SPRÁVA ŽELEZNIC

Our Ref. No.	34441/2023-SŽ-GŘ-O14
Sheets/Annexes	3/2
Attended by	Ing. Lukáš Matta
Mobile Phone	+420 602 706 200
E-mail	matta@spravazeleznic.cz
Date	18 May 2023

Invitation to the preliminary market consultation on the preparation of the tender specifications for the public contract entitled "*Pardubice ETCS Driving Simulator*"

Dear madam, dear sir,

Správa železnic, státní organizace (hereinafter referred to as the "*Contracting Authority*") hereby informs you that it is preparing a tender procedure for the public contract entitled "**Pardubice ETCS Driving Simulator**". The launch of this tender will be preceded by a Preliminary Market Consultation (hereinafter referred to as "*PMC*"), the aim of which will be to obtain relevant information for the correct setting of the subject of performance, the terms of reference, the choice of the type of procurement procedure and the method of evaluation of the submitted tenders. The Contracting Authority seeks to obtain a quality performance that meets its needs at an appropriate price.

The aim of the public procurement is to conclude a contract, the subject of which will be the design, creation and future operation of a simulator of the drivers' partial cab with ETCS, which will be used for training of drivers of Správa železnic under the supervision of the ETCS system in standard operating states, as well as degraded states – simulations of extraordinary events, onboard, and trackside failures – in all application levels currently implemented on the network of Správa železnic and in levels whose implementation is planned or in process. The subject matter is further specified in Annex 1 of this PMC Invitation.

In the framework of the PMC, the Contracting Authority requests answers to the questions set out in Annex 2 – List of Questions.

The aim of the PMC is to gain an overview of the current market situation, the possibilities of contractors and clarification of the issues necessary for the implementation of the public contract in a transparent manner.

The PMC is pursuant to Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on Public Procurement and repealing Directive 2004/18/EC and pursuant to Section 33 of Act No. 134/2016 Coll, on Public Procurement, as amended (hereinafter referred to as the "*Act*"), the Contracting Authority has the possibility to communicate with contractors (or other relevant persons) in order to prepare the award of the public contract and to inform economic

Správa železnic, státní organizace
registered in the Commercial Register maintained by the Municipal Court in Prague, File No. A 48384

Registered Office: Dlážděná 1003/7,
110 00 Praha 1, Czech Republic
ID: 709 94 234, Tax ID: CZ 709 94 234
www.spravazeleznic.cz

Directorate General
Dlážděná 1003/7
110 00 Praha 1
Czech Republic

operators (or contractors) about its plans and requirements in the procurement process – the Contracting Authority may also identify contractors' options and, where appropriate, their proposed solutions in the framework of the PMC.

Form of PMC: written

Method of holding PMC
In the framework of the PMC, we request answers to the questions of the Contracting Authority set out in Annex 2 to this Invitation. The responses received by the Contracting Authority will be carefully analysed and evaluated. In view of the purpose of the PMC, the Contracting Authority will also take into account late responses where possible and appropriate for the purpose of the PMC. However, the Contracting Authority asks participants to meet the deadlines. If the Contracting Authority concludes that some topics remain unclear or controversial or that there is a need for clarification of additional questions, the Contracting Authority will proceed to hold another round of the PMC, which may be conducted again in writing, or the Contracting Authority reserves the possibility to ask the representatives of the contractors to conduct a face-to-face or on-line meeting. This procedure may be repeated by the Contracting Authority until all information necessary to correctly set the parameters of the subject procurement is received. The Contracting Authority will always contact at least those contractors who expressed interest in the PMC in the previous round during the subsequent PMC.

If you are interested in participating in this PMC, please send your answers to the questions listed in Annex 2 – List of Questions to the following e-mail address:
matta@spravazeleznic.cz

Please deliver your answer by 23 June 2023 at the latest.

At a minimum, the Contractor should state in its response:

- the name of the Contractor and the Contractor's registered office;
- Contractor’s ID No.;
- the name and function of the contact persons, including contact details (at least e-mail);
- answers to the attached questions.

For further information regarding the PMC, please contact the following email address: **matta@spravazeleznic.cz**

The Contracting Authority informs that the forthcoming public contract is planned to be awarded as an *above-threshold sectoral* public contract, awarded in an open procedure (Section 56 *et seq.* of the Act) or in a negotiated procedure with prior publication (Section 60 *et seq.* of the Act).

The Contracting Authority expects to evaluate the tender according to the lowest tender price. However, the specific evaluation criteria will still be subject to consideration by the Contracting Authority.

The anticipated date of commencement of performance is Q1/2024 and the anticipated date of handover and acceptance is Q3/2024.

The Contracting Authority will determine the total cost of the implementation of the respective procurement and the subsequent maintenance and development (SLA) after evaluation of the market consultation.

In view of the anticipated interest of foreign contractors in the implementation of the respective public contract, this Invitation, including its Annexes, is drawn up in Czech and English. The Contracting Authority points out that in case of conflicting interpretations of the two language versions, the version in the Czech language shall prevail. **Contractors' answers to** the questions in Annex 2 to this Invitation **may be in Czech or English**.

Preliminary market consultation must not lead to a breach of the basic principles of the Act. The conduct and outcome of the Preliminary Market Consultation will be recorded in a report produced by the Contracting Authority. The information from the Preliminary Market Consultations used in the terms of reference of the respective public contract will be explicitly marked in the tender documentation in accordance with Section 36(4) of the Act, and the persons who participated in the PMC will be identified.

Thank you for your cooperation.

Yours sincerely,


Ing. Pavel Koucký
30.05.2023 10:45
Podepsáno elektronicky

Pavel Koucký
Director of Human Resources Department

Annexes:
Annex 1 – Definition of the Required Technical and Functional Solution
Annex 2 – List of Questions

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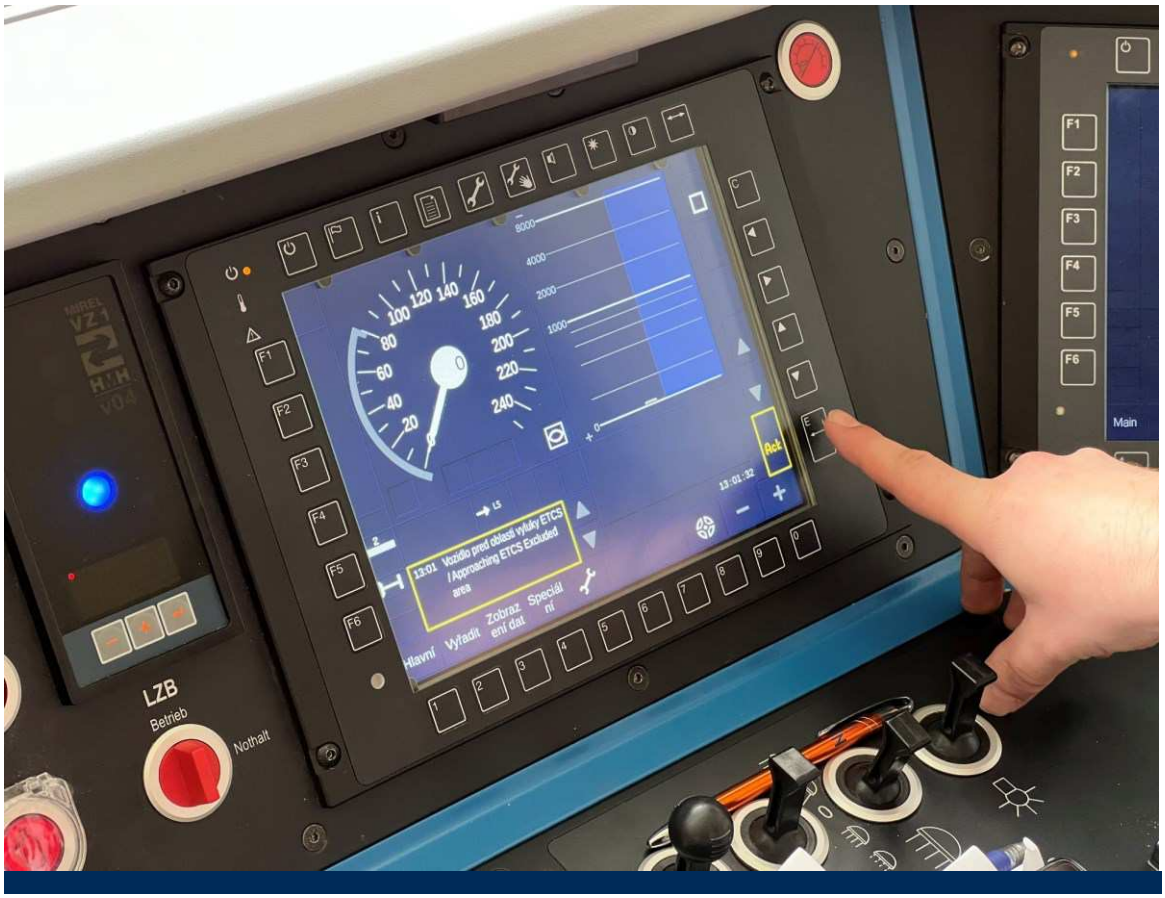

Pardubice ETCS Driving Simulator

Annex 1 – Definition of the Required Technical and Functional Solution

Preliminary Market Consultation

Lukáš Matta
ETCS and Modern Technologies Unit
Directorate General, Signalling and Telecommunications Department

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1 Identification of the planned contract

The planned form of the tender procedure is the negotiated procedure with prior publication (NPPB) with regard to the impossibility of sufficiently detailed specification of the subject of the contract, in order to improve the offers in favour of the Contracting Authority, Správa železnic, státní organizace (hereinafter referred to as the Contracting Authority), so that the Contracting Authority procures performance that is fully adapted to the requirements of the organisation. Therefore, a higher time consumption is expected.

In the event of a highly satisfactory result arising from the evaluation of the preliminary market consultation, the Contracting Authority also accepts the possibility of a conventional open tender procedure.

The contract is planned in the form of Design and Build (D+B), including the future operation of the simulator, such as all maintenance, modifications, etc.

The Contracting Authority will determine the total cost of the implementation of the respective procurement and the subsequent maintenance and development (SLA) after evaluation of the market consultation.

2 Project definition and solution requirements

2.1 Introduction

The railway infrastructure manager, Správa železnic, státní organizace, plans to build an ETCS simulator in the Pardubice Training Centre for its drivers to train them to drive under the supervision of the ETCS system. The basic mission of the Pardubice Training Centre is to acquire and maintain the professional qualifications of the employees of Správa železnic, státní organizace.

Správa železnic does not currently have any simulator for ETCS supervised driving training. In connection with the timetable based on the National Implementation Plan for ETCS and the planned introduction of the European Train Control System on all lines, it is necessary to have adequate facilities for training and testing of drivers, especially drivers of special vehicles operated by Správa železnic.

Section 46 of the Act on Rail Systems lays down the conditions for the professional competence of employees providing rail operation and rail transport. In order to achieve and maintain professional competence, employees operating, maintaining, repairing and inspecting the railway or railway vehicles must be trained and their professional competence must be verified by a professional examination. The conditions for achieving and maintaining the professional competence of employees providing operation, maintenance, repair and inspection of the railway or railway vehicles and the determination of the range of these persons who perform work activities ensuring safe and smooth operation of the railway and railway transport shall be determined by the railway operator and the carrier in the internal regulation on the professional competence and knowledge of persons providing operation of the railway or railway transport. The regulation sets out the method of acquiring professional competence, i.e. the course of preparation for the professional examination and the course of the examination itself, as well as the system of regular training, according to work activities.

In order to properly meet the above provisions of the Act on Rail Systems, the simulator of the Pardubice Training Centre must be equipped in accordance with modern standards, enable full-fledged training of all operational situations and degraded states of the trackside and onboard unit, and its design must enable, in addition to regular training, training of new employees coming from the external environment.

2.2 Project definition

The simulator of the driver's station with ETCS will be used only for the training of drivers of Správa železnic. The purpose of the simulator is to train driving under the supervision of the ETCS system in standard operating states, as well as degraded states – by simulating extraordinary events, faults on the vehicle or on the infrastructure – in all application levels currently implemented on Správa železnic network and in levels whose implementation is planned or in process.

A credible, fully interactive static simulator of an approximated driver's cab is required to enhance the effectiveness of training by allowing a full simulation of a range of common operational, extraordinary and fault conditions. The simulator can thus be used for training of standard operation and common faults as well as for advanced training concepts (emergency response scenarios, etc.). Its fidelity and capability to simulate all possible scenarios, including all versions of the implementation of ETCS trackside and signalling systems, will ensure full and effective training and testing of the staff concerned.

The training will take place in an environment that faithfully simulates real controls and a real environment with specific elements of the Czech railway system and landscape.

In the case of training on the ETCS driver simulator, the acquired information and data from the course of the journeys can also contribute to the adjustment of regulations, the adjustment of the behaviour and parameters of the ETCS system itself (trackside part) and the overall strategy of the system implementation on the network of Správa železnic and thus to the increase of the fluidity and especially the safety of transport.

2.3 Requirements for the functional and technical design of the simulator

The characteristics of the ETCS as a whole and its sub-components are determined by specifications managed by the European Union Agency for Railways (ERA) and are grouped and published in the form of documents called 'SUBSETs'.

The ETCS simulator required for the Pardubice Training Centre must meet all the main functional characteristics of the system and the behavioural requirements (System Requirements Specifications). The version of Subset SUBSET-026 v3.6.0 Baseline 3 R2 in system version 1.1 (and 2.x in the future) is selected as the version of the specification set. The behaviour of the trackside part of the ETCS system will therefore be identical to the behaviour of the real trackside as implemented on Správa železnic network. The onboard unit will also simulate version 3.6.0.

A fidelity simulation of the LNTC, L0, L1 (in the ETCS Regional version, i.e. ETCS L1 LS and ETCS L1 "Stop") and L2 application levels is required, in compliance with all relevant guidelines, regulations and specifications issued by Správa železnic (including technical specifications for the RBC behaviour, design guidelines, national values, national values for braking curves, etc.), which shall be provided by the Contracting Authority as a basis for the tender and the actual implementation of the Work.

The ETCS driver simulator therefore enables testing of all areas related to driving under the supervision of the system, even in its degraded state (traffic closure, construction activity, extraordinary and fault condition), as well as other areas related to the performance of the driver's work (communication with the traffic control apparatus, compliance with regulations, etc.).

2.3.1 Required technical and functional characteristics of the product

- Simulation of driving on a special railway vehicle with a simplified, approximated control panel, the proposed layout of which will be supplied by the Contacting Authority.
- The instructor can select a vehicle from two predefined types, especially in terms of traction, speed and performance in driving and braking:
  - fast electric locomotive and
  - diesel special vehicle (Yellow fleet).
- Vehicle controls simplified to correspond with the simplified control panel (the aim is not to train the vehicle controls):

  - only selected basic commands – battery on/off, desk on/off, main switch, direction of travel, lights, collector, traction, parking brake, brake (air and EDB/retarder), ale vigilance, horn, whistle, sanding, etc.
- Projection of the 4K simulation, or 4K large screen.
- Full and realistic vehicle behaviour and sounds:
  - adhesion,
  - acceleration,
  - braking,
  - the sounds of the vehicle, drives, automatic train protections and other components.
- Full and realistic 3D landscape:
  - other trains moving depending on the scenario and configuration,
  - real surroundings (cars, characters, sounds of the surroundings (level crossing, passing train,...)),
  - shadows, weather and time of day (light, fog, rain, snow, day, night, dawn, sunset) including weather-related adhesion conditions.
- A map of the "world" covering all types of lines and stations on Správa železnic network, with fictional names and station configurations.
- Simulation of the exact behaviour of the ATP and signalling equipment:
  - MIREL VZ1 v4 and KBS06 Automatic Train Protection,
  - ETCS trackside in all possible implementations (L1 LS, L1 LS Stop, L2 FS, L2 FS with benefits),
  - ETCS OBU with touch DMIs.
- Exact ETCS behaviour according to SUBSET-026 v3.6.0 Baseline 3 R2 in system version 1.1 (and 2.x in the future) and according to national specifications.
- Supervision of the student's driving by the monitoring software at the instructor's station
  - creation and editing of simulation scenario, scenario selection,
  - supervision of driving and all parameters,
  - real-time input of faults on the vehicle and infrastructure (ETCS excluded area in the station and on the line, fault at a level crossing, call-on signal aspect, signal fault, malfunction of a balise transmission module (BTM), malfunction of a specific transmission module (STM), radio modem fault, etc.).
- Connection of the instructor's station with the student's station by GSM-R radio (real Touchcall device and real on-board radio station).

2.3.2 Instructor's station equipment and functional requirements

The instructor's station is equipped with:

3x widescreen monitor and PC accessories in the required quantity depending on the supplied simulator (keyboard, mouse, or other controls), touch terminal radio station (Touchcall), intercom for direct communication with the student, controls to turn on the simulator, printer for printing reports and driving evaluation, height adjustable office desk, adjustable chair with a minimum load capacity of 140 kg.

Basic functionality requirements:

The instructor has the possibility to watch the complete action in the simulator cabin using a camera. The instructor also monitors the projection of the route as seen by the driver at any given moment and also monitors the combined overview of all the controls of the driving vehicle (automatic train protection, radio, operating screen, main screen/ETCS DMI display, air gauges, button positions, traction controller, brakes, etc.). All these outputs are graphically displayed on the monitors.

The main monitor displays the controls of the simulator itself. The application allows to select predefined scenarios, create scenarios, track the vehicle on the map, control signals, level crossings, add various elements to the line, change the weather, turn on various predefined faults, etc.

The instructor assigns a student driver to each ride and creates a profile for the student driver. Notes and ratings can be entered during the ride, which can then be printed and stored in the database along with the ride progress.

2.3.3 Student's station equipment

The student's station is equipped with:

A driving vehicle control panel with a GSM-R on-board radio and other required elements (partial cab), a graphical simulator display (display or other technology), an integrated surround sound system, an intercom for direct communication, a camera and a driver's reclining chair as in the vehicle.

Správa železnic, státní organizace
Dlážděná 1003/7
110 00 Prague 1
Czech Republic

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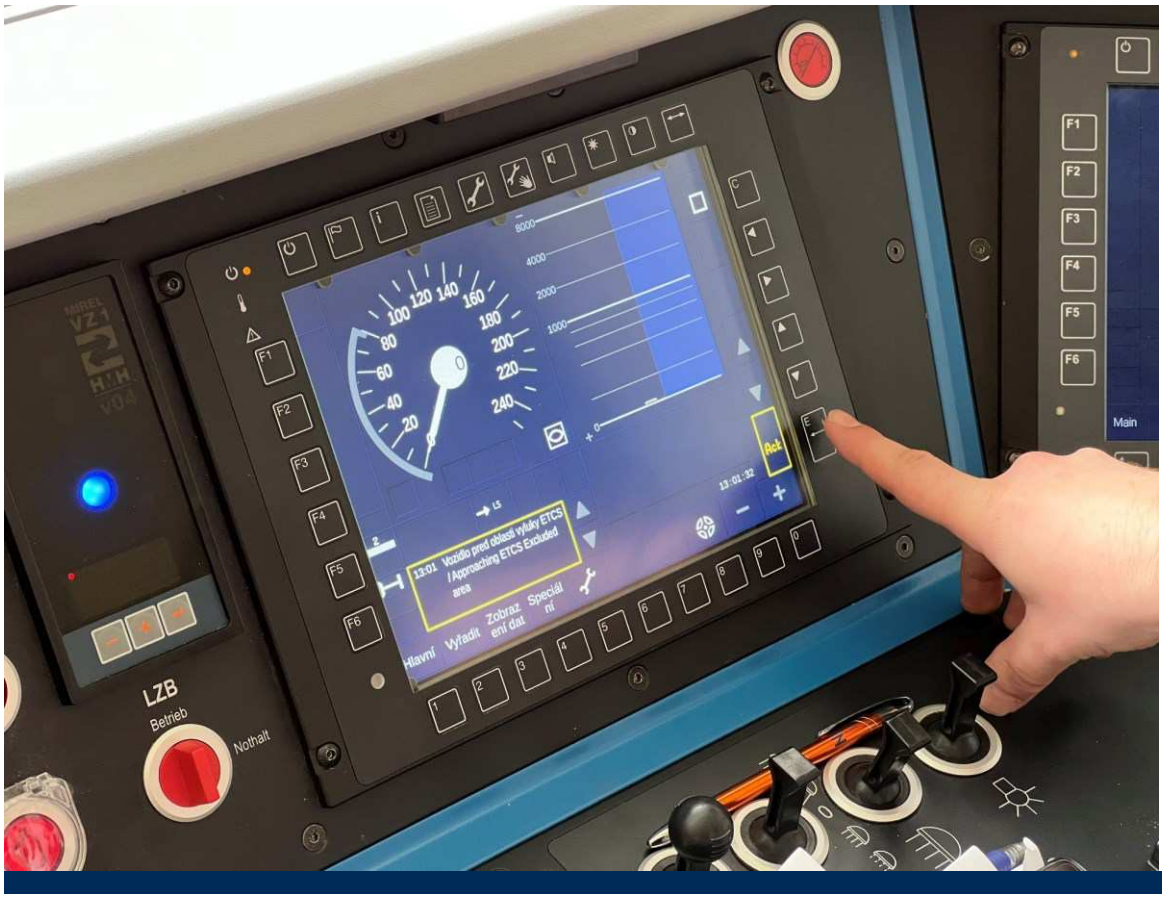

Pardubice ETCS Driving Simulator

Annex 2 – List of Questions

Preliminary Market Consultation

Lukáš Matta
ETCS and Modern Technologies Unit
Directorate General, Signalling and Telecommunications Department

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Questions for the preliminary market consultation

1.1 Implementation part

What conditions in the tender documents do you perceive as fundamentally limiting in terms of your company's possible involvement in the contract for the design and installation of the ETCS simulator?

Do you see any other risks in the case of implementing the ETCS simulator technology supplied by you? If yes, please specify them.

According to the documentation provided, what do you consider to be adequate costs for the implementation of the contract?

Do you propose to conclude a subsequent Service Level Agreement (SLA) of the contract for the maintenance and possible upgrade of the ETCS simulator, or should the service be part of the works contract?

What costs do you consider adequate for the maintenance and future development of the work and over what timeframe should such support be provided? Please indicate the estimated cost per year.

Do you find the Contracting Authority's requirement for the Contractor to provide comprehensive design and project documentation for the implementation of the ETCS simulator in Design and Build mode to be reasonable? Do you have specific experience with this?

Do you consider the evaluation criterion of economic advantage based on the lowest tender price to be an appropriate means for the Contracting Authority to ensure the selection of the Contractor? What other evaluation criteria do you recommend?

In your opinion, what should be the technical qualification requirements in relation to the reference contracts to match the complexity and scope of the planned contract?

To what extent do you foresee the involvement of subcontractors? Please specify which part of the performance you would subcontract.

How long do you consider the deadline for submission of tenders to be sufficient?

Would you be interested in having the forthcoming public contract include, in addition to the actual Design and Build, the provision of operational capability (in Design and Build and Operate mode) of the equipment you supply for a period of 10 years?

What would be the approximate percentage of the cost of providing this operability (Operate mode) compared to the contract implementation in Design and Build mode only?

Do you consider it realistic to complete the implementation of the ETCS simulator by 31 December 2023? Can the implementation be completed earlier? If so, how?

1.2 Technical part

What modifications to the technical and functional specifications for the ETCS simulator do you recommend compared to the current version and for what reason? Can you describe their advantages and disadvantages?

Would you suggest adding any functions and features to the device beyond those required by the Contracting Authority? If so, which ones and why?

Do you perceive any technical and functional requirements of the Contracting Authority as difficult or as a barrier to implementation? If so, which ones and why?

What display technology are you considering for the ETCS simulator? Display, projection, or other? Please specify which one you think is most appropriate and why.

How do you propose to modify or improve the proposed layout of the vehicle control panel supplied by the Contracting Authority, taking into account the planned selection of two different vehicle types and the use of two different automatic train protections (MIREL VZ1 v4 and KBS06)?

Do you offer your own solution for a generic, approximated control panel that would meet our requirements and possibly be ready for simulation of an electric traction vehicle? If so, can you provide reference projects?

Do you recommend the proposed partial cabin solution to be modified or possibly supplemented with additional technologies (e.g. simulating cabin lighting based on time of day)? If so, what would be the solution?

What technology do you propose for displaying selected indicators (in particular the MIREL VZ1 v4/KBS06 automatic train protections and air gauges) in the cab? Are you able to supply real hardware elements or just a simulation on the display?

Is the simulator technology you are designing capable of creating and editing simulation scenarios and maps, or do you require descriptions of the network and desired scenarios before implementation and will they not be able to be changed?

What technology or process do you suggest for creating test and simulation scenarios for the instructor? Is it required to allow the instructor to intervene in the simulation while it is running – do you offer this option? If not, please tell us why.

Is the simulator technology you are proposing capable of handling predefined onboard unit and trackside faults as required in the technical and functional requirements chapter? If not, please specify why.

What is the expected lifetime of your proposed technology?

What timeframe do you expect for testing the installed equipment in Pardubice?

What specific activities would need to be provided by the Contracting Authority to ensure customer tests?

What is the timeframe for the customer tests required to demonstrate that the Contracting Authority's requirements have been met and the overall functionality of the work?

What is your ability to guarantee the availability and reliability (in percentage) of the entire system delivered?

Has your proposed ETCS simulator been implemented by another railway infrastructure manager or carrier? Can you provide reference projects?

What do you see as possible difficulties and obstacles in implementing national rules and elements in the simulator? Will be regulations, instructions and specifications of the state organisation of Správa železnic, as the Contracting Authority, sufficient for your implementation?

How do you foresee the solution of links to real radio stations?

Is the simulator technology you are designing capable of interfacing with other simulators or other technologies through interfaces? If yes, please specify how and with what.

1.3 Operational availability part

Is your company interested in providing maintenance, support and upgrades for the proposed ETCS throughout the lifetime of the system?

What do you consider to be an appropriate and reasonable length of time to support your proposed ETCS simulator technology? What is standard period of time for which the full support of the delivered technology is provided by the Contractor?

In your opinion, is it standard to request an upgrade of the delivered system in terms of behaviour, models, world map or hardware? How do you propose to address the issue of future simulator upgrades based on the requirements of the Contacting Authority? If a future upgrade is not possible, why?

In your opinion, is it standard to require an upgrade of the delivered system in terms of the behaviour of the trackside and onboard unit (modification of national values, transition to newer versions of the ETCS specifications according to the CCS TSI and related Subsets?) How do you propose to address the issue of future simulator upgrades based on the requirements of the Contacting Authority? If a future upgrade is not possible, why?

What are the practices and commonly accepted processes for dealing with the modifications and upgrades described in the previous questions?

How do you propose to define the contractual setting of the issues of the above mentioned changes in the simulator operation (in particular, behaviour according to national values, new installations of trackside, change of specifications) that result in the necessity of modifications of the work, during the development/installation, warranty period and afterwards?

For how long can you guarantee delivery of spare parts? In your opinion, what is the standard guarantee period for the delivery of spare parts?

How do you propose to deal with the contractual treatment of the issue of availability (required functionality) of a facility or part thereof? (definition of requirements, penalties)

Správa železnic, státní organizace
Dlážděná 1003/7
110 00 Prague 1
Czech Republic

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