

MONTENEGRO
Ministry of Transport

Western Balkans Trade and Transport Facilitation Project – WB TTFP phase 2

International Consulting Firm

Terms of Reference

for

ERTMS Implementation Plan of Montenegro

Ref No. MNE-WBTTFP-94710-CS-CQ-26-2.3.11

1. PROJECT BACKGROUND

The Loan Agreement for Montenegro's Western Balkans Trade and Transport Facilitation Project (TTFP) Phase 2 was signed on 13 February 2023 and will close on 30 April 2028. The Project objective is to reduce trade costs and increase transport efficiency in Montenegro by streamlining the processing of international trade and transport documentation for both traders and the administrations. The key benefit will be more efficient processing of international trade and transport documentation. Such efficiencies will enhance the transparency of transactions and reduce duplications and overlaps. The envisaged significant cost savings are expected to result in lower transport costs, reductions in GHG emissions associated with the decrease in truck idling time, reduced administrative costs to trade, and finally in increased competitiveness on regional and global markets.

The TTFP Phase 2 aims to enhance climate resilience of Montenegro's transport sector, through targeted infrastructure activities to enhance climate resilience at railway level crossings; by introducing an early warning system and a corridor monitoring observatory; and by enhancing institutional capacity through the provision of studies, guidelines, and integration of climate resilience considerations. Improving the resilience of the transport network is a part of the Transport Community Treaty (TCT), Sustainable and Smart Mobility Strategy for Western Balkans and as well as Sofia Declaration on Green Agenda for Western Balkans all of which Montenegro is a party too.

The Project consists of the following components:

Component 1: Facilitating movement of goods across the Western Balkans

The component will focus on (i) the design and implementation of a National Single Window (NSW) solution for trade; and (ii) Preparation of the technical designs for the new customs inspection facility at the Port of Bar and procurement of related equipment. This component supports Montenegro's regional and international commitments, including the CEFTA AP5, the Transport Community Treaty, and the World Trade Organization (WTO) Trade Facilitation Agreement (TFA).

Component 2: Enhancing transport efficiency and predictability

This component focuses on (i) the development of a Port Community System (PCS), (ii) the improvement of Railway Level Crossings (RLC), (iii) development and update to various transport sector strategy documents, and (iv) the preparation of the corridor monitoring system.

Component 3: This component will support the implementation of commitments to improve market access in services and foster regional investments

Component 4: Support to project implementation units (PIU)

This component will support the PIU and provide additional technical support, including policy coordination, operating costs, and monitoring and evaluation of the Project.

Ministry of Transport (MoT) is the umbrella ministry under which the transport sector falls and will serve as the lead implementing body for the project and is responsible for forming and the recruitment of the PIU staff. The MoT and TTFP Phase 2- PIU will be supported by the TSU of the Ministry of Finance in FM and procurement functions of the Project.

In addition to MoT, there are several other beneficiaries of the Project:

- a. Ministry of Maritime Affairs
- b. the Customs Administration (CA);
- c. the border police under the Ministry of Interior;
- d. the Railway Infrastructure of Montenegro;
- e. the Port Authority of Bar, along with Luka Bar and Port of Adria;
- f. Transport Administration and Monteput doo.

Beneficiaries of the Project include but are not limited to producers, traders, exporters, importers, and transport service providers, as well as RCA and other agencies regulating import and export procedures. At the regional level, Permanent Secretariat of the Transport Community of the Southern Europe (TCT) will also benefit from the Project.

2. *PRESENT SITUATION IN THE SECTOR (CONTEXT)*

The railway system of Montenegro consists of a network of about 250 km of standard-gauge lines, of which roughly 220–225 km are electrified at 25 kV 50 Hz AC, forming a single-track system concentrated around the national capital Podgorica as the main junction. The network is organized around three main corridors: the Belgrade–Bar railway (the backbone line linking the Adriatic port of Bar with Serbia), the Podgorica–Nikšić line, and the Podgorica–Tuzi line.

The system is technically demanding due to mountainous terrain, featuring around 120 bridges and over 120 tunnels with a combined tunnel length of nearly 58 km, including major engineering structures. Despite its limited size, the network is a critical regional corridor for passenger and freight flows between the Adriatic and Southeast Europe, but it remains in need of modernization to improve speeds, capacity, and interoperability with EU railway standards.

The railway sector in Montenegro operates within a transitional technical and institutional framework, characterized by partial alignment with EU interoperability requirements. The

railway infrastructure and operations are currently based on legacy signalling and train control systems, with limited deployment of modern interoperable systems.

The European Rail Traffic Management System (ERTMS), consisting of the European Train Control System (ETCS) and railway mobile communication systems (GSM-R and future FRMCS), is not yet systematically implemented across the national railway network. Existing signalling systems provide basic route protection but do not ensure continuous train supervision comparable to ETCS functionalities.

Based on currently available information, ETCS Level 1 is being considered on the corridor towards Albania, while earlier project proposals for the corridor towards Serbia included ETCS Level 2 solutions, which are currently subject to further analysis and revision.

Key characteristics of the current situation include:

- Predominance of national legacy signalling and train protection systems;
- Absence of a comprehensive national ERTMS deployment strategy aligned with EU Regulation (EU) 2023/1695;
- Fragmented investment planning for signalling modernization;
- Limited integration of infrastructure and rolling stock planning for interoperability purposes;
- Institutional responsibilities distributed across multiple railway entities without a single ERTMS coordinating framework.
- The absence of a structured ERTMS implementation roadmap constrains long-term interoperability, cross-border compatibility, and access to EU funding mechanisms.

The key objectives and the scope of this study are presented in the sections 4 and 5 below.

3. INSTITUTIONAL ARRANGEMENTS

The **Project Implementation Unit (PIU)** within the **Ministry of Transport** will oversee the implementation of this assignment.

The **Consultant** will work closely with relevant stakeholders ensuring compliance with **Montenegro's policies, EU regulations, and international best practices**.

The identified stakeholders relevant for the assignment in addition to the MoT are:

Directorate for Railway Traffic is a governmental administrative body within the competent ministry responsible for policy development, regulatory oversight, and strategic planning of the railway sector in Montenegro. It performs functions related to drafting and implementation of railway legislation, harmonisation with the EU acquis, and supervision of sectoral development policies, including interoperability and safety policy coordination.

Railway Agency is a newly established, legally and functionally independent regulatory body responsible for railway market regulation, safety oversight, and enforcement of technical and interoperability standards. It performs functions including licensing of railway undertakings, issuance of safety certificates and authorisations, supervision of infrastructure access conditions, and monitoring of compliance with national legislation and EU railway acquis, in accordance with the requirements of the European railway regulatory framework.

Željeznička infrastruktura Crne Gore (ŽICG) is the designated infrastructure manager responsible for the administration, maintenance, development, and operation of the public railway infrastructure network in Montenegro. In accordance with applicable railway legislation, it ensures non-discriminatory access to infrastructure, manages capacity allocation, and is responsible for the operation, maintenance, and modernization of track, signalling, and associated infrastructure systems.

Montecargo is a licensed railway undertaking engaged in freight transport services on the national railway network. It is responsible for the commercial operation of freight trains, ensuring compliance with applicable safety certification requirements, operational rules, and interoperability standards while providing transport services in accordance with market-based principles.

Željeznički prevoz Crne Gore (ŽPP) is a certified railway undertaking responsible for the provision of passenger rail transport services within Montenegro. It operates under a public service obligation framework where applicable, ensuring compliance with safety certification, operational regulations, and passenger transport quality standards in accordance with national legislation and EU railway interoperability requirements.

4. OBJECTIVES OF THE ASSIGNMENT

The objective of this assignment is to prepare a **fully operational, costed, and phased National ERTMS Implementation Plan**, compliant with national legislation, EU Regulation (EU) 2023/1695 and aligned with EU railway interoperability policy.

The Plan shall provide the basis for the Government to adopt a **strategic roadmap** for migration from legacy signalling systems to full ERTMS deployment across the national railway network.

The Plan shall be developed as a comprehensive **CCS TSI-compliant roadmap** covering all requirements of Regulation (EU) 2023/1695, including all relevant Control-Command and Signalling subsystems, interoperability interfaces, certification and authorization processes, migration rules, and institutional arrangements necessary to ensure full system-level compliance beyond ETCS deployment alone.

Regardless of the detailed description of the tasks, all tasks and deliverables defined in this ToR shall be aligned with the requirements set out in Annex H to Regulation (EU) 2023/1695. The National ERTMS Implementation Plan shall be developed in full compliance with the requirements of Annex H.

Specific objectives include:

1. Establish a verified, line-by-line technical baseline of the national railway signalling, interlocking, and telecom systems.
2. Define a complete national target architecture for ERTMS deployment, including ETCS, GSM-R/FRMCS, and associated traffic management interfaces.

3. Develop a corridor-based deployment strategy prioritizing TEN-T and cross-border sections.
4. Define a realistic migration pathway from legacy systems to ETCS Level 1/Level 2 or Level 3 operation as a national standard objective.
5. Ensure full integration between infrastructure deployment and rolling stock retrofit planning.
6. Develop a detailed financial model including CAPEX, OPEX, lifecycle costs, and funding strategy.
7. Establish institutional governance mechanisms for long-term ERTMS implementation.
8. Provide an EU-ready implementation document suitable for submission to European Commission services and financing institutions.

The assignment shall also include the design and delivery of targeted **capacity-building and training activities** to ensure that relevant staff of the infrastructure manager, railway undertakings, and competent authorities are adequately trained in ERTMS/CCS planning, implementation, operation, and maintenance aspects to support sustainable national implementation.

The plan should be aligned with the **Transport Community's (next generation) Action Plans and regional ITS Strategy**, as well as with the **National Transport Development Strategy of Montenegro 2019-2035**, the **National Programme for the Development of Railway Infrastructure of Montenegro**, the **Railway Transport Development Strategy of Montenegro**, and other relevant national and sectoral strategic and planning documents.

The Plan must be also harmonized with other relevant strategic documents and plans in Montenegro, as well as in line with national planning system regulation, including the **Regulation on the manner and procedure of drafting, harmonizing and monitoring the implementation of strategic documents** ("Official Gazette of Montenegro", No. 54/2018)¹.

5. SCOPE OF WORK

The Consultant shall undertake the assignment as an integrated systems planning exercise aimed at developing a coherent, technically feasible and financially viable national migration pathway towards ERTMS deployment in Montenegro.

The assignment shall be implemented using a system-of-systems approach, ensuring coordinated planning of all ERTMS subsystems, including trackside signalling (interlocking, ETCS, RBC), telecommunications (GSM-R/FRMCS), rolling stock onboard equipment, and operational control systems. The Consultant shall ensure that infrastructure and rolling stock planning are fully synchronized in order to avoid partial or fragmented implementation.

The methodology shall be based on:

- **Section-by-section technical assessment** of railway infrastructure and operations;

¹ See Methodology for the policy development, drafting and monitoring implementation of strategic documents (OEBS)

- **Corridor-based planning approach**, prioritizing TEN-T and international routes;
- **Interoperability-driven design principles** aligned with EU TSI CCS requirements and domestic legislation;
- **Phased migration strategy**, including transitional operating modes between legacy systems and ETCS;
- **Financial viability and lifecycle cost optimization**, considering both investment and long-term operational implications;
- **Risk-informed planning**, ensuring identification of technical, institutional, and financial constraints at early stages.

The Consultant shall ensure close coordination with all relevant stakeholders, including the Ministry of Transport, Infrastructure Manager, Railway Operators, and National Safety Authority. Continuous validation workshops shall be organized throughout the assignment to ensure alignment of technical solutions with national operational realities and EU interoperability requirements.

All outputs shall be developed in a manner suitable for appraisal by International Financial Institutions (World Bank, EBRD, EIB) and direct use as a national investment programming document.

The Consultant is expected to apply best international practice in ERTMS deployment planning, including lessons learned from EU Member States that have completed or are advanced in ETCS/GSM-R/FRMCS national rollout programmes.

The Consultant will ensure the whole process, including the procedure of Government adoption, requirements of Strategic environmental impact assessment, the feedback from relevant stakeholders, and any other formal requirements, are met smoothly.

- **Task 1: Technical Baseline Assessment**

The Consultant shall assess the existing systems to support migration planning. This shall include a network, line-by-line and section-by-section assessment of all railway infrastructure covering:

- signalling and interlocking systems (type, age, functionality, redundancy level),
- existing train protection systems (if any),
- telecommunication infrastructure supporting railway operations,
- power supply and auxiliary systems relevant for ETCS deployment,
- operational constraints affecting signalling modernization,
- other technical, civil, and geographical limitations.

Recognising that, currently, the legacy system may not be fully functional, an assessment shall be carried out to identify the existing signalling and telecommunications (SS&T) systems and components that must remain operational during the deployment of ERTMS, in order to ensure the required safety and operational continuity throughout the transition period.

As part of task 1, also, the analysis of existing and planned railway infrastructure modernisation projects in Montenegro should be carried out (primarily the modernisation of the Golubovci–Bar railway line, the section towards the Albanian border, and, where relevant, other railway

rehabilitation and modernisation projects), with the aim of identifying opportunities to integrate ERTMS requirements into projects that are already under preparation or implementation, thereby avoiding potential future adaptation costs and additional investments.

More specifically, the Consultant should identify minimum no-regret design provisions to be embedded in ongoing designs even before full ERTMS deployment decisions are taken.

Additionally, the Consultant shall prepare a GIS-based asset inventory for ERTMS planning purposes using available data from ŽICG, MoT and other relevant institutions.

If no structured GIS data are available, the Consultant shall prepare a provisional section-based GIS planning layer using available drawings, project documentation, public datasets and stakeholder inputs. The Consultant shall clearly identify data sources, data quality, assumptions and missing information. The output shall not be considered a verified enterprise asset register unless confirmed by ŽICG through separate validation or survey activities.

The Consultant shall not be required, under this assignment, to create a full enterprise GIS platform or to perform comprehensive field surveys of all railway assets. Any need for detailed survey, asset verification, radio coverage measurement or enterprise GIS development shall be identified as a follow-up action with estimated scope and cost.

The assessment in general must clearly identify sections where ETCS deployment of relevant level is immediately feasible and sections requiring prior infrastructure upgrades.

Output: Technical Baseline Report + GIS Infrastructure Database

- **Task 2: Gap Analysis against EU TSI CCS Requirements and Training Requirements**

The Consultant shall assess full compliance of the current system with:

- EU Regulation (EU) 2023/1695 (TSI CCS),
- EU Interoperability Directive (EU) 2016/797,
- associated EN standards,
- relevant national legislation, including the Law on Railway Safety and Interoperability, Law on Railways, TSI CCS and other relevant TSI's, other relevant legislation,
- discrepancies between domestic and EU legislation.

The analysis shall identify:

- legal gaps in the existing domestic legal framework,
- functional gaps in train control systems,
- interoperability deficiencies at subsystem level,
- institutional and regulatory inconsistencies,
- certification and authorization bottlenecks.

Additionally, given that one of the key objectives of the initiative is the **strengthening of institutional and technical capacities of relevant railway sector stakeholders**, part of the gap analysis is also to elaborate the training component through the establishment of a **structured and targeted capacity-building programme**. The training needs assessment and

programme (including proposed dates for a workshop/s) will be a subject of the approval of the MoT, as part of the task 2, but it's execution is separate from the following tasks.

Namely, the consultant shall execute at least 1 two-day workshop (or at least 2 one-day workshops) for stakeholders, which will be a subject of the approval of the final report. Areas of further knowledge-gaps shall be also clearly identified, together with provisional needs for future capacity-building and trainings.

The programme should cover the Ministry of Transport, the Railway Infrastructure of Montenegro (ŽICG), railway operators, and the Railway Agency, with a focus on all phases of the ERTMS system lifecycle, including planning, design, implementation, operation, and maintenance. Particular emphasis should be placed on knowledge transfer, practical application of standards and procedures, as well as strengthening internal competencies to ensure long-term autonomous management of the ERTMS environment.

Prior the programme approval, relevant stakeholders should be consulted in the form of a separate workshop.

Output: EU Compliance Gap Analysis Report + training program

- **Task 3: National ERTMS Target Architecture**

The Consultant shall define a high-level technical principles and options of a complete system architecture for national ERTMS deployment, including:

- ETCS deployment model (e.g. Level 1 vs Level 2 vs Level 3 national standard),
- RBC (Radio Block Centre) architecture and distribution logic,
- interlocking integration model (centralized vs distributed),
- GSM-R continuation strategy and FRMCS migration roadmap,
- onboard ETCS system configuration requirements,
- potential integration with future Traffic Management System (TMS),
- other relevant technical aspects.

The architecture must define a **coherent national system-of-systems model**, ensuring interoperability and scalability.

Control centre(s) shall be considered within the ERTMS deployment scope to the extent required for system integration, operational control, supervision, diagnostics, and interfaces with interlocking, RBC, telecommunications and TMS.

Also, the consultant will take into account **ERTMS implementation plans of neighbouring networks**, bearing in mind the importance of cross-border interoperability.

Output: Target ERTMS System Architecture Document

- **Task 4: National Deployment Strategy, Governance and Monitoring Framework**

The Consultant shall develop a section-based deployment strategy, in line with Annex H of Regulation (EU) 2023/1695 structured into phases:

- Phase 1: pilot corridor or section implementation,

- Phase 2: expansion to main national and TEN-T corridors,
- Phase 3 (if relevant): full network rollout and decommissioning of legacy systems.

The strategy shall define:

- prioritization criteria (traffic density, safety risk, international importance),
- transitional operation modes (dual signalling, temporary overlays),
- operational continuity measures during migration,
- cross-border synchronization requirements.

The above considerations shall be assessed in relation the length of both the overall network and the individual lines.

Deployment Strategy and each proposed ERTMS phase must consider financial viability of each individual intervention based on the outcomes of the task 6 and must be linked to confirmed or realistically programmable infrastructure rehabilitation, telecom, power-supply, rolling-stock and financing assumptions.

The Consultant shall also define a full governance model for ERTMS implementation including institutional structure and decision-making hierarchy, as well as develop KPI framework (e.g. km of ETCS-equipped lines, % of fleet equipped, interoperability compliance index etc)

Also, the Deployment Strategy must be harmonized with standard European ERTMS Deployment Plan structure, and TEN-T requirements from Regulation 2024/1679.

Output: National ERTMS Deployment Strategy and Phasing Plan + Governance & Monitoring Framework

• **Task 5: Rolling Stock ERTMS Integration Strategy**

The Consultant shall:

- perform a detailed fleet analysis and segmentation of all rail vehicles operating on the network at the moment of the assessment,
- define ETCS onboard equipment requirements per fleet category,
- assess retrofit feasibility vs replacement strategy,
- define certification pathway for onboard units,
- assess the needs and costs of equipping rolling stock with appropriate ETCS equipment,
- align procurement cycles with infrastructure rollout phases,
- assess potential schemes for subsidized retrofitting in the future.

The Consultant shall ensure full synchronization between infrastructure readiness and onboard deployment.

Output: Rolling Stock ERTMS Integration Plan

- **Task 6: Investment and Financing Plan**

The Consultant shall undertake an economic assessment of the proposed ERTMS deployment scenarios, including a cost-effectiveness analysis and, where sufficient data are available, a cost-benefit assessment of the identified options, including:

- per-kilometre ETCS trackside deployment costs,
- RBC, interlocking, and telecom system costs,
- indicative onboard equipment and retrofit costs per unit,
- lifecycle cost analysis (20–30 years horizon) per section,
- to the extent possible, OPEX implications of ERTMS operation.

The Consultant shall perform at least an economic assessment of the identified ERTMS deployment scenarios, including a comparative analysis of implementation options, estimated investment and operational costs, and expected benefits in terms of interoperability, safety, capacity, and compliance with EU requirements.

The Consultant shall also identify EU funding opportunities (CEF, IPA III/IV), IFI financing options, national budget constraints, and potential PPP structuring options.

Output: Costed Investment Plan + Financing Strategy

- **Task 7: Implementation Roadmap, Risk Management Framework and Strategic Environmental Impact Assessment**

The Consultant shall develop a detailed implementation roadmap including:

- implementation schedule,
- dependency mapping (infrastructure vs rolling stock vs telecom),
- critical path analysis,
- procurement sequencing strategy,
- commissioning and certification milestones.

The roadmap shall be structured in a way that allows direct use for investment programming, in accordance with best practice.

The Consultant shall also develop a structured risk register including:

- technical risks (system compatibility, integration failures),
- institutional risks (coordination failures, governance gaps),
- financial risks (funding delays, cost overruns),
- operational risks (service disruption during migration).

Each risk shall include probability assessment, impact assessment, mitigation strategy (including the identification, assessment and estimation of the residual risk), and responsible institution.

Also, Montenegro has aligned its legislation on strategic environmental assessments with the EU SEA Directive, 2001/42/EC². The Montenegrin Law on strategic Environmental Assessment, SEA Act, 2005 as amended (Official Gazette of Montenegro 75/2018), is found here: [SEA Act, 2005](#).

The Consultant shall support the Ministry in determining, in consultation with the competent environmental authority, whether the National ERTMS Implementation Plan is subject to Strategic Environmental Assessment under the applicable Montenegrin SEA legislation. The Consultant shall prepare the information required for SEA screening. If the competent authority determines that SEA is required, the Consultant shall prepare the SEA scoping documentation and SEA report at an appropriate strategic level, proportionate to the nature of the plan and avoiding duplication with project-level EIAs/ESIAs for individual railway investments.

The ERTMS Plan shall identify environmental interfaces and constraints relevant to implementation, but project-specific environmental and social assessment for individual works packages shall remain subject to the applicable project-level EIA/ESIA procedures.

Output: Detailed Implementation Roadmap + Risk Management Framework + SEA (if required)

Details on deliverables are found in chapter 7.

6. REQUIREMENTS

The service will be selected under the provisions of the World Bank Procurement Regulations for Borrowers under Investment Project Financing” dated July 1, 2016, revised on November 2017, August 2018, November 2020, September 2023 and February 2025 in accordance with Consultant’s Qualifications Based Selection (CQS) and Lump-Sum Contract. The Bank requires that firms or individuals involved in Bank IPF procurement shall not have conflict of interest.

The Contractor will employ experts with appropriate professional qualifications and suitable experience in preparing all the outputs pertinent to this task. All experts must be independent and free from conflicts of interest in the responsibilities they take on. Backstopping and support staff costs are deemed to be included in the respective lump sum prices.

The assignment will require a qualified consulting company or a joint venture that can demonstrate extensive experience in developing ERTMS related documents, and fulfilling the following conditions:

1. General Qualification and Competences of the consultant (firm)

Capacity, competences and organizational structure, of the Consultant firm (Company). The Consulting firm must be a legal entity;

----- (Max 20 points on this criteria).

2. Qualification of the consultant (firm) relevant to the assignment:

² Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment

- (i) Specific Experience obtained under successful implementation of at least three (3) similar contracts in the role of prime supplier, management Supplier, JV member, or subcontractor. For contracts under which the Bidder participated as a Joint Venture member or sub-contractor, only the Bidder's share, by value, and role and responsibilities shall be considered to meet this requirement. The similar complexity of these projects in this context means and include activities of (1) design, development, and implementation of ERTMS, (2) national or corridor-level strategic documents/studies/deployment planning covering ETCS/GSM-R/FRMCS, (3) other relevant ETCS/GSM-R/FRMCS studies, etc.
- (ii) Required similar contracts presented as reference in (i) above, at least two (2) shall have been delivered in either EU's or an EU accession country;
- (iii) Professional staff generally available: List of the key staff that is generally available for this kind of work (without submission of bio data or CVs). The number of permanent staff of the consultant (individual company or joint venture overall) working in the fields related to this contract, must be at least 3 for each of the last three years (2023, 2024 and 2025);

*For each submitted reference (Contract) the Consultant is required to enclose preferably the statement from the previous Client which unambiguously confirm that assignment has been successfully and substantially implemented. In addition, the Consultant firm shall prepare a table which consist following information: name of the assignment, short description of work done, year of contract's implementation, country/region, contact reference (name, e-mail, phone number).

----- (Max **80 points** on this criteria).

It is expected that the Consultant shall establish the Team in accordance with the needs and requirements of this ToR. The Team shall consist of a core team made of key experts with the qualifications and skills defined in the Table 1 below and non-key experts, as needed. The Consultant is obliged to ensure adequate staff in terms of expertise and time allocation, as well as needed equipment in order to complete the activities required under the scope of work and to achieve the objectives of this Contract in terms of time, costs, and quality.

The Team, as a whole, shall include experts familiar with Montenegrin railway infrastructure, traffic, and regulation. The team organization, proposed staff availability and number of working days assigned to specific activities and backup will be evaluated as one of the criteria within the evaluation of the proposed methodology and time schedule.

As part of the organization and methodology of the technical proposal, the bidders will need to demonstrate their capabilities to effectively mobilize highly qualified key experts to carry out the specific tasks and activities requested. In particular, the bidders need to submit the CVs of key and non-key experts (see Table 1) which will be mobilized immediately following the commencement date of the Contracts. However, only key-experts will be subject of evaluation.

The Team Leader with qualifications and skills given below will lead the Team. He/she will be the main contact for the Team and will interface with the Contracting Authority, PIU and other interested stakeholders. He/she will be supported by the Deputy Team Leader, who will

replace the Team Leader when necessary. He/she should be responsible for ensuring high quality performance of the main outputs and deliverables and the timing implementation of the activities during the Contract execution.

The employment of local experts will be welcomed by the Contracting Authority, and such experts should form a part of the team carrying out studies. The Consultant should pay attention to the need to ensure the active participation of local professional skills, and to providing a suitable mix of international and local-staff in the Team.

Table 1: Key qualifications and skills matrix

Title	Qualifications / Experience	Skills
Key experts:	A Deputy Team Leader shall be appointed from one of the key or senior non-key experts who shall be familiar with the Montenegrin railway infrastructure, transport and legislation and speaks fluently Montenegrin.	
Team Leader Senior Railway Expert	<u>Education:</u> A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is four years in traffic engineering, civil engineering, electrical engineering or similar. <u>Relevant Professional Experience:</u> At least 10 years of professional experience acquired in railway sector on positions dealing with railway modernization; Experience as a TL/Project Manager on at least two (2) projects related to national or corridor-level ERTMS deployment planning and/or implementation (preferably both), signalling or relevant railway strategic planning projects.	Proven ability to lead projects relating to railway infrastructure planning and modernization. Strong leadership, planning and communication skills. Strong coordination skills. Strong analytical and report writing skills. Managing a team composed of international and local technical specialists Language: Excellent written and spoken English is required. Knowledge of Montenegrin language is an asset.

Railway Signalling & ERTMS expert	<u>Education:</u> A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is four years in electrical, transport engineering or similar. <u>Relevant Professional Experience:</u> At least 8 years of professional experience acquired in ETCS/ERTMS implementation, design, migration planning or signalling projects; Experience as a TL or key expert on at least 2 (two) projects relating to the design, policy development, and implementation of ETCS/ERTMS.	A thorough knowledge of ERTMS and railway signalling systems. Proven ability to prepare ERTMS implementation strategies/plans, migration scenarios, and assessment of technical options in line with EU interoperability requirements and relevant TSI CCS provisions is an advantage. Language: Excellent written and spoken English is required.
Transport Economist / Financial Expert	<u>Education:</u> A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is four years in economics, finance or engineering. <u>Relevant Professional Experience:</u> At least 8 years of professional experience acquired in transport investment planning and cost estimation;	Proven ability to prepare Cost Benefit Analysis in large infrastructure projects Proven ability to analyze alternatives in project preparation Proven ability to perform multi-criteria analysis Language: Excellent written and spoken English is required

	Experience as an expert on at least 2 (two) projects relating to the CBA in the fields of transport investment planning.	
Non-key experts	The Consultant is free to propose an appropriate non-key experts team composition considering that it is likely to require a mix of international and local experts with substantial international and developing country experience in a wide range of ERTMS studies, and advanced multi-disciplinary skills in a range of areas, including but not limited to: • railway operations / infrastructure expert • railway telecommunications expert • railway safety, • interoperability, • signalling design, • on-board equipment, • rolling stock, • environmental assessment, • GIS, • other disciplines as deemed necessary.	

The indicative breakdown of the input from the experts should be given in the submitted proposal. The costs for backstopping and support staff, as needed, are considered to be included in the bidder's financial offer. During the Inception period, it is expected that the Consultant will mobilize adequate support staff.

In accordance with the CQS, at least three qualified firms shall be requested to provide information about their relevant experience and qualifications. From the firms that have submitted an EoI, the firm with the best qualifications and relevant experience will be selected and invited to submit technical and financial proposal for negotiations.

Office accommodation for each expert working on the Contract is to be provided by the Consultant. The Consultant shall ensure that experts are adequately supported and equipped. In particular, it shall ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities.

No equipment is to be purchased on behalf of the neither Contracting Authority (MoT) nor beneficiaries as part of this service contract or transferred to the Contracting Authority or beneficiaries at the end of this Contract.

7. EXPECTED DELIVERABLES AND SCHEDULE OF THE ENGAGEMENT

It is expected that the Consultant will commence in the 3 QR of the Year 2026 and provide services **within 9 months**, or any period as may be subsequently agreed by the parties in writing.

Deliverables: The draft reports will be commented within two weeks of submittal, after which the Consultant will have a week to incorporate the comments into the subsequent edition of the Report. Following the comments received, the Consultant will send a revised version, with the operated changes highlighted, via the same contact, before formally submitting the final version to the MoT approval. A self-standing draft report will be prepared as per the below table. Approvals of the final reports by the MoT will be issued within a week of submittal. The MoT is responsible for formally approving of reports in the form of Letter of acceptance, signed by the Project Manager and MoT Project Coordinator.

All deliverables intended for management and users must be written in English and Montenegrin. If requested by the Client, or if deemed necessary by the Consultant, executive summary, along with its accompanying recommendations, may be written. Each report shall consist of a narrative section and a financial section, as applicable. For administrative matters the consultant will communicate as necessary with TSU, responsible for carrying out the fiduciary aspects of the project implementation (Procurement, Contract and Financial Management).

All activities under this assignment are expected to be completed within 9 months from contract signing.

Table 2: Deliverables and timeline

No.	Report title	Due (from signing the contract)
1.	<u>Inception Report</u>	1 month
2.	<u>Baseline Assessment and Gap Analysis Report (Task 1+2)</u>	3 months
3.	<u>National ERTMS Architecture, Deployment and Integration Strategy (Task 3+4+5)</u>	6 months
4.	<u>Economic Analysis and Implementation Roadmap Report (Task 6+7)</u>	8 months
5.	<u>Final National ERTMS Implementation Plan (Tasks 1-7, including the summary of the execution of workshop/s)</u>	9 months

Deliverables should be submitted in Two (2) hard and one electronic (USB flash drive) copies; in Montenegrin and English language; Electronic copy should be delivered in pdf (identical to the hard copies) as well as in editable formats of the files (e.g MS Word, Excell).

Inception report: Consultant will prepare, no later than 1 month following commencement of the Contract the Inception Report. It shall be maximum of 20 pages and describe initial findings, report on the discussions with the competent authorities/companies, risk and difficulties expected in addition to work program and staff travel, together with a detailed plan of works, task allocations, timelines and communication procedure. Content of the reports to be prepared within the Contract will be proposed in the Report.

Progress reports: Upon the MoT/PIU request, the Consultant will prepare brief progress reports on the status of the activities, including progress, problems encountered, and proposed activities for the requested period.

Workshops: The Consultant will be responsible to organize workshop/s in accordance with the task 2. For each workshop, the Consultant shall prepare workshop program/agenda, to be distributed early enough so the workshop participants can familiarize with them prior to the event. The report will be prepared following each workshop containing brief description of the discussion and decisions/agreements made and will be submitted to the MoT within two weeks from the particular workshop.

In addition, at least two workshops/presentations will be organized, one to mobilize stakeholders and exchange initial views (during the execution of task 1), and second to consult stakeholders and present initial findings (before drafting Final National ERTMS Implementation Plan).

Strategic Environmental Impact Assessment (SEA): If required, as defined in task 7, the Consultant will prepare a SEA study and report which must be elaborated in compliance with the criteria specified in the SEA Act. The consultant will provide a synopsis (= a SEA report contents overview) for pre-approval prior to initiation of the actual drafting of the study/report.

Further, a review of the consultations conducted with competent authorities, organizations and an interested public must be drawn up and the results of the decision-making process as well as in providing information to the public shall be reported.

Final Report: At the end of the engagement, in addition to the Final National ERTMS Implementation Plan in the shape and form adequate for the Government adoption procedure, the Consultant will prepare the **Final Integrated Report**, integrating all tasks, with a description of achievements, expert utilization, deliverables provided, problems encountered and recommendations for future actions to ensure results' sustainability.

After the completion of each Task, and prior formal approval, if deemed necessary, consultant shall organize a meeting/consultation with all relevant stakeholders with the aim of presenting all major findings from a draft report and obtaining potential further feedback.

The consultants will remain available up to **two months** after the submission of the final report, for any potential comments, clarifications or amendments, in accordance with any potential requests during the process of official adoption, including public consultations.

8. CONTRACT ADMINISTRATION

The Contract will be administered and managed by the MoT through the PIU and with the supervision of the Project Coordinator, in close cooperation with the ŽICG. All tasks will be developed and implemented in close coordination of the MoT, ŽICG, PIU and Project Coordinator. In addition, the technical focal points will be appointed by relevant stakeholder that should provide day-to-day support and facilitate technical consultative processes.

The PIU will assist the Consultant in gathering of all available information that can help in the execution of his assignment. This relates to information on the institutional organization, legal framework, data, transport sector projects that are being prepared or are under implementation, as well as all other relevant information. The PIU will also provide the Consultant with copies of all studies that are available and that may be relevant to the execution of the Contract. Relevant documents that the MoT has in electronic format shall also be made available to the Consultant.

9. TERMS OF PAYMENT

The Contract will be the Standard World Bank Lump Sum Contract. The payments for services will be based on the deliverables/reports approved by the Project Manager and Project Coordinator, in the form of Letter of acceptance. The Contract costs will include remuneration and reimbursable costs referring to the assignment.

The structure and dynamics of payment is shown in the Table 3.

Table 3: Structure and dynamics of payment

No.	Milestone	Due (plan)	Percentage
1	Advance (if needed)		20%
2	Upon approved National ERTMS Architecture, Deployment and Integration Strategy	6 months	35%
3	Upon approval of the Final National ERTMS Implementation Plan	9 months	45%
Total			100%

10. CONFLICT OF INTEREST

A Consultant firm will be selected in accordance with the Consultant Qualification Based Selection (CQS) method set out in the World Bank's "Procurement Regulations for IPF Borrowers" Issued in September 2023. The attention of interested Consultants is drawn to Section III, paragraphs, 11.1; 3.21 - 3.24; 3.13; 3.14; 3.16; 3.17 setting forth the World Bank's policy on conflict of interest.

In addition to the standard conflict of interest restrictions specified in the consulting Contract, all materials created under this Contract will remain the sole property of MoT. Re-use of the materials will require the formal, written approval of MoT.

The Consultant shall have no material interest in any of the outputs of this assignment. The terms of this agreement shall be made consistent with the relevant privacy laws of the Montenegro. The selected Consultant shall not be involved in any other related activities pertaining to this Project assignment, nor in any activities that may subsequently result from this Contract.