

# **Technical Assistance for setting up Western Balkans Electronic Register of Road Undertakings – Phase I**



**Final Report**  
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**Consortium Domotek Consulting Engineers P.C. – Cacttus Sh.a.**

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## List of Abbreviations

BPMN	Business Process Modelling and Notation
CA	Contracting Authority (TCT Permanent Secretariat)
EC	European Commission
EU	European Union
WBRRU	Western Balkans Register of Road Transport Undertakings
ICT	Information – Communication Technology
IT	Information Technology
ERRU	European Register of Road Transport Undertakings
MS	Member States (of EU)
RP	TCT Regional Partner/ Regional Party/ Regional Participant: Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia, Serbia
SEE	South East Europe
TCT	Transport Community Treaty
TEN-T	Trans-European Transport Networks
TODIS	Transport Observatory Database/ Information System
WB	Western Balkans

\* 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.

## Acknowledgements

We would like to acknowledge the Transport Community Permanent Secretariat Task Manager, Ms Nerejda Hoxha, for her pivotal role in the effective monitoring and review of this project's deliverables. Ms Hoxha's valuable guidance and commitment have been instrumental not only in achieving the project's objectives but also in strengthening our partnership and collaboration with the Transport Community Permanent Secretariat.

We also wish to extend our sincere appreciation to all Regional Participants (RPs), particularly the focal points from the line ministries responsible for road transport across the region. Their active engagement in meetings and interviews, as well as their contributions to data provision and report reviews, have been essential to the project's success.

We are deeply appreciative of our team of key experts for their outstanding commitment and expertise. Their dedication and professionalism have been instrumental in achieving the expected results, and it has been a true pleasure collaborating with them throughout this assignment.

## Executive summary

The present Final Report consolidates the findings and deliverables produced under **Phase I of the Technical Assistance for the Establishment of the Western Balkans Electronic Register of Road Undertakings (WBRRU)**. The assignment was implemented by *Domotek Consulting Engineers P.C.* and *Cacttus sh.a.* under contract **PS/SRV/PRT/004/2024** with the Transport Community Permanent Secretariat (TCT).

The overarching goal of this initiative is to support the six Western Balkans Regional Partners (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia) in aligning their legal, institutional, and digital frameworks with the **European Union acquis** on access to the occupation of road transport operator, as set out in **Regulation (EC) 1071/2009, Regulation (EU) 2020/1055**, and subsequent implementing regulations.

Phase I served as the **analytical and preparatory stage**, encompassing five tasks:

1. **Assessment of Current Processes and Gap Analysis:** review of national frameworks, institutional arrangements, and IT systems.
2. **System Design and Functional Architecture:** design of the WBRRU platform and its interoperability model.
3. **Workshop – Regional Consultation and Feedback:** validation of design choices and identification of country-specific integration needs.
4. **Phase II Technical Specifications and Tender Dossier:** tender dossier for full-scale implementation.
5. **Implementation Workplan:** detailed roadmap for the deployment, governance, and risk-management framework.

The consortium adopted an inclusive methodology combining legal analysis, stakeholder engagement, system prototyping, and EU-standard technical drafting.

Key achievements include:

- A detailed **gap matrix** mapping legal and technical compliance across WB6.
- A **microservice-based system architecture** mirroring the European Register of Road Transport Undertakings (ERRU).
- A **regional workshop** securing consensus on interoperability principles.
- A **phased implementation plan** balancing inclusivity and sustainability.
- Full **technical specifications** enabling immediate procurement of Phase II.

**Phase I concludes that the WB6 region possesses the institutional maturity and political commitment to proceed to full implementation. The WBRRU will become a cornerstone for digital integration of the regional road-transport market with the EU.**

## 1 Background and Context

### Policy and Strategic Context

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.

Within the road-transport sector, compliance with **Regulation (EC) 1071/2009** and its amendments is essential. These instruments oblige each Member State to maintain a **National Electronic Register (NER)** of licensed road-transport undertakings and to interconnect them via the **European Register of Road Transport Undertakings (ERRU)**. The ERRU enables secure exchange of compliance information—such as good repute, infringements, and risk rating—between competent authorities across the EU.

For the Western Balkans, this future integration is both a **legal obligation and a strategic opportunity**. It strengthens market transparency, supports fair competition, and enables the gradual participation of WB6 operators in the EU single transport market. Yet, as of 2024, only Serbia operated a near-compliant national register, while others remained at various preparatory stages.

### Objectives and Technical Assistance

The Phase I Technical Assistance was designed to:

- Evaluate the readiness of each WB6 partner for establishing and operating an ERRU-compatible register;
- Define the functional, technical, and legal parameters of a **regional interoperability platform (WBRRU)**;
- Develop a phased implementation plan ensuring legal compliance, institutional ownership, and long-term sustainability;
- Deliver a validated tender dossier for Phase II procurement.

## 2 Task 1 - Assessment of Current Processes and Gap Analysis

Task 1 laid the analytical foundation for the entire project. It began with an exhaustive mapping of national frameworks, using a common questionnaire distributed to all RP members. Each response was cross-checked against EU regulations. This produced a consistent dataset that allowed for a structured comparison across all six Regional Partners. The table below summarizes the level of transposition for each RP.

Table 1. Transposition levels and gaps

Regional partner	Strong points already in place	Critical / high-priority gaps that WBRRU must close
<b>Albania</b>	✓ All four licensing criteria transposed; GDRTS issues e-licences	✗ National register still <b>not implemented</b> and no ERRU XML channel; missing operator-risk algorithm and structured infringement tables
<b>Bosnia &amp; Herzegovina</b>	✓ Central licensing portal and CPC process live	✗ No ERRU-compatible interface; risk ratings & CPC/infringement fields not in register;
<b>Kosovo</b>	✓ Law 04/L-179 already mirrors Reg 1071/2009	✗ Register <b>does not exist</b> ; zero ERRU connectivity; EU financial thresholds & risk formula still to be codified
<b>Montenegro</b>	✓ Recent licensing law; good-repute tests defined	✗ Register legislated but not built; ERRU interface missing; periodic CPC training rule not explicit; no risk-rating process
<b>North Macedonia</b>	✓ Cloud-based e-transport register; CPC & good-repute fully covered	⚠ Register's API is <b>domestic-only</b> – not ERRU XML; lacks infringement history & risk ratings; message protocol upgrade required
<b>Serbia</b>	✓ Full digital register, real-time feeds to customs & business registry;	■ <b>No material gaps</b> – operational aligned with ERRU. Lacks infringement history & risk ratings; message protocol upgrade required

The analysis revealed a high degree of legal convergence with Regulation 1071/2009. Every RP has now introduced in its primary legislation the four essential criteria—establishment, good repute, financial standing and professional competence. Yet transposition depth and implementation differ widely. Serbia, North Macedonia and Bosnia and Herzegovina already apply digital licensing procedures, while Albania, Kosovo and Montenegro have enacted legal acts but lack the digital registers needed to operationalise them.

From a technical standpoint, Serbia remains the most advanced, operating a national database that interacts in real time with customs and business registries. North Macedonia has an e-licensing portal but without exchanging data with other parties. Elsewhere, permit management remains manual, often maintained on spreadsheet archives or unconnected local databases. None of the Regional Partners implements the European infringement taxonomy or risk-rating algorithm prescribed by Regulation 2022/695. This absence of standardisation makes data aggregation and cross-border verification impossible.

Institutionally, each RP has designated a competent authority—usually the Ministry of Transport or a subordinate road-transport directorate—but resources and IT capacity remain uneven. Inter-agency coordination, particularly with customs, police and courts, is inconsistent, and in most administrations the awareness of data-protection obligations under GDPR is still limited.

The gap analysis demonstrated that although legislative convergence has advanced, **technical interoperability and institutional maturity remain the principal barriers**. Addressing them requires a common regional solution rather than parallel national efforts. The Task 1 report therefore recommended the creation of a **WBRRU interoperability platform** that would serve as a bridge between domestic registers and in the future, the EU ERRU system. It also called for the adoption of a harmonised infringement taxonomy, and a phased capacity-building programme to train staff in both ICT security and regulatory enforcement.

By the end of Task 1, all six Regional Partners had endorsed the analytical findings, acknowledging that only a coordinated approach could deliver full compliance with the EU acquis.

### **3 Task 2 – System Design and Functional Architecture**

Building on the diagnostic work of Task 1, Task 2 translated the legal and institutional requirements into a technical architecture capable of delivering the project's objectives. The design process followed a systems-engineering methodology: defining use cases, data flows, user roles and compliance requirements before detailing software components.

The resulting architecture envisions the WBRRU as a **federated, cloud-native platform** operating under the governance of the Transport Community Secretariat. Each Regional Partner connects through a dedicated adapter, ensuring that national data remain under domestic control while achieving full interoperability at regional and EU levels.

At the heart of the system lies a **Message Lifecycle Manager** that validates, timestamps and logs every transaction. Messages are normalised by a central engine using predefined transformation rules, stored in secure audit repositories and then routed either to another Regional Partner or in the future, to the EU ERRU hub through a specialised interface. The architecture accommodates both REST and SOAP protocols, enabling legacy systems to connect without major redevelopment.

Security and compliance considerations shaped every design decision. The system employs mutual TLS authentication, role-based access control and digital signatures conforming to the eIDAS Regulation. All data are encrypted in transit and at rest, and full audit trails guarantee non-repudiation. GDPR principles—purpose limitation, data minimisation and storage limitation—are embedded by design.

The architecture also anticipates the introduction of a **Digital Permit Exchange Module**. This component will allow the sharing and verification of RP bilateral transport permits, complementing existing paper processes. It will rely on the same trust infrastructure and validation services as the core WBRRU system, ensuring legal equivalence between digital and physical documents.

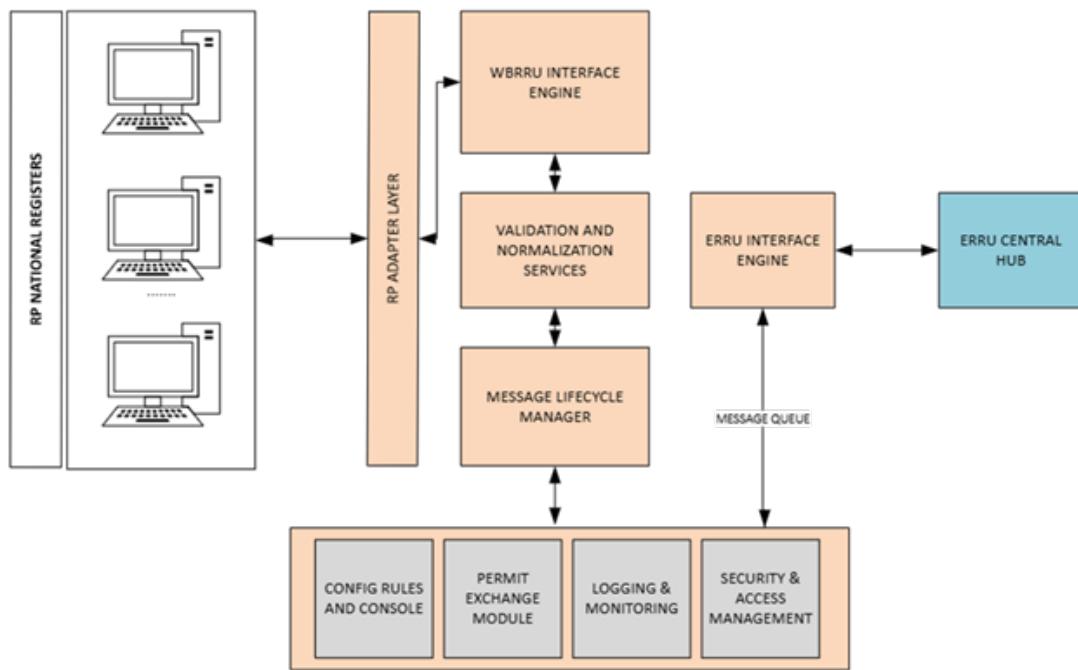


Figure 1: WBRRU Architecture

Performance targets were established early: the system should achieve 99.7 percent uptime, respond to standard queries in less than eight seconds and scale horizontally to handle increasing message volumes as additional RPs integrate.

Task 2 concluded with preparation of specification and a detailed costed design package. These documents now serve as binding inputs for Phase II procurement.

#### 4 Task 3 – Tender Dossier including Technical Specifications for setting up the Western Balkans Electronic Register of Road Undertakings (WBRRU)

The Tender Dossier and Technical Specifications prepared under Task 3 constitute the blueprint for contracting the system's full deployment. They detail functional and non-functional requirements, security standards, interfaces, data models and testing procedures. The Phase II contract (reference PS/SRV/WBR/032/2025) will cover a two-year period and include development, integration, training and operational support.

The services will begin with an **Inception Report** confirming methodology, stakeholder roles and updated risk matrix. Subsequently, the contractor will produce a **Detailed System Design Report**, update the logical and technical architecture if required, and prepare the **Integration Plan** aligning national registers with WBRRU. A comprehensive **Quality Assurance and Testing phase** will follow, ensuring functional, performance and security conformance prior to acceptance. Finally, an extensive **Training and Handover Programme** will build operational capacity within both TCT and Regional Partners.

The anticipated outcomes of Phase II include fully operational national adapters, real-time permit verification among WB6 authorities, seamless future data exchange with the EU ERRU hub and the introduction of the digital permit exchange.

## 5 Task 4 – Implementation Workplan

Task 4 transformed the conceptual architecture into an operational roadmap. Its starting premise was that successful deployment requires synchronised progress along three parallel tracks—technical, legal and institutional. Rather than a single “big-bang” rollout, the plan proposes a phased sequence allowing incremental learning and controlled risk.

The first phase, extending from late 2025 to mid-2026, will focus on building and testing the core modules within a secure sandbox environment. This stage will include the development of RP adapters, message validation engines and monitoring dashboards. The second phase, during 2026, foresees integration with Serbia and North Macedonia, whose existing registers already meet many of the technical prerequisites. Lessons from these pilots will inform adjustments before broader deployment. The third phase, through 2027, will onboard the remaining Regional Partners, in the meantime providing manual portals where national registers are still under construction. The final phase, at the end of 2027, will conduct EU conformance testing and formal handover to the Transport Community Secretariat.

Parallel to technical activities, each Regional Partner will undertake specific **legal and institutional actions**. These include transposing the EU risk-rating formula, defining data-sharing protocols between ministries, and designating national focal points responsible for system administration.

Risk management is integral to the workplan. Potential delays in legislative adoption will be mitigated through model law templates provided by TCT. Infrastructure heterogeneity will be addressed by maintaining both API and manual interfaces. Cybersecurity risks will be controlled through ISO 27001-based procedures and redundant cloud infrastructure. Progress will be tracked by measurable indicators such as message latency, error rates and uptime percentages.

The governance model assigns strategic oversight to the **Transport Community Steering Committee**, operational coordination to **national focal points**, and technical maintenance to the contracted system integrator. Regular progress reviews and quarterly reports will ensure transparency and accountability throughout implementation.

## 6 Task 5 – Regional Workshop

To ensure that the proposed design reflected regional expectations, the consortium organised a validation workshop in Skopje in June 2025, hosted by the Consortium partners. The meeting brought together representatives of five Regional Partners (Montenegro representatives did not participate).

The workshop opened with a presentation of the WBRRU objectives, functional architecture and governance model. Participants engaged in detailed discussions about data flows, security protocols and the sequencing of national integrations. The proposed **two-interface model**—a WBRRU Interface

for national communication and an ERRU Interface for future EU exchange—was unanimously endorsed as the most pragmatic structure.

A dedicated session focused on the **Digital Permit Exchange Module**, exploring how it could simplify bilateral and multilateral permit management. While participants welcomed the innovation, they agreed that its deployment should follow, not precede, the core register integration, to avoid diverting resources from the essential ERRU alignment.

Mock-ups of user interfaces were demonstrated, including dashboards for system administrators and read-only auditor views. Feedback highlighted the importance of bilingual interfaces and real-time error reporting. The workshop concluded with a consensus on three points: the phased implementation approach, the central hosting of WBRRU under TCT, and the need for a structured training programme before rollout. This validation process strengthened political ownership and ensured that the design commands unanimous regional support.

## 7 Sustainability and Transition Strategy

Ensuring longevity is a central concern. The architecture developed under Phase I deliberately avoids vendor lock-in by using open-source technologies and modular micro-services. Source code, documentation and intellectual property are vested in the Transport Community Secretariat. TCT will assume long-term responsibility for hosting, maintenance and cybersecurity. National IT teams will manage their respective adapters, supported by remote monitoring tools.

## 8 Conclusions and Recommendations

Phase I of the WBRRU Technical Assistance has fully achieved its objectives. The project delivered a comprehensive assessment of current conditions, a validated design for the regional system, an agreed implementation roadmap and complete procurement documentation for Phase II. Equally important, it established trust among the six Regional Partners and demonstrated that collective digital transformation in the transport sector is both technically feasible and politically attainable.

The consortium recommends that the Transport Community Secretariat proceed without delay to launch Phase II procurement so that implementation can commence in early 2026. Parallelly, each Regional Partner should adopt the legislative amendments required by Regulation 2022/695 on risk rating and designate permanent WBRRU contact points. TCT should maintain the dedicated Informal Working Group to oversee operation and ensure synergy with other regional platforms such as SEED+ and TODIS. Continued capacity building and peer-learning exchanges will be crucial to maintaining momentum.

Once fully deployed, WBRRU will enable the Western Balkans to participate fully in the European Union’s enforcement ecosystem, ensuring transparency, fair competition and road-safety improvements across the region.