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PIARC Special Project

Digital Twins Global Progress: Real-World Practices and Outcomes in the Road and Mobility Sector

CALL FOR PROPOSALS

Deadline for submission of proposals: 26 March 2026

1 PURPOSE AND STRATEGIC SIGNIFICANCE

1.1 Introduction

Digital twins have a potential to transform how road and transport agencies manage transportation assets by connecting detailed facility information with real-time operational data. However, adoption is uneven worldwide, and benefits/successes are not widely shared. This project will document Road and Mobility Sector digital twin initiatives currently implemented, identifying implementation approaches, challenges, and benefits. Analysing what does and doesn't work will provide critical insights that will equip agencies—both in high-income and low- and middle-income contexts—to plan and justify digital transformation initiatives.

1.2 Definitions

In the following lines are described the main definitions that need to be taken into consideration because they are inspired and commonly understand by PIARC Technical Committees:

Digital Twin: According to ISO a Digital Twin is a "digital representation of a target entity with data connections that enable convergence between the physical and digital states at an appropriate rate of synchronization" (ISO/IEC 30173:2023, Digital twin – Concepts and terminology and PR NF EN 18162 - Building Information Modelling (BIM) - Digital twins applied to the built environment - Concept and definitions).

According the US National Academies of Science, Engineering and Medicine (NASEM) "A digital twin is a set of virtual information constructs that mimics the structure, context, and behaviour of a natural, engineered, or social system (or system-of-systems), is dynamically updated with data from its physical twin, has a predictive capability, and informs decisions that realize value. The bidirectional interaction between the virtual and the physical is central to the digital twin".

According to Digital Twin Consortium: "A digital twin is an integrated data-driven virtual representation of real-world entities and processes, with synchronized interaction at a specified frequency and fidelity."

The UK government definition is "A digital twin is a digital representation of a real-world entity, environment or process that allows the inclusion of a 2-way communication flow into and out of the real world in a timeframe that is appropriate for the required decisions and assumptions. The detailed definition can be consulted here: Digital Twin (official) - GOV.UK

A more simplistic definition of a "digital twin" (DT) is a detailed virtual representation of a real-world physical object, facility, or system, which is kept up to date with real-time data received from sensors on the physical twin. The most advanced examples are supported by machine learning and reasoning".

Definition note: In the road sector, we can consider that the digital twin can eventually integrate a multi-modal approach.

Digital Twin Maturity Level refers to the degree of functional development of a digital twin, reflecting the nature of data integration, analytical capability, and decision-support functionality. A digital model that lacks interconnectivity with real-time data from the physical

counterpart is not a digital twin.

Building Information Modelling (BIM) is a methodology for the creation, management, and use of structured digital information about a built asset across its lifecycle.

Structural Health Monitoring (SHM) is the systematic process of measuring, collecting, and analysing data related to the structural condition and performance of infrastructure assets, typically through the use of sensors and monitoring systems.

Machine Learning refers to a class of data-driven analytical methods in which algorithms learn patterns and relationships from data without being explicitly programmed for each task.

Predictive Modelling is the use of mathematical, statistical, or machine-learning models to estimate the future condition, performance, or behaviour of assets based on historical data, current observations, and defined assumptions.

Digitization is the process of changing analog information into digital data (e.g., scanning a photo, scanning old plans into PDFs, etc.).

Digitalization is leveraging digital technology and data to change business models, processes, or activities (e.g., implementing digital signatures, etc.)

1.3 Context

Digital twins enable optimized infrastructures decision making, asset management, including cost efficiency, through the creation of a digital object of an infrastructure asset thanks to the static and dynamic data that characterized the asset. Digital Twin objects are dynamically linked to its physical counterpart and need to constantly be aligned with the physical objects.

Digital Twins are becoming the base for the management of road infrastructures, considering different point of view.

This project complements work of PIARC's Technical Committees and it can be considered a transversal item for PIARC work. The TCs more involved with the project at the moment are: TC1.1 Transport Administration, TC 1.5 Disaster Management, TC 2.1 Urban and periurban mobility, TC 2.3 Freight, TC 2.4 Road Network Operations and ITS, TC 3.3 Asset Management, TC 4.1 Pavements, TC4.2 Bridges, TC 4.4 Tunnels, TC 4.6 Desing standards.

These committees are exploring integration of digital technologies across different domains and are all aligned with PIARC's priority on digital innovation by addressing a key gap: how to move beyond concept to practical, for a successful implementation.

While digital twins are increasingly referenced in strategies, pilot projects, and research initiatives, their application in the road sector remains uneven and is often limited to isolated use cases or technology-driven demonstrations. Many road agencies face challenges in translating the digital twin concept into practical, scalable, and institutionally sustainable solutions, due to factors such as fragmented data environments, varying levels of digital maturity, unclear links with existing asset management systems, and uncertainties regarding organisational roles, skills, and investment requirements.

Against this background, the project seeks to address a key gap identified within the road sector: the need for a clearer understanding of how digital twins can be implemented in practice, beyond conceptual definitions, and adapted to different asset types, organisational contexts, and levels of digital maturity. The research will focus on identifying enabling conditions, implementation pathways, and good practices that support the progressive and

value-driven adoption of digital twins by road administrations and transport agencies, rather than prescribing a single technical solution.

Specific domain, like for example, tunnel management, digital twins are used for several aspects, like predictive maintenance, using AI to analyse sensor data (e.g., vibrations, material stress) and forecast failures before they occur, reducing downtime and extending asset lifespans. In emergency management, thanks to Digital Twin Road Operators can simulate crises like fires or collisions, allowing operators to define real-time response strategies virtually, improving evacuation efficiency and safety.

For real-time monitoring, DTs combine IoT, BIM, and AI dashboards to track structural health, environmental conditions, and traffic, enabling data-driven decisions. They also enhance training through AR/VR simulations, letting personnel practise emergency protocols in risk-free environments.

Despite these benefits, challenges remain: high implementation costs, particularly for older infrastructure; data standardisation gaps between BIM, GIS, and IoT systems; and cybersecurity risks due to interconnected networks and privacy concerns due to traffic monitoring. Sensor reliability in harsh conditions (humidity, vibrations) is another critical concern.

Future progress depends on standardised protocols for asset mapping, seamless integration, autonomous inspection technologies (drones, robots) to reduce manual labour, and deeper smart city integration to optimise urban mobility and resilience. By addressing these barriers, DTs can evolve from theoretical tools to scalable solutions, enhancing safety, sustainability, and operational efficiency in global road networks—fully aligning with PIARC's mission to advance digital infrastructure innovation.

1.4 Purpose of the project

Most of the countries in the world, are advancing digitization and digitalization within the Road and Mobility Sector.

This project aims at building up a common understanding of the subject, the state of the art and future developments in order to define a common understanding for all PIARC community. It also needs to include contributions of important international organizations, like buildingSMART International, Open Geospatial Consortium, ISO, BSI, and the UK National Digital Twin Programme (former Centre for Digital Built Britain), shaping global frameworks for digital twin interoperability, open data standards, and maturity models.

The project will provide a synthesis of definition, standards and use cases that reflect a range of implementation levels and support informed decision-making and future investments, paving the way for each road administrator or road operation to find their suitable strategy to implement Digital Twins. It is also important to highlight challenges and opportunities connected with the implementation of Digital Twin in the organization, both in digitally developed countries and countries or jurisdictions with less digital development.

Successful and unsuccessful case studies should be presented and analysed in the project.

Road infrastructure is meant to be used mostly by vehicles (motor vehicles, cyclists, etc.) and pedestrians. Connected and Autonomous Vehicles (CAVs) base their digital systems in the road infrastructure physical assets. This project should also explore with a light approach how Digital Twins can be integrated with CAVs, under which circumstances and what new business

models could this bring for road operations and national road administrations.

The key questions this Special Project will seek to address are:

1. What are the official and common international definitions of a Digital Twin and BIM around the word? And what are the main concepts connected to it?
2. What is the relationship between Digital Twin and BIM?
3. What are the standards used, current practices, in the development Digital Twins in the Road and Mobility Sector (R&MS) around the world? What are the main organizations that are providing guidelines on these topics?
4. What is the current use of Digital Twins models in the R&MS?
5. What are the opportunities, barriers and risks for development of Digital Twins? Is it possible to identify specifics for LMIC or countries with less digitalized road sector?
6. Which technologies can be used to develop Digital Twins? Is it possible to identify low-cost technologies? What is the relationship between Digital Twin and ITS?
7. Which aspects of road infrastructure and road operations are currently included in the Digital Twins models, and which ones should be included and which level of information and detail?
8. What new capabilities can be introduced by the implementation of Digital Twins? Are there critical infrastructure or operations that should also be addressed outside the Digital Twins? What are the applications of Digital Twin to Road Network Operations and Monitoring and Control of the road infrastructure?
9. How can the Digital Twin support the sustainability (economical, environmental, social – ESG framework for reference) of the road infrastructure and can help stakeholder management inside and outside the organization? Are there innovative use cases that can be identified?
10. What are the best practices in terms of informing different stakeholders, inside and outside a road authority or operator, of the existence and use of Digital Twins?
11. What are the best practices in terms of standardization and interoperability for Digital Twins?
12. How Digital Twins will be integrated with CAVs? What new business models can this bring to road operators and national road administrations?

1.5 References for the project

The following resources are to supplement the literature review/research for this project for the practices and recommendations preliminary identified by the Project Oversight Team:
Main resources considered for the realization of this special project are:

- **ISO/IEC International Standards like 30173:2023. Digital twin — Concepts and terminology**
- **Peer-Reviewed Academic Journals**
- **Government & Strategic Reports**
- **Conference Proceedings**
- **Technical Standards & Frameworks**
- **Research Institutions & Organizations**

- **PIARC Official Technical Library**
- **TRB & OECD joint database https://trid.trb.org/**
- **TRB Research in Progress (RIP) https://rip.trb.org/**

All the proposal should consider these domains in order to provide an extensive literature review.

PIARC Publications: PIARC's vitual library | Search in the documents

(TC4.4) WG3 « Digitalisation of Road Tunnel Design and Management » - Case Studies

- *CHEVRIER Q., ROBERT F., MURARD F., BANOS C. (2025), France, Digital Twin Prototype for the Fréjus Road Tunnel, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 3 p.*
- *DECK O., MEHDIZADEH R., BERTHEAUX VIRGILI S. (2025), France, Activities in virtual immersion in a road tunnel in operation and in a gallery under construction - simulate, observe and act without risks, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 5 p.*
- *ISHIDA T. (2025), Japan, Application of Digital Twin Concept to Tunnel Structure Maintenance and Management at Metropolitan Expressway: Utilizing i- DREAMS® and InfraDoctor® platforms, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 9 p.*
- *KOST M., LO E., (2025), Australia, Leveraging a ventilation digital twin to optimise brown field tunnel assets in Australia, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 4 p*
- *NONO TAMO N., LEHAN A., KAUNNDINYA I. (2025), Federal Highway and Transport Research Institute (BASt), Germany, Digital twins for the predictive operation and maintenance of road tunnel structures and their safety equipment – research project DIDYMOS, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 3 p.*
- *POTIER M. (2025), France, Road tunnel operation training simulator, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 6 p.*
- *QUEVEDO J., Tunnels, Autopistas Spain, the Vallvidrera Tunnel digital twin, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 2 p.*
- *VAN VELDHUIZEN N. (2025), RWS, The Netherlands, The national Digital Twin programme in The Netherlands, Case study, PIARC TC 4.4 WG3, Innovative technologies for the digitalisation of road tunnel operation, 6 p.*

In Germany, the Engelberg (base) Tunnel has implemented a full tunnel simulator as a digital twin of its control and ventilation systems

Other publications:

- Hajdin, R., Rakić, L., Diederich, H., Richter, R., Hildebrand, J., Schulz, S., Döllner, J. & Bednorz, J. (2024). Automated construction of BIM models from point clouds to digitalize bridge assets. In: IABMAS 2024. Proceedings of the 12th International Conference on Bridge Maintenance, Safety and Management. 24-28 June 2024. pp. 1869-1876. Copenhagen. Denmark.ISO/IEC 30173:2023. Digital twin — Concepts and terminology
- Foundational Research Gaps and Future Directions for Digital Twins 2024
- Opportunities and Challenges for Digital Twins in Engineering: Proceedings of a Workshop—in Brief 2023
- Hagedorn, P., L. Liu, M. König, R. Hajdin, T. Blumenfeld, M. Stöckner, M. Billmaier, K. Grossauer, and K. Gavin. 2023. "BIM-enabled infrastructure asset management using information containers and semantic web." *J. Comput. Civ. Eng.* 37 (1): 04022041. https://doi.org/10.1061/(ASCE)CP.1943-5487.0001051.
- Talaghat, Mohammad Amin, et al. "Digital twin technology for road pavement."

Automation in Construction 168 (2024): 105826. https://doi.org/10.1016/j.autcon.2024.105826
- Yan, Yu, et al. "Digital twin enabling technologies for advancing road engineering and lifecycle applications." Engineering (2024). https://doi.org/10.1016/j.eng.2024.12.017
- Han, Tao, Tao Ma, and Jiangyin Xiao. "Proactive perceptive road: a digital twin-driven intelligent road infrastructure towards proactive road state perception and deduction." Smart Materials and Structures 34.2 (2025): 025030. https://iopscience.iop.org/article/10.1088/1361-665X/ada596/meta
- "Wu, D.; Zheng, A.; Yu,W.; Cao, H.; Ling, Q.; Liu, J.; Zhou, D. Digital Twin Technology in Transportation Infrastructure: A Comprehensive Survey of Current Applications, challenges, and Future Directions. Appl. Sci. 2025, 15, 1911. https://doi.org/10.3390/app15041911
- New Initiatives and Future Visions of Hanshin Expressway Infrastructure - Cyber Management System | CiNii Research
- NTT group and Hanshin Expressway jointly study the implementation of new traffic management using digital technology that contributes to the rectification of urban road traffic | Press Release | NTT
  *Japanese report
- 阪神高速サイバーインフラマネジメントの取り組みと価値創造の可能性

Specifically for tunnels:

- X. Zhang, Y. Jiang, X. Wu, Z. Nan, Y. Jiang, J. Shi, Y. Zhang, X. Huang and G. G. Huang, "AIoT-enabled digital twin system for smart tunnel fire safety management," Developments in the Built Environment, vol. 18, p. 100381, 2024.
- L. Straarup, G. Abdalla, M. Visser et T. Bangsgaard, «A Digital Twin for the Fehmarnbelt Tunnel – preparing for Digital Enabled Asset Management,» chez WTC2022, Copenhagen, 2022.
- X. Wu, X. Zhang, Y. Jiang, X. Huang, G. G. Huang et A. Usmani, «An intelligent tunnel firefighting system and small-scale demonstration,» Tunnelling and Underground Space Technology incorporating Trenchless Technology Research, vol. 120, p. 104301, 2022.

2 METHODOLOGY AND APPROACH

2.1 Key areas and approach

The answer should include a description of the approach to be taken to collecting and compiling the information being requested. Please take into account that the first two points on this chapter are the two key areas for consideration in the project and a more thorough description is expected.

The proposal should answer the following questions about the tenderer's approach:

1. How will you collate information from different road administration authorities, traffic regulators, road operators, other public administrations and relevant industry from international road sector, including successful and unsuccessful case studies, national strategies and pilot projects that deal with Digital Twins?
2. LMIC represent an important share of PIARC membership, and it is crucial that their needs, opportunities and challenges are addressed within PIARC activities.
    a. How will the study consider the reality of lower to middle-income countries?
    b. How will case studies from LMIC be collated?
    c. How will their needs be taken into account?
    d. How will some of the findings of the project be identified as particularly suitable for LMIC?
    e. How will you ensure any recommendations/next steps can be implemented by LMIC?
3. How will the study identify opportunities, challenges in particular related to costs and risks, as well as enablers and barriers to develop and implement Digital Twins?
4. What will be the study milestones in terms of deliverables? What will be the approach for monitoring the progress and including the inputs from the Project Oversight Team (POT)? It is recommended to organize monthly videoconferences, and share with the POT regularly intermediate deliverables asking for feedback.
5. How will the management of the project be organized, including quality assurance and quality control without taking significant resources from the project?
6. How will you mobilize the skills needed to complete this work? We consider that the range of skills needed includes understanding road design, road construction, road maintenance, road safety, road operations, road traffic and mobility, bridges, tunnels, pavements, CAVs, knowledge of road realities across the globe, among others.
7. How will the study make recommendations to National Road Administrations, road and transport agencies, and PIARC members specifically, to establish new Digital Twins or improve current ones?
8. How will the study propose recommendations to PIARC for taking further into account this project and to include the outcomes of the project in the current work of PIARC Technical Committees in the current cycle 2024 – 2027?

2.2 Options

The proposal can be structured as a core proposal plus additional options.

The bid would then include a core proposal within the proposed budget, and then some options which would be described in detail as well as priced on additional budget.

If the bid is selected, PIARC would place the order for the core proposal and maybe as well for some

of the options. This would be done at PIARC's discretion and based on newly available funding.

In any case, the core proposal must answer all the expectations which are presented in this call for proposals document.

3 FINAL DELIVERABLES

The final deliverables will include:

3.1 Technical Report

The final Technical Report should generally include inputs and sections around the items listed below. Variations to this list may be proposed, but with justification and arguments for PIARC's consideration:

- A literature review.
- A collection of case studies[1] with an overview of practices around the world, and their challenges, risks and opportunities.
- A survey on adoption and maturity of Digital Twin around the world.
- Cost/Benefit analysis of these case studies.
- International survey results[2] (if undertaken) or international study conducted by the company aimed at analysing current practices on Digital Twins.
- Analysis of current practices, standards and interoperability for Digital Twins and BIM
- Toolkit for PIARC member organization to approach Digital Twin. Including a digital twin maturity hierarchy to self-assess current status and define next steps. Including a step-by-step guidance for adopting emerging global frameworks and standards
- Conclusions and recommendations for PIARC members and PIARC itself to consider.

A possible structure of the final report could be as follows, although bidders are free to propose their own structures with a rationale:

Executive Summary
1. Introduction: project background, objectives and scope.
2. Methodology and approach.
3. Outcomes of the literature review.
4. Outcomes of the international survey.
5. Case studies analysis from around the world (as a key element of the project).
6. Description and analysis of the current situation for Digital Twins.
7. Description of potential opportunities and challenges in this field.
8. Conclusions of the study.
9. Recommendations for road administrations and transport agencies, LMICs and PIARC.
10. References
11. Appendices (such as complete inputs from survey, additional results of the literature review, etc.)

Each chapter of the report should make reference to LMICs, when relevant. A chapter inside the report's conclusions, with possible **specific recommendations for LMICs** should also be considered.

The specific recommendations for public administration bodies and transport regulators are a key element of the report. They should be relevant for policy advisors, decision makers, practitioners and operators, including from the perspective of understanding and meeting the needs of Vulnerable Road Users (VRUs), including motorcyclists, cyclists, and pedestrians.

[1] PIARC POT will support the dissemination of surveys and call for case studies among Technical Committees and member countries, but the responsibility to ensure appropriate answers to the surveys and call for case studies remains within the bidder of this call for proposals.

The specific recommendations for PIARC could include recommendations to liaise with specific industries, take part in existing conferences and/or how to integrate the outcomes inside PIARC Technical Committees current work 2024-2027.

3.2 Dissemination material

Presentation material to present the results of the Special Project at PIARC Council meeting on 22-23 October 2026 in Merida, Mexico. The selected tenderer will also be invited to join the Council meeting physically or via videoconference. **The retained option should be specified in the proposal**.

The tender should also provide content for a webinar organized by General Secretariat in November 2026. The material can be based on the presentation to Council and can be supported by POT members presentations.

Additional voluntary webinars to present the results of the project might be organized with the support of PIARC General Secretariat the Project Oversight Team.

3.3 Contribution to the next PIARC World Road Congress

The retained consultant will be invited to join the session (participation is optional) and to provide inputs to the Session program on the Special Projects inside the World Road Congress in Vancouver, Canada on 4 – 8 October 2027. This contribution will be requested after finalizing the project and is out of the project budget. So, this point is provided as information.

3.4 Intellectual property and formats

The final products will be submitted in electronic form in English, using the PIARC template for Technical Report and PIARC template for PowerPoint presentations.

The report will be owned by PIARC and it will acknowledge the contribution of the external consultant.

PIARC will ensure translation into French and Spanish. In addition, they will make it available free of charge in the World Road Association's Virtual Library to ensure a large world outreach for the report.

4 KEY DATES

The proposal should also include a proposed draft of a work schedule. The schedule should identify dates or timeframes for accomplishing major milestones in the project. The work schedule will include monthly videoconference meetings and dates or timeframe for an interim product or products that allows adequate time for review and feedback prior to the final deliverable. The schedule must be completed, and final report should be delivered by 30 September 2026, so PIARC can proceed to translation and dissemination of document in advance to participants to PIARC Council meeting foreseen in Merida, Mexico, on 22-23 October 2026.

These are some of the milestones to be included in the offer:

- Mid-April 2026: Kick-off videoconference meeting.
- Intermediate milestones to be proposed by the tenderer.
- 8 September 2026: Final draft report for POT to comment on until 22 September 2026.
- 30 September 2026: Finalization of the report in English including all final comments from POT.
- 8 October 2026: Finalization of Council presentation.
- 22-23 October 2026: Presentation at PIARC Council meeting, in presence in Merida, Mexico, or by virtual participation.
- 4-8 October 2026, Voluntary presentation at the World Road Congress in Vancouver, Canada.

5 PROPOSED BUDGET

Please provide a general budget for the project. The funding requested from PIARC should not exceed 50,700 Euros, all taxes included. The budget should include a general itemization of the costs of the major work elements of the project and a provisional schedule of invoicing.

Invoices will be processed only for completed and approved items, with 10% of each invoice payment to be held back until final deliverables have been accepted by the Project Oversight Team and approved by PIARC.

In line with EU regulations, the payment can take place 60 days after the acceptance of the invoice by the POT.

Since a timing delivery of the outputs is at the essence of the Special Projects mechanism, late penalties could be applied if the external consultant fails to deliver the outputs in the proposed milestones. In line with French regulations, if the delay is the contractor's responsibility, the penalties will be 1% of the budget per week of delay, with a grace period of 15 days, and up to a maximum of 5% of the budget.

6 PROPOSED EXPERTS AND INTERNATIONAL NETWORK

The proposal should also include a description of the relevant expertise that qualifies the contractor to undertake the project. Specifically:

- Please describe any past or current work projects that relate to the subject of this proposal.

- Please also identify the person or persons who will be working on this project, describing their roles and estimated contribution to the project in expertise and time, and providing information on their backgrounds, experience and expertise. **The proposal should detail the proposed time for each expert to contribute to the project.**

- Please provide information about any other international network, other than the World Road Association, from which the tenderer could receive inputs.

7 PROJECT OVERSIGHT AND PROPOSALS EVALUATION

The project will be overseen by a project evaluation and steering committee called "Project Oversight Team" (POT) to select the preferred tenderer and assist in the development of the project. These experts will be drawn from PIARC membership and will include representatives from several technical committees. Some experts will be nominated by member countries and PIARC General Secretariat staff.

The POT will assess proposals and select the preferred tenderer on the basis of its assessment of:

a) Technical approach and methodology (up to 35 points): how the tenderer addresses the project objectives and deliverables, how effective and resilient the proposed approach and methodology are, including proposed international case studies and addressing the needs of different PIARC member countries, in particular the LMIC.
b) Proposed work plan including intermediate milestones (up to 15 points).
c) Value for money offered by the tenderer (up to 20 points): including the time offered by different contributors of the tenderer's team.
d) Experience of the proposed team on the holistic vision of the road sector (up to 10 points).
e) Experience of the proposed team on Digital Twins (up to 10 points).
f) International experience and network of the proposed team (up to 10 points).

The POT will oversee the progress of the Project, including participating in periodic calls, reviewing interim and final products. The POT will also provide any relevant information from the PIARC work to the selected tenderer (e.g., information obtained from surveys) for use in the project. In addition to review and oversight by the POT, input may also be sought from the other members of Technical Committees and the PIARC Executive Committee and Strategic Planning Commission.

8 PROPOSAL SUBMISSION

Proposals should include the elements identified in this Call for Proposals.

Answers must include the following content and characteristics, otherwise they could not be taken into

consideration:

1. Executive Summary (maximum 1 page long).
2. Introduction to the tenderer organization/company (maximum 2 pages; appendixes can be added).
3. Understanding Digital Twins in the road sector and Special Project requirements: project background, scope and objectives (maximum 1 page).
4. Proposed methodology and approach (answering to section 2 of current call for proposals).
5. Potential options and deliverables:

   - Additional options if relevant.

   - Technical report.

   - Council presentation.

   - Congress contribution.
6. Work schedule (please provide a definition of tasks and deliverables in a time frame).
7. Budget:

   - Proposed budget for PIARC.

   - Working time included in the budget for different contributors of the proposed team.

   - Proposed schedule of invoices (to be linked to deliverables).
8. Proposed experts, organization of the team and international network

   (Maximum a half page by individual, including their experience in the road sector, in the mobility needs, in public policy, their international experience and their experience in LMICs; longer CVs and additional information can be added as appendices to the proposal.)
9. Appendices

Page limitations:

The 8 first points should be developed in a maximum of 20 pages.

The whole document should have a maximum of 50 pages including the appendices.

Proposals should be submitted electronically in English to the World Road Association General Secretariat at:

gen-sec-piarc@piarc.org

no later than:

26 March 2026

For any questions, please send E-mail to gen-sec-piarc@piarc.org