DISASTER LOSS CALCULATION SYSTEM (KAZA)

Deliverable 3 "Technical specification for the development, deployment and maintenance of the disaster damage and damage database (KAZA)"

Version 1.0

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This document was prepared on behalf of the State Fire and Rescue Service by the "AA Projects", in accordance with the Work Task for the European Commission's Civil Protection Mechanism Financial Instrument Project "Study on the Establishment of a Natural Disaster Damage Database in Latvia (ECHO/SUB/2019/TRACK1/807448, DLD)" of 25 June 2020 (further exploring the feasibility of setting up KAZA and preparing the technical specification for KAZA for the development and integration of the solution.

DOCUMENT CHANGE HISTORY

Version	Date	Authors	Comments
1.0	*21.01.2021.*	Jānis Avotinš Irina Stepanova Samanta Smirnova Arnis Ļeļs Dita Mukāne Ričards Pinne	Technical specification for the development, deployment and maintenance of the disaster damage and damage database (KAZA), first version

CONTENT

1   Introduction

The document defines the requirements for the development, deployment and maintenance of the disaster damage and damage database (KAZA). The National Fire and Rescue Service (VUGD) is the owner of the KAZA solution and provides the capacity to calculate losses. The aim of the solution is to collect data on direct and indirect losses occurring after disasters. KAZA will regularly obtain data from different national registers so that analysts can carry out appropriate data analysis and regularly study data from different national registers or their changes over time, identify legal relationships between data from different departments and perform an analysis of their commitments.

1.1   Lietotie termini un saīsinājumi

Termins un apzīmējums	Apraksts
KAZA	Disaster damage and damage database
VUGD	State Fire and Rescue Service
ĢIS	Geographical information system
IeM IC	Information Centre of the Ministry of Interior
ODBC	(Open Database Connectivity) is a software interface that allows you to access database tables, views.
Catastrophe	An event which has caused human victims and threatens human life or health, has caused harm or threatened people, the environment or property, and has caused or caused significant material and financial damage and goes beyond the daily capacity of the responsible State and local government authorities to prevent the devastating circumstances of the event.
Disaster case	An incident that has caused non-material damage and does not directly qualify as a disaster because it has not caused extensive damage or caused a threat to people.
VARAM	Ministry of Environmental Protection and Regional Development
ETL	Ripping, transforming, and loading data
WYSIWYG	English acronym $\mathbf{W}$hat $\mathbf{Y}$ou $\mathbf{S}$ee $\mathbf{I}$s $\mathbf{W}$hat $\mathbf{Y}$ou $\mathbf{G}$et. This is usually applied to text editors, who can see all the text formatting during editing as it looks at the end (printed).
CAKPL	Civil Protection and Disaster Management Act

Sprints	Agile's methodology calls for short, repeatable phases, usually one to four weeks, which aim to divide the project into equal stages.
VPM	Single Login Module

1.2 Purpose of the document

Provide a description of the set of technical requirements in order to clearly define the work task for the developer, which will ensure that the system is implemented. This additional document may be used by the commissioning party to ensure a successful procurement procedure, including the assurance that the procurement participants have understood the job and made appropriate offers. At the end of the procurement, this technical specification, together with the answers to the questions provided under the procurement, shall be binding on the successful tenderer and shall form an integral part of the contract.

1.3 Description of the current situation

At present, the VUGD does not have a solution that could be used to develop the KAZA solution, but the Iem IC infrastructure has the following technologies that are being and will be maintained over a longer period of time:

Tabula 1. Iem IC esošo tehnoloģiju uzskaitījums

Nr.	Type	Software
1	Operating systems	X 86 processor architecture-based diOS, Windows Server.
2	Virtualization platform	VMware VSphere (VMware vRealize for infrastructure automation and orchestration)
3	Relational Database Control Systems	Available for Oracle, PostgreSQL, MS SQL
4	Application servers	Tomcat servers with Session Replication, Kubernetes HA, .NET cluster
5	Storage of database objects (documents)	Mongo DB
6	HTTP server	Apache, NGNIX, Microsoft IIS. Load balancing agents: HAProxy, NGNIX
7	Ringing broker	RabbitMQ
8	Conteerisation Solution	Docker
9	Version control and delivery environment	Jenkins, Sonatype Nexus, HELM, GIT
10	Application processing system	Ivanti ITSM (Heat Software).

11	Data exchange	REST based services, including GraphQL, SOAP
12	Authentication/authorization	Active Directory, OIDC/OAuth2
13	Card platform	ArcGIS Enterprise portal
14	Business Intelligence Research System	SAP BusinessObjects BI

The scope of existing technologies does not have any consequences for the applicant to choose the technologies to offer with the solution, but it should be noted that any technological deviation from the existing scope has consequences for the financial offer, where it needs to be detailed.

1.4   Related laws, regulations and documents

Table 2. Effects of legislation on KAZA

#	Name of the legislative act	Description of the legislative act and impact on KAZA
1.	Sendai Framework Programme	The UN Sendai Framework Programme 2015-2030 on disaster risk mitigation [] is a framework defining the achievement of sustainable development objectives. The Framework Programme sets objectives to be achieved within 15 years. The KAZA project aims to ensure the collection and compilation of data for indicators identified in the Sendai Framework Programme.
2.	Sustainable Development Goals	The Paris Agreement of the Convention [] (hereinafter referred to as the Agreement) lays down an obligation to keep global warming below 2 oC compared to the pre-existing level. The agreement aims at improving adaptation to the negative impacts of climate change, promoting sustainability against climate change and promoting investment in carbon-intensive and climate-resilient development.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
		KAZA project implementation and development are closely linked to the basic objectives of the agreement. The data stored in the system will enable the successful implementation of national commitments under this Agreement and the sharing of their data and experience within the EU community in order to jointly achieve sustainable development against climate change .
3.	Sustainable Development Goals	In 2015, the UN General Assembly adopted a resolution transforming Our World: a 2030 Agenda for Sustainable Development. It sets 17 Sustainable Development Goals (SDGs) and 169 sub-targets that can be achieved to reduce global poverty and sustainable global development. The SDGs are balanced in three dimensions: the economy, social aspects and the environment. Successful implementation of the KAZA project will ensure that a number of SDGs are reached. The data gathered in the system will make it possible to take data-based, data-based decision-making on prevention measures in disaster risk and disaster relief activities, which will in turn contribute to disaster risk mitigation and disaster resilience, and will reduce future direct economic losses in disasters.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
4.	Civil Protection and Disaster Management Act Cabinet Order No. 476 of 26 August 2020, "National Civil Protection Plan" (direct text: https://likumi.lv/ta/id/317006-par-valsts-civilas-aizsardzibas-planu)	The aim of the Civil Protection and Disaster Management Act [] is to establish the competence of civil protection systems and disaster management entities in order to ensure, as far as possible, the safety and protection of people, the environment and property in the event of a disaster or disaster threat. This Law lays down the tasks of the civil protection system primarily related to the scope of the goat system, such as timely forecasting of disaster hazards, planning and timely prevention measures, planning and carrying out reconstruction measures, one of the main regulatory enactments for the KaZa project, which governs the disaster management process and responsible authorities. The Law also stipulates that the State Institution shall finance the performance of the civil protection tasks corresponding to its scope from the State budget resources intended for this purpose in its budget, so the State Fire-fighting and Rescue Service may request financial resources from the State budget for the implementation and development of the KaZa project. The national civil protection plan includes a measure "Establishing and maintaining a database or system for disaster loss and damage, and training of users" which requires the establishment and maintenance of such systems or technical solutions, so that future decision-making (in both practical and financial fields) is based on evidence and analysis-based conclusions.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
		The regulatory enactments for civil protection and disaster management should be extended or specified with the following tasks: 1. To provide that all ministries in their sector have the tasks of creating, collecting and storing disaster loss and damage data, but TO identify as a coordinating body which ensures the establishment and integration of a single disaster loss and damage database or system. This task is also in line with the strategic objectives of Cabinet Order No. 476 of 17 July 2019, ENTITLED "Towards a plan FOR Latvia's adaptation TO climate change by 2030" (e.g. "Create and maintain a single database on the damage caused BY disasters, including climate change contributed BY extreme weather conditions"), where: they shall be determined as the responsible authority). 2. It is necessary for each responsible entity in the sector to lay down more precise criteria or boundaries in order to be able to more accurately describe or determine the occurrence of a disaster.
5.	Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection	Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data [] provides that any person has the right to the protection of his or her personal data and lays down rules on the protection of individuals with regard to the processing of personal data and its principles, irrespective of the principles nationality or residence of the persons.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
	Regulation) (Text with EEA relevance)	The KAZA system should be developed within the framework of this general data protection regulation, providing that the system user must have clear grounds for access to sensitive personal data.
6.	Fizisko personu datu apstrādes likums Law on the Processing of the Data of Natural Persons	The purpose of the Law on the Processing of the Data of Natural Persons [] is to create legal preconditions for the establishment of a system for the protection of personal data (hereinafter - data) at the national level, by providing the necessary institutions for this purpose, by defining their competence and basic principles of activity, as well as by regulating the functioning of data protection specialists and the rules for the processing and free movement of data. The KAZA system should be developed in accordance with the law on the processing of personal data.
7.	Information Technology Safety Act	The Information Technology Safety Act [] aims to improve the security of information technologies by setting out the essential requirements to guarantee the receipt of essential services for which these technologies are used. The development, deployment and maintenance of the KAZA system should be ensured in compliance with the Information Technology Safety Act.
8.	National Information Systems Act	The purpose of the State Information Systems Law [] is to ensure the availability and quality of the information to be provided by State and local government authorities in the State information systems.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
		The development, implementation, improvement and maintenance of the KAZA system is subject to the provisions of the Law on National Information Systems and taking into account that the system will cover a large amount of data, KAZA must be registered in the State Register of Information Systems in accordance with the procedures specified by this Law.
9.	Electronic Communications Law	The aim of the Electronic Communications Act [] is to promote the provision of electronic communications networks and the development of electronic communications services, the development of competition in the provision of electronic communications networks and the provision of electronic communications services, including the provision of the regulation of electronic communications networks and electronic communications services independent of electronic communications technology, the rational and efficient use of limited resources for electronic communications in the sector and the protection of the interests of national, user and electronic communications operators, as well as promoting access to universal service, ensuring the integrity and interoperability of electronic communications networks, the continuity of the provision of electronic communications services and the protection of user data, including personal data. The implementation and maintenance of the KAZA system should be ensured in compliance with the Electronic Communications Act. The relationship

#	Name of the legislative act	Description of the legislative act and impact on KAZA
		of the KAZA system does not exist directly with this legislation, but indirectly affects KAZA infrastructure providers and consequently costs for the provision of KAZA infrastructure.
10.	Adaptation plan	Latvia's climate change adaptation plan [] for the period up to 2030 ("the Plan") is designed as a long-term national development planning document (up to 2030). The objective and objectives of the plan are closely linked to the 17 UN Sustainable Development Goals by 2030, as well as the UN Sendai Framework Programme for Disaster Risk Reduction 2015-2030. Successful implementation of the KAZA project will ensure that a number of SDGs are reached. The data gathered in the system will make it possible to take data-based, data-based decision-making on prevention measures in disaster risk and disaster relief activities, which will in turn contribute to disaster risk mitigation and disaster resilience, and will reduce future direct economic losses in disasters. The plan provides for the possibility of receiving additional State budget resources for the responsible authorities involved in the implementation of the plan for the implementation of the measures included in the plan, which provides the basis for the implementation and development of the KAZA system to request financial resources from the State budget.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
11.	Regulation 2018/1999 of the European Parliament and of the Council	Regulation 2018/1999 of the European Parliament and of the Council on the governance of the Energy Union and the Action on Climate Policy. In the KAZA data warehouse, data will be available related to fires in the fields, forests and swamps that may be necessary for the calculation of greenhouse gas (GHG) emissions.
12.	Cabinet Regulation No. 421 of 17 July 2018, Procedures for the Performance of Changes to the Appropriations specified in the Annual State Budget Law	Cabinet Regulation No. 421 of 17 July 2018, Procedures for the Performance of Changes to the Appropriations specified in the Annual State Budget Law, shall prescribe the procedures by which the examination of requests submitted by local governments for the allocation of financial resources from the State budget programme "Funds for unforeseen cases" for the prevention of disasters, natural disasters and fire consequences shall be performed. Since one of the tasks of the KAZA system to carry out the calculation of disaster and damage damage caused, provision should be made for the possibility of obtaining information on the resources allocated by the State to prevent the effects of disasters, natural disasters and fires.
13.	Information report on the conceptual architecture of public administration information systems	The information report presents a conceptual architecture of public administration information systems, which, in the form of 40 general principles, defines the direction and general rules for the development of public administration information systems and ICT support organisations.

#	Name of the legislative act	Description of the legislative act and impact on KAZA
		The conceptual architecture of the KAZA information system was designed in accordance with the principles defined by the information report.
14.	Cabinet Regulation No. 442 of 28 July 2015, Procedures for ensuring compliance of information and communication technology systems with minimum safety requirements	Cabinet Regulation No. 442 of 28 July 2015 [] "Procedures for ensuring compliance of information and communication technology systems with minimum safety requirements" determines the minimum security requirements of State and local government authorities and the procedures by which State and local government authorities and the owners or legal holders of critical infrastructure of information and communication technologies ensure ensure compliance of information and communication technology systems with minimum requirements; general security requirements for national information systems; information technology security requirements for private-law legal entities that are providers of basic service and digital service providers. The planning, design and development of the KAZA information system shall be ensured in compliance with the relevant Cabinet regulations.

Table 3. Legislative changes

#	Name of the legislative act	Article/paragraph of the legislative act	Nature of the change proposal
1.	By-law of the State Fire and Rescue Service.	Corresponds to the task of point 5.15, which determines -	"No need". **JUSTIFICATION** - Cabinet Regulation No.

#	Name of the legislative act	Article/paragraph of the legislative act	Nature of the change proposal
	BOM rules 398 (27/04/2010) https://likumi.lv/doc.php?id=209089	"shall provide the institutions subordinate to the Ministry with the necessary real estate, **information and communication technology and material equipment maintenance and development"**, which shall also apply to the establishment and maintenance of a disaster loss and damage database or system.	616 of 20 September 2016, By-law of the Information Centre of the Ministry of the Interior, paragraphs 3 and 4 as a whole, stipulates that THE IC coordinates, maintains, provides THE ENTIRE internal affairs sector (VUGD, State Police, Border Guard, PMLP, Security Institutions, etc.) with information and communication technology solutions, as well as infrastructure management management, maintenance and development.
2.	**Rules regarding the classification of budget expenditure according to the economic categories.** **Attachment**	**Code 6254 lists:** Social assistance benefits disbursed from local government budget	Make changes to the classification of budget expenditure by dividing expenditure into a separate code according

#	Name of the legislative act	Article/paragraph of the legislative act	Nature of the change proposal
	MK terms Nr.1031 (27/12/2005) https://likumi.lv/doc.php?id=124833	funds in cash, which are granted without assessing the income of the person, if it is in a situation in which the family (person) is unable to provide basic needs due to a disaster or other circumstances independent from the will of the family (person). **Code 6323 lists:** Social assistance benefits in kind granted from the resources of the local government budget, which shall be granted without assessing the income of the person, if it is in a situation where the family (person) is unable to meet basic needs due to disasters or other circumstances independent from the	to the type of disaster (classifier KAZA).

#	Name of the legislative act	Article/paragraph of the legislative act	Nature of the change proposal
		will of the family (person).	

Table 4. KAZA regulatory act

#	Name of the institution	Nature of the regulatory framework
1.	National Armed Forces	It is necessary to develop a new regulatory framework that will ensure the cooperation of the National Armed Forces with the State Fire and Rescue Service and the provision of information on disasters related to the running of a ship on the bank, ship collisions and ship releases of dangerous chemicals.
2.	Information Technology Security Incident Prevention Institution	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Information Technology Security Incident Prevention Authority with the State Fire and Rescue Service and the provision of information related to cyber attacks.
3.	Latvian Geospatial Information Agency	It is necessary to develop a new regulatory framework that will ensure the use of the card services of the Latvian Geospatial Information Agency (at least in the functional requirement No. FP-SS-34 in a specified amount) to the State Fire and Rescue Service.
4.	Central Bureau for Statistics	It is necessary to develop a new regulatory framework that will ensure cooperation between the Central Statistical Bureau and the State Fire and Rescue Service and at least the availability of the following information: • Personal code; • Name of the person; • the declared address of the person's place of residence; • The sign is/is not resident in the declarant's address.

#	Name of the institution	Nature of the regulatory framework
5.	AS "Latvenergo"	It is necessary to develop a new regulatory framework that will ensure the cooperation of AS Latvenergo with the State Fire and Rescue Service and at least the availability of the following information: • Object address • the affected area; • Start date and time of the incident; • End date and time of the incident; • The extent of losses (final act).
6.	AS "Sadales tīkls"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the AS "Distribution Network" with the State Fire and Rescue Service and at least the availability of the following information: • map of damaged networks (affected area); • Start date and time of the incident; • End date and time of the incident; • affected customers (total number, incident address, given name, surname or company name, personal identity number or registration number); • The extent of losses (report act).
7.	AS "Augstsprieguma tīkls"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the AS "High Voltage Network" with the State Fire and Rescue Service and the provision of information regarding damage to transmission and distribution electricity networks and at least the availability of data from the Investigation Act.
8.	AS "Gaso"	It is necessary to develop a new regulatory framework that will ensure the cooperation of AS "Gaso" with the State Fire and Rescue Service and the provision of information on natural gas leakages (availability of basic data for recorded events, as well as loss estimates).

#	Name of the institution	Nature of the regulatory framework
9.	AS "Conexus Baltic Grid"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the AS "Conexus Baltic Grid" with the provision of State fire-fighting and information on natural gas leakages (availability of basic data for recorded events, as well as loss estimates).
10.	Management of Citizenship and Migration Affairs	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Office of Citizenship and Migration Affairs with the State Fire and Rescue Service and at least the availability of the following information: • Personal code; • Name; • Last name; • the declared address of the person's place of residence; • Age; • Gender; • Nationality and type of nationality; • Nationality; • Details of the limitation of the capacity of the person or the review of the capacity limitation; • Status of persons reaching retirement age.
11.	Information Centre of the Ministry of Interior	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Information Centre of the Ministry of the Interior with the State Fire and Rescue Service and the provision of information regarding fires, building breakdowns, road accidents, public riots, terrorist acts and internal unrest, as well as at least the availability of the following information: • The date and time of the event; • the address or coordinates of the event site; • The type of event; • Designation of the site;

#	Name of the institution	Nature of the regulatory framework
		• Detailed description of the site; • the status of the persons involved in the event; • For natural persons: Name, Last name, Personal Code, Date of birth, Gender, Nationality, State of Health; Signs of death; • for legal persons: Name, registration number, Legal address; • Information on the composition of the assignment which has been travelled to the site; • Vehicle information: Number, Mark, Status; • Information about material values Object, Type, Status; • Information on related events.
12.	CAN National Department for Sustainable Development Planning	It is necessary to develop a new regulatory framework that will ensure the cooperation of the State Department for Sustainable Development Planning with the State Fire and Rescue Service and the provision of information regarding the financial resources allocated to local governments from the State budget programme "Emergency Features", the prevention of the consequences and damage of various events, as well as at least the availability of the following information: • the name of the municipality, • the purpose of allocating funding, • the amount of funding allocated. • number and date of the FM order.
13.	State Environmental Service	It is necessary to develop a new regulatory framework that will ensure the cooperation of the State Environmental Service with the State Fire and Rescue Service and the provision of information regarding leaks of chemicals and oil leaks, as well as the availability of information from the Environmental Damage Information System and the databases of polluted and potentially polluted sites (PPPV) in relation to these data sources accidents and damage caused.

#	Name of the institution	Nature of the regulatory framework
14.	State Environmental Service Radiation Safety Centre	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Radiation Safety Centre of the State Environmental Service with the State Fire and Rescue Service and at least the availability of the following information: • information on incidents and losses related to accidents of radioactive substances; • information on incidents and losses related to releases of chemicals; • gamma dose power monitoring data.
15.	VSIA "Latvian Environment, Geology and Meteorology Centre"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Latvian Environment, Geology and Meteorology Centre with the State Fire and Rescue Service and the provision of information on geophysical, hydrological, meteorological and climatological events at least in the amount of data listed in Annex 2.
16.	VAS "Latvijas Valsts Ceļi"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the VAS "Latvijas Valsts ceļti" with the State Fire and Rescue Service and the provision of information regarding road transport accidents: • Coordinates of the event (or affected area); • the cause; • The date of the event; • The length of damaged roads (m); • Length of destroyed roads (m); • The extent of losses; • The affected infrastructure (site name, extent of damage).
17.	VAS "Latvijas dzelzceļš"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the "Latvian Railway" VAS with the State Fire and Rescue Service and provide information regarding railway transport accidents:

#	Name of the institution	Nature of the regulatory framework
		• Coordinates of the event (or affected area); • The type of event; • The date of the event; • The length of the damaged railways (m); • Length of destroyed roads (m); • The extent of losses; • The number of victims; • The number of deaths; • The affected infrastructure (site name, extent of damage).
18.	National Railway Technical Inspectorate	It is necessary to develop a new regulatory framework that will ensure the co-operation of the State Railway Technical Inspectorate with the State Fire and Rescue Service and the provision of information regarding railway transport accidents.
19.	VAS "Road Traffic Safety Directorate"	It is necessary to develop a new regulatory framework that will ensure the cooperation of the "Road Traffic Safety Directorate" of the VAS with the State Fire and Rescue Service and, if necessary, the possibility of requesting video recordings from stationary radars and on-line access to radar cameras, as well as the following information in relation to vehicle recording technical data: • registration number of the vehicle; • stamp; • model; • the technical data necessary for the identification of the vehicle and the characteristics of the technical data; • vehicle equipment; • a national roadworthiness review of the vehicle and the values and defects recorded therein, the term of validity of the national roadworthiness test of the vehicle and the withdrawal of that authorisation;

#	Name of the institution	Nature of the regulatory framework
		• conformity assessment of the vehicle and vehicle conversion. In relation to the owner, possessor, holder of the vehicle: • Status (owner, possessor, holder); • given name, surname or name; • the personal identity number assigned in the Republic of Latvia and the date of birth (for a person who has not been assigned the personal identity number - date of birth) or registration number; • the address of the declared place of residence on the date of receipt of the service CSDD. For a legal person: • type of commercial activity; • information on the suspension, renewal, continuation or termination of business.

#	Name of the institution	Nature of the regulatory framework
20.	SIA "LatRosTrans"	It is necessary to develop a new regulatory framework that will ensure the cooperation of LatRosTrans with the State Fire and Rescue Service and provide information on accidents in the transport infrastructure of the oil pipeline: • The date of the event; • location of the event (address, coordinate); • the cause; • The extent of the threat: • name of species, number of individuals damaged, number of individuals destroyed; • the name of the habitat, the damaged area ha, the destroyed area ha; • name of water body, contaminated area ha; • soil type, extent of pollution in m3; • emergency measures (date of commencement, date of completion); • reorganisation measures (type, purpose, date of commencement, date of completion).
21.	National Health Service	It is necessary to develop a new regulatory framework that will ensure the cooperation of the National Health Service with the State Fire-fighting and Rescue Service and the provision of information on epidemics, accidents of biological substances, data on wounded, dead, as well as the possibility to keep an actual record of the resources involved in natural disasters, at least to the following extent: • Type of substance/allergen (in case of poisoning) or disease caused by epidemics; • Hazard level; • affected population (number); • the distribution of the affected population by age, gender, nationality, nationality, disability/absence;

#	Name of the institution	Nature of the regulatory framework
		• Number of dead;
		• Number of vaccinated (in the event of an epidemic).
22.	Emergency Medical Service	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Emergency Medical Assistance Service with the State Fire and Rescue Service and the provision of information on affected, dead, evacuated residents in relation to most recorded incidents and disasters, as well as information on resources involved in natural disasters.
23.	State Forest Service	It is necessary to develop a new regulatory framework which will ensure the cooperation of the State Forest Service with the State Fire-fighting and Rescue Service and the provision of information regarding forest and peat bog fires: • Event ID; • location of the event (coordinates, cadastre designation, landfill); • Start date and time of the event; • The date and time of the end of the event; • Name, owner/legal possessor of the holding; • Fire area (ha); • Forest area (ha); • The extent of losses; • The affected infrastructure (site name, extent of damage).
24.	Agricultural Data Centre	It is necessary to develop a new regulatory framework which will ensure the cooperation of the Agricultural Data Centre with the State Fire-fighting and Rescue Service and the provision of information on domestic animals from the registers of animals, Ganāmpulku and holdings in accordance with the amount specified in Annex 3.
25.	Rural Support Service	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Rural Support Service with

#	Name of the institution	Nature of the regulatory framework
		the State Fire and Rescue Service and the provision of information on agricultural losses: • Find location (address, coordinates); • Date of event (beginning, end); • Type of damage (flooding, drought, fire, wind break); • Type of damaged crops (wheat, rye and others); • Number of crops to be damaged (ha); • Insurance (name of insurance company, registration number): yes/no; • Amount of costs (extent of losses); • Owner (given name or name, personal identity number or registration number); • the registration number of the affected herd; • the species of affected animals; • The number of animals to be killed.
26.	Food and Veterinary Service	It is necessary to develop a new regulatory framework which will ensure the cooperation of the Food and Veterinary Service with the State Fire and Rescue Service and the provision of information on epizootic diseases: • The location of the event (coordinates, name and address of the holding/establishment); • Start date and time of the event; • The date and time of the end of the event; • Type of substance; • Hazard level; • the registration number of the affected herd; • the owner of the affected herd (given name or name, personal identity number or registration number); • the species of affected animals; • number of animals affected; • The number of animals to be killed;

#	Name of the institution	Nature of the regulatory framework
		• the affected area; • Radius.
27.	State Plant Protection Service	It is necessary to develop a new regulatory framework that will ensure the co-operation of the State Plant Protection Service with the State Fire-fighting and Rescue Service and the provision of information regarding the epifitotics and the availability of the inspection report, test report data and loss estimates.
28.	National Technical Supervisory Agency	It is necessary to develop a new regulatory framework that will ensure the co-operation of the State Technical Monitoring Agency with the State Fire-fighting and Rescue Service and the provision of information regarding registered tractor-engineering: • registration number; • type; • stamp; • model; • hydraulics; • technical data; • equipment; • Validity of the national roadworthiness test. In relation to the owner, possessor, holder of the tractor-engineering: • Status (owner, possessor, holder); • given name, surname or name; • the personal identity number assigned in the Republic of Latvia and the date of birth (for a person who has not been assigned the personal identity number - date of birth) or registration number; • address or registered office of the declared place of residence.

#	Name of the institution	Nature of the regulatory framework
29.	AS "Latvian State forests"	It is necessary to develop a new regulatory framework that will ensure cooperation with the State Fire and Rescue Service of AS "Latvian State Forests" and provide information on forest and peat bog fires: • The date of the event (beginning and end); • location of the event (coordinates, landfill); • The causing of damage; • Type of damage; • Damage amounts (ha); • The extent of the loss.
30.	Insurance companies	It is necessary to develop a new regulatory framework that will ensure the cooperation of insurance companies registered in Latvia with the National Fire-fighting and Rescue Service and the availability of basic data for insurance policies and incidents.
31.	Latvian Vehicle Insurers Office	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Latvian Vehicle Insurers Office with the basic data of the State Fire and Rescue Service and the basic data of the OCTA policy and the registered CSNg information, including the availability of loss data.
32.	Municipalities	It is necessary to develop a new regulatory framework that will ensure cooperation between municipalities and the State Fire and Rescue Service and the provision of information regarding damage caused by natural disasters.
33.	State Land Service	It is necessary to develop a new regulatory framework that will ensure the cooperation of the State Land Service with the availability of the State Fire-fighting and at least the following data sets: In relation to buildings: • an active identifier;

#	Name of the institution	Nature of the regulatory framework
		• the name of the asset; • a description of the asset; • asset value; • active coordinates and address; • active classification; • number of active floors; • active construction material; • the year of construction of the asset; • active status - populated or uninhabited; • another territorial breakdown; • the owner (given name, surname or name, personal identity number or registration number); • Form of management or ownership (e.g. private, municipal, national, NGO, religious organisation). In the case of parcels: • an active identifier; • the name of the asset; • a description of the asset; • asset value; • active coordinates; • active classification (e.g. use mode and other); • another territorial breakdown; • the owner (given name, surname or name, personal identity number or registration number); • Form of management or ownership (e.g. private, municipal, national, NGO, religious organisation). • the cultural and historical identifier of the asset.
34.	Treasury	It is necessary to develop a new regulatory framework that will ensure the cooperation of the Treasury with the provision of State Fire-fighting and information on benefits in disasters

#	Name of the institution	Nature of the regulatory framework
		from municipalities on a consolidated basis (currently listed in codes 6254 and 6323).

1.5   KAZA implementation process and necessary human resources

The introduction of KAZA involves changing policies for the identification of disaster losses and implementing proactive preventive measures and changing technological capabilities in information technologies and industry information exchange processes, since at present a large part of the source systems already provide data-sharing capabilities on the basis of their principles. Accordingly, in order to ensure the regular receipt of information from data sources, the holder of KAZA information resources should conclude data exchange agreements with data source information resource holders. In view of the fact that KAZA will maintain significant information on losses in many sectors, it will be national, to be registered in the VIS register in accordance with the National Information Systems Act.

The key changes to the implementation of KAZA will require VUGD human resources: if the human resources currently involved in industry policy planning and marketing supervision process the information manually, paying some of their working time to activities with low added value (compilation of MS Excel files, verification of the consistency of data, etc.), they will be required to implement KAZA knowledge of the efficient use of data analytics tools (business intelligence) and working time will be devoted to activities with higher added value (information analysis, interpretation of results);

KAZA will require IT human resources (administrators, user support specialists, business analysts):

1. KAZA system administrator and data operator (1 employee);

2. User support specialist (1 employee) providing first-level user support;

3. Project Manager (1 employee), which will ensure that new data sources are added to KAZA after the system has been deployed;

4. A system analyst and tester (1 employee) that will ensure that new reports are added according to users' expectations and will perform system testing;

5. A programmer (1 employee) that will provide data retrieval and develop system enhancements. The outsourcing provider KAZA will develop or implement an existing solution, but the introduction of KAZA will require additional human resources for testing KAZA (2-3 employees).

KAZA will process personal data, so you will need a personal data processing specialist registered in the DVI. These duties may be combined with any of the above-mentioned specialists (additional qualifications).

Currently, KAZA is planned as a centralized VUGD information system, the information will be used by the VUGD and the cooperation partners to identify the extent of disaster damage and to adapt their calculation methods.

The KAZA data warehouse is created without a previously existing data warehouse technical base. KAZA will use a "broad" range of users, thereby saving both the human resources of business analysis and ensuring that information is available in a shorter time. KAZA will be the holder of technical resources for IemIC and the holder of information resources will be VUGD, KAZA will be maintained from State budget resources.

KAZA is planned to be developed in two phases:

• the functionality of the basic data warehouse and the KAZA system is planned to be implemented in phase I, including indicators for which data sources have been identified and data sources have been agreed to transfer;

• In Stage II, it is planned to add new data sources, gradually supplementing the range of indicators available to KAZA and extending the range of KAZA users, supplementing existing functionality with new injury calculation methods, creating a variety of infopanels that inform daily a set of different incidents that may not individually indicate catastrophic cases, but relationships can lead to further analytical conclusions and take preventive action. Additional system functionality should be introduced to allow automated filling of risk assessment.

2   Capacities and user characteristics required to calculate disaster losses

• Collection, inclusion and storage of external data;

• Analysis and visualization of structured data, including various reports;

• disaster loss management and calculation;

• Geographical presentation of events and interuse of layers;

• Use of methods of calculating geographically analytical estimates;

• Editing geographic data and creating new layers;

• Reporting of geographical objects;

• Transfer of data to the parties involved, including Disclosure of analytical information;

• Collection of dynamically structured data.

2.1   KAZA characteristics of users

KAZA user - Analysts, stakeholders in the VUGD disaster loss calculation process. The system will be used to analyze disaster loss estimates and data, data storage and GIS functionality must be available; the availability of functionality is provided through an appropriate organizational unit of the active directory.

GIS and data storage administrators – provide user support and complement data through different interfaces, desktop or web, the aim of users is to complement existing solutions with new data sources or GIS layers, deal with incidents and manage ETL processes.

External users - Use questionnaire functionality to answer questions in the questionnaire or use externally published data and, in some cases, external partners may be granted the right to access the analytical functionality of KAZA users.

3   KAZA solution Goal Architecture

Figure 1. Solution Target Architecture
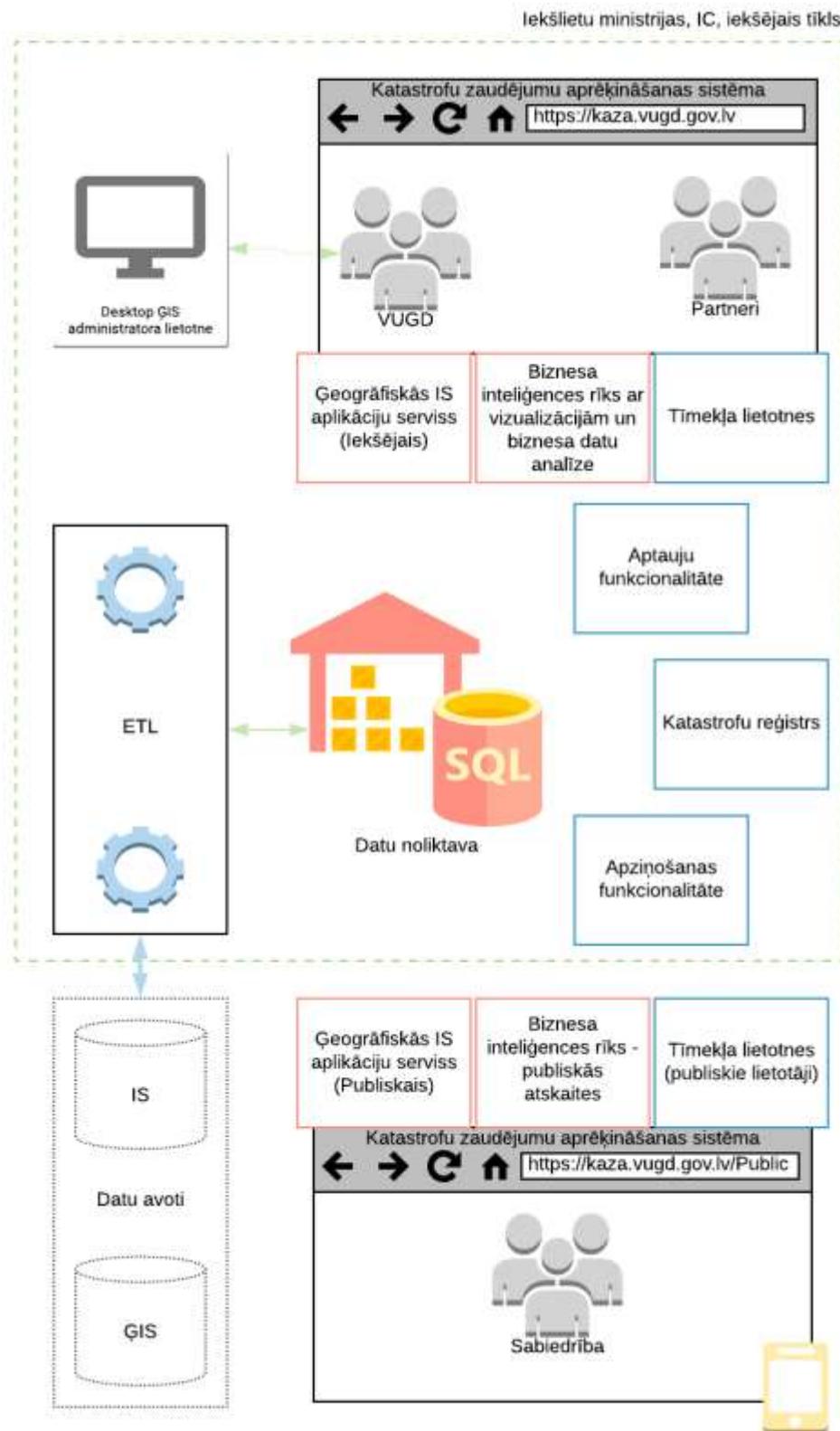
3.1   Description of the main functional blocks

1. Disaster register and loss accounting portal.

1.1. Disaster management: the possibility of adding data in a structured way on catastrophic cases according to target indicator data structures with geographic mapping. The functionality includes adding loss considerations by referring to geographic and analytical data.

1.2. Survey functionality - Loss identification functionality where data is collected in survey form and results are displayed in the analytical or geographic data display tools of the KAZA system. The system shall ensure the possibility of identifying the amount of damage by reporting the various objects identifiable from the map or analytical data.

1.3. Reporting functionality - A service that allows you to segment recipients and send information about different channels controls the delivery state.

2. Data warehouse and ETL - provides data retrieval from data sources, their transformation to KaZa business usage, downloading/storage in a transformed way and the constant structure of data sources. The solution component provides.

3. Mobile Application: A web-based interface that identifies a mobile device and adjusts the design to the resolution of a mobile device and enables you to use most of the functionality of the system.

4. External functionality: functionality for public users that enables data visualization or questionnaire completion;

5. Data download and transfer to external systems - System functionality that provides collaboration with supporting systems.

6. Functionality of GIS and analytical support personnel — standard software that provides in-depth capabilities with GIS and data storage experts, so that data sets of layers or data storage data can be specified.

4   KAZA business Processes

This section displays the main KAZA business processes in process cards.

4.1   The terms used

Table 5. Applied Legend

Identification	Description
	Start event.
	End event
	Activity
	Collapsed sub-process
	Each step in the process participant (activity) has an index (number) assigned to identify a specific action of the process participant (activity).
	Loop: The activity of a particular participant in the process (activity) is constantly occurring, cyclically.
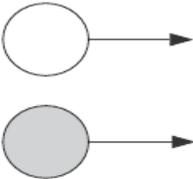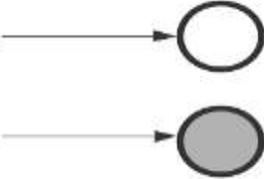
4   KAZA business Processes

Gadījumā, kad anketai norādīts aizpildīšanas termiņš	Comment (annotation) in blue – provides additional information, explanations, etc. for the operation of a process or process participant (activity).
Jāparedz respondentu autentifikācija, izmantojot Latvija.lv autentifikācijas mehānismus, autorizēto aptauju gadījumos	Comment (annotation) in red - means it needs special attention, etc.
→	Process sequence flow (sequence flow).
----------▶	Message flow showing cooperation between the process participant and/or the information system and the external authorities and/or information systems (message flow).
(exclusive gateway symbol)	Place in the process (Exclusive Gateway – exclusive gateway) when the process flows in which direction the process flows. If there is a condition referred to on the outgoing arrow, it shall be taken into account when selecting the next step.
(parallel gateway symbol)	A place in the process (parallel gateway) when all future steps in the process participant (activity) have to take place, but not in any order.
(parallel gateway symbol)	A place in the process (parallel gateway), when the next step in the process (activity) will take place if all of the previous ones occur.
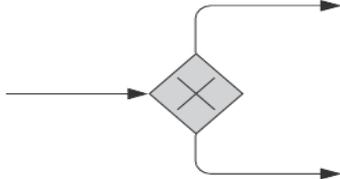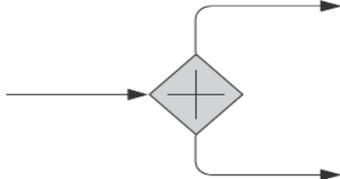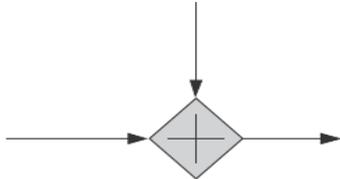
	The location in the process (complex gateway), when only part of all future steps of the process participant (activity) are required and not relevant in any order.
	A waiting time with an indication of the end of the waiting time (timer event) - it may be a condition, the number of days or months, or the time period during which the relevant participant in the proceedings takes place (activity) or after which it will take place.
	Information systems/data sources used in the process/process participant action (activity). Information systems/data sources name colors: green - used in existing processes; blue will be imported into future processes, black remains unchanged.

4.2   KAZA total Business Process

Image 1. KAZA overall business process - General future process scheme

4.3   Recording an event

Image 3. Event Logging - General Future Process Diagram
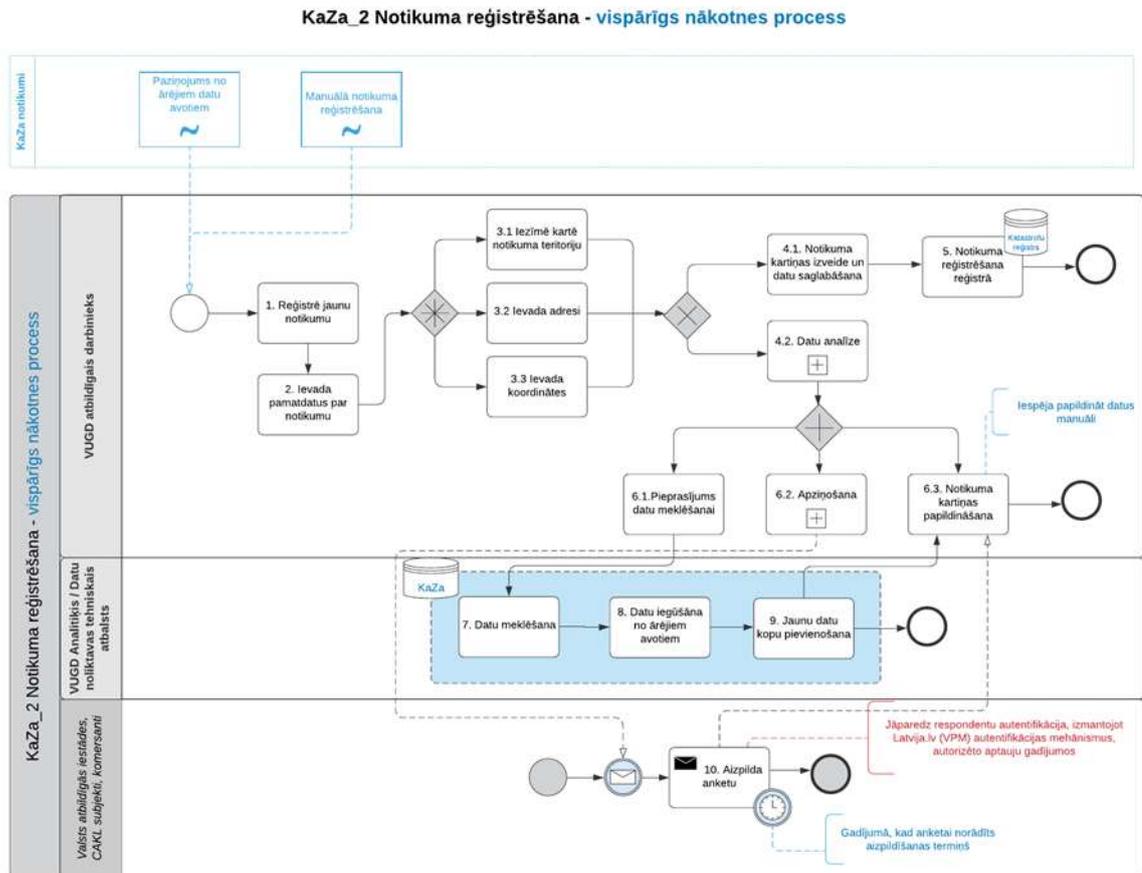
4.4   Searching an event in the disaster register

Image 4. Search for an event in the disaster register - General future process scheme
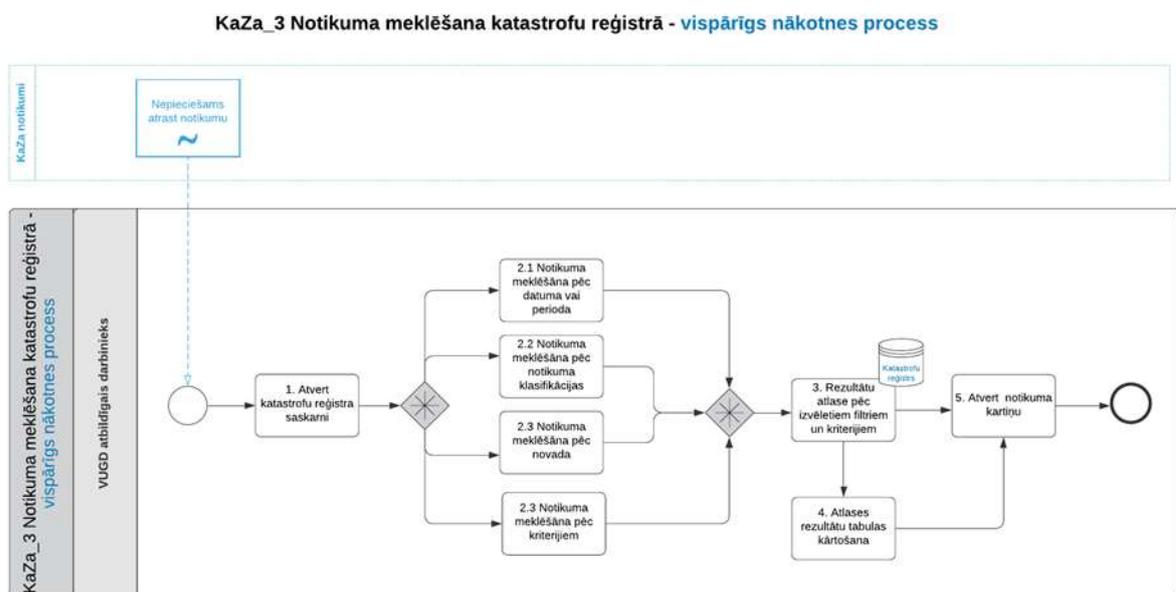
4.5   Survey functionality

Image. 5. Survey functionality - General future process scheme
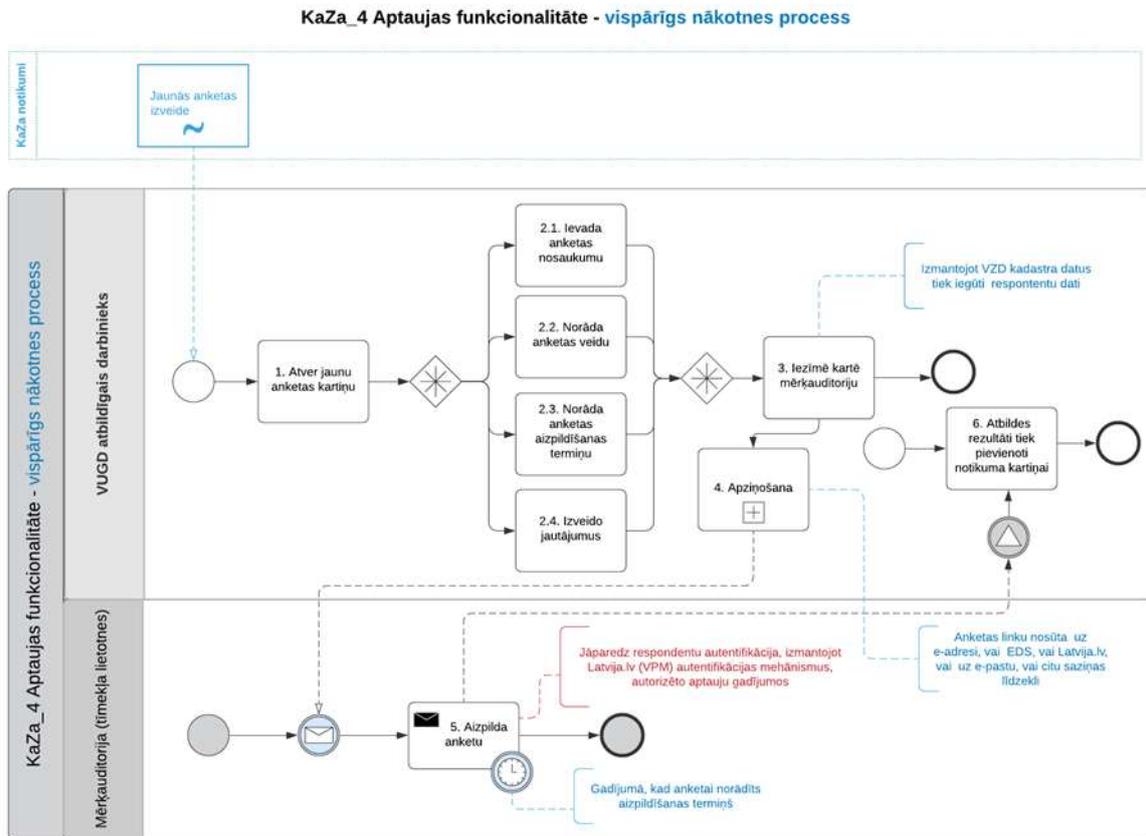
4.6   Data analysis (statistics, forecasting, planning)

Figure 6. Analysis of data (statistics, forecasting, planning) - General future process scheme

KaZa_5 Datu analīze (atskaites, statistika, prognozēšana, plānošana) - vispārīgs nākotnes process
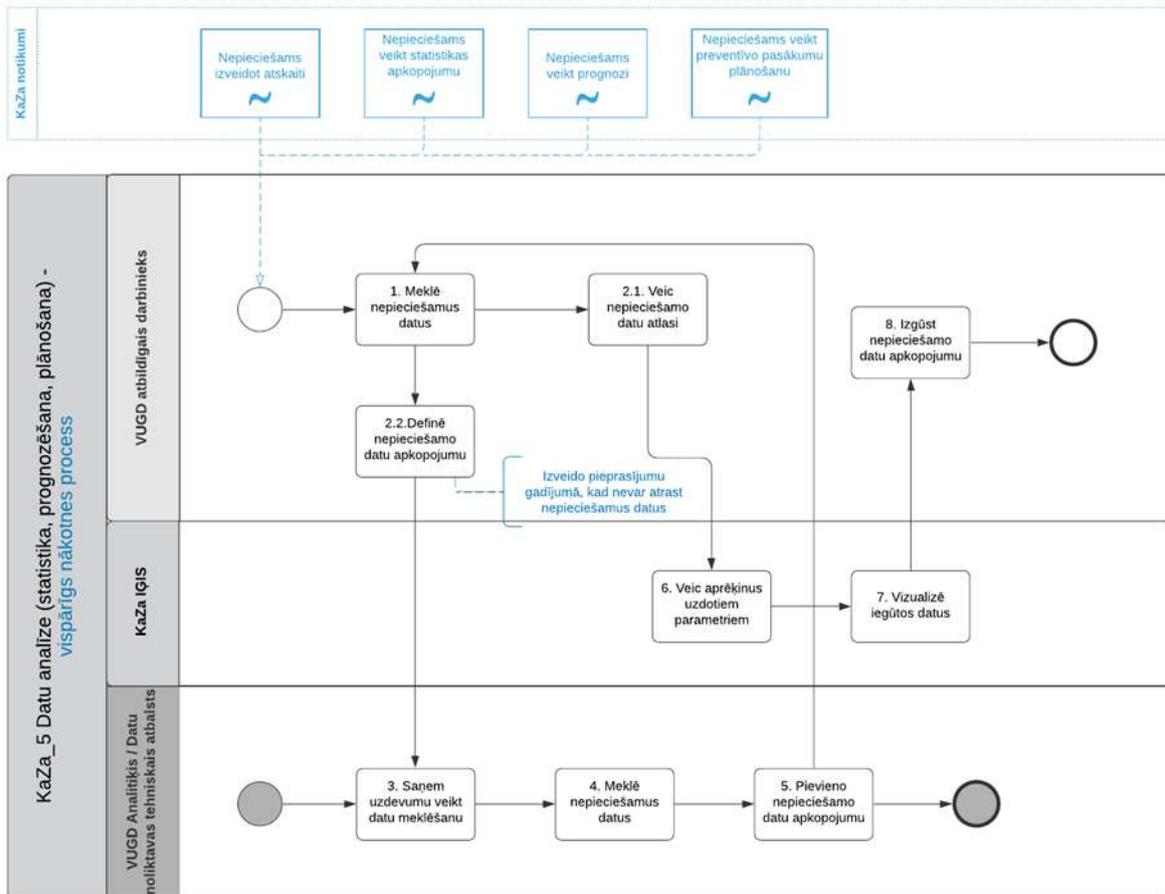
5   General requirements

Table 6. General requirements

#	Claim Name	Description of the requirement
VP-1	Technology usage	When selecting development technologies, the developer shall include in the calculation of the financial supply all costs related to the deployment of new technologies for least 5 years after the introduction of the solution in the production environment. The technology deviation from the existing scope also includes the need to carry out the tracking of IM IC specialists and this activity needs to be detailed in the technical supply. The contracting party shall not have spare licences if the developer relies on the existing technological capabilities of the IM IC, the extent of their use shall include the purchase of additional licences, if the use of the technologies so requires.
VP-2	Technologies used in interfaces	The developer uses only web-based interfaces to develop business functionality.
VP-3	User-accessible interfaces	According to the functional requirements for the defining, the developer provides individual functional interfaces with a manageable scope of functionality that is available to specific user groups.
VP-4	KAZA target architecture	When developing the system, the developer must comply with the principles defined in the KAZA target architecture and develop functional developments according to the definition.
VP-5	User activity audit and error journaling	The components developed in the framework of the project should be audited and organised by Auditing. The goat should be able to record personal data processing and user activity (audit records), collect

		and, if necessary, obtain personal data from the user. The goat should have the possibility to set the time and conditions for the storage of audit records. The goat should be able to create the configurable and transparent audit journal, reflecting audit records on individually adjustable views. The EEAP should ensure the establishment of full, traceable and credible audit records. Audit records must be protected against external exposure factors, including intentional or unintended misrepresentation, leakage, erasure. The amount of audit required for each of the components developed by the Developer must be aligned with the Contractor during the system.
VP-6	Copyright	All ownership rights of the author to the deliverables created during the process of developing the System Supplements, including changes and additions to the System Source Code, compiled code, documentation, test data sets and other technical components and documentation of the System, shall belong to the Customer, and the developer shall not have the right to use them for his or her purposes unless a separate written consent from the Customer has been received. This requirement does not apply to the situation where the developer supplies the software that has already been developed and the purchase results in the acquisition of software rental rights.
VP-7	Provided environments	The developer must install all necessary environments that support the continued implementation of supply approaches, including:

| | | The test environment of the systems for accepting tests, functional tests and single tests; A single repository of supplies and exit codes; A configurable environment for automatic supply to ensure the delivery of convenient systems between test and production environments; Production environment configured for development; The programmer development environment that is configured to allow the customer to open the development project (from the supply repository environment) and perform its successful compilation and execution. The commissioning party will ensure the maintenance of the System Test and Production Environment during the project, as will the necessary technical resources for the implementation of the continuous supply approach (a single repository of supply and exit codes, a configurable environment for automatic deliveries). The developer must coordinate with the Passenger Environment configuration, the tools used and the process for delivering a continuous supply approach prior to the start of development. The developer shall ensure that all necessary environments are created and configured within a maximum of 1 (one) month from the date of conclusion of the contract, and shall ensure that they are maintained within the framework of the development and implementation process and during the warranty. |
| | | |

		If the applicant proposes to use any charge tools in the implementation of a continuous supply approach and the use thereof is also necessary on the Passenger's side, the applicant shall supply the Passenger with the licences for these tools, and the costs of these licences shall be included in the applicant's financial offer.

5.1 System administering

Table 7. System Administration Requirements

#	Claim Name	Description of the requirement
VP-8	White File List	The developer must develop functionality for managing the file white/black list. The purpose of keeping lists is to make it possible to define the types of files that are allowed to be loaded to the System. The system should provide functionality that determines the type of file to be loaded in any dialog and interface in which the user or automatic process is loading the file into the System and the type of file to be loaded is checked or the file type to be loaded is included in the white list. If the file type is not included in the white list, it shall be prevented from uploading and shall be notified to the user.

5.1.1 Managing classifiers

Table 8. Requirements for the management of classifiers

#	Claim Name	Description of the requirement
VP-9	Managing classifiers	The developer must develop classifier management functionality. Classifiers must be designed in such a way that users with appropriate rights can supplement and correct their values without making changes to the System source code.

		When developing classification management functionality, it should be provided that each value of classifiers must contain at least: • Classification value key; • Name of the value of the classifier; • Explanatory text for the value of the classification; • Label whether to show the value of the classifier to the user. The developer must co-ordinate with the values of the initial classifiers of the customers and make their input into the System during the system.
VP-10	List of classifiers	The developer must co-ordinate with the Contractor all the required classifiers, restrictions on the length of the classifier text field, and the depth of the classification branch for multiple-level classifiers during the span, stating that it is necessary to develop classifiers with a depth of at least three levels of branching. The system must ensure that at least the following classifiers are used: • Event classifiers: • event category classification; • the classification of the event group; • Classification of event subgroup. • Loss classification. • The event impact classifier. • Classification of Administrative Territories and Territorial Units.

5.1.2   Integration with external registers and data sources

Table 9. Requirements for integration

#	Claim Name	Prasības apraksts
VP-11	Integration with external registers and data sources	The developer must create integrations with all the registers and data sources needed for this project. The

		exact integration usage scenario with each of the registries and data sources, as well as the amount of registries and data sources to be integrated, shall be coordinated by the developer with the Passenger at the time of the Sisters.

5.1.3 Monitoring of integration and synchronization services

Table 10. Monitoring requirements

#	Claim Name	Prasības apraksts
VP-12	Reports on Integration and Synchronization Services	The developer must provide an integrated monitoring solution for data broadcasting services and data exchange transactions that will ensure the collection of data on events in the operation of the system. The functionality shall provide an overview of the capacity of integration and synchronization services and proactive notification to the incident management system when there are violations of the SLA. Functionality should provide regular reports on daily system data exchange service transactions, in such a way that data exchanges that have partly occurred or not occurred can be identified. Functionality should ensure that problematic data sharing is resumed. The functionality should be specified with the customer during the system.

5.1.4 Authentication, authorization and user rights management

Table 11. Requirements for authentication, authorization and user rights management

#	Claim Name	Description of the requirement
VP-13	Login to System	The developer must develop a user login form in the system. The application functionality should be developed according to the described usage scenario and according to the accompanying introduction sketch 1 KAZA Login. Usage scenario

The system distinguishes two types of users, internal and external, hereinafter referred to as "users".

Internal users:

KAZA users - Analysts, stakeholders in the VUGD disaster loss calculation process. Use the system to analyse disaster loss estimates and data must have data storage and GIS functionality available; Availability of functionality is provided through an appropriate organizational unit of the active directory

GIS and data storage administrators – operating user support – supplementing data through different interfaces, desktop or web, users aim to complement existing solutions with new data sources or GIS layers, deal with incidents and manage ETL processes

On the other hand, external users are all other users who use System functionality, such as the natural or legal persons who will complete the questionnaire. Authentication by external users using latvija.lv functionality (Requirement VP-14) or eparaksts.lv functionality (Requirement VP-15.

Authentication and authorization of users registered on these computer networks must use the single supplier-operated User Connection Solution with the OAuth2 .0 and OpenID Connect protocols, or Active Directory using the Kerberos protocol. It must be possible to use the following connection properties:

a. user name;

b. Password (Password to be created according to 28.7.2015. The requirements of the BOM Regulation No 442).

• Application to the System should be made in accordance with the single sign-on principle, using the IeM IC Active Directory (AD), or through latvija.lv authentication of natural and legal persons or through eparsksts.lv authentication of natural and legal persons, and automatically directing the user to its profile in the System.

• User access rights are defined in the IeM IC AD and are inherited in the System. The use of the Legal Persons Authorization Solution (https://viss.gov.lv/lv/Informacijai/Dokumentacija/Koplietosanas_compon

		ent/JPP) in the System should be ensured. These user permissions determine which System functionality, data, and input forms the user will be able to access. • Only if automatic single login fails, the user is prompted to enter his or her user name and password.
VP-14	Login to the System using latvija.lv	The developer in the System must develop a user login form using latvija.lv functionality. The application functionality should be developed according to the described usage scenario and according to the attached introduction sketch 2 KAZA Login to the System using latvi.lv. Usage scenario • Application to the System should be provided in cooperation with the latvija.lv authentication service of the State Administration portal. • User access rights are defined in the IeM IC AD and are inherited in the System. These user rights determine which functionality, data, and input forms of the Public Part of the System will be accessed by the user.
VP-15	Login to the System using eparaksts.lv	The developer in the System must develop a user login form using eparaksts.lv functionality. The application functionality should be developed according to the described usage scenario and in line with the accompanying introduction sketch 3 KAZA Login to the System using eSignature s.lv. Usage scenario • Application to the System should be provided in cooperation with the eparaksts.lv authentication service of the State Administration portal. • User access rights are defined in the IeM IC AD and are inherited in the System. These user rights determine which functionality, data, and input forms of the Public Part of the System will be accessed by the user.
VP-16	User profile	The system must provide the user with a profile, regardless of the role. The profile is defined by entering the personnel information (base data). The profile displays basic user information (data from IeM IC AD) as well as

		configuration capabilities relevant to the user's access. Sections and functions are available to the user in accordance with the rights of the users in the System.
VP-17	User rights	The developer must develop functionality that allows a user with System Administrator privileges to perform user rights management and associate these rights with user roles. Ensure that user rights and respective roles are synchronised with the AD solution used by IeM IC.
VP-18	Define user roles	The developer must develop functionality for defining system user roles. User roles should be defined in detail up to access control for any individual System Dialog. The roles of users should therefore be identified separately for each System Interface. It should be possible to create System Object Groups by identifying the respective user roles for each of these groups. Each user whose rights are defined in the System must be able to specify the individual code of the particular user. The personal code is used for users who have used Latvija.lv or eparakts.lv authorization functionality for authorization in the System. The system will have at least the following rights groups: • User with system administrator rights; • User with GIS and data warehouse administrator rights; • User with employee rights; • A user with guests' rights. A user with this role should have the right to create a content tree, add and manage content elements, maintain translations, assign roles to other users, and perform other actions that will be specified during system analysis. The developer must design a system administrator panel. The functionality of the system administrator panel should be specified during the analysis of the system.
VP-19	Users with system administrator privileges	A user with this role should have the right to create a content tree, add and manage content elements, maintain translations, assign roles to other users, and perform other actions that will be specified during system analysis.

		The developer must design a system administrator panel. The functionality of the system administrator panel should be specified during the analysis of the system.

Sketch 1. KAZA Login

Sketch 2. KAZA Login to the public part of the system using latvija.lv

Sketch 3. KAZA Login to the public part of the system using eparaksts.lv
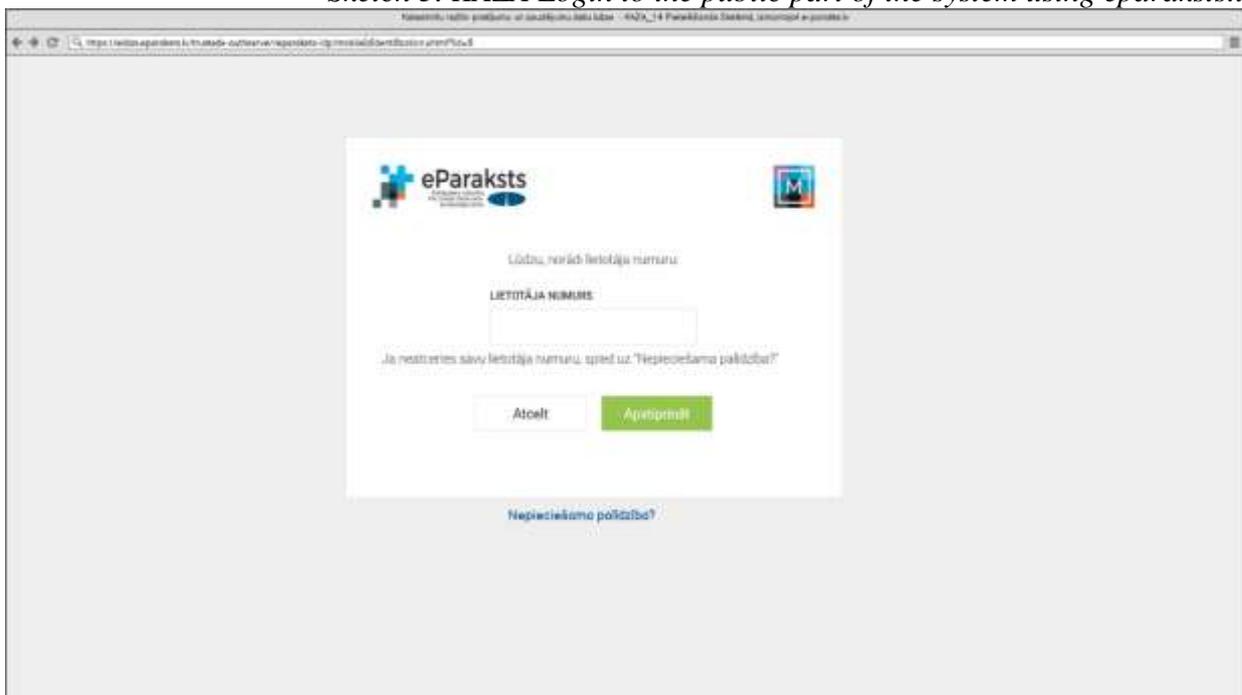
6   Functional requests

6.1   System interfaces

6.1.1   User info panels

Table 12. User infopanel functionality requirementsi

#	Claim Name	Description of the requirement
FP-SS-1	User infopanelis (Home page)	The system requires the development of user infopanel functionality. User infopanel functionality should be developed according to the described usage scenario and in line with the accompanying Introductory Pattern 4 KAZA User Infopanelis. Usage scenario The user's infopanelis (Home page) is the system user's main interface, allowing it to see information on data available in the data warehouse in a single view in a different slicer for all event types defined in the "Event Type" classification. The user's infopanel interface should ensure that dynamic graphics are displayed and linked. For example, when you click a specific territorial breakdown in the "Card" map, other graphics should display information about that region. The type, sequence, slicing and graphics of the event schedules must be reconciled with the Contractor during the system.
FP-SS-2	Map	The user's infopanel functionality should enable the distribution of the total number of the current year by county or by administrative breakdown of the event type concerned (e.g. fire, flooding,

		road accident, etc.) in the kartogram. The cut to be displayed in the cartogram must be aligned with the Passenger during the system.
FP-SS-3	Charts	The user's infopanel functionality must enable you to display multiple chart types. The slicing of data to be displayed in daigram must be aligned with the Passenger during the system.

Sketch 4. KAZA User info panels (Home page)

6.1.2   Map

Table 13. Requirements for the Card interface

#	Claim Name	Description of the requirement
FP-SS-5	Map	The functionality of the Card interface must be developed in the system. The functionality should be developed according to the described usage scenario, according to the accompanying introductory design KAZA_2 .2 Map. Usage scenario

		The "Card" system interface must display a map with the data layers available in the System and a dynamic selection results table.
		In the "Card" system interface, the user should be able to mark sites and/or landfills by displaying in the selection table information on sites in a highlighted landfill from the cadastre register, indicating at least the following data for each site:
		1. Cadastre number;
		2. The address of the object;
		3. Group of premises;
		4. Floors of the building;
		5. Status of the site (populated, uninhabited)
		6. Affiliation (local government natural person, legal person, local government, state, mixed affiliation);
		7. Owner's details (given name or surname);
		8. Insurance status (yes/no);
		9. Number of persons declared.
		The results selection table should allow you to mark a non-residential property on the map by pressing on the data of the non-resident property owner.
		The "Card" system interface should provide for the possibility of showing the total area of the landfill, the number of persons declared and the current cadastre value of the total property.
		In the "Card" system interface, you should be able to add the highlighted object and/or landfill to an existing event on the map or create a new event by opening the initial form of the event card, shown in sketch 5 KAZA Event card - Card.

		The system should incorporate functionality that will allow you to display a slice of the selected time by means of a sliding view.

Sketch 5. KAZA Card
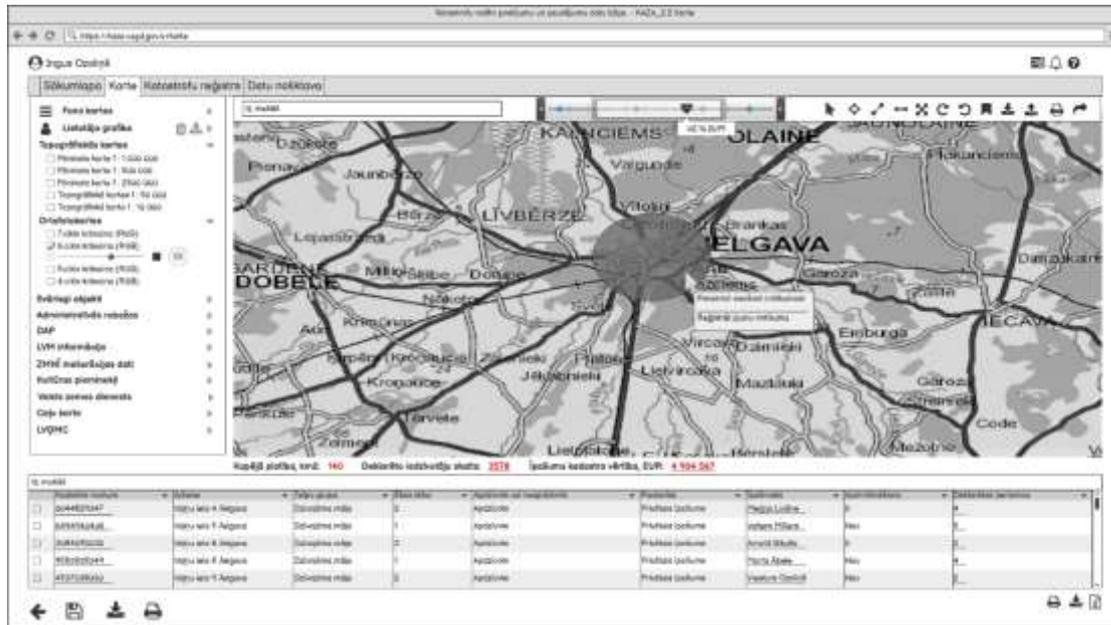
Table 14. Requirements for actions with data layers and map content

#	Claim Name	Description of the requirement
FP-SS-6	Visualize and browse map layers and data	The system should ensure that different layers of cards are available, depending on the user's access rights. Visualization of data shall be ensured in accordance with the customer's requirements and best practices for mapping, as well as in a user-friendly and comprehensible manner.
FP-SS-7	Map view navigation	The system should allow you to zoom in, move away from a specific area of the card, return to previous and next views of the card, move away to the full map view, and move about the map using the cursor

FP-SS-8	Connect/unlock and search different layers of data in the map content window	The system should be able to connect/unlock any slice or group of slices visible in the content window. The layers displayed on the relevant scale are highlighted. You should be able to search for the desired slice (s) by name or by using the slice search window.
FP-SS-9	Set up data layer transparency	The system should ensure that the transparency of the data layers or layer group is reported.
FP-SS-10	Switch background cards	The system must ensure that two background cards are switched in one view by means of a sliding view (swap).
FP-SS-11	View the map legend	The system should provide an opportunity to view a dynamic map legend that displays the names used in the layers displayed in that particular zooming.
FP-SS-12	Map Labelling (redlining)	The system should enable the user to perform temporary markings (points, lines, landfills, inscriptions) in the card window, which is also displayed when printed.
FP-SS-13	Create and save new layers of cards	The system should enable the user to create new layers with different markings (points, lines, landfills, inscriptions) while retaining the created layer in the User Graphics section or the event card interface in the Analytic Data List.
FP-SS-14	Sharing User Graphics	The system should enable the user to share data layers between authorized users.

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Table 15. Requirements for handling map objects and search functionalityi

#	Claim Name	Description of the requirement
FP-SS-15	Identify map objects and view their attributes information	The system should enable the user to identify objects on a map in a particular layer or on all visible layers. If objects are found from only one layer in a given

		area, they should be displayed in the result table, while if objects from multiple layers are found, they should be displayed in a dynamic list where the user should be able to switch between the selection results, zoom in and view the attributes information for each object.
FP-SS-16	Search for objects by attribute information	The system should enable you to search for objects in layers by using full-text search for any of the object attributes. The system should also be able to search for objects based on attribute information in a specific buffer zone around a user-selected point. You should be able to display search results in the results table.
FP-SS-17	Display search results	The system should be able to reflect the results of the search in the table. You must ensure that when you choose the approximating function, automatic positioning (close-up) for the found object in the map view. You must ensure that search results are highlighted – displayed (highlighted) on the map.
FP-SS-18	Import Objects	The system should be able to import SHP files. The functionality must ensure that the geometry is taken over, as well as the takeover of attribute information, if the field names and types match those in the database.

Table 16. Requirements for working with the results table

#	Claim Name	Description of the requirement
FP-SS-19	Selection Results Table	The system must display the selection results table in one view with the map window and allow you to resize it.
FP-SS-20	Working with the results table	The records available to the user in the selection results table depend on the applicability of the user. You must have the ability to filter, sort, export, and view search results on a map. You

		should be able to filter selection results by one or more fields, zoom in on filtered results, return to previous filtering results after new filtering, and clear filtering results.
FP-SS-21	Export of selection results	You must be able to export the selected and filtered results to a MS Excel and/or SHP format file. It must be possible to find and identify the entry in the table by imposing the entry on it in the map view. You must have the option for the user to sort the column order for each slice, hide/return hidden columns, change the column width. You should be able to view existing related records in the results table for layers that have linked tables and create new related records.
FP-SS-22	Print Selection Results	You must be able to print the selected and filtered results.
FP-SS-23	Sampling results statistics	The system should be able to display summary statistics in the selection results table on the information of one or more slice numerical attributes selected by the Passenger for search or identification results.

Table 17. Data Repair Requirements

#	Claim Name	Description of the requirement
FP-SS-24	Correcting data geometry for a single highlighted object	The system should be able to correct the geometry of all attached objects. Field objects should be able to repair the geometry by moving peaks, splitting an object, or deleting the existing geometry, and to draw a completely new one instead, while retaining attribute information. Line and point objects should be able to correct the geometry by moving peaks/s or to delete existing geometry and draw a completely new

#	Claim Name	Description of the requirement
		one instead, while keeping the attribute information. The system should support the repair of multi-part objects, the deletion of their parts.
FP-SS-25	Edit data attributes for multiple selected objects at a time	The system must enable you to correct attribute information for one, more or all of the records in the table at the same time in the results table. The user should be able to see the corrected record identifiers and change statuses in the sessions.

Table 18. Requirements for printing cards

#	Claim Name	Description of the requirement
FP-SS-26	Printing cards	The system should be able to create a standardised print of cards that include layers connected to the user.
FP-SS-27	Print size and configuration	The system should enable the user to select the size of the printout from the list, specify the direction of the printing, add a heading and a description.
FP-SS-28	Model card printout	The system should allow you to view print preview before printing.
FP-SS-29	Exporting a print of cards	The system should be able to export the print of cards, at least to the following file formats: PDF, JPEG, PNG, GIF file formats.

Table 19. Requirements for measuring tools and scale

#	Claim Name	Description of the requirement
FP-SS-30	Measuring lines and areas on a map	The system should ensure that the length of temporary line objects drawn by the user and the area and perimeter of temporary polygonal objects are measured.
FP-SS-31	Measuring distances on a map	The system must ensure that the distance of the card is measured for a broken line drawn freely.

FP-SS-32	Display the scale and coordinates in the map window	The system should enable the display of the map scale, which changes dynamically, depending on whether the map view is reduced or increased, as well as permanently available information in the map window on the map scale and the coordinates of the point where the cursor is located.

Table 20. Requirements for GIS Service Background Cards

#	Claim Name	Description of the requirement
FP-SS-33	External map services and data	List of mandatory data and layers in the GIS service: • TECHNOLOGY orthophoto cards (since 1994) • TECHNOLOGY ortho-imaging cards in the infrared spectrum • Totopographical map OF THE FAMILY • Waste • Natural trails • Dam • Core areas specially protected by DDA • zoning of DDA specially protected areas • Railway • Mat • Door flow directions • Deployment of insects • clearings • Change location • peat deposits • Acquisition sites for peat • Reprocessing plants for peat • LVM railway crossings • Forest roads and natural carriageways • Forest section information • Forest Fire Water Recalling Areas • Other forest fire prevention measures

		• TACT road accessibility layer
		• Bridge
		• Designation of water abstraction sites
		• Watercourse
		• National regulated water gutters
		• National water gutters
		• Surface areas of water gutters of national importance
		• Water catchment areas of national importance
		• Surface water discharge site
		• VZD Address Points
		• ZMNI Polder Pump Plants
		• ZMNI Polder Territories
		• Border map of administrative areas (before and after the 2020 territorial reform)
		• VZD Cadastre Information Card
		• VDZ Address Register Service
		• Forest Ownership Data
		• LVM forest map
		List of desired layers:
		• LatviaFloodMap
		• Protected species (areas)
		• Turning area
		• Locations of deposits
		• Former military facilities
		• Other protected objects
		• Natural protection zone
		• DDA tree plantations
		• DDA micro-reserves
		• Dolomite deposits
		• Existing 110 kV protection zone

		• Existing 110 kV axis
		• Hydroline
		• Specifically protected nature areas
		• Janis Sta Road Network
		• JS Lakes
		• JS rivers
		• Cadastre buildings
		• Cadastre in blocks
		• Communication points
		• Counter development fields LVM areas
		• Locations of LVGMC deposits
		• Shelter deposits of the LVGMC
		• LVGMC Dispute deposits
		• National mineral deposits
		• Border points for mineral deposits of national interest
		• ZMNI Dams
		• ZMNI Dam pickets
		• ZMNI cannula
		• ZMNI Cannula Collectors
		• ZMNI cannula system
		The exact list of the required layers should be aligned with the Passenger during the systemic process.
		The costs and contractual obligations of data or card services shall be arranged by the customer.
FP-SS-34	Restore background cards	Background cards should provide regular automatic updating, at least once a day, unless the card provider updates it less frequently.

6.1.3   Catastrophe Register

Table 21. Requirements for disaster register functionality

#	Claim name	Description of the requirement
FP-SS-35	Disaster register	The developer must develop disaster register functionality in the system. The functionality of the disaster register should be developed in accordance with the described usage scenario and in line with the accompanying introduction template 6 KAZA disaster register. Usage scenario The Disaster Register interface is a system interface that allows it to select information on all events registered in the System in a single view. The Disaster Register interface should display a section with different types of filters, a section of the content of the cards and a section with a list of events recorded in the disaster register as illustrated in the form of a table.
FP-SS-36	List of registered events	The system should enable the disaster register to be touched by default to display a list of events recorded in the disaster register, which should represent events by date in descending order. The exact list of columns to be displayed should be aligned with the Contractor during the framework process. The system should allow you to open this event card by clicking an event.
FP-SS-37	Working with a list of registered events	The system should allow you to filter, sort, export, and view search results on a map. You should be able to filter selection results by one or more fields, zoom in on filtered results, return to previous

		filtering results after new filtering, and clear filtering results.
FP-SS-38	Registered Event List Export	The system must enable you to export the selected and filtered results to a MS Excel and/or SHP format file. It must be possible to find and identify the entry in the table by imposing the entry on it in the map view. You must have the option for the user to sort the column order for each slice, hide/return hidden columns, change the column width.
FP-SS-39	Print a list of registered events	The system should be able to print a list of recorded events.
FP-SS-40	Search for events by applying filters	The system should enable the user to select events: • after the date or period of the event, • by county (s), • by event category, • by event group, • by subgroup of the event, • by type of event, • after the duration of the event (from/to), • by the amount of the loss (from/to). • In addition, you should be able to select events: after the number of deaths • by number of injured/infected • by number of evacuees • by the number of missing • by number of affected • by number of movements • by number of damaged houses • by the number of destroyed houses • by total loss. The system should make it possible to select and display events in the list of disaster records

		according to the applied filters. An example of filters is shown in the accompanying introductory form sketch 7 KAZA Catastrophe Register - Filter 1. The system should ensure that, when selecting the "Group by Years" filter, it is possible to display events by grouping them over the years according to the accompanying introduction sketch 8 KAZA Catastrophe Register - Filter 2.
FP-SS-41	Applied Filters	The system should be able to visually display filters applied by the user, with the possibility to remove the filter by changing the list of disaster records accordingly.
FP-SS-42	Display events on a map	The system should enable the pictograms of the selected events to be displayed on the map, following the event coordinates or by highlighting the landfill affected by the event. You should be able to display the date of the event, the type of event, and the location by clicking an event pictogram. The appearance of accurate pictograms to be displayed and the amount of data to be displayed should be aligned with the Customers during the framework.

Sketch 6. KAZA Catastrophe Register

Sketch 7. KAZA Catastrophe Register - Filter 1

Sketch 8. KAZA Catastrophe Register - Filter 2
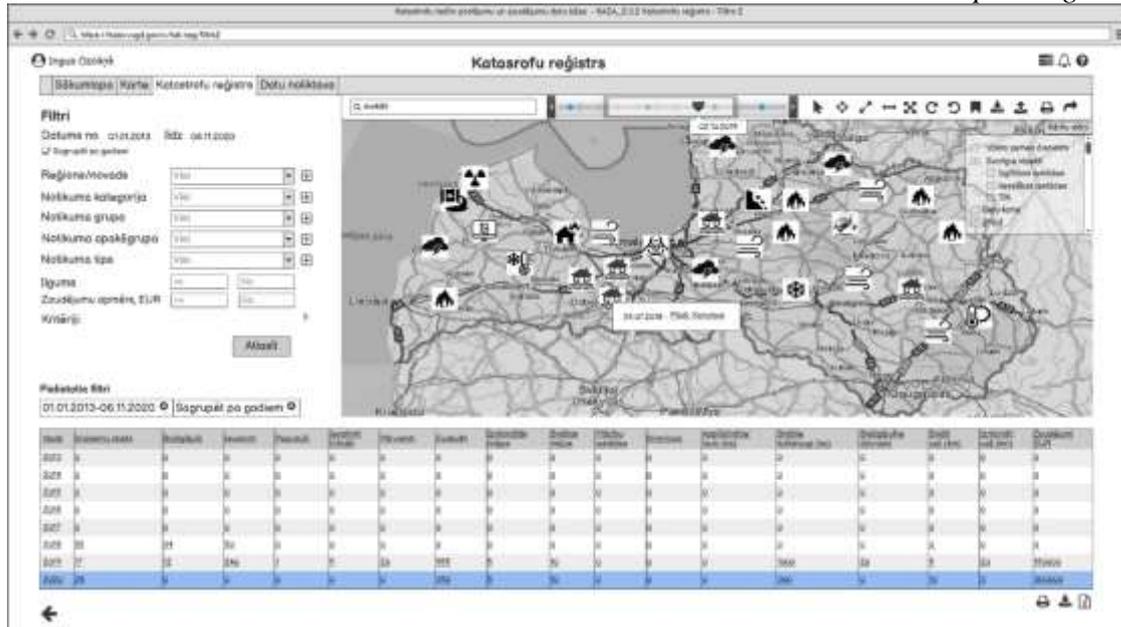
6.1.4   Event card

Table 22. Requirements for event card functionality

#	Claim Name	Description of the requirement
FP-SS-43	Create an event card/Event card	The system must develop the functionality of creating a new event card. The functionality of the disaster register should be developed in accordance with the described usage scenario and in line with the accompanying introduction form sketch 9 KAZA Event card - Card. Usage scenario The event card interface is in the System interface where event information is maintained. The event card interface should allow you to enter and complete information related to a specific event (both manually and automatically). The base information block must also contain a unique identifier (URL) to be used for tagging questionnaires.

		In the base information block, you should be able to enter information on the date and time of the beginning and end of the event, the category, group, subgroup, and type of the event, the location of the event (address and/or coordinates). It should be possible to indicate the impact of the event (e.g. affected industries) by selecting a value from the classifier, as well as the cause of the event recorded in manual, if necessary. The system should be able to display specific event base identifiers according to the type of event selected. The system should ensure that the current event card view is stored in the event card interface by adding it as an attachment to the analytical data list displayed in the introductory form sketch 12 KAZA Event card - Analytical data.
FP-SS-44	Map functionality	The system should allow you to display a card in the event card interface according to the functionality defined by the cards.
FP-SS-45	Comments	The system should enable the user to make notes. Text entry should provide a visual text editor (wysiwyg) with the ability to format text bold, italic, underline, assign colors, create subtitles, number list, align text, create subs (bulleted), copy text with automatic formatting. Table entry requires creating, saving, formatting. Add, edit, and choose to include opening a link type.

Sketch 9. KAZA Event Card - Card
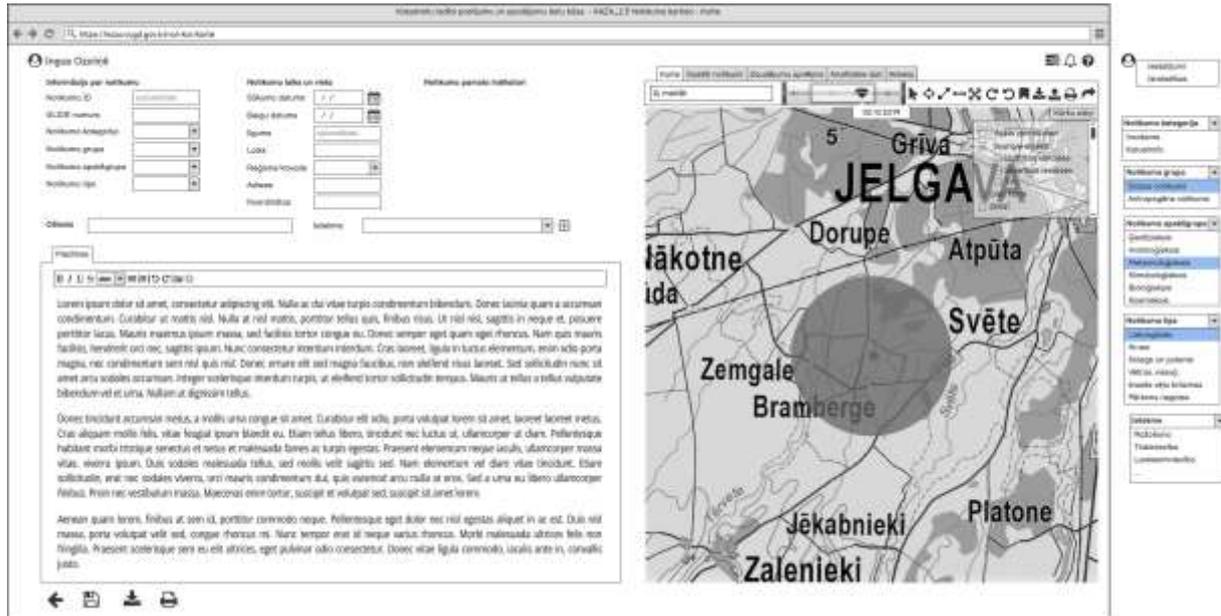
6.1.4.1 Related events

Table 23. Requirements for related event functionality

#	Claim name	Description of the requirement
FP-SS-46	Related event functionality	The system should develop functionality that allows events to create related events. Add related events functionality should be provided for all events in the System. It should be possible for the User to link any other event registered in the disaster register to a specific event, to specify their relationship (cause or effect). The system should be able to display related events in the graph according to the accompanying introduction sketch 10 KAZA Event Card - Related events.

Sketch 10. KAZA Event card - Related events
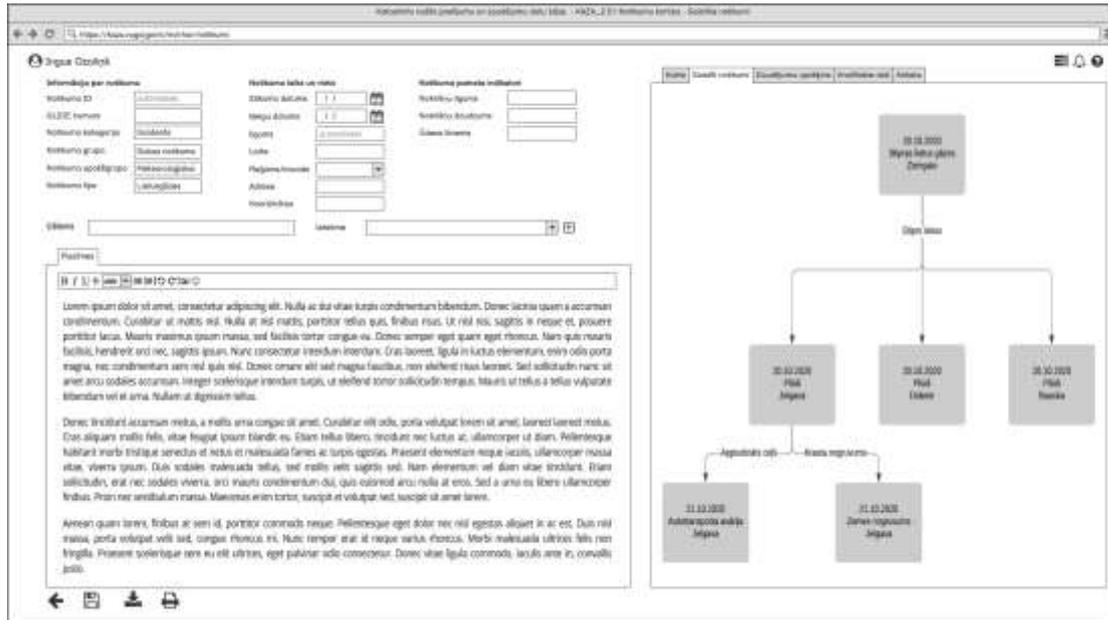
6.1.4.2 Damage calculation

Table 24. Requirements for loss calculation functionality

#	Claim name	Description of the requirement
FP-SS-47	Loss calculation functionality	The system event card interface should develop the Loss calculation functionality, which will display information on event losses, following the described usage scenario, and according to the accompanying introduction sketch 11 KAZA Nojuma karte - Loss statement. Usage scenario The system should be able to add data on losses manually, either by adding an additional line and entering available information, both automated, by adding data from sent questionnaires and external data sources. If you enter the loss data manually, the system should be able to specify the type of loss, the type of loss, the loss sector, select the value from the classifier, and enter a numerical value for the loss

		amount. The system must control the input format for this field value. The system user must be able to add and delete multiple rows in the table. If loss data is added from external data sources, it should be possible to select one or more data sources from which data should be automatically readed and data displayed in the table. It should be possible to correct this data. The system should be able to search for data using full-text search, and it should be possible to filter table data by one or more fields, close to filtered results, return to previous filtering results after new filtering, and clear filtering results. The system should be able to export data from the Loss Statement table to a MS Excel format file, print and download.

Sketch 11. KAZA Event card - Loss calculation
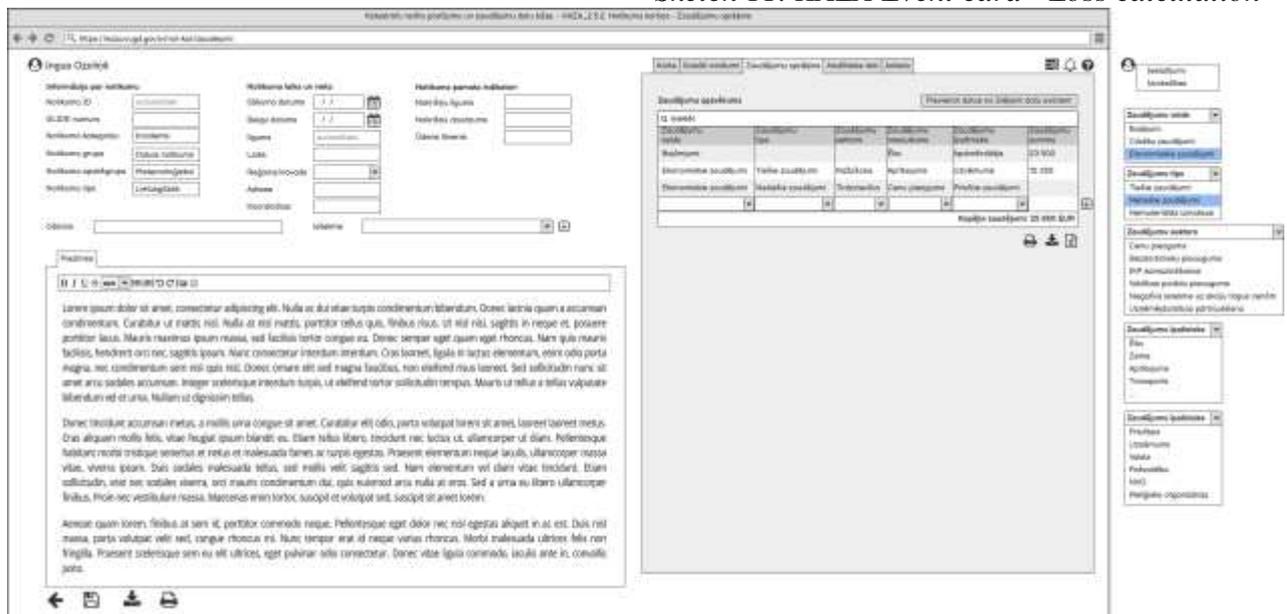
6.1.4.3   Analytical data

Table 25. Requirements for analytical data functionality

#	Claim Name	Description of the requirement
FP-SS-48	Analytical data functionality	The system event card interface should develop an analytical data functionality in which information on all data available in the System will be maintained in relation to this event, following the described usage scenario and according to the attached introduction form sketch 12 KAZA Event card - Analytical data.
		Usage scenario
		The system should be able to add data manually, both by using the file attachment functionality (requirement FP-SS-50 "Add File") and by adding data from the card. By linking data from a card, the data scope is fixated and added to the disaster card. The system should be able to add map data with an active hyperlink that leads to the Map section and displays (. shp) data on the map, while the other file formats should provide previewing (preview) functionality.
		In the case of data being added from external data sources, it should be possible to select one or more data sources from which data should be automatically readed and data displayed in the table. It should be possible to correct this data.
		The system should be able to add all file formats (e.g.. shp,. docx,. xlsl, jpeg,. png, BI objects, GIS, etc.).
		The system user must be able to add and delete multiple rows in the table.
		The system should be able to search for data using full-text search, and it should be possible to filter

		table data by one or more fields, close to filtered results, return to previous filtering results after new filtering, and clear filtering results. The system should be able to export data from the Loss Statement table to the MS Excel format file, print and download.

Sketch 12. KAZA Event card - Analytical data

6.1.4.4   Attach a file

Table 26. Requirement File Add Functionality

#	Claim name	Description of the requirement
FP-SS-49	*Pievienot datni*	The developer must develop file attachment functionality in the system. The file is added in a pop-up window called from the case profile. The functionality should be developed according to the described usage scenario and according to the accompanying introduction sketch 13 KAZA Add a file. Usage scenario

		Select the file to be added in the file connection interface and automatically fill in the date of attachment to the file without allowing it to be edited. You should be able to edit the file name. • The interface for attaching the file should include the possibility to indicate the source of the file. • The interface for attaching the file should include the possibility to provide a description of the file. The user closes the interface by pressing the return button on the file connection interface without saving the entered data and the selected file. When the user presses the save button on the file attachment interface, the data entered and the attached file are stored in the card profile under "Analytical data".

Sketch 13. KAZA Add file

6.1.5   Data warehouse

The developer must perform the establishment or adjustment jobs of the data warehouse in such a way that all the requirements described in this Chapter are realized and must cover the defined components of the marketing architecture and its description during the establishment of the data warehouse. The marketing scenario may be clarified during development.

Table 27. Data warehouse functional requirements

#	Claim Name	Description of the requirement
FP-SS-50	Data Warehouse Architecture	KAZA is planned as an aid tool for calculating disaster losses to ensure that preventive measures and post-disaster effects are assessed. KAZA will collect data from different sources, processing them centrally, providing users with the necessary information for their work. KAZA will be a data warehouse that will allow the pooling of data from all sectors [] and other sector authorities and the retrieval of data in the form of indicators, reports for policy making and monitoring, or display them on a map. KAZA users will have business intelligence solutions available to retrieve information in the necessary cuts.

This chapter describes the architecture of high-level KAZA. The architecture of KAZA consists of the following:
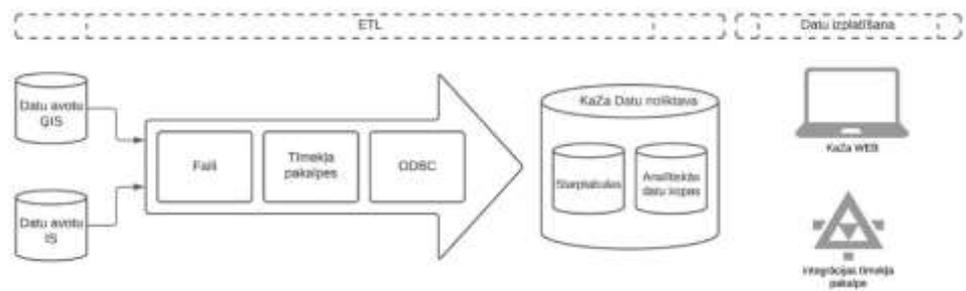
1. Data sources: institutional information systems and GIS data source systems;

2. Data retrieval, transformation and loading components (ETL) — solution components that enable data retrieval, adjustment for data analysis and presentation in a user-friendly manner;

3. Data warehouse: database management systems consisting of cross tables, fact tables and measurement tables;

4. Displaying and distributing data to external data sources – a layer of data display, provides data visualization, both in reporting form and by visualizing data to geographic data layers.

KAZA provides that data in the data warehouse will be loaded from the information systems of subordinate authorities defined by the CAKLP, as well as from external authorities of other sectors. KAZA will ensure that data is retrieved from source systems in at least the following ways:

• Data retrieval using web services (REST, SOAP, GraphQL, etc.);

• Acquisition of data in the on-line data transmission mode between THE information system DBVS;

• Files in. xlsx,. csv formats

• Data retrieval using ALL components.

The selected platform should provide a universal way of enabling users to obtain both regular reports and new dynamic reports. The most extensive reports must be scheduled to run on a schedule, so that the user should not wait for the query to be executed when it is necessary to view them. A user familiar with the structure of the analytic area – dimensions and facts – can build optimal queries without programming knowledge. Generating and executing a query at the database level is supported by the server component of the data warehouse objects.

The solution must be designed in such a way that the user does not need to install specific software on his or her computer – data analysis should take place using an Internet browser.

The ETL components will transfer these data to the interlayer tables of the data storage data from where they will be loaded in the analytical areas.

KAZA users will retrieve information from the data warehouse in the form of a report or display of an GIS using dynamic analysis capabilities (analysis of data as needed).

The Data Warehouse solution will also ensure that auditing records of user activities are stored, etc. information security measures

FP-SS-51	KAZA Data Warehouse Management	The development of a data warehouse takes place in a development environment where, after the changes are recorded, they are installed in the operating environment. In case of work on a number of non-reciprocal improvements, another development environment is created as needed
FP-SS-52	Monitoring servers and software	The developer must provide an integrated monitoring solution in all the technical components of the data warehouse so that it can identify different conditions about the performance of the data warehouse, track available and used server resources, separate the cause of load during data loading or intensive data analysis.
FP-SS-53	Data security principles	The data warehouse must provide a mechanism for the protection of personal data: all available for a person in the data warehouse is a system-generated identifier, without a personal code, without a given/surname, or other attributes that would allow the person to be identified in real life. If there is a need to obtain personally identifiable information from the result of the analysis, this can be done by a person authorised in the framework connecting to the data of the framework.
		Data retrieval should be carried out using secure data transmission channels and should be part of the IeM IC data security policies by appropriately incorporating additional security mechanisms – only part of the available data is displayed for a given user, or additional filters for a particular user to limit the selected data set.
		The authorization of KAZA users is provided using the single authorization principle, based on which the user has authorized the work station with the features of the IeM IC active directory, and the authentication process is not repeated, but the results of the previous authentication have been re-used. KAZA does not provide a user management mechanism, but rather the right to allocate volumes using the resources of the IM IC Active Directory.
FP-SS-54	Data Warehouse Technical Resources	The technical resources of the data warehouse and the amount of their use shall be co-ordinated between the Developer and the commissioning party. The technical resources of the data warehouse must be sufficient to ensure the performance of KAZA even when the number of source systems is increasing significantly or the number of users is expanding.

		The data warehouse database provides data storage in a column-based database. In view of the use of IemIC technologies, the database technology platform can be provided by using PostgreSQL, while if the Developer solution proposes to build a solution based on an existing solution, it is essential to maintain the defined functionality and scope of usage capabilities in the original definition. Sufficient performance of technical resources and the operation of the KAZA data warehouse would require at least the following computing capacity: • CPU at least 64 CPU kernels • RAM at least 256 GB • HDD at least 10 TB It is recommended that virtual servers be deployed to one physical server divided into two or more logical servers. In the case of multiple physical servers, it is necessary to ensure high network capacity (at least 1Gbit/sec). I/O speed must be at least 500 MB/sec. The data warehouse database must provide optimal indexing for small and large unique attributes, and data compression within columns.
FP-SS-55	Source data	KAZA will use the source systems defined in the context of CAKLP for industry authorities, as well as the source systems for which controllers are outside the scope of the CAKLP, to provide different context data. Since mostly source systems enable the processing of information online, it is possible to extract and charge data from the source systems in the data warehouse every day. The frequency of data retrieval depends on the updating of the data of the source system in question and the retrieval of the data should be carried out accordingly. The frequency of data retrieval prior to release must be aligned with the customer.
FP-SS-56	Data retrieval, transformation and retrieval tool (ETL)	The ETL tool must ensure that data is released from data sources according to the types of retrieval defined in the architecture, provides both the retrieval and further transformation of the full and modified data set (or incremental). A single ETL tool must be used for retrieving, transforming, and retrieving data from all source systems in the database. In specific cases, ETL should be able to execute SQL scripts.

		ETL should allow data flow to be tracked from the source system table to the database analytic area information unit.
FP-SS-57	Retrieving data from source systems	The developer must ensure automated data retrieval from the data sources described in Annex 4 and the retrieval of indicators in different dimensions according to the frequency of the data exchange of each data source, but at least annually. The developer must offer the Customer the optimal frequency and method of retrieving data for each data source, based on the technical solutions of the source system and the business logic of the source system. The developer must choose the best for each data source from the data retrieval types. Describing and co-ordinating the type of solution chosen with the commissioning party during development.
FP-SS-58	Downloading data	Developer must provide original and incremental data downloads The developer must provide a solution that complements the historical data of the data warehouse with up-to-date data, so that: • Initial loading of historical data • Load changed data according to the defined frequency of data downloads. • Deleting the status of the loaded data with a view to distinguishing the state of change The data retrieval must be organized in a breakdown by logical steps, broken down by source system, or logically one-dimensional and fact-set. When organizing data downloads in logical steps, it is necessary to define the independent and dependent stages of each other so that, in the event of an error, the loading continues for the independent stages and the loading for dependent phases is stopped. The download process should reflect the result of the download. Data downloading should provide error handling and notification, where loading cannot access the source system, data violate mandatory uniqueness conditions, or other unexpected error messages. In this case, it should be ensured that error processing would inform the parties involved (the data retrieval administrator, the main reporting users) of the occurrence and at least which data analytics cubes are not fully usable until the operation is restored.

		If the download process has failed, the Developer must be able to reload the data from where the process has stopped in the system. The data retrieval process must ensure that data quality checks are performed - data structure formats, data types, classifier values match controls against specified forms.
FP-SS-59	Data processing	In the process of data transformation, KAZA should provide for the possibility of processing received data, validating (if necessary), data acceptance errors. KAZA The developer must provide an environment for examining and validating the received data. KAZA should be able to review, change data and accept individual records, record group, or all received data. This functionality must be disablable. KAZA must ensure that the following data are processed when corrected data are received: 1. The data is received in the temporary store; 2. The fact that the data is received is recorded in the recording journal for receipt of data; 3. The data are transferred to the data warehouse; 4. The data becomes available to the end user. KAZA must ensure that the following data is processed in the event of incorrect data being received: 1. In the case of automatic data downloads, data is not accepted in the following cases: • Failed data format • Extreme figures; • No required parameters; • Incorrect data content • No identifiable/specified data source. • Failure of manual data input or automatic data download does not accept data and generates a message about the data not accepted and the reasons for not accepting data; • An error message is registered in the error message register.

FP-SS-60	Data Transformation	KAZA jānodrošina datu transformācija uz analītikas kubiem.
		Values for data source classifiers should be replaced by harmonised dimension values, creating transition tables if necessary.
		KAZA should provide for aggregation of data with a lower level of detail in data sources than defined indicators.
		KAZA should ensure the pseudo-cloning of personified data by storing KAZA data at a personified level without any personally identifiable information. It should be ensured that personified pseudo-imised data can be linked between several data sources.
		KAZA should be able from pseudo-nationalised data find the pointer for the corresponding personified data from which the pointer is created.
FP-SS-61	Data representation	The developer must provide A WEB-based application/Business intelligence tool so that the user can perform an in-depth analysis of available data using available parameters and expansions (drill-down), create a dynamic analysis that combines the dimensions and facts of the analytic area, maintain the analytical working environment so that it can continue to be used again after authorization. Each user can be assigned roles that define a set of data and how many of the data the user can see. The licenses available to users compete with each other for up to 20 users.
		The developer needs to develop a solution so that KAZA users can get and analyze indicators separately using the BI solution, and they will be grouped into reports that will be available to users in the KAZA web and/or mobile app.
		The developer must ensure that the indicators are grouped by indicator spheres and types of indicators.
		The developer must provide harmonised dimensions of the indicators (cut), which means that the dimensions of all indicators with the same name have the same meaning and attributes.
		The developer should provide as two global dimensions (1) a personal cut for all KAZA indicators that have a personal cut or whose data sources contain personified data (2) and/or geographic mapping dimensions. The personal and geographical mapping dimension needs to be matched between different data sources.

The KAZA users developed must provide a user portal that is tailored to specific user groups and their analytical needs according to the authorization level, and the application functionality should be able to use embedded in the basic system interfaces. As part of the application, the user has access to at least the following functionality:

• A web-based interactive environment where a user can easily create dynamic reports across data areas within the scope of user authorization;

• Build standard reports available to the user according to the scope of the user authorization.

• Displaying metadata for indicators to be captured;

• You should be able to retrieve any reports in at least xls, pdf, csv, word formats.

• The ability to include multiple requests and visualization types in a single report (such as a schedule with a table);

• The ability to display data across multiple tables, for example, if you include data from different areas, they are displayed on different pages.

• grouping data by selected slicers;

• To ensure that reusable groups are created that allow them to be reused in reporting;

• When selecting data selection criteria, one or more indicators and cuts must be selected

• Changing the level of detail – you can change the level of detail from higher to lower, and vice versa;

• When adding new indicators, additional indicators should be interactively added to already retrieved reports;

• When changing the selected dimensions, you should be able to interactively change the selected indicators and their cuts in the reports.

• It is necessary to ensure that at least basic calculations are carried out, such as addition, subtraction, multiplication, division

• Data aggregation should be ensured by collecting data at a higher level of detail by dimensions, their attributes, and periods.

FP-SS-62	Scope for the development of dynamic reports	The development should develop dynamic reports of all indicators listed in Annex 4, including the full dimension of the indicators in the reports and establishing a separate set of dynamic reports that implement the aggregation of data according to THE reporting needs of THE SENDAI framework (Annex 1) to the extent that data from data source systems are available. Accurate visualization and scoping of dynamic reports must be performed with the Customer prior to development.
FP-SS-63	past data	The initial data download must ensure that historical data is available for the period for which data is available. Developer KAZA needs to identify the availability of data in data sources over a specified period and agree to download data for a specified period with the customer.
FP-SS-64	Change History	When creating a data download logic, the Developer must determine which dimensions and facts changes are accumulated to develop an appropriate algorithm to organize data downloads. As a result of the analysis of facts and dimensions (indicators and cuts), the developer must determine: 1. Whose changes are accumulated as new records; 2. Which changes are replaced and a current version is created. The developer must perform an analysis and determine which facts and dimensions must reflect changes over time. The developer must note that not all source systems provide a full history of accumulated changes. In these cases, the data warehouse fully performs the change hoarding function according to the frequency of data loads.
FP-SS-65	Analytic scope principles	The developer must follow the analysis dimensions of KAZA and the aggregation of facts in logical groups in analytic areas. The facts are numeric values (indicators), counted, totaled, invoiced average, maximum, etc. Dimensions are cuts in which the facts are to be displayed or unfiltered. The nature of the dimensions and facts is to contain all the necessary information from the source systems, arranged in analytical and optimal data structures to produce standard reports, provide dynamic analysis in web-based applications. Facts KAZA would be created on a star basis, where one or more dimensions are directly linked to the fact, while territorial and time dimensions can be

| | | used in the context of the GIS. Performance considerations for KAZA must be followed when creating a star scheme. Analytic areas ensure that changes are stored in both facts and dimension attributes. In phase I of the introduction of KAZA, new data sources will be deployed in the data warehouse, the dimensions should be matched from a number of source systems. Thus, the architecture of the analytical functionality may need to be adapted, as well as data matching algorithms (for example, so that the same data subject does not back up in more than one source system). |

6.2   Survey functionality

The developer needs to develop survey functionality, which should provide an efficient way to identify and collect information from respondents in survey form and display the results in the analytical or geographic data display tools of the KAZA system. This functionality is needed to ensure that loss size can be identified.

Table 28. Requirements for survey functionality

#	Claim name	Description of the requirement
FP-AF-1	Survey functionality realized	The survey functionality should be developed as a new independent component of KAZA, which saves the data in a separate database. For questionnaires requiring respondents' authentication, the Latvija.lv authentication mechanism shall be used. KAZA Questionnaire management functionality must use the following System components: • System Audit Log; • Reporting service; • System public portal (questionnaire functionality); • Authenticated questionnaires - Single login module (ALL infrastructure) KAZA Questionnaire functionality must ensure that questionnaires are managed and distributed to

		target groups using the web browser as a user interface.
FP-AF-2	Questionnaire data functionality	The system should develop the Anketa datu functionality of the event card interface, following the described usage scenario and according to the accompanying introductory form sketch KAZA_2 .5 Event card - Anketa - Anketa dati. Usage scenario 1.1.1.1 A system user may invoke the functionality of creating a new questionnaire in the Questionnaire Data functionality interface (Requirement FP-AF-6 "Create a new questionnaire/Anketa card") by pressing the "Create a new questionnaire" button. If the user does not have permission to use Survey functionality, it must not be available for calling. The system should be able to display a list of questionnaires in the "Questionnaire Details" section of the event card interface (Requirement FP-AF-5 "Questionnaire List").
FP-AF-3	Answer functionality	The system must develop the answer functionality of the event card interface, following the described usage scenario and according to the accompanying introduction sketch KAZA_2 .5 .6 Event card - Anketa - Atbildes. Usage scenario

		The system user must display a list of questionnaire response results in the Answer Interface. The list must contain at least the following columns: • Cadastre number; • Owner's details; • Amount of losses. The list must be sorted by columns in both ascending and descending order. The appearance and additional columns of the list should be aligned with the Customers during the framework process. The list page should allow you to open the questionnaire and perform context searching. The system should enable the user to open published questionnaires for card viewing by pressing the data in the list, and it should be possible to add this data to the injury observations table (Requirement FP-SS-48 "Loss Statement Data").
FP-AF-4	Questionnaire management	The system should develop functionality that enables Survey functionality to perform the following actions according to the user's rights: • build; • Repair; • delete; • duplicate a user-accessible questionnaire; • publish a questionnaire available to the user;

		• search and select in the questionnaire list.
FP-AF-5	Questionnaire List	The questionnaire functionality should provide a list of questionnaires in which the user should display questionnaires created within the event in a structured way. The list must contain at least the following columns: • Name; • Status (Sent/Unsent) • Number of respondents; • The extent of losses. The list must be sorted by columns in both ascending and descending order. The appearance and additional columns of the list should be aligned with the Customers during the framework process. The list page must provide the user with the option to open the questionnaire and perform context searches.
FP-AF-6	Create a new questionnaire/Anketa card	The system should develop the functionality of creating a new Anketa (Anketa karte). The functionality should be developed according to the described usage scenario and according to the accompanying introduction sketch KAZA_2 .6 Anketa karte. Usage scenario The system user with the right to create and correct the questionnaire in the Anketa Card interface.

		• The questionnaire card interface should provide information about the name, type (authorized, unauthorized) and status of the questionnaire. • The questionnaire card interface should provide information about the time period for completing the questionnaire. • The questionnaire card interface should allow you to create the contents of the questionnaire by defining the question type and sorting it in the user's preferred order, as well as adding the injury calculation table using the specific functionality. • The questionnaire card interface should allow you to highlight the survey target group on the map.
FP-AF-7	User Authentication	The system needs to develop KAZA User Authentication for Questionnaire functionality using the single login mechanism.
FP-AF-8	User authorization	The system should develop a mechanism to ensure that KAZA Questionnaire functionality acquires user roles in the System.
FP-AF-9	User Roles	In the system, you must design survey functionality so that the user has only the functionality provided by the roles assigned to him. User Rights Management should use IeM IC AD to create the necessary roles for the Developer. The developer must at least separate the following roles: • Preparation and publication of questionnaires: Allows the user to create, edit, delete self-formed questionnaires that have not been published. Gives the right to access questionnaires created by other users, copy questionnaires, and the right to

		publish a questionnaire available to themselves, sending it to target groups, viewing the results of their publications and revoking the publication of questionnaires. • Administrative management: Includes all rights of your author and publisher, and allows you to edit and view other User questionnaires, edit questionnaires that have already been published, and see the results of all publications.
FP-AF-10	Question Groups	The system should make it possible to group questions into groups in questionnaires. An introductory text and an explanatory statement may be provided for the group of questions.
FP-AF-11	Introduction of the questionnaire	The system should develop functionality that enables the user to add an input text to the questionnaire. The introductory text of the questionnaire The user should be able to edit using the "what you see is what you get" expanded text input control, which allows you to change the visual presentation of the text and add pictures to the text.
FP-AF-12	Related issues and question groups	Survey functionality should allow the user to hide or display question groups or individual questions based on answers from previous logical questions.
FP-AF-13	Governance of questions and question groups	The survey functionality should enable you to manage questions and question groups (add/edit/delete). The system should ensure that the questionnaire can be backed up in the form of a questionnaire for the preparation of standard questions.

FP-AF-14	Question text	The survey functionality must enable the User to add question text.
FP-AF-15	Mandatory issues	The survey functionality should enable the user to determine that the answer to the question is mandatory for any type of question.
FP-AF-16	Types of questions	The developer must provide the User with the option to add at least the following types of questions to the questionnaires. The developer shall co-ordinate with the Passenger in addition to the types of matters defined by the Passenger, which are not included in this Chapter, during the framework.
FP-AF-17	Logical selection using the check box	The survey functionality must ensure that a logical choice question can be added to the questionnaire, to which the respondent answers by tightening or not clicking the check box (angl. cur. "checkbox").
FP-AF-18	Logical choice when answering using radio buttons	The survey functionality must ensure that you can add a logical choice question to the questionnaire to which the respondent answers by selecting a response by pressing one of the radio buttons. The menu must contain one or more user-defined values. When defining a question, the user should be able to change the response sequence.
FP-AF-19	Logical choice when answering using the drop-out menu	The survey functionality must ensure that you can add a logical choice question to the questionnaire to which the respondent answers from the falling menu.

		The menu must contain one or more user-defined values. When defining a question, the user should be able to change the response sequence.
FP-AF-20	Questions with multiple answers	The survey functionality must ensure that the user can create questions that have multiple user-specified answers. The user must be able to change the sequence of responses. A respondent must be able to mark any or more responses when answering a question. If a question is required, the respondent must mark at least one of the answers.
FP-AF-21	Assessment issues	The survey functionality must ensure that the user has the ability to create rating questions within the user-defined limits with two or more answers.
FP-AF-22	Numerical issues	The survey functionality must ensure that the user can create questions to which the respondent must answer by entering a number or choosing a number from a number scale within or without the limits specified by the user.
FP-AF-23	Date Questions	The survey functionality must ensure that the user can create a question where the respondent must enter a date from the date selection within or without the user-defined limits.
FP-AF-24	Time-period issues	The survey functionality must ensure that the user can create questions to which the respondent will answer by specifying the starting and ending dates of the time period within or without the user-defined limits.
FP-AF-25	Time issues	The survey functionality must ensure that the user can create questions to which the respondent will

		respond by specifying the time consumption. The time consumption must be indicated at least: • years; • months; • weeks; • days; • hours; • in minutes; • in seconds. The user must be able to specify in any combination of the above, in which case the System should provide the respondent with a field for administering each unit of measure separately.
FP-AF-26	Free text issues	The survey functionality must ensure that the user can create questions that the respondent will answer when entering the text in a free form. The user must be able to specify the length of the text to be entered when creating the question.
FP-AF-27	Check box matrix to be selected	The survey functionality must ensure that the User can create issues that will contain the check box matrix to be selected.
FP-AF-28	Radio Button Matrix	The survey functionality must ensure that the User can create issues that will contain the radio button matrix.
FP-AF-29	Filling restrictions for a questionnaire	The survey functionality must ensure that the respondent can complete the questionnaire once.
FP-AF-30	Questionnaire Status	The survey functionality must enable the user to specify at least the following questionnaire statuses: • Preparation; • published;

		• Closed;
		• Unexpected.
		The developer must coordinate with the additional possible questionnaire status of the customers and the necessary processing of these status during the development of the System.
FP-AF-31	Message after completing the questionnaire	The survey functionality must ensure that the user can define a text message that will appear to the respondent after completing the questionnaire.
FP-AF-32	Notification of the end of the questionnaire	The survey functionality must ensure that the user can define a text message that will appear to the respondent if the questionnaire is attempted to be filled out after the specified fill-in time is completed.
FP-AF-33	Manage published questionnaires	The survey functionality should enable you to perform the following actions, depending on the user's rights: • publish a questionnaire; • stop publishing the questionnaire; • access the results of the questionnaire.
FP-AF-34	List of published questionnaires	The survey functionality must ensure that the System Administrator has a list of all available published questionnaires available in the system. The list must contain at least the following columns: • Type; • Name; • Date of publication; • expiration date of publication; • Number of recipients of the questionnaire; • Number of responses from respondents.

		The appearance and columns of the list should be aligned with the Contractor during the framework process. The list page must provide the user with the option: • Open the published questionnaire; • To perform a search and selection in the list by aligning the criteria with the customer during the system; Sort the list by the specified column in ascending or descending order.
FP-AF-35	Published questionnaire	The survey functionality must enable the System Administrator to open a published questionnaire that contains the following options: • Stop filling out the questionnaire. • Export filling results XLSX, CSV, or XML; • Get questionnaire filling statistics - the required statistics must be aligned with the customer during the system process; • The possibility of extending the time of completing the questionnaire; Get a report on the sending results from the Notification Service.
FP-AF-36	Publishing questionnaires	The survey functionality should enable users with the right to publish the created questionnaire using the Publication Wizard. When publishing a questionnaire, the user must be able to specify: • the time period for completing the questionnaire, specifying the dates from/to; • The invitation text that appears in the accompanying letter to the respondent.

FP-AF-37	Save questionnaire replies	The survey functionality should ensure that the data entered in the questionnaires is stored in the "Questionnaires-Atbildes" section of the relevant event card interface (introductory form sketch KAZA_2 .5 .6 Event card - Anketa - answers).
FP-AF-38	Answer Validation	The survey functionality must ensure that respondent responses are validated before they are saved, at least by the following validation: • Checking whether mandatory issues have been completed; • Check that the answer you entered is within the limits specified by the user (text length, minimum/maximum value limits for the numeric field, eligibility for date fields for the specified time period). If the respondent's response-dependent fields are hidden, the answers for these fields should not be taken into account and validation should not be performed.
FP-AF-39	Hide questions or question groups	The survey functionality must ensure that if the user has indicated that question groups or individual questions should only be displayed with specific user answers, then if the respondent changes the answer that causes you to hide the questions, you must delete the previous answers for the hidden fields.
FP-AF-40	Revocation of the publication of the questionnaire	The developer must develop the Survey functionality, which will enable the user to recall its published questionnaire by specifying a message to be sent to all respondents to whom the questionnaire was sent for completion. If the user withdraws the publication of the questionnaire,

		the module must delete all responses submitted previously by the respondents.
FP-AF-41	User activity audit	Survey functionality must perform an audit of user activities using Audit.
FP-AF-42	Add a file	The survey functionality should enable the respondent to upload one or more files to the questionnaire interface when completing the questionnaire. The size of one file cannot be greater than 5 MB. It should be possible to find the attached files in the "Questionnaires-Answers" section of the interface of the published questionnaire card (introductory form sketch 14 KAZA Event card - Anketa - answers).

Sketch 14. KAZA_ Event card- Replies questionnaire
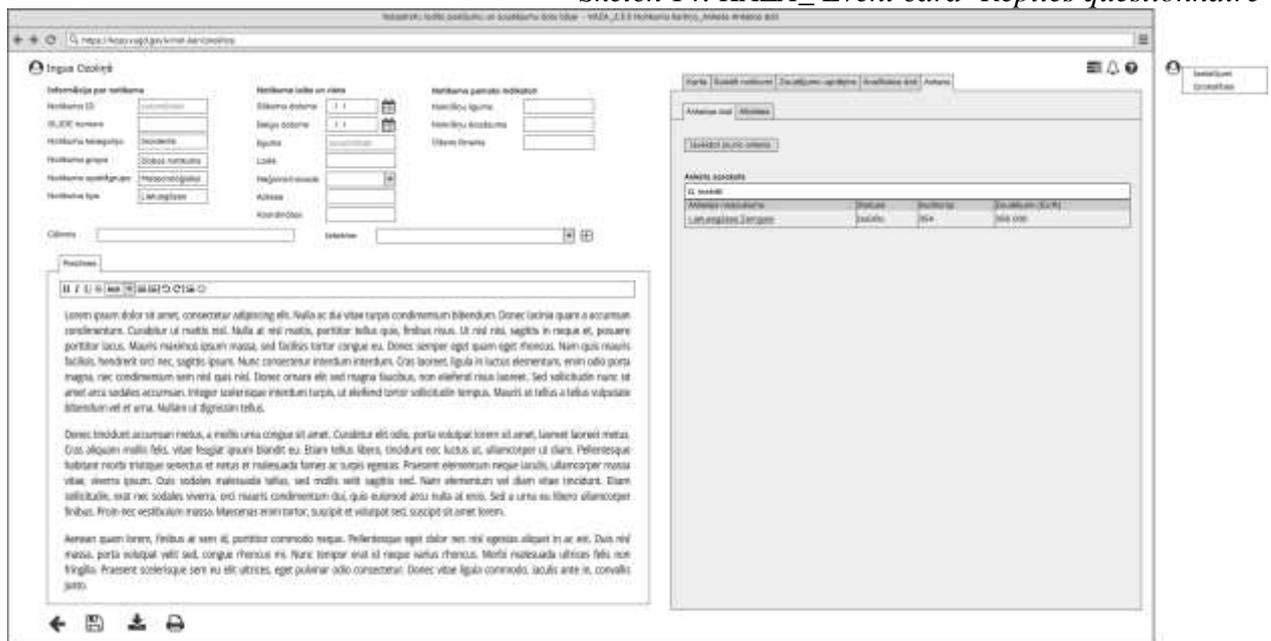
Sketch 1. KAZA Event card_ Replies questionnaire
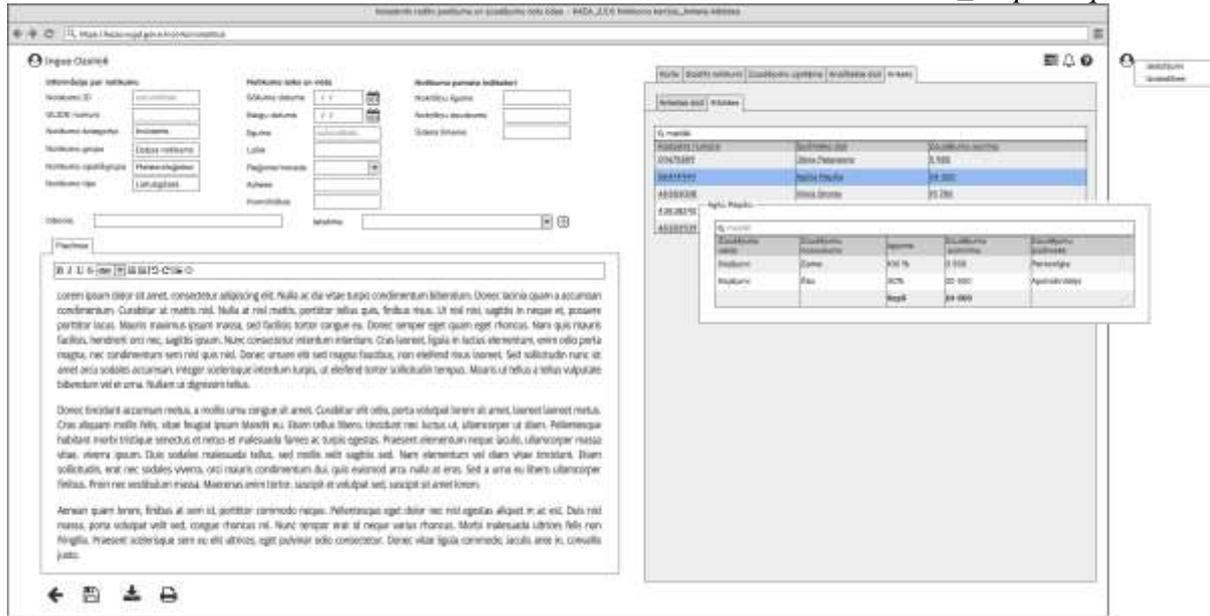
Sketch 16. KAZA_ Replies questionnaire

6.3   Message functionality

This chapter describes the requirements for the KAZA Notification Service that the Developer must implement within the Project. If necessary, during the development of the specific types of disposal shall be co-ordinated with the commissioning party.

KAZA notification service should be developed as a component independent of KAZA, which will ensure that notifications are sent to an official e-address, e-mail, text message, and via another, configurable communication channel.

Because the KAZA notification service is designed as an independent component of KAZA, it will be possible to use it not only to send KAZA messages, but also to send other messages from the Department of Commerce.

Others WILL contact the Notification Service via web services.

Figure 7. Reporting Service Action Conceptual Diagram
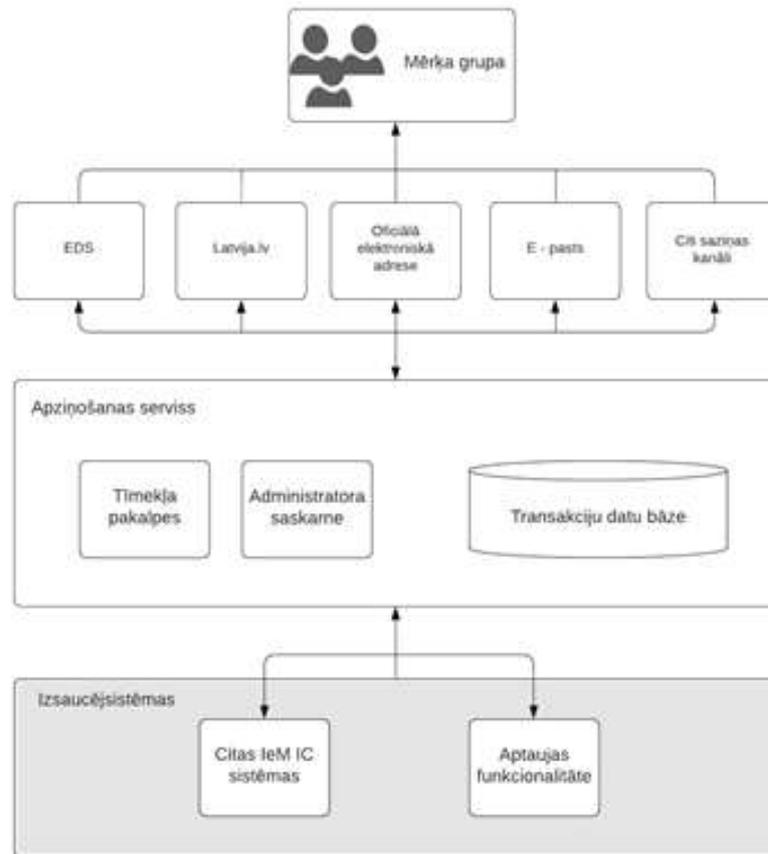
Table 29. Notification Service Requirements

#	Claim Name	Description of the requirement
FP-AS-1	Notification Service Activity Principle	The service must be used using web services when called, sending messages through the specified notification channels, storing the result in the transaction database. The solutions at the disposal of the customer may be used to ensure the operation of the notification service. In this case, during the framework process, the Developer must assess the technical capabilities of the existing IeM IC notification service and

		coordinate with the architectural approach of the Passenger Solution and the reusable components that result in meeting the defined functional and non-functional requirements.
FP-AS-2	Notification channels	The notification service must ensure that messages are sent through at least the following channels: 1. ALL Notification Service 2. Electronic declaration system (EDS); 3. Customer's workplace - https://epakalpojumi.latvija.lv/Help/index.html?kdv_about.htm (Latvija.lv); 4. Official electronic address (e-address); 5. S IC Email Service; Other communication channels that enable messages to be sent according to the solution described.
FP-AS-3	Authorization mechanism	The developer must provide for an authorization mechanism in the notification service for external systems that use it, ensuring that only systems authorized by the IM IC can use the Notification Service. The system authorization must use security certificates. The communication channels available for each authorized system must be configured separately.
FP-AS-4	Transaction database	The developer must create an internal transaction journal for the notification service. The transaction log solution must contain at least the following data: • Transaction Identifier; • The system that initiated the transaction; • Recipient List; • Send status for each recipient.
FP-AS-5	Retrieving a Transaction List	The developer Reporting Service must create a web service that enables the calling system to receive transaction status. The call must contain a transaction identifier.

		The service must be designed in such a way that the calling system can only obtain status for transactions created from this system. The transaction status must contain information about the status of the sending for each recipient included in the distribution list.
FP-AS-6	Retrieve transaction status	The developer must create a web service that enables the calling system to receive transaction status. The call must contain a transaction identifier.
		The service must be designed in such a way that the calling system can only obtain status for transactions created from this system. The transaction status must contain information about the status of the sending for each recipient included in the distribution list.
		The developer must develop at least the following statuses:
		• in the process of sending;
		• Sent;
		• Open
		• Not sent because there is no consent from the recipient;
		• Error sending (with detailed error message).
		If the specified communication channel technology allows this, the message must include a hidden link to the external resource. The link is intended to enable the user to find out if the recipient has opened the message. Transaction status functionality The developer must coordinate with the customer during the system process.
FP-AS-7	Breaking up transactions	The developer must create a web service that would allow the calling system to stop executing an initiated transaction.
FP-AS-8	Reporting Service Management	The developer must develop a user interface where the User can manage the notification service with the relevant rights.
		The user must be able to perform at least the following:
		• Add, delete, configure communication channels
		• Add calling systems;

		• Configure the communication channels available for calling systems (separately for each calling system); • Duration and size of storage of files to be merged. Use KAZA for user authentication and authorization. User actions must be audited using Audit. The developer must coordinate the user interfaces with the customer during the system.
FP-AS-9	Configure communication channels	The notification service must be able to configure new communication channels that will use web services without making changes to the source code. At least the following types of communication channels must be configured in the notification service: • One or more SMTP servers • ALL notification service; • Electronic declaration system (EDS); • Customer's workplace - https://epakalpojumi.latvija.lv/Help/index.html?kdv_about.htm (Latvija.lv); • Official electronic address (e-address). When configuring communication channels, you must be able to specify the time when messages are sent through these channels.
FP-AS-10	Receiving messages and recipients from other ITEMS	The developer must develop a notification service that will be able to receive messages, the notification channel identifier and the distribution list from other IeM IC IS using web services. When you receive a message for sending, you must automatically register the sending transaction and return its identifier to the calling system.

FP-AS-11	Secure connection	The notification service must be able to secure connection to communication channels using certificates, channel encryption and other security mechanisms.
FP-AS-12	Send e-mail messages	The developer must develop a service functionality that will enable the Notification Service to perform e-mail messages using one of the defined e-mail servers by storing the results in the transaction database. If more than one e-mail server is available for the calling system, you must divide the outgoing e-mail flow between all e-mail servers evenly. When implementing the Notification Service, the developer must perform a service configuration by connecting the e-mail servers specified by the customer.
FP-AS-13	Sending official e-address messages	The developer must develop a service functionality that will allow the notification service to send messages to the official e-address while storing the results in the transaction database. The service request must be a parameter in which the official e-address or sub-address of the sending agent's base may be provided, as required, to the recipient of the message as the sending of the message. Sending to a natural person: • The service must verify that the person has the official e-address using the personal code. • If the person does not have an active official e-address, it must be stored in the transaction database;

		• If the person has an active official e-address, you must send the message by storing the result in the transaction database. Sending to State or local government authorities, legal persons and other organisations: • The service must send the message to the institution using the received identifier of the institution's e-address, saving the result in the transaction database. The developer must ensure integration with the e-address solutions according to the e-address documentation: https://viss.gov.lv/lv/Informacijai/Dokumentacija/Vadlinijas/e-address
FP-AS-14	Sending messages with ALL Notifications Service	The developer must develop a service functionality that will enable the Notification Service TO use ALL Notifications Service as one of the notification channels. The notification service must be designed in such a way that it can use the following COMMUNICATION channels provided by the Notification Service: • Notification; • E-mail. The developer must ensure integration with THE ENTIRE Notifications Service according TO ALL Notifications Service documentation: https://viss.gov.lv/lv/Informacijai/Dokumentacija/Koplietosanas_component/Elektronisco_Document_kratuve.

FP-AS-15	Sending a message	The notification service must ensure that the message is sent to the recipients through the specified communication channel. The message must be sent immediately when it is received, if it is specified in the request, in other cases the message must be sent within the time specified in the system settings. The notification service must send messages through the notification channels asynchronously if provided by the communication channel.

7   Non-functional requirements

7.1   Performance requirements

Table 30. Performance Requirements

#	Claim Name	Description of the requirement
NP-1	Ensuring accessibility	The availability of the system shall be not less than 99,5% (in 24 * 7 mode), with the adoption of the month as the reference point (excluding the intended interruptions agreed with the Customers, emergency situation-force majeure). During each quarter, the permissible breaks shall not exceed 11 (eleven) hours, the duration of each individual interruption shall not exceed 4 (four) hours.
NP-2	Operating speed	The operating speed of the system must be at least the following, at network speed up to 5 Mbps: 1. connecting to the System, sending an application for up to 2 seconds; Open form 2, save for up to 2 seconds; 3. Retrieving a predefined report - in the case of a simple report (no more than three analyte parameters) - up to 8 seconds; Upload and download a file size of up to 10 MB for up to 5 seconds. If the file size is greater than 10 MB, then you can increase the processing time.
NP-3	Number of simultaneous requests	The system must provide the operating speed defined in the "Operational Speed" requirement at least 100 (hundred) of simultaneous requests per second.

7.2   System interfaces

Table 31 Requirements for system interfaces

#	Claim Name	Description of the requirement
NP-4	Requirements for design and user interface	The design and user interface of the applications developed by the developer shall meet the following requirements:

		• User interface should be convenient and ergonomic (e.g. lack of horizontal scroll bars (for a computer with a resolution above 1280 x 800), use as few vertical and horizontal scroll bars as possible, transparent input field layout, etc.). • The language used in the interface (names, phrases) must be understandable to the users. • The size of the input fields must correspond to the amount (length) of the data to be entered, i.e. the input field is not too large or small. • As part of the system, the same terms and markings must be used to describe the same thing on different screens. • Standard system messages should be in a language that is easily understood by users, explain precisely the nature of the problems that have occurred and offer a way forward. • System Dialogues should contain only the amount of information that is essential for operating the System and performing the functions of the user. • Navigation between screenforms - The system must be designed so that the user does not have to remember the information when switching from one screen to another. • In the system, the data fields must contain comments - visual indicators that explanatory information is available to complete the data field. This information must be modified, updated, and supplemented in the administrator section. • The system should provide feedback to the user by informing him as much as possible of the activities under the System.

		• The user interface should be designed using adaptive design techniques that ensure that the user interface is available on mobile devices (tablets and smartphones). The screen width must be aligned with the customer during the system. • The design of the system must be user-oriented, so that each required action can be understood and quickly executed. • Regulation No 445 of the Cabinet of Ministers of 14 July 2020, Procedures for the Offering of Information by Institutions on the Internet, paragraph 22. https://likumi.lv/ta/id/316109/redakcijas-datums/2020/07/18#p22. • Regulation No 445 of the Cabinet of Ministers of 14 July 2020, Procedures for the Offering of Information by Institutions on the Internet, paragraph 11. https://likumi.lv/ta/id/316109/redakcijas-datums/2020/07/18#p11 - comply with the common visual identity of the national regulatory authorities and the requirements of the national symbols and the regulatory enactments governing their use. • Cabinet Regulation No. 445 of 14 July 2020, Procedures for the Offering of Information by Institutions on the Internet, paragraph 13 https://likumi.lv/ta/id/316109/redakcijas-datums/2020/07/18#p13.
NP-5	System language	All communications of the System must be in Latvian.
NP-6	Visual highlighting of required fields	The system should ensure visual highlighting of the fields to be filled in and clearly indicate a problem, including exit if you are trying to save incomplete data.

NP-7	Size of texts in data entry fields and dialogs	The text size in the System Data Entry fields and Dialogues must be easily legible. The font size must not be visual less than 10 letters (tenth) in printed text.
NP-8	Time of operation	If the application operation that holds the user's work takes longer than 3 (three) seconds, the system must display an appropriate notification or other visual notification (such as a sandwatch), including search functionality.
NP-9	Canceling	As far as possible, each System function should be able to cancel its execution by discontinuing the intended operation without making changes to the database (for example, the availability of the "Cancel" button on all tracking, editing and deleting screen) (the requirement does not apply to the situation where the transaction was initiated, for example, by activating the "Save" button). The possibility of cancelling operations must be clearly visible and easily accessible to the user. The system should alert the user that the data entered will not be stored and ask if you really want to stop without saving the data.
NP-10	Internet browser support	The system should support the latest two versions of the following browsers, including mobile versions of the browsers: • Microsoft Internet Explorer • Microsoft Edge • Mozilla Firefox • Opera; • Apple Safari • Google Chrome.
NP-11	Interface ergonomics	System interfaces should be developed in accordance with the principles of best practice for user interface

		ergonomics, involving an application ergonomics specialist.
NP-12	Announcement of planned unavailability of the System	Functionality needs to be developed to allow users, both public and internal, to show a message about the planned unavailability of the system. The notification administration is in the administrator section.

7.3   System security

Table 31. System Safety Requirements

#	Claim Name	Description of the requirement
NP-13	System Safety Legal Framework	The security of the system shall be ensured in accordance with the safety standards of the Republic of Latvia and international information systems and at least the following regulatory enactments: • Procedures for ensuring compliance of information and communication technology systems with minimum safety requirements in BOM Regulation No 442 of 28 July 2015; • Regulation No 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data.
NP-14	Development security rules	The functionality of the system shall be developed and avoidable, taking into account at least the following standards and guidelines: • THE "A Guide to Building Secure Web Applications and Web Services" or equivalent developed BY THE OWASP; • THE "Testing Guide" or equivalent developed BY THE OWASP; • ISO/IEC 27001 "Information security management systems — Requirements" and ISO/IEC 27002 "Code of practice for information security management" or

		equivalent;• W3C good practices in the development or equivalent of safe web applications; regulatory enactments of the Republic of Latvia, which apply to State information systems and other information and communication technology systems where the State authority is the system holder and/or controller. The developer must comply with Cabinet Regulation No. 442 of 28 July 2015, Procedures for ensuring compliance of information and communication technology systems with minimum security requirements. According to Paragraph 23 of those Regulations, the Treaty contains a prohibition to restrict the rights specified in Section 29, Paragraph one of the Copyright Law.
NP-15	System security control non-availability	Users cannot access information stored in the System by circumventing security control programs, such as operating systems, file system, or database levels.
NP-16	Encrypting information on a network	The system should ensure that information is encrypted by transmitting it to the public network (excluding information that is publicly available). The TLS 1.2 solution should be used to encrypt information. The developer must define and coordinate with the customer during the requirement analysis the algorithm that will be used in data transmission encryption.
NP-17	Audit of System Activities	The system should carry out auditing of the processes provided by the System available to users.
NP-18	Checking access rights	The system should ensure that, prior to each access to an individual object (function) for which access control has been established, the verification of access rights will be carried out. Access is allowed if the

#	Claim name	Description of the requirement
		verification of access rights was successful and the user has the right to access the object (function) at the appropriate moment.
NP-19	Checking system files against viruses	All files that are not created during the operation of the System must be subjected to an antivirus check. Antivirus testing should also be performed for all files uploaded to the system. Antivirus testing as a background process should be performed on all files stored in the System, providing checks against the latest virus definitions at least once a day. Potential actions in the event of the detection of infected files should be specified during the framework.
NP-20	Using the HTTPS protocol	The developer must provide a web server configuration so that services intended for a limited range of users (registered and authenticated users) are operated only through an encrypted data transmission channel (using the HTTPS protocol).

7.4 Training

Table 32. Training requirements

#	Claim name	Description of the requirement
NP-21	User training	When submitting the deliverables, the developer must develop and coordinate with the customer and supply the user training materials. The training materials shall be submitted for review and acceptance by the Customers at least 5 (five) working days prior to the training process. Training materials should include illustrations (pictures, tables, diagrams, video, etc.) where this is necessary for explaining the text and visualizing the written information. The development of video-based training materials should be ensured.

		Training should be performed for each System Component. The developer shall ensure the training of the customer's employees at least 8 (eight) hours, not less than 4 (four) employees, by co-ordinating the training programme and topics with the Passenger. The training provider must reproduce paper-based training materials at his or her expense and ensure that both paper and electronic document formats are available to listeners. In addition, the training materials must be supplied in an electronically editable MS Power Point format. When planning training, provision should be made for the customer's users to be trained for all functionality. The developer must take into account that training must not interfere with the day-to-day work of the customer. Training should take place in Riga (premises and training environments are provided by the Developer, including the necessary computers, projectors, connections to the global web and other resources needed to provide training). According to the mutual agreement between the customer and the developer, the site may be outside of Riga or updated. Training shall be provided with the Passenger in agreed times during working days. All training should take place in Latvian.
NP-22	System Administrators Training	The developer must perform (one) daily training administrators at least 8 (eight) academic hours (not including breaks) — at least 2 (two) persons. Training should take place in Riga (premises and training environments are provided by the commissioning party, including the necessary

		computers, projectors, connections to the global web and other resources necessary to provide training). Trained administrators must be able to administer and configure the system independently for daily duties. All training should take place in Latvian. Training shall be provided with the Customer in agreed times, working days from 8:30 to 17:00.

7.5   Permissibility

Table 33. Nutrition requirements

#	Claim Name	Description of the requirement
NP-23	Nutrition requirements	System error prevention and enhancement development must be capable of being carried out by the Developer or any other professional software development company experienced in the development framework and products used.

8   Requirements for project management

The developer must perform the performance of System Development tasks according to capability development ("Agile") the methodology adapted to the performance of the specific procurement contract as described in this Chapter.

8.1   General requirements for project management

Table 34. General requirements for project management

#	Claim Name	Description of the requirement
PP-1	Project Library	The content of the project library shall be maintained by the Developer. As a project library, the electronic co-operation environment at the disposal of the customer is used, where the documentation is stored during the development of the System, while the final documentation deliverables that are harmonised in the Project Cooperation environment are placed in the solution of the Customer's Document Library, which will be agreed prior to the commencement. The project library shall be accessible to the representatives of the customer and the representatives of the third party indicated by the commissioning party and shall: 1. The final version of the Project Management Documentation — Project Management Plan, minutes of meetings and interviews, project progress reports, etc., should be deployed; 2. Ensure the availability of the final version of the current documentation required for accepting the deliverables, accepting, using, administering and modifying the System (including drafts of deliverables submitted for harmonisation); Other Project Documentation Deliverables must be deployed.

		At the beginning of the project, the performer shall ensure at least the supply of the following documentation:
		• Project management plan (including project timeline, project risk management plan, initial requirements for System Architecture);
		• System development plan (backlog).
		Within the framework of the contract, after each sprint, the performer shall ensure that at least the following documentation is supplied:
		• Sprinta plan and information on system functionality developed, delivered and modified within the sprint;
		• Installation instructions for System functionality developed, delivered and modified in the Customer's environment;
		• Information on testing of the functionality of the system developed, delivered and modified within the sprint on the Artist side, which includes a description of the amount of testing, documented results of the Regression and progression tests (including information on the timing of the tester performing each of the test scenarios, the build (build) version that has been performed successfully and failed in the test scenario, a list of known defects;
		• Safety and performance test result report;
		• Project progress report (sprint demonstration protocol).
		Within the framework of the contract, with each reauthorization, the transfer of a separate System Component, as well as after making any changes during the warranty, the performer shall prepare and

		hand over at least the following Deliverables to the Customer:
		• Improved description of the system;
		• the Administrator's Manual [V1], supplementing its content with a description of the changes made;
		• the User Manual, supplementing its content with a description of the changes made;
		• Designed System and Ready Software Adjustment Source, Execute Code and Configuration Files (Scripts);
		• a description of the deliverable, including an inventory and description of the delivered items.
		For each layer of the system (Round I and II) and the system implemented by the Express Express Assembly, the performer must prepare and transfer to the Customer at least the following deliverables:
		• Software Requirements Specification (PPS);
		• a description of the design of the software (PPA);
		• Description of the architecture of the system;
		• System testing plan;
		• Specification of examples of system testing;
		• System test summary report and test protocols;
		• Administrator's Manual; [V2]
		• Training materials (including user guide, video guide rollers and interactive training materials);
		• Recommendations for the continuity and renewal of the system; [VR3]
		• System security documentation in conformity with Cabinet Regulation No. 442 of 28 July 2015, Procedures for ensuring compliance of information

		and communication technology systems with minimum safety requirements. Any other documentation and information that significantly affects the system or its operational process at the discretion of the performer
PP-2	Project cooperation environment	The project collaboration environment is an electronic collaborative environment provided by the developer, using application lifecycle management tools that can be integrated with the application register or application management tool. The developer must provide a configuration for his or her application register to ensure that the Project data is synchronized (work items, their interlinks, change history, etc.). Data to be maintained in the project co-operation environment) on the Passenger project in the co-operation environment. The developer must ensure that the following co-operation is carried out through the Project Cooperation Environment: • Plan and maintain Contract Completion Graphics, create work items and their hierarchies; • Track Contract Performance Jobs items: requirements, user stories, job tasks, technical solutions, tests, and a history of interlinks between these work items and full changes to each work item; • Ensure the storage of interview records, demonstration materials and other working documents with version control and all other necessary storage and management of project information.

		The commissioning party and the developer shall use the Project Collaboration Environment for information exchange to register problems, errors, additions or any other Service Application (hereinafter - Application) and track the execution process. The developer may maintain an application register on his or her side, which must appear in the list of tools supported by the Synchronization Module provided by the customer: At the request of the customer, the developer shall ensure that the configuration changes of his or her application register are modified by ensuring interoperability between the application registers. The commissioning party is entitled to change the Project co-operation environment during the Project, in agreement with the Developer. In such a case, the developer should ensure that data is exchanged with the new Project Cooperation Environment, free of charge, once during the implementation of the Project. If the commissioning party changes the project co-operation environment more than once, then starting with the second time, the developer is entitled to request an additional fee for ensuring environmental integration.
PP-3	Project language	The developer must also ensure that all communication and documentation developed or developed within the framework of the Project, including The system is in Latvian during warranty and maintenance.

PP-4	Specify the status of the physical controller for the Developer	Taking into account the fact that during the project the developer will be able to access personal data collected by the customer, the developer is considered to be the controller of personal data in the context of the Law on the Processing of Natural Personal Data of the Republic of Latvia and Regulation 2016/679 of the European Parliament and of the Council of Europe on the protection of individuals with regard to the processing of personal data and the free movement of such data 'in the context. The developer is bound by BOM regulation 442 "Procedures for ensuring compliance of information and communication technology systems with minimum security requirements". According to the above, the Terms of Service Enforcement Agreement will include rules that arise from the requirements defined in the Regulation for personal data controllers and the Developer to be enforceable throughout the service. During the performance of the contract, the commissioning party will have the right to carry out checks on the enforcement of the relevant norms on the part of the service provider.

8.2   Project management

Table 35. Requirements for project management

#	Claim Name	Description of the requirement
PP-5	Project management methodology	The developer must provide Project Management in accordance with the Republic of Latvia and international software development and management standards, such as the current version of Project Management Body of Knowledge.

		The developer must participate in Project Management activities and activities in accordance with the Detailed Project Schedule and the Project Implementation Arrangement. The project management methodology, which complies with the guidelines and principles of the software development methodology Agile (hereinafter - Capacities) for software development (including the management methodology requirements defined in this document), should be described in the Technical Supply and, during the Project, should be guided by the proposed methodology and the requirements of the commissioning party, at least in the following matters: 1. Project management; 2. The definition of requirements and the development of the System Development tasks, i.e. the procedures for ordering the System Development Tasks; 3. Development, adaptation of the system; 4. User preparation; 5. Troubleshooting; 6. Changes in management, including capacity assessment; 7. Risk management; 8. The maintenance of the system guarantee; 9. Systems for the enforcement of user support and change requests. The requirements are described in detail in the following sections.
PP-6	Project leader	The developer must designate a Project Manager whose rights and responsibilities include: • Project planning (contract execution planning); • Management of meetings for defining requirements; • Providing communication between the customer and the developer; • Control project execution;

		• Approval and submission of project documentation and deliverables; Planning preventive and corrective actions.
PP-7	Project Monitoring Board	Project Monitoring Board, a management-level body that may involve the project's co-operation partners. In view of the importance of cross-sectoral cooperation for the successful implementation of the measure, representatives of other public administration bodies and non-governmental organisations may also be invited to the activities of the Council. The Council shall monitor progress and compliance with the project's objectives, plans and budget, be responsible for managing the strategic risks of the project, monitor the work of the Project Steering Group. The developer must provide resources to participate in the meeting of the Project Monitoring Board with the participation of the Developer Management representative and the Developer Project Manager. The developer shall inform the representatives of the customer and the co-operation partners of the Project's progress in the Project Supervisory Board and direct strategic decisions related to the successful implementation of the Project, particularly related to the information systems of the co-operation partners.
PP-8	Project management group	The developer must provide resources to participate in the meetings of the Project Management Group. The task of the project management group is to take decisions related to the management of the project, including the deadlines for the implementation of project activities, amending the budget of the project, changes in content, etc., on which the project management team is informed by the representatives of the Project team. The project management team shall supervise the work of the Project Team, as well as direct the examination of the issues within the Project Monitoring Board if it is not possible to take a decision within the framework of the Project Steering Group.

		Meetings of the project management group should be organised as necessary.
		On the part of the developer, the management representative and the project manager shall be required to participate, including other specialists, according to the instructions of the commissioning party.
		The meetings of the project management group shall be chaired by the commissioning party.
PP-9	Project Team	The developer must provide resources to participate in the meetings of the Project Team.
		A project team is an operational performance-level structure consisting of a project manager, a developer project manager, sub-project team leaders and other persons invited as needed, such as other institutions, industry specialists responsible for specific business processes, representatives of the project partners, etc. The task of the project team is to implement the Project Activity within the allocated budget, Project volume, and specified activity deadlines. The project team shall be chaired by the project manager, which shall ensure the coordination of activities within the competence of the Project Team, the monitoring of their implementation and the provision of information to the Project Management Group on the progress made in the implementation of the project. The project team's working group meetings are chaired by the Developer.

PP-10	Organisation and minuteing of project meetings and interviews	Project meetings and interviews with the commissioning party will take place in the premises specified by the customer. Upon agreement, the place may be changed by agreement between the Customer and the Developer.
		Project meetings and interviews may be proposed as needed by both the Customer and the Developer.
		The project meetings and interviews shall be organised by its initiator as necessary and in accordance with the schedule of interviews, notifying all parties concerned at least 3 (three) working days in advance (adding the proposed meeting agenda).
		Project meetings and interviews shall be organised during working days, working time from 8.30-16.00.
		The developer must record all meetings and interviews within the framework of the Project.
		The minutes shall contain at least the following information: • Date and time of the meeting; • List of meeting participants; • Agenda of the day; • Conclusions and decisions; • The tasks to be performed, indicating the responsibility and the deadline for execution; • documents forwarded/received during the meeting.

		The developer shall submit the protocols electronically to the Customer within 3 (three) working days from the meeting. Protocols must be submitted for harmonisation in the Project Cooperation Environment.
		The commissioning party may agree with the Developer that meetings and interviews of the Project Working Groups, which specify requirements and establish user records, may not be recorded if the decisions taken in the Project Working Groups are electronically harmonised in the Project Cooperation Environment.
PP-11	Project Opening Meeting	The developer shall organise a Project Opening Meeting as soon as possible, but no later than 5 (five) working days after the date of conclusion of the Agreement, which shall consider at least the following: • Project management team to be set up for administrative management of the project, project team, composition, roles in the Project, responsibilities and responsibilities, frequency of meeting (including dates and times), location; • the proposed communication scheme with other parties involved in the project in order to harmonise the progress of the project and the deliverables; • a set of project activities; • At the start of the project meeting, the developer must present the timeline proposed by it. The project commencement meeting shall be organised at the premises of the customer, unless otherwise agreed by the commissioning party with the developer.
PP-12	Project Systemaliser Interviews	The developer must organise and provide resources to participate in the requirement framework interviews. On the Developer's side, the Project Development Specialists should participate in the meetings according to the subject (including the Project Manager as necessary).

PP-13	Indicative plan for sprint development activities	The developer must coordinate with the customer the sprint development activity plan, specification the activities to be performed. Sprint length The developer must meet with the customer, but it is recommended that sprint is organised for a maximum of 20 (twenty) working days. The duration of one sprint must not exceed 1 (one) month.
		In sprint, sequential activities with specified deadlines are carried out. The activities to be performed within the sprint and their sequence are to be viewed in the Sprinta activity "Figure 8. Sprint Progress Activities.
		Figure 8. Sprint Progress Activities
		Sprint Activity Schema Points:
		• Introduction to the detailed requirements
		Before conducting interviews, the Developer must make the requirements detailed and detailed requirements available in the Project Collaboration Environment, at least one working day before the interviews are conducted, so that the Project team can familiarise itself with their content before interviews. The requirements should be detailed in such a way that, during interviews, the Developer can define the user records containing the user body and its acceptance criteria, adding as far as possible screenform plots.
		• interview 1 and interview 2
		Consideration of the detailed requirements submitted by the developer and preparation of the user authorities. Depending on the situation and the progress of interviews, one or more interviews may also be formed. Interviews may also be organised after first-time co-ordination of user states, if the Developer does not understand the requirements of the customer;
		• Reconciliation of user records
		The co-ordination of user records submitted by the developer shall be carried out at the Project Co-operation Environmental Imaging Centre,

during which the commissioning party must give its opinion and harmonise the user authorities developed by the developer. User states that are not agreed by the customer must be corrected by the Developer and then sent to re-reconciliation. Where a person concerned who is required to make a comment or opinion but has not provided a comment or opinion, the person shall be deemed to have no objection and the user authority shall be confirmed. It is desirable to provide for a minimum of 2 (two) working days for harmonising user records;

• Reconciliation

re-screening and co-ordination shall be performed in the Project Cooperation Environment for user ports that were not approved by the commissioning party and where changes have been made. During screening, the party to the customer must provide its opinion and harmonise the user authorities specified or corrected by the developer. It is desirable to provide for a maximum of 1 (one) working day for the re-alignment of user records. After successful matching of all scheduled user records, programming jobs from the Developer are launched;

• Demonstration

presentation meeting of the related sprint development (programming) works, at which the Developer demonstrates the functionality of the sprint to the parties involved in the project. The following persons should be required to participate in the demonstration:

o Developer's representative;

o Passenger's representative;

o Business functionality testers;

o And other people as needed.

o Demonstration should preferably be organised not earlier than 1 (one) working day before the start of testing.

• Testing

The developer shall provide all necessary information and additional materials necessary for evaluating the functionality of the sprint, including, where necessary, preparing test data and users with

		appropriate roles, as well as, if necessary, video guide materials for playing functionality. Upon receipt of the information, testing of marketed user records shall be carried out during which the System is examined against the criteria for acceptance of the relevant user authorities. During testing, users of the customer shall apply for proposals in the Project Co-operation Environment. After this first-time testing, the Developer is given two days to make repairs and fix the identified gaps. Then retesting is carried out, which tests only the solutions for the proposed proposals. If the testing has been successful, i.e. there are no open errors as the user officer marketed in the sprint, the user authority shall be deemed to be complete. It is desirable to provide at least 5 (five) working days for the testing of user stations intended for sprint, at least 2 (two) working days for repeated testing.
PP-14	Monitoring of the speed of assessment and development of user records in the framework of sprint	In line with the capacity development methodology for evaluating user records included in the sprint, the use of "story points" should be performed during development, enabling the assessment of user records not only in terms of human days or human hours needed to meet them, but also in terms of complexity, size, understanding of the user host, its content), uncertainties (unknown or variable factors to be taken into account in the assessment). The assessment of the User Stand Points summarises the impact of all these aspects in a single numerical value, thus allowing for an assessment of the size of the user ports compared to other similar user stations. User Stand Points should also be used to actively assess the speed of the development team ("velocity"). The development speed is determined by dividing the total of user stints performed in the last two sprint by 2 (for example, if 10 user ports were completed during 2 sprint, where each user has been evaluated with a score rating of 4, then the development team speed is $4 * 10/2 = 20$). The speed of the development team, as a metric in the future, should be used to plan and anticipate the work to be carried out in sprint, as well as to more

quickly identify potential risks associated with achieving project deadlines. If desired, the speed of the Development Team shall be equal to the sum of the User Stand Points within one sprint.

If part of the user states is not completed within the sprint, the sum of the incomplete user states shall constitute a technical debt ("technical debt"). The technical debt shall also include the amount of work required to correct errors or inaccuracies recorded during sprint, an estimate of the size of such works shall be carried out in the same way as the user authorities. Technical debt, as a metric, allows you to measure the amount of completed jobs against the amount of jobs scheduled but not completed.

If the amount of the technical debt - the amount of the technical debt user states and response points - reaches the speed level of the development team, then the next sprint should be devoted to the "deletion" of the technical debt by at least 80%. This means that no new user operator or new system functionality is being developed within the next sprint: sprint should only be dedicated to completing the unused user states so far and preventing errors or inaccuracies that have been recorded so far.

Guidelines for assessment of user stints:

• For the first sprint, it may be determined (preferably the Developer determines the values of the User Stand according to its own methodology) that the 1 (one) User Stand Point is approximately equivalent to 1 (one) human day, and the first sprint Development Team's speed is equal to the size of the Development Team (number of people) multiplied by sprint working days the number;

• The assessment of the user points must be quantifiable, which means that the user authority assessed by 2 (two) points should take 2 (two) times more time than the user stent evaluated by 1 (one);

		• Assessment of User Stand Points for each User Stand is a single natural number that is part of the Fibonachi number string (or modified Fibonachi number string), according to the Capability Development methodology; The assessment of the user status points shall be performed by the Development Team, but at the request of the commissioning party a specialist appointed by the commissioning party may be involved in the assessment, co-ordinating or confirming the assessments of the user authorities.
PP-15	Project Software Demo Meeting	The system functionality demonstration must be organised by each sprint, and the aim is to make sure that the System to be developed meets the requirements and user states initially defined during the customer's claims analysis, reflect traceability between the defined requirements and the functionality developed, the System is comfortable in use and performs the functionality needed to ensure business processes (during the demonstration of system functionality). incorrect operation of individual functions shall be allowed if it does not prevent the customer from verifying the functionality of the functionality by nature), as well as to introduce the system testers with the functionality developed or any additions thereto prior to the commencement of sprint testing. According to the necessary additions/gaps/proposals/proposals/proposals identified by the customer during the demonstration, the developer must complete and/or renew the developed software documentation – user records (During the demonstration of the functionality of the System, the commissioning party will not impose conflicting requirements for the requirements defined during the analysis).
PP-16	Impacts on users	Job execution should be planned in such a way as to minimise impacts and user work processes by pooling development works as far as possible.

PP-17	Taking safety measures	When transferring the System Software Deliverable to the developer, all necessary security measures must be taken, i.e. all test users have been deleted, all undocumented remote access channels have been unlocked, and all required security settings have been set in the System. When transferring the System Software Deliverable, the Developer shall submit a security statement. The commissioning party has the right to associate third-party representatives for the performance of safety tests, including by preparing its own tests. These costs shall be borne by the Customer.
PP-18	Privacy requirements	• • The developer must ensure the protection of personal data, in accordance with the requirements of the "VDAR", the "Privacy Data Processing Act" and the security regulations of the Customer Information Technology System. • • Any publicity regarding personal data received, including within the framework of the developer organisation, shall be prohibited. • • The developer must ensure that persons who come into contact with the Customer's Information Resources have signed the relevant data confidentiality and non-disclosure agreements or certificates. • • The developer must ensure that its personnel are prohibited from sharing information about passwords and other parameters that govern access to the Customer Information Resources. • • The developer must ensure the processing of information and data obtained during the execution of works in accordance with the requirements of the Information Disclosure Act, considering the referred to information regarding restricted access information. • • The developer may use the information obtained from the customer only for the performance of the job, it shall not be

		permitted to disclose and transfer the information obtained to other natural or legal persons.
		• • The developer must not perform any action aimed at circumventing, damaging or copying the Customer's security system.
		• The performance of the work must be carried out in accordance with the safety policy of the IM IC IS. All the personnel involved should be familiar with this and the signature must certify compliance with this policy.

8.3 Risk management

Table 36. Requirements for risk management

#	Claim Name	Description of the requirement
PP-19	Risk Management Methodology	The developer must offer a risk management methodology in the Technical Supply. According to the proposed methodology, the developer must perform risk management throughout the lifecycle of the Project. The developer must maintain a register of risks and issues. The developer must provide the following key aspects of risk management: 1. Identify, analyse and prioritise software development project domains with potential technological, cost or maturity risks; 2. Develop strategies to manage these risks; 3. Identify risks and strategies in the software development plan;

		Strategies should be implemented according to the plan.
PP-20	Decision-making on the basis of risk analysis	The decisions taken should be based on risk analysis throughout the life of the System (safety issues should not be viewed in isolation from the activities of developing and implementing the System). The developer must immediately notify the customer of identified problems.

9   Guarantee requirements

Table 37. Warranty requirements

#	Claim Name	Description of the requirement
GP-1	Warranty period	The developer must provide a 2-year warranty period from the date of putting into service of the System.
GP-2	Warranty service providers	The developer must ensure the involvement of the Project Delivery Team meeting the requirements of the Procurement Selection Documentation in the provision of warranty services throughout the warranty period. The developer is entitled to involve third parties in co-ordinating the involvement of third parties with the Passenger in writing. The involvement of third parties should not affect the quality of the service. The developer must make at least two contacts available continuously throughout the warranty, using the communication features specified by the Developer.
GP-3	Provision of the environment during the warranty period	The developer shall maintain the System Development and Test Environments throughout the warranty period with his or her resources, including the test environment on the Customer's side, if the maintenance of the test environment is not provided by the commissioning party.
GP-4	Compliance with security policy and usage rules	The developer must ensure that the operation of the solution complies with the Customer's security policy and conditions of use throughout the warranty period. In the event that the Developer has determined that a potential safety hazard occurring without infringing the requirements of the Terms of Use, the Developer has an obligation to immediately inform the Customer of the existence of such risk and to take measures to improve safety controls.

| GP-5 | Technical support | During the maintenance of the system guarantee, the Developer must provide technical support, including for applications falling under category 6, without additional payment (see requirement "GP-11 .10 Classification of categories of applications").

Technical support must include at least the following activities:

• Supply, install and/or install the latest versions of the software supplied (including update and patch (patch));

• prevention of malfunctions and defects of the software supplied if detected within the warranty;

• Supply, install and/or install misfixes for software supplied;

• Impairing customer data if the data is damaged due to errors or failures of the software supplied;

• diagnosis and analysis of malfunctions and/or problems with the software supplied;

• Consultation and support of the customer's contact in operating the System, but not more than 24 (twenty-four) hours every 6 (six) months.

The developer must provide technical support during working days from 8:00 to 18:00. The developer must ensure that technical support is available to contact persons designated by the customer. |
| GP-6 | Type of technical support during the guarantee period | Technical support should be provided through an application register (e.g. JIRA, TFS, Bugzill, etc.), as a communication channel integrated with the Project Cooperation Environment, if available.

Other communication channels shall be used only if application registers are not available or additional on-site consultations are required. |

		On-the-spot consultations shall be provided where problems cannot be solved through the application register. The developer may, in agreement with the customer, prescribe an additional communication channel.
GP-7	Overview of warranty services	The developer must keep records of the services provided under the guarantee and at least provide a quarterly overview of the services provided to the Customer. The report shall contain at least the following information: • Registered messages and their status (content of the message, information on the dates and times of registration, reporting and prevention, correspondence information, message category and relevance. Current reports must indicate the planned resolution date and time); • a list of messages classified as requests for change (including the content of the report); • Stored System stoppages. The report shall be approved by the commissioning party.
GP-8	Repair Installation Packs	Repair installation packages delivered under the warranty must be "incremental", i.e. its installation must be carried out on a previously supplied software version, unless specifically agreed with the customer in advance. The revisions may not affect data already in the database unless it has been specifically agreed in advance or is not the subject of the correction. Installations must be installable without the System being interrupted. If, however, the interruption of the System is necessary, the duration of the interruption

		and the scheduled time must be agreed in advance with the Passenger.
GP-9	Restore the last non-error version	The developer should be able to restore the System Software, if necessary, using the last non-flawed version.
GP-10	Requirements for the management of guarantee applications	The developer must ensure that warranty applications are managed according to the requirements described in section GP-11 "Requirements for Application Management".
GP-11	Requirements for the management of applications	
GP-11.1	Application processing system	The developer shall provide the Customer with an application registration and maintenance system that is integrated with the Project Cooperation Environment throughout the development, warranty and maintenance of the System. The application processing system must be available 24 hours daily for 7 days per week. The developer application processing system must have a documented software interface (API) based on generally accepted, widely applied and open standards, technologies and protocols (e.g. REST, JSON, XML, HTTP, etc.) available in the industry, enabling the online exchange of application information with the Project Cooperation Environment (such interface) to be provided in the application register (examples of common application processing solutions (registries) are: Bugzilla (REST API), JIRA (REST API), Redmine (REST API), HP QualityCenter, HP ApplicationLifecycleManagement (REST API), IBM ® Rational ® ClearQuest ® (REST API).

| GP-11.2 | Registration and acceptance of applications | Applications shall be registered and accepted by registering them with the customer's contact person in the Project Cooperation Environment or application processing system, ensuring the synchronisation of application data between the two environments. The acceptance of applications shall be 24 hours a day, 7 days a week, but shall be handled within working days from 8:00 to 18:00. Each application must contain at least the following information: • author of the application: automatically the author of the application is identified in the system; • Application number - an application identifier assigned automatically by the system; • a brief description or question of the application; • Detailed description of the application (including troubleshooting actions, if the problem is repeatable, by adding images of system screens with error messages in the annex if the symptoms of the problem are error messages in the system); • Priority of the application as follows: o priority (Emergency situation): the system is not working, not available; it is not possible to work with the system, there are no alternative ways of circumventing the problem; o Priority (Serious Error) - An error that cannot be bypassed causes an internal software error or incorrect operation that causes significant loss of System functionality. There is no acceptable solution to the avoidance of the problem, but it is possible to continue in a restricted way; o Priority (Error that can be bypassed) - Failure of the functionality of the system (non-compliance with the |

		requirements) which can be bypassed or does not interfere with day-to-day work;
		o Priority (Inaccuracy) - visual defect, grammatical error, etc., which does not interfere with the performance of works.
		o Priority (Change Request) - Request for change or complement System functionality and/or documentation (Change Request). Or to perform other additional work outside the scope of the contract or different from the previously agreed requirements.
		o Consultation - a problem or a product defect does not cause loss of opportunity. The software is not an error, but there is some confusion about the operation or functionality, use, technical service, etc.
		• Date and time of the announcement;
		• Status (e.g. new, in resolution, testing, delivered, closed).
		Each application should also be able to add attachments (such as pictures, audio recordings etc.) and comments.
		Each change or activity made in the application must be traceable.
		In the case of priority applications for priority 1-2, errors may be logged by telephone, then by submitting an application for maintenance electronically within an hour, indicating the time of the application by the time of the telephone call.
		The developer has an obligation to provide the Customer with all necessary information regarding all possible application channels not later than 5 (five) working days prior to the beginning of the warranty period.

GP-11.3	Dealing with an application	Before the application is resolved, the developer must submit to the customer an evaluation of the application, which shall specify all necessary resources, the amount thereof, as well as indicate the deadline for execution. The developer shall specify all steps necessary to deal with the application, including harmonisation and testing.
		The developer shall initiate the application only after the customer has co-ordinated the assessment of the application submitted by the developer. The application is to be addressed by the developer within the time limits described in the "Application Categories" requirement, according to the priority of the application.
		If an assessment has not been carried out properly by the developer and additional resources are needed to deal with the application or insufficient resources have been identified, the developer shall mobilise the necessary resources to the extent that the application is resolved within the original submitted evaluation period. Additional resources and amounts exceeding those specified in the initial assessment agreed by the commissioning party shall be covered by the Developer from his own resources.
		The developer must ensure that the existing functionality of the system is maintained to a full extent that does not affect the application. If the delivery of the application solution results in a partial or total loss of functionality that does not affect the application, the Developer shall address this problem by covering its own costs.
GP-11.4	Delivery and testing of the application solution	The developer shall supply the application solution together with a detailed description of the solution

| | | and the installation instructions to the file server specified by the customer and at the same time sending the information to the contact specified in the contract.

If the commissioning party has identified the solution shortcomings in the acceptance test, they shall be notified to the Developer. Within a period of 5 (five) working days, the developer shall prepare corrections and re-submit to the commissioning party for the performance of acceptance.

The time of acceptance of the application solution shall be 5 (five) working days, which may be extended by mutual agreement. If the result of the acceptance of the customer has not been received within this time period, the application shall be accepted.

The testing and acceptance of an application solution shall be organised by the commissioning party, the developer shall be informed in writing (in the application processing system of the developer, if this is not possible by e-mail) of the results of the acceptance.

The developer shall ensure the installation of the supplied solution in the test environment and, at the request of the commissioning party, ensure the installation of the supplied solution in the production environment.

The developer shall ensure that the warranty is maintained for all delivered solutions for 1 (one) year, during which the Developer resolves all loopholes by covering the costs from his own resources. |
|---|---|---|

GP-11.5	Closing an application	An application shall be closed by the commissioning party within 10 (ten) working days after the control time of the approval of the solution, which is specified in the requirement "Supply and testing of the application solution". If the commissioning party does not have a closed application within this time period, the developer shall inform the commissioning party thereof, and if within 5 (five) working days after this reminder the commissioning party does not have a closed application - The developer shall close it automatically, informing the commissioning party thereof.
		An application shall be closed if the commissioning party has no longer established this application (Accepted application) during the testing, unless it has been established again later. In such case, the developer shall prepare an evaluation of the work and resources spent prior to closure and shall co-ordinate it with the commissioning party as amendments to the solution. The closure of the application shall take place in accordance with the time specified at the beginning of this requirement.
		An application shall be closed if the representatives of the customer and the developer agree (being fixed in the Developer Application Processing System) regarding the deferral of the problem for a specified or indefinite period of time (Deferred Application). In such case, the developer shall prepare an evaluation of the work and resources spent prior to closure and shall co-ordinate it with the commissioning party as amendments to the solution. The closure of the application shall take place in

		accordance with the time specified at the beginning of this requirement.
		For applications exceeding the total amount of 8 hours after the closure of the application, the developer shall draw up a deed of acceptance in accordance with the previously agreed assessment of the application. The closure of the application shall take place in accordance with the time specified at the beginning of this requirement.
		For applications which do not exceed the total amount of 8 hours after the closure of the application, the developer shall, by the 10 th of each of the following months, draw up a deed of acceptance which shall include all closed applications in accordance with the previously agreed assessment of the application. The closure of the application shall take place in accordance with the time specified at the beginning of this requirement.
GP-11.6	Problem application escalation for third-party software manufacturers	If, in the course of the application, it is determined that a third-party software developer (manufacturer) intervention is necessary to resolve the problem, the Developer and the commissioning party shall co-ordinate the solution to the performance or error bypass, the future action plan, and the application shall be escalated to the manufacturer concerned. The application is then addressed in accordance with the rules of the system or third-party software manufacturer. Applications shall be escalated to the system manufacturer, unless otherwise agreed by the Parties, at the following control times: • for category applications, if an acceptable solution has failed to be found, within 24 (twenty-four) hours;

		• for category applications, if an acceptable solution has failed to be found, within 5 (five) working days; • and Category 4 applications, if an acceptable solution has failed to be found, within 10 (ten) working days.
GP-11.7	Change Requests	The process of managing changes within the framework of the development, guarantee and maintenance of the system shall be implemented in accordance with the conditions and limits of the Treaty. The developer should propose a Change Management Methodology, which includes a methodology for processing and evaluating Change Requests. The developer must ensure that requests for changes are processed, that proposals for changes are prepared and evaluated initially without additional payment. The developer shall submit the change request assessment to the Customer in writing (the developer must develop a change request processing (initiation, assessment, approval) template). The assessment of the request for change should provide the necessary time for the renewal of all the developed System documentation.
GP-11.8	Extent of assessment of change requests	The developer, upon the request of the commissioning party, shall process the received information regarding the necessary changes or additions within a period of 5 (five) working days and submit a tender to the commissioning party regarding the time period necessary for the realisation of the request for changes (sprint in which it is possible to perform the realisation of the request) and the amount

		of resources. If the customer accepts the tender, the developer shall perform a detailed analysis of the request for change and shall submit a specified offer to the customer.
		In each detailed change request, the Developer must provide the following information:
		• the initiator of the change request and the date of the request;
		• description of changes and specifications (detailed user records should be prepared as a result of a systemic analysis, in accordance with the capacity development methodology);
		• justification for the changes;
		• workability and cost of the changes to be implemented (detailed transcript of the required workload for analysis, design, development, testing, documentation, etc.), the capacity assessment must be provided in accordance with the workload assessment methodology specified in the technical tender;
		• a list of the actions to be taken to implement the necessary change request;
		• a list of deliverables, if necessary in addition to the deliverables submitted to the Customer;
		• other material changes to the deliverables, if any, in the process of making changes to the request (system configuration, documentation, etc.);
		• an impact assessment on the existing functionality of the system, including traceability to the affected initial requirements of the Technical Specification;
		• impact assessment on the technical architecture of the solution. Guidance and impact assessment on related system modules and/or external software.

		• deadline for sale. Any proposal for the sale of a change application must be coordinated with the customer.
GP-11.9	Development, Testing and Supply of Change Requests	The developer shall perform the development, testing and supplementing of the Change Request on the basis of the Customer's requirements, the approved specification of the software requirements and the approved description of the software design. A request for change shall be deemed to have been realised if all the transfers provided for in the detailed request for change have been delivered to the Paying Party, which the commissioning party has accepted and the deed of commissioning has been signed.
GP-11.10	Classification of categories of applications	See Table Classification of Application Categories

Table 38. Classification of categories of applications

Priority and Type	Description	Communication Time Time when the developer communicates with the customer about the registered application	Processing time
Priority 1	Emergency situation – the system is not working, not available; it is not possible to work with the system, there are no alternative ways of circumventing the problem. Emergency situation – the system is not working, not available; it is not possible to	2h (24/7)	Novēršanas laiks 4 (četras) stundas vai individuāli saskaņojot ar Pasūtītāju.

	work with the system, there are no alternative ways of circumventing the problem. Emergency situation – the system is not working, not available; it is not possible to work with the system, there are no alternative ways of circumventing the problem.		
2. Priority	A serious mistake. An error that cannot be bypassed causes an internal software error or incorrect operation that causes significant loss of System functionality. There is no acceptable solution to the problem, but it is possible to continue in a restricted way.	4 h (working days, working hours)	The prevention time of 16 (sixteen) hours of working time or individually co-ordinating with the commissioning party.
3. Priority	An error that can be bypassed. A lack of functionality of the system (non-compliance with the requirements) which can be overcome, or its existence, does not interfere with daily work.	8 h (working days at work)	The prevention period 5 (five) working days or individually co-ordinating with the commissioning party.
4. Priority	Inaccuracy. Visual defect, grammatical error, etc., which does not interfere with the performance of works.	2 working days	The prevention time of 30 (thirty) working days or individually co-ordinating with the commissioning party.
5. Priority	Request for changes or additional System functionality and/or documentation (request for	5 working days	Disposal within agreed time limits of

	change). Or to perform other additional work outside the scope of the contract or different from the previously agreed requirements.		the applicant and the commissioning party.
Consultation	Consultancy: Problem or product defect does not cause loss of opportunity. The software is not an error, but there is some confusion about the operation or functionality, use, technical service, etc.	8 h (working days at work)	Time period for the provision of a consultation - 2 (two) working days or after an agreement with the commissioning party. Note: Consultations may be provided both via the applicant's Internet Service Application System and via telephone or e-mail at the choice of the customer.

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Maintenance requirements

Table 39. Maintenance requirements

#	Claim Name	Description of the requirement
UP-1	Maintenance period	The developer must ensure that the System Supplements are maintained throughout the lifetime of the contract with the customer. During the maintenance of the system, the developer must provide free technical support, which includes counselling and support for the customer's contact in operation of the System, but not more than 48 (forty-eight) hours 1 (one) during the calendar year.
UP-2	Maintenance service providers	The requirement must be fulfilled in accordance with the requirement "Guarantee service providers".
UP-3	Provision of the environment during the maintenance period	Compliance with the requirement must be ensured in accordance with the requirement "Environmental assurance during the guarantee period".
UP-4	Overview of maintenance services	Maintenance and support services shall be assessed (costs and deadline) on the basis of a request from the commissioning party in the Application Registration and Tracking System. The provision of each particular maintenance and support service may only be commenced after the provision of a consent of the commissioning party to the assessment of the relevant service in the application register. The developer must keep track of the services provided within the maintenance framework and provide the Order with a quarterly overview of the services provided at least once. The report shall contain at least the following information: • Applications registered in the application registration and tracking system, their brief description, service type (request for change, counselling, etc.);

		• an overview of the technical support services provided; • For each task and the total amount of hours spent; • Total costs; • Time period.
UP-5	Compliance with security policy and usage rules	Compliance with the requirement must be ensured as defined in the requirement "Compliance with Security Policy and Terms of Use".
UP-6	Access to support for administrator and users	During the maintenance of the system, the developer must provide technical support, which includes counselling and support for the contact person of the customer in operation of the System. Requests for consultations may be submitted to the developer by specialists appointed by the customer. Requests for advice, if registered in the Application Registration and Tracking System, shall be answered electronically within 1 (one) working day. If the request for maintenance indicates that a person-to-person consultation is necessary, the Developer shall, within 2 (two) working hours, agree with the customer's employee regarding the time of the appointment. The person-to-person consultations shall take place at the premises of the customer. Telephone advice shall be provided on request. The developer must provide technical support during working days from 8:00 to 18:00. The developer must ensure that technical support is available to contact persons designated by the customer.
UP-7	Nature of the provision of technical support during the maintenance period	The requirement must be fulfilled in accordance with the requirement GP-5 "Technical Aid".

UP-8	Troubleshoot system security mismatches	During the duration of the contract, the developer must ensure that all identified safety deficiencies are corrected, which have been identified by the commissioning party, such as the information received by an independent System Security Auditor. When addressing a deficiency identified in a System component or section that poses safety risks, other System functionality screening and analysis should also be carried out with a view to finding and addressing a specific type of deficiency in all areas of the System where it may be present.
UP-9	Documentation supplements	System changes and additions The developer must design and document in such a way that not only the Supplier can maintain them, but also any other software development company with experience in the development environment and products used. When drawing up the System documentation, the corresponding document standards referred to in the chapter "Requirements for Project Deliverables" should be taken into account.
UP-10	Keeping the manual	The developer must ensure that the Electronic Form (User Assistance) of the System User Manual is replenished. This requirement does not apply to supplements to third-party standard software if the manufacturer of the manual is required to supplement the electronic form (User Assistant (Help)).
UP-11	Requirements for the management of maintenance applications	The developer must ensure that maintenance applications are managed according to the requirements described in the "Requirements for Application Management" chapter.

<div align="right">**Attachments**</div>

<div align="right">1. **Attachment**</div>

Target A

Significantly reduce global mortality by 2030, reducing average mortality per 100,000 global populations between 2020 and 2030 compared to 2005-2015.

Number	Indicator
A-1	Number of deaths caused by disasters and missing per 100,000 inhabitants. Composite indicator: $$A_1 = \frac{A_{2a} + A_{3a}}{\text{Iedzīvotāju skaits}} \times 100000$$, ,where A1: Number of deaths and missing persons caused by disasters per 100 000 A2A: Number of deaths caused by disasters A3a: The number of missing people connected to disasters Population: running population Given that the above formula is derived from: $$A_2 = \frac{A_{2a}}{\text{Iedzīvotāju skaits}} \times 100000$$ $$A_3 = \frac{A_{3a}}{\text{Iedzīvotāju skaits}} \times 100000$$

	$$A_1 = A_2 + A_3$$
A-2	**The number of deaths caused by disasters per 100,000 inhabitants.** Minimum requirements: Data to be collected for each disaster A-2a Number of deaths caused by disasters Preferred division: Peril Geography (Administrative Unit) Sex Age Disability Income Metadata Additional demographic and socio-economic parameters are needed Population: National population per reporting year. The national indicator would be calculated using the national population. The global indicator is the total population of all reported countries.
A-3	**The number of persons missing due to disasters per 100,000 inhabitants.** Minimum requirements: Data to be collected for each disaster A-3a Number of deaths caused by disasters

Preferred division:
Peril
Geography (Administrative Unit)
Sex
Age
Disability
Income
Metadata
Additional demographic and socio-economic parameters are needed
Population: see A-2

Target B

Significantly reduce the global number of people affected by 2030 by reducing the global average of 100,000 worldwide population between 2020 and 2030 compared to 2005-2015.

Number	Indicator
B-1	**The number of people directly affected in disasters per 100,000 inhabitants.** **Composite creator:** $$B_1 = \frac{sum(B_1 \dots B_5)}{\text{Iedzīvotāju skaits}} \times 100000$$ Additional demographic and socio-economic parameters are needed.

	<u>Population: National population in the reporting year.</u>
B-2	**Number of injured or sick people in disasters.**
	Minimum requirements:
	Data to be collected for each disaster
	Number of people injured or injured in a disaster
	Preferred division:
	Peril
	Geography (Administrative Unit)
	Sex
	Age
	Disability
	Income
B-3	**Number of people whose damaged dwellings are attributable to disasters.**
	Minimum requirements:
	Data to be collected for each disaster
	B-3: The number of people whose damaged housing is linked to disasters.
	B-3a: Number of homes/homes damaged by disasters
	The indicator B-3 can be measured directly and measured using the national methodology or on the basis of B-3a.
	B_3 = **Number of damaged dwellings/houses * Number of average occupiers**
	or
	B_3 = B_{3a} * **Number of average occupiers**

	, where $$\text{Vidējo iemītnieku skaits} = \frac{\text{Iedzīvotāju skaits}}{\text{Mājsaimniecību skaits}}$$ *Preferred division:* Peril Geography (Administrative Unit) If creator B-3a is used to assess the indicator: Sex Age Disability Income Metadata Additional demographic and socio-economic parameters are needed Population: National population and number of households in the country or average number of people per household in the reporting year. The national indicator would be calculated using national data.
B-4	**Number of people whose destroyed dwellings are attributable to disasters.** Minimum requirements: Data to be collected for each disaster B-4 Number of people whose destroyed housing is linked to disasters B-4a: Number of homes/homes destroyed due to disasters

	The indicator B-4 can be measured directly and measured using the national methodology or on the basis of B-4a. B_4 = **Number of dwellings destroyed * Number of average occupiers** Thus, B_4 = B_{4a} * **Number of average occupiers** , where $$\text{Vidējo iemītnieku skaits} = \frac{\text{Iedzīvotāju skaits}}{\text{Mājsaimniecību skaits}}$$ Preferred division: Peril Geography (Administrative Unit) If creator B-4a is used to assess the indicator: Sex Age Disability Income Metadata Additional demographic and socio-economic parameters are needed: see B-3
B-5	The number of people whose livelihoods declined due to disasters. Minimum requirements: Data to be collected for each disaster

B-5: The number of people whose livelihood has been impaired or destroyed is attributable to disaster

The indicator B-5 can be measured directly and measured using the national methodologies or using the methodologies recommended in these guidelines:

- C-2Ca hectares of crops damaged or destroyed by disasters (to be used for the production of statistics on affected workers)
- C-2La Catastrophe for livestock losses (to be used to create statistics on the number of affected workers)
- C-3a Number of productive asset sites (e.g. production, trade, services, etc.) due to damaged or destroyed disasters (to be used to create statistics on affected workers for all types of equipment).

Preferred division:

Peril
Geography (Administrative Unit)

If the methodology recommended in the instructions is used to assess the indicator:
Sex
Age
Disability
Income

Additional demographic and socio-economic parameters are needed

Population: national population and number of households, or average number of people per household per year of reporting.

If countries have a national methodology for measuring indicator B-5, the indicator may be:

entered from the methodology. If no methodologies or measurements are available, B-5 will be calculated using a number of relationships, such as the number of workers per hectare, the number of workers per herd, the average number of employees per company and the industrial facility..

B_{5a} = **Number of crops hectares affected * Average number of workers per hectare**

B_{5b} = **Herd losses * Average number of workers per herd**

B_{5c} = **Sum of affected production assets and infrastructure * Average of workers**

Data needed will be collected for purpose C, so

$B_{5a} = C2C_a$ * **Average number of workers per hectare**

$B_{5b} = C2L_a$ * **Average number of workers per herd**

$B_{5c} = C3_b$ * **Average number of workers per production asset** $+ C5_b$ * **Average number of workers per infrastructure facility**

Which is abbreviated

$$B_{5c} = \sum_{i=1}^{n} C3_{bi} * Str\bar{a}dnieki_i + \sum_{i=1}^{n} C5_{bi} * Str\bar{a}dnieki_i,$$

, where i = 1

N = Types of production assets and infrastructure declared in metadata

Target C

Reduce the direct economic losses of disasters to global gross domestic product (GDP) by 2030.

Number	Indicator
C-1	**Direct economic losses related to disasters relative to gross domestic product.** **Composite creator.** $$C_1 = \frac{(C_2 + C_3 + C_4 + C_5 + C_6)}{Iek\check{s}zemes\ kopprodukts}$$ Additional demographic and socio-economic parameters are needed GDP: gross domestic product of geographic units for which data are collected in the year when the disaster occurred.
C-2	**Direct agricultural losses related to disasters.** **Minimum requirements:** **Data to be collected for each disaster.** **If an accurate economic assessment of direct losses is available (in line with the disaster risk mitigation programme), indicators C-2, C2-C, C2-L, C2-Fo, C2-Fi and C2-Ia can be submitted from it.** **• C-2: Direct agricultural losses related to the disaster** **• C-2C: loss of crops damaged or destroyed by disasters** **• C-2L: Ganāmpulku losses in disasters** **• C-2Fo: damage to forests damaged or destroyed by disasters** **• C-2A: Losses in affected aquaculture production**

• **C-2Fi: Losses in the affected fisheries sector**

• **C-2Ia: Losses of damaged/destroyed capital goods (machines and equipment) in all the sub-sectors mentioned above. The fishing sector should include vessels.**

• **C-2Ib: Value of pre-viewing stock (stored raw materials such as seed, fertiliser, feed, feed, feed, feed, etc., as well as products such as cereals, livestock products, fish, logs, etc.).**

Methods for calculating indicators C2-C, C2-L, C2-Fo, C2-Fi and C2-Ia:

C-2C = losses of annual crop stocks + losses of multiannual crop stocks + annual crop losses + perennial crop losses + losses of reversed assets (total and partial)

C-2L = loss of stocks + loss of livestock production + costs of replacing and/or repairing livestock assets (total and partial)

C-2FO = losses in forestry stocks + loss of forestry production + loss of forestry assets (total and partial)

C-2A = loss of aquaculture stocks + loss of aquaculture production + loss of aquaculture assets (total and partial)

C-2FI = loss of fisheries stocks + loss of fishery production + loss of fisheries assets (total and partial)

The following physical damage indicators will be required, which will be accepted instead of the corresponding estimated economic losses.

• **C-2Ca: number of hectares of crops damaged or destroyed by disasters**

• **C-2La: number of animals lost due to disasters**

• **C-2Foa: number of hectares of forests affected/destroyed**

• **C-2Aa: number of hectares affected in the aquaculture production area**

• **C-2Fia: number of hectares of the affected fishing area**

• **C-2Iaa: number of damaged/destroyed production assets (machines and equipment) associated with all agricultural sub-sectors. The fishing sector should include vessels.**

Given that for sub-indicators C-2Ia and C-2Iaa damaged/destroyed machines and equipment which are clearly productive assets, the following annotation is applied and data collection will have to follow the same model, definitions and methods: productive assets should be allocated to economic sectors, including services, in accordance with the standard international classification. Countries must report on those sectors of the economy that are relevant to their economies.

Losses in agricultural productive assets will be reported in C-2 and may not be backed up by C-3. The classification and associated metadata mechanism will allow them to be distinguished.

To be included on the basis of the United Nations report A/71/644:

• **C-2la, C-2La a: this sub-index should include losses for beekeeping**

Definition of metadata that describes assets and infrastructure elements:

For each type of production assets reported, metadata must include:

• **Code**

• **Description of active type**

	• Group or economic sector/activity ISIC or adopted FAO/UNISDR classification • Units of Measure (m2, meter, hectare, km, tonne, etc.) • Unit value [series 2005 … 2030] •% of the additional value for equipment, furniture, materials, article (if applicable) •% of value added for related physical infrastructure (if applicable) • Average number of employees per facility or infrastructure unit • Formula (or method description) for calculating economic value Note that most metadata definitions and inputs will only occur once when setting up the data collection process, except the annual unit value of the choice. Preferred division: • ALL: at risk • ALL: by geography (administrative unit) • ALL: completely destroyed (lost, dead, destroyed) or damaged (affected) • C-2C: by type of cultivated culture in affected areas • C-2L: by type of livestock • C-2Fo: by forest type • C-2A: by type of aquaculture activity in affected areas • C-2Fi: by type of fishing activity in affected areas • C-2I: by sector (crop, herd, forest, aquaculture, fishery) by type of damaged machinery and objects
C-3	Direct economic losses on all other production assets damaged or destroyed by the disaster. If an exact economic assessment of direct losses is not available, the recommended methodology should be used which proposes to convert the value of physical injury into economic value using replacement costs to determine direct economic losses.

Method 1 for calculating losses on direct production assets - Assets affected reports.

Applicable if the data collection does not distinguish between damaged and destroyed persons. The calculation of the economic loss equation due to the affected (damaged or destroyed) production assets is as follows:

$$C_3 = C_{3a} * \text{vidējais aktīvu lielums} * \text{būvniecības izmaksas par kvadrātmetru} * \text{aprīkojuma koeficients} * \text{infrastruktūras koeficients} * \text{ietekmēto koefificients}$$

, where

C_{3a} is the number of each type of production asset or damaged, or destroyed

The average asset size is the size defined in the metadata, describing the type of asset. For only one type of asset, it may be:

• Average size in the country of this type of manufacturing asset.

• Median or type of the size of this type of manufacturing asset in the country.

• Value of sizes determined by expert criteria when developing a small and conservative production asset for this type.

Construction costs per square meter are the average national value

construction costs per square metre

The equipment ratio is the calculated value (expressed as a percentage of

value of stored equipment and products (including raw materials and finished products)

The infrastructure ratio is the calculated value (expressed as a percentage) of the value of an asset in related connections to the utilities infrastructure.

The affected factor is calculated as the average loss ratio (as a percentage) of all production assets, including all damaged/destroyed production assets.

Method 2 for calculating losses on direct production assets - separate reports for damaged and destroyed assets.

The equation for the economic losses caused by the affected (damaged or destroyed) production assets is calculated as follows:

$$C_3 = (C_{3b} * \text{vidējais aktīvu lielums} * \text{būvniecības izmaksas par kvadrātmetru} * \text{aprīkojuma koeficients} * \text{infrastruktūras koeficients} * \text{bojāto koeficients}) + (C_{3c} * \text{vidējais aktīvu lielums} * \text{būvniecības izmaksas par kvadrātmetru} * \text{aprīkojuma koeficients} * \text{infrastruktūras koeficients})$$

, where

- C_{3b} is the number of damaged production assets of each type

- C_{3c} is the number of destroyed production assets of each type

- *The injury factor is the average loss ratio expressed as a percentage of the total value of assets, recommended 25% (same as the housing sector)*

- *All other variables correspond to those given in method 1.*

Annotation from United States Organization Report A/71/644:

Production assets should be distributed across the economic sectors, including services by international classification. Countries would report against these economic issues sectors of economic importance.

Minimum requirements:

Data to be collected for each disaster

For each of the types of funds affected by the disaster:

• C-3: Direct economic losses on all damaged or destroyed production assets related to the disaster.

• C-3a: number of production assets of each type - damaged or destroyed

or

	• C-3b: Number of damaged manufacturing assets of each type
	• C-3c: number of destroyed production assets of each type
	Preferred division:
	• At risk
	• by geography (administrative units)
	• by type of influence (damaged/destroyed). This should be reflected in metadata.
	• By object size (small/medium/large). This should be reflected in metadata.
C-4	**Direct economic losses in the housing sector related to disasters.**
	If an exact economic assessment of direct losses in the housing sector is not available, the recommended methodology should be used, which proposes to convert the value of physical injury into economic value using replacement costs to control direct economic losses.
	Main equation calculation: $$C_4 = C_{4a} + C_{4b}$$, where C_{4a} - economic value of damage to homes damaged by disasters C_{4b} - economic value of damage to homes destroyed in disasters In turn, $$C_{4a} = boj\bar{a}to\ m\bar{a}ju\ skaits * vid\bar{e}jais\ lielums *$$ $$b\bar{u}vniec\bar{i}bas\ izmaksas\ par\ kvadr\bar{a}tmetru * apr\bar{i}kojuma\ koeficients *$$ $$infrastrukt\bar{u}ras\ koeficients * ietekm\bar{e}to\ koefificients$$, where

	• medium size, construction costs per square metre, equipment ratio and infrastructure ratio have the same definitions as C3. • a damage ratio (average damage) of 25% of the cost of a fully destroyed house is applied. $C_{4b} = $ **iznīcināto māju skaits** $*$ **vidējais lielums** $*$ **būvniecības izmaksas par kvadrātmetru** $*$ **aprīkojuma koeficients** $*$ **infrastruktūras koeficients** *Minimum requirements:* Data to be collected for each disaster • C-4: Extended direct economic losses in the housing sector to disasters. • C-4a: number of homes affected by disasters • C-4b: number of homes destroyed by disasters Preferred division: • at risk • by geography (administrative unit) Optional countries wishing to obtain more accurate estimates: • Criteria such as home size (small/medium/large) and/or • Criteria such as rural/urban and/or • Criteria such as material (wood, cardboard, wall, etc.) Additional demographic and socio-economic parameters are needed • Average size: average estimated home size in the country (or for each home class if declared in metadata) • Unit value: [Each year 2005 … 2030]
C-5	**Direct economic losses of damaged or destroyed critical infrastructure caused by disasters.**

Annotation from United States Organization Report A/71/644:

Production assets should be distributed across the economic sectors, including services by international classification. Countries would report against these economic issues sectors of economic importance.

It is recommended that C-5 be calculated on the basis of indicators comprising the same critical infrastructure units and equipment considered as target D, in particular for indicators D-2, D-3 and D-4.

, where

D2 - number of destroyed or daemged health establishments caused by disasters.

D3-number of educational establishments destroyed or daemged by disasters.

C4 - number of units and facilities of critical infrastructure caused by other disasters.

The set of critical infrastructures that Member States are authorised to report is very extensive. Please refer to the technical guidelines for Objective D which provide complete information on the proposed classification of critical. It should be noted that, in terms of methodology, it is almost impossible to provide guidance for all types of infrastructure to assess direct losses.

These guidelines will provide only two methodological approaches for the assessment of economic losses developed BY ANDDR and the scientific community, which generally cover the following general types of element.

• Critical infrastructure consisting of buildings (e.g. health and educational establishments) or assimilated to productive assets. Loss marked C5 [buildings].

• Roads and highways and, in general, linear structures, the codes of which can be assessed on the basis of length of the affected element (e.g. daged road metres) and a stable fixed price per unit length (costs per linear metre). Loss marked C5 [linear].

• For other critical infrastructure element NOT belonging to any of these groups, Member States are requested to ensure the appropriate rehabilitation or reconstruction codes, depending on the level of damage. Loss marked C5 [other].

So indicator looks like this:

Direct loss of critical infrastructure - critical infrastructures consisting of buildings (e.g. health and educational establishments).

Method 1 - data not broken (from difference from damaged/destroyed

, where

C5 (buildings) - economic losses from the affected infrastructure, both damaged and destroyed.

Method 2 - data broken down to damask and destroyed

, where

• C5a (buildings) - economic losses from damaged infrastructure.

• C5b (buildings) - economic losses from destroyed infrastructure.

• Other variables are defined as indicator C-3.

Direct loss of critical infrastructure - critical infrastructures consisting of linear elements (e.g. roads).

Method 1 - data not broken (no difference from damaged/destroyed

, where

C5 (linear) - Economic losses from the affected linear infrastructure, both damaged and destroyed.

Method 2 - data broken down to damaged and destroyed

	, where • C5a (linear) - Economic losses on damaged infrastructure. • C5b (linear) - Economic losses from destroyed infrastructure. Minimum requirements: Data to be collected for each disaster For each of the types of infrastructure declared in metadata affected by the disaster: • C-5: Direct economic damage caused by damaged or destroyed critical infrastructure caused by disasters. • C-5a: type of asset (code) • C-5b: number of damaged/destroyed units or number of these infrastructure assets Preferred division: • by type of influence (damaged/destroyed) • By the size of the object (small/medium/large or criteria such as a tarred road, unasperated road, highway)
C-6	Direct economic losses to cultural heritage damaged or destroyed by disasters. Data to be collected for each disaster: Minimum requirements: • Economic value of losses of C6a damaged or destroyed real estate assets • Economic value of losses of cultural heritage damaged by C6b • Loss of movable cultural heritage destroyed or wholly lost by C6c economic value. • Number of cultural heritage property buildings, monuments and fixed infrastructures damaged by C6d disasters

	• Number of buildings, monuments and fixed infrastructures of cultural heritage destroyed by C6e disasters • C6f is the number of movable cultural heritage assets (e.g. artworks) damaged • Number of movable cultural heritage assets destroyed by C6g

Target D

Substantially reduce disaster damage to critical infrastructure and basic services by 2030, including health and educational establishments, and develop their recovery capacity

Number	Indicator
D-1	Disaster related damage to critical infrastructure. D-1 = Critical Infrastructure Damage Index = number/population of damaged infrastructure units and facilities * 100,000
D-2	Number of health facilities destroyed or damaged by disasters. Minimum requirements: Data to be compiled for each disaster (related to C-5): D-2 Number of health facilities destroyed or damaged by disasters Preferred splitting requirements (same as C-5): Peril Geography (Administrative Unit) Impact level (damaged/destroyed)

	Object size (small/medium/large). If Member States wish to report more detailed losses by asset size and type, they should use a metadata mechanism to declare. C-5, they are indicated in the index for this breakdown.
D-3	Number of educational establishments destroyed or damaged by disasters.
	Minimum requirements:
	Data to be compiled for each disaster (related to C-5):
	D-3 Number of educational establishments destroyed or damaged by disasters
	Preferred distribution (same as C-5):
	Peril
	Geography (Administrative Unit)
	Impact level (damaged/destroyed)
	Object size (small/medium/large). If Member States wish to report more detailed losses by breakdown of data by size and type of breakdowns, they shall use metadata., which shall indicate an asset to the C-5 indicated for this mechanism.
D-4	Number of other units and installations of critical infrastructures destroyed or damaged by disasters.
	This indicator divides (or should be shared) data and metadata with the indicator C-5.

	Minimum requirements: Data to be compiled for each disaster (related to C-5) and for each type of infrastructure affected: • C-5a: type of asset (code) • C-5b: number of units or facilities damaged/destroyed infrastructure assets • C-5c: Measurement of damage to network units (in units of measurement such as meters or kilometres) For each type of productive asset reported: • Code • Descriptions • Group or economic sector/activity in ISIC or assumed classification • Units of Measure (M2, Mt, Hex, Km, etc.) • Value of measured unit (2005 … 2030) •% not worth of equipment, furniture, materials, articles •% not associated physical infrastructure values Preferred division: Peril Geography (Administrative Unit) Impact level (damaged/destroyed) Size of objects (small/medium/large or criteria, highway, no paving, e.g. roads, one paved)
D-5	Number of disruption to basic services caused by disasters.

	D-5 = Service Disorder Index = Number of Disorders/Population * 100 000 Metadata: Additional demographic and socio-economic parameters are needed Population: The national population in the reporting year.
D-6	Number of outages of educational services related to disasters. Minimum requirements: Data to be compiled for each disaster (related to D-3) D-6 Number of outages of educational services caused by disasters. Preferred division: Peril Geography (Administrative Unit) Interrupted means one or this combination: • Disaster service was partially or completely interrupted one or more times • Service quality level deteriorated • Service coverage was reduced • Failure/destruction of service infrastructure
D-7	Number of health outages related to disasters. Minimum requirements: Data to be compiled for each disaster (related to D-2) D-7 Number of health service breaks caused by disasters.

	Preferred division:
	Peril
	Geography (Administrative Unit)
	Interrupted means one or this combination:
	• Disaster service was partially or completely interrupted one or more times
	• Service quality level deteriorated
	• Service coverage was reduced
	• Failure/destruction of service infrastructure
D-8	Number of breaks in other basic services related to disasters.
	A decision on the elements of basic services to be included in the calculation will be left to the Member States and described in the metadata.
	Minimum requirements:
	Data to be collected for each disaster
	• For each of the types of services declared in the disaster metadata:
	• D-8a: type of asset (code)
	• D-8b: Service impaired Yes/No
	Metadata
	For each type of productive property reported:
	• Code
	• Description
	• Group or economic sector/activity in ISIC or assumed classification

Services for which we recommend collecting data:
Impaired water services (related to D-4)
Poor sewer services (related to D-4)
Degraded transport services (related to D-4)
Government services were disrupted (related to D-4)
Energy and energy services were disrupted (related to D-4)
Emergency services were disrupted (related to D-4)
Communication/ICT services were disrupted (related to D-4)
Solid waste services were disrupted (related to D-4)
Preferred division:
Peril
Geography (Administrative Unit)
Interrupted means one or this combination:
• Disaster service was partially or completely interrupted one or more times
• Service quality level deteriorated
• Service coverage was reduced

Target E

Significantly increase the number of countries with national and local disaster risk reduction strategies by 2020.

Number	Indicator
E-1	Number of countries adopting and implementing national disaster threat reduction strategies under the Sendai disaster risk mitigation system 2015-2030.

The Member State should assess the level of implementation of each key element and enter all information on the Sendai Framework Monitor website. The ten main elements are proposed to be measured equally by allocating 10% (or 0,1) to each element.

• Comprehensive implementation (full score): 1,0,

• Essential implementation, additional progress is needed: 0,75,

• Average implementation: 0.50

• Limited implementation: 0.25,

• If there is no introduction or no existence: 0.

Sub-indicators:

• Defined targets and measures to reduce existing risks

• Defined targets and measures to prevent hazards from occurring

• Defined objectives and measures to strengthen economic, social, health and environmental recovery capacity

• Defined frames, targets, and indicators

• Priority 1 is subject to recommendations and suggestions

• Priority 2 is subject to recommendations and suggestions

• Priority 3 is subject to recommendations and suggestions

• Priority 4 includes recommendations and suggestions

• Development and Combating Poverty Plans and Policies are integrated at all levels, and in particular with the UN Sustainable Development Goals

• Promote coherence, integration and compliance with climate change adaptation and mitigation plans and the Paris Agreement

Through the "Custom Indicators" online monitoring system, countries will be able to monitor the development of each of these elements through sub-indicators, which could contribute to a more detailed and systematic assessment of progress in each area.

E-2	Percentage of municipalities that adopt and implement local disaster risk reduction strategies in line with national strategies.
	It is proposed that Member States count the number of municipalities that adopt and implement local disaster risk reduction strategies in line with the national strategy and expressed it as a percentage of the total number of municipalities in the country.
	This indicator is determined by local authorities, given that local public authorities are responsible for developing strategies for reducing the risk of local disasters.
	It is recommended that countries report on the progress made at the lowest level of government mandated for disaster risk reduction, as the Sendai system contributes to the adoption and implementation of local disaster risk reduction strategies by every local authority.
	Each Member State will calculate the ratio of the number of municipalities to local disaster risk reduction strategies in line with national strategies and the total number of municipalities.

Target F

Significantly improve international cooperation in developing countries by 2030, with appropriate and sustainable support to complement their national actions to implement this system.

Number	Indicator
F-1	Total official international aid (official development aid (ODA) plus other official flows (OOF)) for national disaster risk mitigation activities.

	Minimum breakdown: Donor Recipient Division preferred: Type of finance Type of international aid Sub-sector Groups of countries (global, regional/sub-regional)
F-2	**Total official international support (official development assistance (ODA) plus other official flows (OOF)) for national disaster risk mitigation activities provided by multilateral agencies.** **Minimum breakdown:** **Donor** **Recipient** **Multilateral body** **Preferred division:** **Type of finance** **Type of international aid** **Sub-sector**
F-3	Total official international support (official development assistance (ODA) plus other official flows (OOF)) for national disaster risk mitigation activities provided bilaterally. Minimum breakdown:

	Donor
	Recipient
	Preferred division:
	Type of finance
	Type of international aid
	Sub-sector
	Groups of countries (global, regional/sub-regional)
F-4	Total official international aid (official development aid (ODA) plus other official flows (OOF)) for the transfer and exchange of technology related to disaster risk reduction.
	Minimum breakdown:
	Donor
	Recipient
	Preferred division:
	Type of finance
	Type of international aid
	Sub-sector
	Groups of countries (global, regional/sub-regional)
F-5	Number of international, regional and bilateral programmes and initiatives on transfer and exchange of science, technology and innovation in disaster risk mitigation in developing countries.
	Minimum breakdown:
	Programme/initiative
	Developing partner country

	Preferred division: Type of programme/initiative
F-6	Total official international aid (official development aid (ODA) plus other official flows (OOF)) for disaster risk mitigation capacity building. Minimum breakdown: Donor Recipient Preferred division: Type of finance Type of international aid Sub-sector Groups of countries (global, regional/sub-regional)
F-7	The number of international, regional and bilateral programmes and initiatives related to disaster risk mitigation capacity building in developing countries. Minimum breakdown: Programme/initiative Developing partner country Preferred division: Type of programme/initiative
F-8	Number of developing countries supporting international, regional and bilateral initiatives to strengthen statistical capacity related to disaster risk mitigation.

	Minimum breakdown: Recipient Preferred division: Donor Type of international aid

Target G

Significantly increase people's access to multi-disaster early warning systems and disaster risk assessment information by 2030.

Number	Indicator
G-1	Number of countries with multi-disaster early warning systems. G-1 = (G-2 + G-3 + G-4 + G-5)/4 G-1 is a composite indicator calculated as an index using indicators from G-2 to G-5. The calculation methodology G-1 is as follows: for each country means the calculation of the arithmetic mean of the four score points, where each country determines the value of the indicators from 0 to 1 for each of the four indicators G-2 to G-5. • Comprehensive implementation (full score): 1,0, • Essential implementation, additional progress is needed: 0,75, • Average implementation: 0.50 • Limited implementation: 0.25, • If there is no introduction or no existence: 0.
G-2	Number of countries with multi-hazard monitoring and forecasting systems.

	Minimum requirements:
	G-2a indicator of the existence of a monitoring and forecasting system (1/0) calculated for each hazard type
	Weight per hazard type (0,00 to 1,00)
	Preferred division:
	Data for each hazard type
	G-2b Overall assessment of the quality of monitoring and forecasting systems at 5 levels from 0 to 1
	4 element points (G-2c monitoring, G-2d forecasting, G-2e reports and G-2f process)
	Division:
	Both the minimum and the preferred data sets should be broken down by type of risk.
	Additional data:
	See recommendations and examples for calculating hazard weight based on estimated or historical impacts, or on expert criteria, or on national priorities and targets.
G-3	Number of people per 100,000 who are subject to early warning information through local authorities or national notification mechanisms.
	Minimum requirements:
	G-3a Number of people subject to early warning information through local authorities or national distribution mechanisms

	Division:
	Information dissemination mechanism (media, local).
	Additional data:
	National population
G-4	Percentage of local governments that have an early warning plan.
	Minimum requirements:
	G-4a Number of local authorities with an early warning plan
	Preferred division:
	Data for each municipality
	G-4b Total quality rating of local plan at 5 levels from 0 to 1
	Number of points from 3 elements of plan (G-4c preparedness, G-4d understanding and G-4e evaluation)
	Division:
	Municipality
	Additional data:
	Total number of municipalities
G-5	The number of countries available, comprehensible, usable and relevant information relating to disaster risks and its assessment available to citizens at national and local level.

Minimum requirements:

G-5a The number of points on available, comprehensible, usable and relevant information relating to disaster risks and their assessment available to citizens at national and local level (1/0) shall be calculated for each type of risk.

Preferred division:

Data for each hazard type

G-5b Quality indicator of risk information and assessment from 0 to 1.

The methodology used to perform the best risk assessment will vary according to the type of hazard and take into account the following elements:

I. It should be based on the largest possible scientific approach (ideally if possible);

II. the result of the national consultation, is joint, coordinated and used by national authorities;

III. with clear responsibility for decision-making, planning and storage of data and information.

The Member State should assess each sub-indicator for each hazard type and allocate an increase rate of 0 to 1 (0.0.25, 0.50, 0.75, 1). In turn, sub-index I will have 1 or 0 (binary). It is recommended that these sub-indicators be weighted equally, in the above case 1/3 for each, so that the score will be calculated on the arithmetic average of each hazard.

	, where score: number of sub-index j points (= 1.2, 3) for each hazard type i (= 1,.., n) for impacts: the risk i impact weight calculated on the basis of impacts and coatings or determined by each country; N: Number of types of risk Splitting is recommended: Type of hazard Municipality
G-6	The proportion of the population at risk of disasters, for which preventive evacuation is provided according to early warning. Minimum requirements: Hazard events Preferred division: Municipality (local administrative unit) Member States that can do this are invited to provide information on the number of people evacuated.

s

2. Attachment 'Availability of LVGMC data'

Event sub-group	Event Type	Characteristics	Data accessibility
geophysical	DK_G1 earthquakes	DK_G1.1 magnitus	Is
		DK_G1.2 intensity	Is
		DK_G1.3 depth	Is
		DK_G1.5 affected area	Is
	DK_G2 landslides	DK_G2.1 soil type	Currently, no information on landslides or their risk areas is available. It is necessary to carry out mapping of modern geological processes, using long-term exploration methods and field studies, identifying geological risk zones, as well as developing methodologies for future monitoring of risk zones and risk development scenarios, depending on the factors affected.
		DK_G2.2 landslide/avalanche rate	None
		DK_G2.3 snow/landslide depth	None
		DK_G2.5 affected area	None

hydrological	DK_H1 floods and floods	DK_H1.2 flooded area/affected area	Probably
		DK_H1.4 rainfall	Is
		Duration OF DK_H1.5 rainfall (rain/rainfall)	Is
		DK_H1.6 water level	Is
meteorological	DK_M1 rainfall	DK_M1.1 rainfall	Is
		Duration OF DK_M1.2 rainfall (rain/rainfall)	Is
		DK_M1.3 water level	Is
		Area affected BY DK_M1.5	Probably
	DK_M2 Hail	DK_M2.1 Hail Grains Diameter	No (no longer observed after network automation)
		Area affected BY DK_M2.3	Probably
	DK_M3 strong snowing and putter	DK_M3.1 snow intensity	Is
		DK_M3.2 rise in snow blanket	Probably
		Area affected BY DK_M3.4	Probably
	DK_M4 storms, tornadoes, wind gusts	DK_M4.1 maximum wind speed	Is
		DK_M4.2 Direction	Is
		Area affected BY DK_M4.5	Probably
	DK_M5 thunderstorm	DK_M5.1 thunderstorm intensity (lightning discharge)	Is
		Area affected BY DK_M5.3	Probably

clichological	DK_K1 strong island	DK_K1.1 minimum temperature	Is
		DK_K1.2 Days	Is
		Area affected BY DK_K1.4	Probably
	DK_K2 heat	DK_K2.1 temperature peak	Is
		DK_K2.2 Days	Is
		Area affected BY DK_K2.4	Probably
	DK_K3 icing and wet snow sediment	DK_K3.1 intensity of precipitation (including freezing)	Is
		DK_K3.2 air temperature	Is
		Area affected BY DK_K3.4	Probably
	DK_K4 Droughts	DK_K4.1 SPI	Partial (not hourly data, but values are calculated from a specific sliding period (e.g. month, quarter))

3. Attachment "Data of animal registers, Ganāmpulku registers and holding registers maintained by the LDC"

In Round Number row	Parameter	Description of the parameter
1	ungkey	ID
2	date	date
3	ganp_full	Herd registration Number
4	Name	Name of herd owner
5	Last name	Name of herd owner
6	perscods	Herd Owner's Personal Code
7	Name	Name of herd owner
8	lurcods	Herd Owner Business Registration Number
9	pvnkods	Registration code of the taxpayer of the herd owner's company
10	aw_kods	Herd owner address code
11	atvk	Herd Owner Address ATVK Code
12	Aderess	Address of the herd owner
		Name of holding holder
		Surname of the holding holder
		Personal identity number of the holding holder
		Name of holding holder
		Holding Holder Company Registration Number

		Registration code of the tax payer of the holding holder
15	holding_id	Holding Number
16	aw_code	Housing address code
17	h_atvk	Housing address ATVK code
18	location	Address of the holding
		Housing X coordinate
		Housing Y coordinate
19	L	Cattle population
22	A	Sheep population
24	K	Goat population
26	Z	Horse population
27	C	Pig population
28	N_B	Number of bee flocks
29	N_T	Rabbit population
30	N_K	Fur animals (excluding rabbits)
31	N_SD	Deer
32	N_M	Poultry

4. Attachment "Data Warehouse Indicators"

#	Term	Dimensions	Periodicity
R1	Number of events	identification Number, name, GLIDE number, start date, end date, duration, event category, region/county, loss, persons, buildings, Cadastre value, vehicles, domestic animals, land, roads, prevention	Year
R2	Number of geophysical disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre nr.	Year
R3	Number of hydrological disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre nr.	Year
R4	Number of meteorological disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre nr.	Year
R5	Number of clichological disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre nr.	Year
R6	Number of biological disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre nr.	Year
R7	Number of cosmical disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre no., magnetic disturbance level, meteorite impact	Year

		location, solar radiation level, cosmic radiation level, affected population, affected area	
R8	Number of nuclear disasters	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre No., disaster scale (INES scale), radiation leak, affected population, affected area, evacuation area, type of radioactive material leakage	Year
R9	Number of technogenic disasters	Event type, identification number, name, GLIDE number, start date, end date, duration, event category, region/county, address, Person ID, Cadastre number, affected population, affected area, affected infrastructure, type of substance	
R10	Number of public riots	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, type of infrastructure affected, data loss/damage, attack site, hardware/equipment loss, affected area, evacuation area	Year
R11	Number of terrorist acts	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, type of infrastructure affected, data loss/damage, attack object, hardware/equipment loss, affected area	Year

		evacuation area	
R12	Number of internal riots	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, type of infrastructure affected, data loss/damage, attack site, hardware/equipment loss, affected area, evacuation area	Year
R13	Number of cyber attacks	Event type, ID Number, name, GLIDE number, start date, end date, duration, event category, region/county, address, type of infrastructure affected data loss/corruption attack object hardware/equipment losses	Year
R14	Number of persons	Event Group, Person ID, Address, Event Type, Event Subgroup	Year
R15	Number of buildings	cadastre Number, address, group of premises, buildings, stands, construction material, building year, residential or uninhabited, ownership, owner, value, damage, recovery costs, economic creators, environmental creators, Cure history creators, Insured,	Year
R16	Number of vehicles	Date, Vehicle Number, Classification, Owner (P_ID), Reviewing, recovery costs	Year
R17	Number of pets	number, Number, Number, animal species, animal ID, Owner, date,	Year

R18	Number of units of land	Flooded field (cadastre nr), Area, type of damaged crop plants, costs of recovery, owner's ID	Year
R19	Number of roads	Event ID, Road type, road length km cost of rebuilding, way of meaning the Road,	Year
R20	Number of preventive measures	Event, Cost, Responsible Authority, Date	Year

5. Attachment "KAZA Risk Management Plan"

Methodology for risk assessment

Table 1. Probability

Probability interval	Label Usage
61%-90%	**High**
10%-60%	**Medium**
1%-9%	**Low**

Table 2. Impact

Effect	Ability to proceed with the project
High	Unable to continue
Medium	Project scope changing
Low	Project progress shall not be affected

Table 3. Color Encoding for Risk Groups

Avoidance - avoidance of risks involves changing the project plan to prevent risks or situations or to protect the project's objectives from its effects.

Carry-over - Risk carry-over is a transfer of risk results to a third party along with ownership of liability. Risk transfer simply gives the other party responsibility for managing it does not eliminate the risk.

Mitigation - Risk-mitigation Target is to reduce the probability or effect of an adverse event to an acceptable threshold

Adoption - This method indicates that the project team has decided not to change the project plan to address the risk, or it is unable to identify another appropriate response strategy.

Risk assessment

According to the risk assessment methodology, a risk assessment has been carried out for the possible project KAZA, with a view to identifying potential risks before the project is launched and preparing an appropriate response strategy.

KAZA project risk plan roles:

Project Manager:

• Maintaining a risk register and distributing changes to the responsible persons

• Information the Project Management Group on the state of risks and activities carried out

Risk owner:

• carry out the activities provided for in the risk plan;

• Accounts to the project manager for progress.

The responsible roles identified in the risk management plan should be specified to a specific responsible person.

Identified risks and their responsible officials on the implementation of the risk strategy

Risk ID	Data [1]
Description	Data sources cannot be expected to be involved in the KAZA project. Over the course of the project, this risk should be shared among the topics of the data sources and an additional human resource should be involved, which can work with each data source individually.
Effect	High
Probability	High
Risk owner	Project leader
Risk identification date	08.12.2020
Social standing	Entered
Strategy	Abatement
Answer	An appropriate legislative act is being prepared that obliges data sources to participate in the data transfer process for project KAZA.

Risk ID	Date [2]
Description	Destructive attitudes of data source owners. Data sources may also not cooperate after the drafting and adoption of regulatory enactments
Effect	High
Probability	Medium
Risk owner	Project leader
Risk identification date	08.12.2020
Statuss	Not timed
Strategy	Abatement
Answer	Personal and proactive relationships with technical staff of data sources

Risks ID	Procesi [1]
Description	VUGD maturity level of the analytical process
Effect	High
Probability	High
Risk owner	Project leader
Risk identification date	08.12.2020
Statuss	Not timed
Strategy	Abatement
Answer	Personal and proactive relationships with technical staff of data sources

Risk ID	Finanse [1]
Description	No funding has been allocated to the KAZA project.
Effect	High
Probability	High
Risk owner	VUGD

Risk identification date	08.12.2020
Statuss	Not timed
Strategy	Abatement
Answer	Personal and proactive relationships with technical staff of data sources

Risk ID	Finanses[2]
Description	KAZA the funding allocated to the project is insufficient. Risks may arise if funding is not found for a long period and project implementation is delayed for a long period and the procurement process results in the application of the highest cost bidder.
Effect	High
Probability	High
Risk owner	VUGD
Risk identification date	08.12.2020
Statuss	Not timed
Strategy	Abatement
Answer	Carry out market studies prior to the approval of the budget of the project and the clarification of the needs prior to the announcement of the procurement.

Risk ID	Legislative acts [1]
Description	The KAZA project does not have the appropriate coverage of the laws. A sophisticated and time-consuming process of designing and harmonising appropriate legislation can affect the scope of the functionality and amount of data provided for by KAZA, which can result in partial analytical capacity utilisation.
Effect	High
Probability	High
Risk owner	VUGD

Risk identification date	08.12.2020
Statuss	Not timed
Strategy	Abatement
Answer	Timely preparation of the legislative package and its coordination with stakeholders.

Risk ID	Procesi [2]
Description	Nav definēts KAZA īpašnieks, kas nosaka KAZA funkcionalitātes apjomu un izstrādes prioritātes.
Effect	Medium
Probability	Medium
Risk owner	Project leader
Risk identification date	08.12.2020
Statuss	Not timed
Strategy	Abatement
Answer	Determine the role of owner of KAZA for a specific person