



Israel Railways Ltd.
Procurement & Contracting Division

Request for Information (RFI)

Concerning “Next Generation Railway Infrastructure Engineering and Control System (RIEC-NG)”

July, 2026

Request for Information ("RFI")

Next Generation Railway Infrastructure Engineering and Control System (RIEC-NG)

1. Introduction

Israel Railways Ltd. ("ISR") is interested in receiving information and an overall analysis regarding options of a "Next Generation Railway Infrastructure Engineering and Control System (RIEC-NG)", (the "**System**") all as generally defined in Appendix A attached hereto (the "**Technical Requirements**"), and as further described below.

2. Objective of RFI

- 2.1. The objective of this RFI is to enable ISR to explore the option of acquiring a Next Generation Railway Infrastructure Engineering and Control System (RIEC-NG), by receiving information from potential manufacturers and/or suppliers of the system ("**Respondent/s**").
- 2.2. This RFI is not to be considered as a request for proposals, nor as a tender and the provisions of neither the Israeli *Mandatory Tenders Law 5752-1992*, nor the Government Procurement Agreement shall apply hereto.
- 2.3. Notwithstanding the aforesaid, ISR may, as a result of this RFI, at its sole and absolute discretion, approach one or more of the Respondents to this RFI and/or to any other party, in order to obtain additional information.
- 2.4. ISR may, as a result of this RFI, at its sole and absolute discretion, conduct an additional competitive procedure, *inter alia*, tender procedure, and in such scope, any of the information provided in this RFI may be utilized.
- 2.5. This RFI shall not, under any circumstance, constitute any commitment on ISR's part to negotiate with any or all interested parties, nor to enter into any agreement for the acquisition of the proposed System.

3. Response

- 3.1. Respondents are invited to submit to ISR data and any technical and commercial information regarding the System.

3.2. The information should be delivered in accordance with the Technical Requirements specified in **Appendix A**, and by filling out the Respondent's response table provided in **Appendix B** and the Respondent General Information, attached as **Appendix C**.

3.3 Respondents are encouraged to submit their Response even in case of slight deviation from the requirements listed herein and/or in the Technical Requirements. ISR will consider such Response/s as long as the Respondent is able to demonstrate that its proposed System will provide ISR with substantial economic or other advantages.

4. Language of Response

Responses shall be submitted in English only.

5. Submission of a Response

Responses are to be submitted in writing, to the attention of Ms. Li Or Shmayovich at the following email address: LIORS7@RAIL.CO.IL no later than **September 8,** or by the Electronic Box (as further defined) in the Sourcingvision system of "Mashik Ltd", as described below:

5.1 Submission by Sourcingvision System of Mashik Ltd.

RFI documents are available via ISR's website: rail.co.il or via the electronic box in the Sourcingvision system of "Mashik Ltd." (the "**Electronic Box**"), at the following address: <https://account.sourcingvision.com//Site/SelfSignIn/SelfSignInGetStarted.aspx?IsNoSummonProject=1&IsSealed=1&IsArchived=0&dup&x=SoRNaM09oGbdlFVMZi9uOQ%3d%3d>, after completing the registration process. The Respondent's registration will be carried out through the link available at Sourcingvision' system.

5.2 Submission of Responses

- 5.2.1** All Responses are to be submitted to the e-mail mentioned above, liors7@rail.co.il, or to the Electronic Box of Israel Railways at the Sourcingvision system, starting from **September 6, 2026, 08:00 (Israel Time) and until September 8, 2026, 23:59 (Israel time)** (the "**Final Submission Date**"). After this deadline, it will not be possible to submit Responses to the Electronic Box.
- 5.2.2** Respondents are advised to enter the Sourcingvision system in advance and perform all necessary preparations to ensure that the Responses are submitted on time, and to avoid delays due to various technical issues.
- 5.2.3** The clock of the Electronic Box is the official clock for the submission deadlines in this RFI.
- 5.2.4** It is hereby emphasized that it is the Respondent's responsibility to ensure that the forms that were scanned and uploaded to the system are legible and clear.

5.2.5 It is recommended that the Respondent will retain a copy of the Response submitted to the Electronic Box.

5.2.6 For any technical assistance regarding the use of the Sourcingvision system, the Respondent may contact the support representatives of Mashik Ltd. by email at: service@mashiktech.com, or by phone at +972-50-9029376, from Sunday to Thursday between 08:00 and 17:00 Israel Time (excluding holiday eves and holidays).

5.2.7 The Respondent's Response shall include the following documents:

5.2.7.1 A signed and complete copy of the Technical Requirements (**Appendix A**);

5.2.7.2 Respondent response table Information (**Appendix B**).

5.2.7.3 Respondent's General Information (**Appendix C**)

5.2.7.4 Any other relevant information requested under this RFI

6. Request for Clarification and/or Additional Information

6.1 Any Respondent may submit to ISR, in writing, inquiries and/or requests for clarification and/or additional information regarding the RFI or relating to the RFI documents, as specified herein below (a "**Request for Clarification**").

6.2 A Request for Clarification shall clearly specify to which RFI document it refers.

6.3 Respondent shall submit Requests for Clarification with respect to any errors, ambiguities, inconsistencies, omissions, erroneous, unclear or imperfect provisions ("**Errors**") in the RFI documents. It is clarified that by submitting its Responses, Respondent irrevocably and unconditionally waives any claim, demand or legal or administrative proceeding alleging or claiming that the selection process in the RFI has been influenced or based by an Error and/or that Respondent has suffered any damages as a result of such Error.

6.4 All Requests for Clarification relating to the RFI shall be submitted in English by the Electronic Box of ISR in the Sourcingvision system or by e-mail to: liors7@rail.co.il.

7. General

7.1. This RFI shall not be construed under any circumstances as a pre-requisite or pre-qualification procedure.

7.2. This RFI is merely for the purpose of obtaining any relevant information for consideration purposes only, and ISR shall not be construed as having taken any commitment to procure such System nor to publish any tenders or any other further competitive procedure.

- 7.3. Participation in this RFI does not and shall not provide a Respondent or any other entity with any advantage, nor shall it confer upon a Respondent any right with respect to the System (or any part thereof) or any future proceedings conducted with respect thereto (if any), including with respect to any pre-qualification process and/or tender process, should ISR decide to implement one.
- 7.4. ISR may, as a result of this RFI, approach, at its sole discretion, one or more of the Respondents and/or any other party, in order to obtain additional information, commercial proposals and/or to conduct negotiations with respect to the technical and/or commercial terms, and enter into a contractual relationship with one and/or more Respondents or any other party ISR finds suitable, and/or to conduct any other procedure it deems necessary.
- 7.5. It is hereby clarified that ISR shall not be obligated to engage in any contract on the basis of this RFI and that any information presented and/or submitted to ISR through this RFI is provided voluntarily. ISR shall not be charged in any manner for the submission of information in accordance with this procedure and every Respondent shall bear its own costs with respect to this RFI.
- 7.6. To preclude any doubt, it is emphasized that ISR shall have the right to reject, in whole or in part, any opinion, conclusion or information delivered to it through this RFI. ISR shall also have the right to use the information presented and/or submitted to it for the purpose of planning and preparing a tender or any other procedure, should ISR decide to implement one.
- 7.7. ISR may, at its sole discretion, request from any of the Respondents additional information, details, approvals, recommendations and/or certificates, as required by ISR.
- 7.8. ISR may ignore any Response which lacks information or has unclear details.
- 7.9. ISR shall not be bound to accept and/or consider any Response and it does not undertake herein any commitment whatsoever towards any of the Respondents and/or any other interested parties.
- 7.10. ISR reserves the right, at any time and at its sole discretion, to amend this RFI or any aspect thereof, as well as to extend the date for submittal of the Responses. In addition, ISR reserves the right to cancel this RFI in its entirety at its sole discretion, without providing the Respondent(s) any (or no) reason or explanation.
- 7.11. This RFI process is undertaken by ISR for the purpose of receiving data and information, and it does not create any obligation on ISR's part to commence, continue or complete

any purchase procedure and/or to act in any other method of acquisition, and ISR shall act at its sole and absolute discretion in this respect.

- 7.12. ISR reserves the right to accept, in future stages, information and/or any commercial proposals from entities which did not participate in this RFI process, as ISR shall deem fit.

Appendix A

Technical Requirements

Request for Information (RFI) on Next Generation Railway Infrastructure Engineering and Control System (RIEC-NG)

1. Background

Israel Railways (ISR) issues this Request for Information (RFI) to evaluate technology providers, capable of delivering a "Next Generation Railway Infrastructure Engineering and Control System (RIEC NG)" - a strategic national platform for managing railway infrastructure condition, maintenance, safety, and long term investment planning.

RIEC-NG replaces the legacy RIEC system and must support ISR's transformation toward:

- **Predictive maintenance** - using AI, ML and multi-sensor data fusion;
- **Prescriptive planning** - optimizing budgets, safety and performance;
- **Digital twin visibility** - enabling simulations, scenarios and forecasting;
- **Autonomous and semi-autonomous inspections** - using drones, robots and autonomous cars;
- **Central decision support** - integrating SAP, GIS, DMS, traffic systems and future diagnostic assets;
- **Full continuity** with existing ISR operational knowledge, standards, templates, workflows and safety requirements.

ISR manages over 2,000 km of track, hundreds of turnouts, bridges, tunnels, culverts, catenary systems, and critical signaling assets. Ensuring safe, reliable, and cost efficient operations requires a comprehensive next generation platform.

This RFI seeks **capability statements, architecture proposals, delivery approaches, and cost models** from globally recognized vendors and system integrators.

2. Background & Current Situation

ISR's current RIEC platform provides:

- Track geometry processing (TRV, Track Trolley, manual inspections)
- Rail condition and wear
- Load clearance
- Turnout inspection (manual, trolley, TRV)
- Data import workflows through a dedicated ingestion tool
- Safety & visual inspection mobile applications
- SAP, GIS, and DMS integrations
- Work plan generation and optimization

However, the existing solution is limited in:

- Scalability
- AI analytics
- Real-time sensor fusion
- Modern mobile architecture
- Data volume handling
- Extensibility for new inspection technologies
- Cloud or hybrid hosting

ISR is undertaking a national modernization program and requires a next-generation platform capable of supporting operational growth for the upcoming years.

3. Goals & Success Criteria

ISR seeks a platform that can achieve the following:

3.1 Safety Outcomes

- Early detection of rail defects, turnout hazards, structural risks, etc.
- Reduced manual exposure and safer inspections (drones/robots)
- Reduction in unplanned speed restrictions and emergency works

3.2 Operational Performance

- Higher availability and reliability of track and turnouts
- Accurate multi-year forecasting of degradation and budgets
- Faster inspection–analysis–planning cycles using ML models

3.3 Cost Optimization

- Lower long-term OPEX via prescriptive planning and clustering
- More efficient use of maintenance windows
- Reduced re-work through data-driven prioritization

3.4 Organizational Enablement

- Increased transparency across engineering and operations
- Consistent standardized decision processes
- Full bi-directional integration with SAP
- Stronger integration with spatial data on GIS maps

4. Scope of RIEC-NG

The RIEC-NG platform must cover the full infrastructure management lifecycle:

- 1. Inventory & Digital Twin Management**
 - 2. Data Acquisition & Inspection Management**
 - 3. Data Integration & Validation**
 - 4. Data Analytics & Predictive Modelling**
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5. **Prescriptive Planning & Optimization**
6. **Work Management & SAP Integration**
7. **Reporting & Dashboards**
8. **Mobile Field Operations**
9. **Integration, Security, Operations**

Each module is described in depth below.

5. Functional Requirements

5.1 Asset Inventory & Network Digital Twin

The Digital Twin must:

5.1.1 Represent all infrastructure assets, including:

- Track segments (geometry, topology, curve, gradient)
- Turnouts, crossings, double-slips, scissor crossovers
- Bridges, culverts, retaining walls, tunnels
- Catenary and electrification components
- Drainage systems
- Signals, switches
- Stations, depots, yards

5.1.2 Support multiple hierarchy models

- Location hierarchy (Line → Section → Track → Asset)
- Infrastructure type hierarchy
- Organizational ownership hierarchy

5.1.3 Provide digital twin features

- Time-versioned states
- “As-is,” “as-was,” and “simulated” states
- Full GIS compatibility (ESRI ArcGIS)
- Attribute-level editing, validations and history

5.1.4 Turnout-Specific Requirements

The system must replicate ISR’s detailed templates:

- Measuring points (MP) definitions per type
 - Projections (1-2, 1-3, A-B, C-D, etc.)
 - Thresholds linked to speed classes
 - Continuous & discrete measurement mapping
 - Structural logic for SC/DS, mixed turnouts
 - All MP metadata and positions must be preserved (from legacy files)
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5.2 Inspection Management

5.2.1 Supported inspection sources

- TRV (Track Recording Vehicle)
- TT (Track Trolley)
- Manual inspectors
- Visual inspections (track + turnout)
- Tamping recorder
- Ultrasonic (rail flow) data
- Catenary inspections
- Signaling inspections

- Future Measurement Vehicle (2026+)
- Wayside automated inspection portals (video, LiDAR, thermal)
- Autonomous drones and ground robots
- Ground Penetrating Radar

5.2.2 Inspection Data Types

- Geometry: gauge, cant, twist, alignment, surface
- Rail wear: vertical/horizontal wear, lip, corrugation
- Turnout data: MP-based values, continuous projections
- Catenary: wear, fittings, anchors
- Structures: defect types, severity, extent
- Video, LiDAR, and high-speed imaging feeds
- Ground characterization with depth and density values
- Environmental data: weather, traffic loads, temperature

5.2.3 Required Features

- Route management for TRV/TT runs
- Bi-directional data alignment
- Automatic exception detection
- Comparison of multiple inspections
- AI-based anomaly detection
- Exception lists linked to the digital twin
- Waveforms with synchronized video

5.3 Data Integration, Import & Validation

ISR's existing import workflow **must be modernized but preserved functionally**, including:

5.3.1 Import Job Concepts

- Raw data interface loading
- Schema validation
- Measuring point assignment
- Direction correction (reverse runs)
- Correlation (sliding raster)
- Manual correction tools
- "Release to production" step

5.3.2 Supported Formats

- CSV, XML, JSON, SQL/ODBC, API endpoints
- Vendor-provided proprietary formats for inspection equipment
- Live database query integration

5.3.3 Validation Requirements

- Range checks, min/max
- Structure checks
- Location checks
- Deviation checks vs. reference data
- Full audit trail of corrections

5.3.4 Reference Data Management

- Automatic update of reference runs
- AI-based correlation

- Ability to re-assign data after track reconstruction
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5.4 Analytics, AI & Modeling

The system must include:

5.4.1 Predictive Models

- Geometry degradation forecasting
- Turnout RUL (Remaining Useful Life)
- Switch machine health (vibration/electrical signals)
- Ballast fouling models based on GPR and AI Image recognition
- Environmental degradation models

5.4.2 AI Models

- Image-based defect detection (sleepers, fasteners, ballast, vegetation, cracks)
- ML-based anomaly detection (multivariate)
- Deep learning models for vision & LiDAR
- Time-series forecasting for KPIs

5.4.3 Data Fusion

- Combine geometry, imagery, environmental data, work history, traffic loads
- Multi-modal risk scoring

5.4.4 Explainability

- Feature importance
- Visualization of defect-driving factors
- Transparent thresholds and decision logic

5.4.5 Alignment with research trends

Modeling must align with modern railway AI approaches (2025–2026), including deep learning, digital twins, cyber-physical systems.

5.5 Prescriptive Maintenance & Work Planning

- Geometry treatment rules
- Turnout corrective treatments
- Grinding, tamping, lubrication
- Drainage treatment options
- Structural repair templates
- Cost models

5.5.2 Decision Models

- Multi-factor decision logic
- A/B/C/D threshold mapping
- Multi-year forecasting
- Scenario analysis (“what if”)
- Treatment clustering (location/time)
- Resource constraints

5.5.3 Work Plan Creation

- Annual plan generation
- Multi-year budget planning
- SAP work orders auto-generation
- Emergency (ad-hoc) work orders for critical defects (C/D levels)

5.6 Mobile Field Operations

5.6.1 Requirements

- Offline mode
- Inspection work order retrieval
- Safety inspection interface (MP-based)
- Visual defect capture with images
- Device ML support
- Cross-platform (iOS, Android, Windows)

5.6.2 Replacement of legacy mobile logic

While preserving:

- Local queueing
- Retry logic
- “Backup server” offline equivalence

6. Technical Architecture Requirements

6.1 Deployment Models

Vendors must support at least two of:

6.1.1 Cloud (Preferred Option)

- Managed services (ML, streaming, event buses)
- Geographic redundancy
- High-volume storage and compute
- Edge integration

6.1.2 On-Premise

- Kubernetes/VM-based deployment
- Offline network capability
- ISR-managed hardware

6.1.3 Hybrid

- Local ingestion + cloud analytics
 - Edge nodes for inspection portals and drones
 - Secure synchronization
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6.2 Integration Architecture

6.2.1 SAP

- Work orders, notifications, master data
- Real-time or batch synchronization
- S/4HANA and R3

6.2.2 GIS (ESRI)

- Linear referencing
- Feature layers
- Map rendering inside RIEC-NG

6.2.3 DMS (SharePoint)

- Document linking to assets
- Attachment handling

6.2.4 Traffic Operations System

- Speed restrictions
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- Actual train loads
 - Real-time events
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6.3 Security Requirements

- Zero-trust
 - MFA for all users
 - RBAC & ABAC
 - Encryption (TLS1.3 + AES256)
 - Secure mobile data at rest
 - Logging & SIEM integration
 - Data loss prevention
 - API gateway & rate-limiting
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6.4 Data Governance Requirements

- Data catalog
 - Lineage tracking
 - Quality checks
 - Versioning
 - Deletion, archival rules
 - Metadata management
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7. Implementation Expectations

7.1 Phased Delivery

Phase 0: Mobilization

- Workshops, inventory of legacy artefacts

Phase 1: Core Platform

- Digital twin
- GIS integration
- Data ingestion pipeline

Phase 2: Analytics & AI

- ML models
- Predictive analytics
- Dashboards

Phase 3: Planning & SAP

- Work plan engine
- SAP integration

Phase 4: Field & Mobility

- Mobile app deployment

Phase 5: Final Acceptance

- Full PQ
- Performance test
- Model validation

8. Vendor's Proposed System and Customers

Please provide a list of 5-10 customers who have acquired and installed the proposed software. The list should include the following:

Company name	Contact name	Contact's title	Contact Information : Address, Telephone Number and Email	Description of modules installed	Timeframe for implementing software	Period of use in production	Cost for implementing software	Number of Turnouts	Length of the track network	Number of users	System's Integrations

1. Age of proposed system	
2. Last date Upgrade of proposed system	
3. Number of implementations proposed system	
4. The finance estimation for full system license for 50 users	
5. The finance estimation for an annual maintenance agreement for 50 users	

Appendix B

Respondents must provide ISR with the following information:

<u>Item No.#</u>	<u>Item</u>	<u>Respondent's Response</u>
1	Company profile	
2	Proposed architecture	
3	Compliance matrix	
4	Data ingestion approach	
5	AI/ML methodology	
6	SAP integration strategy	
7	GIS integration strategy	
8	Mobility solution	
9	Cybersecurity model	
10	Implementation timeline	
11	References (rail projects after 2020)	
12	Pricing approach	
13	Optional innovations	
14	Risks & mitigation	

Appendix C

“Next Generation Railway Infrastructure Engineering and Control System (RIEC-NG)”

Respondents are requested to submit the following information:

A	General Information Concerning the Respondent (Table I)		
A1	Respondent name (Company's name)		
A2	Respondent address/location		
A3	Respondent contact person		
A4	Contact person	Telephone No:	E-Mail:
A5	Respondent main fields of expertise		
A6	Respondent professional certifications (Such as ISO 9001:2008/2015, IRIS, etc.)		
A7	Exemplary main customers		