



# Proof of Concept (PoC) Guidelines for Elephant Intrusion Detection System For Indian Railways (Using Distributed Acoustic Optical Fiber Sensing)

Rly Representative	Firm's Representative

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**I. Amendment History**

Sr. No.	Amendment Date	Version	Reason for Amendment
1.	24-10-2024	1.0	First Issue

**POC Test cases:**

Test case	Description	Observations	Result
IDS01	<ol style="list-style-type: none"> <li>The DAS unit shall be capable of detecting various activities as per test case no IDS03 at minimum 40 KM or as decided by user Railway of optical distance per channel.</li> <li>The DAS unit shall have a minimum of Four channels as single unit (Two main channels and two hot standby channels) for connecting the OFC cable.</li> <li>The System shall work in Hot Standby mode i.e. In case of failure of main channel, detection shall not be affected.</li> <li>CPS shall provide GIS map based real time visualization of track simulation for intrusion detection system.</li> <li>CPS shall send real time information/alarm/event to ASM Unit and Loco Pilot Unit as per GUI interface.</li> </ol>		
IDS02	<ol style="list-style-type: none"> <li>In Elephant Corridors, the system shall be capable of displaying continuous elephant movements to and fro from a distance of 150-200 meters from centre of track or as defined by</li> </ol>		

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	<p>User Railway in all soil conditions i.e. dry, wet etc.</p> <p>2. Other than elephant corridor, the system shall be capable of detecting Elephant Movements from a minimum of 20 meters away from the existing OFC cable on either side in all soil conditions i.e. dry, wet etc.</p> <p>3. Continuous distance Between Train and Elephant Intrusion shall be visible on ASM Unit and Loco Pilot Unit as defined in respective GUI.</p> <p>4. Loco Pilot Unit and ASM Unit shall display all the features as defined under GUI interface.</p>		
IDS03	<p>1. System shall be capable of detecting multiple activities simultaneously like:</p> <p>a. Detection of two or more elephants simultaneously at two different locations within 50 m longitudinal and latitudinal distance.</p> <p>b. Detection of two or more different activities like the detection of elephants and Trains simultaneously.</p> <p>c. Detection of two or more elephants at two or more different locations and detection of a train simultaneously.</p> <p>d. Alerts generated by the DAS systems shall be in the form of Audio visual and notifications. Alerts shall be displayed on a Workstation or PC or Tablet. Different alerts shall be generated for different activities and shall be classified as “Elephant”, “Trains” etc as defined in GUI</p>		

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	<p>Interface.</p> <p>e. Provision of hooter shall also be done for audio alarms when activity is detected.</p> <p>f. The System shall be capable of storage/backup for generated events/alarms as defined by user railway.</p> <p>2. Necessary arrangements of two or more elephants, Workstation/PC/Laptop/Tablet shall be made by the firm.</p>		
IDS04	1. Demonstration of the location of the detected activities as per test case no IDS03 (Distance from the server or DAS unit).		
IDS05	<p>1. There must be 100% detection of the elephant. True positive cases shall be 100%.</p> <p>2. The system preferably shall not generate false alarm. The alarms if found false in physical verification shall not exceed 5% of all the alarms being generated per section per month or as defined by user Railway.</p> <p>3. 4-5 nos. of trials for detection of activities mentioned in the test case IDS03 shall be done. In all trials system shall detect each activity clearly in the monitoring section.</p>		
IDS06	1. The system shall be capable of self-diagnosis of system failure, breakdown, fiber cut etc. and an alarm and information shall be generated in real time at a designated location (as specified by Zonal Railway). The alarm signal shall be different from that generated in case of detected events (Elephant Intrusion etc.). Audio alarm of events shall continue until it is acknowledged.		
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**Other Requirements:**

1. Bidder must submit the details of OEM –
  - Make
  - Country of Origin as per tender document
  - Address of OEM factory
2. PoC shall be performed in Local area network. Remote DAS and central server shall not connect to the public internet for detection and processing of alerts except for mobile application alerts. (Android based mobile application is preferred for Loco Pilot Unit if used).
3. Firm shall submit clause wise compliance of Technical Specifications of Remote DAS Unit and Central Processing Server (CPS) with the Data Sheet duly signed by the OEM and provide undertaking that system shall comply with the minimum requirements mentioned in the technical specification of the feasibility report.
4. Firm shall submit the certification endorsed by OEM that all requirements as per the specification and/or user railway shall be fulfilled by the System.
5. OEM signed copy of Data sheets, Test Reports and Calibration certificate of Laser source of OEM to be submitted along with PoC documents.
6. PoC report along with the result of test cases shall be signed by the bidder, OEM and Railway Authority (As decided by Zonal Railway) and shall be submitted to the office of concerned SAG officer.

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