**The Autonomous Public Transport National Initiative**

**Appendix to the Call for Proposal to Advance the Integration of Autonomous Buses in Public Transport Service Lines in Israel**

**In collaboration with:**

**Ministry of Transport, the National Public Transport Authority, Israel Innovation Authority, Ayalon Highways Company and C4IR Israel**

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1. **General**

This Appendix is designed to detail the requirements according to the Call for Proposal (CfP) to advance the integration of autonomous buses in public transport service lines in Israel in the framework of the autonomous public transport national initiative. The initiative is subject to all laws in the State of Israel.

The initiative will encourage the execution of trials, designed to examine and to validate the technological abilities, to map the infrastructures and the requisite regulation principles, and accordingly to develop them. The initiative will enable to support and examine the companies’ business organization with the intent that at the end of 12 to 24 months of receiving participation approval, the option of the companies operating commercially will be examined - in the framework of operating a licensed public transport service line, using autonomous public buses in Israel. This stage is supposed to constitute the basis to turning the public autonomous buses field into a means of transportation, constituting a significant component in the future transportation system, easing traffic jams, improving safety, improving social equality and bridging gaps.

The initiative is designed to enable:

* Examination of possible business and operational models and a commercial/ business solution to operating autonomous public transport service lines for the general public.
* Examining the effect of operating autonomous public buses on passengers using them and the rest of the road users.
* Creating know-how concerning conformity and development of regulation, to enable the operation in a permanent manner and safely, while maintaining personal security, quality of the ride and privacy of the passengers and the rest of the road users.
* Mapping the needs insofar as the requisite infrastructures are concerned to operate the autonomous public vehicles in the format of public transport service lines and by public transport operators. (insofar as applicable, including for example adapting Bus Stops, Terminals and Night Parking Depot s, charging points for electric vehicles and suchlike);
* Mapping the requisite special roadway infrastructures (insofar as applicable), for example - increasing the frequency of painting the lanes, clear and designated marking of pedestrian crossings etc., adjustments, insofar as such are necessary, including possible support for autonomous buses, in places that this is necessary - including designated installations and suchlike.
* Proposal for possible architectures for the automated control and command system, to enable:
  + Planning the autonomous public buses activity.
  + Synchronization between the various bodies.
  + Operational solutions.
  + Maintenance and serviceability.
  + Supervising the autonomous public buses activity.
  + Remitting information according to regulation, and examining the need and use of information.
* Examining the effect of operating the autonomous public vehicles on these two populations -
  + The passengers in autonomous public vehicles - the general travel experience, from boarding the vehicle at the stop and until descending, including but not limited to: the feeling of security, payment experience, density, sensitivity to planned braking, emergency braking, density, receipt of information/ response to passenger inquiries, comfort and suchlike.
  + The rest of the road users and the general public - the effect of operating these vehicles on public roads, with regard to drivers travelling adjacent to the autonomous public vehicle and pedestrians walking by, response to road users and the general public’s inquiries.

1. **Definitions**

* “**Leaders of the Coordinated Initiative**” - Ministry of Transport, the National Public Transport Authority, Israel Innovation Authority and Ayalon Highways.
* **“Amendment 130**” - Bill to Amend the Road Traffic Ordinance (No. 130) 5782-2022
* **“Appendix to Call for Proposal”** - this document that is attached to the Call for Proposal and constituting an integral part thereof.
* “**Application for Trial Permit on Public Roads**” - pursuant to Supplement C of this document.
* **“Operation Permit”** - as defined in Amendment 130.
* **“Trial Area”** - bordered geographic site, approved to execute trials. The trial in the trial area will be executed under the supervision of an authorized laboratory as worded in Amendment No. 7 (5779-2019) to the Road Traffic Regulations, 5721-1961.
* **“Operational Area”** - as defined in the Road Traffic Regulations, 5721-1961.
* **“Operation Space”** - as defined in Amendment 130.
* **“Autonomous Bus”** - a vehicle of a bus or minibus type intended to transport 8 or more persons, in addition to the driver, as defined in the Road Traffic Regulations, also meeting the definition of an autonomous vehicle in the Road Traffic Ordinance.
* **“Control Center”** - the control center as defined in Amendment 130 and operated by the company submitting the application or service provider on its behalf and of its responsibility.
* **“Initiative Management Center”** - the initiative management center to be operated at one of the Ayalon Highways Company’s traffic management centers. The center will track the performance of the activity for the initiative. The center will concentrate inquiries from the public concerning the Autonomous Bus es activity in the framework of the initiative.
* “**Night Parking Depot**” - a closed complex in which the Autonomous Buses will be parked at night and/or during hours the line is not active.
* **“Entity Submitting the Application” -** the corporation submitting the application according to the Call for Proposal.
* **“Licensee to Operate Public Transport Lines”** - a company holding a license to operate public transport Service Lines within the meaning thereof in the Road Traffic Regulations, 5721 - 1961 at the time the bid is submitted. Furthermore, the agreement period with the company includes a possibility of exercising the extension options for the very least up to 31.12.24.
* **“Operator” -** A corporation must have a license to operate regular public transport Service Lines itself or in an engagement with such a licensed corporation.
* **“Dispatcher” -** position holder, authorized by the Operator to inspect the Autonomous Bus before it departs the Night Parking Depot, and to enable the autonomous driving system action.
* **“Controller”** - position holder located at the Control Center whose function is to track the Autonomous Buses, to support them when they are stuck, to connect between the Operator and the rescue services, release, tow. The controller will hold a certification on behalf of the Operator. The controller can also be someone who maintains communication with the passengers.
* “**Human Response Team”** - anyone at the Control Center intended to be in contact with the passengers, according to their needs, in real time and throughout all the hours of operation, and to receive public inquiries in connection with the Autonomous Buses rides in the framework of the initiative. Preference will be given to the passengers’ inquiries. The position requires the Operator’s certification.
* **“Initiative Manager”** - a position holder located at the Initiative Management Center and whose function it is to track the Autonomous Buses, to identify irregularities in their behavior and to alert the Controller and the traffic management center team of the Autonomous Bus’s irregular behavior. The Initiative Manager will hold a certification on behalf of Ayalon Highways.
* **“Autonomous Driving System Vendor”** - vendor of the autonomous driving system.
* **“Autonomous Bus Vendor”** - the vendor of the Autonomous Bus in its final driverless configuration.
* **“Safety Driver”** - trial driver as defined in the application for a permit for public roads trials (see Supplement C), whose function is to control the driving of the Autonomous Bus and to intervene in the driving to prevent a risk to a passenger or other users of the road, infrastructures or equipment. The responsibility to train the Safety Driver lies with the Operator.
* **“Operating Company”** - an Operator who is responsible to operate the Autonomous Bus, responsible to provide the service from end-to-end - including the Control Center, Controllers, Dispatcher s, Night Parking Depot, Autonomous Buses, Safety Drivers, maintenance and cleaning crew, rescue-tow services and suchlike.
* **“Terminal”** - a complex that serves as the start and destination stop for the Service Line or that serves as a place for passengers to pass through between one Service Line and another.
* **“Bus Stop”** - a designated stop for buses as defined in the law, in the regulations and in the Ministry of Transport’s procedures.
* **“Licensed Auto Repair Shop” -** as detailed in Amendment 130.
* **“Learning and Drawing of Conclusions Team”** - the initiative’s team operating with the purpose of drawing of conclusions and implementing them in the initiative, to enable commercial use of the Autonomous Buses in Israel immediately at the end of the initiative.
* **“Service Line”** - as defined in the Road Traffic Regulations, 5721 - 1961.

1. **The Operation Perception**

The initial operation perception is exhibited in the following illustration: 1. The Autonomous Bus is at the Night Parking Depot. 2. The Dispatcher operates the autonomous driving system after scanning and inspecting integrity (if necessary, the Safety Driver boards the Autonomous Bus before operating the autonomous driving system). 3. The initiative’s manned management center and operated by the Initiative Manager. The Control Center manned and operated by a Controller and Human Response Team. 4. Operation of the system by an authorized line Operator. 5. The Autonomous Bus only travels in the Operation Space (if manned by the Safety Driver, the safety driver supervises the Autonomous Bus traffic). 6. A passenger has the ability to converse with the Control Center and the ability to bring the bus to a forced stop. 7. In the case of a fault the Autonomous Bus will stop. A bus with a driver will be sent to rescue the passengers, and a rescue vehicle will be sent to rescue the Autonomous Bus. 8. In the case of a serviceability issue, the Autonomous Bus will be serviced at a Licensed Auto Repair Shop.

As stated above, the operation perception is an initial perception since the purpose of the initiative is to learn, *inter alia*, the changes that need to be made to the operation and regulation perception.



1. **Performance Stages**

| Stage | Entry to Stage Condition | The Stage Characteristics | The Stage Duration  [in months] |
| --- | --- | --- | --- |
| Preliminary | Publication of the Call for Proposal | Publication of the CfP, providing responses, including details pertaining to the method of proving the confidence interval performed in the development of the Autonomous Bus stage, reviewing the answers, choosing winners. | 5 |
| A | 1) Choosing winner  2) Bus import permit | 1) The Entity Submitting the Application’s preperations.  2) Coordinating the trials area.  3) The arrival of one or more Autonomous Bus(es), receipt of the regulatory approvals for the Autonomous Bus.  4) Defining the trial program and implementing it.  5) In preparation for Stage B, identifying an Operational Area, and receipt of permit from the owner of the Operation Area / supervisor on his behalf. | Up to 9 months |
| B | 1) Compliance with the trial requirements in Stage A.  2) Permit from the owner of the Operational Area / supervisor on his behalf.  3) Approving milestone for Stage A. | 1) Test runs in the Operational Area of 1-5 Autonomous Buses with a Safety Driver and performance of capability demos.  2) Submitting the application for Stage C to be approved by the Trials Professional Committee at the Ministry of Transport.  3) Application for vehicle license | 3 |
| C | 1) Approval by the national traffic supervisor and approval by the trial vehicle division manager, depending on compliance with criteria defined by the Professional Trials Committee at the Ministry, according to the provisions in the Road Traffic Ordinance, 5721-1961.  2) Receipt of vehicle license.  3) Approving milestone for Stage B. | 1) Increasing number of rides on public roads, with 1-5 operational buses, in the Operation Space to be approved for the following stages, without passengers, with Safety Driver.  2) Submitting the application for Stage D to receive a special line license pursuant to Section 386 of the Road Traffic Regulations.  3) Submitting the application for Stage E to receive a travel permit in an autonomous vehicle with driver and with passengers pursuant to the regulation provisions. | 3 |
| D | 1) Approving milestone for Stage C. | Increasing number of rides on public roads, en route in the Operation Space to be approved, with test subjects on the company’s behalf with a Safety Driver, with 1-5 operational buses, while testing the use of the payment methods in a public group as approved by the Ministry of Transport. | 3 |
| E | 1) Receipt of regulatory approval as a response to an application for an Operation Permit for Autonomous Bus ride with Safety Driver.  2) Receipt of special line license pursuant to Section 386 of the Road Traffic Regulations (Supplement C). The license will be received after discussion by the Service Lines Committee and the approval of the Traffic Supervisor.  3) Approving milestone for Stage D. | Increasing number of rides on public roads, en route in the Operation Space to be approved, with passengers, with a Safety Driver, with 3-5 Autonomous Buses, while testing the use of the payment methods of public transport as approved by the Ministry of Transport. It is stressed that commencing from this stage, the accounting mechanism between the Operator and the State as determined in the correct agreement with regard to the cluster in which the line will operate will apply. | 3 |
| F | Approving milestone for Stage E. | 1) Increasing number of rides on public roads, en route in the approved Operation Space, with passengers, with Safety Driver, 5 to 15 Autonomous Buses, testing the use of the payment methods.  2) Submitting an application for regulatory approval to progress to a ride without Safety Driver. | 3 |
| G | 1) Receipt of regulatory approval as a response to an application for an Operation Permit for travel in an Autonomous Bus without a Safety Driver.  2) Approving milestone for Stage F. | 1. Increasing number of rides on public roads, en route in the approved Operation Space, with passengers, while gradually removing the Safety Driver in an increasing number of Autonomous Buses until 5-15 Autonomous Buses are reached, with passengers, testing the use of the payment methods  2. As a condition precedent to completing the stage, at least 10,000 km for each one of the vehicles must be accumulated. | 6 |

**Emphasis:** In the case regulation enables bringing the stage in which it is possible to travel without a Safety Driver on an Autonomous Bus forward, the option of bringing it forward while receiving regulatory approval as a response to the application for an Operation Permit for rides on an Autonomous Bus without a Safety Driver will be considered.

1. **Proposals for other activity format**

The operation perception, the operation stages and the performance principles described above are solely recommendations, and the entities submitting the application can propose another activity format to achieve the objective of the application, subject to the Trials Committee, to Amendment 130 and to any law. Insofar as the responder presents a different activity format, the initiative team will consider to allow the performance of the demonstration in the format proposed by the company submitting the bid, and this provided that the activity format complies with all the safety, regulatory and other requirements to be presented and which are presented in the framework of this request and according to the Call for Proposal purposes integrating an Autonomous vehicle in the public transport Service Lines.

1. **Activities Roadmap**

Receipt of the permits procedures from the authorized regulatory authorities will be required[[1]](#footnote-2), including travel in Trial Area, simulations, travel in the Operational Area, demonstrating specific abilities, designated rides on designated lines in the Operation Space after receiving a line license suited to the activity, approval for travel without a Safety Driver.

The entity submitting the bid will be required to prove the basic ability for travel in an urban zone: proving technological practicability in the Trial Area / Operational Area, including start of work departing from the Night Parking Depot (Safety Driver, attaching the automatic driver, maneuvering outside the parking depot, reaching the start of the line point) - whereby all is conducted within the Trial Area / Operational Area. Testing the basic worthiness according to scenarios such as those detailed in Supplement B. Special emphasis on interfacing between the passengers and bus - accessibility, preventing a situation whereby the bus starts to run while passengers are boarding or getting off the bus, measuring accelerations/ decelerations while people are standing in the bus, communication between the passengers and the Initiative Management Center / The Control Center/ telephone response, response to emergency incident, response to instruction for a minimum risk situation/ stopping at the side of the road/ stopping at the next stop capabilities, response to traffic signals, response to traffic lights, speed limits signs and to signs in general, driving around a roundabout and suchlike.

Rides in the Operation Space in the designated line/ designated route - using the increasing “difficulty level” in stages.

Illustration of the program’s progress - in the illustration below.

1. **Regulation**

The entities submitting the application must comply with the following regulatory conditions to reach regulatory practicability to perform the program, according to the timeframes for the performance stages exhibited above:

* Must have the ability to operate an autonomous vehicle (as defined in Amendment 130) for public transport for this Call for Proposal (at an autonomous technological level of at least 4 pursuant to the SAE J3016 definitions), and to have the ability to transport at least 8 passengers.
* The ability to provide Autonomous Buses/ systems enabling the Autonomous Buses to carry passengers, or an engagement with a corporation having such ability.
* Bus / Autonomous Bus import licensee.
* For the stage in which travel will be conducted in a closed Trial Areas or in an operational Area (as defined in the Road Traffic Regulations):
  + Compliance with the provisions in Regulations 95A - 95G to the Road Traffic Regulations, 5721-1961, as applicable.
  + Installation of autonomous driving system.
* For approval of travel on public roads without passengers, or with test subjects on the company’s behalf:
  + Submitting an application for a permit to travel on public roads and receive of a permit pursuant to the Professional Committee’s procedure to conduct trials and test systems on public roads (see Supplement C).
* To approve a Service Line including transporting paying passengers:
  + Operation Permit from the Traffic Supervisor to operate a trial on an autonomous vehicle, according to the provisions in the Road Traffic Ordinance. A separate permit will be required for transporting passengers with a Safety Driver and for transporting passengers without a Safety Driver.
  + Transporting passengers requires obtaining a Service Line license to operate regular public transport Service Lines in Israel. The application to receive a Service Line license will be submitted to the Service Lines committee at the National Public Transport Authority.
  + The application will be submitted to the Service Lines Committee by the Operators licensed to operate regular public transport Service Lines, that operated trials in Stages A and B in the framework of the autonomous public transport national initiative, whether themselves or in co-

Gate  
Winning the Call for Proposal

**Up to 12 months**  
 **1 Autonomous Bus**

Approval to conduct trial in Operation Space with Safety Driver and receipt of vehicle license

Operation Area  
(approx. 3 months)

Vehicle import approval

The winner’s preparations

Trial Area

Night Parking Depot Entrance and Exit

Terminal  
 Entrance and Exit

No satellite navigation

Passengers’ experience and safety

Stopping at the side at the passengers initiative

Central Station  
 Entrance and Exit

Control Center  
Establishment and Testing

**12 Months**  
 **1-15 Autonomous Buses for companies**  
**complying with the requirements and winning the tender**

Cyber validations

Rescue/ Police/ Fire fighters/ MDA

Double parking

Stopping at Bus Stops

Speed according to road conditions

Without comm. driving to the next stop

Service Line License

Operation Permit with driver on an Autonomous Bus

Trial ride on line route

Proving quality of service

Control Center validation

Passengers/ Payment validations

5-15 autonomous buses with Safety Driver, paying passengers

3-5 Autonomous Buses with Safety Driver, paying passengers

Ride on line, 1-5 Autonomous Buses with Safety Driver, paying passengers

Ride on line, 1-5 Autonomous Buses with Safety Driver, without passengers

Permit to operate driverless Autonomous Bus

**6 Months**  
**50,000 km**  
 **5-15 Autonomous Buses for company**  
**that complied with the requirements**

**3-5 companies**

5-15 Autonomous Buses with paying passengers without Safety Driver

Initiative ending

**Thousands of autonomous vehicles further on**

**500 autonomous vehicles**

* + **operation with a corporation having the ability to operate an autonomous driving system, after being announced winners by the Innovation Authority in the framework of the initiative’s CfP.**
  + **In the framework of the Call for Proposal. A combined professional form will be submitted (see Supplement D) to include:**
* Application Form - support for public transport Service Lines Operators to operate a public transport service with an Autonomous Bus.
* Professional Letter of Undertaking.
* Affidavit pursuant to the Public Bodies Transactions Law, 5736 1976.
  + **Coordinating with the Local / Municipal Authority** - coordination with the Local / Municipal Authority will be made in the jurisdiction of which the Service Line subject matter of the application will run through. Approval of the Local / Municipal Authority is required for the planned route, Bus Stops, Operational Areas and Night Perking Depots for the vehicles participating in the pilot, including the infrastructure and the required explanatory publicity.
  + The Service Line to be proposed in the framework of the application must comply with the prioritization model of the National Public Transport Authority.
  + The professional application form will include:
* **Description of the operational program of the Service Line in the framework of the pilot and the rationale behind it** **(also relating to the initiative’s targets as mentioned above), while stating:** the work model (in the framework of an existing line/ first-last km / transport to high demand points/ expanding cover pursuant to the prioritization model of the National Public Transport Authority), the proposed route outline and length, including locations of stops (on a map), size of the system with regard to the number of vehicles, number of rides, frequency, hours of operation, ability to meet peak demands, maximum scope of passengers (seating/ standing) and expected scope of passengers, showing ordering method and means to execute it (regular collection/ call) and validation manner and payment of fare (the manner the validators will be located to validate the ride on the vehicle), the average commercial speed of the vehicles in the planned route considering traffic, operational zones, Night Parking Depot and manner to reach it.
  + - * **Details of the autonomous vehicle that will operate in the framework of the pilot** (type of vehicle, passenger capacity (considering seated/standing passengers) maximum speed, number of doors, dimension of vehicle, underbelly space, floor height, type of electrical propulsion, maximum distance of travel using battery, recharging time, accessibility for persons with disabilities characteristics, technical specification, type of license the drivers hold and training they underwent).
      * **Details of Costs:** procurement / leasing of vehicles (potential models), operation costs including operational infrastructures, building sharing of vehicles interface, installing validators to validate the fares using all validation means authorized by the Ministry, adaptation costs to the service model, regulations-compliance costs with regard to accessibility of the service, insurance costs, roads infrastructure adjustment costs.
      * **Work Plan** to establish the Service Line / system including timeframes to establish the infrastructures, technology development (insofar as additional development is required beyond that which exists) and building the passenger interface, to purchase and deliver vehicles according to the program detailed in this appendix to the Call for Proposal, maintenance and service plan, explanatory activity and coordinating with the Local / Municipal Authority in the jurisdiction of which the pilot is expected to run and description of all of these pursuant to the stages up to the expected date of operation. Furthermore, description of the timeframe to organize the Service Line license.
      * Description of the intended **explanatory and marketing** activity.
  + **The following requirements must be met:**
    - * The Entity Submitting the Application is a licensed Operator to operate public transport Service Lines itself or engaged with such an Operator.
      * The application for the line license in the initiative’s favor will be an integral part of the Operator’s Service Lines.
      * The operation will be according and subject to the law including the provisions in the Road Traffic Ordinance, Part E of the Road Traffic Regulations, 5741-1961, and the Traffic Supervisor’s directives.
      * The vehicles to operate in the future in the framework of the service must be physically and sensory accessible and all according to that determined in the Equal Rights for Persons with Disabilities Regulations (Regulating Accessibility to Public Transportation Services), 5763-2003.
      * Receipt of trials on public roads approval on behalf of the Committee of the Ministry of Transport / Traffic Supervisor, for rides without passengers or with test subjects, all subject to any law valid on the date the application for a Service Line license is submitted.
      * Insofar as the vehicles included in the bid are electric - the Entity Submitting the Application’s undertaking to establish a charging system (including infrastructures) to enable charging of the autonomous vehicle without prejudicing the operational plan of the line to operate in the framework of the initiative.
      * The Local / Municipal Authority’s undertaking in the jurisdiction of which the pilot will operate in the future stating that the requisite infrastructures exist to perform the pilot and to support its operation subject to the timeframes of the operational plan, including explanatory and laying of infrastructures aspects.
      * An undertaking by the Entity Submitting the Application to operate the system fully if it wins, according to the operational and business plan presented in the application, and according to the timeframes to be approved.
      * The Entity Submitting the Application's undertaking to perform explanatory and marketing activities of the initiative among the relevant population.
      * The Entity Submitting the Application’s undertaking to state on the vehicles operating in the framework of the initiative the fact that the Service Line is operating in the framework of a pilot of the National Public Transport Authority, the Ministry of Transport, the Innovation authority, C4IR and Ayalon Highways.
      * The Entity Submitting the Application’s undertaking to perform a users’ poll and examine efficacy once every 3 months, all as detailed in the professional letter of undertaking.
      * Presenting an insurance policy covering the Service Line activity.
  + Upon submitting the application to the Service Lines Committee, the Entity Submitting the Application will be entitled to submit an update to the forms that were submitted in the framework of the response to the CfP.

Clarifications:

1. It is clarified that the discussion regarding the application to receive a Service Line license will be in light of the order of preference of the National Public Transport Authority to operate additional services.
2. The accounting mechanism between the National Public Transport Authority and the service Operator will be according to the accounting mechanism in the cluster in which the service operates.

* For the stages in which driving is executed on public road with an accompanying Safety Driver, the following is required:
  + Compliance with the permit conditions and provisions in the exemption to be granted by the National Transport Supervisor by virtue of Regulation 16A to the Road Traffic Regulations, 5721-1961, according to the Professional Committee’s recommendations pursuant to the provisions in Procedure No. AV-01-2021 “The Professional Committee Procedure to Perform Trials and Test Systems on Public Roads” (hereunder: “Trials Procedure”). It is clarified that during the initial trial stages an accompanying Safety Driver is required.
  + Compliance with the conditions of the registration provisions to be granted by the Vehicle Division Manager at the Ministry of Transport, according to the Professional Committee’s recommendations pursuant to the Trials Procedure.
  + The travel route and the operation conditions will conform to the application for the line license, to gain experience on the travel line before integration with transporting passengers.
* For the stage in which the rides on the Autonomous Bus are conducted on a public road without an accompanying SafetyDriver compliance with the provisions in the Road Traffic Ordinance with regard to autonomous vehicles (Amendment 130) will be required.

1. **Responsibility and Liability**

* The Entity Submitting the Application is aware that the Leaders of the Coordinated Initiative assistance does not impose upon them any liability and/or responsibility and/or obligation toward the Entity Submitting the Application or to a third party, in connection with the project submit matter of the budgetary support, including any bodily injury or property damage to the Operator, anyone on its behalf or any third party sustains.
* The Entity Submitting the Application undertakes by merely submitting the application that if any of the bodies comprising the Leaders of the Coordinated Initiative are held accountable, obligated or any such duty is imposed upon them the Entity Submitting the Application will indemnify it for any amount it is charged as stated above, immediately upon that body’s first demand to do so.
* The winning project will be executed solely and fully at the responsibility of the Entity Submitting the Application.
* The activity will be executed according to all laws.
* The Entity Submitting the Application will verify and will be responsible for all the safety and hygiene aspects involved in the winning project, including presenting in advance all the acceptable insurance policies required in the framework of operating the project subject matter of the budgetary support, according to the Insurance Supervisor’s directives and the Inbal Company.
* It is stressed that by granting the support and/or sponsorship or the Ministry participating in advertisements does not assume mean that the Ministry is assuming any responsibility for the activity or any liabilities, likely to derive as a result of the activity.
* Insofar and after the pilot there is a hindrance preventing the continuance of the line operating by Autonomous Buses, the Operator must continue to operate the Service Line through vehicles that are not autonomous unless it received the Traffic Supervisor’s approval to terminate the service in the framework of that line.

1. **The Scopes of the Activity in Stages A-D Preceding Commercial Operation with Passengers**

An assessment of the expected scopes of activity in the framework of the current CfP, whereby the goal for the operation scenario, attribution, is: a designated line - whereby some of the buses on the line will be autonomous and some not (d)[[2]](#footnote-3). The Autonomous Buses rides do not include commercial operation. The following table contains examples of the expected requirements. The binding requirements will be determined for each company by the regulatory bodies pursuant to the law:

| Section | Stage | Key Issue | Repetition Number for example Their number may change | Comments |
| --- | --- | --- | --- | --- |
| 1 | A | Trials | Defined scenarios - see exemplary scenarios in Supplement B | A vehicle laboratory is required to perform the trial, insofar as apparent at the Ministry of Transport’s trials center operated by Ayalon Highways |
| 2 | B | Rides in the Operational Area | A range of 60 days operation, 20 rides of approximately 30 minutes each day | Hospitals, Kibbutzim, large industry enterprises and suchlike - provided that they are defined an Operational Area pursuant to the law. |
| 3 | C | Practicing exiting and entering the Night Parking Depot | 300 times - including various parking spots in the same parking lot and at least three different parking spots. | Contingent upon approving travel to the Night Parking Depot on public roads. |
| 4 | C | Practicing entry to and exiting from Terminal | 120 times |  |
| 5 | C | Practicing entry to and exiting from the Central Station | 120 times |  |
| 6 | C | Demonstrating travel without satellite navigation (GNSS) | 100 rides of 30 minutes |  |
| 7 | D | Passenger experience demo (“bumpiness”, breaking, passengers boarding and descending and suchlike) | 50 times |  |
| 8 | D | Demonstration of “transition to minimum risk mode”, at the passengers’ initiative | 150 times |  |
| 9 | C-D | Demonstrating work *vis-a-vis* the Initiative Management Center. | 100 times |  |
| 10 | C-D | Demonstration of “transition to minimum risk mode”, at the Control Center’s initiative in various places along the line and at different times | up to 100 times |  |
| 11 | D | Demonstrating stopping at Bus Stops | 300 times |  |
| 12 | C-D | No communication - transitioning to stopping at the closest stop | 200 times |  |
| 13 | B-C-D | Demonstrating speed according to road conditions | 100 times |  |
| 14 | B-C-D | Travel adjacent to parked vehicles/ parking on the two sides of the street | 100 times |  |
| 15 | B-C-D | Demonstrating rescue/ tow/ linking-up with Police/ Israel Fire and Rescue Services/ MDA | 3 successful, one in each stage |  |
| 16 | C-D | Cyber validations | Pursuant to the procedure provisions according to that determined in the Road Traffic Ordinance |  |
| 17 | D | Demonstrating ability to transport test subjects/ general/ free/ use of technology to collect payment | 60 rides of one-half hour at least on the planned line with at least 8 passengers in each ride |  |
| 18 | C-D | The Control Center’s abilities | According to Amendment 130 |  |
| 19 | D | Quality of service/ Passenger Feedback | Each ride, on digital media, enabling reports differentiation and data analysis. |  |
| 20 | C-D | Rides on a "line" – line route initial proving and demonstrations | 150 rides, with full cover of the line |  |
| 21 | D | Rides on operational Service Line | pursuant to the definition in the requested line licensing |  |
| 22 | C-D | Arrival from the Night Parking Depot to the line and from the line to the Night Parking Depot | 300 times | Aspiring to attain short route with minimum risk |
| 23 | C-D | Proof of behavior *vis-a-vis* “works on road” | 100 times |  |
| 24 | B-C-D | Ability to respond to malfunctions - including punctures and faulty sensors. | 100 times |  |
| 25 | B-C-D | The effect of mapping accuracies | 30 times |  |
| 26 | C-D | Practicing reporting of incidents | 20 times |  |
| 27 | B-C-D | Proving documenting and recording systems | Sampling over 7 days of travel |  |
| 28 | C-D | Practical test for security drivers | Safety Driver License | pursuant to the Ministry of Transport’s definitions in the trials procedure |
| 29 | C-D | Trials to demonstrate approval of change in configuration/ software procedures | at least 60 rides of 30 minutes each one with a safety driver | The tests can be expanded according to the corporation submitting the application decision, according to a change that was made.  In the case of a ride without a Safety Driver, the changes, the test program and the results of the rides must be documented |
| 30 | C-D | Practicing fire extinguishing | 30 times |  |
| 31 | C-D | Practicing towing including the vacating-of-passengers process | 20 times |  |

1. **The Scopes of Activity in Stages E-G Commercial Operation with Passengers**

You must estimate the effort and resources required during the commercial travel period.

1. **The Control Center**

The Control Center will be managed and will be the responsibility of the Entity Submitting the Application or whoever is authorized to do so on its behalf. The Control Center’s function is to manage the handling and instructions to the Autonomous Bus and the passengers therein in irregular situations. The corporations submitting the application undertake to operate a control center located in Israel or to engage with such a control center, and to conform to all the obligations concerning the operation of the Control Center, all as detailed in the Road Traffic Ordinance, in the regulations, in the provisions in the procedure and the regulatory permits conditions to be issued to the Entity Submitting the Application .

The Control Center will also operate when there is a Safety Driver on the Autonomous Bus with the purpose of acquiring experience toward the operation of the Autonomous Bus without a Safety Driver.

1. **The Initiative Management Center**

The Initiative Management Center will be operated by Ayalon Highways and will run from Ayalon Highways Metropolitan Control Center. Today the Metropolitan Control Centers operate in Haifa (“Mantam Hamifratz”), in Tel Aviv (“Savidor”) and in Be’er Sheva (not yet established). The Initiative Management Center will enable situational awareness insofar as the Autonomous Buses with and without a SafetyDriver movement is concerned. The Center will assist the corporations submitting the application to resolve issues on site and to reduce the ramification of such issues on the rest of the traffic and users of the road in real time and beyond the travel times. To this end the corporations submitting the application are required to remit the following information to the Initiative’s Management Center:

* Location of all the Operator’s vehicles in the framework of this initiative, including the Autonomous Buses, their speed and their planned travel route in the displays system according to the protocol the Operator is bound by in the framework of the National Public Transport Authority’s guidelines.
* Displaying of the Polygon and the area permitted for travel.
* Reporting a safety incident and a serious safety incident (in addition to the reports the trial permit holder is bound to report by virtue of the Road Traffic Ordinance).
* Reporting passengers/ road users/ the public’s inquiries that do not receive a response
* Calling the rescue and release forces (including Police).
* Passengers distress, health or other incidents.
* Malfunction with the Autonomous Bus or the systems installed in it.
* Nonconformity to the restrictions defined for activity (for example deviating from geographic polygon, exceeding speed limit).
* Information about additional incidents according to Amendment 130.
* Displaying statistics in real time, including, at the very least, the number of buses that are currently en route.
* A time tag will be attached to all the data.

The Initiative Management Center will remit, at the very least, the following information to the Control Center, at least once a day, and insofar as necessary more frequently:

* Updates to define the Operation Space.
* Defining prohibited polygons to be inserted in Autonomous Buses and distributing them to the Operator corporations.
* Defining detailed geographic data, for example, “road works” sites and distributing them to the Operator corporations.
* Distribution of weather alerts and forecast in high resolutions of a grid of 3 by 3 km at the very least.
* Danger points on the road (for example: information about an object on a lane, information regarding incidents including mass gatherings in open spaces and suchlike).

The Initiative Management Center will also operate when there is a Safety Driver on the Autonomous Bus with the purpose of acquiring experience toward the operation of the Autonomous Bus without a Safety Driver.

1. **Learning and Drawing of Conclusions Teams**

The Learning and Drawing of Conclusions Team is a team that was appointed on behalf of the coordinated initiative leaders, with the purpose of drawing conclusions and implementing them in the initiative, to enable commercial use of the Autonomous Buses in Israel immediately at the end of the initiative. The lessons to be learned may influence the consideration of a change (including leniency) in the regulatory requirements, adapting road infrastructures, understanding the passengers' needs, understanding the ramifications of road users and the general public, change in operational and action modes, the procedures to prove the Autonomous Bus’s conformity to the regulatory requirements for autonomous rides without a SafetyDriver, identifying points in which the initiative team can assist the corporations submitting the application, advancing the acoustics of autonomous vehicles in Israel and suchlike.

A joint investigation discussion will be held with the corporation submitting the application and/or representatives on its behalf with the initiative team in each calendar month by the 15th of the month with regard to the previous month. The discussion will be conducted on the basis of a report to be remitted to the Learning and Drawing of Conclusions Team once a month, by the 10th of the calendar month, with regard to the previous month. The crude data will also be transferred on which the report is based. The report will include the following data:

* Key performances and achievements in the previous calendar month
* Plans for the next calendar month
* The data that is transferred to the Initiative Management Center
* Trial results that were performed during the course of the month
* Rides Data - all as required by the Ministry of Transport, including: total vehicle km, total travel km, total working hours of the vehicles, number of passengers, rides performance percentage, faults from operational and technological aspects and from ride validation aspects, the number of passengers that do not validate ride, data regarding system refusals and passenger refusals (insofar as referring to service pursuant to call), heat maps (marking origin and destination according to their frequency), differences between planned and performance in timeframes of the rides, passenger waiting times and differences insofar as applicable between estimated waiting time and actual waiting time, arrival times at Bus Stops, duration of stops until the passengers board, number of passengers that boarded, when did they board, where did they board, when did they descend, where did they descend, ride times, average ride speed in each segment, rides percentages are not performed in relation to planned, deviations from guaranteed ETA for passengers, cost of operating the vehicle per km.
* Insofar as the service uses a designated application - number of downloads and users.
* Passenger’s response to questionnaire refers to: degree of passenger satisfaction, split coefficient (percentage of passengers on the service using the service instead of using private vehicle), integration with additional public transport services (percentage of passengers using the service together with public transport vehicles/ micro mobility in their travel route).
* Assessing the travel experience of the passengers by the Operator
* Remitting statistics data with regard to Safety Driver intervention incidents (reason for intervention, number of incidents according to reason, frequency of incidents according to reason).
* Remitting statistics data with regard to safety incidents (details of the incidents, number of incidents according to reason, frequency of incidents according to reason).
* Issues relating to regulation.
* Issues relating to the road infrastructure.
* Issues relating to passengers.
* Issues relating to the road users and the general public.
* Issues relating to the serviceability of the Autonomous Bus and the changes in configuration (updating hardware, firmware, software etc.)
* Recommendations for change /improvements
* Additional Data if required.

**Emphasis** **A:** By merely submitting the application the Entity Submitting the Application confirms that the Leaders of the Coordinated Initiative will have the right to publish any information in connection with the project that is supported by them, including results of user’s polls and average costs of operating the Autonomous Buses system.

**Emphasis B:** The Learning and Drawing of ConclusionsTeam does not substitute the Autonomous Bus exploration, the task and command over the task, which needs to be performed by the Entity Submitting the Application.

**Emphasis C:** the Leaders of the Coordinated Initiative have the right to make any use of the know-how concerning the operational and service-oriented aspects acquired in the framework of the initiative.

1. **Saving Information**

The Entity Submitting the Application will save all the information relating to the initiative (including but not limited to: the Autonomous Bus data, the Control Center data, the data transferred to the Initiative Management Center and from it, certification documentation, permits and regulatory approvals) by recording and documenting means (including digital documentation, screenshots and relevant “logic” recordings) for the entire initiative period and at least up to 24 months after the initiative ends. Similarly, the corporations submitting the application will be required to act according to that defined in Amendment 130 and the regulatory permits conditions that were issued to them with regard to documentation, collection, saving and remitting information.

1. **Information Security and Privacy**

Subject to any law.

1. **Proprietorship of Know-how**

It is clarified that the winners’ proprietorship in the CfP of the know-how refers to know-how relating to the technological abilities of the autonomous driving system itself (as defined in the Road Traffic Ordinance) as opposed to information relating to the service oriented and operational aspects concerning the integration of the system in the framework of operating public transport. All the know-how relating to the service oriented and operational aspects which is a product of the initiative will be owned by the Public Transport Authority.

1. **Royalties**

Insofar as after the date the pilot ends the Entity Submitting the Application continues to operate the public transport Service Line using the Autonomous Buses according to the license from the Traffic Supervisor, it will be required to pay royalties according to that determined the Innovation Authority’s Track Number 2. It is clarified that in such a situation the National Public Transport Authority reserves the right to instruct immediate and full payoff of all the outstanding payment of royalties to the Innovation Authority.

1. **Emphases**

* The transition from stage to stage will require demonstration (operation, accumulating km, approval documents) of conformity to the regulation requirements.
* The responsibility for all the aspects of the Autonomous Bus and realization of the operation perception (except the Initiative Management Center functioning) applies to the Entity Submitting the Application, including the safety aspects.
* The Entity Submitting the Application must conform to all the regulation requirements.
* The initiative team will assist the companies insofar as possible.

1. **The Response to the Application**

The response to the CfP will be given pursuant to the details in Supplement A. The Entity Submitting the Application must submit the response to each section separately, while maintaining numbering.

1. **Timeframes**

|  |  |
| --- | --- |
| Publication of the Call for Proposal | 11.4.2022 |
| Webinar | 9.5.2022 |
| Last date for clarification questions | 19.5.2022 |
| Last date to provide answers | 9.6.2022 |
| Last date to submit response to CfP | 1.8.2022 at 12:00 Noon |
| Start of performance of the demonstrations - only target date, actual demonstrations depend on budgeting and requisite approvals | 1.1.2023 |

1. **Supplements**

Supplement A - format of submitting the application to the Call for Proposal

Supplement B - examples of test scenarios in Stage A

Supplement C - format of the Professional Committee’s procedure to conduct trials and test systems on public roads

Supplement D - forms required to receive line license

# Supplement A - Format of Submitting the Application as a Response to the Call for Proposal

A response to information (Sections (i)) and demonstration / delivery of official documents (Sections (d)) will be required detailed hereunder:

1. (d) The application will be submitted according to [Benefit Track No. 2](https://innovationisrael.org.il/node/4723/rules)  and [the Track Procedures](https://innovationisrael.org.il/node/4723/rules) of the Innovation Authority in addition to the following completions.
2. (i) The Entity Submitting the Application will submit the work plan document to receive approvals pursuant to the regulation practiced in Israel (law, regulations, procedures) and according to the requirements of this initiative.
3. (i) The Entity Submitting the Application will evaluate the receipt of the permit process for a bus, ride with a Safety Driver and a ride without a Safety Driver in terms of time / money - including details of all the procedures that are required *vis-a-vis* the Ministry of Transport and including, estimating the required number of rides. In this part, you must refer and detail which vehicles the Entity Submitting the Application intends on bringing to Israel and how many trials were conducted on these vehicles thus far and in what format, including, if possible, trial reports/ the original manufacturer's reports.
4. (i) The entity submitting the applicant will describe the operation scenarios detailed on the basis of the sections in this document, while estimating the time and money required, including:
   1. Details of the trials area.
   2. Details of the vehicle laboratory accompanying the activity in the trials area.
   3. Details of the Operational Area and the travel lines in the Operational Area.
   4. Details of the requested Operational Area and the proposed travel lines in the Operational Area.
   5. Details of the number of Autonomous Buses for each designated line/ route, for each stage of the initiative, and details of all the aspects relating to combining manned buses and Autonomous Buses on the same line, insofar as such a plan exists.
   6. Licensing approval, or application to license a vehicle that is not licensed, for the Autonomous Bus it intends on operating.
   7. Details of the coordination *vis-a-vis* the Local Authority/ owners and the supervisor of the OperationalArea / trials center of the Ministry of Transport in Ashdod, support and approval from the vehicle laboratory.
   8. Description of the process to receive the permits for the Safety Drivers/ Dispatchers/ Controllers/ the persons answering the telephone, what experience is required of them, how much time and money the process is expected to need.
   9. Details of how many Safety Drivers the Entity Submitting the Application intends on training and/or allotting for the purpose of operation *vis-a-vis* the number of Autonomous Buses. What are the considerations upon determining this ratio together with an assessment of the training and certification processes required, according to the initiative stages.
   10. Details of how many Dispatchers/ Controllers/ persons answering the telephone *vis-a-vis* the number of vehicles, *vis-a-vis* the number of Autonomous Buses. What are the considerations upon determining this ratio together with an assessment of the training and certification processes required, for each service separately according to the initiative stages.
   11. Passengers:
       1. Methods and procedures insofar as passengers boarding and descending the buses is concerned.
       2. Methods and procedures insofar as transporting passengers is concerned.
       3. Methods and procedures insofar as transporting passengers with accessibility issues is concerned.
       4. Methods and procedures insofar as passengers making payments using the payment methods used in Israel is concerned.
   12. Construction of infrastructures/ leasing infrastructures as required to support the team to operate the trials.
   13. Submitting the safety plan to perform the initiative stages, including but not limited to predicting the behavior of the other road users and the general public. The Vendor will propose ways to reduce the friction between the Autonomous Buses and the rest of the road users, including manner to mark the Autonomous Bus - both when a Safety Driver is present and when it runs autonomously, without a Safety Driver.
   14. Analysis of the Autonomous Buses ride ranges and the ratio to the number and times to charge electricity/ fuel required. Methods and procedures to charge electricity in batteries/ fueling. (Comment: an advantage of the Autonomous Bus is that it reduces pollution and the greenhouse gases).
   15. Description of the area and infrastructures for the Night Parking Depot in each stage - including a blueprint. The method of operation of the Night Parking Depot / Terminals. Trials outline to “start the operation of the parking depot”. Estimations for a ride from/ to the Night Parking Depot with / without a Safety Driver. Time/ Cost assessment.
   16. Trials outline to prove a Service Line route. Time/ Cost assessment.
5. (i) The Entity Submitting the Application will detail a reference to faults and emergencies, including:
   1. Methods and procedures to maintain a fraction in time of travel, including: the Autonomous Bus’s behavior, handling passengers, means and duration of time to vacate the Autonomous Bus and prevent interruptions to the road users.
   2. Methods and procedures for preventative maintenance.
   3. Methods and procedures to maintain cleanliness and quality of service for passengers.
   4. Methods and procedures in the case of identifying a cyber incident, including: the Autonomous Bus’s behavior, handling passengers, means and duration of time to vacate the Autonomous Bus and prevent interruptions to the road users.
   5. Methods and procedures in the case of identifying an emergency incident (accident, fire, security breach and suchlike), including: the Autonomous Bus’s behavior, handling passengers, calling for the emergency and rescue forces, linking the emergency and rescue forces, means and duration of time to vacate the Autonomous Bus and prevent interruptions to the road users.
   6. Methods and procedures in the case of loss of communication with the Autonomous Bus.
   7. Methods and procedures in the case of loss of navigation data/ loss of direction in the Autonomous Bus.
   8. Methods and procedures in the case of the Autonomous Bus exiting, or in the case it is about to make such an exit, from permitted polygon for ride / the Autonomous Bus entering prohibited polygon for ride, or in the case it is about to make such an entry.
   9. Methods and procedures to guarantee prevention of mistakes in abandoning the lane/ polygons / other crucial data.
   10. Methods and procedures with regard to a situation in which the bus cannot continue in the planned route.
   11. Methods and procedures with regard to a situation that the bus cannot reach the Night Parking Depot that was preplanned.
6. (d) The Entity Submitting the Application will present a draft of the application for a line permit to the Ministry of Transport according to the details in Supplement C.
7. (d) The Entity Submitting the Application will present a risks plan and a response to risks.
8. (i) The Entity Submitting the Application will detail a request for the adjustment of the infrastructures including:
   1. Details of the painting situation for the planned line. You must provide specific reference to the pedestrian crossings.
   2. Special markings/ renewing paint/ special signage/ also proximate to the Night Parking Depot.
   3. Reference to the Trial Area, the Operational Area and the Operation Space in relation to navigation accuracies and a situation of no reception of satellite navigation (GPS, GLONASS, navigation based on visual abilities based on aerial photography and suchlike, preventing single failure point).
   4. Communications cover in the Trial Area, in the Operational Area and in the Operation Space.
9. (i) A proposed control system to be placed in the Control Center of the Entity Submitting the Application.
10. (i) Description of the method to transfer the data and displaying them in the Initiative Management Center of the Ayalon Highways Company.
11. (i) The Entity Submitting the Application will address the weather aspects including: which data about the weather is relevant to the Autonomous Bus - depending on the Operation Space. How does the risks plan integrate with the various weather conditions including: rain/ snow/ hail/ flooding and puddles/ sandstorms/ restricted vision/ exceptional winds and all the Operation Space components.
12. (i) The Entity Submitting the Application will address the saving of information aspects, during the course of the operation and thereafter.
13. (i) The Entity Submitting the Application will address the privacy protection aspects, during the course of the operation and thereafter.
14. (i) The Entity Submitting the Application will address the insurance aspects.
15. (i) The Entity Submitting the Application will address the communications aspects - frequencies, technology, encryption and licenses that are required.
16. (i) The Entity Submitting the Application will address cyber protection, *vis-a-vis* the evolving regulations.
17. (i) The Entity Submitting the Application will address the control over the task aspects.
18. (i) The Entity Submitting the Application will address the documentation and exploration aspects that it will work with at the task level.
19. (i) The Entity Submitting the Application will address the documentation and the monthly exploration aspects together with the Learning and Drawing of Conclusions Team of the initiative.
20. (i) The Entity Submitting the Application will submit a list of all the technical standards it intends on conforming to according to the Autonomous Bus license.
21. (d) The Entity Submitting the Application will submit the following documents (see the provisions in the procedure by virtue of Amendment 130):
    1. Description of the operation perception.
    2. The Specification.
    3. The User Manual.
    4. The Maintenance Manual (logging faults, serviceability and permits).
    5. Configuration control manual.
    6. Training of Dispatchers/ Controllers/ telephonists process.
    7. Training of Safety Drivers according to regulation process.
    8. Training of technicians’ syllabus.
    9. Communications procedures (including use of SMS, CSMS systems, insofar as applicable).
    10. Reporting of accidents and irregular incidents procedures
22. (d) Research and Development Components:
    1. The Entity Submitting the Application will expressly state all the activity including the R&D and test run (pilot) components as defined in the Innovation Authority:
       1. Hardware, firmware, software and regulatory components such as control tools, documentation and proof.
       2. Test-run components (performing the trials themselves).
       3. Information Systems, distribution of information systems, safety and operation systems such as: weather stipulations, geofencing mechanism, loading travel plan, loading “roadworks”, loading danger zones, displaying travel plan on the map including from/to the Night Parking Depot, alerts) and suchlike.
       4. The ability to mark in a dynamic manner, “online” the location of the Autonomous Buses it operates - thus at any given time, the vendor can enable convenient display of a picture of the location of the vehicles it operates, at a frequency that does not fall short than once every 3 seconds (content target - once per second).
       5. To calculate/ display/ request changes in the line route in a dynamic manner *vis-a-vis* the foregoing data, including the ability for change in real time as opposed to need/threat/ varying preference.
    2. The Entity Submitting the Application will present a development plan, including risks, time, budget - for development assessment.
23. (i) The Entity Submitting the Application will address the reliability, survivability and redundancy standard of the operation systems and of the Autonomous Bus systems - including proposed technical standards.
24. (i) The Entity Submitting the Application will submit basic calculations for most of the “rounds”, from the Autonomous Buses on the Service Line efficiency aspect.
25. (i) The Entity Submitting the Application will present planned abilities to identify signs (in Israel), identification of traffic lights, identification of markings in paint on the road, identification of Road Bumps and proof/ authentication/ validation ways. (Ability to identify signs defined in the permit in regard to the Operation Space - mandatory).
26. (d) The Entity Submitting the Application will specify its preparations for submitting the applicaiton:
    1. In the framework of a group of companies including the Operator, manufacturer of the Autonomous Bus, vendor of the autonomous operation system, a company specializing in systems development thus immediately at the end of the trials period the vendor can start the commercial public transport service on the Service Line.
    2. If it is unable to provide a response as part of the foregoing group - how it intends on being organized and what support it expects from the initiative participants.
27. (d) The Entity Submitting the Application will submit the forms appearing in Supplement D to this appendix.

# Supplement B - Example of Validation Testing Scenarios

Definition: “Autonomous Vehicle” - an autonomous vehicle as worded in Amendment 130.

Emphasis: testing the autonomous vehicle with the trial driver will be done in the framework of the Professional Committee of the Ministry of Transport and if referring to a driverless autonomous vehicle then the testing will be done in the framework of the requirements of Amendment 130.

The Entity Submitting the Application will specify the validation method that it invokes **before submitting the application** - including documentation. The description will include:

* Theoretical analysis and technical explanation of how the vehicle identifies the situation, decides what to do and what it actually does.
* Deterministic monitored behavior.
* Redundancy aspects.
* What were the validation methods:
  + Trial in trials field (including documentation).
  + Trial in **Operational Area**.
  + Trial on public road in Operation Space.
  + Simulations - including itemization of a number of scenarios and Operation Spaces.

A leniency in performing scenarios will be considered, according to the tests and proofs the Autonomous Bus underwent in the past, the traffic signal conditions and according to the travel conditions in Israel.

**Hereunder are examples of scenarios, whereby, as stated above, the variety of scenarios and the final proof method will be determined by the authorized regulatory entities**:

1. **Obstacle on the road necessitating bypassing it - continuous separation line**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | Obstacle on the road necessitating the vehicle to bypass it | |  |
|  | **Pursuant to Regulation No.** | 40, 47 | |
|  | **Success Rule** | Identifying the obstacle and stopping the vehicle in a safe manner before the obstacle | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | City/ Intercity / straight/ bend/ type of road/ number of lanes |
| Travel Speed | Range of velocities |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Practical test + simulator | |

1. **Autonomous vehicle integrating into busy lane of vehicular traffic**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle attempts to integrate into a lane with heavy vehicle traffic (the reason is irrelevant) | |  |
|  | **Pursuant to Regulation No.** | 21, 40, 64 | |
|  | **Success Rule** | Integration into traffic in a safe manner without compromising the right of way of the other vehicles on the road | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | No. of lanes/ city/ intercity, acceleration lane, road ahead is blocked |
| Travel Speed | Range of Speed |
| Traffic status | Busy, various types of vehicles |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Practical test + simulator | |

1. **Vehicle traveling parallel sways in the direction of the autonomous vehicle**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle is travelling ahead when a vehicle parallel to it traveling in the same direction sways toward the autonomous vehicle | | **תמונה שמכילה טקסט  התיאור נוצר באופן אוטומטי** |
|  | **Pursuant to Regulation No.** | -- | |
|  | **Success Rule** | Identifying the nearing vehicle and preventing an accident | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | No. of lanes/ city/ intercity, oncoming traffic |
| Travel Speed | Range of velocities |
| Traffic status | Busy, sparse |
| Type of parallel vehicle | Private, truck, bus, motorbike |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Practical test + simulator | |

1. **Lane of travel partially blocked when there is oncoming traffic**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle is traveling straight ahead however its travel lane is partially blocked because of a parked vehicle. The oncoming traffic lane is busy. | |  |
|  | **Pursuant to Regulation No.** | 40 | |
|  | **Success Rule** | Bypassing the blocked segment in a careful and safe manner | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | City/ Intercity / straight road/ bend |
| Travel Speed | Range of velocities |
| Traffic status | Busy, sparse |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Practical test + simulator | |

**Comment**: The scenario takes into account that there is a hatched separation line. A case that there is continuous separation line described in scenario no. 7.

1. **Entering intersection without traffic lights**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle (blue) arrives at the intersection without traffic lights and needs to turn left. A vehicle from opposite direction also reaches the intersection | |  |
|  | **Pursuant to Regulation No.** | 22, 64, 65 | |
|  | **Success Rule** | Continue travel in a careful and safe manner according to the right of way rules | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night/ blinding |
| Road conditions | No. of lanes, structure of intersection, incline, decline |
| Travel Speed | Range of velocities |
| Traffic status | Busy, sparse |
| Type of crossing vehicle | Motorbike, private, truck, bus, emergency |
| Direction of the crossing vehicle | Right, left, oncoming |

1. **Entering a roundabout with another vehicle**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle approaches the roundabout when another vehicle approaches the roundabout from a given direction or ids already on the roundabout. | |  |
|  | **Pursuant to Regulation No.** | 64 | |
|  | **Success Rule** | Entering and exiting the roundabout in a safe manner while giving right of way to additional vehicles and pedestrians | |
|  | **Factors having an Effect** | Road conditions | Number of lanes, required exit |
| Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Traffic status | Vehicles approaching the roundabout or already on the roundabout, additional vehicles from other directions |
| Pedestrians | Crossing the road before entering the roundabout or at the exit from it |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Practical test + simulator | |

1. **Animal on the road**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle travels straight ahead on the road and an animal appears on the road in front of it | |  |
|  | **Pursuant to Regulation No.** |  | |
|  | **Success Rule** | Identifying the animal and adjusting travel speed until reaching a stop or bypassing it to avoid an accident | |
|  | **Factors having an Effect** | Road conditions | Bright/ Rainy/ Fog |
| Weather conditions | Day/ Night |
| Lighting | City/ Intercity / straight/ bend/ type of road/ number of lanes |
| Traffic speed | Range of velocities |
| Animal | Various sizes and types (cat, dog, cow, camel) |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Practical test + simulator | |

1. **Pedestrian runs on to the road**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle is traveling along the road. Pedestrian runs on to the road | |  |
|  | **Pursuant to Regulation No.** |  | |
|  | **Success Rule** | Identifying the pedestrian and responding accordingly to prevent accident | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | City/ Intercity / straight/ bend/ type of road/ number of lanes |
| Travel Speed | Range of velocities |
| Pedestrian | Child/ Man/ Woman/ Number of People/ Style of Clothing |
|  | **Additional Issues for Reference** | The test refers to an open field of vision. Scenario with parked vehicles at the side of the road is tested in scenario no. 39 | |
|  | **Recommendation for Testing Manner** | Simulator | |

1. **Pedestrian crossing at a red light**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle reaches the intersection at a green light. Pedestrian crosses a pedestrian crossing at a red light | |  |
|  | **Pursuant to Regulation No.** | 65, 67 | |
|  | **Success Rule** | Identifying the pedestrian and avoiding accident and running over | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | Urban/ Type of Intersection |
| Travel Speed | Range of velocities |
| Field of Vision | Open / vehicles parked at the side of the road |
| Pedestrian | Child/ Man/ Woman/ Number of people |
| Location of Pedestrian | Before / After the Intersection |
|  | **Additional Issues for Reference** | * Scooter rider | |
|  | **Recommendation for Testing Manner** | Simulator | |
|  |  | Travel Speed | Range of velocities |
| Field of Vision | Open / vehicles parked at the side of the road |
| Pedestrian | Child/ Man/ Woman/ Number of people |
| Location of Pedestrian | Before / After the Intersection |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Simulator | |

1. **Exiting the roundabout with a cyclist**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle is traveling on the roundabout. It tries to exit at the requisite exit when a cyclist is cycling on the roundabout parallel to the vehicle | |  |
|  | **Pursuant to Regulation No.** | 65 | |
|  | **Challenge** | Identifying a cyclist, and respective reaction by slowing down and giving right of way | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | Urban/ Number of Lanes |
| Travel Speed | Range of velocities |
| Field of Vision | Open |
|  | **Recommendation for Testing Manner** | Simulator | |

1. **Pedestrian crosses intersection with traffic lights**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Description** | The autonomous vehicle reaches the intersection before turning right at an intersection with traffic lights. Pedestrian walks on the right-hand side and crosses the intersection. | |  |
|  | **Pursuant to Regulation No.** |  | |
|  | **Success Rule** | Identifying the pedestrian, responding accordingly | |
|  | **Factors having an Effect** | Weather conditions | Bright/ Rainy/ Fog |
| Lighting | Day/ Night |
| Road conditions | Urban/ Type of Intersection |
| Travel Speed | Range of velocities |
| Field of Vision | Open / vehicles parked at the side of the road |
| Pedestrian | Child/ Man/ Woman/ Number of people |
| Location of Pedestrian | Before / After the Intersection |
|  | **Additional Issues for Reference** | -- | |
|  | **Recommendation for Testing Manner** | Simulator | |

# Supplement C - Format of the Professional Committee’s Procedure to Conduct Trials and Test Systems on Public Roads





# Supplement D - forms required for line license

**This Supplement includes:**

1. Application Form - support for public transport Operators to operate a public transport Service Line with an Autonomous Bus.
2. Professional Letter of Undertaking
3. Affidavit pursuant to the Public Bodies Transactions Law 5736 1976

**All of the foregoing forms must be submitted whereby they are signed by the authorized signatories.**

**Application Form - support for public transport Operators to operate public transport Service Lines with an Autonomous Bus.**

1. **Details of the public transport Operator requesting the support:**

|  |  |
| --- | --- |
| The Company Name/ Co. No. |  |
| Full address (including postal zip code) |  |

1. **Contact Person’s Details on the Operator’s Behalf:**

|  |  |
| --- | --- |
| Full Name |  |
| Position |  |
| Email Address |  |
| Landline telephone |  |
| Mobile Telephone No. |  |

1. **[The license to operate a public transport line the Operator holds must be attached to this form]**
2. **General Details about the Pilot operational program**
   1. **Designation of the system**   
      🞏 Expanding cover for public transport in

🞏 City, inputting demand areas (shopping malls and/or employment)   
🞏 First/last km 🞏 Other - \_\_\_\_\_\_\_\_\_­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_

* 1. **Details of vehicles in the prohect:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Manufacturer** | **Model** | **Number of Vehicles** | **Maximum No. of Passengers (seated/ standing)** |
|  |  |  |  |
|  |  |  |  |

* 1. **The intended payment method for the ride:**

🞏 Rav - Kav + cellular (using the applications authorized by the Ministry) -

* 1. **The travel lane, collecting passengers' manner, collection and descending stops map, average speed expected of the vehicle, the service frequency**  
     To be attached in a separate document.
  2. **Description of the user interface and technology required to use the service and to integrate the service with applications and other public transport websites (API).**

To be attached in a separate document.

* 1. **Details of the intended explanatory and marketing activity**  
     To be attached in a separate document.

1. **Work Plan to establish the line/ system including timeframes to establish the infrastructures, technology development (insofar as additional development is required beyond that which exists) and building the passenger interface, to purchase and deliver vehicles, explanatory activity and coordinating with the Local Authority, and a description of all of these pursuant to the stages up to the expected date to operate the pilot.**   
   To be attached in a separate document.
2. **Budget Details**  
   Itemization of the costs of each one of the program components to operate the pilot, including one-time expenses and current expenses.

|  |  |
| --- | --- |
| **Expenses** (NIS) | |
| Specify: leasing of vehicles for the pilot period |  |
| Specify: adjustment of vehicles to the service model costs (regular line/ demand customized service and suchlike) |  |
| Specify: Operations Costs |  |
| Specify: Maintenance Costs |  |
| Specify: Providing Accessibility Costs |  |
| Specify: Explanatory Costs |  |
| Specify: Insurance Costs |  |
| Specify: Additional Costs |  |
| **Total estimated cost of the activity:** |  |

The Authorized Signatories Signatures:

\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Name of Authorized Signatory Position Signature

\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Name of Authorized Signatory Position Signature

**Confirmation**

I hereby confirm that on \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ appeared before me, at my office on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Street, Mr. / Mrs. \_\_\_\_\_\_\_\_\_\_\_\_\_\_, who identified him/herself pursuant to I.D. Number \_\_\_\_\_\_\_\_\_\_\_\_and after I warned him/her that s/he must state the truth and that s/he would be subjected to the penalties stipulated by law should s/he fail to do so, confirmed the correctness of the foregoing statement and signed it.

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Attorney’s Stamp and License No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Professional Letter of Undertaking**

We the authorized signatories of the \_\_\_\_\_\_\_\_\_\_\_ Company, Co. No. \_\_\_\_\_\_\_\_\_\_\_\_ (hereunder: the “Entity Submitting the Application”) respectfully submit our application in the framework of the Call for Proposal (CfP) to advance the integration of Autonomous Buses in public transport Service Lines in Israel, the autonomous public transport national initiative, and undertake on its behalf to fulfill all of the sections appearing in the CfP and in the appendix to the CfP.

The Authorized Signatories Signatures:

\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Name of Authorized Signatory Position Signature

\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date Name of Authorized Signatory Position Signature

**Confirmation**

I hereby confirm that on \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ appeared before me, at my office on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Street, Mr. / Mrs. \_\_\_\_\_\_\_\_\_\_\_\_\_\_, who identified him/herself pursuant to I.D. Number \_\_\_\_\_\_\_\_\_\_\_\_and after I warned him/her that s/he must state the truth and that s/he would be subjected to the penalties stipulated by law should s/he fail to do so, confirmed the correctness of the foregoing statement and signed it.

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Attorney’s Stamp and License No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Affidavit pursuant to the Public Bodies Transactions Law 5736 1976**

I the undersigned, Mr. \_\_\_\_\_\_\_\_\_\_ bearer of I.D. number \_\_\_\_\_\_\_\_, after having been warned that I must state the truth and that should I fail to do so I would be subjected to the penalties stipulated by law, hereby declare in writing as follows:

1. I was lawfully authorized by \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereunder: “**Entity Submitting the Bid**”) to sign this affidavit as part of the response to the Call for Proposal (CfP) to advance the integration of Autonomous Buses in public transport Service Lines in Israel, the autonomous public transport national initiative (hereunder: “**CfP**”).

2. The Entity Submitting the Application, whoever is controlled by it, and if the Entity Submitting the Application is a body of persons - then also the controlling shareholder therein or other body of persons controlled by the controlling shareholder therein (control - within the meaning thereof in the Securities Law, 5728-1968), was not convicted in a final judgment of an offense pursuant to the Foreign Workers Law (Prohibition of Unlawful Employment and Guaranteeing Fair Conditions), 5751-1991 in the year preceding the date the bid was submitted to the CfP; and if convicted in a final judgment of two or more offenses under the same law - the last conviction was not in the three years preceding the date the bid was submitted to the tender.

3. The Entity Submitting the Application, including a body of persons controlled by it, and if the Entity Submitting the Application is a body of persons - also the controlling shareholder therein or a body of persons whereby the composition of its shareholders or partners, as applicable, is similar in nature to the composition thereof in the Entity Submitting the Application, and the fields of activity of the body of persons are similar in nature to the fields of activity of the Entity Submitting the Application, and whoever is responsible on behalf of the Entity Submitting the Application for payroll, and if the Entity Submitting the Application is a body of persons that is materially controlled - also other body of persons, materially controlled by whoever controls the engager (control - within the meaning thereof in the Banking Law (Licensing), 5741-1981), was not convicted of an offense under the Minimum Wage Law, 5747-1987, and if convicted of one offense under the same law - at the time the bid was submitted to the tender at least one year has passed since the conviction date, and if convicted of two or more offenses under the same law - at the time the bid was submitted to the tender, at least three years have passed from the last conviction date.

4. This is my name, this is my signature and the content of this affidavit of mine above is the truth.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The Affiant’s Signature

**Confirmation**

I hereby confirm that on \_\_\_\_\_\_\_\_\_\_\_ Mr. \_\_\_\_\_\_\_\_\_\_\_\_, who identified himself by identity card number \_\_\_\_\_\_\_\_\_\_\_, authorized to sign the bid for the tender and this affidavit on behalf of the Entity Submitting the Application pursuant to the incorporation documents of the Entity Submitting the Application and/or pursuant to the document of understandings or co-operation agreement between the bidder’s partners, appeared before me, Adv. \_\_\_\_\_\_\_\_\_ at my office at \_\_\_\_\_\_\_\_\_\_\_\_\_ Street, and after I warned him that he must state the truth and that he would be subjected to the penalties stipulated by law should he fail to do so, confirmed the correctness of his statement above and signed it in front of me.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Attorney / License No.

1. The companies must be well versed with the Committee’s procedures to approval trials for advanced driving systems and to set in motion, as soon as possible, the process for a permit to conduct trials with and without a Safety Driver. [↑](#footnote-ref-2)
2. Marking (d) means that the company is required to provide relevant information and ***in addition***, is requested to demonstrate/ execute the actual section. Marking (i) means that the company is requested to provide only relevant information - without actual demonstration. [↑](#footnote-ref-3)