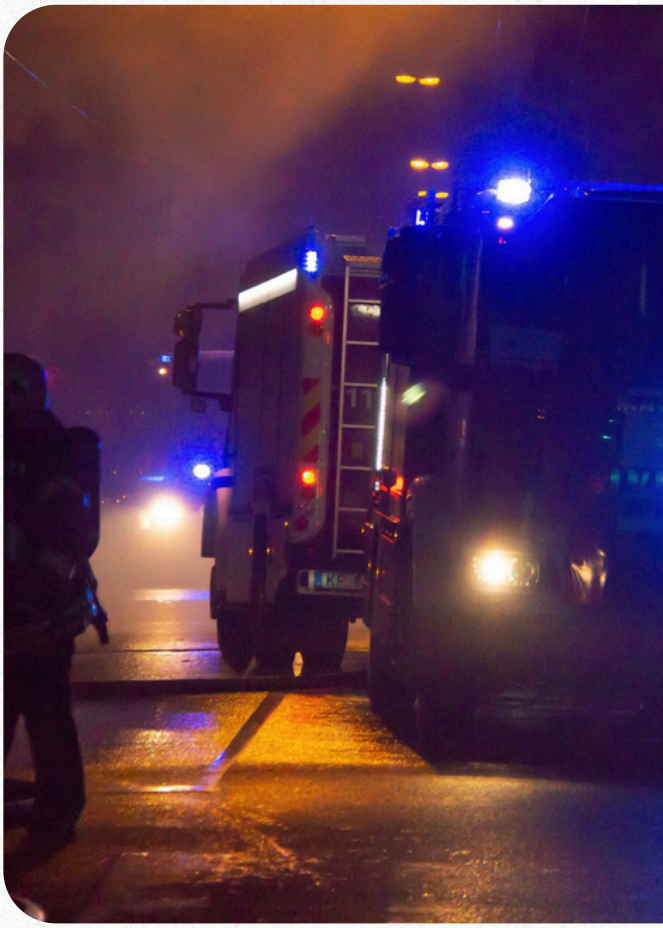


PREPARATION TO IMPLEMENT NATIONAL DISASTER DAMAGE AND LOSS DATABASE IN LATVIA

Project acronym: LV-DLD-2
Project duration: 12 months
Total eligible costs: 141 723.64 EUR

Project aimed to to finalise preparations for the National disaster damage and loss database (DLD) implementation in Latvia.
by build upon the existing feasibility studies: preparing a DLD development roadmap and update DLD technical specification.

Co-funded by the European Union

Project was implemented by Information Centre of the Ministry of the Interior of the Republic of Latvia in close cooperation with State Fire and Rescue Service

Objectives of the project

- To draft the DLD development roadmap
- To supplement existing DLD technical documentation and cost estimates
- To analyse regulatory changes needed to enable the DLD and research technologically similar information systems in
- Latvia with focus on the public sector

Work Packages and Deliverables

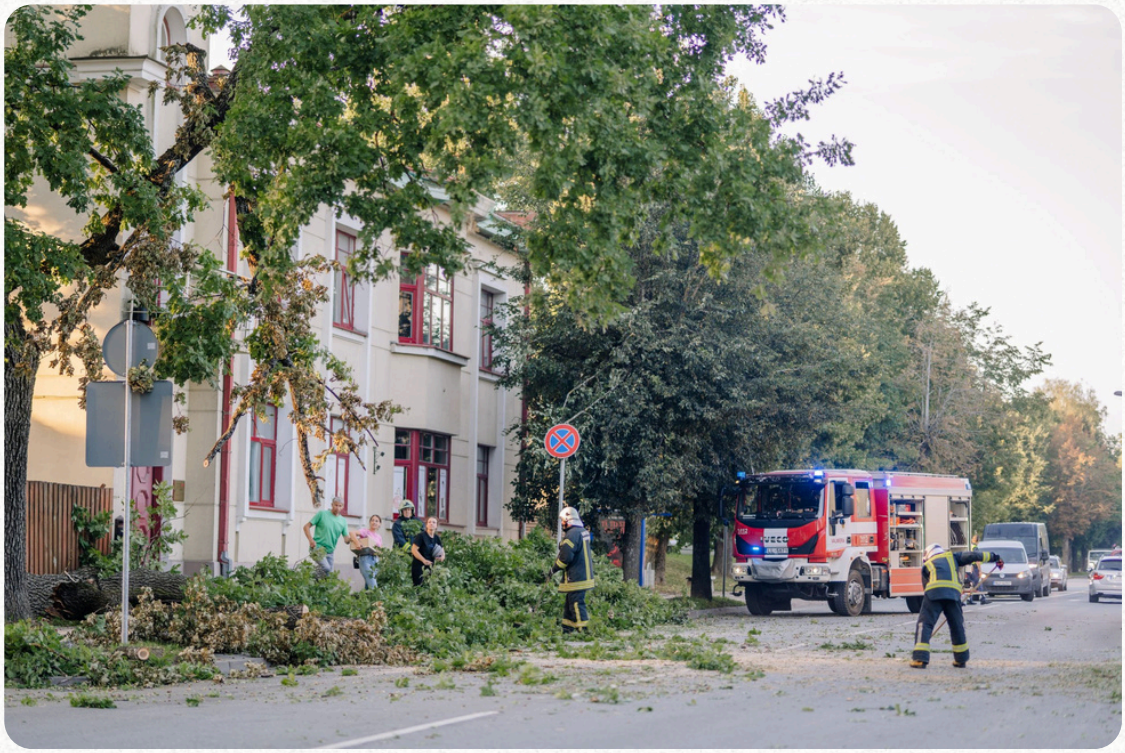
- **Project Management and Coordination**
- **Preparation of the National Disaster Damage and Loss Database Development Documentation**

As a result of project management and coordination efforts relevant reports and communication materials were prepared.

For the implementation of DLD documentation Information Centre signed a contract with “Agile&Co” Ltd.

The project team completed several key activities supporting the development of the DLD system. A comprehensive development roadmap was prepared, drawing on comparable information systems in Latvia, user story analysis, and phased MVP cost estimates.

The team also finalized the DLD Integration Design and Architecture Document, informed by technical interviews with external data providers. In addition, the existing technical documentation was supplemented with insights from the roadmap and architectural design. Finally, an assessment of the necessary regulatory changes was carried out, outlining the legal considerations and proposed legislative amendments required for successful DLD implementation.



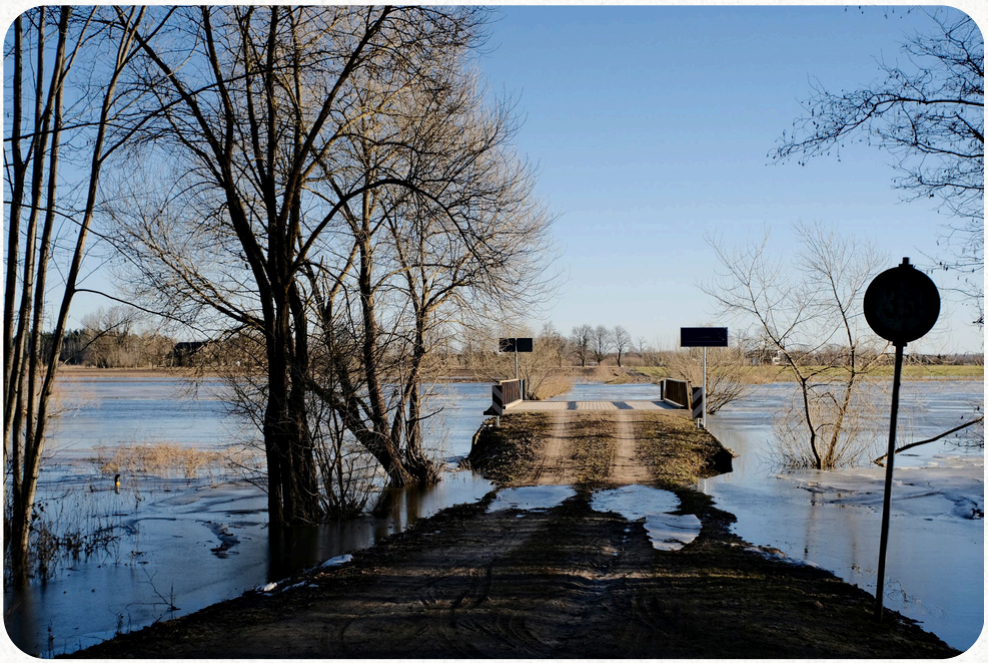
SYSTEM ARCHITECTURE

The DLD system architecture establishes a unified, modular framework that enables national and municipal institutions to collect, manage, and analyze disaster-related data in a standardized and interoperable manner. Its conceptual and business architecture integrates risk management, disaster response, and analytical functions across the full disaster management cycle, supported by GIS-based mapping and visualization.

The software architecture is service-oriented and consists of six core components, including a public and institutional user portal, disaster and risk management modules, analytical tools, a GIS database, and shared administrative services. This modular design ensures scalability, flexibility, and future system expansion.

The data architecture defines structured, standardized handling of business, reference, and system data, using relational models, controlled vocabularies, and spatial data compliant with INSPIRE and OGC standards. Secure API-based data exchange ensures full interoperability within Latvia's national framework.

The technical architecture is designed for high availability, security, and resilience, using containerized deployment, virtualization, redundancy, automated backups, and DevOps-based continuous integration. Strong interoperability is ensured through connections to national authentication and registry systems, communication platforms, the Open Data Portal, the Sendai Framework database, and the ABS+ public alerting system



TECHNICAL SPECIFICATION

The technical specification defines the DLD system as a flexible, multi-level platform designed to support diverse user groups, including government institutions, municipalities, private organizations, insurers, and the general public. Each user category is assigned specific access rights and responsibilities, ensuring that the system functions both as a public information resource and an operational tool for disaster management.

A phased development approach is prescribed, beginning with usability and GIS functionality, followed by the creation of disaster and risk registers, and concluding with analytical and simulation tools. Each phase requires thorough testing, documentation, and acceptance procedures. The development will follow Agile SCRUM methodology within a fixed-price procurement framework, with the contractor providing a two-year warranty that includes maintenance and technical support.

The specification mandates strict compliance with GDPR, national data protection laws, and cybersecurity standards. Secure communication, encryption of sensitive data, audit logging, and full traceability of user actions are required throughout the system. The architecture must meet relevant security classifications and incorporate ongoing compliance updates.

Technically, DLD will operate within the centralized IT environment of the Ministry of the Interior, with development and testing environments managed by the contractor. Open-source technologies are prioritized to reduce long-term costs, while any commercial software must be fully licensed and maintained by the contractor. The system must support scalability, interoperability, and standardized data exchange formats such as XML and JSON.

Functionally, the system will consist of a public portal offering risk information, event updates, and geospatial visualizations, as well as an internal operational environment supporting risk management, disaster registration, analytics, reporting, multilingual access, and accessibility compliance. Integrated communication tools and a user-friendly administrative interface will facilitate efficient coordination and content management. Rigorous auditability, logging, and quality assurance requirements are included to ensure reliability, transparency, and accountability.

DATA INTEGRATION ANALYSIS AND ASSESSEMENT

The assessment examined current data management practices across key institutions to design a practical and cost-efficient data ingestion approach for DLD. Given the relatively low frequency and limited volume of disaster events in Latvia, maintaining continuous automated integrations was deemed unnecessary and costly. Instead, a dual model is recommended: manual data entry by institutional users for timely updates and periodic bulk imports via standardized CSV formats for aggregated loss reports, insurance data, and classifier updates. This approach accommodates institutions with varying technical capacities while minimizing long-term maintenance costs.

A structured methodology for loss assessment is defined, outlining how DLD will classify and calculate financial, human, and asset-related impacts using standardized classifiers and disaster-specific formulas. Institutions will submit verified loss data within six months, ensuring accurate valuation and Sendai Framework–compliant reporting.

Geospatial data integration is identified as a critical component, enabling visualization of disaster impacts and risk areas.

DLD will provide a built-in GIS workspace for institutions lacking their own mapping tools, while others may exchange spatial data in standardized formats such as Shapefile, GeoJSON, GeoPackage, and GeoTIFF. Essential geospatial layers—such as administrative boundaries, cadastral maps, population grids, critical infrastructure, and flood zones—will be sourced from national authorities and regularly updated by the system administrator.

The system will leverage national ICT services to ensure security and interoperability.

A conceptual data-handling model establishes clear post-disaster workflows: incident registration within three days, followed by validated loss data submission within six months. All manually entered or imported data will undergo verification and expert review before being used for analysis, supporting trend identification, cross-disaster comparisons, and alignment with national risk management objectives.

DATA INTEGRATION ANALYSIS AND ASSESSEMENT

The assessment examined current data management practices across key institutions to design a practical and cost-efficient data ingestion approach for DLD. Given the relatively low frequency and limited volume of disaster events in Latvia, maintaining continuous automated integrations was deemed unnecessary and costly. Instead, a dual model is recommended: manual data entry by institutional users for timely updates and periodic bulk imports via standardized CSV formats for aggregated loss reports, insurance data, and classifier updates. This approach accommodates institutions with varying technical capacities while minimizing long-term maintenance costs.

A structured methodology for loss assessment is defined, outlining how DLD will classify and calculate financial, human, and asset-related impacts using standardized classifiers and disaster-specific formulas. Institutions will submit verified loss data within six months, ensuring accurate valuation and Sendai Framework–compliant reporting.

Geospatial data integration is identified as a critical component, enabling visualization of disaster impacts and risk areas.

DLD will provide a built-in GIS workspace for institutions lacking their own mapping tools, while others may exchange spatial data in standardized formats such as Shapefile, GeoJSON, GeoPackage, and GeoTIFF. Essential geospatial layers—such as administrative boundaries, cadastral maps, population grids, critical infrastructure, and flood zones—will be sourced from national authorities and regularly updated by the system administrator.

The system will leverage national ICT services to ensure security and interoperability.

A conceptual data-handling model establishes clear post-disaster workflows: incident registration within three days, followed by validated loss data submission within six months. All manually entered or imported data will undergo verification and expert review before being used for analysis, supporting trend identification, cross-disaster comparisons, and alignment with national risk management objectives.