

3.1.1. European Rail Traffic Management Systems (ERTMS)

General objectives:

The general objective is to deploy ERTMS on the trans-European transport core network, including track-side and on-board components.

All actions supported by CEF shall contribute to the objectives of bridging missing links, removing bottlenecks, enhancing rail interoperability, and, in particular, improving cross-border sections. They shall be compliant with Commission Regulation (EU) 2016/919 or subsequent versions, and with Directive 2008/57/EC and Directive 2004/49/EC, or Directive (EU) 2016/797 and Directive (EU) 2016/798.

ETCS Baseline 3 (B3) means the set of specifications #2 or #3 in table A2.2 or A2.3 of the Annex A of the Commission Regulation (EU) 2016/919.

On-board and track-side ERTMS deployment may not be submitted together in one application.

Specific objectives:

Under the call the following eligibility conditions shall apply:

- Trackside projects, should be B3 compliant, and located on the Core Network, with priority on cross-border sections in the Core Network Corridors (CNC).

On-board projects:

- ERTMS retrofitting and/or upgrading (works) of B3-complaint on-board components with priority for international traffic.

3.1.1.1. ERTMS track-side deployment

a) Description

Proposals addressing ERTMS track-side deployment compliant with B3, or upgrade of lines to B3 compliant version

Deployment means:

- equipment with ERTMS of a railway line section (already in operation or in construction) and not equipped with this system before.

Upgrade means:

- equipment with B3 of a line section already in operation and equipped with a version of ERTMS/ETCS not compatible with the sets of specifications laid down in the Commission Regulation (EU) 2016/919
- equipment with B3 of a line section already in operation and equipped with B2.

b) Essential conditions

Are excluded from the scope of this specific objective:

- Studies;
- Applications covering solely GSM-R component of ERTMS;
- Works related to Class B system(s) and/or Specific Transmission Module (STM).

c) Information to be included in a proposal:

For proposals related to a deployment of ERTMS (works):

- Identification of a specific line and its main characteristics, incl. location, length, single/double track, type of traffic i.e. freight, passenger, mixed, etc.;
- Characteristics and description of the ERTMS track-side subsystem to be installed including details of the CCS TSI, baseline, level, interoperability constituents and optional functions as for example the use of Euroloop;
- A description of tests strategy in line with applicable technical specification for interoperability, to be performed with on-board units provided by at least one different supplier to the one in charge of the equipment of the line. The on-board units used for tests shall be compliant with applicable technical specification for interoperability;
- Expected date when the ETCS track-side subsystem equipped section will be authorised to be placed in service;
- Evidence of the activities completed/ planned in order to obtain the authorisation to place the line in service;
- Identification and justification for infrastructure eligible works for track-side equipment (falling under the definition in Article 2(5) of the CEF Regulation) which are necessary for the implementation of ETCS level 2 (e. g. upgrade or renewal of interlockings);
- Description of the provisions of the envisaged ERTMS technical solution in line with article 19 of Directive (EU) 2016/797:
 - providing access to details of the technical solutions,
- In the case of applications covering a GSM-R component, information regarding interferences, e.g. identification of the problem, mitigation measure(s) undertaken/planned, etc.;
- Information on contractual arrangements with a supplier(s), e.g. offer, contract, provision(s) for future software upgrade, error(s) corrections, maintenance, etc.

For proposals related to an **upgrade of ERTMS**:

- Identification of a specific line and its main characteristics, incl. location, length, single/double track, type of traffic i.e. freight, passenger, mixed, etc.;
- Comprehensive description of the ETCS track-side subsystem already installed, including details of the CCS TSI, baseline, level and optional functions as for example the use of Euroloop;
- A copy of the authorization placing the ETCS-equipped line in service issued by the competent National Safety Authority;
- Existing certificates and declarations of the subsystem and certificates and declarations of conformity of the interoperable constituents shall be provided. A detailed description of all deviations, its restrictions and its conditions of use following the template developed by the European Union Agency for Railways¹ ;

¹ <http://www.era.europa.eu/Core-Activities/ERTMS/Pages/Certification-issues.aspx>

- Comprehensive description of the envisaged work and necessary changes to reach interoperability with B3-compliant on-board units;
- A description of the test strategy, in line with the applicable technical specification for interoperability, to be performed with on-board units provided by at least one different supplier to the one in charge of the equipment of the line. The on-board units used for tests shall be compliant with the technical specification for interoperability;
- Identification and justification for infrastructure eligible works for track-side equipment (falling under the definition in Article 2(5) of the CEF Regulation) which are necessary for the upgrade to ETCS level 2 (e. g. upgrade or renewal of interlockings);
- Expected date when the line will allow ETCS B3 equipped vehicles to run for commercial services;
- Evidence of the activities completed/ planned in order to obtain the authorisation to place the line in service following its upgrade, including information/evidence on involvement of national safety authorities and conformity assessment bodies;
- Description of the provisions of the envisaged ERTMS technical solution in line with article 19 of Directive (EU) 2016/797:
 - providing access to details of the technical solutions,
 - forecast of technical meetings and possible audits from the European Union Agency for Railways
- In the case of applications covering a GSM-R component, if applicable, information regarding interferences, e.g. identification of the problem, mitigation measure(s) undertaken/planned, etc.;
- Information on contractual arrangements with a supplier(s), e.g. provision(s) for software upgrade, error(s) corrections, maintenance, etc.
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d) Funding conditions

In addition to the general funding principles established in this Work Programme, the following shall apply.

For deployment:

Eligible costs for the **deployment of the lines** shall be limited to a ceiling of EUR 260 000 per kilometre of double-track line equipped with ERTMS.

Infrastructure works for trackside equipment (falling under the definition in Article 2(5) of the CEF Regulation) which are necessary for the implementation of ETCS level 2 (e.g. upgrade or renewal of interlockings, equipment of Radio Block Centres directly related with ERTMS functioning, etc.) may also be funded and are not covered by the ceiling. In such cases the applicant(s) shall provide thorough technical and financial information substantiating the costs and respective CEF requested support. The applicants shall present the infrastructure works in (a) separate activity(ies) to facilitate their technical and financial distinction from ERTMS upgrade and subsequent assessment.

For upgrade:

Eligible costs are not subject to a ceiling and will be evaluated individually. In such cases an

applicant(s) is invited to provide thorough financial information substantiating total costs and respective CEF requested support. The tasks not covered by the ceiling shall be presented in a separate activity(ies) to facilitate their technical and financial differentiation and subsequent assessment.

e) Deliverables (which shall be requested in the grant agreements for projects selected for Union funding):

Assessment of the final outcome of the CEF supported actions shall be based on the completeness and the demonstration of compliance with the technical specification for interoperability of the deliverables listed below.

Deliverables of a proposal selected and implemented within this specific objective shall cover:

- Engineering rules and operational test scenarios in line with the definition set out in chapter 6 of Commission Regulation (EU) 2016/919;
- List of interoperability risks and respective evidence that ensures that the risks are mitigated. This list shall be updated during the implementation of the action based on the milestones of the project and will be used for monitoring possible deviations from Commission Regulation (EU) 2016/919;
- Information regarding tests results (test report including operational scenarios) in line with the latest applicable technical specification for interoperability, performed with on-board units provided by at least one different supplier to the one in charge of the equipment of the line. The on-board units used for tests shall be compliant with the applicable technical specification for interoperability;
- EC declaration of conformity for each interoperability constituent relevant for ERTMS issued by the supplier or the supplier's authorised representative established within the Union, including the certificate of conformity from a notified conformity assessment body; the EC declaration of conformity shall be fully in line with Directive 2008/57/EC;
- EC declaration of verification of the subsystem issued by the applicant for each Control Command Signalling subsystem installed including the EC certificate of verification of subsystem from a Notified Body and the safety assessment report following section 3.2.1 of Commission Regulation (EU) 2016/919; the EC declaration of verification shall be fully in line with Directive 2008/57/EC. The technical compatibility details of the certificates shall be provided using the specific template developed by the European Union Agency for Railways²;
- Copy of an application for an authorisation for placing the Control Command Signalling trackside subsystem in service or the authorisation in case available by the time the final payment claim is due.

All deliverables shall be sent, ideally according to the milestones' dates included in the grant agreement, and shall be assessed in close cooperation with the European Union Agency for Railways.

² <http://www.era.europa.eu/Core-Activities/ERTMS/Pages/Certification-issues.aspx>

3.1.1.2. ERTMS on-board deployment

a) Description

Proposals addressing the retrofitting or upgrade (works) with B3 compliant of vehicles already operating on the Union railway network ERTMS may be funded under this specific objective with priority for international traffic.

Retrofitting means

- the installation of the ERTMS B3-compliant equipment (hardware, software, GSM-R in the case of Level 2) on an existing vehicle(s) already in operation and not equipped with this system before.

Upgrade means

- deployment of ERTMS B3 equipment on existing vehicle already in operation (authorised by NSA by the time the application is submitted) and equipped with pre-B2 compliant ERTMS or with B2.

b) Essential conditions

Only works proposals may be funded.

Works related to Class B system(s) are excluded from the scope of the specific objective.

Works related to a combination of ETCS and a specific transmission module (STM) may also be funded. However, the costs related to the STM equipment itself may not be funded.

Vehicles must be authorised for operation on the Union railway network (in at least one Member State) prior to submission of the application. For upgrade proposals, the authorisation documentation must identify the ERTMS version already installed, together with information on options, level, software version, hardware, etc.

c) Information to be included in a proposal

To facilitate the evaluation, applicants are requested to provide information related to:

- i. for proposal related to the retrofitting of vehicles (works)
 - Identification of the vehicle(s) type(s), including its basic characteristics, supplier, serial numbers of vehicles to be retrofitted, etc.;
 - Comprehensive description of the current on-board subsystem, including details of the TSI CCS, baseline, optional functions and a copy of the authorisation to place them into service;
 - Description of the authorisation procedure, including evidence of the activities completed/ planned in order to obtain the authorisation;
 - Identification of a line(s) on which vehicles operate today and/or on which they might operate in the near future;
 - A description of tests that will be carried out following technical specification for interoperability to ensure that ETCS B3 vehicles can run on the ETCS equipped line(s), once retrofitted. The description shall include the testing strategy for proving conformity of the on-board equipment (e.g. accredited laboratory, on-site testing, etc.), scenarios requested (e.g. suppliers scenarios, railway scenarios) and a role of a Notified Body(ies);
 - In the case of applications covering a GSM-R component, information

regarding interferences, e.g. identification of the problem, mitigation measure(s) undertaken/planned, etc.;

- Information on contractual arrangements with a supplier(s), e.g. offer, contract, provision(s) for future software upgrade, error(s) corrections, maintenance, etc.;
- In the case of applications including prototype(s), a detailed costs structure and description of the tasks foreseen for the elaboration of a prototype(s) (development, including interoperability constituents, certification or upgrade of certification, authorisation, etc.);

ii. for proposal related to the upgrade of ERTMS (works)

- Identification of the vehicle(s) type(s), including its basic characteristics, supplier, serial numbers of vehicles to be upgraded, etc.;
- Identification of a line(s) on which they operate today and/or on which they might operate in the near future;
- Definition of the ERTMS on-board subsystem already in service, including details of the TSI CCS, baseline, optional functions and a copy of the authorisation to place in service the ERTMS on-board issued by the competent NSA;
- Current certificates of conformity of the constituents and certificates of verification of the subsystem. A detailed description of all incompatibilities between the version(s) of ETCS currently installed on the vehicle(s) concerned by the proposal and ETCS B3-equipped lines. The detailed information concerning the deviations and/or restrictions derived from existing certificates and conformity declarations shall be provided;
- A description of tests that will be carried out following technical specification for interoperability to ensure that ETCS B3 vehicles can run on the ETCS equipped line(s), once upgraded. The description shall include the testing strategy for proving conformity of the on-board equipment (e.g. accredited laboratory, on-site testing, etc.), scenarios requested (e.g. suppliers scenarios, railway scenarios) and a role of a Notified Body(ies);
- Evidence of the activities completed/ planned in order to obtain the authorisation to place the vehicle(s) in service following the upgrade;
- In the case of applications covering a GSM-R component, if applicable, information regarding interferences, e.g. identification of a problem, mitigation measure(s) undertaken/planned, etc.;
- Information on contractual arrangements with a supplier(s), e.g. provision(s) for future software upgrade, error(s) corrections, maintenance, etc.
- In the case of prototype upgrade applications information on the results sharing and dissemination with the railway sector and the European Union Agency for Railways.
- In the case of applications including prototype(s), a detailed costs structure and description of the tasks foreseen for the elaboration of a prototype(s) (development, including interoperability constituents, certification or upgrade of certification, authorisation, etc.);

d) Funding conditions

For prototypes:

Eligible costs are not subject to a ceiling and will be evaluated individually. In the cases of prototypes an applicant(s) is invited to provide thorough financial information justifying total costs and respective EU contribution. These tasks shall be presented in a separate activity(ies) to facilitate a better assessment of their technical and financial details.

For retrofit:

Eligible costs shall be limited to a ceiling of EUR 250 000 per ERTMS on-board subsystem to be deployed (hardware and software including GSM-R) on an already existing vehicle. In case a vehicle is already equipped with ETCS-compliant hardware, the ceiling may be decreased in the call for proposals. The applicant(s) shall provide thorough and detailed financial information substantiating total costs and respective CEF requested support.

For upgrade:

Eligible costs are not subject to a ceiling and will be evaluated individually. In such cases an applicant(s) is invited to provide thorough financial information substantiating total costs and respective CEF requested support. The tasks not covered by the ceiling shall be presented in a separate activity(ies) to facilitate their technical and financial differentiation and subsequent assessment.

e) Deliverables (which shall be requested in the grant agreements for projects selected for Union funding):

Deliverables shall demonstrate completeness and compliance with applicable technical specification for interoperability. Assessment of the final outcome of the CEF supported actions shall be based on the completeness and TSI-compliance of the deliverables listed below. Deliverables of a project selected and implemented within this specific objective shall cover:

- Information regarding tests results (test report) in line with the applicable technical specification for interoperability;
- Declaration signed by a laboratory accredited according to ISO 17025 that it has performed the tests in accordance with the applicable technical specification for interoperability;
- EC declaration of conformity for each interoperability constituent relevant for ERTMS issued by the supplier or the supplier's authorised representative established within the Union, including the certificate of conformity from a Notified Body; the EC declaration of conformity shall be fully in line with Directive 2008/57/EC;
- EC declaration of verification of the subsystem issued by the applicant for each Control Command Signalling subsystem installed on a vehicle and including the EC certificate of verification of subsystem from a Notified Body and the safety assessment report following section 3.2.1 of Commission Regulation (EU) 2016/919; the EC declaration of verification shall be fully in line with Directive 2008/57/EC. The technical compatibility details of the certificates should be provided using the template developed by the European Union Agency for

Railways³. A copy of a complete application for authorisation of the vehicle(s) or the authorisation itself, in the event it is available by the time the final payment claim is due.

- Copy of an application for an authorisation for placing the vehicle prototype on the market or the authorisation in case available by the time the final payment claim is due.

These deliverables shall be ideally sent following the milestones dates and shall be assessed in cooperation with European Union Agency for Railways.

³ <http://www.era.europa.eu/Core-Activities/ERTMS/Pages/Certification-issues.aspx>