



**DG/COAI/TECH/2026/3040**

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**Subject: COAI Response on Consultation Paper on the Regulatory Framework for Vehicle-to-Everything (V2X) Communication**

Dear Sir,

This is with reference to the TRAI Consultation Paper on the Regulatory Framework for Vehicle-to-Everything (V2X) Communication released on 30 April 2026.

In this regard, please find enclosed COAI Response to the Consultation Paper.

We hope that our submission will merit your kind consideration and support.

With Regards,

Signed on: 04-06-2026 19:51:07

Digitally Signed by:

Lt Gen Dr SP Kochhar

DG

COAI

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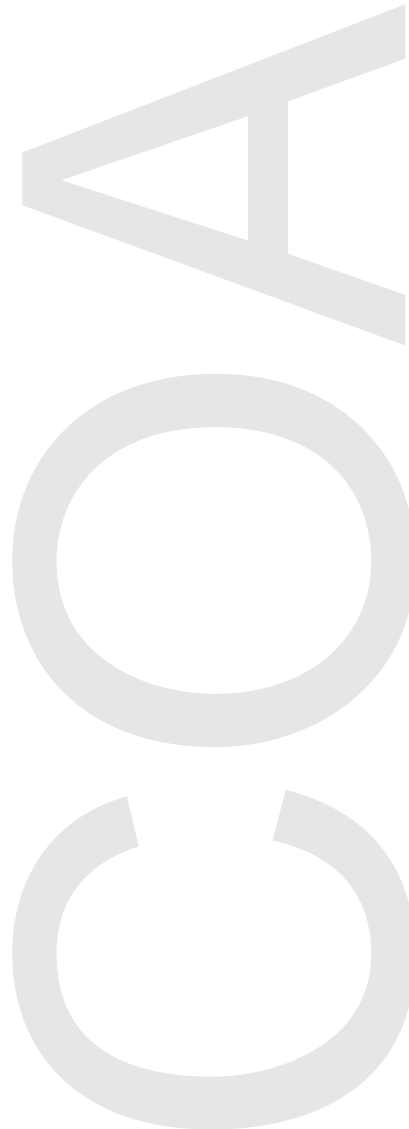
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## COAI Comments – TRAI Consultation Paper on the Regulatory Framework for Vehicle-to-Everything (v2x) Communication

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At the outset, we thank TRAI for giving us the opportunity to respond on the Consultation paper on Regulatory Framework for Vehicle-to-Everything (v2x) Communication. Our response is given below.

### Preamble:

1. Intelligent Transport Systems (ITS) are deployed to enhance road safety, optimize traffic management, and enable cooperative mobility through real-time information exchange among vehicles, infrastructure, and cloud systems.
  - a. **Basic Safety Applications** - Focused on immediate hazard awareness and collision avoidance, these applications are characterized by strict latency and reliability requirements - Forward collision warning, Emergency electronic brake light, Intersection collision warning, Vulnerable Road user (pedestrian/cyclist) protection, Emergency vehicle approaching alerts. These use cases rely on low-latency communication (e.g., sub-100 ms range) to enable timely driver/vehicle response and accident prevention.
  - b. **Advanced ITS Applications (V2N / V2N2X)** - Leveraging cellular connectivity and cloud/edge platforms, these applications extend beyond proximity-based safety to enable wide-area cooperative mobility and automation -Traffic event and hazard information sharing, Traffic signal information and priority management, Smart routing and congestion optimization, Cooperative perception (sensor / object sharing), HD map updates and dynamic environment awareness, Automated valet parking and remote driving support.
  - c. Majority of the use cases are enabled through **Vehicle-to-Network (V2N)** communication using cellular networks (Uu), supporting large-scale, cross-region coordination.
2. Global deployment experience indicates that V2N-based architectures have been prioritized as the primary deployment model.
  - a. V2N connectivity, leveraging existing cellular infrastructure (4G/5G), already provides near-ubiquitous coverage across urban and inter-urban environments, enabling rapid and scalable ITS service rollout.
  - b. Advanced ITS applications can be efficiently realized through the integration of edge computing with V2N connectivity, supporting real-time processing and enhanced service quality.



- c. This approach also establishes a future-ready foundation, aligning with evolving 6G capabilities such as Integrated Sensing and Communication (ISAC), which are expected to further enrich advanced ITS use cases.
3. For latency-sensitive and safety-critical applications, the cellular network (4G/5G) is capable of meeting stringent performance requirements: As an additional safeguard, a fallback mechanism via direct V2V communication (PC5 interface) can be employed to ensure uninterrupted service in edge-case scenarios where there may be intermittent or limited RSU infrastructure.
4. Deployment of dedicated V2I infrastructure entails significant capital investment and operational complexity, which may not be necessary given the capabilities of current cellular networks:
  - a. Existing V2N-based deployments can support the majority of ITS applications without requiring extensive additional roadside infrastructure.
  - b. Consequently, it is recommended that V2N be adopted as the primary deployment model for ITS services, ensuring cost efficiency, scalability, and rapid nationwide implementation.
5. **Our response is based on the following key aspects:**
  - a. No separate licence/authorisation is required for V2X/V2I services.
  - b. V2X should be enabled through existing access service providers' IMT networks and spectrum assigned to licensed TSPs.
  - c. The identified 5.9 GHz spectrum band should be harmonized and assigned for use by licensed Access Service Providers (TSPs) for IMT-based C-V2X ecosystem development.

**6. Our Issue -wise submissions are as below:**

**Q1. Whether there is a need to introduce an authorisation for vehicle-to-infrastructure (V2I) communication service under Section 3(1)(a) of the Telecommunications Act, 2023? If yes, please provide input with respect to the following aspects:**

- (a) Eligibility conditions for the authorisation;**
- (b) Period of validity of the authorisation and conditions for its renewal;**
- (c) Service area of the authorisation;**
- (d) Scope of service of the authorisation;**
- (e) Technical, operating, security related conditions etc. of the authorisation;**
- (f) Any other related aspect. Kindly provide a detailed response with justification.**



**Q2. In case your reply to Q1 is no, what should be the mechanism for enabling, facilitating and regulating vehicle-to-infrastructure (V2I) communication service in India? Kindly provide a detailed response with justification.**

**Q3. Any other suggestions relevant to the authorisation for vehicle to-infrastructure (V2I) communication service may be submitted with proper explanation and justification.**

**COAI Comments:**

1. We submit that there is no need to introduce a separate service authorisation for Vehicle-to-Infrastructure (V2I) communication under Section 3(1)(a) of the Telecommunications Act, 2023, particularly where such communication could be enabled through existing licensed telecom networks ( through cellular networks or through localized road-side infrastructure deployed for intelligent transport and road-safety applications).
2. Section 3 of the Telecommunications Act, 2023 already requires authorisation for providing telecommunication services, establishing/operating/maintaining/expanding telecommunication networks or possessing radio equipment.
3. In this context, a separate V2I authorisation would not be necessary and may lead to regulatory duplication, fragmentation and avoidable compliance burden. The scope of the Access Service license/authorization should be expressly broadened to encompass the full suite of V2X communication services. This includes Vehicle-to-Infrastructure (V2I), Vehicle-to-Network (V2N), Vehicle-to-Vehicle (V2V), and Vehicle-to-Pedestrian (V2P) functionalities, ensuring that all modes of V2X are brought under a unified and coherent licensing framework.
4. V2X is essentially an application/use-case layer for enabling road safety, traffic efficiency, emergency alerts, smart mobility, connected vehicle services and intelligent transport systems. It should not be treated as a separate telecom service requiring a standalone authorisation, especially when the underlying connectivity is already provided by authorised TSPs.
5. **V2X technologies can operate through cellular uplink/downlink interfaces as well as sidelink/direct communication interfaces**, and the standards ecosystem covers V2V, V2I/N and V2P use cases. Therefore, the regulatory approach should distinguish between:
  - a. Telecom connectivity layer, which is already regulated through existing telecom authorisations/licences; and
  - b. Transport/ITS application layer, which may be governed through technical standards, certification, security and interoperability requirements, but should not require a separate telecom service authorisation.



6. **Existing authorisations are sufficient for TSP-led V2X services:** Where V2X services could be enabled over public cellular networks, the underlying service is already covered under existing Access Service/Unified Licence or corresponding service authorisations under the Telecommunications Act, 2023. TSPs already comply with extensive obligations relating to:
  - a. Lawful interception and monitoring;
  - b. Network security;
  - c. Subscriber/customer verification, wherever applicable;
  - d. Quality of service;
  - e. Emergency communications
  - f. Cybersecurity incident reporting;
  - g. Trusted telecom equipment requirements.
7. **Avoid duplication with the broader service authorisation framework:** TRAI has already recommended a broad service authorisation framework under the Telecommunications Act, 2023, with categories such as main, auxiliary and captive service authorisations. The stated objective is to simplify the licensing framework and promote ease of doing business. Introducing a new, standalone V2I authorisation may run contrary to this approach, as it would add another service category for what is essentially a vertical use case riding on telecom networks and ITS infrastructure.
8. **Existing TSP investments should be leveraged:** India already has extensive 4G/5G networks, fibre backhaul, edge capabilities and nationwide telecom infrastructure. V2X policy should leverage these existing investments rather than creating parallel networks that may be economically inefficient and operationally fragmented.
9. In view of the above, **we respectfully submit that a separate authorisation for V2I communication service under Section 3(1)(a) of the Telecommunications Act, 2023 is not required.** V2X should be treated as a transport/ITS application enabled through telecom networks, rather than as a new standalone telecom service. Thus, **existing TSPs should be permitted to provide V2X-related connectivity and services under their existing authorisations.** The scope of the **Access Service license/authorization should be expressly broadened to encompass the full suite of V2X communication services.**
10. We believe this approach would avoid regulatory duplication, promote ease of doing business, encourage innovation, leverage existing telecom infrastructure and enable faster deployment of V2X services in India.

**Q4. Whether a specific technology (such as LTE-based C-V2X, NRbased C-V2X etc.) should be prescribed for the implementation of C-V2X in India? If yes, which technology should be adopted for the implementation of C-V2X? If no, in what manner, the issues**



related to inter-operability between different technologies should be addressed? Kindly provide a detailed response with justification.

**COAI Comments:**

1. COAI submits that a specific C-V2X technology generation, such as only LTE-based C-V2X or only NR-based C-V2X, should not be rigidly prescribed in regulation. **India should adopt a 3GPP C-V2X-based, technology-neutral and release-flexible framework, under which LTE-V2X and NR-V2X are both permitted subject to compliance with prescribed technical, safety, security, coexistence and interoperability requirements.**
2. DoT/TEC may notify minimum technical and performance requirements and update them periodically as 3GPP standards evolve.
3. COAI recommends that India should prescribe C-V2X as the harmonised technology family but should not prescribe only LTE-V2X or only NR-V2X in regulation. A flexible 3GPP C-V2X framework, supported by TEC specifications, mandatory certification, a common ITS stack, security credentials and interoperability testing, would best serve India's objectives of road safety, scale, innovation, global alignment and future readiness.

**Q5. Whether there is a need to bring road-side units (RSUs) and onboard units (OBUs) under the regime of Mandatory Testing Certification of Telecom Equipment (MTCTE)? If no, in what manner, Electromagnetic Interference (EMI), Electromagnetic Compatibility (EMC), safety, technical and security requirements prescribed by TEC/DoT may be ensured? Kindly provide a detailed response with justification.**

**COAI Comments:**

1. COAI submits that RSUs **should be brought under the MTCTE regime**, with appropriate Essential Requirements framed by TEC/DoT for C-V2X equipment. Since RSUs transmit and receive radio signals and form part of a safety-critical communications ecosystem, it is important that their compliance with technical, safety, EMI/EMC, security and EMF exposure requirements is ensured before deployment in India.
2. TEC should prescribe separate Essential Requirements for RSUs.
3. **On OBUs, our members may submit comments individually.**

**Q6. To ensure inter-operability among different RSUs/ OBUs, whether there is a need to standardize the layered communication framework (stack) for higher layers (other than the access layer in which C-V2X will be used) of Intelligent Transportation System (ITS)?**

**If yes, which standard for ITS stack and security should be adopted?**



**Specifically, whether the ETSI standard for ITS stack and security, as recommended by the Task Force on Intelligent Transportation System for the use of 5.9 GHz (mentioned at para 3.5 of this consultation paper) should be adopted?**

**If no, in what manner, inter-operability among different RSUs/ OBUs can be ensured? Kindly provide a detailed response with justification.**

**COAI Comments:**

Since C-V2X should be introduced through existing access service license/authorisation framework; there is no need to define any standard. The license/authorisation conditions prescribe adoption of TEC or global standards. Further, for additional security conditions, same should be prescribed through separate guidelines/instructions, without hard-coding them into license/authorisation.

**Q7. Whether there is a need for prescribing a security framework for ITS/ C-V2X in India? If yes, -**

**(a) What should be the security framework for ITS/ C- V2X?**

**COAI Comments:**

1. Access service license/authorisation frameworks are already aligned with the security requirements for C-V2X as recommended in the final report of the Task Force on Intelligent Transport System (ITS) in the recommendations for Automotive Industry Standards and regulations related to Intelligent Transportation systems, and rollout of communication between Vehicle to anything (V2X).
2. The license/authorisation conditions prescribe adoption of TEC or global standards. For additional security conditions, we recommend that should be prescribed through separate guidelines/instructions.

**(b) Which agency [such as Controller of Certifying Authorities (CCA), Ministry of Electronics & Information Technology (MeitY)] should implement the Public Key Infrastructure (PKI) framework for ITS/ C-V2X in India?**

**COAI Comments:**

Access service license/authorisation frameworks are already aligned with the security requirements for C-V2X, therefore any additional security conditions, should be prescribed through separate guidelines/instructions.



**Q8. What should be the regulatory framework for the assignment of frequency spectrum to the entities holding the proposed V2I communication service authorisation? Specifically, -**

**(a) Whether there is a need for partitioning the 30 MHz spectrum (5,875-5,905 MHz) for specific applications such as “safety applications” and “operational applications (non-safety applications)”?**

**(b) In case more than one authorised entity has to operate in the same geographical area, what should be the mechanism for simultaneous use of the spectrum? Specifically, whether the spectrum should be divided amongst the authorised entities in an exclusive manner, or should the authorised entities utilize the spectrum in a shared manner?**

**(c) If your response to part (b) is “in an exclusive manner”, what should be the minimum quantity of spectrum to be assigned to each entity holding the proposed V2I communication service authorisation? If your response to part (b) is “in a shared manner”, whether there is a need to prescribe a mechanism for interference management?**

**COAI Comments:**

1. We submit that the regulatory framework for spectrum assignment for V2I/C-V2X services should be based on licensed, interference-protected and IMT-integrated use of the 5.9 GHz band, rather than a fragmented or licence-exempt model.
2. In this regard, we would like to submit that:
  - a. The entire 50 MHz band from 5875–5925 MHz should be made available for licensed use by Telecom Service Providers (TSPs) for deployment of IMT-based C-V2X services;
  - b. India’s V2X ecosystem should be built on licensed spectrum integrated with existing 4G/5G IMT networks, so that deployments are secure, scalable, interoperable and capable of meeting stringent safety and quality-of-service requirements; and
  - c. All safety-critical V2X communications, particularly those intended to reduce road accidents and fatalities, should operate only over licensed and interference-protected spectrum.
3. V2X services are best deployed over licensed IMT networks, which offer secure, low-latency and scalable connectivity. Any unlicensed use will not only fragment the ecosystem but will also create interoperability challenges and hinder the reliable performance of life-critical applications.
4. COAI submits that **there is no need to statically partition the 30 MHz spectrum into separate blocks for “safety” and “operational/non-safety” applications.**



**Q10. Whether there are any other suggestions related to assignment of spectrum to the entities holding the proposed V2I communication service authorisation? Please provide a detailed response with justification.**

**COAI Comments:**

1. As V2X communication services rely on dedicated spectrum to enable safety-critical and intelligent transportation applications, it is imperative that such assignment ensures optimal utilization, robust regulatory oversight and interference protection.
2. A licensed framework will enable coordinated deployment and strengthen spectrum management.
3. Furthermore, V2X communication must not be perceived as a narrow, standalone short-range service. It should be recognized as an integrated, layered communications ecosystem encompassing Vehicle-to-Network (V2N), Vehicle-to-Infrastructure (V2I), Vehicle-to-Vehicle (V2V), and Vehicle-to-Pedestrian (V2P) functionalities. These modes operate in a complementary and interoperable manner, collectively forming the backbone of a resilient, future-ready intelligent transportation framework.

**Q16. For spectrum assigned to the V2I communication service authorised entities under the proposed V2I communication service authorisation, what should be the appropriate payment terms for spectrum charges, if any? Please provide your response with detailed justification.**

**COAI Comments:**

No separate payment terms are required since no additional spectrum charges should apply.

**Q18. What should be the definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR), and Adjusted Gross Revenue (AGR) for V2I communication service authorised entity under the proposed V2I communication service authorisation? Further, what should be the relevant items of revenue, exclusions and deductions and consequent definitions of GR, AGR and ApGR? Please provide your response with detailed justification.**

**&**

**Q19. What revenue components should be included in, or excluded from, the computation of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR) for the purpose of determining authorisation fees or spectrum charges for the proposed V2I communication service authorisation? Please provide your response with detailed justification.**



**COAI Comments:**

In respect of the license/authorisation regime in general, we wish to submit that the scope of revenue should be confined strictly to licensed activities, with non-authorized services excluded from LF/SUC. To avoid cascading levies, deductions must be broadened to cover charges paid by one V2X operator to another. Further, composite offerings that combine licensed and non-licensed services should not attract levy, and DoT can safeguard legitimate revenues through a fair and transparent valuation approach.

**Q20. Whether revenue derived from safety-related V2X services under the proposed V2I communication service authorisation should be excluded from the computation of AGR, in view of their public interest and non-commercial nature? Please provide your response with detailed justification.**

**COAI Comments:**

Please refer to response to Q18-19.

**Q21. What should be the appropriate entry fee for V2I communication service authorised entities under the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**&**

**Q22. What should be the appropriate terms and conditions for bank guarantees for the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**&**

**Q23. What should be the applicable minimum equity and minimum net worth requirements for authorised entities under the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**&**

**Q24. What should be the applicable application processing fee for the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**&**



**Q25. What should be the applicable rate of authorisation fee for proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**&**

**Q26. Apart from the financial provisions discussed earlier, are there any other financial terms and conditions that should be made applicable for the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**COAI Comments:**

The financial conditions under extant Access Service license are adequate to ensure the entry of only serious players. There is no need to prescribe any separate or additional financial conditions for V2X services.

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