adjustments to budgetary financial commitments | Payments | High |
| BA.PAY.26 | Control over the creation of budgetary financial commitments within the approved annual budgetary allocations under budgetary programs | Payments | High |
| BA.PAY.27 | Transmission of information for creation of payment orders | Payments | High |
|  | Control over the creation of payment orders within the approved monthly allocation plan for budget programs | Payments | High |
| BA.PAY.28 | Creation of registers for budgetary, financial budgetary commitments, and payment orders. Integration with the Treasury RSS to automatically transmit registers of budgetary commitments, budgetary financial commitments and payment orders in accordance with the law | Payments | High |
| BA.PAY.29 | Ensuring changes in the status of budgetary, financial budgetary commitments, and payment orders at all stages of their processing | Payments | Medium |

### Accounting (ACC)

Functional requirements for the NHS IS concerning accounting processes:

| Code | Description of requirements | Priority |
| --- | --- | --- |
| ACC.1 | Possibility to generate primary accounting documents in accordance with the forms prescribed by law | High |
| ACC.2 | Possibility of keeping stock of inventory by nomenclature, persons responsible and storage sites, using the material assets estimation prescribed by NPSAS (by classification groups and analytic indicators: – PCSs, Funds, budget revenues classification, ECCE) | High |
| ACC.3 | Generation of documents for asset recognition of material assets and low-value assets:   * receiving of material assets and low-value assets from supplier; * asset recognition of material assets and low-value assets discovered in the inventory; * asset recognition of material assets and low-value assets that have been received as humanitarian aid; * recognition of material assets as a result of splitting or liquidation; * generation of documents on the movement of material assets and low-value assets: * internal movement of material assets and low-value assets; * intra-departmental transfer of material assets and low-value assets | High |
| ACC.4 | Material assets revaluation | High |
| ACC.5 | Generation of documents for material asset write-offs material asset recoveries | High |
| ACC.6 | Generation of printed accounting forms for material assets and low-value assets in accordance with the current legislation | High |
| ACC.7 | Generation of inventory documents for material assets and low-value assets, and display of inventory results | High |
| ACC.8 | Possibility of accounting for fixed and intangible assets in accordance with NPSAS (by classification groups and analytic indicators: PCSs, Funds, budget revenues classification, ECCE) | High |
| ACC.9 | Setting up the composition of commissions in the organization that are entitled to sign standard reporting and printed forms on current and non-current assets | High |
| ACC.10 | Generation of documents on receiving non-current assets:   * receipt of capital investments; * commissioning of fixed assets; * recognition of fixed assets discovered in the inventory of non-current assets; * receipt of current assets for off-balance sheet accounting; * intradepartmental receipt of non-current assets; * receipt of non-current assets free of charge from a Contractor; * modernization, reconstruction, repair; * unfinished capital construction, by analytic indicators | High |
| ACC.11 | Generation of documents for write-off of non-current assets:   * write-off of fixed assets; * write-off of low-value non-current tangible assets; * write-off of intangible assets; * write-offs from off-balance sheet accounting of fixed assets and low-value non-current tangible assets;   depreciation of fixed assets, intangible assets and low-value non-current tangible assets | High |
| ACC.12 | Registration of other operations on non-current assets:   * generation of inventory descriptions of non-current assets; * internal movement of non-current assets; * transfer of non-current assets to conservation and their return from conservation; * generation of printed forms for accounting of non-current assets in accordance with the current legislation; * display of the outcome of inventory of fixed assets, intangible assets, and low-value non-current tangible assets;   revaluation of fixed assets | High |
| ACC.13 |  |  |
| ACC.14 | Possibility to account for budgetary allocations | High |
| ACC.15 | Possibility to keep track of funds in the context of currencies, invoices, settlement documents | High |
| ACC.16 | Possibility to keep track of revenues and expenditures of a budgetary institution | High |
| ACC.17 | Possibility to keep records of future revenues and expenditures | High |
| ACC.18 | Possibility to record settlements with debtors/creditors and reportable persons, including generation of reports on reconciliation of accounts with Contractors | High |
| ACC.19 | Generation of documents on services received:   * registration of invoices for services received; * generation of completion certificates on services received | High |
| ACC.20 | Generation of documents on services provided:   * registration of invoices for services provided; * generation of completion certificates on services provided | High |
| ACC.21 | Possibility to generate analytical reports on accounting registers for analysis of financial and economic activity | Medium |
| ACC.22 | Possibility to generate and submit a complete package of financial, budget, tax and statistical reporting | High |
| ACC.23 | Possibility of accounting for general and special fund | High |
| ACC.24 | Maintaining all the dictionaries, directories and registers necessary for accounting | High |
| ACC.25 | Possibility of accounting with the use of analytic indicators by structural and territorial units | High |
| ACC.26 | Possibility of different kinds of filtering by certain types of analytic indicators, with the possibility of exporting the output to Excel | High |
| ACC.27 | Possibility to integrate accounting module with budgeting, payroll and invoicing modules for internal transactions and plan-fact reports | High |
| ACC.28 | Possibility to enable manual operations (printing of accounting statements) | High |
| ACC.29 | Possibility of enabling scheduled operations:   * closing of accounts at the end of the quarter; * closing of accounts at the end of the year; * currency revaluation | High |
| ACC.30 | Possibility to keep a log of business operations | High |
| ACC.31 | Possibility to keep a consolidated register of documents | High |
| ACC.32 | Possibility to set opening balances:  – setting opening balances for the main balances;  – setting opening balances for accounting records;  – setting opening balances on material assets;  – setting opening balances for settlements with counterparties | High |
| ACC.33 | Possibility to set no-edit date | High |
| ACC.34 | Integration with the Public Sector Accounting and Financial Reporting System in accordance with the 2025 strategy approved by the Cabinet of Ministers of Ukraine dated July 20, 2018, No. 437-p | High |

### Personnel Records (PS.P)

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| PS.P.1 | Generation of the staffing list of the organization based on the approved organization design | High |
| PS.P.2 | Possibility of keeping personal files of employees (for civil servants in accordance with the order of NACS No. 64 dated March 22, 2016 on Approval of the Procedure for Keeping and Storage of Personal Files of Civil Servants) | High |
| PS.P.3 | Providing staff workflow (applications, orders, etc. resulting in changes of employee records) | High |
| PS.P.4 | Possibility to receive reports on personnel record keeping in accordance with the current legislation of Ukraine:   * **On Quantity of Civil Servants** (quarterly) – NACS Order No. 223 dated October 21, 2016; * **INFORMATION FORM** on record keeping of state institutions, where management and specialists are civil servants (Form No. 1-PDO – annual) – NACS Order No. 43 dated April 8, 2014; * **INFORMATION ON** EMPLOYMENT **OF** CITIZENS **WITH ADDITIONAL EMPLOYMENT** GUARANTEES FOR THE YEAR 20\_\_ – Order of the Ministry of Social Policy No. 271 dated May 16, 2013 (as amended). | High |
| PS.P.5 | Flexible mechanism of setting working schedules | Medium |
| PS.P.6 | Periods of service. History of calculations (Labor Code of Ukraine, Art. 46 of the Law on Civil Service, Resolution of the Cabinet of Ministers of Ukraine dated March 25, 2016 No. 229 on Approval of the Procedure for Calculating Civil Service Periods of Service) | High |
| PS.P.7 | Hiring and dismissal. Transfering (Labor Code of Ukraine, Art. 19-21, 31-37, 83-90 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine No. 271 dated April 06,.2016 on Approval of the criteria for determining the list of positions of employees of state bodies performing service functions) | High |
| PS.P.8 | State service. Oath. Ranks (Art. 36, 38-49 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine No. 229 dated March 25, 2016 on Approval of the Procedure for Calculating Civil Service Experience, Resolution of the Cabinet of Ministers of Ukraine dated April 20,.2016 No. 306 on Awarding ranks to local government officials, military ranks, diplomatic ranks, and other special ranks) | High |
| PS.P.9 | Salaries. Extras. Welfare Assistance (Art. 50-55 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine No. 15 dated January 18, 2017 on Remuneration of Employees of State Institution, Resolution of the Cabinet of Ministers of Ukraine dated August 08, 2016 No. 500 on Approval of the Procedure for Provision of Welfare Assistance to Civil Servants to Address Social Issues, Order of the Ministry of Labor No. 77 of October 02,1996 on Remuneration Conditions for Employees Engaged in the Service of Executive Bodies, Local Self-Government and Its Executive Bodies, Prosecutor's Offices, Courts and Other Institutions) | High |
| PS.P.10 | Promotion in the institution (Art. 38-49 of the Law on Civil Service) | High |
| PS.P.11 | Annual evaluation (Art. 44 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine dated August 23, 2017 No. 640 on Approval of the Standard Procedure for Assessing the Performance of Civil Servants | High |
| PS.P.12 | In-service training (Art. 48-49 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine dated September 27, 2016 No. 674 on Some Issues of Reforming the System of Professional Training for Civil Servants and Officials of Local Self-Government; NACS order No. 86 dated April 19, 2017 on Approval of the Procedure for In-Service Training for Civil Servants and Officials of Local Self-Government in Educational Institutions under the Government Contract by the National Agency of Ukraine for Civil Service) | High |
| PS.P.13 | Competition (Art. 22-30 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine dated March 25, 2016 No. 246 on Approval of the Procedure for Holding Competitions for Public Service Offices, NACS Order No. 72 dated April 06, 2016, on Approval of the Procedure for Setting Special Requirements for Persons Applying for Public Service Offices of the Categories "B" and "C", the joint order of NADS and the Ministry of Justice dated May 06, 2016 No. 97/1328/5 on Approval of Test Questions", NADS order No. 110 of May 25, 2016 on Approval of the Procedure for Registration and Sending (Delivery) of Demands for Revocation of Decisions by State Bodies and Their Officials Concerning Civil Service in Case They Contradict with the Legislation Regarding the Rights of Citizens to Civil Service, Elimination of Violations of the Rights of a Civil Servant, or Revocation of the Results of the Competition for a Vacancy in Civil Service) | High |
| PS.P.14 | Vacations (Labor Code of Ukraine, Art. 56-60 of the Law of Ukraine "On Civil Service", Law of Ukraine on Vacations, Resolution of the Cabinet of Ministers of Ukraine dated April 06,2016 No. 270 on Approval of the Procedure for Granting Additional Paid Vacations to Civil Servants, Resolution of the Cabinet of Ministers of Ukraine No. 230 dated March 25,.2016 on the Procedure of Recalling a Civil Servant from an Annual Leave ", Resolution of the Cabinet of Ministers of Ukraine No. 231 dated March 25,.2016 on Approval of the Procedure for Compensation of Unforeseen Expenses of a Civil Servant Resulting from Their Withdrawal from Basic or Additional Annual Leave) | High |
| PS.P.15 | Business Trips (Art. 42 of the Law of Ukraine on Civil Service, Resolution of the Cabinet of Ministers of Ukraine No. 681 dated October 05, 2016 on Amendments to the Resolution of the Cabinet of Ministers of Ukraine No. 98 dated February 2, 2011.) | High |
| PS.P.16 | Benefits. Sick Leaves (Law of Ukraine on Donation of Blood and Blood Components, Law of Ukraine on the Status of War Veterans, and Guarantees of their social protection, Law of Ukraine on the Status and Social Security of Citizens Affected by the Chornobyl Disaster, Law of Ukraine on Vacations) | High |
| PS.P.17 | Military Enlistment (Resolution of the Cabinet of Ministers of Ukraine No. 921 dated December 7, 2016 on Approval of the Procedure for Keeping Military Records of Conscripts and Servicepeople) | High |
| PS.P.18 | Labor activity (Labor Code of Ukraine, Law of Ukraine on Civil Service) |  |
| PS.P.19 | Flexible mechanism for setting up wage schemes (rates, allowances, deductions, etc.) | High |

### Payroll Accounting (PS.SAL)

|  |  |  |
| --- | --- | --- |
| Code | Description of Requirements | Priority |
| PS.SAL.1 | Possibility to keep payroll accounting taking into consideration the special features of civil service | High |
| PS.SAL.2 | Automatic generation of payroll documents (payment slips, payroll registers, etc.) | High |
| PS.SAL.3 | Calculation of wages, unified social tax, other charges and deductions, incl. those under executive instructions | High |
| PS.SAL.4 | Calculation of leave allowances and sick pays | High |
| PS.SAL.5 | Automatic generation of statistical reports on remuneration for the State Statistics Service | High |
| PS.SAL.6 | Automatic generation of reports of personal income tax, unified social tax, etc. in accordance with the requirements of the current legislation of Ukraine | High |
| PS.SAL.7 | Generation of documents necessary for payment of salaries both through the cash desk and to employees' bank cards | Medium |
| PS.SAL.8 | Generation of statement wages accrued and paid | High |

### Requirements for the Knowledge Management and Training Function (KM)

The knowledge management and training function shall be implemented as a subsystem integrated with the Personal Management system, the Contact Center, CRM, and shall contain the following components:

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| KM.КМ.01 | * E-learning (distance learning) system; * Knowledge management system;   These systems are built on the same technological platform and interact directly | High |
| KM.DLS.02 | Distance learning (e-learning) enables optimization of the task of informing employees and external users about learning events, user-teacher interaction, exchanges of views and experiences between users, tutor advice between in-person sessions, access to learning materials from any location at any time, effective and transparent control of knowledge by means of computer testing | High |
| KM.DLS.03 | **Personal User Account**  There are several levels of access for external users:   * Without authorization – general information for all target audiences * For users who are logged in via social media and email (downloading content and receiving updates on scheduled training events) * After manual authorization with identity verification (broader access to development programs and personal knowledge cards by profession) * Internal NHS users (integration with the NHS staff management system) * Training specialist (ability to upoload or edit material, reports, etc.) * Administrator (full access) | High |
| KM.DLS.04 | There are two possible approaches to registration of users in the System: self-registration (either with or without approval by the Administrator, with email confirmation), or manual registration by the Administrator, or importing a .csv file | High |
| KM.DLS.05 | A self-registered user only has access to open courses and news; the access to specific courses, forums and databases can be granted by the Administrator by means of adding the user to certain groups, according to the registration information, user lists provided to the Administration, or requests for participation in the course from a user | High |
| KM.DLS.06 | Constant feedback from users as a prerequisite for successful organization of e-learning | High |
| KM.KM.07 | The knowledge management system should use the same technological platform and the same access management system as the e-learning system | High |
| KM.KM.08 | The knowledge management system consists of:  A library of regulatory documents, laws and sub-laws related to the tasks performed by the NHS | High |
| KM.KM.09 | A library of general professional materials (articles, instructions, books, other texts, audio and video materials), | High |
| KM.KM.10 | A library of practical case studies related to the NHS operations |  |
| KM.KM.11 | Communication platforms for discussing cases, holding consultations, obtaining urgent expert and mentoring assistance | High |
| KM.KM.12 | Courses that are open to all registered users and contain a classifier of headings for easy finding of the necessary material shall be created for the Legal Library and the Professional Library | High |
| KM.KM.13 | Consultation and discussion platforms are created both within the Libraries and in separate permanently accessible courses for all registered users. | High |
| KM.KM.14 | The practical case study library can be organized as a Wiki. In this case, each page of the case study should contain a general description of the situation, links to files with protocols, reports, instructions, and a platform to discuss and comment on the case. Discussion of cases can happen both separately from distance learning courses and within them. The most interesting and insightful comments can be added by the Administrator into the body of the case, and further used by experts to create job descriptions and practical instructions for courses. The case library should also include a classifier of headers and contextual search | High |
| KM.KM.15 | Creation and maintenance of a knowledge base containing structures representing sets of knowledge (domains) of applied tasks, consisting of knowledge units that can be represented by text, audio or video, etc. | High |
| KM.KM.16 | Search for content by subject area, both in the knowledge management system and in external sources | High |
| KM.KM.17 | Availability of a system for storage of electronic documents corresponding to different representation forms of formalized knowledge (text, audio, video, animation, images, spreadsheets, models, etc.) | High |
| KM.KM.18 | Possibility of group discussion of knowledge sets and units of knowledge and online Q&A consultations | High |
| KM.KM.19 | Possibility for the users to evaluate knowledge domains and units | Medium |
| KM.KM.20 | Possibility of structured representation and generation of knowledge in systems | High |
| KM.KM.21 | Possibility to create configurations for practical testing of knowledge | Medium |
| KM.KM.22 | Possibility to present knowledge and educational materials in accordance with the structure of the solution | High |
| KM.KM.23 | Possibility to create cases based on structured domains of knowledge and tools for their practical application | Medium |
| KM.KM.24 | Possibility to create case-based training courses | Medium |
| KM.KM.25 | Availability of a dynamic role model that enables users to grow in the system | Medium |
| KM.KM.26 | Availability of tools for group social interaction of users while solving subject-matter problems (elements of social media, blogs) | High |
| KM.KM.27 | Availability of educational tools (webinars, virtual classrooms) | High |
| KM.KM.28 | Possibility to include subject-matter problems into or didactic materials into knowledge domains; integration with electronic libraries | Medium |
| KM.KM.29 | Possibility of integration with the personnel management system | High |
| KM.KM.30 | Possibility of integration with the Client (Contractor) Management System | High |
| KM.KM.31 | Use of user tags, blocking and activation of user accounts | High |
| KM.KM.32 | User synchronization. Import from CSV, use of city, division and position attributes; data updates on the next import | High |
| KM.DLS.33 | Sign-on to the system through social media | High |
| KM.KM.34 | Organizational structure. Configuration of unit subordination, supervisors and subordinates, automatic redistribution of users on synchronization, integration with the Personnel Management system | High |
| KM.KM.35 | Contacts. Employee contact database for search and filtering by organizational structure | High |
| KM.DLS.36 | Educational resources. Creation and uploading of resources for learning. HTML page, file, web presentation, gallery, hyperlink, Markdown page | High |
| KM.KM.37 | Page Grabber – automatically retrieval of content from specified URLs while removing ads and other unnecessary items | High |
| KM.DLS.38 | Importing SCORM and HTML training modules | High |
| KM.KM.39 | Presentations. Convertion of PDF presentations into web format | High |
| KM.KM.40 | Presentations. Conversion of PowerPoint presentations into web format | High |
| KM.KM.41 | Video. Background conversion of video files to web formats (MP4, OGG) | High |
| KM.DLS.42 | Hands-on tasks. Providing hands-on tasks for independent work, individual counseling, file sharing and evaluation of the results of the assignment. | High |
| KM.DLS.43 | In-person classes. Appointments for in-person classes (date, time, place), attachment of files for the class, evaluation. | High |
| KM.DLS.44 | Tests. Single choice, multiple choice and open questions. Import of questions from a text file. Different modes of testing | High |
| KM.DLS.45 | Comprehensive testing. Organization of general testing on given topics with separate result analysis on each subject | High |
| KM.DLS.46 | Polls and voting | High |
| KM.DLS.47 | Courses. Combining resources, tests, and questionnaires into simple courses. Creation and adjustment of the course plan | High |
| KM.DLS.48 | Learning programs. Combining resources, tests, questionnaires, and courses into learning programs. Creation of a learning path by setting rules for access to program elements | High |
| KM.DLS.49 | Schedule of tasks. The list of tasks with their execution dates. Individual or group assignment. Setting deadlines for completion. Self-assigned, by application, and mandatory assignments | High |
| KM.DLS.50 | Webinars | High |
| KM.DLS.51 | Messaging service. Customization of message templates. E-mail messages, browser, SMS messages  Notifications/announcement  News. Maintaining a news feed divided into sections | High |
| KM.DLS.52 | Forum. Real-time updates, member and comment ratings, inviting new participants, attaching files. Event notification.  Restricted forum topics. Creation of restricted access topics. Only participants can view the topic and its messages. All the information is encrypted.  Restricting access to forum sections. Allowing users to access resources by the combination of city, unit, position, and tag | High |
| KM.DLS.53 | Chat. Real time discussions. Group and personal communication channels. Attachment of files and browser messages. Search in the chat | High |
| KM.KM.54 | Wiki. Internal public encyclopedia.  Knowledge Base. Automatic creation of information base and search on permitted resources, wiki, news, forum  Restricting access to resources. Allowing users to access resources by the combination of city, unit, position, and tag | High |
| KM.DLS.55 | Reports. Course training, testing, logging user sessions of the use of the system.  Training program report.  Questionnaire report  Consolidated report on user training for all tasks for a given period.  Log of access to training tasks | High |
| KM.DLS.56 | Comments. Commenting on of resources, tests, courses. Control and management of comments.  Working tasks. Task tracker – recording the process for setting and performing working tasks | High |
| KM.DLS.57 | 360 degree feedback | High |
| KM.DLS.58 | Sent emails log  Sent SMS log  User import protocol  Reporting to supervisors on their subordinates  Sent emails log  Sent SMS log  User import protocol  Individual reports. Creating reports that follow the specific logic of the Customer. | High |
| KM.DLS.59 | Check-lists. Evaluaton by a controller/trainer according to checklists | High |
| KM.DLS.60 | Automation rules. Setting rules for automatic task assignment. | High |
| KM.DLS.61 | Individual development plans. Customization of personal development plan templates for different purposes. Performance evaluation by the manager, the counselor; self-assessment. Flexible changes of the plan and combination of different plans. | High |
| KM.DLS.62 | Badges for tasks. Creation of badge sets. Granting a badge for successful completion of the task. Personal badge collections. | High |
| KM.DLS.63 | Processing of applications for in-service training. Creation of a list of qualification programs, collecting and processing of applications for participation. | High |
| KM.DLS.64 | API integration with third-party systems | High |
| KM.DLS.65 | **Training center**  Automation of the training process: collecting and processing of training orders, creation of development plans, database of teachers and training programs, event planning, event calendar, budgeting, document management, communication | High |
| KM.DLS.66 | **Mobile application**  This module enables users without permanent Internet access to use distant learning and testing autonomously, with the subsequent transfer of results to the e-learning system. It shall be available for Android and iOS. Possibility for users to learn and answer question offline, having preloaded the content. | High |
| KM.DLS.67 | **Virtual classroom**  Conducting webinars, web conferences. Enabling videos from the participants’ web cameras. Communication in written and in the voice chat. Displaying presentations from the teacher's screen. Enabling questionnaires and polls. | High |
| KM.DLS.68 | **Chat bot**  A module that enables communication with your target audience, setting up a feedback system. Integration with various messengers: Telegram, Viber, Skype, Facebook. | High |
| KM.DLS.69 | Integration with the NHS Website: www.nszu.gov.ua   * This is the main entry point to the NHS Academy for all target audiences (representatives of health care facilities, students and universities, scholars, journalists, ordinary citizens). * Database of schools and training programs: Aggregator of schools and training programs. For users: possibility to choose optimal training by certain parameters (region, subject, duration, cost, etc.). * Event Calendar: keeping the archive of previous events (with photo/video materials from the event). Signing up for upcoming events * Statistics/reports: creation of dashboards, integration with other modules of the NHS IS * Website News: maintaining a news feed divided into sections | High |

### Requirements for Inventory Management (INV)

The system shall register movements of material assets and fixed assets

|  |  |  |
| --- | --- | --- |
| Code | Description of Requirements | Priority |
| INV.INV.01 | A single inventory catalog for all components of the NHS IS | High |
| INV. INV.02 | Configuration of measurement units for all items and for each particular item-organization combination | High |
| INV. INV.03 | Configuration of inventory and nomenclature numbers at the level of items, batches, use-by dates | High |
| INV. INV.04 |  |  |
| INV. INV.05 | Keeping item names in the Ukrainian language | High |
| INV. INV.06 | Keeping the structure of storage sites in sync with the structure of the facility (regional unit, department, warehouse, location, person responsible, etc.) | High |
| INV. INV.07 | Identification of storage locations by row, shelf, location number, etc. | High |
| INV. INV.08 | Registration of material asset receipt transactions in one or two stages, with quality control if necessary. | High |
| INV. INV.09 | Registration of material assets decommissioning and transfer transactions, by serial numbers, batch number or automatically, FIFO or LIFO | High |
| INV. INV.10 | Registration of material assets movements between structural units and storage sites | High |
| INV. INV.11 | Registration of material assets decommissioning with different types of transactions (write-offs, handover of long life material assets, inventory adjustments, etc.); the user should be able to add options to the list of transaction types. The number of transaction types shall not be limited. | High |
| INV.INV.12 | Generation of accounting transaction, transferring transactions to the billing and accounting unit using standard interfaces of the software vendor (scheduled or instant, upon transaction) | High |
| INV.INV.13 | Keeping a transaction log with possibility to search and track transactions in different ways, directly from the forms of the system | High |
| INV.INV.14 | Availability of standard on material assets (for printing) | High |
| INV.INV.15 | Possibility to create additional reports based on DB reports using system software code requests (form requests, viewing, etc.) | High |
| INV.INV.16 | Accounting for the balance and movement of the material assets in in terms of quantity and value, at historical cost or indicative price | High |
| INV.INV.17 | Possibility to modify process workflow using graphical interfaces at the system administrator level. | High |
| INV.FA.18 | Application the selected current assets depreciation method to a group of current assets or each item individually | High |
| INV.FA.19 | Printing labels with inventory numbers or serial/factory numbers, using 1D, 2D barcodes | Medium |

### E-Marketplace Requirements (EMP)

The system should enable reverse auctions or other types of bidding for the procurement of any materials/services, both for the own needs and to meet the government needs for reimbursement, primary care services, etc.

|  |  |  |
| --- | --- | --- |
| Code | Description of Requirements | Priority |
| EMP.01 | Setting up an institution's corporate identity on the e-marketplace website | Medium |
| EMP.02 | Publishing of marketing materials, descriptions, brand definitions, images, and goals for each marketplace platform (for each auction) | Medium |
| EMP.03 | Manage user and company accounts of members | High |
| EMP.04 | Managing price lists/price catalogs/metrics, taken together or separately | High |
| EMP.05 | Registration of participants with identification by qualified electronic signature | High |
| EMP.06 | Registration of the holder of the registration certificate or its authorized person, who is entitled to do the actions specified in the announcement | High |
| EMP.07 | Registration of participants' profiles. Participant company data (name, legal/actual address, etc., user registration data from the user provider)  search by user/member directories | High |
| EMP.08 | Integration with external registers (SSR, SDS License Register, Medicinal Products Register, etc.) using the RI functionality (MDM functionality unit) | High |
| EMP.09 | Integration with the functional account management unit   * flexible selection of pricing options, payment methods and options * generation of orders based on the outcome of the auction | High |
| EMP.10 | Procurement by catalogs. Managing directories, assigning directories to multiple sellers, defining payment methods | High |
| EMP.11 | Bidding in the form of reverse auction | High |
| EMP.12 | Supplier portal functionality | Medium |
| EMP.13 | Bidding with the use of WHO DDD, daily dose (or any other measurement unit) with automatic conversion into medicinal product units from the catalog (register). | High |
| EMP.14 | Generation of medicine registers based on the auction outcomes |  |
| EMP.15 | Determination of the price of medicinal products in relation to the indicative price, and the reimbursement amount | High |
| EMP.16 | Integration with the Inventory unit: item catalogs, delivery order numbers | High |
| EMP.17 | Viewing requests by quotas. Viewing the available inventory of the items supplied by a single supplier | High |
| EMP.18 | Determination of valid order parameters such as quantity, minimum quantity per order (supply offer), limitation for supply batches | High |
| EMP.20 | Possibility to set quotas for volumes or amount of procurement | Medium |
| EMP.21 | Integration of the e-marketplace with the Inventory functional unit, including fixed assets management | High |
| EMP.22 | External Referencing – Comparison and analysis of price offers for similar products in neighboring countries (downloading data from files or databases) |  |

## Non-Functional Requirements List

### Requirements for the Number and Qualification of the System Staff and Their Operation Modes

#### **Requirements for the Number of Users**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.PE.01 | According to the list of roles and the estimated number of staff in these roles, the total number of system users by the end of the project can reach 1060 persons. | High |
| G.PE.02 | The system should enable the increase in the number of users without adaptations or modifications | High |
| G.PE.03 | The system shall be able to manage the number of simultaneous multiple connections from one users (multiple working sessions can be either enabled or disabled) | High |
| G.PE.04 | System performance should not depend on the number of sessions and users connected | High |

#### **Requirements for Staff Operation Modes**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.PE.05 | The introduced system should be available 24x7 on an ongoing basis, except for times when the system is undergoing maintenance (up to 5 hours per month) or stopped for upgrade, if that has been scheduled. | High |
| G.PE.06 | System users must have unconditional access to all system services on weekdays from 9 am to 6 pm, and access during off-hours, except for scheduled maintenance works | High |

### Performance Indicators

#### **Requirements for System Functioning Modes**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SP.4 | The maximum response time for request processing or operations in the NHS IS shall be no more than 3 seconds | Medium |
| G.SP.5 | The NHS IS must ensure average report generation time of no more than 300 seconds | Medium |
| G.SP.6 | The NHS IS should be able to provide information on its performance to the infrastructure and application monitoring systems | Low |
| G.SP.7 | Possibility to use the corporate catalog for user authentication | Medium |
| G.SP.8 | In the case of any software or hardware failure, the NHS IS shall be restored to working condition within a maximum of 60 minutes from the time the hardware is brought back to working condition. | High |
| G.SP.9 | In the event of data corruption, the NHS IS shall be restored from the archive/backup of a copy that is not older than 24 hours | High |
| G.SP.10 | The NHS IS should provide workload support based on the following numbers of users:   * The functionality of billing for medical services, reimbursement and interaction with providers – up to 600 users; * Efficiency management, financing and accounting functionality – up to 80 users; * Personnel record keeping and payroll accounting functionality – up to 60 users, etc.   Increasing the number of users should not affect system performance if the server capacity has reserves for increase | High |
| G.SP.11 | The NHS IS shall ensure uninterrupted operation under the following conditions (not less than):   * 2000 primary care facilities; * 25,000 primary care physicians; * 30,000 pharmacies; * 4,000,000 prescriptions per month as part of the reimbursement program with the possibility to expand to 10,000,000 without impact on system performance and without the need for adaptations; * 2 payments per pharmacy per month under the reimbursement program; * Over 2,000 specialized care facilities; * 2,000 contracts with primary care facilities; * 15,000 contracts with specialized care facilities * with monthly exchange of reports on services provided under each contract. * 1 payment per month to each primary care facility and 2 payments per month to specialized care facilities (except for pharmacies); * 10,000,000 visits to doctors (or medical episodes) monthly | High |

#### **Requirements for Methods and Means of Information Exchange Between System Components**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.I.1 | The NHS IS shall have built-in integration mechanisms with other information systems (open interface tables or APIs) | High |
| G.I.2 | The NHS IS shall have built-in CSV, XLS, or XML data export mechanisms available to system users through the standard system interface. Visualization of reports exported to PDF, PNG | High |
| G.I.3 | The NHS IS should ensure data export and import according to the specified schedule. | High |
| G.I.4 | Data exchange between system components should be performed without file exchange, without user involvement. | High |
| G.I.5 | The use of internal interfaces provided by the vendor is permitted. |  |

#### **Requirements for System Management Modes**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SP.16 | **Regular operation mode** implies availability of the full functionality of the modules of the NHS IS in accordance with this ToR. | High |
| G.SP.17 | **Maintenance mode** is not available. It is implied that the maintenance work, backup, database synchronization, platform updates, etc. should occur in the background while the system is functioning, without affecting its functionality, but with a possibility of increased end-user response time. | High |
| G.SP.18 | **Emergency mode** of the system operation is on when one or more components of software and/or hardware fail.  If the system is going to switch to the emergency mode, it is necessary to do the following:   * shut down the applications without losing data; * disable all peripheral devices; * back up the database; * inform users and administrators about the incident and the time for which the servers will be unavailable.   After that, it is necessary to perform a set of measures to eliminate the cause of the emergency mode. | High |

#### **Change Adaptability Requirements (G.SM)**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SM.01 | System adaptability should be achieved through automated management of:   * timeliness of administration; * modernization of data collection, processing and downloading processes to meet the new requirements; * modification of procedures for data access and data provision to end users; | High |
| G.SM.02 | It is necessary to ensure the possibility of operational changes without the involvement of the Contractor and the platform vendor (if the changes are related to adding/modification of the functionality ensured by the manufacturer) | High |
| G.SM.03 | Availability of the Contractor support team in Ukraine is a prerequisite for ensuring flexible changes to the system in case of changes in the legislation or emergence of additional requirements for functionality. | Medium |
| G.SM.04 | Availability of online support 24/7 (with a response time depending on the criticality of the error and the established SLA requirements), online access to documentation, availability of user forums. | High |
| G.SM.05 | The software upgrade of the subsystems should be done with release control and code version control, maintenance of the code repository, possibility of roll back to the previous version. | High |
| G.SM.06 | The Contractor shall ensure that the system is updated in the event of a change in legislation concerning business processes, including, but not limited to, mandatory reporting/ accounting that require a change of functions within 30 business days.  Adaptations in accordance with the requirements of the legislation should be performed free of charge within the framework of the support contract if such a contract is available. | High |

#### **System Diagnostics Requirements**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SP.12 | Diagnosis of the System should be performed by the following standard means included in the software delivery:   * Admin software that enables monitoring; * Visualization tool. | High |
| G.SP.13 | If the subsystems of the NHS IS are implemented on different software and technological platforms, the Workplace of the IS Administrator should be created, ensuring a convenient interface to combining the monitoring interfaces of the subsystem platforms. | High |
| G.SP.14 | For all the technical components, it is necessary to ensure regular and ongoing monitoring of their condition by means of maintenance notice panels. | High |
| G.SP.15 | It is mandatory to keep electronic incident logs, as well sheduled maintenance logs | High |

### Reliability Requirements

#### **Reliability Indicators List for the System as a Whole**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SM.07 | System adaptability should be achieved through automated management of:   * timeliness of administration; * modernization of data collection, processing and downloading processes to meet the new requirements; * modification of procedures for data access and data provision to end users; | High |
| G.SM.08 | Reliability and stability will be evaluated by the following parameters:  Uptime/Availability – uninterrupted time of system uptime/availability (defined as a percentage, e.g. 99.99%) | High |
| G.SM.09 | RTO (recovery time objective) – number of hours within which the system needs to be restored (for instance, 8 hours) | High |
| G.SM.10 | MTPD (maximum tolerable period of disruption) – number of hours for which the system may be unavailable without unacceptable consequences (for instance, 72 hours) | High |
| G.SM.11 | RPO (recovery point objective) – number of hours determining the frequency of data backup – in other words, the permissible data loss period (e.g., 24 hours). | High |

#### **List of Emergencies Defining Reliability Requirements**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SM.13 | Stability of operation should be ensured in the following emergencies:   * Hardware failure * Network infrastructure failure * Data center power loss * System software update failure * Temporary data loss | High |

#### **Requirements for Methods of Assessment and Monitoring of Reliability Indicators at Different Stages of System Creation**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SM.14 | The main performance indicators of the system will be measured during the testing and trial operation phase. The investigation and evaluation method is experimental, i.e., in the trial mode all the main emergency situation are simulated, under which the indicators of reliability and restoration of the system's performance must be confirmed. | High |

### Ergonomics and User Interface Requirements

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.UI.1 | Availability of contextual help, including but not limited to the meaning of fields in the data entry forms | Medium |
| G.UI.2 | Possibility to adapt the interface to the rights and responsibilities of the user: the interface must contain only the information that:   * the user has access to * the user needs in the context of this particular business process | High |
| G.UI.3 | Availability of interface in the Ukrainian language | High |
| G.UI.4 | Possibility to notify the user by email about business events on the system, automatic sending of reports | Medium |
| G.UI.5 | Possibility to access NHS IS from mobile devices, on the most common versions of Android and iOS | Low |
| G.UI.6 | Possibility for the user to adapt the NHS IS interface for their own use, within the requirements of UI.2 | Medium |
| G.UI.7 | Availability of a built-in Ukrainian-language help on NHS IS functionality | Low |
| G.UI.8 | For each role, the NHS IS should display the information required to fulfill the user's job responsibilities within the framework of approved automated business processes. | High |

### Requirements for Information Protection from Unauthorized Access

#### **Information Security Requirements (G.SP)**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SP.1 | Possibility of receiving CSIP for the entire NHS IS/its components (responsibility of the Contractor) | High |
| G.SP.2 | Possibility to establish secure connection between client and server | High |
| G.SP.3 | Logging and possibility to audit all changes in the NHS IS (who made the change, what and when was changed) | Medium |
| G.SP.4 | Availability of mechanisms for control over permanent deletion of data | Medium |
| G.SP.5 | Roles approach for user access to system resources | High |
| G.SP.6 | The types, names and designations of the documents being developed shall be determined in accordance with DSTU 3918-1999 (ISO / IEC 12207: 1995) and be consistent with the NHA. | Medium |

#### **Antivirus Protection Requirements (G.SP)**

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SP.7 | Executable files must be protected against changes by virus signatures, which can be implemented by means of signing the executable files and the key software libraries of the NHS IS software by the Contractor, as well as mechanisms for checksum verification of the main program files. | High |

### Emergency Information Storage Requirements (G.SP)

The following data backup modes shall be provided and supported for the operation of the system:

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.SP.8 | Live/constant data backup in the data storage system | High |
| G.SP.9 | Regular backups (backup of data by software tool to external media on specified time intervals). | High |

### Standardization and Unification Requirements

The following standards should be used in the development and operation of the system, though the methodology may be changed if agreed on by the parties; the list of documenting rules should be included as an annex to the Project Charter:

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.ST.1 | DSTU 3918-1999 (ISO/IEC 12207:1995) “Information technologies. Software Lifecycle Processes” | High |
| G.ST.2 | DSTU 4302:2004 (ISO/IEC 6592:2000, MOD) "Guidelines for Software Documentation" | High |
| G.ST.3 | DSTU 3008-95 “Documentation. Reports in the field of science and technology. Structure and design rules” | High |
| G.ST.4 | DSTU 2873-94 “Information processing systems. Programming. Terms and Definitions” | High |
| G.ST.5 | DSTU 2941-94 “Information processing systems. Development of systems. Terms and Definitions” | High |
| G.ST.6 | The types, names and designations of the documents that are being created shall be defined in accordance with DSTU 3918-1999 (ISO/IEC 12207:1995) and be agreed upon with the NHS. | High |

## Requirements for Types of Support

### Requirements for the Procedure of Ensurance of Legal Validity of Documents

The system shall have the functionality of signing documents with EDS/QES obtained from any Certification Authority.

### Requirements for Linguistic Support

The software shall be able to support the Ukrainian language user interface, that should be available directly in the system settings, or enable the use of language that comes with the localization of the operating system.

### Software Requirements

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.PP.1 | The software platform must enable modification: elements of the user interface, attributes and relations between system objects (assets, working tasks, etc.), and business logic, and saving of those modifications when upgrading the platform to new versions. These settings and modifications to the NHS IS must be made through built-in tools or administrative applications without the need for programming. | Medium |
| G.PP.2 | The NHS IS should enable modifications or creation of own software code to solve specific problems, such as formula calculations | High |
| G.PP.3 | The NHS IS shall have built-in e-mail tools: for automatic mailing of alerts or reports, or sending email to users directly from system applications | Low |
| G.PP.4 | Full-text search by all the NHS IS objects with arbitrary search functionality and storage of all search queries | Medium |
| G.PP.5 | Possibility to create standard profiles and roles for the NHS IS users with defined functionality | High |
| G.PP.6 | Flexible access configuration mechanisms:   * to system objects * to elements of RI and their associated information | High |
| G.PP.7 | Availability of tools for the visual design of reports and business processes | Medium |
| G.PP.8 | Availability of regular updates for the NHS IS/its modules, in particular, functional updates reflecting changes in the Ukrainian legislation | High |
| G.PP.9 | The goods supplied under this Terms of Reference are software instances. Software Instances – on physical media – are electronic files in which computer programs are recorded, in the sense of the copyright objects as defined in Art. 1 of the Law of Ukraine on Copyright and Related Rights. | High |
| G.PP.10 | Software instances must belong to the Contractor on an ownership basis, otherwise the Contractor must be an authorized representative of the software platform vendor implementing software in Ukraine, with the knowledge and permission of the copyright owner. The goods are software products in accordance with Item 26-1, Sub-section 2, of Section XX of the Tax Code of Ukraine | High |
| G.PP.11 | Proper updating of software that is already in use by the Customer by means of providing remote access to the Internet resources of the software platform manufacturer for the period of implementation and technical support | High |

### Requirements for Technical Support

Within the framework of the project, the Contractor shall provide the adjusted sizing of server and communication equipment, description of technical requirements for ensuring the required performance and functioning of the system.

### Requirements for Integration with Other Systems (I.I)

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| I.I.1 | Integration with the STU software for managers and recipients of budget funds | High |
| I.I.2 | Integration with the eHealth CC | High |
| I.I.3 | Integration with statistical and other kinds of reporting software | Medium |
| I.I.4 | Integration with specialized BI software for data analysis (DWH) | Medium |
| I.I.5 | Integration with Microsoft Office software | Medium |
| I.I.6 | Integration with free alternatives to Microsoft Office software | Low |
| I.I.7 | Possibility to automatically perform integration procedures according to the schedule specified in the methodology | Medium |
| I.I.8 | Availability of open interface tables and/or APIs for integration with other Customer systems or systems of other enterprises/institutions | High |

### Organizational Support Requirements (G.S)

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.S.1 | Availability of built-in mechanisms for transferring instances of the NHS IS between the development, testing, and productive environment. | Medium |
| G.S.2 | Availability of built-in mechanisms for the transfer of the NHS IS settings and adaptations between the development, testing and productive environments. | Medium |
| G.S.3 | Availability of 24/7 Ukrainian/English technical support provided by the Contractor to resolve system malfunctions that are causing interruptions in business processes of the institution | High |
| G.S.4 | Availability of Ukrainian/English technical support during the working hours provided by the Contractor to resolve system malfunctions that can be resolved in temporary ways by the Customer, but still require resolution. | High |

### Patent Purity Requirements (IP, Intellectual Property)

When designing and introducing the system, patent purity requirements must be met. If it is necessary to use intellectual property not owned by the Contractor or the Customer (or the users), it must be used in accordance with the current legislation of Ukraine and international law.

| Code | Description of Requirements | Priority |
| --- | --- | --- |
| G.IP.1 | The supplied software and its components shall not have EOL/EOS (End-of-Life/End-of-Support) status at the time of submission of the proposal by the Contractor | High |
| G.IP.2 | A permanent software license shall be provided | High |
| G.IP.3 | Licensing terms should allow for multiple server installations to be created after the introduction (their number can be limited by mutual agreement of the parties) for testing, development, and training purposes. The number of servers during the introduction period is not limited | High |
| G.IP.4 | The software license must provide information about the list of additional software, the installation of which is required for the system to function properly (licenses for database usage, etc.), if there is such a need:   * + Database   + Other components | High |
| G.IP.5 | The software license includes software support for one year since introduction | High |
| G.IP.6 | The cost of licenses for the use of the software must include all the additional software components necessary for the functioning of the system | High |
| G.IP.7 | The Contractor shall provide the Customer with the Software, the result of its introduction and the Documentation that meets all the requirements of the Terms of Reference, and all the software code that was used to build the system and developed during the project, with exclusive rights to any software code that does not fall under purchased licenses for primary and secondary software. | High |
| G.IP.8 | Regardless of whether the names or alias names of the authors of the intellectual property rights are specified on the the copies of the Software provided to the Customer (10 copies), in the result of the Works and the Documentation, it is considered that the Contractor has legally received the permission (consent) of the authors of the respective copyrights of the Software, the result of the Works, and Documentation for the use of the copywrited objects. Accordingly, in each such case, the Customer has the right to assume that it has the right to use the provided software, the result of the Works, and the Documentation without specifying the author's name. | High |

# Composition and Content of the System Creation Work

## Project Roles

It is suggested to replace “presence” with “availability” for the NHS employees

On the part of the Contractor and the Client, the following roles must be specified, with the following percentage of presence at the project during their working time:

* The Contractor Project Manager (80% of working time)
* Head of the NHS Working Group (50% of working time)
* Contractor Team Leaders, by areas (80% of working time)
* NHS Team Leaders, by areas (50% of working time)
* Contractor Functional Consultants, by areas (80% of working time)
* NHS Working Group Members (Functional Advisers) (30% of working time)
* Contractor Developers (100% working time)
* NHS IT Specialists (50% of working time)

## Project Management Procedures

As part of the Works on introduction of the NHS IS, the Contractor, with the participation of the Customer, shall ensure the following project management processes in accordance with the implementation methodology:

* Stakeholder management and information provision procedure
* Reaching agreement concerning documents
* Change management process
* Managing problems and open issues
* Risk management
* Monitoring of project progress
* Project budget management
* Meeting deadlines and adherence to the project schedule
* Project documentation management.

## Stages of Project Works

The list of stages of work under the project and deadlines for implementation of stages, reference points (documents, works) will be drawn up separately in the text of the contract specification based on the proposals received from the organizations ready to supply and introduce the system, but shall include 5 main items and documents, by stages of work:

|  |  |  |  |
| --- | --- | --- | --- |
| **Stage No.** | **Name of the NHS IS Development Stage** | **Deadline** | **Document** |
| 1 | Analysis | Determined on the calendar planning stage | 1. List and description of future business processes to be automated  2. Testing Protocol  3. Description of Requirements  4. List of annexes  5. Terms of reference for adaptation of the system  6. Completion certificate on the *Analysis* stage |
| 2 | Design | Determined on the calendar planning stage | 1. Description of functional design of applications  2. Description of settings  3. Description of access levels  4. Testing protocol for business processes  5. Completion certificate works on the *Design* stage |
| 3 | Building | Determined on the calendar planning stage | 1. Testing Protocol  2. End-to-end testing protocol  3. User manual  4. Description of the functional architecture  5. Completion certificate on the *Building* stage |
| 4 | Transition | Determined on the calendar planning stage | 1. User training protocol  2. Protocol on system readiness for commercial operation  3. Completion certificate works on the Transition stage |
| 5 | Productive operation, technical support of the system | Determined on the calendar planning stage | 1. Transition of the system to commerical use  2. Result analysis  3. Corrections of documentation  4. System debugging  5. Certificate of completion |

## Training Requirements

The Contractor shall provide training for the NHS staff to the extent necessary for further use of the IS, in line with the following requirements.

|  |  |  |
| --- | --- | --- |
| Code | Description of requirements | Number |
| EP.01 | System administrators | 3 |
| EP.02 | Key users of the system | 1 for each functional unit |
| EP.03 | Coaches from the NHS staff who will train the rest of the staff | 1 for each functional unit |
| EP.04 | NHS functional specialists (members of the project team) | 1 for each functional unit |
| EP.05 | IT Specialists | 5 |
| EP.06 | Regular users of the system | 3 for each functional unit |
| EP.07 | Specialists of departments for technical support of the system | 1 for each functional unit |

# IS Control and Acceptance Procedure

While developing the NHS IS, the organization introducing the system shall comply with the General Requirements for Software Products Procured and Created under Orders from State Institutions, approved by the Cabinet of Ministers of Ukraine No. 869 on August 12, 2009.

In the introduction process, it is important to apply the following elements of control and acceptance of works:

* The NHS IS must undergo pre-testing and acceptance testing with the use of the Customer input data and scenarios;
* testing and further operation of the NHS IS is takes place on the Customer equipment
* for each program module of the NHS IS, the Contractor shall provide operational documentation in the Ukrainian language;
* technical training of the IT staff and end users of the Customer is provided by the Contractor on the Customer site and equipment;
* The obtained knowledge and documentation should enable the IT-staff of the Customer to independently install, use and maintain the software modules of the NHS IS.

## Acceptance Requirements by Stages of Works

### Checking the Completeness of Software License Delivery

The Customer checks the completeness of delivery, in particular:

* Availability of licenses according to the delivery list (contract specification) to the extent necessary for introduction
* Availability of licenses according to the list of delivery according to the established number of roles/users identified during the project

### Acceptance of Works on Completion of Project Stages

* The completion of each stage (according to the project plan) is confirmed by a certificate of completion. The certificates of completion include the list of the works completed, their readiness status and references to project documents for each item of the works completed.
* The completion certificate is signed by the project managers of the Customer and the Contractor, and approved by the Acceptance Commission in accordance with the paragraph 6.2.
* All the project works must be documented and included into the project library of the Customer. The project documentation is signed by the team members of the Contractor and the Customer Working Group, and approved by the project managers of the Contractor and the Customer.

### System Testing During the Project

All the customization works must be tested with the participation of the Customer staff, depending on the readiness of the settings in part or in full.

The test results are formalized into project documents. They should include at least:

* Operational checks and compliance testing. Testing scenario and testing results for the functionality of individual modules and solutions, according to the Customer business processes in the system;
* functional testing in a test environment. Testing scenario and testing results of process chains across all system units within process chains;
* functional testing in a test environment. Testing scenario and testing results for integration of all processes (cross-testing).

It is documented by the installation certificate for the system:

* post-migration testing in the productive environment (including testing under load).

## Admission Commission Status Requirements

The organization and conducting of testing and acceptance of the system shall take place with involvement of the System Acceptance Commission of the System, consisting of:

* Chairman of the Acceptance Commission
* members of the System Acceptance Commission, including representatives of the Customer and the Contractor
* the test execution team responsible for test conducting and documenting of the test results.

The Chairman of the Commission plays the following role in the testing procedure:

* approve the testing plan (including system acceptance criteria and testing principles);
* reaches agreement upon the testing schedule;
* coordinates the activities of the Acceptance Commission and regular monitoring of the testing process, holding of status meetings;
* ensures resource management of the testing team;
* agrees upon the system acceptance certificate

The System Acceptance Commission plays the following role in the testing procedure:

* approval of the testing plan (including system acceptance criteria and testing principles)
* approval of the testing schedule
* approval of acceptance testing protocols
* approval of the system acceptance certificate.

The testing team performs the following role in the test preparation process:

* taking training on testing.

The testing team performs the following role in the testing procedure:

* execution of test scenarios according to the approved plan and schedule;
* informing on errors and deviations from the testing schedule;
* filling in and signing of test reports.

# Requirements for the Composition and Content of the NHS Preparations for the Introduction of the System

## Technical Measures

The Customer shall, following the recommendations and advice of the Contractor, complete the following works before commencing of the introduction works:

* preparation of the NHS premises for placement of the system hardware in accordance with the requirements provided in this Terms of Reference;
* procurement and installation of the necessary hardware and technical equipment;
* organization of the necessary network interaction.

## Organizational Activities

The Customer, together with the Contractor, shall resolve the organizational issues regarding interaction with the data source systems before the commencement of the works. These organizational issues include:

– creation of units and services necessary for the functioning of the system;

– organization of access to the source databases;

– defining the procedure for informing the departments involved in the automation on changes in the structure of the source systems;

– identification of the responsible specialists on the part of the Customer for interaction with the project team concerning interaction with data source systems;

– definition of terms and procedure of personnel allocation and training to create conditions for operation of the system sufficient to guarantee the compliance of the created system with the requirements contained in these Terms of Reference, to ensure its effective use.

# Documentation Requirements

## List of Documentation Requirements

The NHS IS shall have user manuals and operating system documentation in the Ukrainian language.

## Requirements for Documentation of System Elements

| Code | Description of requirements | Priority |
| --- | --- | --- |
| G.S.1 | Availability of complete documentation on the NHS IS functionality, and on any changes made in the NHS IS on the introduction stage (in the Ukrainian language) | High |
| G.S.2 | Availability of complete documentation on the NHS IS functionality, and on any changes made in the NHS IS on the introduction stage (in the language of the platform supplier) | High |
| G.S.3 | Possibility of updating documentation from the official sources of the Contractor (electronically) throughout the lifetime (10+ years) with description of updates available for installation | High |
| G.S.4 | Documentation must be provided by the Contractor either electronically or as a hard copy. |  |
| G.S.5 | System documentation must be complete, informative, understandable, structured, readable, sufficient, unambiguous and consistent (identical terms, definitions, identifiers, etc. shall be used). | High |
| G.S.6 | A complete package of documentation should be developed to provide methodological and regulatory support for the processes:   * system setup; * system administration; * managing current processes; * quality control of process execution, handling of system errors; * integration with other systems to automate information transfer | High |
| G.S.7 | The technical and program documentation includes:  – Specification for system adaptation in accordance with functional and non-functional requirements;  – general description of the system;  – description of automated functions (description of the implemented functionality);  – description of the classification and coding systems;  – catalog of databases (description of the table structure and links);  – User manual;  – Administrator manual;  – testing program and methodology;  – guidelines for system operation. | High |