



**Master Service Tender**

**For a System for Counting Passengers in Vehicles – Based on Installation of Roadside Equipment**

**Requirements Specification**

## 1. General

- 1.1. A system is required for the identification of the number of passengers in the vehicles driving on designated lanes on inter-city or urban roads, at a level that enables identification of multi-occupancy and single-occupancy vehicles, as well as the vehicle's license plates, all as detailed below (hereinafter: "**the System**" or "**the Passengers Counting System**").
- 1.2. This document includes 2 levels of requirements:
  - 1.2.1. Individual requirements for the Practical Test Stage – the requirements are detailed in paragraphs 2-7 of this document.
  - 1.2.2. General System requirements– these requirements are for the operational installation stage (insofar as will be required). The requests are detailed in paragraph 8 of this document. It must be clarified that the company is entitled to set additional technical requirements in the framework of every individual pricing procedure, at its discretion.
- 1.3. The Practical Test Stage will include a preliminary stage during which the bidder may run the System in the area where the practical test is to be conducted (hereinafter: "**the Calibration Stage**").
- 1.4. In the Requirements Specification and other tender documents, requirements for a commercial System for identifying multi-occupancy vehicles are also generally defined. The bidder will refer in its proposal to the manner in which the proffered System meets these requirements in their commercial form – as required in the tender documents.
- 1.5. Information in this document is a general description regarding the requirements and necessary capabilities for the System, and does not accurately define the technology that is to be used by the bidder.
- 1.6. Insofar as in the framework of the methodology document the bidder will offer proposals that exceed the aforementioned in this document – the bidder or master service supplier (upon necessity) will be obliged to meet a higher threshold.

## 2. List of abbreviations

Abbreviations	Meaning
GDPR	European General Data Protection Regulation for maintenance of personal information of individuals
HOV	High Occupancy Vehicles – multi-occupancy vehicles in accordance with the definition in paragraph 3.4 below.
LPR	License Plate Recognition

## 3. Accuracy level required for System identification of the occupancy level during the field test stage:

- 3.1. During the field test stage, the following subjects will be examined:
  - 3.1.1. Ability to automatically identify the relevant vehicles.
  - 3.1.2. Accuracy level for automatic identification of the number of passengers in relevant vehicles.
  - 3.1.3. Ability to automatically identify situations in which the System cannot count passengers in a reliable manner and a manual count is required – this will be defined as 'unidentifiable'.

- 3.2. During the practical test, various vehicles with a known number of passengers will be used.
- 3.3. The relevant types of vehicles for identification in the Passenger Counting System are all vehicles permitted to drive on the monitored lanes, except for two-wheeled vehicles and buses (hereinafter: **“the Relevant Vehicles”**).
- 3.4. The System will be required to correctly identify the number of passengers in Relevant Vehicles according to the following categories:
  - 3.4.1. Vehicles with a single passenger (the driver)
  - 3.4.2. Vehicles with two (2) passengers (driver + an additional passenger)
  - 3.4.3. Vehicles with 3 passengers (driver+ at least two additional passengers) and more.
- 3.5. Calculation of total System accuracy during the practical test will be carried out according to the ratio between the number of participating vehicles where the correct number of passengers was identified – according to the categories in paragraph 3.4 above, and the total vehicles participating in the practical test.
- 3.6. The System must identify the classification of vehicles driving in the monitored lane in accordance with the licensing levels defined in the Transport Ordinances (A-F).
- 3.7. The System must identify the vehicle number in accordance with the licensing plate at a 98% level of accuracy.
- 3.8. The System will ensure the performance required in relation to these parameters:
  - 3.8.1. All environmental conditions detailed below.
  - 3.8.2. Below- detailed electromagnetic environment
  - 3.8.3. Every possible driving volume on the monitored lane.
  - 3.8.4. For every driving speed up to 130 km/h.
  - 3.8.5. Conditions of disruption or works in the area of the System components that characterize a normal environment of the monitored lane.
- 3.9. The accuracy level required during the practical test is defined in paragraph 5.3.14 of the tender documents.

#### **4. Instructions for installing the System for the calibration stage and Practical Test Stage**

- 4.1. The field test will be conducted at sites to be determined by the company (hereinafter; **“the Experiment Sites”**).
- 4.2. Netivei Ayalon will provide to each bidder during the Practical Test Stage all that is detailed in paragraph 5.3.2 of the tender, including-
  - 4.2.1. Construction bridges/poles/other at the test sites where the end equipment of the proffered System is to be installed during the practical test. This infrastructure will be in a standard customary form for installations of roadside equipment.
  - 4.2.2. Electrical infrastructure for equipment and installation of an equipment closet at a reasonable dimension for the benefit of the bidder’s equipment.

- 4.2.3. Infrastructure for communication between the end components at the site and the central computing equipment of the bidder (hereinafter: **“the Core Systems”**).
    - 4.2.4. All approvals requested for the installation and operation of the System from the regulation entities. The bidder must assist the company as much as required for this purpose.
  - 4.3. The bidder will supply and install the other components and the accompanied equipment required for the installation and full operation of the System during the Calibration Stage and the Practical Test Stage, including (insofar as relevant without detracting from the generality of the above) equipment for Identification and detection, infrastructure for storing data, their licenses, etc.
  - 4.4. If backup is required for supply of electricity to the System’s end components – for example, for orderly shut-off, the backup will be under the responsibility of the bidder, for the period required for orderly shutoff and reloading in the case of an electrical failure.
  - 4.5. The bidder will be required to provide the company with a planning document, including all items required for installation for the Practical Test Stage. the document will be submitted for the company’s approval. As part of the planning document, the bidder is required to present to the company the installation requirements at the site, including:
    - 4.5.1. Full detailing of all system components including type of equipment and its quantities, cables and details of dimensions and weights.
    - 4.5.2. Required installation method (including sketches of the location of the system and end devices).
    - 4.5.3. Details of electricity connections and communication required for the operation of the system.
    - 4.5.4. Solutions for forwarding of data between the end equipment and the core system, and operation method.
    - 4.5.5. Method of operation of the core system during the practical test period.
    - 4.5.6. Acceptance tests for the system for the Practical Test Stage.
    - 4.5.7. Operation and maintenance methods, including requirements regarding access to equipment during the Calibration Stage and the Practical Test Stage.
  - 4.6. It must be clarified that during the planning stage and for the installation of ft system for the Practical Test Stage, Netivei Ayalon may define requirements, and the system must meet all relevant requirements for privacy protection, including the Privacy Protection Law and its amendments, the Privacy Protection Regulations (Data Security) of 2017 in anything related to the management of databases that include private information, and the European GDPR standard, for proving the system’s capacity, in accordance with the technology to be proffered by the bidder.
  - 4.7. The method of installation of the system for all its components will enable its operation with full performance without disrupting the environment, including

in the following situations (some of which are defined as a mandatory requirement, and some as a non-mandatory one):

- 4.7.1. Operation. Along the fast lanes there are high current lines, including lines that serve for the electrification of the train (Standard EN50121-4), antennas of cellular network operators, other communication devices in the area, and other radiators that are characteristic of the environment of the monitored lanes - EMC: 2014/30/EU - mandatory requirement.
- 4.7.2. The system will fully operate during all hours of the day, including during the night - mandatory requirement.
- 4.7.3. The system will fully operate in all weather conditions that are characteristic of the site - mandatory requirement.
- 4.7.4. The end equipment will include protection from lightning according to ISS 1173 and 62305 IEC - mandatory requirements.
- 4.7.5. That plan will ensure that the system is durable to wind load according to ISS 414 - mandatory requirement.
- 4.7.6. The end equipment will fully operate, in the most optimal manner in a temperature range  $-10^{\circ}$  and  $+55^{\circ}$  Celsius, and in %10 to %95 humidity – nonmandatory.
- 4.7.7. The end equipment will meet the IP-66 Standard – nonmandatory.
- 4.7.8. The end equipment will include protection from hailstorm – nonmandatory.
- 4.8. The bidder must ensure that the installation of the system for the Calibration Stage and the Practical Test Stage meets all relevant safety requirements, including:
  - 4.8.1. Safety standard: LVD: 2014/35/EU
  - 4.8.2. With no exceptions in the aspects of size, weight, moment or any other aspect with safety repercussions.
  - 4.8.3. The system will be installed in a manner that ensures the safety of the system's use, including in aspects such as non-dazzling or disruption to the driver and/or the vehicle itself and the systems installed in it (including autonomous braking systems, Mobile Eye, etc.) – in accordance with the type of technology and equipment that the bidder uses for the sides of the monitored lane.
  - 4.8.4. The end equipment will be installed in a manner that enables easy and safe access for maintenance and repairs, without putting the maintenance persons and road users at risk, and with minimum disruption.
- 4.9. Installation of the core system for the Practical Test Stage
  - 4.9.1. The core system during the Practical Test Stage can be installed at the site of the bidder, at a designated computing facility or a hosting facility in Israel or on a private cloud.
  - 4.9.2. A solution based on the use of a public cloud will require an approval for meeting the unique standards of maintaining data on a cloud with emphasis on aspects of privacy protection.

- 4.9.3. The bidder will present, in the framework of the planning documents, the manner in which it intends to maintain and backup the information throughout the entire period of the practical test.
- 4.9.4. The bidder is responsible for establishing, operating and maintaining the core system during the entire Calibration Stage and the Practical Test Stage, until the submission of the experiment reports and the forwarding of information to Netivei Ayalon as required below. This subject includes 3<sup>rd</sup> party licenses insofar as will be required.
- 4.9.5. The core system during the Practical Test Stage will include the entire software and hardware for running all required applications, namely:
  - 4.9.5.1. Processing of data and execution of all required analyses.
  - 4.9.5.2. Storing and management of data and information.
  - 4.9.5.3. Issuance of detailed experiment reports in accordance with the definitions in this document.
  - 4.9.5.4. Control and monitoring.
  - 4.9.5.5. Possibility to display the results for the individual review of each vehicle driver.
- 4.9.6. Netivei Ayalon will be entitled to request the information stored by the bidder during the Calibration Stage and during the Practical Test Stage for investigation and establishment of a database for the field. Data will be forwarded through a protected mechanized interface or on a media – the bidder will present its proposal on this topic for the company's approval.
- 4.9.7. In any case, the bidder will notify Netivei Ayalon if it intends to delete this information.
- 4.10. Acceptance tests prior to the Calibration Stage and the Practical Test Stage
  - 4.10.1. Prior to the installation of a roadside system, the bidder will conduct acceptance tests for the system.
  - 4.10.2. In the framework of these tests, the bidder must prove that the system meets the general requirements detailed in this document and in its methodology document, with emphasis on the subjects of safety, environment conditions, etc.
  - 4.10.3. The bidder will forward the testing plan to the company for its approval.
  - 4.10.4. It must be clarified that the acceptance tests shall not constitute an approval to install the system during the operational activation stage. These tests will be determined separately during the specific pricing stage.

## **5. Calibration Stage**

- 5.1. After installation, the bidder can calibrate the system for a period of up to 3 months.

- 5.2. During the Calibration Stage, the bidder will deploy and operate end equipment at locations determined by Netivei Ayalon, and will collect information for the development and calibration of algorithms.
- 5.3. The bidder must present to the company the summary of this stage and its preparedness for the execution of the practical test.
- 5.4. Preparedness will be reflected in the report and a designated survey where the adjustment processes that were carried out will be displayed, as well as analysis of the results of the information stored during the Calibration Stage.

## **6. The Practical Test Stage**

- 6.1. The duration of the practical test will be up to 3 months.
- 6.2. The practical test will be conducted in accordance with the scenarios defined by Netivei Ayalon. The scenarios will examine the ability to count passengers in a variety of scenarios, such as:
  - 6.2.1. Types of vehicles
  - 6.2.2. Vehicle occupancy
  - 6.2.3. Children and babies in the vehicle
  - 6.2.4. Day and night hours
  - 6.2.5. Weather
  - 6.2.6. Extreme situations: concealment of the vehicle space in various means, Identification of dummy dolls, Identification of animals, fast driving (up to 130 km/h), etc.
- 6.3. The practical test will be conducted Sunday-Thursday, 6:00 - 22:00.
- 6.4. The bidder will be required to issue and provide a daily results report that summarizes the results of the practical test for a given day. The information will include:
  - 6.4.1. Time signature and Identification for every monitored vehicle.
  - 6.4.2. License plate number (LPR);
  - 6.4.3. Number of passengers in the vehicle (comment: the accuracy level will be examined according to the categories in paragraph 3.4 above.
  - 6.4.4. Vehicle classification (as defined in the vehicle licensing);
- 6.5. The bidder will be required to present hourly and daily results during the practical test period. The bidder will issue and present the summary of results within a quarter of an hour from the conclusion of that hour, upon the receipt of information by the bidder's processing station, in the event that information did not arrive in real time. The result will be sent digitally to Netivei Ayalon in the manner defined by the company.
- 6.6. The information will be submitted on a file with the details based on which the passengers were counted (photo, collection of photos, other – according to the type of the proffered system). The exact format of the data structure in the digital report will be defined by the company.
- 6.7. If the system cannot automatically count the number of passengers in a specific vehicle – the vehicle will be marked as 'unidentifiable'.
- 6.8. Representatives of Netivei Ayalon will accompany the process of deciphering the information during the Practical Test Stage, and will examine the report issuance processes based on automatic Identification only. The bidder will

be required to demonstrate to them the system's automatic Identification capability.

- 6.9. During the Practical Test Stage, the system will meet all requirements of the law, ordinances and standards in Israel, as well as customary international standards regarding maintenance of privacy, including the Privacy Protection Regulations (Data Security) of 2017, regarding management of information databases that include personal information, and the European GDPR standard, including meeting the requirements for deleting excessive information that may be received from the system, such as location of the vehicle, etc., according to the provisions of the law.
  - 6.10. The bidder will manage and keep an accurate and backed-up database of all information accumulated in the system, according to the law and regulatory requirements that apply to the system in terms of management, database security and maintenance of privacy.
  - 6.11. Notwithstanding the aforementioned, the system will be able to store all data required during the Calibration and Practical Test Stages for eighteen (18) months.
  - 6.12. In the case of interrupted communication with the core system, the end unit will have the ability to record and automatically store for at least 24 hours all data required for the analysis of information and issuance of reports for the experiment.
  - 6.13. Upon the completion of the practical test, and after delivering all information to the company, the supplier will delete all data related to the experiment (or part of it) that are stored by it or with anyone on its behalf.
7. Maintenance and operation of the system during the Calibration Stage and the practical planning stage
- 7.1. The bidder will be responsible for the maintenance and operation of the equipment during the period of preparations for, and during the period of the Practical Test Stage.
  - 7.2. The bidder will obtain Insurance for the equipment during that period, in accordance with the instructions of the Insurance consultant on behalf of the company.
  - 7.3. The bidder will carry out the maintenance activities on its own or via an entity authorized on behalf of the system manufacturer to supply maintenance services for equipment in Israel, subject to the company's advance approval.
  - 7.4. The bidder will be responsible for carrying out the following services during the calibration period and the practical test period (with as minimum disruptions as possible to the traffic):
    - 7.4.1. Monitoring of the system for all its components (software and hardware).
    - 7.4.2. Execution of preventative maintenance including repairment of components as required according to the manufacturer's instructions
    - 7.4.3. Amendment of defects and bugs
    - 7.4.4. Supply and installation of spare parts (if relevant)
  - 7.5. The system will be available during the entire period of the practical test, for at least 95% of the hours during which the practical test is conducted.



- 7.6. The system will monitor the functionality of all its components continuously, and locate and report routinely on failures in any of its components. Reports on failures will be presented routinely to Netivei Ayalon, including the nature of the failure and its impact on the system's capabilities.
- 7.7. Failure reports will be maintained in a database for investigation and will be forwarded routinely to the company.

## **8. General requirements for the commercial system**

- 8.1. General requirements for the commercial system
  - 8.1.1. As detailed in the tender documents, the master service supplier will be required to offer a passenger count service for various projects of Netivei Ayalon or other entities affiliated with the Ministry of Transport.
  - 8.1.2. The technical requirements for every installation will be determined in the framework of the individual request to be distributed by the company prior to every installation and operation of the system. The company may determine specific requirements for every installation that are suitable for the conditions on fields, even if not all systems meet these requirements.
  - 8.1.3. This paragraph details general system requirements which the company may demand during the stage of the operational activation.
  - 8.1.4. The requirements of this appendix are a general description of the requirements and abilities required for the system and does not define in a detailed manner all requirements that the master service supplier is to meet.
  - 8.1.5. There may be gaps between the requirements detailed in defferet individual requests, including:
    - 8.1.5.1. Definition of the relevant vehicles on the monitored lane
    - 8.1.5.2. Definition of multi-occupancy vehicles (HOV)
    - 8.1.5.3. Definition of requirements for maximum speed on the monitored road
    - 8.1.5.4. Manner of implementation of the system: location of the core system, number of roadside stations, interfaces with external systems, etc.
- 8.2. General requirements
  - 8.2.1. The system will be based on technical and systematical solutions for identifying the number of passengers in a vehicle, based on the equipment, which is to be installed on the right side of the lane or above.
  - 8.2.2. The proffered system will be based only on means that are outside the vehicles.
  - 8.2.3. The system will use data from the roadside equipment, identify and classify the type of each vehicle, count the number of passengers in relevant vehicles, identify license plates, and report its findings.

- 8.2.4. For this operation, the system will not depend on other systems or entities.
- 8.2.5. The system's software will be developed in the open architecture approach, with interfaces, accessibility and combination of services based on API.
- 8.2.6. The system will be supplied with an SDK for the development of applications and interfaces.
- 8.2.7. The system can interface with other systems for the forwarding of data or receipt of data, including:
  - 8.2.7.1. Forwarding of Identification and vehicle classification data to enforcement and billing systems
  - 8.2.7.2. Forwarding of system status data
  - 8.2.7.3. Forwarding of various reports
- 8.3. Performance requirements
  - 8.3.1. The system will issue and document at least the following data for each relevant vehicle that drives the monitored lane:
    - 8.3.1.1. Time signature for Identification
    - 8.3.1.2. Location of Identification – given that there are several monitoring gates on the monitored road.
    - 8.3.1.3. The vehicle's license number (LPR) – the accuracy level of an automatic Identification of a license plate will be above 99%. The system will support a combined test: automatic + manual. The combined test will achieve an accuracy level of at least 99.9% in identifying the license plate number.
    - 8.3.1.4. Number of passengers sitting in the vehicle;
    - 8.3.1.5. Type of vehicle (as defined in the vehicle license). The probability for a correct automatic classification of vehicle will be 99% for all vehicles using the monitored lanes;
    - 8.3.1.6. Whether the vehicle is authorized to drive on the fast lane or not;
  - 8.3.2. Identification of number of passengers in a vehicle
    - 8.3.2.1. The accuracy level of the system in automatically identifying vehicle as HOVs will be at least 90%.
    - 8.3.2.2. The accuracy level of the system in combined automatic and manual Identifications of vehicles as HOVs will be at least 98%.
    - 8.3.2.3. The number of errors (automatic and manual) that cause the vehicle to be identified as a non-HOV despite meeting the HOV requirements will be less than 30% of the overall number of errors.
- 8.4. Instructions for installing the system
 

The master service supplier will establish a management and control system for the passenger count system, which will include the following components:

  - 8.4.1. End components that will be installed on roadside monitoring gates;

- 8.4.2. Means for storing data up to 72 hours in case of interrupted communication
- 8.4.3. Solutions for electricity feeding, including backup for 4 work hours without electricity
- 8.4.4. Installation and equipping according to the requirements of each individual request
- 8.4.5. Equipment and communication infrastructure (wireless or wired) and routing of data from end components to the core system for monitoring and controlling of end components, distant maintenance, and more. Communication between the end components will be based on IP communication and standard communication protocols, such as TCP/IP. Part of the project's communication must be backed up.
- 8.4.6. Core system – the system, especially the core system, software and solutions for communication and information routing, will support the largest possible number of gates for classification of vehicles. The core system will include:
  - 8.4.6.1. Software and hardware for system management and running of all required applications.
  - 8.4.6.2. Data processing and execution of all required analyses and Identification and classification activities, with emphasis on passenger counting and classification of vehicles as HOV or non-HOVs.
  - 8.4.6.3. Support of manual testing of part of the vehicles in accordance with the project definitions
  - 8.4.6.4. Storing and management of data and information
  - 8.4.6.5. Issuance of detailed reports in accordance with the company's definitions, including a report generator that enables automatic manufacturing of various reports in accordance with the company's requirements.
  - 8.4.6.6. Monitoring and control of the system
  - 8.4.6.7. Report generator and issuance of automatic reports
  - 8.4.6.8. Permissions management
  - 8.4.6.9. Interfacing with other systems as required by the company.
- 8.4.7. Operation and monitoring stations, including:
  - 8.4.7.1. Stations of the system operators, including operators conducting manual complementary tests for the automatic part of the system
  - 8.4.7.2. Stations for monitoring and control of the system
- 8.4.8. Location of the core system
  - 8.4.8.1. The core system will be installed in locations to be determined by the company.
  - 8.4.8.2. Separate core systems may be required for various projects.

8.4.8.3. The requirement may be to establish the core system at a designated facility, a hosting facility, or on a cloud.

8.4.8.4. The level of the electro-mechanical systems at the hosting facilities will be adjusted to the requirements of Tier II or Tier III standard, in accordance with the Uptime Institute definitions – depending on the requirements of the project.

8.4.8.5. for some/all of the projects, backup will be required for the core system, and the definition of the DR requirements will be separate for each project.

8.5. The system's software

8.5.1. The system's software will be developed in the open architecture approach with interfaces, accessibility and combination of services based on API.

8.5.2. SDK supply to the company for the development of applications and interfaces.

8.5.3. The system can interface with other systems for the forwarding or receipt of data, including:

8.5.3.1. Forwarding of Identification and vehicle classification data to enforcement or billing systems

8.5.3.2. Forwarding of system status data

8.5.3.3. Forwarding of different reports

8.5.4. The master service supplier will be responsible for updating the software as required in the project for technical advancement, cyber protection and protection of information.

8.6. Documentation and maintenance of data

8.6.1. The system will enable the maintenance of data in a manner that supports the requirements of the company.

8.6.2. Specifically, the requirement of maintaining data for responding to appeals will be supported for the period and in the scope to be defined by the company. In any case, there will be a possibility to store information for at least three (3) years.

8.6.3. The master service supplier will manage and maintain an accurate and back-upped database of the entire information accumulated in the system, in accordance with the law and the regulatory requirements that apply to the system in terms of management and security of database and maintenance of privacy including the requirement to delete excessive information that may be received from the system, as will be determined by law.

8.6.4. Upon the termination of the contract, the company may demand from the master service supplier to delete all information and data at its possession and/or transfer them to the company.

8.7. Privacy protection

8.7.1. The system must meet all relevant requirements for privacy protection, including the Privacy Protection Law and its amendments, the Privacy Protection Regulations (Data Security)

of 2017 in anything related to the management of databases that include personal information, and the European GDPR standard.

8.8. Cyber and information security

8.8.1. The system will be required to meet all customary requirements in the field of cyber protection as of the time of supply and operation of the system, including the following standards:

8.8.1.1. All relevant standards of the 27XXX ISS group, specifically ISS 27001, ISS 27002 and ISO 27032 standard for secured development.

8.8.1.2. ISS 15408 (or a parallel international standard) and the IEC18045 standard;

8.8.1.3. Aspects derived from the privacy protection requirements according to ISS 29100 regarding information technology, ISS 24760 and the GDPR standard of the European Union.

8.8.1.4. ISS 62433 (for its different parts) industrial systems security/SCADA/industrial network security

8.8.1.5. The information security regulations for technical infrastructure that are required in addition the 'Information Security Policy' are available in their updated version.

8.8.1.6. Approval of the National Cyber Security Authority and the Cyber Department of the Ministry of Transport.

8.8.2. In addition, the master service supplier must meet the following requirements:

8.8.2.1. Carrying out routine security updates, according to the requirements of the project

8.8.2.2. Separate development, testing and running environments

8.8.2.3. Monitoring of the supply chain

8.8.2.4. Encryption will be carried out with the HSM system, which will allow the concessionaire to keep the encryption keys at its exclusive control (generation and replacement of keys- no entity other than the master service supplier shall have access to the HSM system, apart for encryption information.

8.8.3. If the master service supplier elects to operate the technical infrastructure in a public cloud environment (subject to the approval of the company), it must ensure that the cloud service supplier meets the STAR standard. In addition, the information managed in the information system (including the backup site) shall not exit the boundaries of the states listed as 'permitted' for storing personal data, according to the instructions of the Privacy Protection Authority at the Ministry of Justice.

8.8.4. To meet the requirements of this paragraph, the master service supplier will confirm with the company the approach and architecture for cyber security and information security. This plan

will include all relevant aspects, including mapping of risks, meeting of regulations, overall architecture, secured development, information security components and cyber security, communication and information security for mobile objects, immobile data security, aspects related to physical security, aspects related to SOC and NOC, access control, workers approval, etc.

8.9. Secured development

The executing supplier will set procedures that will assure that every development will be completed with the required information security. These procedures will include at least:

- 8.9.1. Preparation of a secured code development procedure, which will oblige the entire development staff (example for a similar procedure can be found in the procedures of the Ministry of Health for development of secured systems, at the following address: [www.health.gov.il/services/tenders/doclib/mi16\\_2013r.pdf](http://www.health.gov.il/services/tenders/doclib/mi16_2013r.pdf)).
- 8.9.2. Appointment of an expert for secured development, who is responsible for implementing the aforementioned procedure in the development processes.
- 8.9.3. Provision of training to all characterization, development and testing teams regarding the completion of the procedure.

8.10. Information security components

The supplier will use information security components with proven quality, as part of the architecture, which will be updated during the project's life span in accordance with the standards and regulations and the customary methods for dealing with cyber threats at the time. At least the following components will be used:

- 8.10.1. Firewall devices, which will serve for separation between networks in different classifications, for protecting the interfacing between the primary information systems, for connecting to the Internet network and external entities, and for separation between users and servers.
- 8.10.2. WAF devices for protecting WEB sites.
- 8.10.3. XML firewall for protecting interfaces with the system.
- 8.10.4. IPS devices for protecting internet connection.
- 8.10.5. DLP devices, to prevent issuance of information that is not secured outside of the network.
- 8.10.6. Anti-virus software for all stations and servers on the network.
- 8.10.7. NAC system to prevent un-authorized access to supplier networks.
- 8.10.8. Permission management system (details below).
- 8.10.9. SIEM system for collection, monitoring and analysis of information security events.

8.11. Physical security requirements – the company is entitled to define specific requirements for the following topics:

- 8.11.1. Access control – in accordance with the project's requirements

- 8.11.2. Approval of workers – in accordance with the project’s requirements
- 8.12. Environment conditions, electromagnetic compatibility and additional requirements related to site adjustments.  
The system must be suitable to the environmental conditions and electromagnetic compatibility, with emphasis on end components. Specifically, it must meet the following conditions:
  - 8.12.1. IP66
  - 8.12.2. Work temperatures between °10C and °70C
  - 8.12.3. Relative humidity will range between 10% and 95%
  - 8.12.4. electromagnetic compatibility – for example, meeting the EMC: 2014/30/EU.
  - 8.12.5. Protection against mechanical blows according to EN-62262 IK08 (in some of the projects there may be an IK10 requirement).
  - 8.12.6. Protection of cables at the defined level.
  - 8.12.7. Wind durability – ISS 414
  - 8.12.8. Vibrations - ENV EN60068
  - 8.12.9. Resistance to vibrations – ISS 413
- 8.13. Safety
  - 8.13.1. Meeting of all requirements and standards of electrical safety, mechanical and other safety. The end equipment will be installed in a manner that meets the safety requirements, including electrical and mechanical safety, with no exceptions in terms of size, weight, moment or any other aspect with safety repercussions. Specifically, meeting the standards:
    - 8.13.1.1. Safety: LVD: 2014/35/EU
    - 8.13.1.2. Safety: EN12675
    - 8.13.1.3. Resistance to lightning – ISS 1173
  - 8.13.2. End equipment will be installed in a manner that enables easy and safe access for maintenance and repairments, without putting maintenance persons and road users at risk, and with minimum disruption to traffic.
  - 8.13.3. The system will be safe to use, including aspects such as non-dazzling or disruption to the driver and/or the vehicle itself and the systems installed in the vehicle (including autonomous braking systems, Mobile Eye, etc.) – according to the type of technology and equipment to be used by the bidder on the sides of the monitored lane.
- 8.14. Quality plan
  - 8.14.1. The master service supplier will fulfil the quality requirements of the ISO 9001, throughout the duration of the project, whether on its own or through the chief contractor that it will support.
- 8.15. Maintenance, reliability and availability
  - 8.15.1. The proffered system will have to meet high reliability and availability standards. As a target, the system will be available more than 99.9% of the time.

- 8.15.2. Overall system maintenance will be under the responsibility of the master service supplier – whether directly or via a sub-contractor on its behalf. Alternately, the master service supplier will offer a support service for the maintenance of the system to the chief contractor of the project.
- 8.15.3. The maintenance method and the SLA will enable the meeting of availability requirements, and they may be defined differently in different projects.
- 8.15.4. End equipment will be installed in a manner that enables easy and safe access for maintenance and repairs, without putting the maintenance persons and road users at risk, and with minimum interruptions to the traffic.
- 8.15.5. The system will continuously monitor the functionality of all of its components, and will routinely detect and report failures in each one of its components. Failure reports will be kept in a database for investigation.
- 8.15.6. The master service supplier is responsible for ensuring the provision of support services of the software and hardware manufacturers it will use during the project period.
- 8.16. Support of integration, system tests and experiments
  - 8.16.1. The supplier will be required to support processes of integration with other systems.
  - 8.16.2. The master service supplier will be required to conduct acceptance tests and other customary activities for such projects.
  - 8.16.3. Upon necessity, the master service supplier will conduct complementary experiments in the framework of projects in which it will be a partner.
- 8.17. Support of the system's operation
  - 8.17.1. The supplier will supply a training kit to the system operator
  - 8.17.2. The supplier will plan the training process of the system operators in various projects in accordance with the project's requirements.
  - 8.17.3. The supplier will support the running and operation process of the system in accordance with the project's requirements.