

TECHNICAL REQUIREMENTS

**for the modernisation of the system
“Automated Information Complex
of Education Management 2.0”
Code: (AIKOM 2.0)**

Development of AIKOM 2026–2027

Kyiv – 2026

Contents

1. DEFINITIONS AND ABBREVIATIONS	2
2. GENERAL INFORMATION	3
2.1. Full name and designation	3
2.2. Names of the Contracting Authority and of the Service Recipient	3
2.3. Source and procedure of financing	4
2.4. Period of provision of the services	4
2.5. Requirements for warranty support	4
2.6. List of documents to be taken into account during development	7
3. PURPOSE AND OBJECTIVES OF THE MODERNISATION OF THE SYSTEM	8
3.1. Objective of the modernisation of the system	8
3.2. Purpose of the modernisation of the system	9
4. CHARACTERISTICS OF THE AIKOM HARDWARE AND SOFTWARE COMPLEX	10
4.1. General requirements	10
4.2. General architecture of the solution	11
4.3. Requirements for software development	13
4.4. Requirements for data preservation	14
4.5. Requirements for the methods and means of communication for information exchange between components	14
4.6. Requirements for operating modes	15
4.7. Logging requirements	16
4.8. Requirements for information support	16
4.9. Requirements for organisational support	16
4.10. Security requirements	17
4.11. Requirements for information protection	18
4.12. Design requirements	20
4.13. Standardisation and harmonisation requirements	20
4.14. Language requirements	21
5. FUNCTIONAL REQUIREMENTS	21
5.1. Recording of data on the material and technical base of educational institutions: buildings/structures (entry of the current status and generation of reports)	22
5.2. Change of the internal school identifier	25
5.3. Recording of data on the material and technical base of educational institutions: premises (entry and updating)	26
5.4. Recording of data on the material and technical base of an educational institution: batches of equipment/technologies (entry and updating)	28
5.4.1. Determination of the need for equipment/technologies	30
5.4.2. Specific features of recording certain categories of the material and technical base:	

shelters	
Aim / purpose:	32
5.5. National register of children: recording of pupils and of children not covered by education	33
5.6. Development of a service for the integration of AIKOM with the “LOGICA” information and analytical system	35
5.7. Updating of the structure and parameters of the online reports implemented in Redash	37
5.8. Set of processes for recording and monitoring academic lyceums	38
5.8.1 Planning of the network of academic lyceums	38
5.8.2. Conclusion of a cooperation agreement between territorial communities	41
5.8.3. Creation or updating of data on a Lyceum. Entry of the parameters of the organisation of the educational process in an academic lyceum	43
5.8.4. Generation of data for the academic lyceums dashboard	45
5.9. Electronic safety passport of an educational institution	47
5.9.1. “Creation and submission of the safety passport of an educational institution” (MES/educational institution users)	47
5.9.2. “Processing of the safety passport of an educational institution” (State Emergency Service/National Police users)	48
5.10. Addition of a method for retrieving data on a child from the State Register of Civil Status Acts by taxpayer registration number (the GetBirthArByRnokpp method)	50
5.11. Generation of questionnaire-based reports for the State Statistics Service of Ukraine (57 reports)	52
5.12. Changes to the API methods for integration with MRIYA and educational information systems	56
5.12.1. Changes to the API methods for retrieving classes	56
5.12.2. API changes related to the introduction of academic lyceums	57
5.12.3. Transactions for connecting educational information systems	57
5.12.4. Teacher movement within a school/class	57
5.13. Process for education administration bodies for the submission of statistical data used to calculate education development indicators	58
5.14. Optimisation of database operations	65
5.15. Technical support for the AIKOM IT team	65
5.16. Extension of the integration with the analytical, financial and statistical modules	66
6. Results of the provision of the services and acceptance criteria	67
6.1. Deliverables	67
6.2. Acceptance criteria	67
6.3. Reporting	68
7. Procedure for making amendments and additions to the technical requirements	69

1. DEFINITIONS AND ABBREVIATIONS

Term / Abbreviation	Definition
API	(Application Programming Interface) A set of appropriately structured requests to third-party systems and websites
AIKOM 2.0	Automated Information Complex of Education Management
DB	Database
SRIT	State Register of Individual Taxpayers
Educational institution (EI, GSEI)	A legal entity governed by public or private law whose principal activity is educational activity
AIKOM hardware and software complex	An information and communication system comprising the requisite set of technical facilities together with the software deployed and configured thereon
IEA	Institute of Educational Analytics – the technical administrator of AIKOM 2.0
QES	Qualified electronic signature
STF	Set of technical facilities
Module	A set of interrelated business processes and system functionalities centred on a single system entity
SW	Software. A set of text characters recorded on a digital medium
RNOKPP	Registration number of the taxpayer's record card
DBMS	Database management system
ToR	Terms of reference
Grid	A tabular interface component of the registers platform that displays data from register entities in the form of a structured table with search, filtering, sorting, pagination and record-level actions

2. GENERAL INFORMATION

2.1. Full name and designation

Full name – Modernisation of the hardware and software complex “Automated Information Complex of Education Management 2.0”.

Designation – AIKOM 2.0.

2.2. Names of the Contracting Authority and of the Service Recipient

Contracting authority for the services: the Ministry of Education and Science of Ukraine (hereinafter – the Contracting Authority).

Recipient of the Services: State Scientific Institution “Institute of Educational Analytics” (hereinafter – the Service Recipient).

2.3. Source and procedure of financing

The procurement is financed under the Swiss-Ukrainian DECIDE project, the donor of which is the Swiss Confederation through the Swiss Agency for Development and Cooperation (SDC) and the Embassy of Switzerland in Ukraine. The project is implemented by a consortium led by the NGO “DOCCU” (Ukraine).

2.4. Period of provision of the services

The planned start of the provision of the services is after the date of signature of the contract; the planned completion date is no later than 1 August 2027.

2.5. Requirements for warranty support

The warranty period is 12 months from the date of signature of the acceptance certificate for the final stage of the provision of the services in accordance with the schedule.

The Contractor shall provide warranty maintenance services for the software developed under these Technical Requirements, which may be specified in more detail at the terms-of-reference stage. If the Service Recipient modifies any part of the software developed under these Technical Requirements using its own resources (or by engaging a third party), the warranty maintenance terms shall not apply to the unmodified part. The warranty maintenance services comprise the following:

1. elimination by the Contractor of defects in the software created (troubleshooting services);
2. advising the responsible persons (technical administrators) on matters relating to the operation, use, installation and configuration of the software. Consultations shall be provided by telephone and by e-mail;
3. restoration of the operability of the software during its use, for example in the event of failure of its components as a result of updates or changes made by the Contractor;
4. recovery of corrupted data, provided that the data were corrupted as a result of a malfunction of the software supplied by the Contractor;

5. amendment of the operational documentation in line with the changes made to the software in the course of eliminating the said defects.

In order for the remote monitoring services to be provided properly, the Contractor shall agree with the Technical Administrator on:

1. the technology for remote monitoring of the developed parts of the AIKOM hardware and software complex;
2. the interaction with the designated representatives of the Technical Administrator within the framework of the selected remote access technology;
3. the hardware and software monitoring tools for the said parts.

In order to ensure the provision of the services, the Contractor shall draw up a list of contact (responsible) persons and provide access to standardised customer support services or dedicated communication channels for interaction.

Proposals concerning the cost of warranty support and the terms of its provision shall be indicated by the Contractor in its commercial bid.

Warranty support services may be:

1. urgent;
2. routine;
3. request-based (incident-based).

Urgent warranty support services are measures aimed at preventing and counteracting information security incidents, failures and breakdowns and at overcoming their consequences.

The Contractor shall provide immediate assistance in the event of a failure of the developed software and shall ensure the recovery of the information and of the operation of the software within the period determined by the Technical Administrator.

Routine services relate to the provision of services requiring joint performance of maintenance work on the AIKOM hardware and software complex by the Contractor and the Technical Administrator; such work shall be carried out on working days, from Monday to Thursday, between 08:00 and 17:00. No planned work is carried out on Fridays. By agreement between the parties, joint maintenance work, in particular emergency and recovery work, may be carried out outside working hours.

Request-based (incident-based) maintenance services means making changes to the software of the AIKOM hardware and software complex in the event of incorrect functioning of the software (errors, malfunctions).

Once an incident has been identified, its level is determined (blocking, critical, non-critical); the decision is taken by the responsible persons appointed by the Technical Administrator. All incidents are classified by level:

1. Blocking – the identified malfunction prevents the user from connecting to the AIKOM hardware and software complex and using its functions, i.e. access to the functions is restricted or the AIKOM hardware and software complex is unavailable;
2. Critical – the identified malfunction prevents the user from using the functions of the AIKOM hardware and software complex or their execution takes a considerable amount of time, i.e. significantly longer than specified;
3. Non-critical – a malfunction which does not materially affect the use of the core functions of the AIKOM hardware and software complex.

The process for eliminating software defects is as follows:

1. the Contractor shall analyse the incident and provide the Technical Administrator with a description of how the defects will be eliminated; the response times are determined by the incident level:
 - a. Blocking – no more than 2 (two)* working hours from receipt of the error notification in the error registration system;
 - b. Critical – no more than 6 (six)* working hours from receipt of the error notification in the error registration system;
 - c. Non-critical – no more than 24 (twenty-four)* working hours from receipt of the error notification in the error registration system.
2. The Technical Administrator shall assess the proposed incident resolution method to be used for eliminating the defects and shall approve or reject it. If the proposed method is rejected, the Contractor shall provide an alternative method within twice the period specified in the paragraph above;
3. Software defects shall be eliminated by the Contractor within the following time limits:
 - a. Blocking – no more than 1 (one)* working day from receipt of the error notification;
 - b. Critical – no more than 5 (five)* working days from receipt of the error notification;
 - c. Non-critical – no more than 20 (twenty)* working days from receipt of the error notification.

** the above time limits for assessing and eliminating defects are indicative and will be specified in the contract with the Contractor. A longer period for correcting errors may be agreed with the consent of the Technical Administrator.*

Warranty support shall provide for the Contractor's involvement at application level in ensuring the uninterrupted operation of the developed software and the prompt restoration of its functionality and/or operability in the event of breakdowns and incidents.

Response to incidents in the AIKOM hardware and software complex shall take place both upon request of the Technical Administrator and without such a request where an incident is identified by the Contractor and the Parties are unable to agree on their interaction (absence of communication, non-working hours (this list is not exhaustive and may be specified at the development stage)).

2.6. List of documents to be taken into account during development

1. the Law of Ukraine "On Electronic Trust Services";
2. the Law of Ukraine "On Electronic Documents and Electronic Document Management";
3. Resolution of the Cabinet of Ministers of Ukraine No. 1807 of 31 December 2025 "Certain Issues of the Functioning of the Software of the State Electronic Platform for Maintaining Public Electronic Registers 'Diia.Engine'"
4. the Law of Ukraine "On Public Electronic Registers" No. 1907-IX of 18 November 2021
5. the Law of Ukraine "On Citizens' Appeals";
6. the Law of Ukraine "On Administrative Services";
7. the Law of Ukraine "On Information"; the Law of Ukraine "On Access to Public Information";
8. the Law of Ukraine "On Education";
9. the Law of Ukraine "On Complete General Secondary Education";
10. the Law of Ukraine "On the Protection of Information in Information and Telecommunication Systems";
11. the Law of Ukraine "On Electronic Identification and Electronic Trust Services" No. 2155-VIII of 5 October 2017.
12. the Law of Ukraine "On Information" No. 2657-XII of 2 October 1992.
13. the Law of Ukraine "On the Protection of Personal Data" No. 2297-VI of 1 June 2010.
14. the Law of Ukraine "On Education" No. 2145-VIII of 5 September 2017.
15. the Law of Ukraine "On Complete General Secondary Education" No. 463-IX of 16 January 2020.

16. the Law of Ukraine “On Pre-School Education” No. 2628-III of 11 July 2001.
17. the Law of Ukraine “On Out-of-School Education” No. 1841-III of 22 June 2000.
18. the Law of Ukraine “On Vocational (Vocational and Technical) Education” No. 103/98-VR of 10 February 1998.
19. Resolution of the Cabinet of Ministers of Ukraine No. 471 of 12 June 2020 “On Approval of the Programme of Activities of the Cabinet of Ministers of Ukraine”.
20. Resolution of the Cabinet of Ministers of Ukraine No. 1255 of 2 December 2021 “On Approval of the Regulation on the Hardware and Software Complex ‘Automated Information Complex of Education Management’”.
21. Resolution of the Cabinet of Ministers of Ukraine No. 684 of 13 September 2017 “On Approval of the Procedure for Keeping Records of Pre-School and School-Age Children, Pupils and Students”.
22. Resolution of the Cabinet of Ministers of Ukraine No. 532 of 19 June 2019 “On Approval of the Regulation on a Hub Educational Institution”.
23. Resolution of the Cabinet of Ministers of Ukraine No. 522 of 12 April 2002 “On Approval of the Procedure for Connection to Global Data Transmission Networks”.
24. Resolution of the Cabinet of Ministers of Ukraine No. 749 of 19 September 2018 “On Approval of the Procedure for the Use of Electronic Trust Services in State Authorities, Local Self-Government Bodies, Enterprises, Institutions and Organisations of State Ownership”.
25. Resolution of the Cabinet of Ministers of Ukraine No. 373 of 29 March 2006 “On Approval of the Rules for Ensuring the Protection of Information in Information, Telecommunication and Information and Telecommunication Systems”.
26. Order of the Ministry of Internal Affairs of Ukraine and the Ministry of Education and Science of Ukraine No. 685/1013 of 18 August 2023 “On Approval of the Procedure for Early Warning and Evacuation of Participants in the Educational Process in the Event of an Attack or the Risk of an Attack on an Educational Institution” (registered with the Ministry of Justice of Ukraine on 7 September 2023 under No. 1583/40639)

3. PURPOSE AND OBJECTIVES OF THE MODERNISATION OF THE SYSTEM

3.1. Objective of the modernisation of the system

The objective of the modernisation of the “Automated Information Complex of Education Management 2.0” system (AIKOM 2.0) is to build a modern, reliable and interoperable digital education management platform that provides education administration bodies at all levels with

complete, reliable and up-to-date data for taking well-founded management decisions, allocating resources efficiently and monitoring reforms in the field of education.

The modernisation is aimed at achieving the following strategic objectives:

1. **Data quality and reliability – ensuring the completeness, consistency, historical traceability and integrity of educational data as a single source of truth for the formulation of state policy and for reporting.**
2. **Interoperability and integration – developing secure electronic interaction with state registers and information systems in order to eliminate data duplication, reduce the administrative burden and increase the speed of information exchange.**
3. **Support for education reforms – providing information support for priority reforms, in particular the reform of specialised upper secondary education, with the possibility of monitoring their implementation in near real time.**
4. **Evidence-based policy and analytics – expanding the analytical and reporting capabilities of the system in order to support data-driven decision-making, to track education development indicators and to assess performance.**
5. **Transparency and accountability – increasing the transparency of the use of resources in the field of education and creating the conditions for effective oversight, including by society and development partners.**
6. **Security and compliance – ensuring the protection of personal data and compliance with the requirements of the legislation of Ukraine, as well as an appropriate level of security, availability and continuity of operation of the system.**
7. **Sustainability and scalability – creating a flexible, standardised and scalable architecture that ensures the long-term viability of the system, its further development and the sustainability of the project results after its completion.**

The achievement of this objective will help to strengthen the capacity of Ukraine's education management system, to increase the efficiency and targeting of education expenditure and to bring national education statistics into line with international approaches to data-based governance.

3.2. Purpose of the modernisation of the system

The modernisation of the AIKOM system is intended to create an integrated information framework for education management in which data on the infrastructure of educational institutions, on the population of children and on the conditions for organising the educational process are created once, kept up to date and reused for planning, reporting and management decision-making. The modernisation covers the recording of the material and technical base of educational institutions together with the introduction of a unified internal institution identifier, the national register of children and monitoring of education coverage, information support for the reform of specialised upper secondary education, the introduction of the electronic safety

passport of an educational institution, and the development of secure electronic interaction with state registers and educational information systems.

The second substantive area of the modernisation is aimed at turning the accumulated data into an effective management tool: updating online reporting, generating statutory statistical reports, automatically calculating education development indicators and extending the integration of the database with the analytical, financial and statistical modules, supported by the optimisation of database operations and technical maintenance of the system. As a result, education administration bodies at all levels obtain a single source of reliable data for resource planning and reform monitoring, educational institutions are relieved of duplicated reporting thanks to its automatic generation from data already entered, and national education statistics acquire the comparability needed for evidence-based policymaking.

The implementation of these tasks is intended to ensure the transition to a single source of reliable educational data, to reduce the administrative burden on educational institutions and administration bodies, and to increase the soundness of management decisions in the field of education.

4. CHARACTERISTICS OF THE AIKOM HARDWARE AND SOFTWARE COMPLEX

4.1. General requirements

The modernisation provides for the automation and improvement of the following key areas:

1. Recording of the material and technical base of educational institutions – maintaining data on buildings and structures, premises, batches of equipment and technologies, taking into account serial numbers, condition and service life, determining the need for equipment for procurement planning, and recording certain categories of the material and technical base, in particular shelters (civil protection structures).
2. Introduction of a unified internal identifier of an educational institution (school ID) for use in the recording of the material and technical base, in analytics, in reporting and in integration interaction.
3. National register of children – keeping records of school-age children and pupils and monitoring education coverage at the levels of “educational institution – territorial community, district, oblast – children’s services”, recording pupils who fail to attend classes without valid reasons, and generating lists of children not covered by education.
4. Information support for the reform of specialised upper secondary education – planning of the network of academic lyceums by education administration bodies, recording of cooperation agreements between territorial communities, creation and updating of data on lyceums with the parameters of the organisation of the educational process, and generation of a data set for the academic lyceums dashboard.

5. Introduction of the electronic safety passport of an educational institution – creation, completion, signing with a qualified electronic signature and submission of the passport by the educational institution, as well as its processing, approval or return for revision by users of the State Emergency Service and of the National Police of Ukraine, with status control.
6. Development of secure electronic interaction with state registers and information systems – integration with the “LOGICA” information and analytical system for obtaining financial and budgetary indicators, retrieval of birth record data from the State Register of Civil Status Acts by the registration number of the taxpayer’s record card, and the extension and updating of the application programming interfaces (APIs) for interaction with the “MRIYA” platform and with educational information systems.
7. Development of reporting and analytics – updating the structure and parameters of the online reports implemented in the Redash environment, generating 57 statutory reports for the State Statistics Service of Ukraine on the basis of questionnaire data, and introducing a process for the entry of statistical data by education administration bodies with automatic calculation of education development indicators.
8. Increasing the technological capacity of the system – optimising queries and database structures, extending the integration of the database with the analytical, financial and statistical modules together with their subsequent support, and engaging a technical maintenance team for the period of the modernisation.

The implementation of these tasks is intended to ensure the transition to a single source of reliable educational data, to reduce the administrative burden on educational institutions and education administration bodies, and to increase the soundness of management decisions in the field of education.

Achieving these results requires an appropriate technological foundation, namely increasing the flexibility and scalability of the system, reducing the cost of its support and ensuring consistency in the construction of business processes, which entails:

1. adherence to unified principles for the development and updating of modules,
2. standardisation of the structure of the centralised database and of the reference books,
3. harmonisation of the mechanisms for data exchange with other state IT systems,
4. ensuring that educational information is up to date, historically traceable and complete.

4.2. General architecture of the solution

1. Data storage:

- Data on the material and technical base of educational institutions (buildings and structures, premises, batches of equipment and technologies, the need for equipment, shelters), data of the national register of children and pupils, data on the network of

academic lyceums, electronic safety passports of educational institutions, as well as statistical parameters and the calculated education development indicators are stored in the centralised database of the system.

- Use of normalised data structures supporting the unified internal identifier of an educational institution (school ID), as well as reference books and dictionaries of the material and technical base, of object types and of clusters and study profiles.
- Ensuring versioning and retention of the history of values for those entities where this is provided for by the functional requirements, in particular approved versions of safety passports and statistical parameters with recording of the previously entered value, as well as retention of historical data during the introduction of the new internal identifier of an educational institution.
- Ensuring encryption of personal data and compliance with storage policies in accordance with the Law of Ukraine “On the Protection of Personal Data”.
- Ensuring the performance and optimisation of database operations (optimisation of queries, indexes and storage structures, preparation and execution of scripts for updating and populating data).

2. Data exchange:

- Application programming interfaces (APIs) for integration with external systems and state registers, in particular with the State Register of Civil Status Acts, the “LOGICA” information and analytical system and the Unified State Electronic Database on Education, as well as with the “MRIYA” platform and educational information systems (EIS), including the development and modification of the relevant API methods.
 - Interagency interaction with state electronic information resources through the “Trembita” system in accordance with sub-section 4.6.
 - Internal synchronisation with the other modules of AIKOM 2.0, in particular with the analytical, financial and statistical modules, with the extension and subsequent support of that integration.
 - Transfer of analytical indicators to visualisation and reporting tools, in particular the updating of the online reports implemented in the Redash environment.
 - Support for structured data exchange formats (JSON, XML) in accordance with the technical conditions of the specific integration, in particular the parsing of XML responses from the State Register of Civil Status Acts, as well as the generation of CSV exports for external dashboards and the export of statutory reports.
 - Support for the application and verification of a qualified electronic signature for documents submitted and approved in the system, in particular the electronic safety passports of educational institutions.
 - Logging of all requests to the API.
- ### 4.3. Requirements for the technical facilities

The Contractor is responsible for including in its bid all the software required for the operation of the modernised AIKOM hardware and software complex within the infrastructure of the Service Recipient.

The technological architecture shall be highly fault-tolerant and shall contain no single point of failure. The technological architecture shall ensure the rational and balanced use of data processing resources.

The technological platform will consist of the set of software and hardware components required to provide the operating environment of the AIKOM hardware and software complex. As regards hardware, the Contractor shall provide general requirements concerning servers, storage systems and virtual machines (this list is not exhaustive and may be specified at the development stage).

The technological platform for the software includes: – software development platforms, – a database management system, – operating systems, – other software, including third-party software, required for the operation of the AIKOM hardware and software complex. The Contractor shall supply all software required for the operation of the modernised AIKOM hardware and software complex.

In addition, the Contractor is also responsible for installing and configuring the software in the designed hosting environment.

4.3. Requirements for software development

During the modernisation of AIKOM 2.0, the Contractor shall ensure that the software is developed in accordance with the architectural, technical and security principles governing the operation of public electronic registers and, where applicable, with the requirements for the use of the State Electronic Platform for Maintaining Public Electronic Registers “Diia.Engine”.

The software shall be compatible with the existing architecture of AIKOM 2.0 and shall support modularity, scalability, a role-based access model, logging of user actions, protection of personal data, integration interaction through standardised APIs and the possibility of further development without disrupting the operation of the system’s existing business processes.

All enhancements shall be carried out in compliance with the requirements of the legislation of Ukraine in the fields of public electronic registers, information protection, personal data protection, electronic identification, electronic document management and electronic interaction of state electronic information resources. The Law “On Public Electronic Registers” defines the legal and organisational framework for the creation and operation of such registers, while Resolution of the Cabinet of Ministers of Ukraine No. 1807 governs the operation of the State Electronic Platform for Maintaining Public Electronic Registers “Diia.Engine”.

4.4. Requirements for data preservation

All data shall be stored in structured form under the control of a relational DBMS allowing complex queries to be executed and clustering to be applied, and offering high reliability.

The Contractor shall ensure regular data back-up. Data back-up shall be performed at least once every 24 hours.

In the event of a software failure or an emergency, the AIKOM hardware and software complex shall ensure that operation is restored from the last recorded stable state. An emergency means the abnormal termination or “freezing” of processes, errors not detected during the debugging and testing of the AIKOM hardware and software complex, and software or power supply failures.

4.5. Requirements for the methods and means of communication for information exchange between components

Information exchange between the components of AIKOM 2.0, as well as the interaction of AIKOM 2.0 with other state electronic information resources, registers and information and communication systems, shall be carried out through standardised, secure and documented electronic interaction mechanisms.

For interagency data exchange with state electronic information resources, the Contractor shall provide for the use of the “Trembita” system of electronic interaction of state electronic information resources as the principal channel of integration interaction.

The integration services shall be implemented taking into account the following requirements:

1. ensuring data exchange between AIKOM 2.0 and external information systems through secure API services;
2. use of “Trembita” for receiving, transmitting, updating and verifying data from state electronic information resources in the cases where such interaction is provided for by the functional requirements;
3. support for structured data exchange formats, in particular JSON and/or XML, in accordance with the technical conditions of the specific integration;
4. parameterisation of the integration services so that individual interaction settings can be changed without modifying the software code, in particular by means of configuration parameters, reference books or administrative settings;
5. ensuring authentication, authorisation, encryption of the data transmission channel and control of the integrity of information in accordance with the requirements of the legislation of Ukraine on information protection, personal data protection and electronic interaction of state electronic information resources;

6. keeping information exchange logs, including the recording of the date and time of the request, the initiator of the request, the source system, the recipient system, the type of operation, the execution status and any technical error or refusal to process;
7. ensuring error handling, resending of requests in the event of temporary unavailability of a service, control of duplicate requests and preservation of data integrity during exchange;
8. documentation of all integration services, including a description of the methods, the structure of requests and responses, validation rules, error codes, access conditions and the testing procedure;
9. ensuring the compatibility of the new integrations with the existing architecture of AIKOM 2.0 and preventing any disruption of the system's existing business processes;
10. ensuring the possibility of further extending the integration interaction without any substantial change to the software architecture.

Internal information exchange between the components of AIKOM 2.0 shall be carried out through secure internal APIs or other agreed inter-service interaction mechanisms. Direct access by external systems to the AIKOM 2.0 database is not permitted, except in cases separately defined by the terms of reference and agreed with the Technical Administrator.

All integration solutions shall be implemented in such a way as to ensure the reliability, scalability, fault tolerance, controllability and traceability of information exchange.

4.6. Requirements for operating modes

Continuous full-scale operation in accordance with the declared functional capabilities is required. The software shall operate on a 24/7 basis with predefined periods of routine maintenance. The operation of the AIKOM hardware and software complex shall provide for the following modes:

- Main mode – the mode of normal operation of all functional components in accordance with their purpose.
- Administration mode – the mode of centralised automated configuration and automated updating of the AIKOM hardware and software complex simultaneously with the work of the other users in the main mode or in the routine maintenance mode.
- Maintenance mode – the mode of routine technical maintenance and restoration of the operability of the technical facilities of the functional subsystems of the AIKOM hardware and software complex, during which users cannot work in the system.
- Emergency mode – an abnormal situation caused by damage to equipment or software, to the power supply or to external networks (this list is not exhaustive and may be specified at the development stage) which makes normal operation impossible.

4.7. Logging requirements

Diagnostics of the operation of the AIKOM hardware and software complex shall be ensured by logging its operation:

1. at platform level (for example: the database management system, the web server, the operating systems (this list is not exhaustive and may be specified at the development stage));
2. at application software level (for example: log files of search queries, error log files).
3. Using the data of the logging system, the Administrator of the AIKOM hardware and software complex shall be able to establish unambiguously the sequence of actions that led to an error, failure or crash of the AIKOM hardware and software complex.

4.8. Requirements for information support

The information support shall meet the following requirements:

- ensuring data integrity;
- ensuring control of the reliability and currency of data;
- protection of information against unauthorised access;
- flexibility in scaling and adapting to changes in legislation or functional requirements;
- standardisation and harmonisation of information structures;
- adaptability to changes in user types and access models;
- minimisation of manual data entry and output through the automation of processes and integrations with other systems.

4.9. Requirements for organisational support

In order to ensure the proper provision of the Services for the modernisation of the AIKOM hardware and software complex on the instance of the Registers Platform, the Parties shall ensure the organisational, technical and information interaction required for the development, configuration, testing, implementation and handover of the results of the Services into operation.

During the period of provision of the Services, the following organisational measures shall be ensured:

1. **The Service Recipient shall provide the Contractor with the available materials, documents, description of business processes, functional requirements, reference data, available technical specifications, description of the existing architecture and other information required for carrying out the work on the modernisation of the AIKOM hardware and software complex.**
2. **The Technical Administrator shall provide the Contractor with agreed access to the relevant instance of the Registers Platform, to the development, testing and/or**

implementation environments, and to the necessary infrastructure, integration and service components to the extent required for the performance of the Services.

3. The Contractor's access to the instance of the Registers Platform and to the server, communication and other technical environments shall be granted solely to the extent required for the performance of the defined tasks, in compliance with information security requirements, the segregation of access rights, the logging of actions and the internal regulations of the Technical Administrator.
4. **The Contractor shall ensure the development, configuration, testing and implementation of the software created or modernised on the instance of the Registers Platform in accordance with the approved technical requirements, the terms of reference, the architectural rules of the Registers Platform and the requirements for the operation of the AIKOM hardware and software complex.**
5. The Contractor shall ensure the compatibility of the components created or modernised with the existing architecture of the AIKOM hardware and software complex, the existing business processes, the data model, the role-based access model, the reference books, the integration services and the other components of the relevant instance of the Registers Platform.
6. The Contractor shall carry out configuration, deployment and handover of the results of the Services in the manner agreed with the Contracting Authority, the Service Recipient and the Technical Administrator, ensuring proper documentation of the changes made.
7. Where necessary, the Parties shall designate responsible persons for coordinating the work, approving technical solutions, arranging access, conducting testing, accepting results and communicating on incidents or clarifications during the performance of the Services.
8. Upon completion of the work, the Contractor shall ensure the correct functioning of the software created or modernised on the instance of the Registers Platform and shall provide the necessary technical, operational and/or user documentation in accordance with the terms of the contract and the terms of reference.

4.10. Security requirements

The system shall ensure the protection of information, the integrity of data and the secure operation of the system. Security shall be implemented at all levels – from the infrastructure and data storage to the interaction of users and external systems; in particular, the following shall be implemented:

1. Segregation of the rights of access to information and to operations in the AIKOM hardware and software complex by means of individual sets of access rights for each user and/or group of users in accordance with their role.

2. Typification of the errors that may occur during the operation of the AIKOM hardware and software complex.
3. Development of mechanisms for handling emergencies. This includes, but is not limited to, the following aspects:
 - detection and logging of errors,
 - notification of the responsible persons or systems,
 - automatic recovery after errors,
 - provision of back-up procedures to minimise the impact of errors on the operation of the AIKOM hardware and software complex.
4. Use of tools for applying and verifying a qualified electronic signature that are certified in accordance with the legislation of Ukraine in the field of cryptographic protection of information.
5. Provision of effective security measures to protect against threats such as cross-site scripting (XSS), SQL injection and others.
6. Storage of important files, configurations, passwords and other critical data of the AIKOM hardware and software complex exclusively in configuration files located in an isolated environment. That environment shall be properly protected against unauthorised access and shall provide a high level of security to prevent the leakage, alteration or loss of valuable information.
7. The technical facilities of AIKOM 2.0 shall be installed in such a way as to allow their safe operation and maintenance.

4.11. Requirements for information protection

The protection of information in AIKOM 2.0 shall comply with the provisions of the Laws of Ukraine “On the Protection of Information in Information and Telecommunication Systems” and “On the Protection of Personal Data”.

In AIKOM 2.0, all information is subject to protection against unauthorised access, as is the software intended for its creation and processing. Information sent to interested parties is also subject to protection. By the totality of its characteristics, AIKOM 2.0 belongs to class “3” automated systems.

A comprehensive information protection system operates in AIKOM 2.0 which ensures:

- segregation of the access of users and user programs to information;
- detection and registration of attempts to breach the segregation of access;
- automated identification of users and operating personnel when accessing the resources of AIKOM 2.0;
- registration of instances of unauthorised access;

- logging of user actions, including access from external information systems;
- prohibition of unauthorised changes to the configuration of AIKOM 2.0;
- detection, identification and removal of computer viruses on the servers of the system;
- protection of the database and of reporting and archival information against unauthorised access and physical destruction;
- protection of information against distortion and unauthorised use during the interaction of the structural components of AIKOM 2.0 via communication channels;
- protection of data integrity against destruction in emergency modes and in the event of failures of the power supply of AIKOM 2.0.

In order to protect information against unauthorised access, the software of the components of AIKOM 2.0 provides for the use of password protection when configuring its components and when entering data manually.

The segregation of the powers of different users of AIKOM 2.0 as regards access to information and documents is ensured.

At DBMS level, administrators shall also be authorised and their rights clearly defined. The Institute of Educational Analytics shall put in place the necessary organisational protection measures (physical security of the premises, control over the use and non-distribution of copies of the software, etc.).

The transmission of information in AIKOM 2.0 shall be carried out using the Ethernet, TCP/IP, HTTP (HTTPS) and SSL (TLS) protocols.

AIKOM 2.0 shall maintain the protection of transmitted information against unauthorised access by means of cryptographic protection, for which purpose it is necessary to ensure:

- encryption with guaranteed strength and message authentication protection of the information transmitted via the communication channels between the automation objects;
- cryptographic transformation of the information transmitted via open public IP networks;
- authorisation of electronic documents by means of the generation and verification of a qualified electronic signature;
- management and distribution of key and identification information.

4.12. Design requirements

The interface forms created or modernised as part of the development of AIKOM 2.0 on the instance of the Registers Platform shall comply with the existing UX/UI patterns of the AIKOM

hardware and software complex, with the principles for building user interfaces of the Registers Platform and with the uniform visual style of the system.

The interface shall be intuitive, consistent and convenient for users of various levels: educational institutions, education administration bodies, technical administrators and other defined roles. Typical actions shall be performed with the minimum necessary number of steps, without duplicate data entry and without creating an excessive burden on the user.

4.13. Standardisation and harmonisation requirements

During the modernisation of AIKOM 2.0, maximum use shall be made of standard technical solutions, information technologies, equipment and software.

The main components of the technical, software and information support of AIKOM 2.0 have a modular design which makes it possible to expand the scope for applying standard and harmonised solutions.

The harmonisation requirements shall be met at the development, implementation and operation stages of AIKOM 2.0 and shall cover:

- the structural solutions and the hardware used in AIKOM 2.0;
- the information support;
- the information interfaces with the channels of inter-system interaction and the inter-system interaction protocols;
- the methods and algorithms for verifying the reliability of information;
- the procedures for conducting acceptance tests of AIKOM 2.0 and of its structural components;
- the procedures for the technical maintenance of AIKOM 2.0 and of its structural components; – the requirements for the use of classifiers and codifiers defined by the applicable regulatory documents.

4.14. Language requirements

The user interface of the AIKOM hardware and software complex shall be in Ukrainian. In error messages displayed to the user, part of the message may be in another language where this is necessary for diagnosing the operation of the operating system and of the DBMS.

All documentation developed as part of the modernisation of the AIKOM hardware and software complex shall be provided in Ukrainian.

5. FUNCTIONAL REQUIREMENTS

The modernisation of the AIKOM hardware and software complex provides for the development, enhancement, optimisation and implementation of functional components and business processes aimed at ensuring the full cycle of creation, updating, processing, storage, verification, exchange and analytical use of data in the field of education.

The functional requirements cover the processes relating to the recording of educational institutions, learners, children not covered by education, employees, the material and technical base, educational infrastructure, special statuses, documents, reference books, reporting, inter-system interaction and other entities required for the operation of AIKOM 2.0 as a component of the digital infrastructure of education management.

The development and modernisation of the relevant business processes shall be carried out taking into account the existing architecture of the AIKOM hardware and software complex, the specific features of its operation on the instance of the Registers Platform, the existing data model, the role-based access model, the integration services, the reference books, the logging mechanisms and the requirements for the protection of information and personal data.

The functional requirements described in this Section define the high-level scope of the envisaged modernisation and are subject to further detailing at the stage of preparation of the terms of reference, design of solutions, development of data models, description of business processes, integration scenarios, validation rules, interface forms and acceptance criteria.

During the preparation of the terms of reference and during design, development, testing and implementation, the functional requirements may be clarified, detailed, structurally improved or supplemented, taking into account the technical capabilities of the Registers Platform, the existing architecture of the AIKOM hardware and software complex, the results of the analysis of business processes, legislative requirements, integration constraints, security requirements and the practical needs of users.

Such clarifications and improvements may concern the names and sequence of business processes, the composition of fields, validation rules, status models, user roles, interface forms, reference books, integration scenarios, reporting forms, data processing logic and the criteria for accepting the results.

Any clarification, detailing or improvement of the functional requirements shall be made upon agreement with the Contracting Authority, the Service Recipient and/or the Technical Administrator. Such changes shall not narrow the substance and purpose of the functional requirements, impair the quality, security, integrity, currency or historical traceability of data, or disrupt the operation of the existing components of the AIKOM hardware and software complex.

The list of functional tasks, business processes, participants, roles and expected results is set out in the sub-sections of this Section.

5.1. Recording of data on the material and technical base of educational institutions: buildings/structures (entry of the current status and generation of reports)

Aim / purpose:

To enable an educational institution to keep records of the buildings and structures which it uses under a right of ownership, lease or another right of use, which will make it possible to produce objective analytical reports on the condition of the material and technical base on the basis of quantitative data and, at the same time, to reduce the burden on the educational institution thanks to the subsequent automatic generation of reports from up-to-date system data.

The functional module shall ensure the recording of data on at least the following entities:
– building/structure; – premises; – batch of equipment or technology; – equipment location; – additional characteristics of the entities; – dictionaries and the rules for their application; – analytics and reporting.

Description of the workflow:

1. The user logs in to AIKOM.
2. The user opens the section/function “Material and technical base” – “Buildings/structures”.
3. The user shall be able to view the list of buildings/structures entered for their educational institution.
4. The user shall be able to create a record of a building/structure and to complete/update the characteristics of the building, in particular (the list may be specified in more detail at the terms-of-reference stage):
 - Name of the building;
 - Address;
 - Type of building/structure (from a dictionary);
 - “Main building of the educational institution” flag;
 - Land plot – the cadastral number and area of the land plot are entered;
 - Total area of the building;
 - Year of construction;
 - Year of the last major overhaul;
 - Number of storeys;
 - Up to which storey barrier-free access is available for children with disabilities;
 - Availability of sewerage (yes/no);

- Availability of the internet: yes/no;
- Technology used to provide internet access (multiple choice from a dictionary);
- Internet speed (selection from a dictionary);
- Barrier-free accessibility features (multiple choice from a dictionary);
- Type of heating (central/individual/stove);
- Autonomy of the building (multiple choice from a dictionary);
- Own grounds for outdoor activities (conditionally – for the “Teaching block” type);
- Design capacity;
- Condition of the building (from a dictionary/list of conditions);
- Availability of alternative sources of electricity (Yes/No).

4.1. Characteristics of the terrain in the area where the educational institution is located:

- Relief: flat, mountainous, lowland plain;
- Possibility of vehicle/pedestrian access: accessible, obstructed, impossible;
- Adjacent forest areas: distance, direction, none;
- Adjacent water bodies: type (river, lake, sea), distance (m or km), none;
- Presence of public roads: yes, no, distance (m or km).

4.2. Fencing:

- Presence (yes, no);
- Coverage (full perimeter or partial);
- Height of the fence;
- Number of entrances;
- Number of controlled entrances;
- Number of vehicle gates (indicating whether controlled or not).

5. The user shall be able to enter/update data on the right of use of the building. One building may have several sets of rights. For each set of rights the user indicates:

- type of right (from a dictionary): right of ownership / lease / other type of use;
- valid from (mandatory);
- valid until (mandatory for a lease/other type of use);
- holder of the right;
- grounds.

6. If the type of building is “Teaching block”, the consumption parameters shall be completed as a mandatory requirement: 6.1. Parameter (to be selected from a dictionary):

- Number of independent power supply lines;
- Average monthly consumption of electricity in kWh;
- Average monthly consumption of heat energy in Gcal;

- Average monthly consumption of cold water in m³;
 - Average monthly consumption of hot water in m³;
7. If additional characteristics have been configured for the type of building, the user shall be able to complete them.
 8. The user shall be able to edit the data entered and to view the detailed record card of the building/structure.
 9. The user shall be able to delete a building/structure (logical deletion).

Description of the system's behaviour:

1. The system shall store the data of a building/structure in a separate entity and maintain the link to the relevant educational institution.
2. The system shall make it possible to have several buildings/structures for one educational institution.
3. The system shall provide for the creation, viewing, editing and logical deletion of records on buildings/structures.
4. The system shall support the storage of several sets of rights of use for one building/structure.
5. If the type of building is “Teaching block”, the system shall make it possible to enter and store consumption parameters in accordance with the “Type of consumption parameter” reference book.
6. If additional characteristics have been configured for the type of building, the system shall:
 - display the list of characteristics;
 - support the value types (text/number/yes-no/date/dictionary/multiple choice);
 - require the completion of the mandatory characteristics.
7. The system shall validate the fields and display errors in the event of incorrect data.
8. The deletion of a building/structure is implemented logically (is_deleted), with deleted records prohibited from being displayed in the account of the educational institution.
9. During implementation, provision shall be made for the transfer (migration) of the existing infrastructure data from the “General secondary education institutions” table to the new entities.
10. Provision shall be made for the migration of existing data from external files and from the systems of the Institute of Educational Analytics.

5.2. Change of the internal school identifier

Aim / purpose:

To ensure the introduction of a new internal identifier of an educational institution (school ID) of up to 5 characters for use in the material and technical base functionality, in analytics, in reporting and in integrations. The functionality shall ensure: – storage of the new internal school ID in the database; – harmonisation of the internal identifier for subsequent integrations and reporting; – support for historical data without changing the existing identifiers.

Description of the workflow:

1. When the functionality is implemented, the system shall create a new parameter “Internal ID”.
2. For each educational institution, the system shall ensure the storage of the new ID of the educational institution.
3. The internal school ID shall be used in the material and technical base functionality and in the related entities.
4. Users with the appropriate rights shall be able to view the internal school ID.
5. The system shall ensure the automatic generation or entry of the value of the internal ID in accordance with the rules defined in the terms of reference.
6. The new internal ID shall not change or replace:
 - the USREOU code;
 - the AIKOM ID;
 - other existing identifiers of the institution.

Description of the system’s behaviour:

Creation of the new parameter: – the system shall create a new parameter/attribute in the database: – “Internal school ID”; – maximum length – 5 characters. – The data type of the parameter is determined at the terms-of-reference stage (numeric or text format).

Storage rules: – the system shall ensure the uniqueness of the internal school ID within the system. – The value of the internal ID shall be stored separately from the other identifiers of the educational institution.

Validations: – the system shall check: – the uniqueness of the value; – compliance with the maximum length; – compliance with the permitted format.

Data migration: – when the functionality is implemented, the system shall ensure that the new parameter is populated for the educational institutions that already exist. – The rules for generating/populating the internal ID are defined separately at the terms-of-reference

stage. – The existing integrations and links shall not be disrupted after the new parameter has been added.

5.3. Recording of data on the material and technical base of educational institutions: premises (entry and updating)

Aim / purpose:

To enable an educational institution to maintain a list of the premises within its buildings/structures in order to ensure the reliable recording of infrastructure and the generation of analytical reports.

Description of the workflow:

1. The user logs in to AIKOM.
2. The user opens the section/function “Material and technical base” – “Premises”.
3. The user shall be able to select a building/structure from the list of the buildings of the educational institution; by default, the “main building of the educational institution” / “teaching block” shall be selected (where available).
4. The user shall be able to view the list of premises within the selected building/structure.
5. The user shall be able to create premises and to complete/update the data of the premises (the list may be specified in more detail at the terms-of-reference stage), in particular:
 - Name of the premises;
 - Type of premises (from a dictionary);
 - Sequence number; Storey in the building;
 - Area (m²);
 - Number of study places;
 - Used for their intended purpose (yes/no);
 - May be leased out (yes/no); Adapted for children with special educational needs (yes/no);
 - Condition of the premises (from a dictionary/list).
6. The user shall be able to complete additional characteristics of the premises (mandatory status/value type/multiple choice) in accordance with the rules defined for the selected type of premises.
7. The user shall be able to view the detailed record card of the premises and to edit it.
8. The user shall be able to delete premises (logical deletion).

Description of the system’s behaviour:

1. The system shall provide for the maintenance of the list of premises within the selected building/structure, including creation, updating and logical deletion.
2. The system shall support the “building/structure – premises” link and make it possible for many premises to exist within one building/structure.
3. The system shall allow a building/structure to be selected from the list of the buildings of the educational institution; by default – the main building/teaching block (where available).
4. The system shall provide for the logical deletion of premises (is_deleted) and shall not display deleted premises in the account of the educational institution.
5. The system shall support additional characteristics of premises in accordance with the settings for the type of premises, in particular:
 - apply the mandatory-status rules;
 - support the value types (text/number/yes-no/date/dictionary/multiple choice);
 - support multiple choice (where provided for by the rules).
6. The system shall make it possible to enter rights of use of premises under the applicable conditions (where this is permitted/required by the business rules).
7. The system shall prevent the duplication of characteristics.
8. The system shall validate the data entered and display errors in the event of incorrect values, in particular:
 - validation of the area (numeric value, permitted range – in accordance with the system rules);
 - validation of the number of study places (numeric value, permitted range – in accordance with the system rules);
 - validation of the dates of the rights of use (logic of the “valid from/valid until” interval, mandatory status depending on the type of right).

5.4. Recording of data on the material and technical base of an educational institution: batches of equipment/technologies (entry and updating)

Aim / purpose:

To enable an educational institution to record batches of equipment/technologies with identical characteristics (taking into account serial numbers and additional characteristics) in order to monitor availability, use/service life and condition and to generate reports. The recording of the material and technical base shall cover the following areas, broken down by actual availability and need:

- recording of New Ukrainian School equipment

- recording of energy resources
- recording of catering units
- recording of fire safety equipment
- recording of gadgets and IT equipment
- recording of shelters (civil protection structures and basic shelters)
- recording of school buses and of the organisation of transport (taking into account the existing data collection processes)

Description of the workflow:

1. The user logs in to AIKOM.
2. The user opens the section/function “Material and technical base” – “Equipment/technologies” – “Batches”.
3. The user shall be able to view the list of batches of equipment/technologies and to perform a search by entered text across the reference-book values and the characteristics of the batches.
4. The user shall be able to create a batch of equipment/technologies and to complete the fields of the batch:
 - Name of the equipment;
 - Type of equipment/technology (from a dictionary);
 - In use from / until;
 - Total quantity;
 - Purchased with funds from (from a dictionary);
 - Owner – the current educational institution (yes/no);
 - Name of the owner (if the owner is not the current educational institution).
5. The user shall be able to add serial numbers for a batch manually and/or by uploading them from Excel.
6. The user shall be able to view the detailed record card of a batch, including the list of serial numbers and the additional characteristics.
7. The user shall be able to complete additional characteristics of a batch (in accordance with the display/mandatory-status rules defined for the type of equipment).
8. The user shall be able to edit a batch subject to the restrictions defined by the integrity rules for the related data (in particular, the blocking/restriction of the editing of critical fields once allocations have been created).

9. The user shall be able to delete a batch; the system shall in that case process the related allocation records in accordance with the rules defined in the terms of reference (as a minimum – logical deletion of the related allocations).

Description of the system's behaviour:

1. The system shall provide for the creation, viewing, editing and (logical) deletion of batches of equipment/technologies with identical characteristics.
2. The system shall store the following attributes for a batch: name, type, period of use (from/until), quantity, source of purchase, owner flag (current educational institution / other) and the name of the owner (where required).
3. The system shall support the recording of serial numbers within a batch, in particular:
 - manual entry;
 - import from Excel;
 - validation of duplicate serial numbers within a single batch;
 - generation of messages about format/content errors in the Excel file in the event of an incorrect upload.
4. The system shall apply the additional-characteristics rules for a batch depending on the type of equipment, in particular:
 - display of the list of characteristics in accordance with the settings;
 - control of mandatory status;
 - support for the value types (text/number/yes-no/date/dictionary/multiple choice);
 - prohibition of duplicating the same type of additional characteristic within a batch.

For example, for the equipment or technology type “laptop” the type of operating system will be a mandatory characteristic to be entered; for the type “licence” – the period of validity and the number of devices covered by it; for a generator – the power output and the type of fuel (diesel, petrol, gas, gas-petrol); for a battery – the capacity in kW; and for a solar power plant – the rated power of the inverter. Further details on working with dictionaries for entering additional characteristics are set out in the section “Administration of dictionaries”.

5. The system shall validate the data of a batch, in particular:
 - verification of the logic of the “in use from/until” dates (the “until” date may not be earlier than the “from” date);
 - verification of the correctness of quantitative values (in accordance with the system rules).

6. The system shall restrict the editing/deletion of a batch in cases where the changes could compromise the integrity of the related data (for example, after allocations have been created):
 - the system may block the editing of critical fields and/or prohibit certain changes entirely;
 - the system shall display the reason for the restriction (what exactly is blocked and why).
7. When a batch is deleted, the system shall perform a logical deletion of the batch and of the related allocation records in accordance with the rules defined in the terms of reference.
8. The system shall provide a search by entered text across the reference-book values and the characteristics of the batches.

5.4.1. Determination of the need for equipment/technologies

Aim / purpose:

To enable an educational institution to determine and record the need for equipment/technologies (broken down by type, characteristics and quantity) in order to support procurement planning, analysis of provision levels and the generation of reports for education administration bodies/state authorities.

Description of the workflow:

1. The user logs in to AIKOM.
2. The user opens the section: “Material and technical base” – “Equipment/technologies” – “Need”.
3. The user views the list of the needs that have been recorded.
4. The user creates a new need entry and completes the fields:
 - name of the equipment;
 - type of equipment/technology (from a dictionary);
 - quantity required;
 - justification of the need (text field/reference book?);
 - period (year/academic year);
 - source of financing (optional, from a dictionary).
5. The user may:
 - add additional characteristics (according to the type of equipment);
 - save the record;
 - edit or delete the need entry.
6. The user may view the recorded need in the form of a list or of a detailed record card.

Description of the system's behaviour:

1. The system shall provide a need creation form containing:
 - Name of the equipment;
 - Type of equipment/technology (reference book);
 - Quantity;
 - Period;
 - Justification;
 - Additional characteristics (dynamic, depending on the type).
2. The system shall provide for the recording of needs:
 - separately from the actual batches of equipment;
 - with the possibility of subsequently comparing “need against availability”.
3. The system shall apply the same rules as for batches of equipment:
 - dependence on the type of equipment;
 - control of mandatory status;
 - support for the value types (text/number/date/dictionary/multiple choice).
4. The system shall check that:
 - the quantity is greater than zero;
 - the key fields are completed (type, name, quantity); the records are unique (by the combination: type + characteristics + period – optional).
5. The system shall allow a need entry to be edited.
6. The system shall allow a need record to be deleted:
 - logically (is_deleted_flag);
 - with retention of the history of changes.

5.4.2. Specific features of recording certain categories of the material and technical base: shelters Aim / purpose:

To ensure the recording of those categories of the material and technical base which have a specific set of characteristics and require alignment with the existing data collection processes, in particular shelters (civil protection structures), within a single model for recording the material and technical base (batches and units of equipment, allocation by location and by responsible person, additional characteristics by type), without duplicating data already collected in other processes of the System.

Description of the workflow:

1. The user logs in to AIKOM.

2. The user opens the section “Material and technical base” and selects the relevant recording category
3. The user creates or updates a record, completing the general fields in accordance with clause 5.4 and the additional characteristics defined for the relevant type in the dictionaries of the material and technical base (clause 5.6).
4. For a shelter, the user indicates the linkage to a building/structure and to premises of the educational institution (clauses 5.2 and 5.3).
5. The user views the data in the list and in the detailed record card and uses them to generate the relevant reports.

Description of the system’s behaviour:

Recording of shelters

1. The system shall provide for the recording of shelters as a separate category of the material and technical base using the types defined in the dictionaries: civil protection structure, anti-radiation shelter, basic shelter, dual-purpose structure (clause 5.6).
2. The system shall provide for the storage of additional characteristics of a shelter, in particular: capacity (persons), area, state of readiness, availability of autonomous power supply, water supply, sanitary facilities and ventilation, adaptation for persons with disabilities and other groups with reduced mobility, and the availability of audible guidance to the shelter.
3. The system shall ensure the linkage of a shelter to a building/structure and to premises of the educational institution in accordance with clauses 5.2 and 5.3 without re-entering data.
4. The system shall ensure that the data on shelters are used when generating the electronic safety passport of the educational institution (clause 5.20) and the related reports.
5. The system shall ensure the transfer of the indicators relating to shelters to the analytical module, including for comparison with the data on expenditure on the equipping and maintenance of shelters obtained in accordance with clause 5.10.

5.5. National register of children: recording of pupils and of children not covered by education

Aim / purpose:

To ensure the maintenance of the national register of school-age children and pupils and the monitoring of education coverage at the levels of: educational institution – territorial community/district/oblast – children’s services, in particular:

- recording of pupils who fail to attend classes without valid reasons for longer than the period permitted by regulatory legal acts;

- generation of the list of children who are “not covered by education” (including after expulsion/transfer without subsequent enrolment within 10 working days);
- creation by education administration bodies of profiles of children so that they can subsequently be enrolled by a school;
- display of data on the availability of vacant places broken down by year group;
- obtaining consolidated information for reporting purposes (based on report 77-RVK) and its further processing by education administration bodies and children’s services.

Description of the workflow:

1. Educational institution: the responsible employee of the school records the failure to attend classes without valid reasons for longer than the period permitted by regulatory legal acts.
2. The employee finds the profile of a pupil of their school, marks that the pupil fails to attend classes without valid reasons and indicates the date from which the pupil has not been attending.
3. The educational institution compiles an up-to-date list of children and, where necessary, updates the records (status/date/comment).
4. Education administration body/amalgamated territorial community/oblast: the administrator of the education administration body views, in list format, the information received from educational institutions on pupils who fail to attend classes and also receives information on children who have not completed school but are not enrolled in any educational institution.
5. The education administration body generates reports (in particular in form 77-RVK) in the REDASH environment.

Description of the system’s behaviour:

1. The system shall make it possible to set the status “The child shows signs of being in difficult life circumstances” in each individual pupil record card.
2. Recording of “fails to attend classes”:
 - the system shall allow an educational institution to create/update a “fails to attend classes” record for a pupil of its school, indicating the start date of the non-attendance and a comment;
 - the system shall maintain a list/register of such pupils for the school and the territorial community (so that the current list and the state of processing can be seen).
3. Data route from school to education administration body:

- the system shall ensure that the information received from educational institutions is displayed at the level of the territorial community/district/oblast, with the possibility of consolidation in a report.
4. Automatic “not covered by education” flag (10 working days):
 - where information on expulsion/departure or transfer to another educational institution is entered in a child’s profile, the system shall check for the existence of a new enrolment record;
 - if no enrolment record is entered within 10 working days, the system shall automatically set the flag “not covered by education”;
 - the flag shall be removed once information on enrolment in an educational institution has been entered.
 5. Verification against the Unified State Electronic Database on Education for years 9–11:
 - the system shall support the recording of the results of checking the place of study in the Unified State Electronic Database on Education for pupils of years 9–11;
 - if a child is not found, the child shall be recorded as potentially “not covered by education”;
 - if the child is found, the system shall display to the school the name of the place of study (as grounds for further action) and the date of enrolment.
 6. Child registration statuses (reference book). The system shall support a reference book of the statuses of a child’s registration (as a minimum):
 - “Fails to attend classes”;
 - “Removed from the register”;
 - “Under monitoring”.
 7. Reporting: the system shall provide for the generation of statistical information on the number of school-age children, including children not covered by education, broken down by region/territorial community (form 77-RVK – as the target/reference form).
 8. Data sources for “children residing in a defined territory”: where there is no reliable source in the Unified State Demographic Register for selecting “all children residing/registered in an amalgamated territorial community”, the system shall allow work within the available registers/data and shall record the coverage limitations.

5.6. Development of a service for the integration of AIKOM with the “LOGICA” information and analytical system

Aim / purpose:

To ensure integration between the “AIKOM” hardware and software complex and the “LOGICA” information and analytical system for the selective retrieval of financial and budgetary indicators (by targeted queries) with their subsequent storage in the “AIKOM” hardware and software

complex and use in the Analytical Module of AIKOM (indicators, reports, visualisations, retrospective data, validations). Description of the workflow:

1. The responsible person configures the integration of AIKOM with the “LOGICA” information and analytical system (registration of services, configuration of access rights and security policies).
2. AIKOM performs targeted queries to the “LOGICA” information and analytical system in order to obtain the required indicators (without being granted full access to that system).
3. AIKOM receives responses in the formats/standards defined in the integration specification and stores the data received in its own storage facilities/registers.
4. In accordance with the agreed schedule, AIKOM performs automated data updates.

Description of the system’s behaviour:

1. **Channels and security of the interaction.** The integration between the “AIKOM” hardware and software complex and the “LOGICA” information and analytical system shall be carried out via secure communication channels using authentication and authorisation mechanisms.
2. **Exchange model.** Data exchange shall be carried out by means of targeted queries, which ensures the selective retrieval of information without granting full access to the “LOGICA” information and analytical system. The “AIKOM” hardware and software complex shall receive data from the “LOGICA” information and analytical system in accordance with the applicable standards (message formats, protocols, requirements for services).
3. **Automated updating.** The “AIKOM” hardware and software complex shall support the automated updating of data in accordance with the agreed schedule. The results of each update shall be stored in AIKOM for subsequent use and retrospective analysis.
4. **Composition of the data received from the “LOGICA” information and analytical system.** The “AIKOM” hardware and software complex shall be able to receive data for the generation of analytical indicators:
5. **4.1 Budget indicators**
 - the total size of the local budget;
 - the volume of expenditure on education;
 - the structure of local budget expenditure by main item

4.2 Financing of general secondary education (general secondary education institutions)

- the volume of financing of general secondary education institutions from the education subvention;

- the volume of financing of general secondary education institutions from the local budget;
- (separately) the financing of special educational institutions.

4.3 Staff remuneration

- the volume of expenditure on the remuneration of teaching staff (state budget);
- the volume of expenditure on the remuneration of teaching staff (local budget);
- the volume of expenditure on the remuneration of non-teaching staff (local budget);
- the monthly breakdown of expenditure on remuneration (by staff category).

4.4 Education subventions and their use

- expenditure and use of the funds of the New Ukrainian School subvention;
- expenditure and use of the funds of the subvention for children with special educational needs;
- expenditure and use of funds for the professional development of teaching staff;
- expenditure and use of funds for allowances and additional payments to teaching staff;
- expenditure and use of funds for shelters (equipping and maintenance);
- expenditure and use of funds for the purchase of school buses;
- expenditure and use of funds for the organisation of catering in educational institutions;
- expenditure and use of funds for the purchase of equipment for general secondary education institutions;
- expenditure and use of funds for the introduction of STEM education.

4.5 Capital expenditure and other costs

- the volume of capital expenditure on educational institutions (general fund);
- the volume of capital expenditure on educational institutions (special fund);
- the costs of utility services of educational institutions: – heat supply; – electricity; – gas supply; – water supply; – wastewater disposal (sewerage).

5.7. Updating of the structure and parameters of the online reports implemented in Redash

Aim / purpose: To ensure that the online reports implemented in the Redash analytical environment are brought up to date in line with the changes to the system's functionality made under Section 5, and that all new parameters are available for the digital tools of education managers – in the Analytical, Financial and Statistical Modules of AIKOM.

Requirements for the Contractor:

1. Updating and correction of the online reports in line with the changes to the functionality

1.1. The Contractor shall ensure that the online reports in Redash are updated and corrected in line with the update of the system's functionality carried out under Section 5.

1.2. The Contractor shall ensure that the data sources of the reports (queries, views, sets of parameters) correspond to the updated AIKOM data model and that the values displayed in the reports are correct, complete and consistent.

2. Display of new parameters

2.1. The Contractor shall ensure that all new parameters created in the course of the implementation of Section 5 are displayed in the Redash online reports.

2.2. The Contractor shall implement the display of such parameters in the form of online reports for the level of the educational institution, unless other levels (territorial community/oblast, etc.) are specified in the particular clause of Section 5. Where other levels are specified in the relevant clause of Section 5, the Contractor shall ensure that the parameters are displayed at all the levels specified.

2.3. The creation of new reports for levels above that of the educational institution (territorial community/district/oblast, etc.), in cases where the report parameters include personal data (as, in particular, in clause 5.9), shall be ensured by the Contractor on the Redash side.

3. Availability of the new parameters in the analytical views and modules of AIKOM

3.1. In order to enable the implementation of digital tools for education managers, the Contractor shall ensure that all newly created parameters are added to the analytical views.

3.2. The Contractor shall ensure that all newly created parameters are available for use in the Analytical, Financial and Statistical Modules of AIKOM.

5.8. Set of processes for recording and monitoring academic lyceums

Aim / purpose:

To provide AIKOM with a unified set of business processes for recording, updating and analytically monitoring data on academic lyceums within the framework of the reform of specialised upper secondary education.

The functional module shall ensure:

- planning of the network of academic lyceums by education administration bodies;
- recording of the organisational statuses of educational institutions as regards participation in the piloting and the planned reorganisation;
- creation, updating and administration of educational institutions of the “Lyceum” type;
- entry of data on the cooperation of territorial communities in ensuring access to specialised secondary education;

- entry by the principal or the administrator of a general secondary education institution of the parameters of the organisation of the educational process in an academic lyceum;
- generation of data for subsequent use in the analytical dashboard.

The functional module comprises the following business processes:

1. Planning of the network of academic lyceums.
2. Modernisation of the business process “Updating of an educational institution” for the creation and updating of an educational institution of the “Lyceum” type.
3. Entry of the parameters of the organisation of the educational process in an academic lyceum.
4. Generation of data for the academic lyceums dashboard.

5.8.1 Planning of the network of academic lyceums

Aim / purpose: To enable education administration bodies to record the statuses of educational institutions within the planning of the network of academic lyceums, in particular an institution’s participation in the piloting of the reform in 2026 and the planned change of the type of institution as from September 2027.

Users of the process: The business process shall be available to users of education administration bodies holding the following roles:

- head of the education administration body;
- administrator of the education administration body.

Description of the workflow: The user of the education administration body opens the business process “Planning of the network of academic lyceums”.

The system displays a grid with the list of active general secondary education institutions subordinated to the relevant education administration body.

The grid shall provide for searching for an institution by name.

The grid shall contain the following data:

Field	Description
Full name of the institution	Full name of the general secondary education institution
Type of institution	Current type of the educational institution
Year groups	List of the year groups existing in the institution
Forms of study	List of the forms of study provided in the institution

Field	Description
Piloting status	Editable field with selection of a value from a reference book
Planned reorganisation	Editable field with selection of a value from a reference book
Decision	Details of the decision of the council or of the military administration
Action	Navigation to editing of the record

The user of the education administration body shall be able to select, for each institution, one value in the “Piloting status” field:

- piloting-2025;
- piloting-2026;
- not participating in the piloting / value not determined.

The user of the education administration body shall be able to select, for each institution, one value in the “Planned reorganisation” field:

- transformation into a lyceum in 2027;
- downgrading to the level of a gymnasium in 2027;
- decision not taken / value not determined.

If the user has selected a value in the “Piloting status” or “Planned reorganisation” field, the system shall require the details of the relevant decision to be entered:

- type of decision: decision of the council / decision of the military administration;
- number of the decision;
- date of the decision;
- link to the document.

Once the data have been entered, the system shall display the entered values to the user for review before signing.

Once all mandatory fields have been completed, the user shall sign the process with a qualified electronic signature. After the qualified electronic signature has been successfully verified, the system records the changes made.

Description of the system’s behaviour: The system shall:

1. Display in the grid only active general secondary education institutions subordinated to the relevant education administration body.
2. Where there are no subordinated institutions, display the message: “No educational institutions found in subordination”.
3. Ensure that values for the “Piloting status” and “Planned reorganisation” fields can be selected only from the relevant reference books.
4. Ensure that only one value can be selected for each of these fields.
5. Store the data at the level of the specific educational institution.
6. Not change the current type of the educational institution where the “Planned reorganisation” field is completed, since that field reflects a future state.
7. Link the value of the planned reorganisation to the year 2027.
8. Allow the “Planned reorganisation” field to be left blank if the relevant decision has not yet been taken.
9. Validate the mandatory details of the decision.
10. Where mandatory fields are not completed, highlight such fields in red and disable the possibility of proceeding to the next step.
11. Verify the qualified electronic signature of the signatory of the education administration body.
12. Log all changes, recording the user, the date and time of the change, the previous value and the new value.

Acceptance criteria: – The business process is available only to the head or the administrator of an education administration body.

- Only active general secondary education institutions subordinated to the education administration body are displayed in the grid.
- The user can find an institution by name.
- Only one value can be selected for the piloting flag.
- Only one value can be selected for the planned reorganisation.
- The planned reorganisation does not change the current type of the institution.
- If a piloting status or a planned reorganisation has been selected, the details of the decision are completed as a mandatory requirement.
- The process cannot be completed without the mandatory fields being completed and without signing with a qualified electronic signature.
- The data are stored at the level of the specific institution.

- All changes are logged.

5.8.2. Conclusion of a cooperation agreement between territorial communities

Aim / purpose:

To enable education administration bodies to record the cooperation agreements concluded between them on behalf of territorial communities for the organisation of specialised secondary education, in particular for the enrolment of pupils from other communities in academic lyceums.

Description of the workflow

1. The user of the education administration body initiates the business process “Conclusion of a cooperation agreement between territorial communities”.
2. The user selects:
 - the partner community/communities (another community or communities);
 - the educational institution (academic lyceum) in which the pupils are to be enrolled.
3. The user completes the details of the agreement:
 - number of the agreement;
 - date of the agreement;
 - link/document (where available);
 - period of validity (optional).
4. The user signs the agreement with a qualified electronic signature.
5. The user may view the active concluded agreements in the grid and edit the list.
6. The agreement is initiated by the community in whose network the lyceum in respect of which the agreement is concluded has been established. The concluded agreement shall be displayed to the partner community without the possibility of editing.
7. A parameter concerning the agreement shall be added to the display in the “Network of institutions of the territorial community” report.

Description of the system’s behaviour:

1. The business process is available only to users of education administration bodies:
 - head;
 - administrator.
2. The system shall provide an agreement creation form containing:
 - initiating community (completed automatically);
 - partner community (multiple choice from a reference book);

- educational institution (subordinated institutions only);
 - details of the agreement (number, date, link).
3. The conclusion of the agreement shall be confirmed by the application of a qualified electronic signature.
 4. The system shall store:
 - the date and time of signature;
 - the signatory;
 - the history of changes to the agreement.
 5. The system shall prohibit the creation of an agreement without:
 - a partner community;
 - an educational institution;
 - the number and date of the agreement.
 6. The educational institution shall be of the type “Lyceum”.
 7. The system shall prohibit duplicate active agreements between the same communities and the same institution.

Acceptance criteria: – The cooperation parameter is available only for educational institutions of the “Lyceum” type.

- Data on partner communities may be entered only by the founding education administration body.
- The partner community is selected only from a reference book.
- More than one partner community can be added.
- The data are stored at the level of the specific institution.
- The data are available for subsequent use in analytics.

5.8.3. Creation or updating of data on a Lyceum. Entry of the parameters of the organisation of the educational process in an academic lyceum

Aim / purpose: To make it possible to create a new educational institution of the “Lyceum” type, to reorganise an existing institution into a lyceum and to update the data of an existing lyceum, taking into account the parameters required for the recording of academic lyceums and for subsequent analytics.

Updating of information on an existing lyceum. To enable the principal or the administrator of a general secondary education institution to enter data on the organisation of the educational process in an academic lyceum, in particular on clusters, study profiles, subjects/courses and the distribution of pupils by profile.

These data shall be used for the recording of academic lyceums, the generation of analytical indicators and display on the dashboard.

Users of the process: The business process shall be available to users of general secondary education institutions holding the following roles:

- head of the educational institution;
- administrator of the educational institution.

Description of the workflow: The user of the education administration body shall be able to create or update a lyceum in one of the following ways:

1. Reorganisation of an existing educational institution.
2. Creation of a new educational institution of the “Lyceum” type.

After an educational institution of the “Lyceum” type has been created or updated, the principal or the administrator of the general secondary education institution shall be able to complete the parameters of the organisation of the educational process in the lyceum.

The system shall make it possible to:

1. Define the cluster or clusters in which the institution operates.
2. Select study profiles from the reference book of profiles by cluster.
3. Assign one study profile to each pupil.
4. Allow a pupil’s profile to be changed during the academic year.

A field for selecting a study profile shall be added to a pupil’s educational profile. The field shall be implemented as a drop-down list allowing only one value to be selected.

Reference book of clusters and profiles: The system shall ensure the use of a reference book of clusters and profiles.

Cluster	Profiles
STEM cluster	Physics and mathematics; mathematics; physics; biology; biotechnology; biology and chemistry; biology and physics; chemistry; chemical technology; physics and chemistry; geography; technology; STEM profile; information technology;
Social sciences and humanities cluster	Economics; history; law; history and law;
Language and literature cluster	Philology; Ukrainian philology; foreign philology

Description of the system's behaviour: The system shall:

1. Allow the parameters of the organisation of the educational process to be entered only for educational institutions of the "Lyceum" type.
2. Ensure that clusters and profiles are selected from a reference book.
3. Allow several profiles to be added within one institution.
4. Ensure that each profile is linked to the relevant cluster.
5. Make it possible to enter the list of subjects/courses for each profile.
6. Ensure that only one study profile can be assigned to a pupil.
7. Allow a pupil's profile to be changed during the academic year.
8. Retain the history of changes to a pupil's profile, indicating the date of the change, the user, and the previous and new values.
9. Transfer aggregated data on profiles and pupil numbers for the generation of the dashboard.
10. Ensure the logging of changes to the parameters of the educational process.

Acceptance criteria: – The process is available to the head and the administrator of a general secondary education institution.

- The process is available only for educational institutions of the "Lyceum" type.
- An institution may have several study profiles.
- Each profile belongs to one cluster.
- Only one study profile may be assigned to a pupil.
- A pupil's profile can be changed during the academic year.
- Data on clusters, profiles, subjects/courses and pupil numbers are stored at institution level.
- The data are available for subsequent display on the dashboard and in the "Enrolment" and "Network" reports at all levels of education administration.

5.8.4. Generation of data for the academic lyceums dashboard

Aim / purpose: To ensure the generation of a data set for transmitting data to the academic lyceums dashboard at <https://profilna.mon.gov.ua/https://profilna.mon.gov.ua/>

The dashboard shall display the key parameters of academic lyceums, in particular geographical location, forms of study, availability of boarding facilities, statuses of the institution, clusters, study profiles, subjects/courses and the number of pupils by profile.

Description of the workflow: The system shall generate a data export in .csv format for subsequent upload and processing in that environment.

The export shall be generated on the basis of the current AIKOM data on educational institutions of the “Lyceum” type and the parameters entered under the business processes described in clause 5.18.

One row in the .csv file shall correspond to one educational institution.

The file shall be generated in UTF-8 encoding.

Structure of the CSV file: The CSV file shall contain the following groups of fields:

1. Identification and administrative data of the institution

N

o. Field

- 1 Number of the institution in AIKOM
- 2 Oblast
- 3 Full name of the institution
- 4 Location: urban / rural
- 5 Whether it is the only lyceum in the community: yes / no
- 6 Form of study: full-time / distance / blended
- 7 Availability of boarding facilities: yes / no
- 8 Mountain institution status: yes / no
- 9 Instruction in the languages of the indigenous peoples / national minorities of Ukraine: yes / no

2. Data on study profiles

For each profile from 1 to 7, the CSV file shall contain the same set of fields:

Field	Description
Cluster for profile N	Values: language and literature / STEM / social sciences and humanities
Profile N	Name of the study profile
Advanced-level subjects within profile N	List of subjects/courses
List of elective subjects and courses within profile N	List of elective subjects/courses
List of elective subjects and courses outside profile N	List of elective subjects/courses

Field	Description
Number of pupils in profile N	Numeric value

where N is the sequence number of the profile from 1 to 7.

3. Geographical, contact and reference data

No.	Field
52	longitude
53	latitude
54	KATOTTG code of the community
55	Community
56	Website of the institution
57	Contact telephone number
58	Full name of the principal

Description of the system's behaviour: The system shall:

1. Generate the CSV file in accordance with the defined structure.
2. Include in the export only educational institutions of the "Lyceum" type or holding another academic lyceum status defined in the terms of reference.
3. Use the current data stored in AIKOM at the time the export is generated.
4. Transfer to the file the data on study profiles, clusters, subjects/courses and the number of pupils by profile.
5. Ensure the correct generation of geographical coordinates for displaying the institutions on the map.
6. Make it possible to update the data for the dashboard on a regular basis.
7. Where there is no value for an optional field, leave the corresponding cell empty.
8. Where a mandatory value is missing, either not include the record in the final data set or mark it as erroneous in accordance with the rules defined at the terms-of-reference stage.
9. Ensure the logging of the generation of the export, indicating the date, the time and the user/system process.

Acceptance criteria: – The system generates the CSV file in UTF-8 encoding.

- One row of the CSV file corresponds to one educational institution.
- The structure of the CSV file corresponds to the defined list of fields.
- Data on profiles are generated for profiles 1–7.

- Data on the number of pupils by profile are transferred as a numeric value.
- Geographical coordinates are transferred in the longitude and latitude fields.
- The data can be used to build the dashboard.
- The generation of the export is logged.

5.9. Electronic safety passport of an educational institution

5.9.1. “Creation and submission of the safety passport of an educational institution” (MES/educational institution users)

Aim / purpose:

To enable the head and/or an employee of an educational institution to create, complete, sign with a qualified electronic signature and submit the electronic safety passport of the educational institution for review to the State Emergency Service/the National Police, with status control and restriction of simultaneous editing.

Description of the workflow:

1. The user of the educational institution enters the business process “Creation and submission of the safety passport of an educational institution”.
2. The user of the educational institution initiates the creation/completion of the passport (status “Under editing”).
3. The user of the educational institution completes the passport with an unlimited number of saves; each save is confirmed by a qualified electronic signature.
4. The safety passport of the institution shall be completed automatically on the basis of the data entered in other sections of the system. If any blocks have not been completed, the system shall highlight to the user which section needs to be completed.
5. The user of the educational institution approves the completed passport and submits it for review (status “Awaiting review”).
6. If the passport has been returned for revision (status “Revision”), the head of the educational institution/the responsible officer takes the passport into work (status “Under editing”), makes changes taking the comments into account and resubmits it for review (status “Awaiting review”).
7. Users of the Ministry of Education and Science may view the safety passport in any status.
8. Users of the Ministry of Education and Science may export the safety passport to a file in the statuses “Approved” and “Awaiting update”.

Description of the system’s behaviour:

1. Statuses of the passport (within the creation/submission business process):
 - “Under editing” – creation/completion;
 - “Awaiting review” – after approval by the head of the educational institution;
 - “Revision” – the result of the review by the Ministry of Internal Affairs with comments;
 - “Approved” – after approval by the Ministry of Internal Affairs (see business process 5.20.2);
 - “Awaiting update” – an update request from the Ministry of Internal Affairs (see business process 5.20.2).
2. Restriction of simultaneous editing (Ministry of Education and Science). Simultaneous access to editing the safety passport is possible for only one user of the Ministry of Education and Science at a time.
3. Qualified electronic signature on saving. Every save of changes to the passport at the editing stage shall be confirmed by a qualified electronic signature.
4. Submission for review. The transition to the status “Awaiting review” takes place after approval by the head of the educational institution.
5. Revision. In the “Revision” status, the system shall display the comments of the Ministry of Internal Affairs by section; once the changes have been made and signed with a qualified electronic signature, the passport is again moved to “Awaiting review”.
6. Export. The export of the passport to a file is available to users of the Ministry of Education and Science in the statuses “Approved” and “Awaiting update”.
7. Versioning of approved passports. Approved versions of the passport shall be stored in the system and be available for viewing by users of the Ministry of Education and Science and of the Ministry of Internal Affairs.

5.9.2. “Processing of the safety passport of an educational institution” (State Emergency Service/National Police users)

Aim / purpose:

To enable users of the State Emergency Service and of the National Police to take a passport for review, to add comments by section, to approve it or send it for revision, and to initiate a request for updating an approved passport, with control of simultaneous access and signing of every save with a qualified electronic signature.

Description of the workflow:

1. A user of the State Emergency Service or of the National Police takes a passport having the status “Awaiting review” for processing (status “Under review”).

2. A second user of the Ministry of Internal Affairs (State Emergency Service or National Police) also takes that passport for review (within the access rules).
3. The users of the Ministry of Internal Affairs review the passport and, where they have observations, add comments to the sections.
4. Approval/revision is determined by the combination of the decisions of the two users of the Ministry of Internal Affairs:
 - if at least one of them has sent it for revision – the status is “Revision”;
 - if both have approved it – the status is “Approved”.
5. Once the revised version has been received (the status is again “Awaiting review”), the user(s) of the Ministry of Internal Affairs who left comments (or both of them) again take the passport for review and repeat the review steps.
6. Once it has been approved by both bodies of the Ministry of Internal Affairs, the passport becomes “Approved”.
7. A user of the State Emergency Service or of the National Police may initiate a request for updating an approved passport (status “Awaiting update”), and the head of the educational institution receives a notification.
8. Users of the Ministry of Education and Science and of the Ministry of Internal Affairs may export the passport to a file in the statuses “Approved” and “Awaiting update”.
9. Users of the Ministry of Internal Affairs may export a consolidated report on the safety passports of the institutions to which they have access (statuses “Approved” and “Awaiting update”).

Description of the system’s behaviour:

1. Roles and access rights (Ministry of Internal Affairs):
 - User of the State Emergency Service – processes passports, leaves comments, approves them/sends them for revision, initiates update requests and exports data.
 - User of the National Police – the same rights in respect of the institutions available to them.
2. Taking for review and the “Under review” status:
 - A passport with the status “Awaiting review” may be taken into work, after which it acquires the status “Under review”.
3. Restriction of simultaneous processing (Ministry of Internal Affairs):
 - Simultaneous access to a passport within the business process “Processing of the safety passport” is possible for only one user of the Ministry of Internal Affairs at a time (for editing/saving).

4. Every save of changes/comments during processing shall be confirmed by a qualified electronic signature.
5. Comments and the rule “adding a comment = revision”:
 - The system shall allow comments to be added to the sections of the passport.
 - The addition of at least one comment is deemed to constitute grounds for sending the passport for revision (as a minimum condition).
6. Logic of the decisions of the two users of the Ministry of Internal Affairs:
 - if MIA1 = “approve” and MIA2 = “revision” – the status is “Revision”;
 - if MIA1 = “revision” and MIA2 = “approve” – the status is “Revision”;
 - if MIA1 = “revision” and MIA2 = “revision” – the status is “Revision”;
 - if MIA1 = “approve” and MIA2 = “approve” – the status is “Approved”.
7. Repeat review after revision:
 - After being returned from revision, the passport is again processed by the user(s) of the Ministry of Internal Affairs who left comments (or by both of them).
8. Request for updating an approved passport:
 - A user of the Ministry of Internal Affairs may set the status “Awaiting update”; the system shall send a notification to the head of the educational institution.
Export:
 - The export of the passport to a file is available to users of the Ministry of Internal Affairs in the statuses “Approved” and “Awaiting update”.
 - The export of a consolidated report on passports is available to users of the Ministry of Internal Affairs for the institutions to which they have access, in the statuses “Approved” and “Awaiting update”.
9. Retention of approved versions:
Approved versions of passports shall be stored in the system and be available for viewing by users of the Ministry of Education and Science and of the Ministry of Internal Affairs.
10. The structure of the passport shall correspond to the approved form in accordance with

5.10. Addition of a method for retrieving data on a child from the State Register of Civil Status Acts by taxpayer registration number (the GetBirthArByRnokpp method)

Aim / purpose:

To enable AIKOM to retrieve birth record data from the State Register of Civil Status Acts by taxpayer registration number via the GetBirthArByRnokpp service in order to clarify/verify the data of a child and of the related persons (father/mother) in cases where identification is performed by taxpayer registration number. The service is intended for the retrieval of birth

record data upon a request by taxpayer registration number and may take into account the role of the subject of the civil status record.

Description of the workflow:

1. The user logs in to AIKOM and initiates the retrieval of data from the State Register of Civil Status Acts by taxpayer registration number (in the relevant business process where integration with that register is provided for (Updating of a pupil's profile, creation of a pupil's profile, change of a pupil's documents)).
2. The user enters the taxpayer registration number and (where required) selects the role of the subject of the civil status record:
 - 1 – child;
 - 2 – father;
 - 3 – mother.
3. AIKOM generates a request to the State Register of Civil Status Acts via the GetBirthArByRnokpp service and sends it by SOAP. The service is described as providing birth record data upon a request by taxpayer registration number.
4. AIKOM receives the response of the service, processes it and, where execution is successful, decodes and parses the response (XML in Base64) and displays/uses the data in the logic of the business process. The response of the service (ResultCode) has codes 0–5, where 0 means success and 5 means incorrect input parameters.
5. If the service returns an error or incorrect parameters, the user receives a message stating that the data cannot be retrieved and the reason for this.

Description of the system's behaviour:

1. The system shall use the GetBirthArByRnokpp service of the State Register of Civil Status Acts (SOAP) to retrieve birth record data by taxpayer registration number. In the documentation, the service is expressly defined as a SOAP service for retrieving birth record data by taxpayer registration number.
2. Input parameters of the request:
 - 2.1. The system shall transmit the taxpayer registration number parameter (string, 10 characters) as a mandatory parameter.
 - 2.2. The system shall support the parameter for the role of the subject of the civil status record (Role):
 - 1 – child;
 - 2 – father;
 - 3 – mother.
 - 2.3. If the role is not specified, the service finds and returns all civil status records of the

relevant type in which the subject with that taxpayer registration number appears in any role.

3. Processing of the service response:
 - 3.1. The system shall process the standard output parameters of the service:
ErrorInfo – textual information on errors;
ResultCode – the execution result code;
ResultData – XML with the output data (Base64).
 - 3.2. The system shall regard the retrieval as successful only where ResultCode = 0;
 - 3.3. Where ResultCode $\neq$ 0, the system shall stop further processing of ResultData, display a message to the user and log the error code/description. The documentation contains the codes: 1 – internal error, 2 – not permitted, 3 – more than one active service, 4 – fields not specified, 5 – validation failed.
4. Use of the ResultData data (minimum composition for AIKOM)
 - 4.1. The system shall support the parsing of the ResultData XML and be able to use/store at least the following groups of data:
 - data on the civil status record in the register;
 - data on the child (full name, taxpayer registration number, sex, date of birth);
 - data on the father and the mother (full name, taxpayer registration number, date of birth, citizenship, address data);
 - data of the birth certificate.
 - 4.2. The system shall correctly handle optional fields (many fields within ResultData are marked “No” in the mandatory-status column).
5. Validations and restrictions in AIKOM:
 - 5.1. The system shall validate the format of the taxpayer registration number before sending the request (10 characters, in accordance with the description of the Rnokpp field).
 - 5.2. The system shall check the admissibility of the value of the role of the subject of the civil status record (Role) (1/2/3) where the role is transmitted. The values of the role are described in the table of input parameters.
 - 5.3. The system shall use the service only within the limits of lawful access to personal data, since the service is not public, contains personal data and is restricted to use by entities entitled to obtain information from the State Register of Civil Status Acts.

5.11. Generation of questionnaire-based reports for the State Statistics Service of Ukraine (57 reports)

Aim / purpose:

To ensure the generation in AIKOM of 57 statutory reports of the State Statistics Service of Ukraine on the basis of the data collected through questionnaires (surveys/data collection forms),

in order to:

- obtain consolidated indicators in standardised forms;
- ensure the comparability of indicators across regions/types of educational institutions/forms of ownership;
- make it possible to export the reports in a format suitable for submission/analysis.

Description of the workflow:

1. The user of the Institute of Educational Analytics opens the section “Reporting – State Statistics Service (questionnaires)”.
2. The user selects a report form from the list (in accordance with the approved templates).
3. The user sets the generation parameters:
 - academic year / reporting period (where used in the form);
 - level of aggregation (where required): country/oblast/district/territorial community/institution;
 - filters (where required by the particular form): form of ownership, location (urban/rural), types of educational institutions, etc.
4. The system generates the report in accordance with the template and displays the result in the form of a table.
5. The user exports the report (Excel/CSV, and where required PDF/print) or saves a link to/a version of the generated report.

Description of the system’s behaviour:

The Contractor shall ensure that the System is able to generate 57 report forms in accordance with the approved templates. Each form shall have a fixed structure of columns/rows and shall work with the “reporting year/period” parameters.

Names of the forms (the structure and content of the forms are set out in Annex 2):

1. General secondary education institutions at the beginning of the 20__/_ academic year
2. Number of general secondary education institutions at the beginning of the 20__/_ academic year, by region
3. Number of pupils graduating from general secondary education institutions in 20__, by region
4. General secondary education institutions at the beginning of the 20__/_ academic year, by type
5. General secondary education institutions at the beginning of the 20__/_ academic year, by form of ownership
6. Number of general secondary education institutions in urban areas at the beginning of the 20__/_ academic year, by region

7. Number of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by region
8. Number of general secondary education institutions (state/municipal ownership) at the beginning of the 20__/_/___ academic year, by region
9. Number of general secondary education institutions (state/municipal) in urban areas at the beginning of the 20__/_/___ academic year, by region
10. Number of general secondary education institutions founded on state and municipal ownership in rural areas at the beginning of the 20__/_/___ academic year, by region
11. Number of general secondary education institutions founded on private ownership at the beginning of the 20__/_/___ academic year, by region
12. Number of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by region
13. Number of pupils of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by region
14. Number of pupils of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by region
15. Number of pupils of general secondary education institutions founded on state and municipal ownership at the beginning of the 20__/_/___ academic year, by region
16. Number of pupils of general secondary education institutions founded on state and municipal ownership in urban areas at the beginning of the 20__/_/___ academic year, by region
17. Number of pupils of general secondary education institutions founded on state and municipal ownership in rural areas at the beginning of the 20__/_/___ academic year, by region
18. Number of pupils of general secondary education institutions founded on private ownership at the beginning of the 20__/_/___ academic year, by region
19. Distribution of classes of general secondary education institutions at the beginning of the 20__/_/___ academic year, by region
20. Distribution of classes of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by region
21. Distribution of classes of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by region
22. Number of pupils of general secondary education institutions by form of education at the beginning of the 20__/_/___ academic year, by region
23. Distribution of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by class and region
24. Distribution of pupils of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by class and region
25. Distribution of pupils of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by class and region

26. Distribution of female pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by class and region
27. Distribution of female pupils of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by class and region
28. Distribution of female pupils of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by class and region
29. Distribution of repeating pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by class and region
30. Distribution of repeating pupils of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by class and region
31. Distribution of repeating pupils of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by class and region
32. Distribution of female repeating pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by class and region
33. Number of particular categories of pupils studying in general secondary education institutions at the beginning of the 20__/_/___ academic year, by region
34. Number of teachers of general secondary education institutions at the beginning of the 20__/_/___ academic year, by region
35. Number of teachers of general secondary education institutions by age and sex at the beginning of the 20__/_/___ academic year, by region
36. Languages of instruction of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year
37. Distribution of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by language of instruction and region
38. Distribution of pupils of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by language of instruction and region
39. Distribution of pupils of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by language of instruction and region
40. Age composition of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year
41. Distribution of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by age and region
42. Distribution of pupils of general secondary education institutions in urban areas at the beginning of the 20__/_/___ academic year, by age and region
43. Distribution of pupils of general secondary education institutions in rural areas at the beginning of the 20__/_/___ academic year, by age and region
44. Distribution of female pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by age and region
45. Distribution of pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by class and age

46. Distribution of female pupils of general secondary education institutions at the beginning of the 20__/_/___ academic year, by class and age
47. Distribution of pupils of general secondary education institutions by foreign languages studied as a subject at the beginning of the 20__/_/___ academic year
48. Distribution of pupils of general secondary education institutions by the number of foreign languages studied as a subject and by age at the beginning of the 20__/_/___ academic year
49. Organisation of the transport of children to school at the beginning of the 20__/_/___ academic year, by region
50. Number of general secondary education institutions that have ICT, meet the basic sanitary and hygiene conditions and offer skills development programmes for HIV prevention and sexuality education at the beginning of the 20__/_/___ academic year
51. Separate boarding institutions and social protection institutions for children
52. Special general secondary education institutions (including those with boarding facilities) and special and inclusive classes in general secondary education institutions at the beginning of the 20__/_/___ academic year
53. Distribution of pupils by class, form of ownership of the institution and sex at the beginning of the 20__/_/___ academic year
54. Distribution of teachers by class, form of ownership of the institution and sex at the beginning of the 20__/_/___ academic year
55. Composition of the teaching staff of general secondary education institutions by form of ownership of the institution, category of staff, level of education of the staff and sex at the beginning of the 20__/_/___ academic year
56. Number of general secondary education institutions by form of ownership and level of education at the beginning of the 20__/_/___ academic year
57. General secondary education institutions that suspended their activities or did not operate for various reasons, by region.

The system shall provide the set of filters required to generate a report in regional breakdowns, namely by oblast, district and territorial community, as well as in breakdowns by type of educational institution, form of ownership and location. Such filters shall be applied only to those reporting forms whose structure provides for the relevant breakdowns and shall not change the composition or order of the indicators of the form itself. The system shall make it possible to apply several filters simultaneously, shall correctly recalculate the totals in accordance with the conditions selected, and shall segregate access so that a user obtains data within their own level of administration and the territories subordinated to it.

The system shall provide for the export of each report in Excel and CSV formats, preserving the structure of the form, the names of the indicators, the row and column headings and the filter parameters applied during generation. The exported file shall contain indications of the reporting period and of the breakdowns selected, shall retain numerical values in a format

suitable for further calculations and shall be generated in UTF-8 encoding for the correct display of the Ukrainian alphabet. The Excel format is intended for the submission of reports and for visual processing, whereas the CSV format ensures machine processing of the data and their upload to external analytical environments.

5.12. Changes to the API methods for integration with MRIYA and educational information systems

Aim / purpose:

To ensure the extension and updating of the AIKOM API to support integrations with external educational information systems (EIS) and with the “MRIYA” platform, taking into account the new business processes, changes in the class structure, the introduction of specialised secondary education lyceums, support for study groups and extracurricular clubs, transactions for connecting educational information systems and transitions between academic years.

5.12.1. Changes to the API methods for retrieving classes

Description of the workflow:

1. The system shall update the API methods for retrieving classes in line with the new model.
2. The API shall return additional parameters:
 - class type;
 - inclusiveness flag;
 - special class flag;
 - sports class flag.

5.12.2. API changes related to the introduction of academic lyceums

Description of the workflow:

1. The system shall extend the API methods to support:
 - clusters;
 - profiles;
 - profile courses and subjects.

5.12.3. Transactions for connecting educational information systems

Description of the workflow:

1. The system shall implement a method for reporting the connection of an educational information system.
 - Identifiers of the educational information system;

- Date of connection;
- Contract expiry date;
- Status;
- Error text (if any).

5.12.4. Teacher movement within a school/class

Description of the workflow

1. The system shall implement an API method for transmitting information on:
 - the assignment of a teacher to a class;
 - a change of class;
 - a change of teaching load;
 - the termination of teaching.
2. The system shall ensure the transmission of:
 - Employee identifier;
 - Class identifier;
 - Start date of teaching;
 - End date of teaching.
3. A service script shall be implemented for transferring general secondary education institutions to the next academic year in the Mriya system.

The script shall make it possible to carry out the transfer:

1. for all educational institutions;
2. for a specific list of educational institutions;
3. for institutions meeting defined selection criteria.

The purpose of this task is to automate the process of preparing the data of educational institutions for the new academic year and to minimise manual operations during the annual transition.

5.13. Process for education administration bodies for the submission of statistical data used to calculate education development indicators

Aim / purpose:

To provide AIKOM with a business process for education administration bodies enabling them to enter structured statistical data (parameters) broken down by defined thematic sections and to calculate automatically, on that basis, education development indicators for the purposes of monitoring, analysis and management decision-making, in particular:

- entry and updating of parameters by thematic section (block), with validation;

- retention of the history of values with recording of the previously entered value of each parameter (for the previous period/date);
- automatic calculation of indicators according to defined formulas on the basis of the parameters entered;
- use of the data collected and of the calculated indicators in reporting, analytical dashboards and the statistical module (including Redash).

Description of the workflow:

1. The user of the education administration body logs in to AIKOM; the business process “Submission of statistical data for the calculation of education development indicators” is available to them.
2. The user selects the reporting period (year/period) and the level (territorial community/district/oblast) in accordance with the user’s assignment.
3. The business process consists of thematic sections; in each section the user enters/updates the relevant set of parameters.
4. For each parameter, the system displays the previously entered value (for the previous period) in view-only mode and a separate field for entering the new value.
5. The user saves the data for the section; the system records the new value and stores the previous value in the history (value, date, author, period).
6. Once the required parameters have been completed, the system calculates the indicators and displays them; the results are available for viewing, reporting and export.

Description of the system’s behaviour:

1. The system shall implement the business process divided into thematic sections (the list of sections is set out below), each with its own set of parameters.
2. For each parameter, the system shall store the versioning of values with recording of the previous value and shall display the previous value next to the new-entry field.
3. The system shall ensure validation: numerical values ≥ 0 ; numerators $\leq$ the corresponding denominators; “yes/no” flags – from a dictionary; consistency between related parameters.
4. The system shall calculate the indicators according to the formulas on the basis of the parameters entered; where an indicator is not applicable (for example, in the absence of a participatory budget), it shall not be calculated and shall be marked accordingly.
5. The system shall ensure that the parameters and the calculated indicators are available to the Analytical, Financial and Statistical Modules of AIKOM and to the reports in Redash, with the possibility of export.
6. The system shall ensure the segregation of access rights according to the level (territorial community/district/oblast) and the user’s assignment.
7. The system shall support reference books (type of institution, sections, units of measurement, flags) and the possibility of administering them.

List of the indicators calculated on the basis of the parameters completed

No.	Education development indicator
-----	---------------------------------

Participatory budget and public governance	
1	% of winning projects under the participatory budget that are directed to education (out of the total number of winning projects) – where a participatory budget exists
2	% of implemented projects directed to education, out of the winning projects under the participatory budget that are directed to education – where a participatory budget exists
3	% of educational institutions for which a board of trustees of the educational institution has been established
4	Existence of a board of trustees covering all educational institutions of the community as an advisory body of the local self-government body (yes/no)
5	% of communities having a board of trustees covering all educational institutions of the community as an advisory body of the local self-government body
Property and land matters of educational institutions	
6	% of educational institutions having technical documentation for buildings and structures registered in the real property register
7	% of educational institutions located on land plots that have state registration
Staffing and professional development	
8	% of teachers who teach particular subjects of the invariant component of the curriculum in their main field of specialisation
9	% / number of vacant posts of assistant to the pre-school teacher in inclusive groups
10	% / number of vacant posts of pre-school teachers in pre-school education institutions
11	% of teaching staff who have completed professional development in the area of digital competence
12	% of teaching staff who have successfully completed certification (out of those registered)
13	% of expert teachers who have completed training and are involved in conducting institutional audits
Enrolment, coverage and accessibility (pre-school, primary and basic education)	
14	% of children aged 3–5 residing in the relevant territory who attend a pre-school education institution
15	% of pupils who reside in the given community and receive primary education in an educational institution of that community (in relation to pupils residing in the territory of the community)
16	% of pupils who reside in the given community and receive basic secondary education in an educational institution of that community (in relation to pupils residing in the territory of the community)
Transition of year 9 graduates	

17	% of year 9 graduates who obtained basic secondary education and continue their studies to obtain complete general secondary education in vocational (vocational and technical) education institutions
18	% of year 9 graduates who obtained basic secondary education and continue their studies to obtain complete general secondary education in professional pre-higher education institutions
Transport of pupils and school routes	
19	% of school bus routes that run on hard-surfaced roads
Pre-school education: design capacity	
20	% of pre-school education institutions in which the number of children exceeds the design capacity of the institution by 50% or more
21	% of pre-school education institutions in which the number of children is below the design capacity by 50% or more
22	% of children in relation to the design capacity of the pre-school education institution

List of parameters by section of the business process

The parameters are grouped by section of the business process. The list of parameters shall be specified in more detail during development. The implementation of the parameters shall correspond to the hierarchical structure of the system's entities. Each parameter shall be created in the entity to which the corresponding values are relevant; if such an entity already exists in the register, the parameter shall be created within the existing entity (without creating a duplicate).

No.	Parameter (indicator to be entered)
Section 1. Participatory budget and public governance (boards of trustees)	
1	Flag indicating the existence of a participatory budget in the community (yes/no)
2	Total number of winning projects under the participatory budget
3	Number of winning projects under the participatory budget that are directed to education
4	Number of implemented projects directed to education (out of the winning projects directed to education)
5	Total number of educational institutions of the community
6	Number of educational institutions for which a board of trustees of the educational institution has been established
7	Flag indicating the existence of a board of trustees covering all educational institutions of the community as an advisory body of the local self-government body (yes/no)
Section 2. Property and land matters of educational institutions	
8	Number of educational institutions with technical documentation for buildings/structures registered in the real property register

9	Number of educational institutions located on land plots with state registration
10	Total number of educational institutions of the community (parameter shared with Section 1)
Section 3. Staffing and professional development	
11	Number of vacant posts (teaching staff) in the i-th educational institution
12	Number of posts (teaching staff) in the i-th educational institution
13	Number of vacant posts / posts of teachers of years 1–4 in the i-th educational institution
14	Number of vacant posts / posts of teachers of years 5–11(12) in the i-th educational institution
15	Number of vacant posts / posts of teachers of Ukrainian language and literature
16	Number of vacant posts / posts of teachers of history
17	Number of vacant posts / posts of teachers of physics
18	Number of vacant posts / posts of teachers of mathematics
19	Number of vacant posts / posts of teachers of the fundamentals of computer science
20	Number of vacant posts / posts of teachers of chemistry
21	Number of vacant posts / posts of teachers of geography
22	Number of vacant posts / posts of teachers of biology
23	Number of vacant posts / posts of teachers of English
24	Number of vacant posts / posts of teachers of other foreign languages
25	Number of vacant posts / posts of teachers of music, fine arts, physical education, defence of Ukraine and labour training
26	Number of vacant posts / posts of practical psychologists
27	Number of vacant posts / posts of social pedagogues
28	Number of vacant posts / posts of teacher's assistants in inclusive classes
29	Number of vacant posts / posts of assistants to the pre-school teacher in inclusive groups
30	Number of vacant posts / posts of pre-school teachers in pre-school education institutions
31	Total number of teachers aged 30 or under and pre-school teachers aged 30 or under
32	Total number of teachers aged over 60 and pre-school teachers aged over 60
33	Total number of all teachers and pre-school teachers in the calculation breakdown
34	Sum of the ages of the teaching staff
35	Number of all teaching staff in the calculation breakdown

36	Number of teaching staff who have completed professional development in the area of digital competence in the i-th educational institution
37	Number of teaching staff in the i-th educational institution of the relevant territorial community
38	Number of teachers of the i-th general secondary education institution of the relevant territorial community/region who have registered for certification
39	Number of teachers of the i-th general secondary education institution who have successfully completed certification (derived parameter)
40	Number of expert teachers of the i-th general secondary education institution who are involved in conducting institutional audits
41	Number of expert teachers of the i-th general secondary education institution of the relevant territorial community/region
42	Number of posts of teaching/non-teaching staff in the i-th educational institution of the relevant territorial community
43	Number of posts of teaching/non-teaching staff in the i-th out-of-school education institution of the relevant territorial community
44	Number of teaching staff in the i-th educational institution of the relevant territorial community/region who hold a master's degree
45	Number of teachers who teach particular subjects of the invariant component in their main field of specialisation, and the total number of teachers of the invariant component (derived parameters)
Section 4. Enrolment and coverage (children with special educational needs, pre-school education, clubs/sections)	
46	Number of children with special educational needs studying in inclusive classes / in general secondary education institutions
47	Number of children with special educational needs studying in inclusive groups / in pre-school education institutions
48	Number of children aged 3–5 residing in the relevant territory who attend a pre-school education institution
49	Number of children aged 3–5 residing in the relevant territory
50	Number of pupils attending general secondary education institutions
51	Number of pupils attending clubs, sections, associations, cultural and educational, sports and health or research groups based at the i-th general secondary education institution
52	Number of children attending the i-th out-of-school education institution
53	Number of children attending the j-th children's and youth sports school
54	Number of children who have reached the age of 5 residing within all territorial communities of a given region

55	Number of girls/boys who have reached the age of 5 who attend the i-th out-of-school education institution
56	Number of girls/boys who have reached the age of 5 who attend the j-th children's and youth sports school
57	Number of girls/boys who have reached the age of 5 residing within a given territorial community
64	Number of pupils of years 1–4 attending extended day groups
65	Number of pupils of years 1–4 whose parents have submitted the relevant application (for an extended day group)
Section 5. Accessibility of education at the place of residence (primary, basic)	
66	Number of primary school pupils who reside in and receive primary education in an educational institution of the given territorial community (record cards of primary school pupils in AIKOM in which the territorial community of the place of registration and the territorial community of the educational institution are simultaneously the given territorial community)
67	Number of primary school pupils residing in the territory of the given territorial community (record cards of primary school pupils in which the territorial community of the place of registration is the given territorial community)
68	Number of pupils of years 5–9 who reside in and receive basic secondary education in an educational institution of the given territorial community (record cards of pupils of years 5–9 in which the territorial community of registration and the territorial community of the educational institution are simultaneously the given territorial community)
69	Number of pupils of years 5–9 residing in the territory of the given territorial community (record cards of pupils of years 5–9 in which the territorial community of the place of registration is the given territorial community)
Section 6. Transition of year 9 graduates	
70	Number of year 9 graduates who have enrolled in a vocational (vocational and technical) education institution (in the calculation breakdown)
71	Number of year 9 graduates who have enrolled in a professional pre-higher education institution (in the calculation breakdown)
72	Number of year 9 graduates who received a certificate of basic secondary education
73	Number of persons admitted to year 10 of day-time and evening general secondary education institutions
74	Number of children aged 6 to 18 who are not studying to obtain complete general secondary education (in the calculation breakdown)
75	Total number of children aged 6 to 18 (in the calculation breakdown)
Section 7. Transport of pupils and school routes	

76	Number of pupils of general secondary education institutions who require transport by specially equipped vehicles (in the calculation breakdown)
77	Number of pupils of general secondary education institutions for whom transport by specially equipped vehicles has been arranged (in the calculation breakdown)
78	Number of approved route passports of school buses transporting children (in the calculation breakdown)
79	Number of school bus routes running on hard-surfaced roads (in the calculation breakdown)
80	Total number of school bus routes (derived parameter – denominator)
Section 8. Pre-school education: design capacity	
81	Number of pre-school education institutions in which the number of children exceeds the design capacity by 50% or more
82	Number of pre-school education institutions in which the number of children is below the design capacity by 50% or more
83	Number of pre-school education institutions within the territorial community
84	Number of children and the design capacity of pre-school education institutions (for the indicator “% of children in relation to capacity”) (derived parameters)
Section 9. Out-of-school education and children’s and youth sports schools	
85	Number of children attending the children’s and youth sports school(s) (in the calculation breakdown)
86	Number of study groups in the children’s and youth sports school(s) (in the calculation breakdown)
87	Number of groups in the out-of-school education institution(s) (in the calculation breakdown)
88	Number of children attending the out-of-school education institution(s) (in the calculation breakdown)
Section 10. Inclusive resource centres	
89	Existence of an inclusive resource centre (including on the basis of cooperation)
90	Total number of children (aged 2–18) in the service territory of the i-th inclusive resource centre of the relevant region
91	Total number of children aged 2–18 residing within the region
92	Number of inclusive resource centres within the region
Section 11. Governance (management of educational institutions)	
93	Flag: the head of the i-th general secondary education institution of the relevant territorial community/region was appointed following a competitive selection procedure (except during the period of martial law); 0 – in other cases

5.14. Optimisation of database operations

The Contractor shall ensure at least 60 hours of work per month by a qualified database specialist. This includes work on the optimisation of database queries as well as the creation, testing and execution of scripts of various types (SQL, PL/pgSQL, etc.) for updating, correcting and populating the database in the course of the modernisation and operation of the system.

The work shall be aimed at improving performance, data integrity and data reliability, as well as at resolving any incidents affecting the stability of the system.

5.15. Technical support for the AIKOM IT team

To strengthen the technical team of the Ministry of Education and Science of Ukraine and of the Service Recipient by temporarily engaging additional qualified specialists for the period of the modernisation of the AIKOM hardware and software complex, and to create a resource for performing unplanned (ad hoc) technical tasks arising in the course of the operation and development of the system, in accordance with the requests and priorities of the Ministry.

The specialists engaged work as an extension of the technical team of the Ministry of Education and Science and not as a separate contracting team. Such engagement shall ensure the continuity of the system's maintenance in the face of a growing volume of changes, reduce dependence on the Ministry's limited internal resources, shorten the response time to incidents and user requests, and make it possible to redistribute effort promptly between modernisation tasks and the Ministry's current needs without concluding separate arrangements for each task.

From the moment the contract is signed, the temporary engagement of at least two developers, one tester, two business analysts and two project managers is envisaged. The qualifications of the specialists engaged shall correspond to the technology stack of the AIKOM hardware and software complex and to the architectural rules of the Registers Platform. The replacement of a specialist during the term of the contract shall be effected upon agreement with the Service Recipient and the Technical Administrator, ensuring the transfer of knowledge and without suspending the work.

Procedure for setting and prioritising tasks:

Tasks for the engaged team are set by the Ministry of Education and Science and/or the Service Recipient in the form of requests and are maintained in a single list (backlog) in an agreed tracking system. The priority of the tasks is determined by the Ministry, which may also revise the priorities during the reporting period in line with current needs. The volume of work is planned at regular planning sessions attended by representatives of the Contractor, the Service Recipient and the Technical Administrator. The Contractor shall keep records of the time spent, broken down by specialist and by task, and shall submit those records together with the reporting for the relevant period.

Scope of work:

Within the said period, the Contractor shall ensure a timely response to cases relating to erroneous or incomplete data in the system, as well as the performance of the full set of necessary work, including diagnostics, data correction, testing and verification of the changes made, in order to guarantee the correct operation of the system, in particular:

- provision of third-line user support and interaction with the second-line support team, including the handling of escalated requests;
- provision of project management and communication with stakeholders, in particular work planning, monitoring of deadlines, risk management and preparation of status reports;
- organisation of work and communication with educational information systems regarding the updating of the procedure for connection to AIKOM in accordance with the applicable regulatory legal acts;
- verification that the profiles of pupils and teachers correspond to the current situation, identification of discrepancies and preparation of measures to eliminate them;
- preparation of recommendations on the updating of historical data, as well as the development and execution of the relevant scripts upon agreement with the Technical Administrator;
- analysis, description and detailing of the requirements for new or amended business processes at the request of the Ministry, including the preparation of task specifications for subsequent implementation;
- performance of unplanned technical tasks at the request of the Ministry of Education and Science, in particular the generation of non-statutory data samples and analytical briefs and the provision of advice on technical matters relating to the operation of the system;
- support of releases, regression testing and confirmation of the operability of the system after changes have been made.

5.16. Extension of the integration with the analytical, financial and statistical modules**Aim / purpose:**

To ensure the extension of the integration of the database with the analytical, financial and statistical modules in line with the scope of development carried out under this contract, as well as their subsequent support and optimisation during its term.

Description of the workflow:

The work on extending, supporting and optimising the analytical, financial and statistical modules is carried out by the team supporting and developing those modules, which ensures:

1. The creation of new analytical views in line with the new functionality developed.

2. The updating of the indicators, criteria and benchmarks of education development in line with the development carried out.
3. The extension and updating of the analytical, financial and statistical modules to an extent corresponding to the development carried out under this contract.
4. Technical support for those modules throughout the term of performance of this contract.
5. The creation of the relevant online reports and/or dashboards for users at the level of education administration bodies, oblast state administrations and the Ministry of Education and Science in the analytical environment of AIKOM.
6. The allocation of at least 100 hours per month to the support and optimisation of the analytical, financial and statistical modules throughout the term of performance of this contract. That volume covers, in particular, the maintenance and optimisation of analytical views, reports and dashboards, the updating of the indicators, criteria and benchmarks of education development, and the elimination of identified defects and response to user requests.

6. Results of the provision of the services and acceptance criteria

6.1. Deliverables

As a result of the provision of the services, the Contractor shall hand over to the Service Recipient at least the following documented deliverables:

1. Modernised and deployed components (modules, business processes, integration services and reports) of AIKOM 2.0 in accordance with Section 5 of these Technical Requirements, integrated with the existing system without disrupting the logic of its operation.
2. An updated database structure, reference books and migration scripts applied to the production environment.
3. Implemented and documented application programming interfaces (APIs) for integration with external systems in accordance with Section 5.
4. Operational and technical documentation in Ukrainian (user and administrator manuals, description of the architecture and of the integrations, description of the data structure), updated as at the date of acceptance.
5. The results of testing (functional, integration and load testing to the agreed extent) and confirmation that the defects identified have been eliminated.

The specific list, scope and phasing of the deliverables shall be detailed in the terms of reference and in the schedule agreed by the Parties.

6.2. Acceptance criteria

The results of the provision of the services shall be accepted in stages in accordance with the schedule, on the basis of acceptance certificates. The general acceptance criteria are:

1. Compliance of the functionality implemented with the requirements of the relevant sub-sections of Section 5 and with the agreed terms of reference.
2. Compliance with the non-functional requirements of Section 4 (performance, security, information protection, operating modes, logging).
3. Successful completion of the agreed acceptance test scenarios and the absence of open defects of the “blocking” and “critical” levels.
4. The availability and completeness of the documentation handed over in accordance with sub-section 6.1.
5. Successful deployment of the results in the environment of the Service Recipient and confirmation of the operability of the integrations.

6.3. Reporting

The Contractor shall provide the Service Recipient with reports on the progress and results of the provision of the services, with the content and frequency defined by the contract and the schedule. The reports shall reflect the work performed in the stage, the state of elimination of defects, the status of the integrations and the readiness of the results for acceptance.

The Contractor shall draw up a proposed project plan. The project plan shall be agreed by the parties involved as regards their obligations to perform their tasks and/or work within the project and shall be approved by the Contracting Authority.

The obligations of the parties involved shall terminate upon completion of the tasks and/or work undertaken by them through the due handover to the Contractor (in accordance with the project plan) of the tasks and/or work performed by those parties, as confirmed by the Contractor’s acceptance and approval of the completed results of such tasks.

A working group comprising representatives of the Contracting Authority and of the Contractor will be set up to conduct the acceptance tests of the System. The acceptance tests will be carried out directly by representatives of the Contractor. Testing will be performed in accordance with the use scenarios defined in these Technical Requirements, as well as with any additional clarifications provided during development. All test scenarios shall be thoroughly verified and agreed by both parties in order to ensure that the functionality corresponds to the requirements and expectations of the Contracting Authority.

The Contractor shall transfer to the Contracting Authority the exclusive rights to the System component developed. Where the transfer of exclusive rights is not possible, the Contractor shall transfer the rights to all parts of the System which allow the Contracting Authority and/or third parties selected by the Contracting Authority to make any modifications.

The additional functionality of the System supplied shall be installed and configured on the infrastructure designated by the Contracting Authority. The infrastructure and all the access rights and settings required by the Contractor shall be provided by the Contracting Authority to the Contractor no later than 40 calendar days before the planned start of the verification and acceptance of the System.

Following the development of the component, the System shall successfully pass the tests in accordance with the test programme and methodology developed by the Contractor and approved by the Contracting Authority.

The System shall have the following documentation:

1. Terms of reference.
2. Test programme and methodology.
3. Test report and the accompanying statement.
4. Description of the database structure.
5. API documentation for developers (where available):
 1. It contains a list of the supported methods and their description;
 2. It contains a list of the request parameters and their description;
 3. It contains a list of the response attributes and their description;
 4. It makes it possible to emulate a request/response with a description of the response status (success, error).

7. Procedure for making amendments and additions to the technical requirements

All amendments to the technical requirements shall be documented in a separate document containing a description of the amendments, their justification and their impact on the project. The document shall be agreed between the Service Recipient and the Contractor, signed by both parties and shall enter into force as an annex to the applicable Technical Requirements.

The following note shall be made on the title page of the Technical Requirements: “Valid together with Addendum No. ____”.

An addendum to the technical requirements shall contain:

1. Title page of the addendum:
 - title of the document: “Addendum No. ____ to the technical requirements”;

- date on which the addendum was drawn up;
- signatures and details of the persons responsible for drafting, agreeing and approving the addendum.

2. Content of the addendum:

- grounds for the amendments: a description of the reasons for and justification of the need for the amendments;
- substance of the amendments: a detailed description of the amendments or additions made to the Technical Requirements, with references to the relevant sections or clauses of the original Technical Requirements;
- impact of the amendments on other sections of the Technical Requirements: where necessary, a description of the changes to be made to other parts of the Technical Requirements.