



Technical Specifications

for

delivery of services on Transport Observatory Data Information System Upgrade

PS/SRV/TOU/010/2024

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1. Introduction

This document includes all the requirements on the basis of which each Tenderer will prepare its tender (Technical Proposal and Financial Proposal) for the performance of the services that are the subject of the Contract resulting from this procedure.

The Contracting Authority is the Transport Community through by the Permanent Secretariat of the Transport Community.

Permanent Secretariat of Transport Community - is one of the institutions set up under the Transport Community Treaty ("Treaty"). The Transport Community is an international organisation in the field of mobility and transport. It has 36 participants – the European Union member states represented by the European Commission, the six South East European Parties (the Republic of Albania, Bosnia and Herzegovina, Kosovo* , Montenegro, the Republic of North Macedonia, and the Republic of Serbia and the three observing participants (Georgia, Republic of Moldova and Ukraine).

The Permanent Secretariat of the Transport Community ("the Secretariat") provides administrative support to the other institutions of the Transport Community (the Ministerial Council, the Regional Steering Committee, the technical committees and the Social Forum). The Secretariat acts as Transport Observatory to monitor the performance of the indicative TEN-T extension of the comprehensive and core networks to the Western Balkans and assist the six Western Balkans partners in adopting and implementing the EU legislation in the transport field and supporting projects connecting Western Balkans regional partners among themselves and with the EU.

The Secretariat also reviews the implementation of the obligations under the Treaty.

Address: Beogradjanka building, Masarikova 5/8, 11000, Belgrade, Serbia

Internet addresses: <https://www.transport-community.org/>

2. Background

2.1. Information about the Contracting Authority

The Transport Community is an international organisation in the field of mobility and transport. Transport Community is working on integrating Western Balkans' transport markets into the EU by assisting the regional partners in adopting and implementing the EU legislation in the transport field and supporting projects connecting the region and with the EU. The aim of the Treaty therefore is the creation of a Transport Community in the field of road, rail, inland waterway, and maritime transport as well as the development of the transport network between the European Union and the Western Balkan Parties.

The Permanent Secretariat of the Transport Community (further on "TCT") has been tasked to support the parties on the path towards achieving their common goals. The organisation was

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence

founded by the Treaty² establishing the Transport Community signed on 9th of October 2017 by all partners (Council Decision (EU) 2019/392).

2.2. Information about the context which has made necessary the procurement of the services

According to the Treaty, the Transport Community Secretariat should develop Transport Information System with aim to monitor the performance of the indicative TEN-T extension of the comprehensive and core networks to the Western Balkans.”

Fulfilment of taken obligations has been considered and monitored by the Secretariat of TCT. The Secretariat of TCT set in place software system, named Transport Observatory Database/Information System (TODIS) as tool which will be used for that purpose.

<https://www.transport-community.org/transport-observatory/transport-observatory-database-information-system/>

TODIS became operational in December 2023 (currently under the maintenance contract) and serves as the main information repository in relation to the TEN-T indicative extensions in the Western Balkans, providing both static and dynamic data for the benefit of people and businesses in the region. The Transport Observatory includes the following functions:

- Monitoring the performance of the TEN-T Network in Western Balkans (both infrastructure quality and operation/service performance).
- Monitoring of TEN-T projects;
- Monitoring EU Acquis transposition.

Considering recent legal changes, including the revised TEN-T Regulation and completion of two (2) studies by the Transport Community Secretariat it is necessary to increase level of TODIS compliance with actual regulations and add new functionalities.

2.3. Objectives (Information about the expected benefits)

After the upgrade, TODIS should include:

- New KPIs as per revised TEN-T Regulation for all modes of transport;
- Results of the Study on climate resilience for both road and rail (GIS-based outcomes);
- Market Monitoring Report for Rail (Non-GIS outcomes).

The detailed requirements for each task are listed in Point 3.3.

2.4. Stakeholders

Information about the stakeholders and their implications in the contract implementation:

- Transport Community Treaty Permanent Secretariat (TCT Secretariat) – Contracting Authority;

² <https://www.transport-community.org/wp-content/uploads/2022/10/treaty-en.pdf>

3. Description of the services

3.1. General objective to which the services shall contribute

The general aim of the services is to enhance the functionality and scope of the Transport Observatory/Database Information System (TODIS) to support evidence-based decision-making, aligned with the requirements of the revised TEN-T Regulation and the evolving needs of the transport sector.

3.2. Specific objective to which the services shall contribute

The specific objective of the services is to enhance the TODIS database by introducing new parameters, datasets, and outputs aligned with the updated KPIs, as per the revised TEN-T Regulation. This includes upgrading the TODIS application to incorporate thematic maps related to the new KPIs, climate resilience maps based on GIS outcomes for road and rail, and dashboards featuring the updated KPIs to support comprehensive analysis and reporting.

3.3. Services and activities to be performed

The contractor will be responsible for implementing changes to the Transport Observatory/Database Information System (TODIS). The source code of the existing TODIS application will be provided to the contractor by the Secretariat, who is expected to carry out modifications in line with the current structure and functionality of the system.

Specifically, any required changes in TODIS arising from the introduction of new KPIs should be seamlessly integrated into the application, following the same principles and practices already established in its design.

The contractor is requested to perform the following tasks:

Task 1. New KPIs as per revised TEN-T Regulation for all modes of transport

Sub-task	Task requirement description
T1.1	<p>Update TODIS database</p> <p>The TODIS database will be updated to incorporate new Key Performance Indicators (KPIs) for each transport mode as follows:</p> <ul style="list-style-type: none"> • Rail: six new KPIs, • Inland ports: two new KPIs, • Roads: five new KPIs, • Airports: two new KPIs, • Multimodal freight terminals: one new KPI. <p>A detailed description of each new KPI is provided in Appendix I of this Technical Specification.</p> <p>The final decision regarding the inclusion of the KPI for multimodal freight terminals will be made by the TCT Secretariat during the course of the project.</p> <p>The updates to the TODIS database should encompass the addition of new datasets within existing database.</p>

Sub-task	Task requirement description
T1.2	<p>Upgrading of existing and adding new forms</p> <p>The contractor should upgrade/create forms in the TODIS application for the new KPIs.</p>
T1.3	<p>Development of new thematic map</p> <p>The contractor is required to develop a thematic map for each new KPI, ensuring full integration into the TODIS module for data exchange. Each new thematic map must adhere to the existing TCT mapping standards, including the creation of appropriate symbology.</p> <p>The Filter module should be configured to query all new maps in the same manner as it does for existing maps, and it must be updated to include new parameters used for querying these maps.</p> <p>The Info Tool should be capable of displaying all parameters associated with network elements, regardless of whether they are part of an existing dataset or a newly added one.</p> <p>Additionally, all new thematic maps must be labelled consistently with the existing thematic maps to maintain uniformity and usability across the system.</p>
T1.4	<p>Dashboard update</p> <p>Upgrade of dashboards with new KPI</p>
T1.5	<p>Dashboard widget selection</p> <p>A new functionality should be added to the dashboard, allowing users to choose which widgets will be visible when a dashboard query is executed.</p> <p>The dashboard's data filtering tool should display a list of widget names accompanied by checkboxes, enabling users to select or deselect widgets to determine their visibility after executing the query.</p>
T1.6	<p>Data and compliance validation</p> <p>Develop functions to perform data validation and compliance checks for all new parameters and datasets.</p> <p>The data validation function should identify and display all network elements lacking a key value required for KPI calculations. This function should be accessible from the module drop-down list in the filter tool. Validation results must be presented on both a map and a separate table. Users should be able to double-click a table row or map element to open a form for entering or modifying the data.</p>

Sub-task	Task requirement description
	The compliance checking function should identify network elements that either meet or fail to meet the requirements of the TCT regulation. These compliance checks must operate in the same manner as those for existing maps.

Task 2. New module on climate resilience for both road and rail (GIS-based outcomes)

The climate resilience project has produced GIS-based thematic maps for both rail and road networks. These maps reflect the outcomes of a comprehensive vulnerability and criticality analysis of the TEN-T Core and Comprehensive Networks, covering current conditions and future scenarios for 2030 and 2050. The results are divided by:

Vulnerability Analysis

- **Sensitivity:** Maps display sections of the road and rail networks most affected by climate-related hazards based on historical damage data.
- **Exposure:** Spatial representations of current and future exposure to climate-related hazards, ranked by frequency and likelihood of occurrence.
- **Combined Vulnerability:** Integrated maps illustrating the spatial distribution of vulnerability levels for individual and combined climate hazards.

Criticality Assessment

- Identification of network sections where operational disruptions would have the most significant negative impact.
- Integration of vulnerability and criticality to pinpoint the most critical sections of road and rail networks.
- Thematic maps highlighting current and future criticality levels, prioritising sections for adaptation measures and potential project pipelines.

These GIS maps provide a spatially detailed foundation for understanding climate risks, enabling informed decision-making and the prioritisation of adaptation measures for the TEN-T road and rail networks.

Sub-task	Task requirement description
T2.1.	<p>Adding climate resilience map to Data Sharing module.</p> <p>The thematic maps for each identified climate hazard, covering both the 2030 and 2050 time horizons, should be integrated into the Basemap Gallery of the TODIS application.</p>
T2.2	Creation of hazard layer with Linear Referencing System (LRS)

	<p>Create layer for each hazard with LRS information about hazard distribution for road and rail network.</p> <p>The user should be able to select one or all hazards to be displayed on the network</p> <p>Info tool should display information about hazard and position of the hazard along network.</p>
T2.3	<p>Adding hazard to Filtering tool</p> <p>Filtering tool should support multi-selection of climate hazards, enabling users to filter and display one or multiple hazards simultaneously. Each hazard should appear as a distinct selectable item within the Filtering Tool, ensuring clarity and ease of use.</p>
T2.4	<p>Data collecting application</p> <p>Create an application for data collecting. User management and generation of new data collection task should be done from TODIS application. Ensuring all collected data is formatted and structured for seamless integration into TODIS, including LRS attributes and relevant metadata.</p>

Task 3. Railway Market Monitoring Report (Non-GIS outcomes)

Monitoring the railway markets is necessary in order to inform policy choices, both at EU, Regional and national level.

The Recast of the first Rail package (Directive 2014/34/EU) finally created a legal base for RMMS reporting and data harmonisation. It's Article 15 states that the Commission shall make necessary arrangements to monitor technical and economic conditions and market developments in Union rail transport. This must include the use of networks as well as the evolution of framework conditions such as infrastructure charging, capacity allocation, investment in railway infrastructure, prices, quality of services, use of public service contracts, market opening, degree of harmonisation, licensing, employment and related social conditions. The Directive foresaw that the Commission may adopt measures to ensure consistency in the Member States' reporting obligations. The Commission itself shall report every two years to the European Parliament and the Council on the developments in rail markets.

Accordingly, in July 2015, after thorough consultation with Member States and stakeholders, the Commission adopted an [implementing Regulation \(EU\) 2015/1100 on the reporting obligations of the Member States in the framework of rail market monitoring](#). Since 2016, EU Member States and Norway have been providing input to the Commission's monitoring of the rail market in line with the format and content defined in the Regulation.

In 2023 TCT Secretariat mirroring the EU Railway Market Monitoring Report has collected data on rail market developments in Regional Partners via RMMS Questionnaires for the first time (<https://www.transport-community.org/reports/assessment-of-the-rail-market-in-the-western->

[balkans-in-terms-of-capacities-policies-economic-and-technical-level-of-development-of-freight-and-passenger-transport-segments/](#) .

The data for Railway Market Monitor Report are currently collected by entering the data into a predefined Excel file questionnaire. Each partner sends an Excel file and the TCT Secretariat summarises this data in a Report file that is later used to create charts that are used in the report.

The outcome of this task is to transpose this processes into an IT tool that will collect the data and generate the reports and infographics needed for generating the Rail Market Monitoring Report for the Western Balkans compared with the adequate EU Report (https://transport.ec.europa.eu/transport-modes/rail/market/rail-market-monitoring-rmms_en).

Sub-task	Task requirement description
T3.1	<p>Creation of new database</p> <p>Create new database which will be in line with Directive 2012/34/EU and regulation EU 2015/1100 dataset which was collected in excel file before by the TCT Secretariat.</p>
T3.2	<p>Data collecting application</p> <p>Create application for data collecting. User management and generation of new data collection task should be done from TODIS application.</p>
T3.3	<p>Excel chart template</p> <p>Create excel template which will pull data from database and create all necessary charts for report.</p>
T3.4	<p>Info tool</p> <p>Create a new form in the TODIS application that displays the collected data and displays infographics with a click on specific object representing the Regional Partner to display the form with the data for the selected year.</p>

3.4. Expected results/outcomes following the performance of the services

All deliverables shall be prepared in English and shall be handed over in electronic editable format.

Deadlines for delivery refer to the draft version of the reports. In principle, the deadlines set out below cannot be extended.

The Contractor is deemed solely responsible for delays occasioned by subcontractors or other third parties (except for rare cases of *force majeure*). Adequate resources and appropriate

organisation of the work including management of potential delays should be put in place in order to observe the timetable.

The following deliverables shall be produced by the Contractor under the Contract:

No.	Deliverables (Activities)	Deadline for submission
1.	Inception Report and Methodology	1 month after the commencement date
2.	New Modules (Task 2 and Task 3) Analysis and System Detailed Design	3 months after the commencement date
3.1	System Development for Task 1	6 months after the commencement date
3.2	System Development for Task 2 and Task 3 3.2.1 Acceptance Testing Plan; 3.2.2 Training Plan.	3.2.1. 8 months after the commencement date 3.2.2. 10 months after the commencement date
4.	Data Import for Task 2 and Task 3	10 months after the commencement
5.1	System Implementation for Task 1	7 months after the commencement
5.2.	System Implementation for Task 2 and Task 3	11 months after the commencement
6.	Training for Task 2 and Task 3	12 months after the commencement
7.	Maintenance for all Tasks	12 months, after TODIS upgrade commissioning.

Each of the above-listed deliverables are presented in more details below:

1. Activity 1: Inception Report and Methodology

During the Inception Phase a detailed review of the ToR requirements and related documentation (reports, data, data description, key stakeholders, legislation, etc) will be undertaken. This task will also include the analysis, development, and confirmation of detailed plan for the successful implementation of the project, including all phases of the project implementation. The Contractor shall also (a) review and further develop its risk mitigation strategy (b) define the communication strategy and (c) update and submit as an appendix to

the Inception report the and Quality Assurance Plan provided in the Technical offer. Based on the detailed review, the Contractor shall provide description of the technical equipment, software, definition of the conceptual data model, and high level business processes and overall training plan (to be further detailed under Activity 3).

All the above shall be duly reflected in The Inception Report that shall also include a detailed implementation timeline showing compliance with the contractual deadlines. Such timeline shall entail sequencing project activities (tasks and sub-tasks), milestones and the project's critical path.

The overall duration of the inception phase shall not exceed 1 month, and the activity will conclude with the delivery of the Inception Report.

Deliverable: Inception Report

Deadline: Commencement plus 1 month

2. Activity 2: New Modules (Task 2 and Task 3) Analysis and System Detailed Design

This activity would follow the Inception Phase and includes the analysis and the development of new segments of the system's including detailed design for Task 2 and Task 3.

The system design shall include the system architecture with the description of models in UML (Unified Modelling Language), detailed design of the modules, detailed design of the system database (logical and physical design), system functionality and interface (including workflow diagrams and mock-up screens with logical sequence and validation procedures), detailed description of system integration.

This activity shall be completed by the end of month three with the delivery of the Business Analysis and System Design Report.

Deliverable: Analysis and System Design Report.

Deadline: Commencement plus 3 months

3. Activity 3: System Development

3.1. Activity 3.1: System Development for Task 1

This major activity involves upgrading the TODIS system to integrate new KPIs, including development and testing of the system modules in the Contractor's environment. The Contractor will ensure quality assurance throughout, following the plan provided in the Technical Offer and revised at the Inception Report. During this phase, the acceptance testing will also be developed as per the Technical Specifications.

System upgrade will begin in month one, with the acceptance testing plan delivered by month six, along with the release candidate version in the staging environment. The release candidate will be considered delivered after successful acceptance testing and will then move to production. The release candidate version shall be considered as delivered after undergoing

the acceptance testing, as per the approved acceptance testing plan (please refer to section 9.1). This last task shall also define the issues to be dealt with in the system implementation phase (Activity 5)."

Deliverable:

- New KPIs **release candidate** integrated in **TODIS**;
- **Acceptance Testing Plan**;

Deadlines:

- **Commencement plus 6 months for the Acceptance Testing Plan**;

3.2. Activity 3.2: System Development for Task 2 and Task 3

This major activity will include the development of two (2) new modules and implementation in the development environment of the Contractor. It will entail conducting continuous testing and quality assurance on development as per the Quality Assurance Plan provided in the Technical offer and further revised at the time of Inception Report, staging and production environment. During this period, the plans for acceptance testing and training plan will also be developed in line with the relevant provisions of the Technical Specifications.

New modules development is expected to commence in month four and entails the delivery of the acceptance testing plan in month eight, the training plans in month ten together with the release candidate version of the system (fully compliant with all ToR requirements in staging environment which will go in production mode after successful acceptance testing). The release candidate version shall be considered as delivered after undergoing the acceptance testing, as per the approved acceptance testing plan (please refer to section 9.1). This last task shall also define the issues to be dealt with in the system implementation phase (Activity 5)."

Deliverable:

- **Task 2 and 3 release candidate**;
- **Acceptance Testing Plan**;
- **Training Plan**.

Deadlines:

- **Commencement plus 8 months for the Acceptance Testing Plan**;
- **Commencement plus 10 months for the rest**.

4. Activity 4: Data Import for Task 2 and Task 3

Following the collection and confirmation of data by TCT Secretariat, the sub-task of importing the available data to the system would be undertaken, including data formatting and restructuring, according to the data model requirements.

Data structure and format must be tested, verified, and validated before being imported for operational use. During the data processing and import, the Contractor should ensure the quality for spatial characteristics of the data, for the completeness and logical accuracy of the attribute information of the data and for the metadata. The quality of data and information must be ensured throughout their life cycle.

The task will conclude with the delivery of the Report on Data Import and Validation in month 10.

Deliverable:

- **Data validated and imported.**
- **Report on imported and quality assured data.**

Deadline: Commencement plus 10 months

5. Activity 5: Implementation of the System

5.1. Activity 5.1: System Implementation for Task 1

This activity comprises the implementation of staging and production environment on the stakeholder's infrastructure (on-premise server), as well as conducting the system acceptance testing. It also includes the development of the system documentation and system maintenance plan. The overall duration is estimated at one month (month 7).

Deliverable:

- **Acceptance testing protocols;**
- **System documentation (user guides, administrator's guides, installation, and configuration guides);**
- **System maintenance plan.**

Deadline: Commencement plus 7 months

5.2. Activity 5.2: System Implementation for Task 2 and Task 3

This activity comprises the implementation of staging and production environment on the stakeholder's infrastructure (cloud or on-premises as per the agreed technical proposal and detailed system design), as well as conducting the system acceptance testing. It also includes the development of the system documentation and system maintenance plan. The overall duration is estimated at one month (month 11).

Deliverable:

- **Acceptance testing protocols;**
- **System documentation (user guides, administrator's guides, installation, and configuration guides);**
- **System maintenance plan.**

Deadline: Commencement plus 11 months

6. Activity 6: Training for Task 2 and Task 3

This task includes the training on the system for both regular system users (i.e. Regional Users, Regional Coordinators, TCT Subject Matter Experts) as well as the system power users (i.e. administrators). This would include conducting training on data input, analysis, and interrogation, as well as reporting and data outputs.

The training should be carried out in accordance with the requirements of the Technical Specifications and based on the Training Plan previously developed by the Contractor and approved by the Contracting Authority (see Activity 3.2).

There should be specialised courses for individual users of the system to include a comprehensive set of topics in order to increase the capacity to work with the system and use the full amount of its resources. The training materials should include a different set of materials for the different categories of learners.

Training of Regional Users and Regional Coordinators is expected to take place in Western Balkans region organised by the TCT Secretariat.

The Contractor shall be responsible for all aspects related to training delivery and materials. The cost for logistics will be covered by the TCT Secretariat, including rental of adequate venues, refreshments and meals for all participants.

The overall duration of this Activity would be one month, thus completing the delivery of the TODIS within 12 months.

Deliverable:

- **Training materials;**
- **Training protocols.**

Deadline: Commencement plus 12 months

7. Activity 7: TODIS Maintenance related to all Tasks

Following the successful implementation and put into operation of the upgrade of the TODIS, after the system commissioning, a maintenance period of one year for the upgrade shall commence. During the maintenance period, the Contractor shall:

- Remedy TODIS upgrade related *defects* (i.e. inherent deficiencies of the system);
- Maintain the system upgrade operational and remedy *errors* (problems in the functioning of the upgraded elements of the system, which may or may not be the result of a *defect*);
- Serve requests for support from TODIS users.

The minimum requirements during the maintenance period include:

- Keeping upgraded elements of the information system functional and secure;
- Making necessary alterations to or corrections of the upgraded elements of the information system;
- Documenting the use of and alterations made to the upgraded elements of the information system;
- Monitoring the operation and use of upgraded elements of the information system;

- Bug-Error fixing with response and resolution time of 1 working day for critical issues and 3 working days for non-critical issues;
- System general support (Including software updates, updates of security certificates, etc.)/ issues tracking.

Deliverable:

- **Monthly reports with all issues, bug fixes and maintenance activities**
- **Final Maintenance Summary with all issues, bug fixes and maintenance activities and recommendation for next steps of the system life-cycle maintenance and improvement of the software and hardware components.**

Duration: 12 months, from TODIS upgrade commissioning.

3.1. Duties and responsibilities of the parties

The Contractor shall be fully responsible for:

- ensuring resource planning in relation to the estimated schedule for the performance of the contract and presented in this document;
- fulfilling its obligations, in compliance with the best practices in the field, the relevant legal and contractual provisions, as well as with full understanding of the complexity related to the successful execution of the Contract, so as to ensure the fulfilment of the established objectives, ensuring that the activities performed and the obtained results are at the required quality parameters;
- ensuring the validity of all authorisations and certificates which might be needed for the performance of the services;
- ensuring a certain degree of flexibility in the performance of services according to the objective needs of the Contracting Authority at any time during the course of the contract. This might include slight adaptations of the schedule of performing the services, to bring it in line with challenges on the ground.
- performing the services - and presenting the results - in accordance with the requirements of the Technical Specifications;
- collaborating with the assigned staff of the Contracting Authority.

The Contracting Authority shall be responsible for:

- facilitating contacts with relevant stakeholders in all regional partners;
- taking over the deliverables and paying the contract price at the time and in the manner prescribed in the contract.

4. Assumptions and risks

The Consultant is deemed to have acknowledge all the relevant constraints in this regard and include in its bid all the costs for addressing them accordingly.

5. Approach and methodology

The Contractor will have to define a methodology, describing in detail the activities and sub-activities (if any) that will be performed according to these ToR to achieve the expected results.

Additional activities may also be suggested, and their need justified for the successful implementation of the assignment.

The methodology should indicate the intended results in the realisation of the respective (sub)activity by linking it to the specifics of the activity itself and the proposed way of its implementation and to clearly describe the chronological, technological, and logical interconnection of the processes in the implementation of the individual (sub)activities.

The methodology should include a detailed schedule with specific deadlines for the implementation of specific activities in the individual stages and the assignment as a whole. The proposed timetable should comply with the overall deadlines under the project and shall be presented in the form of a Gantt Chart.

The Contractor has to apply a system for the management of the risks within this assignment. This risk management process of the Contractor has to include, as a minimum, a risk analysis, identification of possible risks and the necessary actions to avoid, transfer, mitigate or accept them.

The methodology shall be included in the tender and further refined at Inception stage.

6. When developing methodology, the Contractor shall take into account the existing maintenance contract and make sure the TODIS upgrade activities to not collide with the existing maintenance contract and by no means to undertake any activities that would impact the maintenance of the already existing system. Work plan for activities/services

The main relevant milestones for the contract implementations are defined in sections 3.3 and 3.4 above. In due observance of the deadlines therein provided, the Contractor will prepare the implementing schedule as part of its methodology (see point 5 above).

7. Place and duration of activities/services

7.1. Place and duration of activities/services

Contracting Authority's headquarters is located in Belgrade, Republic of Serbia. While the Contractor shall not be asked to open a branch office or otherwise register in Serbia for the scope of performing the contract, physical presence of its team in Belgrade shall be required from time to time.

7.2. Commencement date and completion date for the execution of the services or the Time/Period for Completion of the Services

The contract shall **last 24 months** from the commencement date, out which first 12 months shall be delivery of the above activities from 1 to 6 and 12 months shall be post commissioning maintenance as per activity 7.

8. Staff

The team delivering the services should include, as a minimum, the profiles hereunder provided.

The team should provide experts who have qualification and legal capacity to perform in a timely manner all the obligations of the Contractor described in this Terms of Reference throughout the term of the contract.

Experts who have a crucial role in implementing the contract are referred to as key experts. The profiles of the key experts for this contract including minimum requirements with regard to qualification and skills, specific professional and project related experience are provided below.

For carrying out the activities under the Contract, the Contracting Authority anticipates that certain fields of expertise or the following categories of professions (as applicable):

The team should include experts of sufficient qualification and capacity to perform in a timely manner all the obligations of the Contractor described in this Technical Specifications throughout the term of the contract.

The team delivering the services should include, as a minimum, the profiles provided under Annex 1 - Instruction to Tenderers.

The Contractor is responsible to select, hire and/or use any other experts whose inputs might prove necessary for the proper delivery of services without seeking Contracting Authority’s prior approval in this regard.

The costs for other experts, backstopping and support staff, as needed, are considered to be included in the tenderer's financial offer.

8.1. Main /key experts’ profile

Role of the expert: Team Leader	
Educational and/or professional qualification	University graduate from Mathematics/Engineering/IT areas or 10 years of professional experience
General professional experience	Proficiency in English
Specific professional experience	Proven skills in project management
Project related experience	Minimum 7 years of experience in major roles (project manager/team leader/system architect) in software development of Information Technology (IT) solutions in transport
Responsibilities under the Contract	Experience as a Project Manager in at least two completed projects involving the development of software applications.

Role of the expert: GIS Expert	
Educational and/or professional qualification	<p>University graduate from Mathematics/Engineering/IT areas or 8 years of professional experience</p> <p>Proficiency in English, both oral and written</p> <p>Proven skills in project management</p>
General professional experience	<p>Minimum 5 years of professional experience in software development in projects with GIS component</p>
Specific professional experience	<p>Experience in projects with commercial GIS software such as ArcGIS, MapInfo or open source QGIS, and related utilities</p> <p>Experience in handling large datasets and database management in GIS environments.</p> <p>Experience with PostgreSQL database and PostGIS extension</p> <p>Experience in software development in at least 2 completed projects which are using linear referencing systems (LRS) solutions for transport infrastructure</p>
Responsibilities under the Contract	<p>In charge for GIS task, transforming GIS related functional requirements into development tasks for the software development team and quality control in of GIS related functionalities accordance with the project milestones</p>

Role of the expert: Software Development Expert	
Educational and/or professional qualification	University graduate from Mathematics/Engineering/IT areas or 8 years of professional experience Proficiency in English, both oral and written
General professional experience	Minimum 5 years of professional experience in web software development.
Specific professional experience	Experience in development of application frontend and backend Experience in handling large datasets and database management. Experience with Postgres RDBMS. Experience in software development with NodeJS and React JavaScript framework, knowledge of C# or Java. Experience in software development in at least 2 completed projects.
Responsibilities under the Contract	In charge of software development team, transforming functional requirements into development tasks for the software development team and software quality control in accordance with the project milestones

8.2. Non-key experts (secondary experts)

The Contractor is responsible to select, hire and/or use local experts in each WB6 partner if needed, especially for data collection and other activities, as well as other experts whose inputs might prove necessary for the proper delivery of services without seeking Contracting Authority's prior approval in this regard.

The costs for other experts, backstopping and support staff, as needed, are considered to be included in the tenderer's financial offer.

9. Contract Management and approval of services

9.1. Services approval

All the services and deliverables to be produced under the contract shall be subject to acceptance by the Contracting Authority. The following acceptance procedures shall apply.

Contracting Authority's feedback shall be submitted within 20 calendar days upon receipt of the draft version of a deliverable and may take one of the following forms:

- a. Unconditioned approval;
- b. Approval with comments;

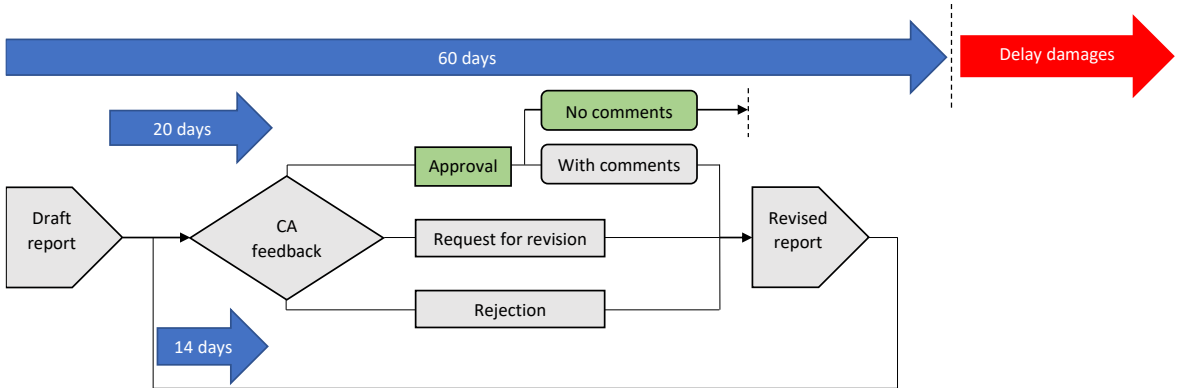
- c. Request for revision (in case the deliverable needs quality and/or content improvement);
- d. Rejection (in case the minimum contractual requirements on the deliverable's content and quality are not met).

In cases listed at points b, c and d above Contracting Authority's decision shall be accompanied by a list of comments that the Contractor will have to consider when preparing a revised version of the deliverable. The Contractor shall send the revised version as soon as practically possible, and the Contracting Authority shall provide its feedback within 14 calendar days from such submission.

Notwithstanding Contracting Authority's entitlement to reject or request revision of a deliverable until its feedback properly addressed, failure of the Contractor to have its reports approved within 60 calendar days from the initial submission would trigger delay damages applicable starting from the first day following such deadline.

Contracting Authority's failure to send feedback within the time limits set under this article would result in the reports being deemed approved starting from the day following the date such feedback was due.

The typical sequence of report approval events is presented graphically below:



9.1.1. Services acceptance protocols

Activities no. 3 and 5 shall only be deemed completed further to the successful passing of all relevant tests, confirmed by the acceptance protocols. Testing of TODIS upgrade shall be conducted based on the Acceptance Testing Plan to be prepared under Activity 3.

Testing starting date and duration shall be defined by the Acceptance Testing Plan, in full observance of the overall completion deadline for Activities 3 and 5. Failure to pass the acceptance tests within 30 days from the completion date of Activity 5 would trigger the provisions of art. II.10 of the contract applicable starting from the first day following such deadline.

Activity no. 6 shall be deemed completed further to the delivery of all training sessions as per the approved Training Plan and acceptance by the Contracting Authority of the training protocols. The training protocols template shall be included in the Training Plan Report and

shall comprise information on each training sessions held, no. and names of attendees and summaries of courses evaluations.

Contracting Authority's feedback approval on the training protocols shall be submitted within 7 days from submission and the relevant provisions of art. 9.1 shall apply providing that the approved templates are being used and the information thereunder included is factually correct.

9.1.2. TODIS upgrade Taking Over

Notwithstanding approval of individual deliverables/services performed under various activities, TODIS upgrade shall be taken over by the Contracting Authority when:

- the Contractor has successfully carried out all tests provided by the Acceptance Testing Plan, all test reports for the system being accepted by the Contracting Authority;
- TODIS system documentation has been submitted and approved unconditionally by the Contracting Authority);
- the Contractor has successfully delivered the training for all system components;
- All hardware and software forming the system is physically and legally in the possession of the Contracting Authority;
- All software that has been developed or acquired to support the development or functioning of the system or the component being taken over is physically and legally in the possession of the Contracting Authority.

Taking over of TODIS shall be formalised through a handover protocol to be concluded between the Contractor and the Contracting Authority. Such protocol will include details on fulfilment of each individual condition for TODIS taking over, as listed above. Notwithstanding the Contracting Authority's right to ask for template modifications or the time needed for effective signing of the handover protocol by both Parties, the date the last condition was met shall be considered the taking over date from which TODIS maintenance period (Activity 7) shall be deemed commencing.

9.2. Meetings and phone conferences

TCT Secretariat will seek to facilitate the communication between the Contractor and beneficiaries whenever needed, but it is the ultimate responsibility of the Contractor to obtain a sufficient flow of information from the national focal points to be able to complete each of the tasks of this contract.

TCT Secretariat shall designate person/-s for the entire duration of the contract for the regular day-to-day communication with the Contractor.

The contractor is expected to participate in the following meetings and phone conferences:

- A kick-off meeting, virtual or in TCT Premises in Belgrade, at the latest 7 calendar days following the entry into force of the contract.
- Conference calls between the Contractor, TCT Secretariat and national focal points – shall be organised to discuss key deliverables, and any other important issues on request of any of the parties, Contractor or TCT Secretariat.
- Progress calls between the Contractor and TCT Secretariat shall be organised twice per month. The contractor will be notified in case a summary record is deemed necessary for any of those meetings or conference calls. If requested, the summary record should be drafted by the contractor within 3 working days following the meeting and it needs to be agreed among the participants.
- Online meeting to present deliverables and receive feedback will be held with the stakeholders from RPs for each deliverable (excluding inception report) at least once.