TN 268109

Market Consultation VVZE, Participants Proposals

Received general proposals

- A concept with a small formfactor for ETCS OBU-equipment connected to both the peripherals on the train vehicles as well as to the DMI tablet in the cabin. The latter connection requires the installation of cabling in the train vehicles or the inclusion of a separate dedicated cable/connection from the box to the cabin where the DMI is placed.
- The term "tablet" is probably not the right word. Better would be modular and compact.
- A version of a an ETCS OBU-equipment that is functionally limited to customer requirement specifications. For example, ETCS without running transitions to ATB to achieve cost reduction. Proposal is an "extended" tablet solution which comprises a tablet as well as a separate compact portable unit.
- Compact and portable and can easily be handled and installed by one person. Power consumption less then 100W and the portable part with a weight which fits in the range for a single person to carry.
- A solution that has a detachable DMI, which needs to be plugged in a standardized interface and can be installed in the cabin (or through a separate cable).
- Alternatively, STM-ATB/Vv functionality is proposed in order to facilitate transitions without stopping the train.
- Certain ETCS components like the balise reader and equipment for odometric measurements must be pre-fixed on the vehicles.
- ETCS EVC's/OBU's are proposed to either be delivered as a new to be developed component, or to be derived from an existing product and developed as a special version.
- Low effort for existing modular solution, mid effort for extra battery solution, high effort for developing flat tablet with risk for homologation. If required, probably possible: DMI with connectors for easy removal, ETCS cabinet with easy removal.
- Doubt of the feasibility of a portable solution as described in the consultation documents including the CDS:
  - The solution would not be standard as the range of vehicle types to be equipped with the ETCS trolley may be completely different. An ad hoc solution for each vehicle type should be developed, which would have a great impact on costs (specially with integration constraints of old fleets).
  - Taking into account the current legal, normative, business framework, etc. If this could be modified in the future, its feasibility could be studied according to the specific modified conditions.
  - A detailed business case shall be necessary to analyze the feasibility of a portable solution as described in the CDS, e.g. concerning the use of existing axle sensors and/or brake system components.
  - Additional engineering development may be required, especially with respect to proprietary hardware (interfaces) on the vehicles.
  - The portability concept requires modifications concerning fixed train-parameters as a product modification. This requires a solution to guarantee train data integrity for different configurations.

- Application as a (partly) compact/tablet solution is considered a challenge with regards to certification as there are no proofs of concept known that have been certified and accepted by NSA's and / or ERA and it seems that neither any derogations have been issued.
- Puts limits on the options for a safe hardware architecture.
- Possibly a lack of 'ports' complicating the interface to the train hardware.
- Required space can be an issue in terms of flexible/standardized application in different vehicle types. This can however be solved by versions/variants serving different dimensions and/or connections.
- Housing for a DMI for special conditions can be foreseen. A simple Android tablet does not fulfil the safety requirements.
- Installation issues due to lack of space in the underframe. Balise antennas would have to be equipped anyway in each of the vehicles which would not reduce equipment related costs.
- Tablet instead of DMI poses the risk that there is no homologation possible.

Aims for delivery

- Complete systems including the required SW platform.
- Complete systems including certifications.
- HW and SW maintenance of the delivered product (product support).

Engineering, installation and regular maintenance offers

- Engineering by the supplier or in combination with seconded OEM's.
- Engineering by the ECM of all installation of any required connectors and cabling to peripherals between product and the vehicles based on provided installation instructions.
- Engineering, installation and regular maintenance not provided (application only).

Further input that is deemed necessary

- CDS Needs further discussion of the concept, requirements (integrity levels, TSI normative compliance, …) and scopes.
- Number of requested devices or uses (per year) during the duration of the contract.
- Number and type of the train vehicles to be supported.
- Proposed business models:
  - pay per use,
  - pay per device,
  - project time & materials,
  - a combination of the above,
  - scope and target prices.
- Allowed time for the initial development and successful certification.
- Maintenance (SLA) requirements including for example:
  - response times (24/7 etc.),
  - duration of the maintenance agreement.
- Required (safety) integrity levels.
- TSI normative compliance.
- More precise required specifications (for ex. "extremely hot" would need to be defined).
- It would not be a standard solution, so relevant project specific developments would be required:
  - Provision of detailed vehicle information is required in an early phase.

Proposed development strategies

Project split into two phases with one or more contenders:

- Fase one: build, integrate and test to develop a Proof-of-Concept (PoC) preferably in at least two vehicles including preparations for certification and based on the conclusions of the PoC draw up the finalized technical specifications and prepare engineering, financial and maintenance projections.
- Fase two: full engineering, validation and certification of the chosen solution.

Offered expertise

- Experience with industrial human-machine interfaces in rugged and mobile environments.
- Experience with development and delivery of SIL 3-4 products for railway vehicle applications.
- Experience with engineering, installation, acceptance and certification of vehicle equipment.

Advices
- Face to face further discussion is needed.
- Organize a competition to get the best out of innovative parties.
- Start a pilot project for locomotives soon.
- Vehicles are needed for pilot project.
- Create and enforce a standardized interface to the existing HW peripherals and optionally install a cable for the connection of the DMI.
- Every train vehicle owner may have its own specific requirements and demands. It is mandatory for a cost-effective solution that the interfaces to the existing infrastructure in the train vehicle are standardized across the fleet.
- When the ETCS trolley is removed from a vehicle to be stored or to be installed in another one, re-homologation/re-authorization management needs to be taken into account.
- Consider:
    - TSI compliance and national normative fulfillment,
    - NoBo/ISA/DeBo certification,
    - NSA authorization.