



सड़क परिवहन
एवं राजमार्ग मंत्रालय
MINISTRY OF
ROAD TRANSPORT
AND HIGHWAYS



**Global Expression of Interest (EOI) for
construction of Free Flow GNSS Lanes at
Toll Plazas for Implementation of Global
Navigation Satellite System (GNSS) based
Electronic Toll Collection in India**

INDIAN HIGHWAYS MANAGEMENT COMPANY LIMITED

An Initiative of

National Highways Authority of India
(Ministry of Road Transport & Highways)
Government of India

02.07.2024

LETTER OF INVITATION

Indian Highways Management Company Limited (IHMCL), a Company promoted by National Highways Authority of India (NHAI) (an Autonomous Body Under the Ministry of Road Transport & Highways (MoRT&H), Government of India) invites Global EOI for construction of Free Flow GNSS lanes at Toll Plazas for Implementation of Global Navigation Satellite System (GNSS) based Electronic Toll Collection in India.

i. The EOI includes the following Sections:

Section 1 - Disclaimer

Section 2 - Introduction

Section 3 - Pre-Qualification Criteria

Section 4 - Background

Section 5 - Objective of EOI

Section 6 - Scope of Work

Section 7 - Schedule of EOI process & Contact details

Section 8- Appendices

ii. Interested Applicant(s) shall submit their application along with covering letter and all supporting documents/ information as per **Appendix-B** in soft copies addressed to Email ID indicated in the contact details (Section-7) on or before last date of Submission.

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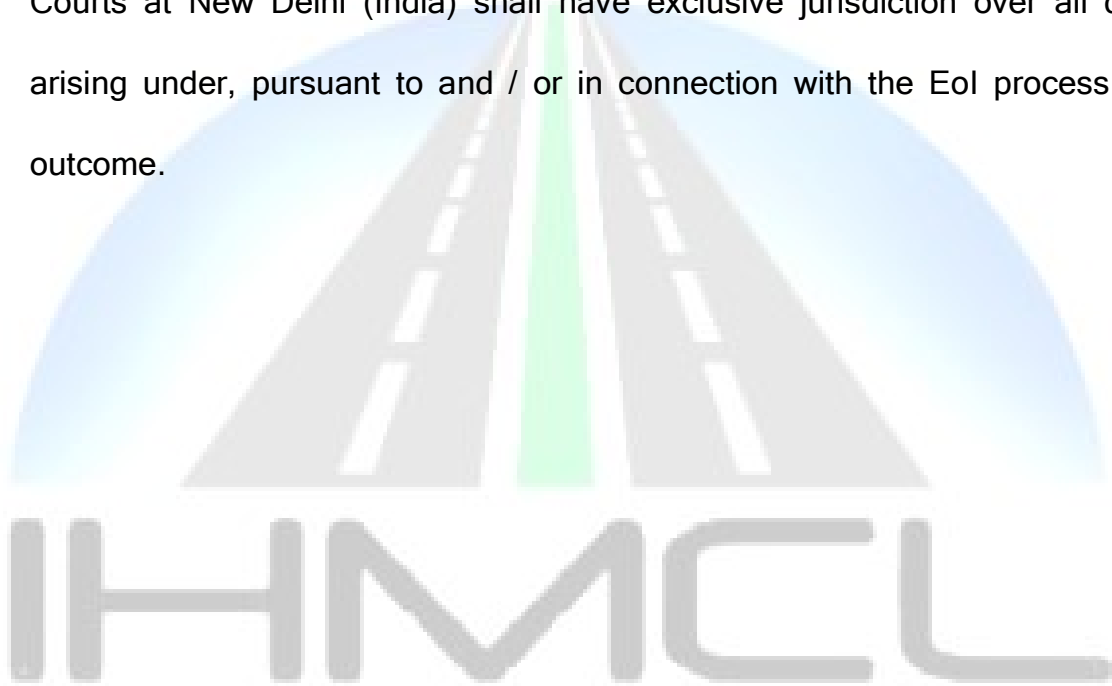
SECTION-1

Disclaimer

- (i) The purpose of this EOI document is to provide the Applicant(s) with information to assist them in formulation of their applications. This EOI document does not purport to contain all the information, each Applicant may require. Each Applicant should conduct their own investigations and analysis and should check the accuracy, reliability and completeness of the information in this EOI document and where necessary obtain independent advice from appropriate sources.
- (ii) IHMCL, its employees and advisors make no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the EOI document.
- (iii) IHMCL may, in its absolute discretion, but without being under any obligation to do so, annul, modify, amend or supplement the information in this EOI document.
- (iv) An applicant means a Business Entity, who has sufficient experience in accordance with the Conditions of Eligibility as detailed in EOI is permissible.
- (v) The issue of this EOI does not imply that IHMCL is bound to select and shortlist Applicants to enter into tie-up agreements with shortlisted Applicants.
- (vi) The Applicant shall bear all costs associated with or relating to the preparation and submission of its EOI application including but not limited to the preparation, copying, postage, delivery fees, expenses associated with any

demonstrations/technical discussion/presentation and submission of EOI, IHMCL shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the EOI process.

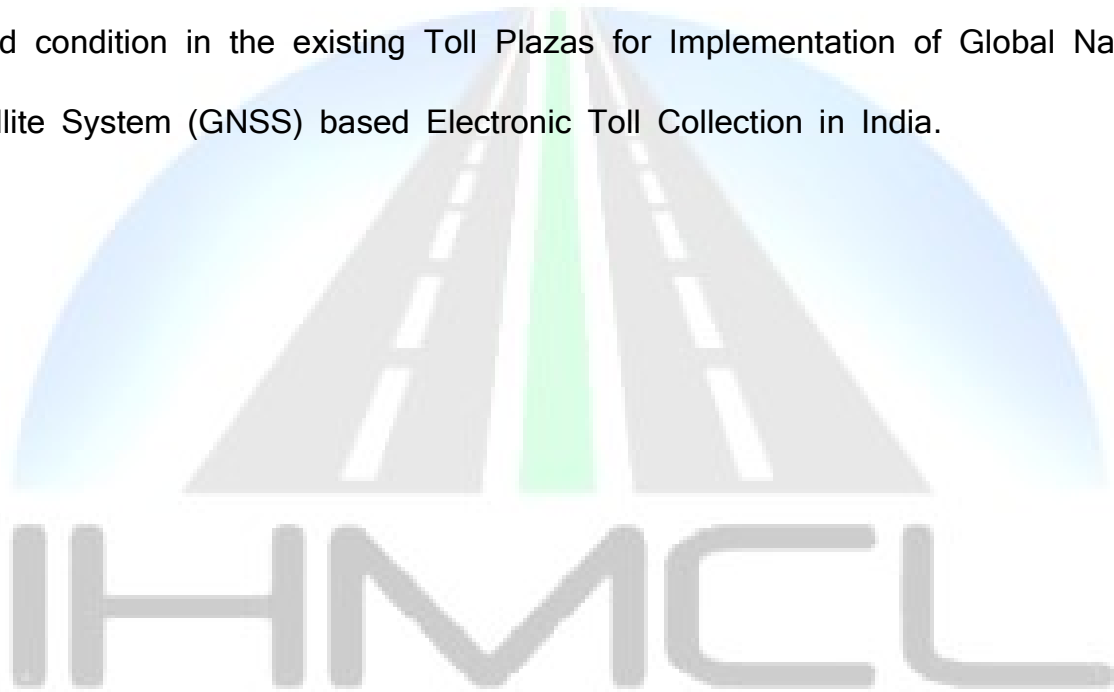
- (vii) Canvassing in any form by the applicant or by any other agency on their behalf may lead to disqualification of their EOI.
- (viii) Governing Laws & Jurisdiction: The EOI process and its outcome shall be governed by, and construed in accordance with, the laws of India and the Courts at New Delhi (India) shall have exclusive jurisdiction over all disputes arising under, pursuant to and / or in connection with the EOI process and its outcome.



SECTION-2

Introduction

IHMCL, a promoted Company of National Highways Authority of India (NHAI), an Autonomous body under the Ministry of Road Transport & Highways (MoRT&H) invites Global Expression of Interest (EOI) from Applicants in the field of Electronic Toll Collection meeting the criteria set forth in **Section-3** to submit their Technical Application so as to enable construction of dedicated Free Flow GNSS lane(s) under hybrid condition in the existing Toll Plazas for Implementation of Global Navigation Satellite System (GNSS) based Electronic Toll Collection in India.



SECTION-3

Pre-Qualification Criteria

1. The applicant must be a business entity incorporated in India under the Companies Act, 1956/2013 or the Limited Liability Partnerships Act, 2008 or equivalent law(s) in the country of jurisdiction of the entity.

2. The applicant should be:
 - a. Original Equipment Manufacturer (OEM) of high-performance Electronic Toll Collection Equipment capable of performing at vehicle speed >100kmph

OR

 - b. Software Development/Technology firm having experience as System Integrator of Electronic Toll Collection systems with Multi Lane Free Flow condition with Vehicle Speed > 100 Kmph.

 - c. The applicant should have an Average Annual Turnover during the last three Financial Years of INR* 100 Crore (INR 1000 million) or equivalent foreign currency. In case the financial figures are in foreign currency current market exchange rate (State Bank of India BC Selling rate as on last date of submission of the EOI application i.e., 22.07.2024) will be applied for the purpose of conversion of amount in foreign currency into Indian Rupees.

***Indian Rupees**

SECTION-4

Background

The Ministry of Road Transport & Highways (MoRTH) envisages to implement Global Navigation Satellite System (GNSS) based Electronic Toll Collection (ETC) in India to increase the efficiency of the Tolling operation in line with the global practices. In this regard, the National Highways Authority of India (NHAI), an Autonomous Body under MoRTH, through its promoted Company M/s Indian Highways Management Company Ltd (IHMCL), which oversees the National Electronic Tolling Collection (NETC) program, has been entrusted with the responsibility to implement the GNSS based ETC across India.

National Highways Authority of India (NHAI) is responsible for the development, maintenance, and management of the National Highways entrusted to it, as well as related matters. Currently, out about 1,50,000 km of National Highways declared by the Ministry of Road Transport & Highways, about 70,000 km are managed by NHAI. Additionally, NHAI is mandated to collect user fees (tolls) on these highways in accordance with the National Highway Fee (Determination of Rates and Collection) Rules, 2008. At present, User fee is collected for approximately 45,000 km of National Highways (NH) and Expressways in approx. 1200 Toll Plazas maintained by NHAI / Concessionaires.

Presently Electronic Toll Collection in India is done through Radio Frequency Identification (RFID) technology, branded as FASTag, which was launched in India in 2015. Since February 2021, FASTag has been made mandatory for the payment

of user fees at National Highway toll plazas, with a provision for a 100% penalty for cash or non-FASTag payments. As of March 2024, more than 98% of user fee payments are made through FASTag at the Toll Plazas.

GNSS based Tolling: IHMCL plans to implement the GNSS-based Electronic Toll Collection (ETC) system within the existing FASTag ecosystem, initially using a hybrid model where both RFID-based ETC and GNSS-based ETC will operate simultaneously. Dedicated GNSS lanes will be available at toll plazas, allowing vehicles using the GNSS-based ETC to pass through freely. As GNSS-based ETC becomes more widespread, all lanes will eventually be converted to GNSS lanes.

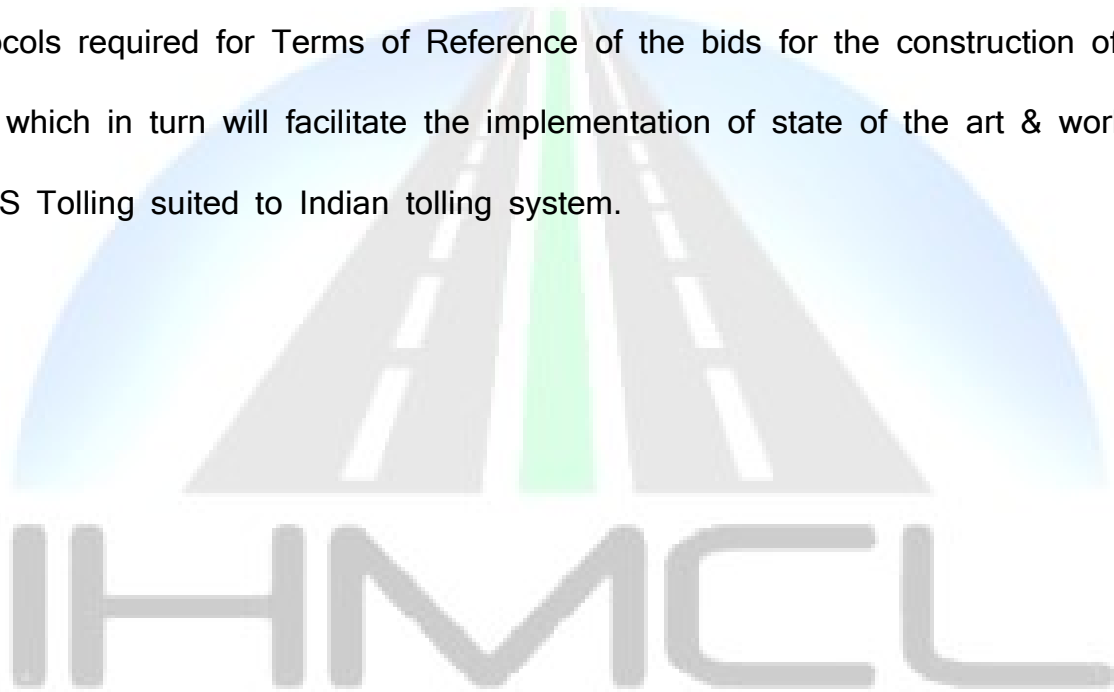
It is envisaged that the GNSS Lanes will provide Free Flow of Vehicles at High Speed. It should have advance reading / identification / enforcement equipment for vehicles so that valid vehicle gets a free flow pass.



SECTION-5

Objective of EOI

The objective of this global EOI is to prepare the layout of GNSS Lanes, identify the key equipment & their specifications, identify the national / international testing protocols for the key equipment and identify qualified and experienced agencies/OEMs who can implement the GNSS Lane within the existing Toll Plazas. The EOI will serve as the foundation for drafting a comprehensive specification and testing protocols required for Terms of Reference of the bids for the construction of GNSS lane which in turn will facilitate the implementation of state of the art & world class GNSS Tolling suited to Indian tolling system.



SECTION-6

Scope of Work

- a. To develop a layout of dedicated one or two GNSS Lanes within existing Toll Plazas which will allow free flow to vehicles who have opted GNSS Tolling (GNSS Vehicles). The layout shall also include advance signages, markings, lighting, placement of equipment etc. so as to allow the GNSS Vehicles safely cruise through the Toll plazas at reasonably high speed without coming in conflict with the slow-moving RFID based vehicles passing through non-GNSS lanes.
- b. To identify the high-performance equipment which can perform following functions (but not limited to) at vehicle speed greater than 100 kmph in the GNSS Lane(s):
 1. RFID Tag Reading
 2. Vehicle Registration Number Reading through ANPR Cameras
 3. Vehicle Class Identification (Axle, type etc)
 4. Vehicle Weight Identification with accuracy >90%
 5. Any other equipment required for proper functioning of GNSS lane(s) and its integration with the Toll Charger (Refer **Appendix-C** for Concept Note & Toll Charger)
- c. Suggested Make & Model of each equipment with proven examples, if any of the suggested make and model of equipment.

- d. Whether equipment is manufactured in India, if not then origin of manufacturing, Availability of Equipment in India, After sale support in India etc.
- e. Operational Characteristics of each equipment.
- f. Environmental Characteristics of each equipment.
- g. To identify the complete specifications of each equipment required in the GNSS lanes.
- h. To identify the testing protocols, certifications and testing agencies for specifications and operational characteristics of each equipment.
- i. To identify integration protocols to integrate GNSS lanes with the Toll Charger (Refer **Appendix-C** for Concept Note & Toll Charger)
- j. Any other attribute required for implementation of GNSS Tolling in Indian Tolling ecosystem.



SECTION-7

Schedule Of EOI Process & Contact Details

1. Issue of EOI Document

EOI Document is issued on **02.07.2024**

2. Pre-EOI Meeting

A pre-EOI meeting is scheduled for July 12, 2024, at 11:00 AM Indian Standard Time at the NHAI Headquarters, G-5 & 6, Sector 10, Dwarka, New Delhi - 110075, India. Applicants may also join via video conference by requesting access through email at tenders@ihmcl.com.

3. EOI Submission

The applicant shall submit the EOI application via the official email ID of the Power of Attorney (PoA) holder by July 22, 2024, at 03:00 PM Indian Standard Time. Submissions should be sent to tenders@ihmcl.com. If the application size exceeds 20 MB, the applicant shall provide a Google Drive link that is not password-protected.

4. Address for communication and EOI submission:

Shri. A R Chitranshi,
Chief Operating Officer (COO)
Indian Highways Management Company Limited (IHMCL)
NHAI, G-5 & 6, Sector 10, Dwarka,
New Delhi - 110075, India
Tel- 011- 25074100,25074200 Ext-1804
Email: tenders@ihmcl.com

SECTION-8

APPENDICES

Appendix-A

Technical Application

1. Company profile, including experience and expertise in relevant projects as per **Section-3**.
2. Detailed Applications outlining the proposed solution shall include the following, but not limited to:
 - a) Layout of the GNSS Lanes under existing Toll Plaza Setup- elevation, plan, marking, signages, lighting, placement of equipment, safety feature etc.
 - b) Required High Performance Equipment capable of performing for vehicle speed > 100kmph
 - c) Make & Model of each equipment with proven examples, if any of the suggested make and model of equipment.
 - d) Specifications of each equipment
 - e) Operational Characteristics of each equipment.
 - f) Environmental Characteristics of each equipment.
 - g) Testing Protocols of each Equipment
 - h) Certifications required for each Equipment
 - i) Testing Agencies for each equipment
 - j) Whether equipment is manufactured in India, if not then origin of manufacturing.
 - k) Availability of Equipment in India.
 - l) After sale support in India etc.
 - m) Any other relevant information.

Document Requirements for EOI

1. Company Incorporation Details
2. Experience Certification issued to the Company apostille at foreign origin, if any.
3. Financial details of Company including net worth along with annual turnover for the last 3 financial years duly vetted by Statutory Auditor
4. Relevant experience in last 10 years in support of Sl. No. 2 of Pre-Qualification Criteria under Section 3:
 - a. Country (or countries) and date(s) of implementation
 - b. Name(s) of Client(s)
 - c. Total Number of Equipment Installed Worldwide including Type, Make, Model, etc.or
 - d. Multi Lane Free Flow Electronic Toll Collection Projects & its details
 - e. Any other relevant information supporting the firm's capabilities and qualifications
 - f. References from previous clients, particularly in similar projects.

Format for submission of the above information is enclosed as Proforma to this Appendix.

Proforma 1: Covering Letter

[On the Letterhead of the Applicant]

[Date]

<<Address>>

Dear Sir,

Ref: Global Expression of Interest (EOI) for construction of Free Flow GNSS Lanes at Toll Plazas for Implementation of Global Navigation Satellite System (GNSS) based Electronic Toll Collection in India

With reference to your EOI Document dated *****, I/we, having examined the Documents and understood their contents, hereby submit our EOI for the aforesaid Project. The EOI is unconditional and unqualified.

- i. I/we propose to submit our EOI as _____ (Name of the Applicant)
- ii. All information provided in the EOI and in the annexures is true and correct and the documents accompanying are in original or true copies of their respective originals, as the case may be.
- iii. I/we shall make available to IHMCL/NHAI/MoRTH any additional information it may find necessary or require to supplement or authenticate our proposal in response to the EOI.
- iv. I/we acknowledge the right of IHMCL/NHAI/MoRTH to reject our EOI without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
- v. I/we acknowledge that the issue of this EOI does not imply that IHMCL is bound to select and shortlist Applicants to enter into tie-up agreements with shortlisted Applicants.
- vi. I/we certify that in the last three years, we have neither failed to perform on any contract, as evidenced by imposition of a penalty or a judicial pronouncement or arbitration award, nor been expelled from any project nor contract nor have had any contract terminated for breach on our part.
- vii. I/we understand that you may cancel the EOI Process at any time and that you are neither bound to accept any EOI that you may receive nor to invite the Applicants to submit a Proposal for the Project, without incurring any liability to the Applicants.
- viii. I/we believe that we satisfy the eligibility criteria and meet the requirements as specified in the EOI document.

On Behalf of (Name of the Applicant)

Signature of the Authorized Person

Name:

Designation:

Note: Paragraphs in square parenthesis may be omitted, if not applicable.

Proforma 2 : Applicant Details

- i. Details of the Firm/ Applicant
 - ▶ Name of Firm/ Applicant: _____
 - ▶ Address: _____
 - ▶ Tel No. (with code): _____
 - ▶ Contact person: _____
 - ▶ Name and Designation: _____
 - ▶ Address, Telephone No. and Email address: _____
- ii. Type of Company (Public Limited/ Private Limited) : *[with supporting]*
- iii. Date of incorporation with documentary evidence (or equivalent certificate):
- iv. Registration detail of firm with documentary evidence (or equivalent certificate):
- v. State the following for Firm/Applicant:
 - ▶ Name of the Firm:
 - ▶ Legal Status and country of incorporation:
 - ▶ Registered address and principal place of business:
- vi. Brief description of the firm and organization structure and business.
- vii. Any other details which the firm wish to give

On Behalf of (Name of the Applicant)

Signature of the Authorized Person

Name:

Designation:

IHMCL

Proforma 3 : Power of Attorney

Power of Attorney

(On the letter head of Applicant)

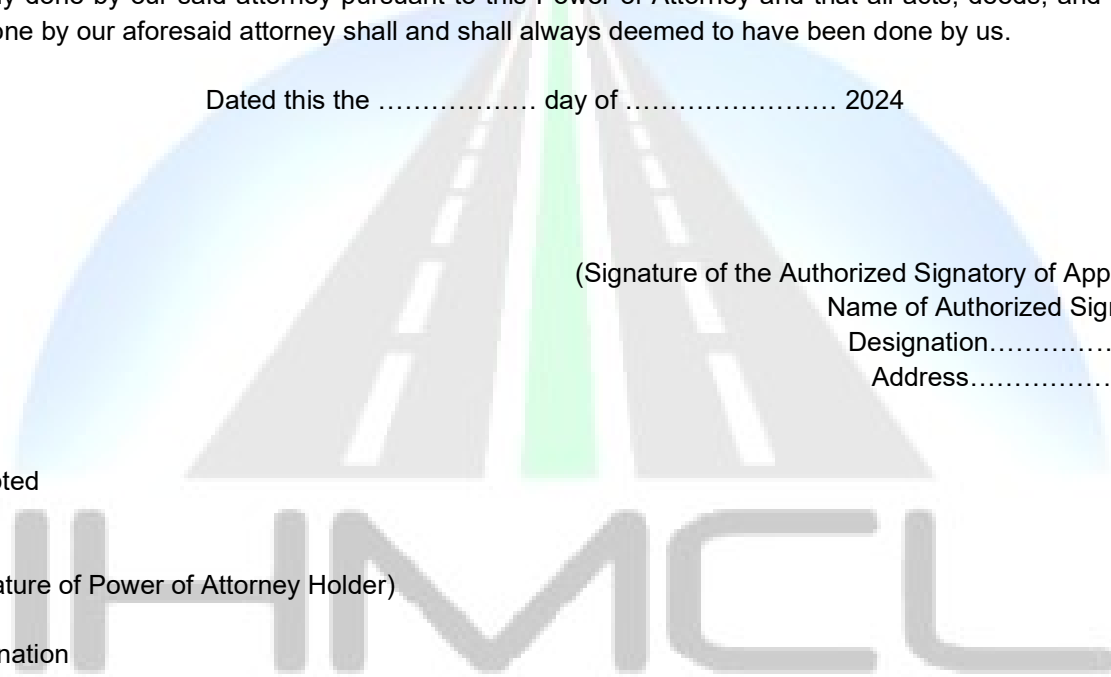
I/We (name of Applicant along with registered address) do hereby constitute, appoint and authorize Mr/Ms..... (name of Power of Attorney Holder) who is presently employed with (name of Applicant) as our attorney, to do in our name and on our behalf, all such acts, deeds, and things necessary in connection with or incidental to our application for the Global Expression of Interest for..... including signing and submission of all documents and providing information / responses to the Indian Highway Management Company Ltd (IHMCL), representing us in all matters before the IHMCL in all matters in connection with our application for the said Global Expression of Interest. We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds, and things are done by our aforesaid attorney shall and shall always deemed to have been done by us.

Dated this the day of 2024

For
(Signature of the Authorized Signatory of Applicant)
Name of Authorized Signatory
Designation.....
Address.....

Accepted

(Signature of Power of Attorney Holder)
Name
Designation



Proforma 4: Detailed experience format

Original Equipment Manufacturer (OEM) of high-performance Electronic Toll Collection Equipment capable of performing at vehicle speed >100kmph: -

OR

Software Development/Technology firm having experience as System Integrator of Electronic Toll Collection under Multi Lane Free Flow condition at vehicle speed >100kmph: -

[Formats to be filled for each reference experience/ project individually along with verifiable documentary proof]

Credential Format

Applicant are requested to furnish the credentials in the following format for Pre-qualification criterion. All credentials should be followed by relevant documentary proof.

Name of the Work and Location/ Country	
Name of the Applicant	
Client's Name(s) and Complete Address	
Original Equipment Manufacturer (OEM) of high-performance Electronic Toll Collection Equipment capable of performing at vehicle speed >100kmph OR Software Development/Technology firm having experience as System Integrator of Electronic Toll Collection under Multi Lane Free Flow condition at vehicle speed >100kmph	<i>[Select one of the two]</i>
Narrative description of project/ Details of Solution/ Details of total number of Equipment Installed Worldwide including Type, Make, Model, etc. OR Narrative description of Multi Lane Free Flow Electronic Toll Collection Projects & its details including no. of lanes, implementation methodology etc.	<i>[only brief to be submitted here; details may be provided separately in the EOI application]</i>
Date of Start	
Current Status (On-going/ if Completed then Date of Completion)	
Activities undertaken by Applicant	

Proforma 5: Financial capability

FORMAT FOR FINANCIAL CAPABILITY OF THE APPLICANT

Name of Applicant:.....

Annual Turnover (in INR or Equivalent Foreign currency*)

	Last 3 Preceding year		
Name of the Applicant			
Average Turnover for 3 years			

Date:

Signature of the Authorized Person

Name:

Designation:

[Name and rubber seal of the Applicant]

**In case the financial figures are in foreign currency current market exchange rate (State Bank of India BC Selling rate as on last date of submission of the EOI application) will be applied for the purpose of conversion of amount in foreign currency into Indian Rupees.*

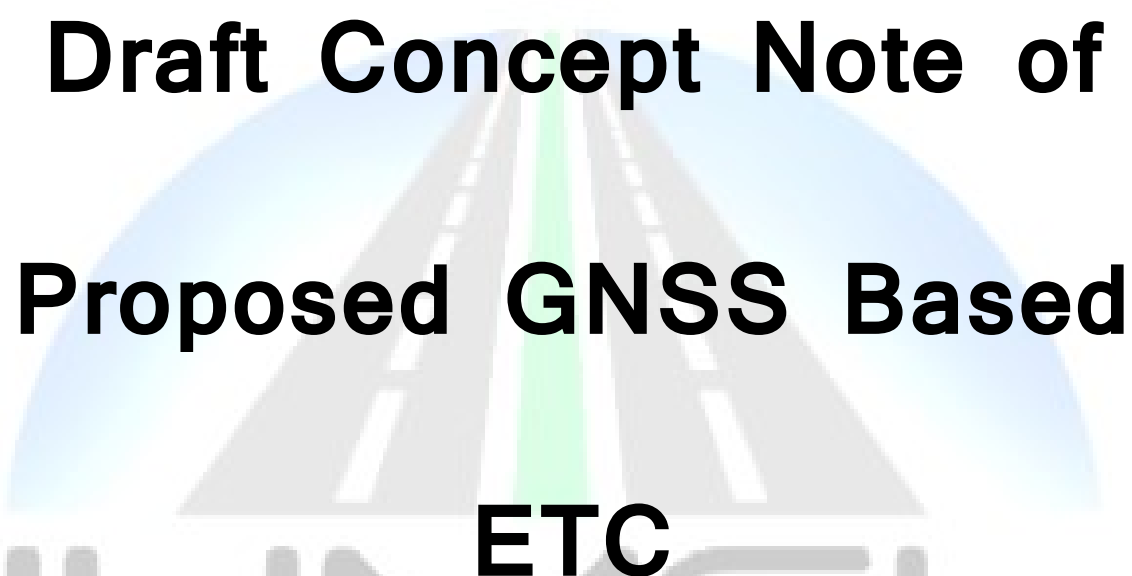
The logo for IHNMCL is displayed as a large, light gray watermark in the background. It features a stylized road with a green center line and white dashed lines on the sides, leading towards a horizon. Below the road, the letters 'IHNMCL' are written in a bold, sans-serif font.

Proforma 6 : Applicant's submission and recommendations

Applicants should provide suggestions and recommendations including but not limited to the following aspects of each component as mentioned in the EOI:

1. Layout of the GNSS Lanes under existing Toll Plaza Setup- elevation, plan, marking, signages, lighting, placement of equipment, safety feature etc.
2. Required High Performance Equipment capable of performing for vehicle speed > 100kmph
3. Make & Model of each equipment with proven examples, if any of the suggested make and model of equipment.
4. Specifications of each equipment
5. Operational Characteristics of each equipment.
6. Environmental Characteristics of each equipment.
7. Testing Protocols of each Equipment
8. Certifications required for each Equipment
9. Testing Agencies for each equipment
10. Whether equipment is manufactured in India, if not then origin of manufacturing.
11. Availability of Equipment in India.
12. After sale support in India etc.
13. Any other relevant information as per the prescribed format mentioned below:

SI. No.	Section/ reference in the ToR	Comments/ Proposed suggestion with justification
1		
2		
.	.	.
.	.	.
.	.	.
N	Any other information	



**Draft Concept Note of
Proposed GNSS Based
ETC**

IHMCL



Version 1.0



Date: 29.05.2024

Draft Concept Note of proposed GNSS based ETC in India

1. Introduction

- a. Global Navigation Satellite System (GNSS) based Tolling is a barrier free method of Electronic Toll Collection wherein the road users are charged on the distance they have travelled on the tolled Highway stretch. The system uses Satellite or Constellation of Satellites to track vehicle's movement and calculate tolls based on the distance travelled on tolled Highways.
- b. The Ministry of Road Transport & Highways envisages to implement Global Navigation Satellite System (GNSS) based Electronic Toll Collection (ETC) in India to increase the efficiency of the Tolling operation in line with the global practices. In this regard, the National Highways Authority of India (NHAI) through its promoted Company M/s Indian Highways Management Company Ltd (IHMCL), which oversees the National Electronic Tolling Collection (NETC) program, has been entrusted with the responsibility to devise the action plan and implement the GNSS based ETC across India.

2. General

- a. The proposed Indian GNSS based Tolling Solution is a hybrid system in which the existing Toll Plazas will have two or more dedicated "GNSS Lanes" wherein the default position of barriers will be open for free flow of GNSS Vehicles. The lanes will have advance readers to identify GNSS vehicles. Additional fees will be charged from non-GNSS vehicles entering GNSS lanes.
- b. The Toll Plaza will itself act as the Stationary Enforcement Gantry in the system.
- c. The system architecture includes a Centralized Toll Charger responsible for distance & toll calculation of GNSS vehicles travelling on GNSS stretch.
- d. The Toll Charger will receive pings (distance and time stamp) of GNSS vehicles through On Board Unit (OBU) fitted in the GNSS vehicles.
- e. The OBUs of GNSS vehicles will be onboarded with the Toll Charger through Fintechs to be called "Issuer Entity" similar to the Issuer Banks under FASTag System.
- f. The payment mechanism shall be similar to the existing FASTag ecosystem.

- g. It is also proposed to start GNSS based Tolling with Commercial Vehicles. Private Car/Jeep/Van may be included in phased manner.

3. Role of Centralized Toll Charger

- a. **Map Making of GNSS stretch-** The Toll Charger entity shall make the geo-referenced map of the GNSS stretches and nearby roads/highways with precision upto decimeter level. The map shall clearly demarcate the median edges, main-carriageway edges (upto shoulder) and service road on each side. The Geo-reference shall also capture the elevation which would ensure that the distance is calculated on the flyovers/elevated portions and not on the service road below it. The ownership of the map shall lie with NHAI.
- b. **Correlation / Validation of Chainage and Geo-Reference:** The Toll Charger shall validate the chainage wise details given by NHAI with the geo-referenced map.
- c. **Receiving Anonymised Pings from AIS AIS 140 VLT Device (OBU) -** Fully compliant AIS AIS 140 VLT Device (OBU) fitted in a vehicle shall be the OBU for GNSS based Tolling. The Toll Charger shall be capable of receiving per second anonymised pings from the OBU consisting of Time-Location Stamp of OBU, Virtual-ID associated with Vehicle/Vehicle Class etc. Any data not falling on the National Highway network shall be not be stored or processed further and discarded immediately. The toll-charger will operate with principle of purpose-limitation with objectivity of calculating toll. The customer information will be with the IssuerEntity.
- d. **Map Matching -** Tracing the precise location of the vehicle on the geo-referenced map through the time-location stamp received from the OBU. With state of art AI based digital routing/Gap analysis tools to validate de-routing / fraud / loss of signal / OBU malfunction cases.
- e. **Network based Digital Routing:** The Toll Charger should have capability of AI based digital routing of Vehicles through Cellular Network also.
- f. **Calculation of Distance travelled:** The Toll Charger shall calculate the distance travelled by the OBU fitted vehicle based on the time-location stamp. The software shall ensure that the distance is measured only on the tollable portion of highway i.e the distance shall be measured only on the main carriageway and not on the service road. For elevated Highways where service road is under the elevated portion the distance shall be

calculated only on the elevated portion and not if the vehicles is travelling on service road below it.

- g. **Toll Parameter:** The Toll Charger shall calculate the User Fee based on Toll Parameters defined by the Authority from time to time. The Toll Parameter varies stretch to stretch depending upon type of structures, bypass, expressway etc. The Toll parameter for every stretch is revised once in a year.
- h. **Calculation of User Fee based on distance travelled:** The Toll Charger shall calculate user fee based on the distance travelled by the GNSS Vehicle using the Vehicle Class of OBU and toll parameter. The User Fee is proposed to be calculated real time on following occasions although the list is not exhaustive:
- 1) Whenever Vehicle crosses the influence length of particular Toll Plaza(s)
 - 2) Whenever vehicle makes a U-Turn
 - 3) Whenever vehicle leaves the GNSS stretch
 - 4) Whenever OBU turns red (no balance/OBU malfunctions)
 - 5) Vehicle Stopped on Highway beyond defined time limit
 - 6) Any other occasion decided by the Authority

The calculation of User Fee should trigger payment module and conclude with SMS being sent to the Road User by Issuer Entity.

- i. **Send calculated User Fee to Acquirer Bank:** The Toll Charger shall send the calculated User Fee to be charged to a GNSS Vehicle to the Acquirer Bank which will then follow same payment protocol as FASTag system. The Toll Charger will also facilitate the road user to see the path travelled by their GNSS vehicle on a map by clicking a link shared to them by Issuer Entity through SMS.
- j. **Creation of User Fee Portal for each Toll Plaza:** The Toll Charger shall create a Web based Portal for each Toll Plaza on the GNSS Stretch to provide the GNSS based toll transaction of each GNSS based vehicle in the influence length of the toll plaza.
- k. **Exemption of minimum distance travelled:** The Toll Charger shall ensure that no toll is charged if vehicles are travelling less than minimum Tollable length of the GNSS stretch. Say 'X' km per day in each direction.

- l. **AIS-AIS 140 VLT Device VLT Device Device (OBU) Onboarding Protocols:** The Toll Charger in consultation with the Authority, shall prepare necessary software level protocols (like FIFO, Information sequence, encryption etc) required to onboard AIS AIS 140 VLT Device (OBU) fitted in vehicle to the Toll Charger through Issuer Entity. The Toll Charger shall create a central mapper for onboarding all registered OBUs with Issuer Entity.
- m. **AIS AIS 140 VLT Device (OBU) Status Protocols:** The Toll Charger shall define the AIS AIS 140 VLT Device (OBU) status protocols (green/red cases) for the Issuer Entity. The red OBU cases should be reported to the Issuer Entity through open standard APIs.
- n. **Integration with GNSS Lane:** The Toll Charger shall integrate with the GNSS Lanes of the Toll Plaza
- o. **Setting up of Dispute Redressal Setup:** The Toll Charger shall set up an Online Dispute Redressal mechanism/Support Center which will integrate data from Enforcement Gantries, OBUs, Toll Plazas and Issuer/Acquirer Entity to allow for easy resolution of customer complaints. The same shall be integrated with NHA 1033 Helpline/Rajmarg Yatra App.
- p. **Adhere to the SLAs:** The Toll Charger shall adhere with the highest standards of uptime/availability, precision, integrity, dispute redressal and other SLAs defined in Contract Agreement.
- q. **Redundancy and Disaster Recovery:** The Toll Charger shall have appropriate redundancy, availability and disaster recovery protocols so that there is no loss of Toll Revenue.
- r. **Interoperability among Toll Chargers:** The Authority may appoint region / pan India wise multiple Toll Chargers. The Toll Charger shall have open standard API based interoperable solution with other Toll Charger to ensure seamless GNSS based Toll collection between different region/pan India.
- s. **Data Center / Cloud:** The Toll Charger shall establish Data Center in India for the purpose of all the services under the Contract. For any Cloud Services, the Toll Charger shall comply with the latest guidelines of Ministry of Electronics and Information Technology (MeitY), Government of India. The Toll Charger shall retain the data as per the archival policy decided by the Authority.

- t. **Operation & Maintenance, Development and Training:** The Toll Charger shall operate & maintain the Toll Charger services for the entire contract period. The Toll Charger shall also make important developments in the Software so as to meet the latest requirement. The Toll Charger shall impart trainings to the officials/representatives of the Authority so that they can undertake operation of the Toll Charger.

4. GNSS On Board Unit (OBU):

- a. **OBU:** Fully compliant AIS 140 VLT Device fitted in a vehicle shall be the OBU for GNSS based Tolling in India.
- b. **Proposed modification in AIS 140 VLT Device (OBU) Specifications:** The Authority also aims modify few attributes of AIS 140 VLT Device (OBU) specifications like increasing the inbuilt memory for storage of geo-polygons and time-location stamp in no network/power scenario, increasing an IP port for TCP/IP communication with Toll Charger, etc along with Virtual-ID and other necessary information.
- c. **Onboarding of OBUs with Toll Charger:** The Issuer Entity shall onboard the Vehicle fitted with AIS 140 VLT Device (OBU) to the Toll Charger after doing KYC, mapping its FASTag and generating Virtual-ID.
- d. **Identification of GNSS Vehicle at Toll Plaza/GNSS Stretch:** The GNSS Vehicle shall be identified through the Virtual-ID linked with the OBU device and ANPR Cameras that will be installed at GNSS Lanes. An OBU with Valid FASTag shall find free flow at GNSS lane whereas an OBU with blacklisted FASTag shall find the barrier closed based on the reading of FASTag by reader/VRN by ANPR Camera.
- e. The AIS 140 VLT Device (OBU) shall be suitably programmed as per the protocols set by Toll Charger like FIFO (first in first out) pings etc.
- f. The existing version of AIS 140 VLT Device VLT Device Device specifications are enclosed at **Annexure-1**

5. Role of Issuer Entity:

- a. **Accreditation of Issuer Entity:** Fintechs/Banks/Insurance Cos etc who wish to act as Issuer Entity needs to get accredited by IHMCL.

- b. **Onboarding of OBUs with Toll Charger:** The Issuer Entity shall onboard the Vehicle fitted with AIS 140 VLT Device (OBU) to the Toll Charger after doing KYC, mapping its FASTag and generating Virtual-ID. The Issuer Entity shall register the Vehicles fitted with fully compliant AIS 140 VLT Device (OBU) with the Toll Charger after thorough checking of the AIS 140 VLT Device (OBU). The Issuer Entity shall also retrofit the fully compliant AIS 140 VLT Device (OBU) in vehicles registering with the Toll Charger.
- c. **Anonymised Pings:** The Issuer Entity shall ensure transfer of anonymised pings from the onboarded Vehicle OBU/proxy server to the Toll Charger. The Issuer Entity may empanel/tie up with compliant OBU Manufacturers in this regard.
- d. **Link with FASTag ID:** The Issuer Entity shall maintain with itself the link between the existing FASTag of the Vehicle and the Virtual-ID generated.
- e. **AIS 140 VLT Device (OBU) Status Management:** The Issuer Entity shall ensure that a vehicle fitted with Valid OBU (FASTag with balance + Functional OBU) shall be charged only per km wise if it crosses the toll plaza or otherwise. Suitable mechanism shall be developed to ensure that there is no double charging when the vehicle fitted with valid OBU crosses the Toll Plaza.
- f. **Linking of Payment System:** The Issuer Entity shall be responsible for linking Bank Account / Wallet /Credit Card of the GNSS Vehicle with FASTag wallet linked to the OBU of GNSS Vehicle. The Issuer-Entity will be responsible to reveal the FASTag ID mapped to Virtual-ID when requested by Acquirer Bank for processing payment.
- g. **Payment Creditor:** The Issuer Entity shall be obliged to credit the calculated User Fee to the Acquirer Bank whenever demand raised through the Central Clearing House (CCH) / NPCI.
- h. **Commercial Terms with Owner:** The Issuer Entity may provide value added services like free OBU, free Insurance etc based on consent-based data sharing and other commercial terms with the owner.
- i. **Customer Support:** The Issuer Entity shall send SMS, Voice Call, IVR based reminders to its customers in case there is OBU malfunction/low balance/power snap of OBU or other issues with OBU. The Issuer Entity shall also provide Customer Support and dispute redressal for chargeback /wrong deduction and other ETC related disputes

j. **SMS Information:** Issuer Entity shall send SMS to the Customer whenever Toll is Charged under following scenario:

- 1) Whenever Vehicle crosses the influence length of particular Toll Plaza(s)
- 2) Whenever vehicle makes a U-Turn
- 3) Whenever OBU turns red (no balance/OBU malfunctions)
- 4) Vehicle Stopped on Highway beyond defined time limit
Whenever vehicle leaves the GNSS stretch
- 5) Any other occasion decided by the Authority

Typically the SMS should contain the following information:

- Vehicle Number
- Distance Travelled
- User Fee Charged
- Link provided by Toll Charger showing path of vehicle on map

Illustration:

Rs.30.98 charged for 16.57 km travelled by vehicle DL1LAG1162. For trip details click <https://t.ly/9owgU> For enquiry call 1033. Kotak Bank.

The Issuer Entity shall also create APIs to integrate with Rajmargyatra such that User can use Rajmargyatra app to access above information within app.

6. Role of Acquirer Bank

- a. **Validation of Toll Parameter:** The Acquirer Bank will validate the Toll Parameter of particular stretch.
- b. **Payment to Toll Collection Agency:** Acquirer Bank shall pay the settled User Fee to the Toll Collecting Agency similar to FASTag system

7. Role of NPCI

- a. **CCH and User Fee feed to TMCC:** NPCI shall continue to act as the Centralised Clearing House (CCH) for the Acquirer-Issuer system in GNSS ecosystem similar to FASTag system. NPCI shall create a separate GNSS head for GNSS based user fee collection and send the information to TMCC.
- b. **Onboarding of GNSS Lanes:** NPCI shall make necessary integrations to onboard the GNSS Lanes as per defined protocols at plaza level.

8. Role of NHAI

- a. **To furnish the list of proposed GNSS Stretches to the Toll Charger:** NHAI shall provide the list of stretches proposed under GNSS Tolling to the Toll charger with all the details like structures, bypasses, location of Toll Plaza etc.

- b. **To Furnish Toll Parameter:** NHA shall furnish Toll Parameter to the Toll Charger for each GNSS stretch.
- c. **Validation of GNSS Stretch:** NHA shall validate the geo-reference of the GNSS Stretch with the chainages of the Highway.
- d. **Lane Level Changes at Toll Plaza:** NHA shall undertake required lane level changes at the Toll Plazas.
- e. **Develop GNSS Toll Collection field in TMCC:** NHA shall develop a GNSS User Fee field in the existing TMCC wherein the user fee collection from GNSS based ETC shall be reflected as shared by NPCI.



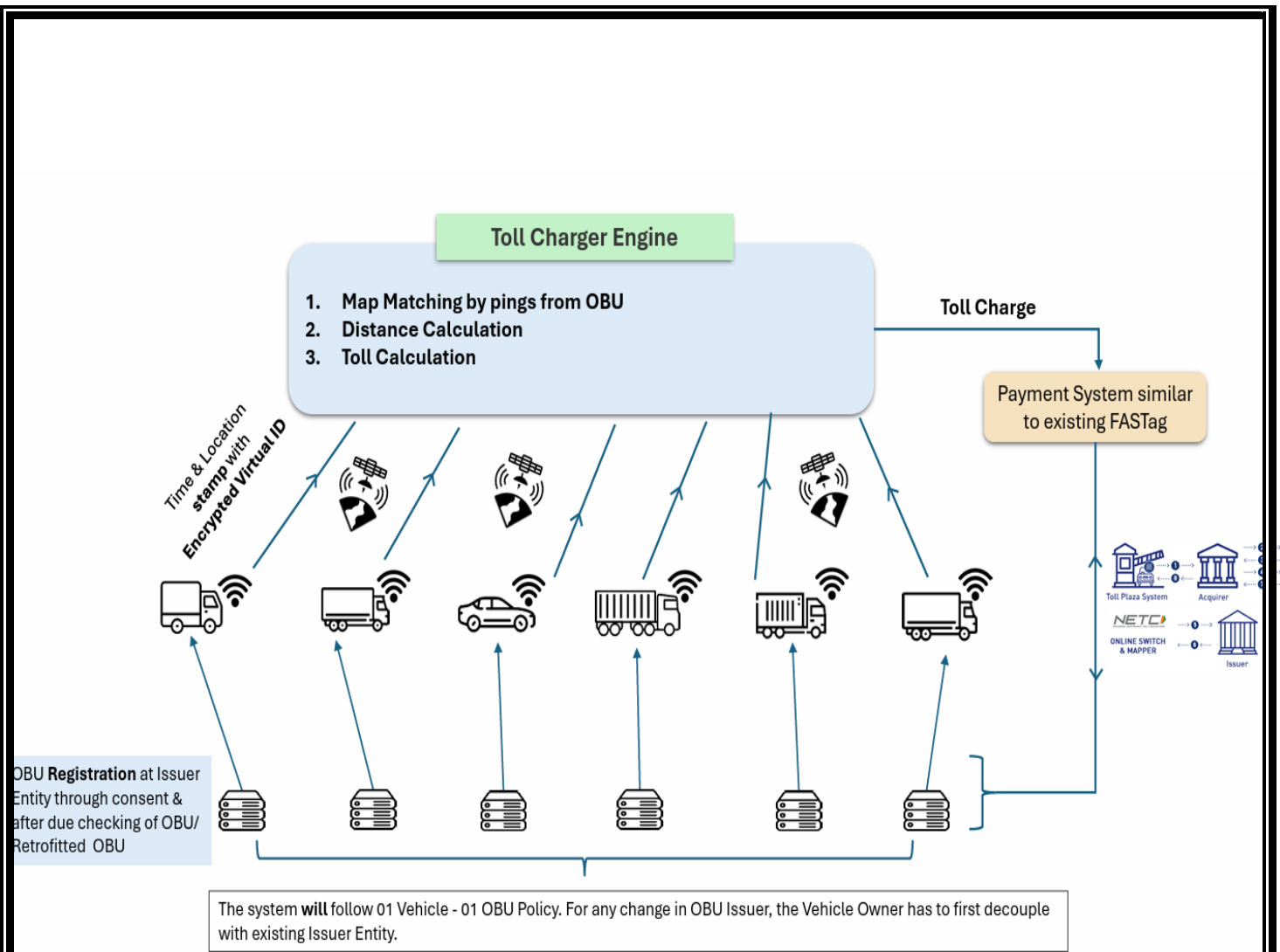


Fig 1 GNSS System Architecture

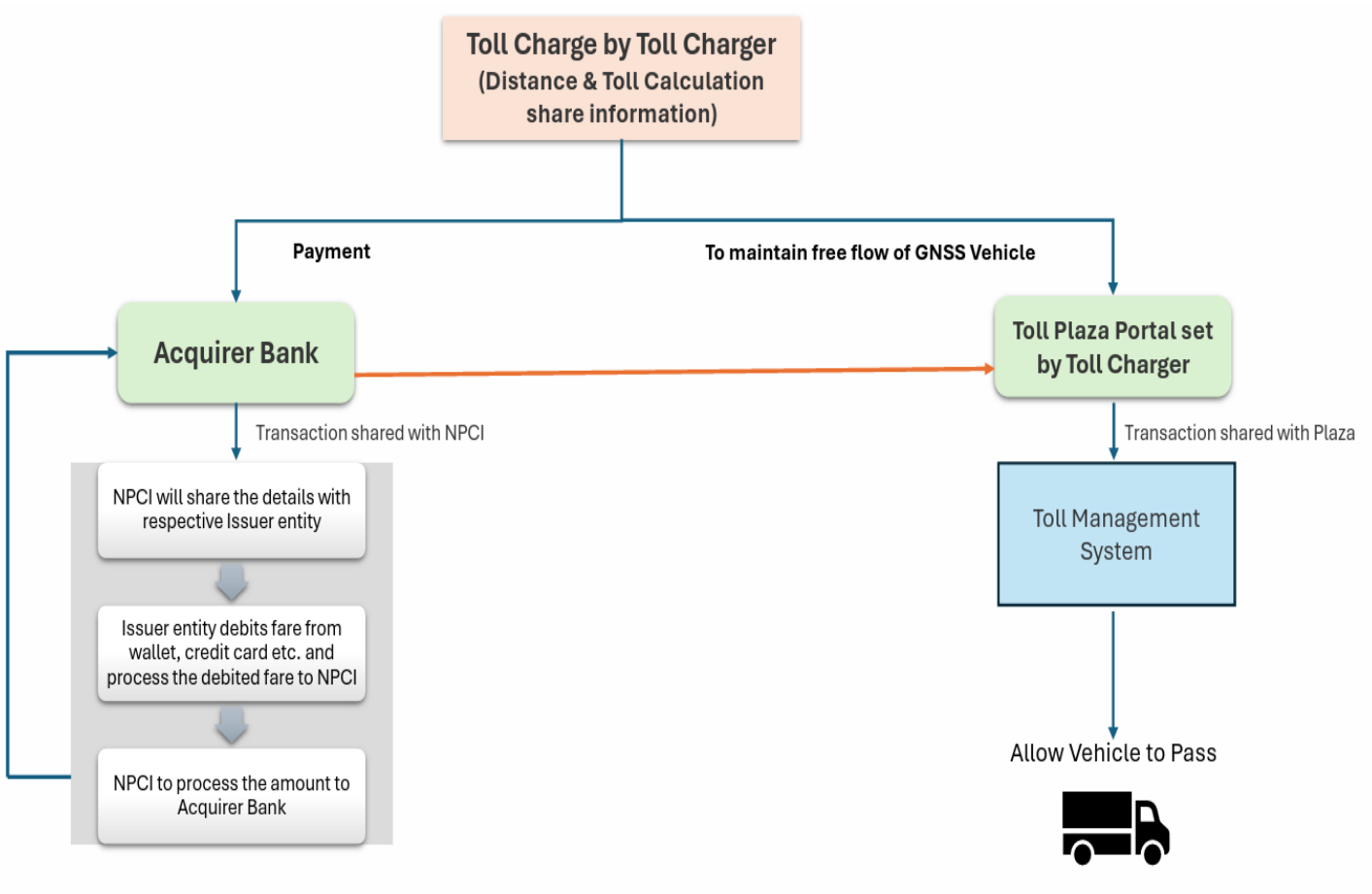


Fig 2 Payment Architecture