**ERA * UNISIG * EEIG ERTMS USERS GROUP**

| ERTMS/ETCS |
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| **Baseline Compatibility Assessment** <br> **Baseline 3 Release 2** <br> **Final Report** |
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## Modification History

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# 1. INTRODUCTION

## 1.1 Background

1.1.1.1 The new Baseline 3 Release 2 (B3R2) of the ERTMS/ETCS specifications results from 55 Change Requests (CRs) against the Baseline 3 First Maintenance Release (B3MR1).

1.1.1.2 The CRs that have been accepted to be part of the B3R2 had to fulfil the principle of a full backward/forward compatibility between B3R2 and B3MR1, i.e. B3R2 trains can run a normal service on B3MR1 trackside and B3MR1 trains can run a normal service on B3R2 trackside.

1.1.1.3 In May 2014, a Baseline Compatibility Assessment (BCA) report (delivered by UNISIG and the ERTMS Users Group) gave already evidence of the compatibility of B3MR1 with B2 (B3MR1 trains on B2 infrastructure, and B2 trains on B3MR1 infrastructure with X=1).

## 1.2 Scope and Purpose

1.2.1.1 The purpose of this document is to report on the results from the Baseline Compatibility Assessment of the new Baseline 3 Release 2.

1.2.1.2 This BCA consists of checking that B3R2 is fully backward/forward compatible with B3MR1, but also to check both the backward compatibility between B3R2 trains and a Baseline 2 (B2) trackside and the compatibility between a B3R2 trackside operated with system version X=1 (i.e. a B3R2 trackside using only B2 functions) and B2 trains.

1.2.1.3 In addition the BCA includes the analysis of the compatibility between trackside and onboard both within B3MR1 and within B2, in the light of the problem description of the CRs included in B3R2.

# 2. COMPATIBILITY ASSESSMENT

## 2.1 Methodology

2.1.1.1 This BCA is carried out with individual CR assessments, each of them consisting in answering questions based on the provisions laid down in the SUBSET-104 and in the annex A.1 of the ERA CCM procedure (ERA_ERTMS_0001).

2.1.1.2 To perform the CR individual assessments, a strict focus on the content of the specifications has been observed. Project or product specific considerations, quantified or not, were on purpose not considered.

2.1.1.3 Compatibility is considered to be achieved for a particular combination of on-board and trackside when the on-board is able to run a normal service on that trackside. The expression "train is running a normal service" shall be understood as "a train not penalised because of a reduction of performance or safety" (see SUBSET-104 clause 5.1.1.5).

2.1.1.4 The BCA is divided in three parts intended to:

- check that the B3R2 definition leads to a full backward/forward compatibility with B3MR1

- in case the assessment of an individual error CR identifies a potential compatibility issue in the B3R2 definition part, check whether it is inherent to the B3MR1

- check that the B3R2 definition does not create any compatibility issue with B2.

2.1.1.5 For the formulation of the questions, see sheet "Explanation" in the file embedded in the next section below.

## 2.2 Results

2.2.1.1 See embedded file below:

BCA_report
B3R2_EECT110516_v1

2.2.1.2 For 50 out of the 55 analysed Change Requests, the analysis demonstrated that the compatibility between the baselines has been achieved and no potential compatibility problems were identified, i.e. they do not need any mitigation measure to assure the compatibility among baselines.

2.2.1.3 Five CRs (CR 933, 1089, 1184, 1249 and 1262) have been identified as corresponding to potential compatibility issues by applying the clause 2.1.1.2. They were however not removed from the definition of the B3R2 for the following reasons:

- For CR933, 1089 and 1249, realistic mitigation measures are proposed for the concerned trackside (B3R2, B3MR1 and/or B2).

- For CR1184, although a mitigation measure is proposed, in practice it is expected that only ETCS on-board equipments already compliant with this CR can be put on the market.

- The CR1262 does not create itself any incompatibility issue, since the numerous functional shortcomings identified by the CR are already present in both B2 and B3MR1. It is therefore strongly recommended not to use the concerned functionality (RBC initiated calls) as any existing use of this function can only be considered as a project specific implementation, without any guarantee of interoperability.

2.2.1.4 The recommended mitigations embedded in this document are provided as guidance to trackside implementation projects and identify which referential is applicable (B3R2, B3MR1 or B2). Whether or not a particular mitigation is applicable, suitable, or necessary to implement in any particular project, is the responsibility of each individual implementation of ERTMS/ETCS.

# 3. CONCLUSIONS

3.1.1.1    This analysis confirms that the B3R2 is fully backward/forward compatible with B3MR1, i.e. that B3R2 trains can run a normal service on B3MR1 trackside and B3MR1 trains can run a normal service on B3R2 trackside.

3.1.1.2    This analysis, considered together with the previous BCA completed by the experts from UNISIG and the ERTMS Users Group in 2014, also gives evidence of the compatibility of B3R2 with B2 (B3R2 trains on B2 infrastructure, and B2 trains on B3R2 infrastructure with X=1).

3.1.1.3    In addition the analysis shows that no problem description of the CRs included in B3R2 has identified a compatibility issue both within B3MR1 and within B2.