Public Report GPvEM clarification sessions *Rolling Stock*

GPvEM Clarification Sessions September 2019

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Released	ERTMS Program - MHB

Version	1.0
Date	22 January 2020
Status	Final

AAKVJ2WZ7HMH-2123672669-6012

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Reference	AAKVJ2WZ7HMH-2123672669-6012
Subject	Public Report GPvEM clarification sessions
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Date	Version	Wijziging
22-01-2020	V1.0	Final version

Annex

1 Rules of the clarification meetings
2 Presentation used in the meetings
3 Overview of questions and answers

Table of contents

1. Introduction of the GPvEM clarification sessions (rolling stock)

Following the previous publication of the "Generiek Programma van Eisen Materieel v1.0" (referred to as "GPvEM"), the ERTMS Programme Directorate (PD-ERTMS) has noticed that suppliers of ERTMS onboard equipment would like to share their view regarding the GPvEM.

The PD-ERTMS has facilitated parties to register for clarification meetings. The applicable conditions pertaining to these meetings can be found below in Annex 1 to this report. Only suppliers of ERTMS onboard equipment were invited to register.

Several suppliers registered for a clarification meeting. For each supplier a two-hour meeting in September/October 2019 took place between delegations of the supplier and the PD-ERTMS at the Programme premises. The applied structure of these meetings was:

- The supplier sent a list of questions in advance of the meeting;
- The PD-ERTMS prepared answers to the supplier questions prior to the meeting;
- The meeting started with a presentation of the PD-ERTMS explaining the rules and the organisational context. The presentation is attached as Annex 2 to this report.
- The PD-ERTMS presented the answers to the supplier questions;
- The questions and answers were discussed, with the supplier in the lead;
- The PD-ERTMS made minutes of meeting which were shared with the supplier for approval.

1.1 Intention of this report

The intention of this report is twofold. Firstly, in this report, the PD-ERTMS is sharing the results of the clarification sessions with the market. These results are presented in a broad and anonymous manner to safeguard the confidentiality of information received from the market players. Secondly, the information that was shared by the PD-ERTMS in the discussions with the market will be passed on in this report to all of the parties so as to guarantee a level playing field.

1.2 Conditions of the clarification meetings

To ensure confidentiality and a level playing field, conditions have been set pertaining to the clarification meetings. These conditions have been (previously) published on internet with the invitation for registry. By participating in the clarification meetings, parties have agreed to the conditions. To ensure the confidentiality of commercially sensitive information, parties were granted the opportunity to indicate whether information was commercially sensitive, and were also enabled verify their individual minutes of the meeting.

The conditions are included in Annex 1 of this report.

2. Summary of questions and answers

In the clarification sessions, six suppliers have raised 155 questions on GPvEM requirements in total. More than one supplier question was raised about quite some GPvEM requirements as given in the table below. For example, on 16 GPvEM requirements, two questions were raised.

Number of questions raised per GPvEM requirement	Number of GPvEM requirements
1	74
2	16
3	12
4	2
5	1

All questions and answers are given in Annex 3, except for the questions which were indicated as confidential.

This chapter presents a summary of questions raised by Suppliers and answers given by the ERTMS-PD. The summary concerns requirements for which similar questions were raised by more than one supplier. Also, general questions and answers are addressed, which do not concern one specific requirement.

2.1 General questions

1. Contents of the rolling stock type application table ("KT-") given for each requirement are not appropriate for ERTMS upgrades.

   PD-ERTMS states that the contents of the application tables are not always correct and that the application tables should be ignored.

2. How to consider requirements which need activity in the rolling stock domain?

   The answer is that where requirements cover rolling stock aspects, these shall be taken into account; it is up to the implementation organisations (e.g. Railway Undertakings) to subcontract the full requirement scope to the Suppliers or to allocate rolling stock and ERTMS activities and perform the integration between them. Deviations from the GPvEM requirements have to be reported by the implementation organisation to the PD-ERTMS. These deviations will be handled in the Issue- and Change management process.

3. Documents and/or supplements referred to by requirements, whether these can be delivered.

   The answer is that the PD-ERTMS will either make available these documents/ supplements or indicate the related requirement as not applicable.

2.2 ERTMS version updates

4. Requirement ETCS-1481 and related requirements ETCS-1485 and ETCS-7646: ten questions were raised which can be summarized as follows. How is it expected to handle error corrections (1) in general and (2) with regards to vehicle implementation?

   This had been answered as:
   (1) it is possible to implement only those CR's which affect operation at the infrastructure the vehicles intend to be compatible with
   (2) the error corrections should be implemented in the rolling stock and it is the Railway Undertaking which decides whether vehicle implementation is subcontracted to the Supplier.

   Furthermore it was remarked that it is impossible to predict which ERA technical opinions will be published in the coming seven years and therefore the requirement cannot be contracted. Related, it was advised that a number of updates should be defined.

   It was replied by the ERTMS-PD that with the ERTMS MoU 2016 and resulting UNISIG proposal, it is advised to contract such software upgrade clause between Railway Undertaking and Supplier. This specifically refers to a period of time, not to a number of updates.

5. About requirement ETCS-1483 and ETCS-2021, questions were raised how ATO and FRMCS can be applied since the specifications are unknown yet.

   The answer is that ATO and FRMCS are not required by the PD-ERTMS. Instead, it is required to demonstrate that on-board ETCS platform is able to facilitate the ATO and FRMCS functionalities.

2.3 STM-ATB

6. Regarding requirement ETCS-1689, the status and planning of STM ATB-EG and STM ATB-NG as provided by PD-ERTMS was asked.

   The answer is that the information will be published at the PD-ERTMS website. Since the meetings took place, information was published at Nov 17th, Dec 13th and Jan 6th, see https://www.ertms-nl.nl/nieuwsberichten+en+publicaties/default.aspx. The completion of information on the STM ATB-EG is expected to be published early 2020.

2.4 Redundant ETCS DMI

7. About requirement ETCS-3524, it was remarked that interfaces to existing screens (if available) will increase integration complexity and additional costs considerably. Advised is that a requirement for reliability is more appropriate than a requirement for a second DMI solution, to enable alternative solutions. Another remark is that space limitations for installation of additional DMI screens into cockpit should be considered.

   The answer is that Railway Undertaking and Supplier are to agree upon the choice to apply one or more ETCS DMI's in order to comply to the reliability (RAM) values which are required.

2.5 Isolation of STM-ATB

8. Two kinds of questions were raised about requirement ETCS-6643:

   a. If ATB fails, how would it be possible to operate at ATB infrastructure without restrictions and what is the aim of it?

      The answer is that operation in level NTC with failed STM is supported by ETCS baseline 3, with reference to subset 35 v3.1.0, section 4.2. Operation on the ATB infrastructure remains possible, with onboard ETCS functioning in level NTC and the actual speed presented at ETCS DMI. This is to ensure that the train can continue its journey to the next station.

   b. What is the status of ETCS level 0 in the Netherlands?

      The given answer is that level 0 generally is and will be not applied in the Netherlands

2.6 GSM-R performance and GSM-R parameters

9. Quite some noteworthy questions were raised related to GSM-R requirements. Since most of these question and answers concern specific functions, these cannot simply be summarized; therefore, we refer to Annex 3.

10. About requirements ETCS-5477, ETCS-6663, ETCS-6665, ETCSA-8444 and ETCSA-8446, addressing conditions on (lab) type tests, amongst others it was asked and remarked that:

    - the diversity of the trackside configurations impedes optimum GSM-R parameter settings;
    - in which location the 10.000 hours of tests can take place since the tracks equipped with ERTMS in the Netherlands are limited and none equipped with GPRS;
    - what test lab will ProRail/ PD-ERTMS provide that replicates the field conditions in order to be a "representative environment"?
    - how does ProRail/ PD-ERTMS envisage achieving 10.000 hours of testing within a reasonable time period?
    - what time period does ProRail/ PD-ERTMS consider to be a reasonable for the 10.000 hours of testing?

    The given answer is that the provisions for testing in general will partly be provided by Supplier and, where necessary provided by the ERTMS-PD. The process of determining which additional test provisions are necessary has recently started by the ERTMS-PD. The Supplier test lab could be made representative and/or the Supplier could participate in the EoG-pilot (EoG = ETCS over GPRS).

2.7 Onboard mode transition timing

11. About requirements ETCS-2033 and ETCS-2011 dealing with the time to change from NP- to SB mode and from SB to an active mode, it was remarked that the required times will not be met; that brake test timing is rolling stock dependent; that RadioBlockCenter and GSM-R network components are outside the suppliers scope; that minimizing timing of the

safety purposed self-test is not recommended and it was asked whether the STM initialization is included.

The questions were discussed and answered, including that the RBC / network component and STM initialization are outside the scope of both requirements.

Annex 1: Rules of the clarification meetings

The ERTMS Programme has set out the following conditions pertaining the clarification meetings:

1. The clarification meetings are explicitly not part of any procurement procedure that may or may not follow.
2. Expressly no rights may be derived from the information that is provided for the purposes of the clarification meetings.
3. As a result of participating in the clarification meeting, participants will not be given any preferential status with respect to any future procurement procedure, nor will participation lead to exclusion from such a procedure.
4. The clarification meeting is voluntary and no rights can be derived from the (insights resulting from) the clarification meeting.
5. The target group for the clarification meetings is initially limited to suppliers of onboard ERTMS equipment.
6. The following parties are, amongst others, excluded from participation in the clarification meetings: public entities, interest groups, private individuals, the press and knowledge institutions.
7. Interested parties may request an individual clarification meeting with the ERTMS programme directorate. Depending on the nature of the request, the ERTMS programme directorate may decide to hold such a meeting. Parties are aware, and agree, that minutes of the meeting will be made public, unless commercially sensitive information (to be indicated by the participating party and decided upon by the ERTMS programme directorate) is shared.
8. The ERTMS programme directorate may draft an overall report of the main points of all of the individual clarification meetings and queries. This report will be made public (without any commercially sensitive details).
9. The primary language of the clarification meetings will be Dutch or English.
10. All communication regarding the clarification meetings, including requests and queries, must take place via the following email address: loket.ertms@prorail.nl
11. By participating in the clarification meetings, parties unconditionally agree to the conditions as stated herein.
12. Parties are aware that participating in a clarification meeting is voluntary; no compensation for participation shall be made nor shall compensation be made for expenses arising from participation.

Annex 2: Presentation used in the meetings

ERTMS

GPvEM clarification

Agenda GPvEM clarification meeting

Agenda items

- Introduction – who is who 10 min
- Conditions clarification meetings 5 min
- Objective & Organisation ERTMS Programme 15 min
- Q&A 90 min
- Closure

2

Conditions clarification meetings

- Conditions are published on the website www.ertms-nl.nl (with the invitation for registry).
- By registering and participating, parties have unconditionally agreed to these conditions.
- The conditions aim to ensure a level playing field for all parties concerned, as well as to protect the interests of participating parties.
- Minutes of meeting and overall report will be made public, please remember to clearly indicate if commercially sensitive information is concerned.

3

Objective ERTMS programme

- Upgrade the Dutch Rail Transport System with ERTMS, in compliance with the requirements specified by the Ministry of Infrastructure and Water Management.
- Requirements are specified in the System/Subsystem Specification (SSS) of the Rail Transport System

  Also known as the "PvE"
- Requirements relate to performance of the Rail Transport System (capacity, speed, reliability, maintainability, interoperability, safety, (cyber)security, quality of use, etc).

4

Why GPvEM

Vehicles which are in service in the Netherlands are an integral part of the Rail Transport System, influencing the performance. The GPvEM requirements are needed to realize the ERTMS programme objectives

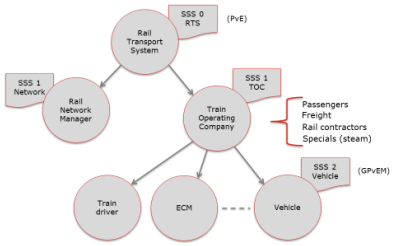
- TSI → interoperability
- National rules (NNTR) → CCS class B system (ATB)

The apportionment of requirements in the SSS0 (PvE) into requirements for vehicles is done via Analysis Models concerning

- Quality of Use
- RAM
- Cybersecurity
- Interoperability
- Performance
- Safety
- Speed & Capacity

5

System engineering role of the ERTMS programme directorate



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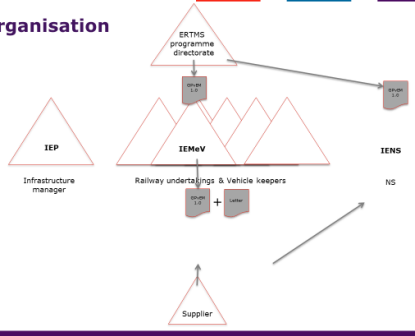
Organisation



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Q&A

Proposed process:

- We show Q&A with prepared answers on screen/projector
- Supplier takes the lead to go through Q&A
- Supplier will state confidentiality of questions
- We will make notes, send them to supplier for checking contents and confidentiality, after reply we finalize the notes

8

Annex 3: Overview of questions and answers

This annex contains the questions and answers of the clarification meetings.
In the Q&A table the abbreviations S: and P: are used for Supplier and ERTMS Programme Directorate respectively.

The Q&A table has been sorted on the GPvEM requirement ID's.
If more than one question was raised on a GPvEM requirement, this is indicated by an index number.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
Req_ID	Index	Requirement	Question	Answer	
ETCS-1223	1	On the basis of the FMEAs, Supplier shall deliver a Fault Tree Analysis (FTA, according to NEN-IEC61025) for hardware failures in fault category Fc1. Supplier shall describe the analysis in such way that the modeling and the applied starting points and assumptions are transparent for the customer.	Confidential question	The scope of supply is to be agreed between contracting party and supplier. The definition of 'upgrade' means the installation of a Baseline 3 ETCS onboard system in a vehicle that already is equipped with ETCS.	
ETCS-1225	1	On the basis of the hierarchical system breakdown, Supplier shall provide Design and Interface/Integration FMEA's (DFMEA and IFMEA) for each component and failure mode, according NEN-IEC60812 and including additional data required by Customer.	Confidential question	The scope of supply is to be agreed between contracting party and supplier. The definition of 'upgrade' means the installation of a Baseline 3 ETCS onboard system in a vehicle that already is equipped with ETCS.	
ETCS-1481	1	Following shall be implemented in the ERTMS On-board Equipment: - ERTMS change requests which are error corrections and are published by an ERA Opinion. This provision shall apply for seven years following the date of Contract Signing. All ERTMS and Vehicle related re-authorization shall be implemented as well. Explanation. This requirement relates to clause A7 of the 'Memorandum of Understanding concerning the cooperation for the deployment of the ERTMS', signed in autumn of 2016.	It should be clarified what is meant by a provision applicable for seven years after contract signing; Implementation of the technical opinions takes at least 2 years (ETCS-1485): is it the implementation of technical options which shall be performed during 7 years or the technical opinions published during 7 years which shall be implemented? A number of updates should be defined (the number of technical opinions to be published is difficult to predict).	Meant is the technical opinions published during 7 years shall be implemented. In the MoU ERTMS 2016 and resulting Unisig proposal, it is not the number of updates but the period which applies. No one can predict the exact number of updates within the timeframe. Not all updates are relevant for all inframanagers. So the question is also about which are relevant. This uncertainty should be taken into account when contracting.	
ETCS-1481	2	Following shall be implemented in the ERTMS On-board Equipment: - ERTMS change requests which are error corrections and are published by an ERA Opinion. This provision shall apply for seven years following the date of Contract Signing. All ERTMS and Vehicle related re-authorization shall be implemented as well. Explanation. This requirement relates to clause A7 of the 'Memorandum of Understanding concerning the cooperation for the deployment of the ERTMS', signed in autumn of 2016.	Implementation of TSI error correction (by ERA): Technically feasible. Contractual inclusion to be further discussed.	To be discussed with the contracting party.	
ETCS-1481	3	Following shall be implemented in the ERTMS On-board Equipment: - ERTMS change requests which are error corrections and are published by an ERA Opinion. This provision shall apply for seven years following the date of Contract Signing. All ERTMS and Vehicle related re-authorization shall be implemented as well. Explanation. This requirement relates to clause A7 of the 'Memorandum of Understanding concerning the cooperation for the deployment of the ERTMS', signed in autumn of 2016.	how is it expected to handle error corrections published by the ERA in the frame of the retrofitting programme? This re-authorization would only apply to safety related error corrections?	Expected is that the error corrections are implemented in vehicles. It is for the rolling stock owner to agree on the split of activities, e.g. whether re-authorization of vehicles is in the suppliers scope of delivery. The art 10 change requests are about errors that do not allow the system to provide a normal service, or what we can call interoperability. That would include not only on a safety related impact. P: It is up to the rolling stock owner to contract changes and, if applicable, re-authorisation. S: Example: ERA is publishing a change to a function defined in the TSI. In that case, should supplier release a new version directly? This would be very cumbersome for supplier as well as rolling stock owner. P: This related to the 'to be contracted' maintenance clause. There should be a balance that benefits the programme, supplier and rolling stock owner. S: From a contractual point of view this is difficult to manage. Maybe not all published CR's affect the infrastructure, so are not necessary. P: Suppliers point of view is clear.	According to industries, it is not feasible to contract for 7 years application of coming error corrections. The reason is that industries are not able to determine the effort and time needed, because contents and planning of the ERA error correction publications (related to TSI CCS art. 10) are unknown. Since the requirement is a support for Railway Undertakings to guarantee compatibility with trackside, the Railway Undertaking is free to apply an alternative approach to guarantee compatibility. For your information, the Dutch Ministry intends to introduce national technical rules on that part of ERA opinions on error corrections that concerns compatibilty eigth the Dutch network. For Opinion ERA/OPI/2017-2 that concerns six change requests, which will be included in the revised Regeling Indienststelling Spoorvoertuigen, intended to be published before April 1 2020.
ETCS-1481	4	Following shall be implemented in the ERTMS On-board Equipment: - ERTMS change requests which are error corrections and are published by an ERA Opinion. This provision shall apply for seven years following the date of Contract Signing. All ERTMS and Vehicle related re-authorization shall be implemented as well. Explanation. This requirement relates to clause A7 of the 'Memorandum of Understanding concerning the cooperation for the deployment of the ERTMS', signed in autumn of 2016.	What is the rationale for ETCS-1481? We would like to discuss the implications of these requirements (e.g. the need for new homologation/vehicle authorization).	The rationale is that the ERTMS MoU 2016 describes the 'software update clause' as the solution to implement error correction change requests. Vice versa, ERA/OPI/2017-2 (section 4.7) refers to the MoU for software updates. S: the duration of 2 years is quite restrictive and might not be manageable due to the related effort which depends on the specific Opinion and possible inclusion of authorization. P: this could be an issue. S: the start of this 2 year period is defined as 'grouping into packages of necessary changes, commercially accountable for'. P: the 2 year requirement is challenging, yet the contractual obligation shall eventually be decided upon by the contracting party.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-1481	5	Following shall be implemented in the ERTMS On-board Equipment: - ERTMS change requests which are error corrections and are published by an ERA Opinion. This provision shall apply for seven years following the date of Contract Signing. All ERTMS and Vehicle related re-authorization shall be implemented as well. Explanation. This requirement relates to clause A7 of the 'Memorandum of Understanding concerning the cooperation for the deployment of the ERTMS', signed in autumn of 2016.	The Major cost factor in ETCS is re-homologation of the Vehicle. What is the proposal of the program to handle this high costs that will be generated by ERTMS CR for the 7 year period. As there is no generic homologation procedure defined by program, so it is expected that as supplier we go everytime with the new CR on all the lines in NL to test the ETCS system as defined inside ETCSA-8469 -- ETCSA-8472	The clustering of CRs is one of the alternatives to save on cost and effort. Note that the requirement addresses ERA Opinions which are bundles of CR's instead of single CR's. The Programme ERTMS does not have a generic re-authorization procedure for ERA Opinions. The responsibility for re-authorization of vehicle type and implementation in the vehicle series is to be determined between the contracting party and the supplier.	
ETCS-1483	1	The Supplier shall specify the Adaptability of the ERTMS On-Board Equipment for the following two modifications: 1. Automatic Train Operation (ATO) 2. Future Radio Mobile Communication System (FRMCS) Adaptability shall include, but is not limited to, the spare capacity of processor use, memory, communication channel bandwidth, Ethernet outlets on switch and all types of Input and Outputs. Note that * both ATO and FRMCS are currently defined as so called 'game changers' by the ERA, for which specifications are partly available in draft status. Full definition with formal status is expected by the publication of TSI CCS by 2022. * the related specifications to be considered should include interface documents on-board ATO-ETCS and on-board FRMCS-ETCS, regardless whether these will be included in related TSI CCS' expected by 2022.	EDOR replaceable with FRMCS: FRMCS is not yet released. Technical requirements for replaceability still unknown.	We would like to know the plan for migration towards FRMCS for the offered onboard system. The availability of (draft) FRMCS specifications is to be checked by the rolling stock owners at the time of implementing GPvEM in their procurements.	
ETCS-1483	2	The Supplier shall specify the Adaptability of the ERTMS On-Board Equipment for the following two modifications: 1. Automatic Train Operation (ATO) 2. Future Radio Mobile Communication System (FRMCS) Adaptability shall include, but is not limited to, the spare capacity of processor use, memory, communication channel bandwidth, Ethernet outlets on switch and all types of Input and Outputs. Note that * both ATO and FRMCS are currently defined as so called 'game changers' by the ERA, for which specifications are partly available in draft status. Full definition with formal status is expected by the publication of TSI CCS by 2022. * the related specifications to be considered should include interface documents on-board ATO-ETCS and on-board FRMCS-ETCS, regardless whether these will be included in related TSI CCS' expected by 2022.	In some cases, this could lead to extra costs, so is the requirement optional?	P: ATO is out of scope of the Programme. Within the scope is the option for future developments, that the system is ready as much as possible and not blocking these developments . We are not able to put in 'hard' requirements regarding ATO, so we ask suppliers to indicate plans, strategies for implementation of these developments.	
ETCS-1483	3	The Supplier shall specify the Adaptability of the ERTMS On-Board Equipment for the following two modifications: 1. Automatic Train Operation (ATO) 2. Future Radio Mobile Communication System (FRMCS) Adaptability shall include, but is not limited to, the spare capacity of processor use, memory, communication channel bandwidth, Ethernet outlets on switch and all types of Input and Outputs. Note that * both ATO and FRMCS are currently defined as so called 'game changers' by the ERA, for which specifications are partly available in draft status. Full definition with formal status is expected by the publication of TSI CCS by 2022. * the related specifications to be considered should include interface documents on-board ATO-ETCS and on-board FRMCS-ETCS, regardless whether these will be included in related TSI CCS' expected by 2022.	As mentioned, these functions are not specified yet. How do you plan to manage this?	These functions are being specified indeed. Signalling industries may be informed of the specification work e.g. by participating in Unisig and the Shift 2 Rail initiative. That may relate to the On-Board ETCS product planning (roadmap) you may have. Our request to specify the adaptability of the offered On-Board ERTMS to the two new technologies ATO and FRMCS is related. P challenges the suppliers to inform their strategy to them to reduce the impact of the implementation of these new technologies on the Rail Transport System and the owners of rolling stock. S: How will the work be coordinated once the changes take place. P: ATO functionality is out of scope,just as migration to FRMCS is. We solely facilitate the migration once it will take place. P wants the ETCS platform to be able to facilitate the ATO functionality.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-1485	1	With reference to requirement ETCS-1481, the Supplier shall implement the error corrections published by an ERA Opinion in each Vehicle Type within two years from publication in the Official Journal of the European Union.	What is the rationale for the 2 years time requirement? This is a challenging/dimensioning requirement while the added value is not guaranted : in case a CR has a real impact on the operations, delay of 2 years is too long, in case a CR has no real impact on the operations, delay of 2 years is too short (especially for cross-border trains which needs longer certification time).	2 Years should be feasible for a supplier. Agreed that not all CRs are equally necessary for safe or reliable operation. The rationale is that these error corrections which affect normal service should have an implementation period which is reasonable for the user. The chosen period is a balanced answer P considers reasonable. Reply is, that only requirements necessary for the customers are being implemented. So, P is the first party to ask S for the whole set.	
ETCS-1485	2	With reference to requirement ETCS-1481, the Supplier shall implement the error corrections published by an ERA Opinion in each Vehicle Type within two years from publication in the Official Journal of the European Union.	Supplier cannot implement into vehicles without consent of vehicle owner / operator. Recommendation: Specify time until update package is available	S: The two years is doable for the Onboard, but not for the rollout in the vehicle series.	
ETCS-1485	3	With reference to requirement ETCS-1481, the Supplier shall implement the error corrections published by an ERA Opinion in each Vehicle Type within two years from publication in the Official Journal of the European Union.	The Major cost factor in ETCS is rehomologation of the Vehicle. What is the proposal of the program to handle this high costs that will be generated by ERTMS CR for the 7 year period. As there is no generic homologation procedure defined by program, so it is expected that as supplier we go everytime with the new CR on all the lines in NL to test the ETCS system as defined inside ETCSA-8469 -- ETCSA-8472	As explained for your remark regarding ETCS-1481, ERA Opinions concern bundles of CR's. Regarding your word 'everytime': the time between the first two consecutive Opinion publications is more than two years. The Programme does understand that the need to authorize the vehicles for every Opinion depends on impact on interoperabilty and costs. That aspect is subject to the arrangements between the contracting party and the supplier. Regarding your words 'on all the lines to test', it is not expected that implementation of error corrections need tests at lines.	
ETCS-1488	1	The Supplier shall demonstrate the ETCS System Compatibility with the infrastructure in the scope of this tender, as described in [amended TSI-CCS] paragraphs 4.2.1.7 and 6.1.2.4. The Supplier shall provide: - the ESC/RSC full (test) report clearly indicating the results of the tests cases and sequences used; - the ESC/RSC statement, which declares that the requirements for ESC are met - NoBo's evaluation of the results of the tests, according to amended TSI CCS section 6.3.3.1 Note: in Master Test Plan Rolling Stock [ref. Supplement VIII-2] this is Test_ID2.	According to ETCS-1488, the Supplier shall demonstrate the ETCS System Compatibility with the infrastructure in the scope of this tender, as described in [amended TSI-CCS] paragraphs 4.2.1.7 and 6.1.2.4. We assume [amended TSI-CCS] refers to the Opinion published by the ERA on June 9th, 2019. We would like to know your vision on the process for the implementation of this ERA/OPI.	Commission Implementing Regulation 2019/776. S: For ESC/ RSC, the inframanager is responsible to set up the descriptions. P: PD-ERTMS adheres to the process as is adapted by the EC and the Dutch legislation. P refers to the Railcenter lab facilities in Amersfoort and explains that this lab can be used to facilitate tests. The process of testing is to be negotiated with the contracting party. S: Regarding OPI/2017/2: intends to implement all error corrections.	
ETCS-1492	1	The ERTMS On-board Equipment shall support a selection by the Driver to operate with level STM-ATB EG at the Dual Signalling lines (i.e. Amsterdam-Utrecht and Hanzelijn). This function is also referred to as "ATB-Only". When this function is activated the following shall apply: - when entering a Dual Signalling line (fitted with both ERTMS-L2 and ATB-EG) from an ATB-EG area, the ERTMS On-Board shall remain in Level-STM-ATB and not make a Level-transition to ERTMS Level 2, and; - when performing a Start of Mission, the option of selecting ERTMS Level 1 or 2 shall be made unavailable for the Driver, and; - when entering an ERTMS-only line from an ATB-EG area, the ERTMS On-Board shall command application of the Service Brake. Explanation: this function enables operation on Dual Signalling lines with not-ERTMS-trained Train Drivers. Note: for requirements on Driver selection, see ETCS-6446 and ETCS-2043.	What shall be displayed to the driver in this case? (what about packets like P42, P45,...)?	The information to be displayed shall be as specified for level STM ATB. No information to be displayed to the driver, other than TSI determined should be presented to the driver. E.g. the solution to suppress Levels 1 and 2 for 'ATB only mode' would result in selecting the next level in the infra send level priority list which is STM ATB at the dual signalling lines. Scope of the requirements is the dual signalling lines and the educational level of the drivers.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-1492	2	The ERTMS On-board Equipment shall support a selection by the Driver to operate with level STM-ATB EG at the Dual Signalling lines (i.e. Amsterdam-Utrecht and Hanzelijn). This function is also referred to as "ATB-Only". When this function is activated the following shall apply: - when entering a Dual Signalling line (fitted with both ERTMS-L2 and ATB-EG) from an ATB-EG area, the ERTMS On-Board shall remain in Level-STM-ATB and not make a Level-transition to ERTMS Level 2, and; - when performing a Start of Mission, the option of selecting ERTMS Level 1 or 2 shall be made unavailable for the Driver, and; - when entering an ERTMS-only line from an ATB-EG area, the ERTMS On-Board shall command application of the Service Brake. Explanation: this function enables operation on Dual Signalling lines with not-ERTMS-trained Train Drivers. Note: for requirements on Driver selection, see ETCS-6446 and ETCS-2043.	Confidential question	This requirement is to the rolling stock owner. The reason is, that we expect that not all drivers can be ERTMS-licensed at the same time, for maximum flexibility of driver-train, this is an acceptable solution. Of course, the rolling stock owner decides.	
ETCS-1492	3	The ERTMS On-board Equipment shall support a selection by the Driver to operate with level STM-ATB EG at the Dual Signalling lines (i.e. Amsterdam-Utrecht and Hanzelijn). This function is also referred to as "ATB-Only". When this function is activated the following shall apply: - when entering a Dual Signalling line (fitted with both ERTMS-L2 and ATB-EG) from an ATB-EG area, the ERTMS On-Board shall remain in Level-STM-ATB and not make a Level-transition to ERTMS Level 2, and; - when performing a Start of Mission, the option of selecting ERTMS Level 1 or 2 shall be made unavailable for the Driver, and; - when entering an ERTMS-only line from an ATB-EG area, the ERTMS On-Board shall command application of the Service Brake. Explanation: this function enables operation on Dual Signalling lines with not-ERTMS-trained Train Drivers. Note: for requirements on Driver selection, see ETCS-6446 and ETCS-2043.	What are the current procedures for that?	In the current situation, drivers are skilled to work in a dual signalling environment or in ATB environment. The railway undertaking is in the lead for migration of drivers and fleet to ERTMS at dual signalling lines, including application of related procedures.	
ETCS-1493	1	The ETCS Train Data shall be entered automatically. The Driver shall confirm the ETCS Train Data related to brake deceleration (e.g. isolated bogies) and train composition related length. Explanation: Note that this requirement will introduce the need to interface the ETCS On-Board Equipment with external systems in the vehicle. Note: this requirement only applies for passengers trainsets	Confidential question	For passenger trainsets that have no intelligent onboard system, obviously, this requirement would not apply. Requirement is intended for the integrator. To be agreed between contracting party and supplier. If train data is not available from existing systems like TCMS, the supplier can apply devices and/or sensors to determine brake data and train length.	
ETCS-1493	2	The ETCS Train Data shall be entered automatically. The Driver shall confirm the ETCS Train Data related to brake deceleration (e.g. isolated bogies) and train composition related length. Explanation: Note that this requirement will introduce the need to interface the ETCS On-Board Equipment with external systems in the vehicle. Note: this requirement only applies for passengers trainsets	Data entry and start of mission automation: complete data introduction automation (specially safety data) could add additional costs for a retrofit while other variants could also be feasible. Is it possible to keep some data not automatic? (for example, train composition confirmation, number of isolated bogies…)	The requirement is safety-related and also has impact on capacity. Ultimately, the RSTO's will be responsible for contracting this requirement. S: Some safety related information needs to be available from the train, for which technical implementation would increase the cost. Operationally, if the driver provides the information, this is preferable. Information by the driver could be in a fixed train composition, just by selecting number of cars and isolated bogies. P: Automatically does not mean that the driver does not have to confirm. S: From a safety point of view, if you let the driver confirm the data previewed by ERTMS, he will act out of habit and just confirm.	
ETCS-1503	1	The supplier shall provide as part of the offer a document with: - the proposed architecture of the monitoring function - description of the design of the monitoring function - overview of all monitoring data provided from de ERTMS On-Board Equipment to the TCMS and data recorder - description of the external interface to the data recorder (including the applied protocol) - security measures taken in the design to be secured against attacks, manipulation, intrusion and accidental access.	"overview of all monitoring data provided from de ERTMS On-Board Equipment to the TCMS ", what do you mean with this request?	What is meant is ERTMS data which are stored for monitoring purposes, in the TCMS (if any) and the data recorder.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-1510	1	The ERTMS On-board Equipment shall comply to the requirements defined in Subset 026 paragraph 3.6.5.2 for ETCS level 2 as well.	As mentioned, our OBE is ready to provide a TIM function for passenger trains and fixed train sets with train lines and ETCS lines or trains with 2 communicating cabs. However, a solution for freight trains will be available in the future but, even if the industry is working on it, it will take some more years before the standard will be set. We would like to discuss this item.	The GPvEM 1.0 document is a sum of requirements, of which parts apply to types of vehicle. The requirements about TIM do apply to passenger trainsets only. P: The table with information on categories of rolling stock that is in the GPvEM is not to be applied. P-ERTMS has decided to apply this requirement only to passenger fixed train compositions.	
ETCS-1511	1	The availability of L_TRAININT and Q_LENGTH related to all possible Train Compositions shall be as listed below: - For all possible Train Compositions, composed solely with the Traintype(s) that is/are part of this contract, L_TRAININT and Q_LENGTH shall be available/implemented. - For all possible Train Compositions, that contain one of the Traintype(s) that is/are part of this contract and that are intended for normal operation, L_TRAININT and Q_LENGTH shall be available/implemented. - For Train Compositions, that contain one of the Traintype(s) that is/are part of this contract and that contain unknown types, L_TRAININT and Q_LENGTH need not to be available/implemented. - For Train Compositions, that contain one of the Traintype(s) that is/are part of this contract and that contain unknown types, the implementation of TIM shall not cause any defect.	The ETCS OBU can be made to manage in a generic way the reporting of train integrity to the RBC, however, since no driver action is foreseen, the train integrity monitoring will depend on the possibility to be implemented on the rolling stock. We expect further information to be delivered for the specific RFP.	Understood. Further information is to be obtained from the contracting party.	
ETCS-1563	1	The CMD shall allow the value of D_CMD_allowed_movement to be set by the Customer from a maintenance location. The value of D_CMD_allowed_movement shall be adjustable per Train.	Do you intend to classify such requirements as "Wishable"? (it is possible to have a value per type of train, but what is the need to change it from the maintainer?)	P does not classify the requirements.	
ETCS-1567	1	When the CMD is designed as an external component, the CMD shall interface with the ERTMS On-Board Equipment via the TIU (Train Interface Unit as specified in subset 34). The Supplier shall specify the interface of the CMD as part of the TIU. Note: subset 34 does not specify I/O for the CMD.	Is it really a requirement? The CMD is not an interoperable constituent	This is a requirement: the interface shall be clearly described by the supplier. Ultimately, the contracting parties will be responsible for contracting this requirement.	
ETCS-1568	1	The Customer shall have the right to use the Supplier's interface specification of the CMD to the ERTMS On-Board Equipment for replacement of the ERTMS On-Board Equipment for another one from any supplier.	which is the rationale of this requirement? We understand that the CMD would be part of the retrofitting scope of the supplier, as a part of the whole system, not to be interchangeable by another suppliers' subsystem, as depending on the system architecture, this may not be feasible.	The intended purpose of the requirement is reduction of life cycle costs. E.g. after end of life of ETCS or CMD in a vehicle prototype, it would be possible to exchange one without exchanging the other one. S: The scope would change a bit. Either CMD is a separate system in which case there would be a clear interface or integrated, in which case there is not a clear interface. Certification would be affected if a third party CMD is applied. P: The rationale for the requirement is not to dictate a system architecture. The reason is to get insight in the interface between CMD and EVC as well as reduction of LCC. Other requirements state that interfaces should be known. S: In the contracting phase, not being compliant could mean a disadvantage. P: The rolling stock owner is in charge of which requirements ultimately apply to the supplier. The supplier shall have to indicate non-compliancy with respect to the requirements from the contracting party and perhaps suggest alternatives. S: Prefers the functional requirement, leaving open the implementation choice. Again, the cost of recertification could outweigh the cost of third party applications.	
ETCS-1570	1	Where the CMD is connected to an external power supply, the external power use of the CMD shall not exceed 5 W (total 840 Wh).	CMD power supply <= 5 W / 7 consecutive days: <5 W possible If connected to the on-board main battery CMD availability duration is determined by battery not by CMD.	Correct, the system integrator is responsible for the solution.	
ETCS-1574	1	The MTBF for malfunctioning of the ERTMS On-Board Equipment, where malfunctioning is defined as not fulfilling the requirement of subset 41, paragraph 5.3.1.1, shall be at least 10.000 operational hour. Note: subset 41, paragraph 5.3.1.1 requires a minimal accuracy of the measured distance s: for every measured distance s the accuracy shall be better or equal to ± (5m + 5% s), i.e. the over reading amount and the under reading amount shall be equal to or lower than (5m + 5% s). Note: this requirements only applies for passengers rolling stock	The increase of odometry error is not only linked to default in the sensor but mainly due to degraded operational conditions e.g. slipping or sliding during several seconds within slopes, running at very low speed, for which the error can increase beyond these values temporarely before going back within the limit defined (and therefore having no impact on the operation). Do you intend to classify these requirements as "wishable/optional"?	P does not classify the requirements.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-1574	2	The MTBF for malfunctioning of the ERTMS On-Board Equipment, where malfunctioning is defined as not fulfilling the requirement of subset 41, paragraph 5.3.1.1, shall be at least 10.000 operational hour. Note: subset 41, paragraph 5.3.1.1 requires a minimal accuracy of the measured distance s: for every measured distance s the accuracy shall be better or equal to ± (5m + 5% s), i.e. the over reading amount and the under reading amount shall be equal to or lower than (5m + 5% s). Note: this requirements only applies for passengers rolling stock	Confidential question	The scope of supply is to be agreed between contracting party and supplier. The definition of 'upgrade' means the installation of a Baseline 3 ETCS onboard system in a vehicle that already is equipped with ETCS. The requirement applies to freight locomotives as well as to upgrade.	
ETCS-1577	1	The Supplier shall provide the maintenance instructions for preventive and corrective maintenance, in order to meet the requirements ETCS-1574 and ETCS-7633. The restoration of the functions given in ETCS-1574 and ETCS-7633 shall take not more than 48 hours after detection of the accuracy error.	Note that commitments cannot be made by the supplier which relate to performance targets of a separate maintenance contract.	Provisions necessary during maintenance must be indicated by the supplier.	
ETCS-1689	1	The STM-ATB shall support the ATB first generation (ATB EG) functionality. The ATB first generation functionality in rolling stock is defined by the Regeling Indienststelling Spoorvoertuigen. Note: foreign STM's are not in scope of this project.	ATB STM-ATB: Required ATB versions need to be specified in detail. Conditions of STM provision need to be clarified.	Assuming the version you mean is ATBEG and/ or ATBNG? In that case, this is to be decided by the rolling stock owner.	
ETCS-1689	2	The STM-ATB shall support the ATB first generation (ATB EG) functionality. The ATB first generation functionality in rolling stock is defined by the Regeling Indienststelling Spoorvoertuigen. Note: foreign STM's are not in scope of this project.		Regarding STM-ATBEG: P: explains the procedure which is published on the website. S: When will the information etc, be available?	Refer to website https://www.ertms-nl.nl , 'Nieuwsberichten en publicaties'. For your information, since the clarification sessions held with industries, information has been published at the website.
ETCS-1689	3	The STM-ATB shall support the ATB first generation (ATB EG) functionality. The ATB first generation functionality in rolling stock is defined by the Regeling Indienststelling Spoorvoertuigen. Note: foreign STM's are not in scope of this project.	STM ATB: What is the status of ATB-EG and NG BL3 STM from Prorail? STM ATB: When it is Developed? Is it In Production? Homologated? When accessible?		Prevailing Information related to the status of STM-ATB can be found on the website ertms-nl.nl.
ETCS-1995	1	The ERTMS On-Board Equipment shall transmit at least the following ETCS Track Conditions to the related Systems of the Rolling Stock, if the Rolling Stock is equipped with the concerned Systems: - Powerless section, lower pantograph (in Dutch Stroomafnemer, SA) - Powerless section, switch off main Power Switch (in Dutch Snelschakelaar, SNS) - Air tightness - Station platform, enable passenger Doors Note: implementation in the Train System is required only for Pantograph (see ETCS-6032) and Main Power Switch (see ETCS-6030).	The type of interface shall be specified before the tender, otherwise the different offers can not be compared	This requirement is about making available the information at the On-board ETCS output. The type of interface is not a criterion to be judged. Interface (e.g. MVB or hard-wired) to be discussed with the contracting party.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-2011	1	The ERTMS On-board Equipment shall make a transition from ETCS mode Stand-by (SB) into ETCS modes Staff-Responsible (SR), Full-Supervision (FS), On-Sight (OS), Shunting (SH) and System National (SN) in less than 45 consecutive seconds. This requirement includes the Start of Mission (SoM) related actions by the Driver and the time for set up a GSM-R data connection/session. The time to set up this GSM-R data connection/session shall be less than 15 seconds. This requirement includes the processing times of the RBC The required time of 45 seconds applies to the nominal situation. The transition from mode SB starts by activating the cabin (S0 in figure 1 of subset 26, chapter 5.4) Note: The complete set of requirements on the GSM-R connection/session set up time is listed in chapter 2.4. Note: the SoM related actions by the Driver are included in the time interval as the number and kind of actions can be affected by the design. Note: the Driver is expected to be a „nominal Driver“. This means educated, experienced and working in a normal ergonomic environment in the cabin. Note: For demonstration that this requirement has been met, at least 10 drivers should be able to execute the SoM procedure within 45 seconds at least 10 times, with at least 30 minutes between consecutive attempts by the same driver. Less than 5% of the total number of attempts may take longer than 45 s. The specified ‘nominal’ drivers will be selected by the Customer.	This requirement is train dependant since it requires to adapt the rolling stock to have time of data entry reduced to the minimum (which is not possible with locos). It can not be generic.	Generic means the requirement contributes to the Programme goals. It does not mean it applies to all rolling stock. This requirement applies to the passenger fleet only. We advise to not consider the distributed table in the GPvEM regarding the applicability of the requirement to types of rolling stock. The classification to types of rolling stock in the GPvEM in the distributed table is not correct. 'Generic' in this context means: relevant for the Programme goals.	
ETCS-2011	2	The ERTMS On-board Equipment shall make a transition from ETCS mode Stand-by (SB) into ETCS modes Staff-Responsible (SR), Full-Supervision (FS), On-Sight (OS), Shunting (SH) and System National (SN) in less than 45 consecutive seconds. This requirement includes the Start of Mission (SoM) related actions by the Driver and the time for set up a GSM-R data connection/session. The time to set up this GSM-R data connection/session shall be less than 15 seconds. This requirement includes the processing times of the RBC The required time of 45 seconds applies to the nominal situation. The transition from mode SB starts by activating the cabin (S0 in figure 1 of subset 26, chapter 5.4) Note: The complete set of requirements on the GSM-R connection/session set up time is listed in chapter 2.4. Note: the SoM related actions by the Driver are included in the time interval as the number and kind of actions can be affected by the design. Note: the Driver is expected to be a „nominal Driver“. This means educated, experienced and working in a normal ergonomic environment in the cabin. Note: For demonstration that this requirement has been met, at least 10 drivers should be able to execute the SoM procedure within 45 seconds at least 10 times, with at least 30 minutes between consecutive attempts by the same driver. Less than 5% of the total number of attempts may take longer than 45 s. The specified ‘nominal’ drivers will be selected by the Customer.	Time requirements, e.g. power on time 30s, break test 30s: Real life times are strongly impacted by outside (ETCS on board system) factors such as response times of GSM-R or break system performance. Timing requirements for the on board ETCS system would need further clarification.	The rolling stock environment is included in scope of supply thus not considered as ' outside' and for requirement ETCS-2011 the driver aspect is treated. Requirement ETCS-2011 has a limited RBC reaction time which should be clarified as ' outside' by the Programme indeed. Brake test related requirements are intended to stimulate the supplier to reduce the time needed for the brake test. Of course for cargo trains the 30 second requirement may not be achievable. The NP-SB timing requirement has a direct influence on the capacity of the whole rail transport system and is especially affected when a reset-action is necessary. According to S, events outside control or influence of the Supplier cannot be contractually be borne by the Supplier.	Because freight trains perform operations like coupling and decoupling and turning around in Shunting areas, this requirement could be declared as not necessary for freight trains by the Railway Undertaking. Generally, applicability of requirements to the vehicle type is to be informed by the contracting Railway Undertaking.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-2011	3	The ERTMS On-board Equipment shall make a transition from ETCS mode Stand-by (SB) into ETCS modes Staff-Responsible (SR), Full-Supervision (FS), On-Sight (OS), Shunting (SH) and System National (SN) in less than 45 consecutive seconds. This requirement includes the Start of Mission (SoM) related actions by the Driver and the time for set up a GSM-R data connection/session. The time to set up this GSM-R data connection/session shall be less than 15 seconds. This requirement includes the processing times of the RBC The required time of 45 seconds applies to the nominal situation. The transition from mode SB starts by activating the cabin (S0 in figure 1 of subset 26, chapter 5.4) Note: The complete set of requirements on the GSM-R connection/session set up time is listed in chapter 2.4. Note: the SoM related actions by the Driver are included in the time interval as the number and kind of actions can be affected by the design. Note: the Driver is expected to be a „nominal Driver“. This means educated, experienced and working in a normal ergonomic environment in the cabin. Note: For demonstration that this requirement has been met, at least 10 drivers should be able to execute the SoM procedure within 45 seconds at least 10 times, with at least 30 minutes between consecutive attempts by the same driver. Less than 5% of the total number of attempts may take longer than 45 s. The specified ‘nominal’ drivers will be selected by the Customer.	the fulfilment of this requirement depends on the network and RBC answer time. We understand that this requirement should only take into account the time needed for the onboard system.	The rolling stock environment is included in scope of supply thus not considered as ' outside' and for requirement ETCS-2011 the driver aspect is treated. Requirement ETCS-2011 has a limited RBC reaction time which should be clarified as ' outside' by the Programme indeed.	
ETCS-2016	1	When a cabin is activated the ERTMS On-board Equipment shall initiate the ETCS Start of Mission procedure. Note: Timing requirements are in section ch 3-3.2.4.	The start of mission procedure starts by a request to the driver to enter/revalidate the driver id. Do you expect something else after opening of the cabin?	Related to ETCS-2043. No, we do not expect so. With reference to SRS chapter 5, the SoM starts with S0 (event: cabin status changes from closed to open).	
ETCS-2021	1	It shall be possible to replace the EDOR (part of GSM-R On-board Equipment) by new generation radio equipment (Future Railway Mobile Communication System, FRMCS), without the need to modify or replace the ETCS On-board Equipment hardware or antenna and antenna cable. Software may be updated.	In a contract with a train owner, such requirement is a risk which can not be managed only by the ETCS supplier		
ETCS-2021	2	It shall be possible to replace the EDOR (part of GSM-R On-board Equipment) by new generation radio equipment (Future Railway Mobile Communication System, FRMCS), without the need to modify or replace the ETCS On-board Equipment hardware or antenna and antenna cable. Software may be updated.	Note that this cannot be guaranteed because the frequency allocation for FRMCS has not be defined.	The requirement is intended to challenge suppliers to make their system future-proof. When the GSM-R unit is replaced in the future by a FRMCS, it would have a significant impact on LCC if (most of) the rest of the onboard system would have to be replaced as well. P takes note of the remark.	
ETCS-2022	1	The ERTMS On-board Equipment shall comply with <document 'Automatic_Train_Protection_for_train_drivers V3.0.docx'.> This requirement does not apply for upgrades.	Can we have a copy of “Automatic_Train_Protection_for_train_drivers_V3.0.docx”		The document 'Automatic_Train_Protection_for_train_drivers V3.0.docx' cannot be made publicly available. The objective of aforementioned document is to describe unified procedures that will be implemented by the Railway Undertaking. The procedures describe the required drivers actions for Start of Mission (SoM) and for specific situations. The technical ETCS equipment shall support these procedures. An important condition is that these procedures do not compromise the European Harmonized Interoperability requirements Railway Undertaking / Contracting Party shall agree with the Supplier a document that describes the generic procedures related to the Automatic Train Protection systems for the rolling stock that have ETCS or parts of ETCS implemented.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-2024	1	The OBE shall allow the Driver-ID and the Train Running Number be entered only once for GSM-R voice and ETCS together; the Driver-ID and the Train Running Number shall be entered at the ETCS DMI and shall be distributed to the GSM-R voice. The Drivers-ID and Train-Running-Number data shall be transmitted immediately after the data has been entered and confirmed on the ETCS DMI. Note: Entering GSM-R voice data in GSM-R equipment shall remain possible, for example when ETCS is degraded. Note: The requirement specification of the rolling stock owner shall specify the interface details.	Note that this requires that a suitable interface is made available on the GSM-R Voice Radio. This shall be done by the customer.	It is the responsibility of the Railway Undertaking to provide the interface information. It has been checked whether GSM-R voice applies interfaces, which are for exampe ADP (Ethernet and RS422 implementations) and CIP (ethernet).	
ETCS-2024	2	The OBE shall allow the Driver-ID and the Train Running Number be entered only once for GSM-R voice and ETCS together; the Driver-ID and the Train Running Number shall be entered at the ETCS DMI and shall be distributed to the GSM-R voice. The Drivers-ID and Train-Running-Number data shall be transmitted immediately after the data has been entered and confirmed on the ETCS DMI. Note: Entering GSM-R voice data in GSM-R equipment shall remain possible, for example when ETCS is degraded. Note: The requirement specification of the rolling stock owner shall specify the interface details.	If GSM-R voice is out of scope of delivery, this could mean a non-compliance	P: To be further clarified with the rolling stock owner. S: We cannot comply if the GSM-R voice is not able to process the available information. The other concern is, that the original supplier defines an interface and is competing for ETCS as well. This would affect the level-playing field. P: Level playing field is also in our interest. We will double-check on the ownership of the specification of this interface and determine whether a level playing field is affected. S: What would be the source for the train running number? This is not in the TSI.	The source of the train running number is the on-board ETCS equipment. Detailed information is to be given by the contracting Railway Undertaking.
ETCS-2025	1	In level STM-ATB and for the ATB-only function the DMI-lay-out shall be according to the document "Programma ERTMS, DMI-Lay-Out in level NTC-ATB" (supplement V-4). The exact lay-out shall be agreed by Customer with written approval from the Customer. Note: this document contains a table for positioning on the DMI all indicators and buttons that are used in level STM-ATB.	Note that the requirement leads to the possibility of several different customer-specific layouts… this is exactly what should NOT be encouraged.	Layout still has to comply to the layout defined in TSI and other related requirements in this GPvEM.	
ETCS-2028	1	The ERTMS On-board Equipment shall include a Reset Function. When the Reset Function is applied, the ERTMS On-Board Equipment, except for the Cold Movement Detection function, shall be unpowered (enter mode No Power) and shall start up with all floating errors (e.g. software errors, dead locks, etcetera) elapsed. For start up the timing requirements in chapter ch3-3.2.4 apply. Explanation: The function of the Reset Function is to recover from certain fault situations.	What is the aim of this function? (in order to check whether some alternative proposal could be made)	This requirement sets a common approach to let the driver set the ETCS OBU to NP and starting up again.	
ETCS-2028	2	The ERTMS On-board Equipment shall include a Reset Function. When the Reset Function is applied, the ERTMS On-Board Equipment, except for the Cold Movement Detection function, shall be unpowered (enter mode No Power) and shall start up with all floating errors (e.g. software errors, dead locks, etcetera) elapsed. For start up the timing requirements in chapter ch3-3.2.4 apply. Explanation: The function of the Reset Function is to recover from certain fault situations.	According to TSI there is no requirement for a reset switch. Recommendation: Discuss why this is required. Specify required functionality. Unless there is a true technical demand to reset the OBE at random points in time this requirement should be softened.	P clarifies that driver's manual mentions resetting the onboard system. P wants to harmonize the operational procedure.	Interpret requirement as follows: The ERTMS On-board Equipment shall include a Reset Function. Supplier shall provide compelling evidence when a reset button (see requirement ETCS-6443) is not included, that the impact does not affect availability and reliability requirements. When the Reset Function is applied, the ERTMS On-Board Equipment, except for the Cold Movement Detection function, shall be unpowered (enter mode No Power) and shall start up with all floating errors (e.g. software errors, dead locks, etcetera) elapsed. For start up the timing requirements in chapter ch3-3.2.4 apply. Explanation: The Reset Function is to recover from certain fault situations.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-2028	3	The ERTMS On-board Equipment shall include a Reset Function. When the Reset Function is applied, the ERTMS On-Board Equipment, except for the Cold Movement Detection function, shall be unpowered (enter mode No Power) and shall start up with all floating errors (e.g. software errors, dead locks, etcetera) elapsed. For start up the timing requirements in chapter ch3-3.2.4 apply. Explanation: The function of the Reset Function is to recover from certain fault situations.	Confidential question	The CMD should be sufficiently independent of the rest of the ETCS so that the result of a reset action is that the ETCS train location (sent to RBC in the SoM) stays valid.	
ETCS-2033	1	The ERTMS On-board Equipment shall perform a transition from ETCS mode No Power (NP) into mode Stand-By (SB) in less than 30 consecutive seconds. This time interval shall include any Automatic Brake Test ATP or Self Test ATP considered necessary by the Supplier.	30 sec is a difficult requirement to meet while this time of power-up is not really a dimensioning in the time of train preparation before the service. Do you intend to classify such requirements as "Wishable"? The reminder in 5456 of requirement 2033 is confusing : during power-up, an ETCS OBU shall check its ability to safely command its outputs to emergency brakes while the EB test is performed on a daily basis to check the correct behaviour of the complete chain till EB (and the time depends a lot of the rolling stock). Therefore : - what is the link between the 2 requirements? - how do you intend to make 5456 train dependant?	P does not classify the requirements. The brake and selftest are not always part of the power-up of the system. The 30 second limit applies to both, but when brake and selftest are part of the power-up, the 30 second apply to the whole. Ultimately, the contracting parties will be responsible for contracting this requirement.	
ETCS-2033	2	The ERTMS On-board Equipment shall perform a transition from ETCS mode No Power (NP) into mode Stand-By (SB) in less than 30 consecutive seconds. This time interval shall include any Automatic Brake Test ATP or Self Test ATP considered necessary by the Supplier.	Time requirements, e.g. power on time 30s, break test 30s: Real life times are strongly impacted by outside (ETCS on board system) factors such as response times of GSM-R or break system performance. Timing requirements for the on board ETCS system would need further clarification.	The rolling stock environment is included in scope of supply thus not considered as ' outside' and for requirement ETCS-2011 the driver aspect is treated. Requirement ETCS-2011 has a limited RBC reaction time which should be clarified as ' outside' by the Programme indeed. Brake test related requirements are intended to stimulate the supplier to reduce the time needed for the brake test. Of course for cargo trains the 30 second requirement may not be achievable. The NP-SB timing requirement has a direct influence on the capacity of the whole rail transport system and is especially affected when a reset-action is necessary. According to S, events outside control or influence of the Supplier cannot be contractually be borne by the Supplier.	The intent of the requirement is to stimulate suppliers to minimize startup time. Requirement remains unchanged.
ETCS-2033	3	The ERTMS On-board Equipment shall perform a transition from ETCS mode No Power (NP) into mode Stand-By (SB) in less than 30 consecutive seconds. This time interval shall include any Automatic Brake Test ATP or Self Test ATP considered necessary by the Supplier.	30 seconds is a very restrictive time. In some fleet brake tests + self-tests could last longer. Additionally, some STM ATB require 90seconds from NP to SB therefore, even the ERTMS would be in SB, STM mode would not be available.	Class B equipment (including STM ATB) is outside the scope of requirement ETCS-2033. S: The brake test could be longer than expected and train dependent. When it takes 90 seconds, the requirement cannot be met. There is a dependence of the vehicle (esp. retrofit). P: The intended timing does not include the STM time. The 30 seconds for just the ETCS is then left as a 'hard' requirement. The criticality is, when a reset is necessary during the mission. The startup process is not predescribed: preferably, starting up STM, train and EVC should be done in parallel. S: Please note that the requirement is about a function which is safety relevant, thus possibly affects safety.	
ETCS-2033	4	The ERTMS On-board Equipment shall perform a transition from ETCS mode No Power (NP) into mode Stand-By (SB) in less than 30 consecutive seconds. This time interval shall include any Automatic Brake Test ATP or Self Test ATP considered necessary by the Supplier.		S: Is this including the brake relay? P: including. This requirement is deemed necessary because of capacity-related calculations. When a fault occurs during normal operation, startup has to occur as quickly as possible.	The intent of the requirement is to stimulate suppliers to minimize startup time. Requirement remains unchanged.
ETCS-2034	1	The Supplier (System Integrator) shall determine the values of the ETCS Brake Parameters of the Braking Model of the Rolling Stock, such that the applied Braking Model reflects the brake performance. Note: according to TSI OPE (appendix T) the Train Operator is responsible for the braking performance to satisfy or exceed the braking performance required by the IM. The braking performance is reflected by the values of the ETCS Brake Parameters of the Braking Model.	The braking characteristics of the rolling stock shall be delivered by the train owner. Which process do you have in mind for the supplier of the OBU? Note also that the role of "system integrator" is a contractual matter which differs per train owner.	The supplier of the OBU will commit to the process described in this requirement. The system integrator is contractually responsible. system integrator is a role (Ch2) which the supplier is responsible for.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-2034	2	The Supplier (System Integrator) shall determine the values of the ETCS Brake Parameters of the Braking Model of the Rolling Stock, such that the applied Braking Model reflects the brake performance. Note: according to TSI OPE (appendix T) the Train Operator is responsible for the braking performance to satisfy or exceed the braking performance required by the IM. The braking performance is reflected by the values of the ETCS Brake Parameters of the Braking Model.	Confidential question	The integrator manages. Rolling stock owner is responsible for the correct values. S: in an older vehicle, integration with TCMS and trainbus to get the information (e.g. for brake status) to the ETCS system will be difficult. The necessary knowledge may not be available even at the suppliers site. P: general remark, whilst GPvEM is generic, it does not mean that all requirements apply to all type of rolling stock. For passenger trains operating on the HRN, there are more capacity-related requirements than for cargo locomotives only operating partially on the HRN. Vehicle owners initially decide by means of the implementing organisations which requirements would be directly applicable, in concurrence with the programme directorate ERTMS.	
ETCS-3199	1	The Supplier shall meet the applicable requirements for ETCS System Compatibility, related to the network the vehicle is intended to operate at. Explanation: Currently the RLN00295 document applies, as defined by the Regeling Indienststelling Spoorvoertuigen. As defined by the amended TSI CCS which will apply by June 2019, section 6.1.2.4, the related checks have to be submitted to the Agency by September 2019.	Requirement not understandable	The requirement consists of two parts: 1) The Supplier shall meet the applicable requirements for ETCS System Compatibility These applicable requirements are given by COMMISSION IMPLEMENTING REGULATION (EU) 2019/776. For your information, the ERA (EU Agency for Railways) prepares an update of the TSI CCS application guideline, which is a voluntary document and will include the ESC/RSC process. 2) Related to the network the vehicle is intended to operate at. The Railway Undertaking indicates the intended area of use for a vehicle, after which the operator is responsible to perform the route compatibility check. The inframanager ProRail will make the scope of checks regarding ESC/ RSC available beginning 2020. This is, of course, only applicable to the current (B2) infrastructure.	
ETCS-3509	1	The ERTMS On-Board Equipment shall be able to issue a Traction Cut Off (TCO) command and shall receive the associated TCO Feedback. (see also ETCS-6442) Explanation: This TCO command will be used in (safe) braking curve calculations (ETCS-3510) and can be used by future ATO/DAS functions.	Safety Integrity Level for Traction Cut Off: specially for retrofit, making a safe traction cut off could imply changing parts of the traction or the brake system, increasing the cost of the retrofit. What is the aim of these requirements?	The aim is related to capacity, by reducing the ETCS braking curve length. S: This could increase the cost for retrofit. Changes in the traction system might be necessary. Authorisation of the vehicle after change could be difficult as well. A means to comply is to open the main circuit breaker to force traction cut-off. Frequent operation could deteriorate train components and could be inconvenient for passengers. S: How would you realise this for e.g. a steam locomotive? P: Please be aware that not all requirements are equally applicable to all kinds of rolling stock. The implementing organisation decides.	
ETCS-3510	1	The calculation of the brake intervention curves (EBI, SBI) shall use - the TCO function, including TCO feedback AND - the actual Brake Status Information (i.e. Special Brakes Status, Service Brake Application etc.). Explanation: The ERTMS On-Board Equipment will use this information to optimize the calculated ETCS braking curves. See also ETCS-2034.	Do you have something in mind different than the possibilities defined in TSI CCS (Subset 026 §3.13)?	P: No we do not have. It is not the intention to copy the requirements from the ERTMS specification. The actual application of TCO is not mandatory from the spec point of view. That is why this requirement is made.	
ETCS-3519	1	If automatically entered ETCS Train Data changes (e.g. due to uncoupling or coupling of Train Sets) the ERTMS On-board Equipment shall ask the Driver for confirmation.	Note that this may applicable to new-build vehicles but be impossible to implement in retrofitted vehicles. 1. Shall this apply only if the OBU enters SB mode or shall it also apply if the OBU is in e.g. FS mode?	See Subset 026, §5.17.	
ETCS-3524	1	If the ETCS DMI is faulty and cannot be used, the ERTMS On-Board Equipment shall select another screen for the presentation of ETCS and STM ATB information. If the ERTMS On-Board Equipment cannot select another DMI the Driver shall have the possibility to select another screen. In order to meet this requirement: - the Supplier shall provide an extra ETCS DMI in Rolling Stock that has no DMI available for this purpose; or - the Supplier shall make a DMI suitable for use by ETCS, in Rolling Stock that has a DMI available for this purpose.	The experience of mixing rolling stock equipment like DMI with ETCS signalling equipment like DMI has shown that this always lead to huge extra costs (during the first in class and also in the software updates). Operators having made this choice 10 years ago are now asking for separation between Rolling Stock and Signalling parts. The display of ETCS info shall be SIL2, so having a backup with a rolling stock DMI does not seem appropriate while there are other solutions already available on the market (at many signalling suppliers).	Especially maintenance in software creates a link between ERTMS and other onboard equipment which is very complicated to maintain. Of two options, S considers the latter not acceptable. The second part (TCMS DMI inclusion) of the requirement is optional. The integrator is responsible in the end to answer your question.	Railway Undertaking and Supplier are to agree upon the choice to apply one or more ETCS DMI's in order to comply to the reliability (RAM) values which are required (see requirement ETCS-988 and clarifying text ETCS-5627).

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-3524	2	If the ETCS DMI is faulty and cannot be used, the ERTMS On-Board Equipment shall select another screen for the presentation of ETCS and STM ATB information. If the ERTMS On-Board Equipment cannot select another DMI the Driver shall have the possibility to select another screen. In order to meet this requirement: - the Supplier shall provide an extra ETCS DMI in Rolling Stock that has no DMI available for this purpose; or - the Supplier shall make a DMI suitable for use by ETCS, in Rolling Stock that has a DMI available for this purpose.	Space limitations for installation of additional DMI screens into cockpit should be considered. Interface to existing screens (if available) increases integration complexity. Recommendation: Specify MTBF of screen or information still available if one screen fails.		
ETCS-3524	3	If the ETCS DMI is faulty and cannot be used, the ERTMS On-Board Equipment shall select another screen for the presentation of ETCS and STM ATB information. If the ERTMS On-Board Equipment cannot select another DMI the Driver shall have the possibility to select another screen. In order to meet this requirement: - the Supplier shall provide an extra ETCS DMI in Rolling Stock that has no DMI available for this purpose; or - the Supplier shall make a DMI suitable for use by ETCS, in Rolling Stock that has a DMI available for this purpose.	which is the aim of the second screen? Complete ERTMS functionality or just some reduced functionality to allow the train reach the next station for maintenance? Depending on the purpose, different solutions can be foreseen.	Reliability and impact-reducing. The fulfilment of the requirement should be conform TSI. Ultimately, the contracting party will be responsible for contracting this requirement. S: It is important to understand what functionality should be available in the 2nd screen. What is the aim of the requirement? P: See response. As it is required now: a 2nd DMI is still necessary, even if reliability is met. S: Note that a second DMI (SIL2) is possible but expensive to apply.	
ETCS-3558	1	If the ERTMS On-Board Equipment is isolated, the actual Train speed shall be presented on drivers request. Note: the accuracy of the train speed signal is set in requirement ETCS-6645 Note: which source and display unit are applied is not required, thus may be an external source (Train System) or ETCS (the Option for Train Speed determination in SRS 4.5.2.1) and may be a display which is external of ETCS.	How to take this kind of requirement into account? A supplier can be compliant mentioning that the source of info shall be external to the ETCS and the display shall be external to the ETCS…therefore it becomes completely a rolling stock issue.	Please bear in mind that P considers contracting parties to appoint responsible parties for the onboard integration. The GPvEM requirements have been made available to the implementation organisations (ERTMS@NS, IEMeV). Ultimately, the contracting parties will be responsible for contracting this requirement.	
ETCS-5029	1	Supplier shall demonstrate on basis of the FTA that the failure frequency of hardware failures in fault category Fc1 is at the most equal to the value specified in ETCS-988 for Fc1.	Confidential question	The scope of supply is to be agreed between contracting party and supplier.	
ETCS-5463	1	When the ERTMS On-board Equipment is in normal operational service, its functioning shall not require the ETCS mode No Power.	What is meant by this requirement?	Applications which apply ETCS installations in No Power for non-degraded operations are undesirable and might be possible according to TSI CCS. An example which has been addressed by Dutch NNTR is the application of NP mode instead of Sleeping mode for 'slave' ETCS installations for ETCS baseline 2.	
ETCS-5463	2	When the ERTMS On-board Equipment is in normal operational service, its functioning shall not require the ETCS mode No Power.	What does this mean?	P: E.g. a non-leading vehicle in a train could be in the mode NP (NP could be used also on other occasions). This is what we would like to rule out.	
ETCS-5463	3	When the ERTMS On-board Equipment is in normal operational service, its functioning shall not require the ETCS mode No Power.	Explanation	This requirement is to prevent the situation were NP is used for (e.g.) non-leading vehicles. TSI CCS does not prevent unsuitable application of NP mode. Starting up from NP requires more time than from SL, so there is a potential capacity impact.	
ETCS-5464	1	The ERTMS On-board Equipment shall comply to the On-board related aspects of the IRS GSM-R. Explanation: The IRS GSM-R contains generic requirements to the communication systeem and EURORADIO that apply for rolling stock, infrastructure and GSM-R. The IRS rolling stock requirements and their relation to the other subsystems are hereby incorporated in the rolling stock specification.	Could you deliver the IRS GSM-R?		The document IRS GSM-R will be published on https://www.ertms-nl.nl

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-5466	1	The ERTMS On-board Equipment shall comply with subset 093 . Note: for the Netherlands the following values apply: - T_NVCONTACT (@HSL-Zuid) = 30 seconds - T_NVCONTACT (other) = 35 seconds. Explanation: Performance of the connection / session is of great interest for the ERTMS Programme. The performance requirements of subset 093 will help in getting the performance right.	(a) Subset 093 is non-mandatory in BL2 and BL3 Set#1. (b) Subset 093 is not included in BL2 Set#2. (c) Subset 093 states requirements for the end-to-end communications system performance and does not provide any apportionment to the various parts of the whole system? (d) a NoBo will not provide any compliance statement for an OBU related to Subset 093 because the specific OBU requirements are insufficiently defined. (e) Due to lack of definition of the OBU requirements, a supplier cannot comit to making a compliant OBU. 1) Which specific clauses of Subset 093 shall apply to the OBU? 2) How shall the performance of the OBU be tested against these specific clauses, given that the Subset does not provide any apportionment to the various parts of the whole system? 3) the values for T_NVCONTACT stated in ETCS-5466 are not the same as those stated in Subset-093. How shall the values stated in the Subset be translated into requirements under ETCS-5466?	The Programme takes note of remarks (a) up to and including (d). P answers, that the remark (c) is really an issue the programme directorate has recognized and will answer in due time. P: for the Netherlands, Programme ERTMS including ProRail would like to improve by means of subset 093 and is aware that it is out of scope of the NoBo. S: previously, for 'all-in rolling stock companies', this was not a big issue, but responsibilities and scopes are too divided to make subset 093 usable. S cannot indicate which parts of subset 093 it is responsible for. P: in general, GSM-R quality is extremely important for the rollout of ERTMS and finds that the interoperable requirements are not sufficient.	
ETCS-5466	2	The ERTMS On-board Equipment shall comply with subset 093 . Note: for the Netherlands the following values apply: - T_NVCONTACT (@HSL-Zuid) = 30 seconds - T_NVCONTACT (other) = 35 seconds. Explanation: Performance of the connection / session is of great interest for the ERTMS Programme. The performance requirements of subset 093 will help in getting the performance right.	This values are not compliant with the TSI	Please explain what you exactly mean, considering that subset093 is not referred in TSI. S assumes that only one value of T_NVCONTACT can be used. P says that this is a national value that will be communicated by the infrastructure at the beginning of the applicable lines. Although it might be that only one value can be pre-programmed, the actual value will be transmitted on entrance of the line by the vehicle.	
ETCS-5467	1	For the ERTMS On-Board Equipment, the probability of the ERTMS On-Board Equipment not establishing a Safe Session during SoM within the assumed time for SoM shall be less than 10^-4. Explanation: When ordered in this manner, the train shall establish a connection / session. To reduce unnecessary braking by the train, this action must have at least the performance as specified in the requirement. For the OBE, this requires that measures are taken to maximise this performance. Requirement ETCS-5466 states the generic performance of a session initiation. Requirement ETCS-5467 and ETCS-5468 specify the time constraints within which a successful session is expected to be established.	The establishment of the radio communication session does not depend only on the trainborne equipment, therefore the probability can not be allocated to the OBU (also 10-6 is more strict that the MTBF Fc1 from ETCS-5627)	This is correct for the radio network part, in case of loss of radio connection. About the allocation to onboard/trackside, agreements should be made. S: The overall MTBF for the whole network cannot be met.	
ETCS-5467	2	For the ERTMS On-Board Equipment, the probability of the ERTMS On-Board Equipment not establishing a Safe Session during SoM within the assumed time for SoM shall be less than 10^-4. Explanation: When ordered in this manner, the train shall establish a connection / session. To reduce unnecessary braking by the train, this action must have at least the performance as specified in the requirement. For the OBE, this requires that measures are taken to maximise this performance. Requirement ETCS-5466 states the generic performance of a session initiation. Requirement ETCS-5467 and ETCS-5468 specify the time constraints within which a successful session is expected to be established.	During SoM the vehicle is not moving, therefore what can this have to do with braking performance?		SoM is given as an example. The requirement also applies to establishing a Safe Session for a running train

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-5470	1	Prior to powering down the ERTMS On-Board Equipment, the ERTMS On-board Equipment shall terminate the connection/session according to specification, including the IMSI Detach of the modem.	This topic has been discussed during a specialist meeting in 2018, nevertheless, the requirement is still unchanged. Therefore the problem remains : in case of powering down the ETCS, do you mean that the EDOR mobile shall remain active some seconds? ERTMS Program explained that this requirement is originated from issues which occurred in which the GSM-R trackside kept some modems attached while the modem was powered-down. As explained to the ERTMS Program, this issue is a trackside issue : Implicit IMSI detach: The GSM air-interface transmits network-specific information on specific broadcast channels. This information includes whether the periodic location update is enabled. If enabled, then the MS must send location update requests at time intervals specified by the network. If the MS is switched off, having not properly completed the IMSI detach procedure, the network will consider the MS as switched off or unreachable if no location update is made. In this situation the VLR performs an implicit IMSI detach.	About the requirement text ' … including the IMSI Detach of the modem' . Both IMSI detach methods (the explicit and implicit one) do meet the requirement. P is responsible for the handshake of requirements with implementation organisations and will take care of it.	Interpret requirement as follows: Prior to powering down the ERTMS On-Board Equipment, the ERTMS On-board Equipment shall terminate the connection/session according to specification, including the IMSI Detach of the modem. This measure influences the GSM-R network capacity and availability positively.
ETCS-5471	1	After the loss of a safe radio connection (or a communication session), detected by the ERTMS On-Board Equipment, the ERTMS On-Board Equipment shall start a new safe radio connection (or a communication session) attempt within 2 consecutive seconds in at least 99,0% of all cases. Explanation: in case of a lost connection or session, actions need to be taken to reduce the chance of the train system may decide to an unnecessary brake command. Requirement ETCS-5469 defines the general performance requirement and requirement ETCS-5471 suggests a quick detection and quick reestablishment of the connection / session.	Please define more accurately what is meant by "loss of session", "loss of connection" and "start a new … attempt" so that it is possible to link this to the value of 2s.		During the last decade of analysis of operation, it has appeared that in a number of cases where an interruption of connection has occured, a swift attempt to establish a new connection is missing. The interruption of the connection in the analysed situation was indicated by expiry of N2 on HDLC level. After conclusion that trying to resend data is not viable, no apparent action was taken, leading to a stranding. There could not be found a reason for the OBE not trying to reestablish a connection to the RBC. This requirement intends to circumvent this situation by specifying that the Euroradio should, after detection that no data can be exchanged and regardless of the cause, a new attempt ought to be made to try to reestablish a connection to the RBC.
ETCS-5472	1	When GSM-R modems are started up from No Power, the GSM-R modems shall scan for R-GSM carriers prior to scanning all other carriers.	Presumably not only scan for but also register to the home network or first other GSM-R network that is encountered.	Your presumption is correct.	Interpret requirement as follows: When GSM-R modems are started up from No Power, the GSM-R modems shall scan for R-GSM carriers (and register when possible), prior to scanning all other carriers.
ETCS-5476	1	The Supplier shall realize all necessary safeguards against combinations of the onboard Parameters (both in Rolling Stock as in relation to the infrastructure settings) that do not lead to a correctly functioning ERTMS communication system. Correctly functioning is defined as not exceeding T_NVContact. The solution shall be agreed by the Customer with written approval from the Customer. Explanation: - Goal is to make possible to achieve optimal performance of the mobile connection/session. However, whatever combination of the onboard Parameters is chosen, the ETCS communication system shall function correctly. - "All necessary safeguards" may comprise, for example, conditions embedded in software or a description of conditions in a manual.	Presumably there is only one set of parameters which yields the "optimum" performance as defined in ETCS-xxxx and therefore an infinite number of sets which do not. It is completely unreasonable to expect the OBU supplier to implement this while at the same time allowing the customer to further tweak the parameters.		Interpret "**necessary safeguards**" in the requirement text as "**feasible safeguards**"

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-5477	1	To demonstrate the compliance to requirement ETCS-6665, the Supplier shall demonstrate to the Customer that the ERTMS On-board Parameters lead to the optimal safe connection/session. This shall be performed by participating in a type test program to verify and determine an optimal set of these Parameter(s). The type test program will be in a lab and real environment.	10.000 hours of testing, plus iterations thereof when parameters are changed, will lead to extremely long delays in project rollout and an unacceptable open-ended contractual situation for the supplier. 1. What test lab will ProRail / Programma ERTMS provide that replicates the field conditions in order to be a "representative environment"? 2. How many GSM-R channels in the field will ProRail / Programma ERTMS make available for the 10.000h field test such that 10.000h test can be completed with a reasonable elapsed time period? 3. How do ProRail / Programma ERTMS envisage achieving 10.000 of test within a reasonable elapsed time period? 4. What elapsed time period do ProRail / Programme ERTMS consider to be a reasonable for the 10.000h of testing? 5. If the system cannot enter operation until the 10.000h test has been completed, how will the system be tested "With the actual ETCS configuration in both train and infrastructure".	Generally, iteration of requirements and their verification should be avoided.	The provisions for testing in general will partly be provided by Supplier and, where necessary provided by P. The process of determining which additional test provisions are necessary has recently started. We invite Suppliers to indicate what methods are available to obtain fulfillment of this requirement. As an example, we can think of using in parallel multiple OBEs both in the test lab and in trains. Perhaps using trains of the Implementation organisation can be used to deploy OBE's in service areas that can be monitored from a distance. The Supplier test lab could be made representative and/or the Supplier could participate in the EoG-pilot (EoG = ETCS over GPRS).
ETCS-5478	1	The values as mentioned in ETCS-5473 <subset 37, table 44> should initially be set as: - window size (k): 25 (ss37 rec. value: 1-61); - Ack time (T1): 1.3 s (ss37 rec. value: 0.8-2); - Local processing delay time (T2): <0.08 s (ss37 rec. value: <0.08); - Out of service time (T3): 4 s (ss37 rec. value: T3>>T4); - Inactivity time (T4): 2 s (ss37 rec. value: >N2*T1); - max bits in I-frame (N1): 400 bits (ss37 rec. value: 240<=N1<=1024; Tx 312; Rx 1024); - Max retransmissions (N2): 2 (ss37 rec. value: 3-6; rec:5). Note: these settings are based on several years of monitoring the performance of the ETCS-connections/session on the Dutch ETCS-equipped tracks. Note: if Change Request CR1146 is implemented, the values in CR1146 prevail. At the moment (March 2019) CR1146 is in consideration. Explanation: the initial setting of the CS-Parameters are suggested here. These values are based on 6 years of experiences with 4 ETCS-CS-equipped lines, given the radio environment of the Netherlands. It was empirically determined that the values above result in the lowest probability of connection/session loss. It is suggested to start the (lab) type test program (ETCS-6663) with this set of values. The Supplier is nonetheless invited to suggest other values, would the specific implementation give need for that.	Note that the TSI Subsets do not specify that these values shall be sent as national values from the wayside, nor do they specify that the OBU shall be able to store a multiplicity of pre-configured values for different NID_C areas. The values stated in ETCS-5478 might be unacceptable for operation in other networks. 1) How do ProRail / Programma ERTMS expect to ensure interoperability of vehicle with other countries' wayside at the same time as requiring use of local values and / or the optimisation of parameter values for local conditions? 2. In other requirements, it states that the Supplier shall be responsible for determining the optimium parameter values and that each candidate set of parameters shall be tested in lab and field for 10.000. Can the supplier assume that the values stated in ETCS-5478 are exempt from the requirement for 10.000h testing. 3. Furthermore, can the supplier assume that the values stated in ETCS-5478 are already the optimum and that no other values shall be tested? 4. What guidance does ERTMS_ _ _ / ProRail give regarding the selection of optimum values for local conditions? (e.g. does ProRail believe that all OBU and all RBC should use exactly the same values?) (This information is necessary for the supplier - otherwise the supplier could be forced by the ETCS-5476 and ETCS-6666 into spending millions of hours testing a vast number of sets of parameters to empricially find the optimum.)	The paramater values must be aligned with values necessary for other countries. ERA publication will align some of these issues in the near future. The GSM-R parameter values with size of frames, window, speed, correct message and retransmission of lost messages. These have to be aligned with values necessary for other countries. With CR1146, ERA publication will align some of these issues in the near future.	Regarding 1: for this reason the ERA introduced CR1146. Regarding 2: no, these settings are not exempt from the testing requirements. These settings were meant as a suggestion to start checking from. Another (substantiated) suggestion by the Supplier is also permissible. Regarding 3: no, it is not guaranteed that these settings are the optimum for the Netherlands. Other settings may be tested, depending on performance. Regarding 4: the optimal settings considering the Dutch conditions to be generic for the country are expected
ETCS-5480	1	The Maintainer shall maintain the antenna and its circuitry in order to ensure compliance with the requirements and engineering rules and installation instructions of the Supplier, listed in requirement ETCS-5479. Explanation: the maintainer is obliged to keep the antenna circuitry in such a state as is required in the maintenance instruction of the Supplier. The aspects important here a the ones mentioned in requirement ETCS-5479.	Why is a maintenance requirement included in a specification for equipment supply? Is this not the wrong place for such a requirement?	Between contracting party and supplier	
ETCS-5487	1	The ETCS system shall report the status of each GSM-R modem in the EDOR to the Driver on request. The following EDOR status shall be reported: - modem available/not available; - status of the network registration and presentation of the network name; - GSM-R signal level (e.g. a bar diagram network indicator). Explanation: Having this functionality available for the Driver may aid in a more quick resolvement of the disruption, or even to prevent disruptions.	How do ProRail / Prpgramma ERTMS envisage that the signal strength can be obtained from the modem while it is in transparent mode during a call? This is a contradiction to the Euroradio FFFIS.		The requirement part "- GSM-R signal level (e.g. a bar diagram network indicator)", should be interpreted as: "- GSM-R signal level (e.g. a bar diagram network indicator when available." Explanation: Having this functionality available for the Driver may support a faster resolvement of the disruption, or even to prevent disruptions.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-5495	1	With regards to requirement ETCS-5473 and ETCS-5474: the Customer will consult the Supplier when a change is planned. The Supplier shall advise the Customer whether: - the proposed set of Parameters lead to a correctly functioning communication system, - the proposed set of Parameters brings the intended improvements. This advice will either be charged by the Supplier to the Customer given the pricing arrangements, or is part of the Framework Agreement.	Note: In the requirement ETCS-5474 it says that the customer shall be able to change parameters without involving the supplier. ETCS-5495 contradicts ETCS-5474. Which requirement has precedence?	Input from the supplier regarding the parameters and the expected result is needed. Requirement 5474 states, that the actual changing of the parameters shall be possible by the (ECM of) vehicle owner.	
ETCS-5666	1	The method of interfacing the ERTMS On-Board Equipment to the Train Control Systems shall not adversely effect the existing capability of the vehicle to operate with Multiple Units. These existing capabilities shall be registered by Supplier and approved by the Customer.	According to ETCS-5666, the method of interfacing the ERTMS On-Board Equipment to the Train Control Systems shall not adversely affect the existing capability of the vehicle to operate with Multiple Units. Each train type will be subject to a specific interface and configuration for which a specification will be needed from the train supplier. What will be the process for the delivery of such vehicle specifications?	The vehicle data are to be delivered by your contract partner.	
ETCS-5728	1	The ERTMS On-Board Equipment shall include the function "Cab-Hold-Over". When activated this function holds the Cabin-active Signal to the attached ERTMS On-board Unit active. Note: when the Drivers-key is in position "Cabin Active", the Cabin is Active. Note: When the cabin-active signal to the ETCS is active and no driving direction is selected, the ETCS will perform stand still supervision (roll-away protection, see subset 26, 4.5.2 and 3.14).	Does it mean that when a driver closes a cabin, the EVC shall remain in the same state e.g. Level 2 Full Supervision? In which mode shall be the other EVC? Still in Sleeping mode? normally it shall go to SB mode/ We expect some problems when a single EVC is used for 2 cabins since the opening of the second cab would put the first cab in SB mode and only at this moment the disconnection to the RBC is triggered. If the driver validates his ID by pushing on the DMI of the second cab, the EVC may still be connected with the RBC for the first cab.	Yes and understood. S expects a problem; P will have to reconsider the requirement. The scope of the requirement is trainsets (with more than 1 EVC).	In composing the GPvEM, basic scenario's were considered and addressed. For example, the mentioned concern for a opening another cab before the 'cab-hold-over time' expires, is addressed by requirement ETCS-5731. However, P confirms that more detailed analysis is required for design of the cab hold-over function. The application of the cab-hold over function with that deeper analysis is the responsibility of the Railway Undertaking
ETCS-5728	2	The ERTMS On-Board Equipment shall include the function "Cab-Hold-Over". When activated this function holds the Cabin-active Signal to the attached ERTMS On-board Unit active. Note: when the Drivers-key is in position "Cabin Active", the Cabin is Active. Note: When the cabin-active signal to the ETCS is active and no driving direction is selected, the ETCS will perform stand still supervision (roll-away protection, see subset 26, 4.5.2 and 3.14).	Regarding the cab holdover, what is the object?	P: There should be a delay on closing the desk/ cabin, so that a quick restart for a change of driver or driving direction is possible.	
ETCS-5728	3	The ERTMS On-Board Equipment shall include the function "Cab-Hold-Over". When activated this function holds the Cabin-active Signal to the attached ERTMS On-board Unit active. Note: when the Drivers-key is in position "Cabin Active", the Cabin is Active. Note: When the cabin-active signal to the ETCS is active and no driving direction is selected, the ETCS will perform stand still supervision (roll-away protection, see subset 26, 4.5.2 and 3.14).	Why this function? Is it mandatory?	This function avoids the need for a Start of Mission process for a change of driver. That contributes to capacity utilization at stations. S: implementing this function could be dangerous.	
ETCS-5734	1	In addition to index 6 (ERA_ERTMS_015560), par 11.3.3.4, the following apply: - the Driver ID shall be entered by numerical keys; - A button to switch to alpha numerical keys may be added; - immediately after Activating the Cabin or Desk the numerical key pad shall be selected.	Will these requirements become Dutch NTRs?	Not foreseen.	
ETCS-5739	1	The ERTMS On-board Equipment shall use the ETCS-function Override for "override STS" in Level STM-ATB as prescribed in Subset 26-5, par. 5.8.1.5 - 5.8.1.8 (v360) and Subset 35, par 10.10.1.	Not clear. What is override STS?	Override STS is an ATB-functionality, necessary to pass a signal at danger.	
ETCS-5902	1	The Supplier shall, in agreement with the Customer, establish a review team with his and the Customers'representatives, consisting of the roles Owner, Keeper, Maintainer, Operator and Driver; this team shall stay active up to and including phase 11 (Operation, Maintenance, Performance monitoring). Goal for this review team is to assess whether the solution suggested by the Supplier, from the point of view of 'operation', usability/satisfaction and RAMS/LCC, succeeds in realizing a required design, end product (solution) and related education materials as described in this tender.	We would like to discuss with you the organisation of the common review team, from the design phase up to the operational, maintenance and performance monitoring phase.	This discussion should be done with the implementing organisations. S: a direct line for requirements to the party responsible for the requirements (P) is necessary to clarify and find the impact of not fulfilling the requirement completely. P: ultimately, the contracting party is the party that decides on the impact of not fulfilling a requirement, and shall inform and coordinate with the P of a possible deviation.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-5933	1	The ERTMS On-board Equipment shall comply with ETCS Baseline 3 Release 2 and GSM-R Baseline 1, as defined in TSI CCS 2016/919/EU, Set of Specifications #3. note: this implicates operation in level 3.	Confidential question	Please contact your customer to indicate for which type of vehicle or upgrade, which requirements are applicable.	
ETCS-6087	1	The software management plan shall consist of the following subjects: • Software development; • Software documentation; • Software integration and test plan; • Software quality assurance; • Software support and life cycle management.	The software development is not limited to the cybersecurity aspect. The security plan is a deliverable to a customer but the software management for the generic EVC development is usually not discussed with customers (since it is made for several customers) what is your intention with these requirements in §8.1.4?	Definition of cybersecurity requirements is (still) an ongoing process at programma ERTMS. We expect the requirements regarding cybersecurity to stabilize within the coming year. For S, software management includes also confidential information. This information is not normally distributed to the customer.	The objective of this requirement is for the Railway Undertaking to gain understanding of the development processes (EN50128) of the Supplier. Railway Undertaking / Contracting Party shall agree with the Supplier the means by which this understanding can be achieved and in what way this will be documented.
ETCS-6210	1	The Supplier shall add the reliability/availability related failures listed in the table below to the Functional Failure List (see ETCS 5447). The failures shall have a classification (see ETCS 5447) as specified in the column "Fc" (Fault classification). id | Failure | Fc 1 | The ERTMS On-board reports to RBC “Train Integrity confirmed by Driver” while all units (*) in the train are fitted with a Train Integrity function and the actual status is “Train Integrity information confirmed by integrity monitoring device” (error: Q_Length is reported 2 while Q_Length = 1) | Fc2 2 | The ERTMS On-board reports to RBC “no Train Integrity information” for a period longer than T_response while all units (*) in the train are fitted with the a Train Integrity function (excluding the situations in ETCS-1527 and ETCS-1528) (error: Q_Length is reported 0 while Q_Length = 1) | Fc2 3 | The ERTMS On-board reports to RBC "Train Integrity lost” while the train is complete and not having left coaches or wagons behind. (error: Q_Length is reported 3 while Q_Length = 1) | Fc2 4 | The ERTMS On-board reports NOT to RBC "Train Integrity lost” while Train Integrity is lost longer than a time T_response (L_TRAININT still is correct) (error: Q_Length is reported 0, 1 or 2 while Q_Length = 3; and L_TRAININT still is correct) | Fc2 5 | The ERTMS On-board variable L_TRAIN is more than 10 meter longer than the actual train length. | Fc2(*) a unit can be a Locomotive, Trainset (multiple unit) or steering car.	the inaccuracy of the L_TRAIN depends on the speed of the train (considering the latency of the TIM) and of the odometry error. 10m of inaccuracy with a rate Fc2 is not possible to achieve.	P: Do you mean L_TRAININT instead of L_TRAIN?	Reference is added in the Publication. Subset 026, v3.6.0: paragraph 7.5.1.56. Note that L_TRAIN also was used in the document 'Report on the Request for Information on ERTMS Cold Movement Detection and ERTMS Train Integrity Monitor'. That document is published at the Programma website. The weblink to the document is https://www.ertms-nl.nl/nieuwsberichten+en+publicaties/Documenten+bij+nieuws/default.aspx#folder=424091
ETCS-6242	1	In Q_LENGTH the status information “Train Integrity information confirmed by integrity monitoring device” shall be implemented.{comment:69}	Report of Train Rear End Position for Level 3: Good for application in new vehicles. Retrofit would require extensive modifications of existing vehicles or complex interfacing.		
ETCS-6299	1	The Diagnostic function shall detect and report faults at a level more refined than the defined LRU. All information available shall be used to detect the anomaly with as much detail as possible. The diagnostic report shall give insight in the reason why the diagnostic report is activated.	The diagnostic messages specified here are not fully in line with the UNISIG. What is the rationale behind it?	The specification is in line with UNISIG, but tightens the requirements in order to be able to detect root causes for disruptions. S: needs more information on what information is requested. Asks for a list or some other type of information. P: related to reliability-requirements and performance monitoring. The level of detail depends on the definition of an LRU. S: the requirement is too vague to organize. P: this requirement shall eventually be decided upon by the contracting party.	
ETCS-6301	1	If the odometry needs a 'wheel diameter correction factor' : - The Diagnostic function of the ERTMS On-Board Equipment shall guard the correctness (plausibility check). - The Diagnostic function shall activate a diagnostic report when the speed sensor has a deviation greater then 3% to the actual speed (configurable Parameter). - The Diagnostic function shall activate a diagnostic report when the speed sensor has a deviation lower then 2% to the actual speed (configurable Parameter).	This requirement seems applicable to some particular architectures. Do you intend to classify such requirements as "Wishable"?	The purpose of this requirement is to detect anomalies in the wheel diameter. P does not classify the requirements.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-6301	2	If the odometry needs a 'wheel diameter correction factor' : - The Diagnostic function of the ERTMS On-Board Equipment shall guard the correctness (plausibility check). - The Diagnostic function shall activate a diagnostic report when the speed sensor has a deviation greater then 3% to the actual speed (configurable Parameter). - The Diagnostic function shall activate a diagnostic report when the speed sensor has a deviation lower then 2% to the actual speed (configurable Parameter).	Confidential question	1. The relation between one revolvement of the wheel and the wheel diameter. 2. As is normally done when parameters are involved. 3. The reason is accuracy in odometry, leading to increased network capacity. 4. This is up to the supplier.	
ETCS-6315	1	Recorder message The ERTMS On-Board Equipment shall send the information required for data recording by the TSI 'Operation and traffic management' and RIS (Regeling Indienststelling Spoorvoertuigen) to the recorder The required update frequency shall be 1 Hz.	The JRU is defined in the TSI. The recorder not yet. Can the Supplier reuse the existing JRU and extend its functionality to meet the requirements in Ch 3-3.2.10 - or do you want a distinct, separate piece of equipment?	The TSI CCS only define the data that shall be recorded. 'Recorder' is defined in TSI RST. Programme ERTMS does not have a preference for a separate equipment yes/no, one integrated equipment is possible. S: Explains that it could be a separate recorder or an upgraded JRU. P: neither is required, it is up to the contracting party to decide upon this.	
ETCS-6316	1	Diagnostic message At the moment a Diagnostic report is activated/deactivated the ERTMS On-Board Equipment shall send a diagnostic message to the recorder. The message shall contain the following information: - Diagnostic report code - Diagnostic report description - ERTMS On-Board Equipment date/time - Diagnostic report status (activated / deactivated)	The recorder on the requirement, is it the JRU or the TCMS memory? Only data specified on SS27 shall be sent to the JRU or also diagnostic message?	The recorder as mentioned in the requirement is not the JRU but the train recorder. Train recorder and JRU may be combined in one device. The diagnostic information as mentioned in this requirement is not related to Subset 27.	
ETCS-6317	1	Measurement message (STM-ATB) All measurement data of the STM-ATB shall be sent to the recorder. The required update frequency shall be 5 Hz.	Where are defined these measurement data? Why is there a frequency requirement of 5Hz?	Measurement data are defined in the NNTR. The frequency chosen is best practice.	
ETCS-6317	2	Measurement message (STM-ATB) All measurement data of the STM-ATB shall be sent to the recorder. The required update frequency shall be 5 Hz.	1. What is meant by "measurement data"? 2. Why is the frequency so high? Five updates per second seems to be unnecessary, especially given that the TSI requires a 1s update interval.	Measurement data are all input and outputs and the internal mode and status of the concerned system. 5Hz gives sufficient short time to avoid loss of time in the chain. 5Hz is about offering the signal, not about storage of the signal which may be recorder specific.	
ETCS-6318	1	Measurement message (ERTMS On-Board Equipment) All signals mentioned in subset 34, the status of the inputs/outputs of the ERTMS On-Board Equipment and the internal status/modes/variables of the ERTMS On-Board Equipment shall be sent to the recorder. The required update frequency is 5 Hz. The exact content of the message shall be defined in agreement with the Customer and with written approval from the Customer.	Note that this seems to be a duplicate requirement.	Requirements ETCS-6318 concerns ETCS, not STM-ATB and this it is therefore not duplicate.	
ETCS-6323	1	The ERTMS On-Board Equipment shall have an Ethernet interface for sending data to the recorder.	to which equipment is this interface about?	Interface to the recorder. The chapter in which this requirement is, is misleading. Should the data be sent to the dedicated ERTMS recorder or also to the vehicle (L&P) recorder? The purpose of this requirement is to interface with the diagnostic system. The architecture is to be agreed upon between the supplier and the contracting party.	
ETCS-6323	2	The ERTMS On-Board Equipment shall have an Ethernet interface for sending data to the recorder.	There is interface, might MVB instead of Ethernet. Is it possible?	To be agreed with the rolling stock owner.	
ETCS-6347	1	The recorder shall have at least the following interfaces: - 1 ruggedized M12 Ethernet interface at the secure side of the recorder (connected to the ERTMS On-Board Equipment); - 1 ruggedized M12 Ethernet interface at the non secure side of the recorder (connected to OBOS/other transmission system) - 2 galvanic isolated inputs; - USB or Ethernet interface for service (non secure side); - mobile 3G/4G communication interface (non secure side). The recorder shall be extendable with a module with at least 16 extra galvanic isolated inputs.	This requirement (and all others) defines a specific product (not existing on the market today). The aim of these requirements is clear however what are the possibilities to propose alternatives? What is the interface to the OBOS system?	To be part of the contract negotiations with the conctracting party. OBOS is meant as 'On Board Ontsluiting Systeem', an ICT system in the train that collects all relevant traindata and maintains a copy in the wayside counterpart OWTS.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-6439	1	The ERTMS On-Board Equipment shall be able to receive the status of the brakes (e.g. brakes active, brakes isolated, brakes defect, brake activated etc.). Explanation: The ERTMS On-Board Equipment will use this information to optimize the calculated ETCS braking curves.	Note that the requirement goes far beyond TSI and implies special functionalities which may well be different in each vehicle type. 1. What is the difference between "brake active" and "brake activated"? 2. How shall isolated brakes be defined, at what level of resolution (bogie, axle, vehicle)? 3. How will the effect of brake isolation on the train brake performance be defined? 4. Will the vehicle owner provide the vehicle adaptation and interface? 5. How shall the information be gathered from the vehicle and what is the (standardised) interface to the ETCS OB? (Especially in retrofitting of existing vehicles.) 6. What is the effect of isolated brakes on the STM functionality (supervision delay times, speed limits)?	1. brake active means "is the brake subsystem operational?". Brakes actived means "is the brake subsystem activated". E.g. Magnetic Track Brakes. "MTB active" means that the MTB system is in use/operational. "MTB activated" means that the MTB is applied and generating brake force. The same principle applies to the other "special brakes". 2. The resolution shall be similar to the actual isolation possibilities of the rolling stock. In general this is "bogey" and for some rolling stock this will be "axle". 3. As regulated by valid specifications/standards (valid subsets, UIC 544-1, expected to be replaced in near future by EN168341). In general testing is recommended. A reliability and/or availability study can be used to give input which test cases are needed to be tested as degraded modes. 4. Between rolling stock owner and supplier. 5. Integrator is responsible. 6. This is not different from current implementations.	
ETCS-6458	1	The ERTMS On-board equipment shall have an interface as described in subset 34, par. 2.7 to isolate the STM-ATB (see also ETCS-6643).	What is the definition of "Isolation" of the ATB STM?	Isolation means: not being able to influence the behavior of the train. P explains that in the applicable NNTRs (Regeling Indienststelling Spoorvoertuigen) this is also called 'Buiten bedrijf'.	
ETCS-6617	1	The interfaces of the On-Board Equipment and recorder shall, during full operational life of the ETCS system, be secured against attack, manipulation, intrusion and other unauthorized access ('cyber security'). The implemented countermeasures shall be detailed in consultation with and agreed with the customer.	What does this mean? Do we need to fulfill EN 50159 und/or IEC 62442? How do we showcase that we fulfill this? What is the criteria for acceptance?	It would be acceptable to comply to IEC62443 or to the ISO27000-series.	
ETCS-6619	1	The intrusion detection function shall signal an intrusion and the kind of intrusion with: - the setting of a status bit in the table 'measurements' at the moment an intrusion is detected - the setting of a status bit in the table 'measurements' at the moment an intrusion is not present anymore - activation of a diagnostic report at the moment an intrusion is detected - deactivation of a diagnostic report at the moment an intrusion is not present anymore	Could you elaborate on the list of functions / data you would like to have in relation to the intrusion detection function?	The goal of this requirement is to signal only that an intrusion is detected. Maybe it's useful to signal more information. The Supplier is free to make a proposal.	
ETCS-6620	1	The security function shall have a continuous health and integrity check at the ERTMS On-Board Equipment and recorder and shall signal any possible health/integrity problem with: - the setting of a status bit in the table 'measurements' at the moment the health/integrity problem is detected - the setting of a status bit in the table 'measurements' at the moment the health/integrity problem is not present anymore - activation of a diagnostic report at the moment the health/integrity problem is detected - deactivation of a diagnostic report at the moment the health/integrity problem is not present anymore	According to requirement ETCS-6620, The security function shall have a continuous health and integrity check at the ERTMS On-Board Equipment and recorder and shall signal any possible health/integrity problem. Could you specify "continuous" in that context?	For example a daily 'health and integrity check' is not acceptable. A health and integrity problem shall be directly reported.	Continuous should be read as 'every second'. Suggestion to refer to standards. Requirements regarding cybersecurity then refer to IEC62443 or to the ISO27000-series.
ETCS-6638	1	If TIM or the related safe train length acquisition fails, the following applies: - the failed part(s) or subsystems shall be able to be isolated or switched off; - operation in all ETCS levels shall remain possible without any restrictions. Note: switches to isolate or switch of failed part(s) or subsystems are described in ETCS-7216 Note: operation for following trains will be restricted due to the non-availability of the TIM.	Interaction with TCMS (e.g. for communication of OBUs across trains of multiple vehicles, break data infeed): Requires complex integration into existing TCMS including train hardware. Recommended for new vehicles. Degraded modes, no or only minimum loss of functionality. Can only be achieved by full redundancy.	Correct. S prefers functional requirements to be able to implement their own solutions. P: Complete redundancy is not intended.	Clarification: The onboard ETCS system and the Train Integrity Function shall be independent so that the failing of the Train Integrity Function will not lead to decreased availability of the onboard ETCS system.
ETCS-6638	2	If TIM or the related safe train length acquisition fails, the following applies: - the failed part(s) or subsystems shall be able to be isolated or switched off; - operation in all ETCS levels shall remain possible without any restrictions. Note: switches to isolate or switch of failed part(s) or subsystems are described in ETCS-7216 Note: operation for following trains will be restricted due to the non-availability of the TIM.	To what is TIM? Train Integrity Management?	Correct. S: if TIM fails, operation in L3 is no longer possible. P: in the scope of this requirement there are trackside operational scenarios called hybrid L3 where L3 combined with trackside detection in case the train is not equipped with L3.	The requirement applies to a hybrid level 3 application.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-6643	1	If STM-ATB fails, the following applies: - STM-ATB shall be able to be isolated; - operation on ETCS L0, L1, L2 and L3 (if relevant) infrastructure shall remain possible without any restrictions; - operation on ATB infrastructure shall remain possible without technical restrictions; - the actual speed shall be displayed correctly. Note: ATB isolation switch is described in ETCS-5776	What is the status of the level 0 in the Netherlands? (till now this mode was not allowed)	Level 0 is not applied in the Netherlands. Concerns the second bullet in the requirement. The requirement is technical, not intended to prohibit or prescribe the use of certain levels.	
ETCS-6643	2	If STM-ATB fails, the following applies: - STM-ATB shall be able to be isolated; - operation on ETCS L0, L1, L2 and L3 (if relevant) infrastructure shall remain possible without any restrictions; - operation on ATB infrastructure shall remain possible without technical restrictions; - the actual speed shall be displayed correctly. Note: ATB isolation switch is described in ETCS-5776	The given specification effectively requires redundant system STM-ATB Recommendation: Specify MTBF of functionality.		Interpret requirement as follows: If STM-ATB fails, the following applies: - STM-ATB shall be able to be isolated; - Normal operation in all other than Level NTC-ATB shall remain possible; - Level NTC-ATB shall be able to be selected, with the actual speed displayed correctly to facilitate operation on ATB infrastructure; - Operation at ATB equipped infrastructure shall be possible in ETCS level NTC-ATB.
ETCS-6643	3	If STM-ATB fails, the following applies: - STM-ATB shall be able to be isolated; - operation on ETCS L0, L1, L2 and L3 (if relevant) infrastructure shall remain possible without any restrictions; - operation on ATB infrastructure shall remain possible without technical restrictions; - the actual speed shall be displayed correctly. Note: ATB isolation switch is described in ETCS-5776	Confidential question	Isolated means: not being able to influence the behavior of the train.; With Isolation is meant the status of STM ATB which results from the 'Isolation switch' position Isolated. That function is described in requirement ETCS-5776. 'Isolation switch' corresponds to the Dutch term 'Buiten bedrijf schakelaar', which is a switch to be operated by the driver. 1. meant is that operation in level NTC ATB is possible with an isolated STM ATB. It is an operation with active ETCS and isolated thus unprotected class B, to be used by the operator according to their rules e.g. to drive until the next station. 2. A backup STM ATB is not required neither expected 3. The corresponding ERTMS function is introduced in Baseline 3 and described in subset 035 section 10.3.3.5 and supported by subset 034 section 2.7. It enables the driver to isolate STM and continue the journey at Class B equipped infrastructure according the national operational rules. The function is a mandatory baseline 3 requirement for ETCS, though application of the interface between ETCS and STM ATB Isolation switch may not be mandatory. P: there should be no technical barrier to continue the mission.	
ETCS-6643	4	If STM-ATB fails, the following applies: - STM-ATB shall be able to be isolated; - operation on ETCS L0, L1, L2 and L3 (if relevant) infrastructure shall remain possible without any restrictions; - operation on ATB infrastructure shall remain possible without technical restrictions; - the actual speed shall be displayed correctly. Note: ATB isolation switch is described in ETCS-5776	if ATB fails how would be possible to operate in an ATB infrastructure without restrictions? Which is the aim of it?	Subset 35 v3.1.0, section 4.2. Operation on the ATB infrastructure remains possible when actual speed is shown from a technical point of view. This is to ensure that the train can continue to the next station.	
ETCS-6645	1	The indicated speed on the DMI, in the cases as described in ETCS-3558 and ETCS-6500 shall have an inaccuracy of not more than 3 kilometers per hour.	Could you clarify that such value shall have a non-SIL level?	The actual speed level is independent from the STM ATB. Therefore, the value of the speed shall have the same SIL level as in non-degraded mode; for degraded situation a non-SIL level would apply. SIL0 is acceptable. The safety level of the requirement should be clear before RFP process starts.	
ETCS-6648	1	The ERTMS On-board Equipment shall enable the use of brake percentage values only if: - the Braking Model can not be used, i.e if a degraded mode of the train does not allow use of Parameter values of the Braking Model; or - the driver selects to enter Brake Percentage Parameters. Note: the Driver is responsible for entering the correct Brake Percentage Parameters.	Is it really required for locomotives?	This requirement is not applicable for locomotives.	This requirement could be declared as not necessary for freight trains by the Railway Undertaking.

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-6648	2	The ERTMS On-board Equipment shall enable the use of brake percentage values only if: - the Braking Model can not be used, i.e if a degraded mode of the train does not allow use of Parameter values of the Braking Model; or - the driver selects to enter Brake Percentage Parameters. Note: the Driver is responsible for entering the correct Brake Percentage Parameters.	Note that the requirement states that it shall apply also to "locomotive freight", but this seems very doubtful because freight consists are highly variable and should therefore always use the lambda input, which is readily available from the brake manifest sheet that all operators prepare as standard procedure for freight trains. The requirement is stated as not applicable to maintenance vehicles, but when travelling under their own power without hauling other vehicles, these could easily use the Braking Model.	You are right. The table with vehicle type applicability per requirement is not always correct and is not applicable for all requirements. Requirement ETCS-6648 does apply to train composed of passenger trainsets and to fixed composition trains only. S states the difficulty of applying gamma model to trainsets with different numbers of cars. S states that lambda is the only feasible solution for locomotives. S states that a driver confirming the data could be difficult. S In case the TCMS data is available, the SIL is normally not sufficient. The range of different combinations of number of cars and number of isolated bogies could be too much to remember accurately for the driver, which makes his confirmation unreliable. Drivers input of data, with confirmation by data from the train is a better solution.	This requirement could be declared as not necessary for certain types of train by the Railway Undertaking.
ETCS-6659	1	The HDLC local processing delay time T2 shall be less than or equal to 80 ms	Why is T2 specifically mentioned as a parameter to be configurable? Is there really an issue with the function behind?	Reliability related: necessary requirement. As given by ETCS-5473, all (table 42/43/44 of subset 037) parameters should be configurable. That is to enable an optimum parameter setting.	
ETCS-6660	1	The requirements ETCS-5473, ETCS-5474 and ETCS-5475 shall not affect the certification of the constituent and the related 'EC' declaration of conformity and shall not affect the certification of the vehicle implementation and the related 'EC declaration of verification. The Supplier shall state this in the offer.	Note that it may be possible to exclude the parametrisation from the EC declaration (depending on the opinion of the specific NoBo). However it creates a very difficult contractual situation if the OBU supplier has fulfilled the optimisation goal but the parameters are subsequently changed by a third party, leading to under-performance which affects the supplier's performance warranty.	The Programme takes note of the remark about the difficult contractual situation. Agreement on possible 3rd party modification and the related responsibility is to be made between the Railway Undertaking and the Supplier.	
ETCS-6663	1	A (lab) type test program as defined in ETCS-5477 shall be composed of: - test the performance on a test bed, consisting of an infra part and a rolling stock part. The infra part is representative for the Dutch infrastructure and will be delivered by the IM. The rolling stock part shall be delivered by the Supplier - analysis of the test results performed by a joint team of the Supplier, IM and Customer. - verification and validation of driving using ETCS L2 as ATP: • With the actual ETCS configuration in both train and infrastructure; • 10.000 hours of test using the initial configuration settings as per ETCS-GSM-R_05b {comment:87}{comment:86}in test or operational service. The tests can be performed in a lab, when a representative lab environment is available; • Analysis on the basis of loggings from (and when needed monitoring in) the train, appended with logging data from the infrastructure by a joint team of the Supplier, IM and Customer; • The Customer, Supplier and IM shall conclude on correct settings; • Iteration of the above when change of the settings in order to optimise performance gives need for further analysis. Explanation: For the initial setting of the Parameters (both PS and CS) a verification phase shall be set up, for which activities of the Supplier are required.	The aim of these requirements is clear however we see difficulties in evaluating what can be considered as an optimal set of parameters with the diversity of the trackside configuration…this can be an endless story. It shall also be clarified when and where these 10000 hours of tests can take place since the tracks equipped with ERTMS in the Netherlands are limited (and none with GPRS)	The ration lab/field tests will depend on the supplier test approach and the representativeness of the lab. On track, tests can be done as performance monitoring from 2026/27. At this 'level' of requirement, it is not possible to determine the location where the tests will take place. This depends for example on the quality and capabilities of the lab. This type of requirements are independent of the authorisation related testing.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-6663	2	A (lab) type test program as defined in ETCS-5477 shall be composed of: - test the performance on a test bed, consisting of an infra part and a rolling stock part. The infra part is representative for the Dutch infrastructure and will be delivered by the IM. The rolling stock part shall be delivered by the Supplier - analysis of the test results performed by a joint team of the Supplier, IM and Customer. - verification and validation of driving using ETCS L2 as ATP: • With the actual ETCS configuration in both train and infrastructure; • 10.000 hours of test using the initial configuration settings as per ETCS-GSM-R_05b {comment:87}{comment:86}in test or operational service. The tests can be performed in a lab, when a representative lab environment is available; • Analysis on the basis of loggings from (and when needed monitoring in) the train, appended with logging data from the infrastructure by a joint team of the Supplier, IM and Customer; • The Customer, Supplier and IM shall conclude on correct settings; • Iteration of the above when change of the settings in order to optimise performance gives need for further analysis. Explanation: For the initial setting of the Parameters (both PS and CS) a verification phase shall be set up, for which activities of the Supplier are required.	10.000 hours of testing, plus iterations thereof when parameters are changed, will lead to extremely long delays in project rollout and an unacceptable open-ended contractual situation for the supplier. 1. What test lab will ProRail / Programma ERTMS provide that replicates the field conditions in order to be a "representative environment"? 2. How many GSM-R channels in the field will ProRail / Programma ERTMS make available for the 10.000h field test such that 10.000h test can be completed with a reasonable elapsed time period? 3. How do ProRail / Programma ERTMS envisage achieving 10.000 of test within a reasonable elapsed time period? 4. What elapsed time period do ProRail / Programme ERTMS consider to be a reasonable for the 10.000h of testing? 5. If the system cannot enter operation until the 10.000h test has been completed, how will the system be tested "With the actual ETCS configuration in both train and infrastructure".	Generally, iteration of requirements and their verification should be avoided. 10.000 hours may include monitoring of performance of trains in commercial operation. S asks how to resolve the requirement conflicting with the practical reality and asks how much infrastructure is available for this testing? P explains: we have provided primary answers in the column Response, and in addition to this, the programme may further elaborate on previous answers. The required 10.000 hours are generic and have to be more clearly defined between the rolling stock owner and the supplier. Not all of this test load is meant for testing before acceptance, some part can be verified during lab tests, some afterwards during performance testing.	
ETCS-6663	3	A (lab) type test program as defined in ETCS-5477 shall be composed of: - test the performance on a test bed, consisting of an infra part and a rolling stock part. The infra part is representative for the Dutch infrastructure and will be delivered by the IM. The rolling stock part shall be delivered by the Supplier - analysis of the test results performed by a joint team of the Supplier, IM and Customer. - verification and validation of driving using ETCS L2 as ATP: • With the actual ETCS configuration in both train and infrastructure; • 10.000 hours of test using the initial configuration settings as per ETCS-GSM-R_05b {comment:87}{comment:86}in test or operational service. The tests can be performed in a lab, when a representative lab environment is available; • Analysis on the basis of loggings from (and when needed monitoring in) the train, appended with logging data from the infrastructure by a joint team of the Supplier, IM and Customer; • The Customer, Supplier and IM shall conclude on correct settings; • Iteration of the above when change of the settings in order to optimise performance gives need for further analysis. Explanation: For the initial setting of the Parameters (both PS and CS) a verification phase shall be set up, for which activities of the Supplier are required.	How would the programme manage the tests?	P: The manner is not predetermined. We invite suppliers to come up with a plan how to demonstrate. Type tests and lab tests together may lead to sufficient amount of testing. Supplier and contracting party are permitted to further organise testing. Demonstration during performance monitoring in commercial service is possible. Wayside availability for these tests is expected from 2026 onwards.	Clarification: This requirement is applicable for the Railway Undertaking, intended to invite Railway Undertakings and Suppliers to develop a programme to determine, finetune, test, verify and validate GSM-R settings to achieve compliance with all GSM-R related requirements.
ETCS-6664	1	The recommended settings of ETCS-5478 shall be used as start values for the (lab) type test program described in ETCS-5477.	Why is it necessary to test these values for 10.000h if they have already been optimised for several years in operation service?	The values are determined based on the experience of several years. But no experience has been gained yet with application of these values.	The proposed values are considered to be fit for the Dutch situation based on the experience with settings of diverse rolling stock and analysis of the connection interruptions occured, but are not verified in operation. So tests are needed.
ETCS-6665	1	The Supplier (System Integrator Rolling Stock) shall determine the values for the GSM-R On-Board Parameters, such that these values lead to the optimal safe connection/session. The optimal safe connection/session is defined as the highest chance of retaining the safe connection/session and when a reconnection/reestablishment is needed, this is performed within expiry of T_NVContact. This is achieved by setting the Parameters such that the (statistically) biggest margin between the time needed to perform a reconnection/session-(re)establishment on ETCS application level and T_NVContact is obtained.	Note that this in combination with other requirements for 10.000h of testing of every parameter set will lead to an unacceptable open-ended contractual situation for the supplier.	The Programme takes note of the remark. The Railway Undertaking and Supplier are expected to elaborate a plan of action in which the relation between requirements and verification of the requirements are addressed. S remarks that representative test environment is important otherwise testing is a waste of time and work. Also, infrastructure should be available.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-6677	1	The ERTMS On-board Equipment shall be compliant with: * Specific Transmission Module (SS035 v3.2.0) * STM FFFIS Safe Time Layer (SS056 v3.0.0) * STM FFFIS Safe Link Layer (SS057 v3.1.0) * STM FFFIS Application Layer (SS058 v3.2.0) * Performance requirements (SS059 v3.1.0) Note: The complete Subsets 56, 57 and 58 apply to both the STM-ATB and ETCS on-board. Subsets 35 and 59 contain requirements which are applicable only to the STM-ATB and requirements which are applicable only to the ETCS on-board.	Confidential question	The requirements is about ETCS and says it shall meet the TSI required function of STM management. The requirement does not require application of a STM, that is done by ETCS-1579.	
ETCS-6677	2	The ERTMS On-board Equipment shall be compliant with: * Specific Transmission Module (SS035 v3.2.0) * STM FFFIS Safe Time Layer (SS056 v3.0.0) * STM FFFIS Safe Link Layer (SS057 v3.1.0) * STM FFFIS Application Layer (SS058 v3.2.0) * Performance requirements (SS059 v3.1.0) Note: The complete Subsets 56, 57 and 58 apply to both the STM-ATB and ETCS on-board. Subsets 35 and 59 contain requirements which are applicable only to the STM-ATB and requirements which are applicable only to the ETCS on-board.	We have considered today the ATB -EG from BT in our Limburg project as there is no other ATB-EG is existing from Program. The ATB-EG from BT only fulfills the STM requirements coming from Baseline 2 and not the STM FFFIS documents listed in here. Is this OK?	The subsets mentioned are related to the TSI CCS B3R2, which is required. This requirement supports the rolling stock owner in being able to exchange an STM without the necessity to change the scope of the rest of the onboard. P: the requirement is about compliance of the EVC. If S selects an STM that does not comply, this is th responsibility of S.	
ETCS-6741	1	For operational modes other than mentioned in ETCS-1578, e.g. more isolated bogies or other Train Compositions, the ERTMS On-board Equipment shall calculate and use the braking curve according to the Braking Percentage calculation. Note: The Braking Model used to be called Gamma Model, Brake Percentage used to be called Lambda Model.	Confidential question	The data that is used for braking curve calculation shall be safe. From the input data (directly by the driver or the vehicle in terms of braking percentage or number of cars/ trainsets and isolated bogies/ axles or indirectly in braking performance characteristics) the onboard ETCS can calculate the supervised speeds. Note that requirement ETCS-1493 is related. P: Requirement relates to automated train data entry. If the driver enters the data, there is no specific SIL applicable. For automated data entry, P wants to adhere to TSI; the determination of the SIL is to be done by the supplier to build the safety case.	
ETCS-6811	1	The Supplier shall provide all reports of the tests performed according to subset 76, including the NoBo evaluation of the test results. The reports shall be provided in human readable and understandable format, e.g. used codes shall be explained.	Test results with NoBo evaluation: would require internal development documentation supply (proprietary information)	P: Errors in tests can be caused by wayside, onboard or maybe faulty test specification. It helps if Subset 076-results are available to analyse the cause of the error. S: what is the level of transparency necessary to fulfil this requirement? P: this would be limited to Subset 076 results on a basic level.	
ETCS-7168	1	The information as mentioned in ETCS-7167 shall have the Safety Integrity Level to enable automatic data entry with confirmation of the driver (ETCS-1493).	SIL-4 Data provision (Gamma Train?)	this is up to the integrator and shall fulfil the appropriate safety analyses.	
ETCS-7169	1	The ETCS Train Data Entry during Start of Mission shall be based on preconfigured train configurations (note 1) according to the Braking Model (note 2). If the actual train composition does not match with any of the preconfigured train configurations, the ETCS Train Data Entry shall be switched to/based on Flexible train data entry and the Brake Percentage. Note 1: in ERA_ERTMS_015560, 11.3.9.6 this is called the 'Fixed train data entry'. Note 2: see also ETCS-1578. The Braking Model used to be called Gamma Model, Brake Percentage used to be called Lambda Model. Note 3: see ETCS-1493 for the level of automation of Train Data Entry (driver confirms the presented Train Data).	These requirements depend on the possibility to interface the rolling stock : it is not possible to develop an EVC which could cope with all possibles train sets. We expect to have adetailed specification of the external train interface as part of the specific RFP per train type.		
ETCS-7174	1	Regarding Cyber security the Supplier shall apply the requirements in section ch 3-5.2.5.	Note that this requirement only points to another chapter, therefore it should be deleted.	Requirement ETCS-7174 concerns the ERTMS On-board equipment and section 3-5.2.5 is about the Monitoring function. The requirements in 3-5.2.5 also apply to the ERTMS On-board equipment.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-7219	1	Communication protocol between recorder and 'Monitoring Way Side'. The protocol shall be: - MQTTsecure - push principle (the recorder pushes the messages to the Way Side) The communication protocol used for sending data to the recorder shall be non-proprietary and described in such detail level that it can be implemented by the Customer. One of the communication bearers offered shall be 3G or 4G. The exact implementation shall be agreed by the Customer with written approval from the Customer.	What is the inteface to the trackside system?	The interface is to the trackside system used by the rolling stock owner's ECM. Ultimately, the contracting parties will be responsible for contracting this requirement.	
ETCS-7341	1	The system shall have a security function to guarantee the confidentiality and integrity of the system.	what does it mean? So SIL-4 reactions?	Meant here is cybersecurity.	
ETCS-7342	1	Supplier shall undertake in cooperation with the client a cyber security analysis for both the ERTMS OBE and the recorder in accordance with the relevant ISO standards for this domain The initial analysis shall take place during the design phase. Identified and agreed countermeasures shall be implemented during the detail design phase. Residual risks and procedural measures shall be treated conform the process used for the Common Safety Methods The cyber security analysis will be iterated at least every two (2) years during the duration of the Support Agreement to find and possibly counter any new threats .	Confidential question	The scope of supply is to be agreed between contracting party and supplier. The definition of 'upgrade' means the installation of a Baseline 3 ETCS onboard system in a vehicle that already is equipped with ETCS.	
ETCS-7343	1	Vulnerabilities During the warranty phase and during the support agreement phase the supplier shall inform the client about the cyber security vulnerabilities. The supplier shall deliver patches / updates to solve the vulnerability for no extra costs (part of the support agreement).	Confidential question	The scope of supply is to be agreed between contracting party and supplier. The definition of 'upgrade' means the installation of a Baseline 3 ETCS onboard system in a vehicle that already is equipped with ETCS.	
ETCS-7646	1	The ERTMS equipment shall enable the updates mentioned in ETCS-1481 without change of hardware. Note: ETCS-1481 is about error corrections. It does not specify for enhancements / functional changes like the upgrade of GSM-R (EDOR) to the Future Railway Mobile Communication System, which is treated by requirement ETCS-2021.	ERA correction to be implemented w/o OBU hardware change: Whilst it is unlikely that ERA corrections will require hardware changes S on its own cannot determine the extent of correction changes. Future corrections are unknown and under the control of the ERA.	Correct. P: This requirement only applies to already published changes. The scope of change to be expected cannot however be fully predicted.	
ETCS-7646	2	The ERTMS equipment shall enable the updates mentioned in ETCS-1481 without change of hardware. Note: ETCS-1481 is about error corrections. It does not specify for enhancements / functional changes like the upgrade of GSM-R (EDOR) to the Future Railway Mobile Communication System, which is treated by requirement ETCS-2021.	We do not have any visibility on the upcoming CR's for the next 7 years and we cannot guarantee this requirement.	The Programme takes note of the remark. According to the MoU ERTMS 2016 and resulting Unisig proposal, it is advised to apply such requirement. Also, the intention of the requirement is to challenge the provider into realizing a future-proof hardware environment. S: the text in the column 'Question' is to be considered as a remark, not a question.	
ETCS-7996	1	The ETCS mode Passive Shunting (PS) shall not be able to be selected by the Driver	Do you mean that Passive Shunting shall not be used at all? How do you deal with cross-border trains? (in current RFP for Loco running in Germany, Passive Shunting is mandatory)	PS is not applied in the Netherlands. The requirement applies to rolling stock authorized in NL only. GPvEM is intended for national vehicles only. P understands the possible conflict with locos intended for international traffic.	
ETCS-7996	2	The ETCS mode Passive Shunting (PS) shall not be able to be selected by the Driver	The intention of PS is to allow quick re-entry to SH when changing cabs during shunting operations. 1. Why is PS not permitted in the Netherlands? 2. How shall shunting be continued quickly after a cab change in a two-cab loco that is engaged in shunting work? 3. How shall this requirement be implemented in vehicles that operate also in countries where PS may be required?	1. Safety related 2. To be decided between your customer and yourself. 3. GPvEM is intended for national vehicles only. Programma ERTMS understands the possible conflict with locos intended for international traffic. S: why is PS not allowed? It allows drivers to shunt without having to re-enter train data. P: Safety background, we will not conflict with TSI-requirements; we might reconsider this requirement. At application level it might be possible to prevent selection of PS. Up to the supplier and rolling stock owner if and how to implement.	
ETCS-7996	3	The ETCS mode Passive Shunting (PS) shall not be able to be selected by the Driver	Question what is the meaning exactly of this requirement? PS shall be activated when the switch is activated on separate panel. And also TCMS shall be involved.	The exact meaning is, that the driver shall technically not be able to select PS. Please could you explain why a switch is necessary to enable activation of PS mode? PS is a mandatory function to provide. P intends to prevent the presenting of the possibility of selecting PS, for the driver to not make a mistake.	
ETCS-987	1	The Supplier shall classify Faults in accordance with the Functional Failure List in supplement IV.	Ask for supplement	The documents to which is referred from the GPvEM will either be provided	The document *Functional Failure List in supplement IV* will be published on https://www.ertms-nl.nl

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCS-988	1	The ERTMS On-Board Equipment, including components from other train systems (which can also lead to a ERTMS functional failure when in a defective state), shall meet or exceed the following Performance Indicators in terms of MTBF (Mean Time Between Failure): FC1: MTBF (operational hours of the train) 84.046 FC2: MTBF (operational hours of the train) 1.667 FC3: MTBF (operational hours of the train) 1.667	MTBF 84.000 hrs of system, redundant system: Is redundancy still required when MTBF is fulfilled? if so hot or cold redundancy?	Redundancy is a separate requirement for the DMI, in parallel to an MTBF requirement for the whole onboard system. S: Why does the programme require redundancy? P: redundancy is not required for the whole system, only DMI should be redundant.	
ETCSA-8444	1	To demonstrate the compliance to requirement ETCS-6665, the Supplier shall demonstrate to the Customer that the ERTMS On-board Parameters lead to the optimal safe connection/session. This shall be performed by participating in a type test program to verify and determine an optimal set of these Parameter(s). The type test program will be in a lab and real environment.	It shall also be clarified when and where these 10000 hours of tests can take place since the tracks equipped with ERTMS in the Netherlands are limited (and none with GPRS). We understand this request as part of the safety qualification test period, however, for a clear evaluation during the tender, it shall be clarify in the RFP what shall be considered as part of the tests to be performed in lab and which part shall be performed on site (the SQT is not depending only of the supplier, but shall be in agreement with the applicant and with the NSA)	The lab/ field ratio depends on the representativeness of the lab and will not be specified by P. For S, software management includes also confidential information. This information is not normally distributed to the customer.	The aim is to demonstrate the compliance to requirement ETCS-6665.
ETCSA-8446	1	A (lab) type test program as defined in ETCSA-8444 shall be composed of: - test the performance on a test bed, consisting of an infra part and a rolling stock part. The infra part is representative for the Dutch infrastructure and will be delivered by the IM. The rolling stock part shall be delivered by the Supplier - analysis of the test results performed by a joint team of the Supplier, IM and Customer. - verification and validation of driving using ETCS L2 as ATP: • With the actual ETCS configuration in both train and infrastructure; • 10.000 hours of test using the initial configuration settings as per ETCS-GSM-R_05b in test or operational service. The tests can be performed in a lab, when a representative lab environment is available; • Analysis on the basis of loggings from (and when needed monitoring in) the train, appended with logging data from the infrastructure by a joint team of the Supplier, IM and Customer; • The Customer, Supplier and IM shall conclude on correct settings; • Iteration of the above when change of the settings in order to optimise performance gives need for further analysis. Explanation: For the initial setting of the Parameters (both PS and CS) a verification phase shall be set up, for which activities of the Supplier are required.	10.000 hrs. of type testing (e.g. GSM-R test lab): Would add substantially to the production effort. S recommends shorter testing periods for delivered products, if required. Extended periods of operation can be proven by installed and running units.	It is allowed to perform (part of) the 10.000 hours in operational service, or as you call installed and running units (installed base). The term 'type testing' actually refers to the amount of testing for one type of equipment. The conditions for acceptance by the customer are to be contracted with the contracting party. S: is acceptance also possible based on testing in other European countries? P: may be included, but a substantial amount should also be valid for the Netherlands, on behalf of the rail system GSM-R aspect. It is also possible in performance testing during commercial service. Wayside availability for these tests is expected from 2026 onwards.	
ETCSA-8452	1	The customer and supplier shall agree on applying the cyber security policy of the customer. The agreed cyber security policy shall be included in the software management plan.	Cyber security requirements: S applies cyber security techniques for OBU that go beyond current EU specifications. To be discussed further.	To be discussed with the contracting party.	
ETCSA-8452	2	The customer and supplier shall agree on applying the cyber security policy of the customer. The agreed cyber security policy shall be included in the software management plan.	Confidential question	The scope of supply is to be agreed between contracting party and supplier. The definition of 'upgrade' means the installation of a Baseline 3 ETCS onboard system in a vehicle that already is equipped with ETCS.	
ETCSA-8455	1	When operating in Level NTC with NID_STM =1 (ATB), the ETCS Onboard shall prevent the driver selection of the mode Shunting. Note: The mode Shunting is not applied for level NTC with the Dutch ATB class B system. The requirement excludes the possibility that a driver incorrectly selects Level NTC Shunting mode resulting in a class B unprotected situation.	According to Subset 026 4.4.8.2, SH-Mode is used in level 0, NTC, 1, 2 and 3. Therefore it is a TSI deviation to state that SH-Mode shall not be used in Level NTC ATB. 1. Is Programme ERTMS aware of this deviation and if so, what is the solution proposed?	The subset states that de mode is used, but not that it should be available.	
ETCSA-8455	2	When operating in Level NTC with NID_STM =1 (ATB), the ETCS Onboard shall prevent the driver selection of the mode Shunting. Note: The mode Shunting is not applied for level NTC with the Dutch ATB class B system. The requirement excludes the possibility that a driver incorrectly selects Level NTC Shunting mode resulting in a class B unprotected situation.	Yes, but it is not compliant with TSI CCS. Requires an specific application. Why mode SH cannot be selected?	In Level NTC ATB, Shunting is less safe than operation in ATB modes. Shunting can be inhibited in compliance with TSI CCS. It is not forbidden by SRS.	

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
ETCSA-8456	1	Delay between receiving of a MA via radio (both from RBC and from radio in-fill) and the update of EOA/LOA on-board, as defined by subset 041 clause 5.2.1.4, shall be less than 0,5 seconds for 95% of the received MA messages and less than 1,5 seconds for 100% of the received MA messages. Note: the update of the EOA/LOA on-board includes presentation of the new MA on the DMI.	This requirement is more strict than the TSI-CCS. Such requirements will limit the number of OBU suppliers which can participate to this RFP. Do you intend to classify such requirements as "Wishable"?	P does not classify the requirements.	
ETCSA-8456	2	Delay between receiving of a MA via radio (both from RBC and from radio in-fill) and the update of EOA/LOA on-board, as defined by subset 041 clause 5.2.1.4, shall be less than 0,5 seconds for 95% of the received MA messages and less than 1,5 seconds for 100% of the received MA messages. Note: the update of the EOA/LOA on-board includes presentation of the new MA on the DMI.	Requirement ETCSA-8459 is stronger than subset 041 v3.2.0, sec. 5.2.1.4. More generally, performance requirements on response times are quite optimistic. What is the logic behind these requirements?	This requirement is capacity-related. S: Technically, some timing requirements are challenging.	
ETCSA-8458	1	The calculation of the 'measured acceleration' (A_est1, A_est2, subset-026 3.13.9.3.2) shall have an inaccuracy of less than 5% related to the actual acceleration. The actual acceleration does not include acceleration due to short time transients or vibrations etc.	Odometry performance: Speed 3 km/h distance inaccuracy 2m+2% for 95% of measured distance MTBF for 5m+5% at 10.000 operational hours Deviate from TSI CSS: Adds complexity. needs to be further clarified in conjunction with wayside equipment.	This is not 'deviation', but a more restrictive requirement, necessary for the programme targets. Additional question: why is acceleration accuracy added to the requirement? Answer: to facilitate accuracy in odometry in case of stops (stations etc.) near EoA. Critical to capacity. Response S: a functional requirement would be more appropriate. Also, one extra balise will complement the requirement for 2% for instance.	Interpret requirement as follows: The ERTMS Onboard Equipment shall include a means to establish the measured acceleration with an inaccuracy less than 5%. The Supplier has to provide evidence of this. The justification is to enable SMB/EOA approaching situations under release speed, without unnecessary braking curve intervention due to inaccuracy of acceleration parameters.
ETCSA-8469	1	The ERTMS On-Board Equipment integrated in the rolling stock shall be Authorised for operation in both ETCS level 2 and ETCS level STM-ATB at the line Amsterdam-Utrecht.	What is the authorization procedure for the ETCS B3 R2 in NL? Do we need to go on every new line and make the Train track integration as specified in ETCSA_8469 -- ETCSA_8472 or we make a country specific Authorization one time which can be resused on the upcoming ETCS Lines which will be commissioned in Future e.g. Utrecht-Eindhoven etc.	The term 'Authorized for operation' used in ETCSA-8469 should be clarified, as follows. 'Authorized' means Authorized to place on the market. 'For operation' (ETCS-1486) means that the route compatibility check to be performed by the railway undertaking, is supported by the evidence for the concerned ESC/RSC type of line. The requirement for that ECS/RSC evidence is given by ETCS-1488. The procedure is fully in line with the 4th Railway Package. About ETCSA_8472, you ask whether authorization should be a one time or a linewise action. Though the intention is a one time action, the detailed ESC/RSC checks are yet to be elaborated by the infrastructure manager. Due to the uncertainty of contents and moment of availability of the ESC/RSC checks the Programme will reconsider the inclusion of ETCSA_8472.	The application of requirement ETCS-8472 is subject between Railway Undertaking and the Supplier
General	1		Are the requirements to be interpreted as leading to a customized product or an adapted product, meaning that the result will be based on a current product with individual adaptations Is there a distinction between mandatory and optional requirements?	P: Requirements are not intended one or the other. Requirements respect the legislation and are sometimes more strict to meet the programme objectives. P: No.	
General	2		There is no reference table and references are incomplete. Furthermore references are not availble to supplier yet. When will we get an overview of all the reference including the referred documents? Perhaps the GPvEM is visually nice, but understand that every supplier will import the text in their own requirement handling tool. From this perspective the format of GPvEM is totally not user friendly. First word or excel are preferred with as much as layout removed. e.g. Visualisations for 'text' and 'requirement' causes unneccessary clean-up. Can we receive a clean version of the requirements in word or excel?	Not all references can be made available. Your clients will be the Railway Undertakings, which will formulate their requirements. GPvEM is an input for that. Thus the Programme with its GPvEM will have no direct relation with you. S has questions about requirements not being able to be fulfilled, would the respective vehicles therefore be denied access to the infrastructure? S would prefer a breakdown of requirements into manageable portions. S: Has P discussed any of these requirements with ERA? P: Not discussed, since there is no conflict with the essential TSI requirements. On TSI related evolving topics like subset 093, P is in touch with ERA. S sees a risk in being more restrictive than TSI, leading to hidden 'NNTR's' and possible conflict resulting therefrom. S opinion: if an NTR is hidden, not notified, it is not NNTR - there should be no hidden NTR. If fulfilment of a GPVEM requirement is mandatory for national subsidy, then de facto it is a national requirement and must be notified to ERA.	An Excel version of GPvEM 1.0 can be delivered on request. This Excel contains the most important fields: requirement ID, requirement description, Type, T/R, Text, Requirement, paragraph GPvEM, paragraph text

Req_ID	Index	Requirement	Question Supplier	Answer Programme ERTMS	Additional clarification Programme ERTMS
General	3		We found that some requirements were not clear, especially regarding the diagnostic (ERTMS OBE) and RAMS. Are there any technical meetings planned to clarify any requirement? What if operators do not comply to certain requirements? Other rolling stock owners than NS, are they also committed to have a public tendering?	No technical meetings are foreseen. P: To be further discussed with the contracting rolling stock owners. P: All requirements are necessary to fulfil the programme objectives. NS has also committed itself to these Programme objectives. There is a delta analysis process in place to estimate the impact of non-compliance of certain requirements against the programme objectives. P: Not all rolling stock owners are bound by the European public procurement rules.	
General	4		What kind of format / programme do you want to have / use?	The format / programme is to be agreed with your contract partner, the rolling stock owner P: we do not interfere with the implementing organisation. S: It would be helpful for P to require a standard for this. P: because there is not yet a mature standard available, it is not mentioned in the requirements. Regarding STM-ATBEG: P: explains the procedure which is published on the website.	
General	3		Regarding the sheet in the presentation about Organisation: at the IEMeV division of the implementing organisations, some rolling stock owners integrally forward the generic requirements, were NS first translates these into specific requirements.	P explains the mission of IEMeV and their contribution to the realisation of ERTMS and that they will assist the rolling stock owners with their contracting processes. P explains that presentations were given to clarify this role. The process of funding through subsidies by the Ministry is explained to the supplier during the clarification meeting. At present there is a CEF funding for the upgrade of several freight locomotives. During meeting, P said that NL "topup" funding for BL3 Upgrade vehicles depends on fulfilment of GPVEM. It has been confirmed in other meetings with the freight loco subsidy coordinator that our remarks in the meeting (which is not correctly minuted in the red marked text) is correct and that customers will receive 90% funding of prototypes and 50% of series vehicles as the sum of CEF and NL funding, independent of fulfilment of GPVEM requirements.	