

**Invitation for Expression of Interest (EOI)
From
Indian Institute of Science (IISc)
For Selecting Technology Partner for the
Development of Universal Data Processing
Module (DPM) for Instrumented Wheel Set
(IWS) Systems**

Bid Schedule

1	Tender No	EOI/DPM/AE/2025/01
2	Tender Date	18 th June 2025
3	Item Description	DPM
4	Tender Type	EOI
5	Place of EOI document submission	Department of Aerospace Engineering Indian Institute of Science (IISc), Malleshwaram, Bangalore - 560012 Karnataka, INDIA.
6	Last Date & Time for submission of tender	9 th July 2025, by 5pm IST
7	For further clarification	Professor Gopalakrishnan Srinivasan krishnan@iisc.ac.in Department of Aerospace Engineering Indian Institute of Science, Bangalore, 560012

Introduction:

The Indian Institute of Science (IISc) invites an expression of interest to be a technology partner from domestic organizations to participate in a project to develop a **Universal Data Processing Module (DPM)** for existing IWS systems currently available with RDSO—comprising **two sets for LHB coaches** and **five sets for various rolling stock**. The IISc is looking for an industry technology partner who will support IISc to standardize and enhance the data processing capabilities across multiple IWS platforms by implementing a single, modular, and universal system.

Through this Expression of Interest (EOI), IISc invites applications from eligible and capable companies/technology partners interested in collaborating on the **design, development, implementation, integration, and long-term support** of this initiative.

This will be a single-stage participation where the documentations submitted by the short-listed organizations will be evaluated and a single organization will be select.

Eligibility Criteria

a. Company Profile:

- The applicant must be a company, partnership firm, or LLP registered in India under the applicable laws (e.g., Indian Companies Act, 1956/2013; Partnership Act, 1932).
- The organization must preferably have a technology implementation office in Bengaluru, India.
- If the organization is a startup company, it must be a DPIIT-recognized.
- The organization must have access to a lab or dedicated workspace within Bangalore to facilitate easy collaboration with IISc on this proposed R&D activity.

b. Experience:

- The organization must have a minimum of 5 years of experience (as of 15th June 2025) in developing products and systems for the railways in collaboration with academic institutions, government bodies, public sector units, or allied agencies (Note this condition can be relaxed to 3 years if the organization is a startup or MSME).
- Demonstrated experience in railway electronics, embedded systems, or related engineering domains is required.
- Proven track record in R&D, product development, or system integration, with at least two Intellectual Properties (IPs) owned by the organization.
- Must possess in-house technical capabilities or have strategic partnerships to support project delivery/product development.
- Should have successfully executed at least one R&D project for Indian Railways through RDSO in collaboration with IISc or similar organization, with a project cost exceeding ₹1 crore.

- Must nominate at least one full-time scientist with a doctoral degree and two M.Tech professionals for this project.

c. Past Assignments:

The organization must have successfully completed at least one R&D project in railway domain, preferably with RDSO.

d. Financial Capability:

The applicant must have achieved a minimum annual turnover of INR 1 crore in each of the last three financial years (Note that if the organization is a startup or MSME, the minimum annual turnover should be INR 60.0 Lakhs).

e. Declaration of Transparency:

The applicant must not be under any declaration of ineligibility for corrupt or fraudulent practices issued by the Government of India or any State Government. A self-declaration must be submitted as per the format provided in Annexure.

Project Details:

The **Data Processing Module (DPM)** is a critical component of the Instrumented Wheel Set (IWS) system. Its primary role is to process strain signals captured by the IWS and convert them into quantifiable wheel–rail contact forces. The DPM comprises a tailored combination of **hardware and software**, developed specifically for this application. Given the uniqueness of each IWS configuration, the DPM cannot follow a standard template; it requires **custom development** tailored to specific applications and test parameters.

Objectives of DPM Development:

1. Assess the feasibility of designing and developing a **universal DPM** compatible with existing IWS setups.
2. Design, develop, and transfer complete know-how (including hardware and software) of the DPM that can interface with all six types of IWS systems currently held by RDSO.

Scope of Work

The scope includes, but is not limited to:

- **Design and development** of both hardware and software for a universal DPM
- Ensuring **compatibility** with multiple IWS variants (including LHB coaches and other rolling stock)
- Real-time **data acquisition, processing, and visualization**
- Seamless **integration** with RDSO's existing systems
- Comprehensive **documentation, testing, and field deployment**
- Provision of **long-term maintenance and upgrade support**

The selected partner shall develop and demonstrate a working system, which includes:

- Acquisition and interpretation of strain signals from existing IWS systems
- Experimental testing under varying loads to evaluate signal-load relationships
- Development of models to estimate **lateral and vertical wheel forces**
- Computation of **derailment coefficient** and other relevant safety metrics

Duration and Milestones of the project:

Total duration of the project 7 months

- MS-1: 2 months
- MS-2: 3 months
- MS-3: 3 months

ID	Denomination	Description
MS-1	Feasibility of Development	Literature review, system and subsystem experiments, signal analysis, and submission of a feasibility report to RDSO.
MS-2	Design and Development of Data Acquisition system	Design and development of data acquisition system.
MS-3	Design and Development of universal DPM	Design and develop a universal DPM compatible with existing hardware to estimate rail-wheel forces through model parameter optimization.

Intellectual Property (IP) Sharing:

- Intellectual Property (IP) generated through research under IISc will be jointly shared by IISc, RDSO and the selected indigenous organization or industry partner involved in the project.
- The patent will be jointly owned by RDSO, IISc, and the contractor/vendor/industry partner. The patent filing will be carried out by IISc after the technology is formally declared as developed by both RDSO and IISc.

EOI with all enclosures should be emailed to Professor Gopalakrishnan Srinivasan on krishnan@iisc.ac.in on or before 5 p.m. on July 9, 2025. The organization should include the following with their application

1. Work completion certificates
2. Turnover certificates from competent authority for the last 3 financial years
3. Proof of IP generated from the organization
4. Evidence of work done with RDSO with project cost exceeding Rs 1.0 crore
5. GST/PAN details, and
6. DPIIT certificate issued by competent authority
7. Self-declaration certificate in the attached format

Late submissions will not be considered.

No price information shall be submitted along with this EOI. If any price information is revealed in the EOI document, the bid will be treated invalid.

IISc reserves the right to evaluate the EOI and accept/reject the proposal.

IISc reserves the right to reject any/or all the EOIs without assigning any reasons whatsoever.

Annexure

Self-Declaration Format

Ref. No:

Date:

To,
The Registrar,
Indian Institute of Science

With reference to my/our expression of interest to IISc, it is hereby declared that I/ (name of firm) was not declared ineligible for corrupt and fraudulent practices either indefinitely or for a particular period by any Government or other agency.

I/(name of firm) also declare that there are no contractual restrictions or legal disqualifications or other obligations which will prohibit me/us from entering this bid and each and every one of the statement and particulars contained herein are correct.

Signature of the Applicant

Date:

Place:

(seal)