Lead standards committee:	Control Command and Signalling - CCS	**Date:**	
Support standards committee:	Rolling Stock - RST	**Date:**	
Subject:	Five-year review of RIS-0711-CCS issue 1, *Interface Requirements for Connected Driver Advisory System*		
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1. Purpose of the paper

1.1 This paper sets out the outcome of the five-year review of RIS-0711-CCS issue 1, *Interface Requirements for Connected Driver Advisory System.* Standards committee(s) approval and support is sought for the recommendation and way forward.

2. Background

2.1 RIS-0711-CCS issue 1, published in December 2018, outlines the requirements for a standardised interface for the Connected Driver Advisory System (C-DAS). This includes the protocol for data exchange between the off-train C-DAS sub-systems operated by Infrastructure Managers (IMs) and Railway Undertakings (RU). The CCS Standard Committee aimed to prevent the proliferation of different data formats and achieve cost savings by incorporating C-DAS requirements into procurement specifications, therefore reducing future upgrade costs from DAS to C-DAS. Therefore, the standard is relevant to any stakeholder involved in the procurement, development and trials of C-DAS systems including IMs, RUs and DAS suppliers.

2.2 The requirements are based on output generated by the Digital Railway programme including the operational concept (issued in 2017) and system requirement specifications reflecting the design status of the C-DAS sub-systems at that point in time. Following the publication of the RIS, Network Rail (NR) issued two documents in 2021: “Digital Railway Requirements: C-DAS Infrastructure Manager Subsystem” and “Digital Railway Requirements – C-DAS Railway Undertaking Subsystem”, which refers to RIS-0711-CCS in their ‘normative’ requirements with V&V requirements matrix in 2022.

2.3 Network Rail’s “Speed Management Programme” aims to improve the way that speed restrictions are managed on the GB mainline railway. These changes may or may not require updates to RIS-0711-CCS, depending on whether data structure or other elements need alteration. The programme is still in its early stage (Phase 1) so the explicit impacts are unknown, but there is a potential need for changes.

2.4 A preliminary consultation with the Driver Advisory Systems (DAS) Board [1]members and key DAS suppliers revealed that RIS-0711-CCS is not widely recognised or fully utilised, with few implementations to date. The South Western Railway by Cubris (C-DAS supplier) and the Great Western Railway route by TTG (C-DAS supplier) have not applied RIS-0711-CCS fully due to the timeline of issuing the standard. The findings from the preliminary consultation also highlight that RIS-0711-CCS should reflect the current interfaces, such as the use of the Layered Information Network Exchange (LINX) and data from other systems. As of this five-year review, there has been no request to change RIS-0717-CCS.

2.5 European railways, in collaboration with the International Union of Railways (UIC), have been developing and implementing C-DAS to enhance operational efficiency and sustainability. For example, SNCF has integrated C-DAS with their high-speed TGV trains, achieving significant energy savings. The UIC developed a protocol called Smart Communications for Efficient Rail Activities (SFERA), establishing a standardised approach for data exchange, with versions issued in 2020 and 2022. This SFERA protocol (IRS-90940), similar to the RIS-0711-CCS standard, serves as a single messaging standard for data exchange between IMs and RUs, accommodating ATO and DAS applications, and working over both ETCS and Class B ATP systems. SFERA has been developed with input from a user group of about 10 suppliers including key UK DAS suppliers, IMs and RUs. It aims to build upon ATO related TSI (subset-126: ATO-OB / ATO-TS FFFIS Application Layer) and is intended for integration into future TSIs.

2.6 ATO over ETCS specifications have been included in the ETCS Baseline 4 as set out in the 2023 CCS TSI. Although these specifications support the provision of advisory speed and other C-DAS functions to the driver during manual operation, there is no interface specification covering the scope of the internal data services set out in RIS-0711-CCS.

3. Impacts on the standard(s) following publication/entering into force

3.1 Consideration has been given to the following during the review:

a. Business case for change – The objectives for this standard were as follows:

Objective 1) The specification of requirements setting out a standard data interface between the C-DAS sub-systems to prevent the proliferation of data format solutions.

Objective 2) The requirements setting out the standard data interface between the C-DAS RU sub-systems and C-DAS IM sub-system to be available to potentially reduce costs associated with upgrading from DAS systems to C-DAS.

[1] The DAS board, a subgroup of VTC&C SIC, promotes the development and deployment of DAS systems, supporting rail industry needs and technical strategy. The DAS Board includes representatives from Network Rail, RSSB, operators and DAS operations specialists.

There have been very few C-DAS implementations in GB (the trial on Great Western Railway is the only one), and the trial implementation did not fully utilise the interface set out in the standard as it was published before the industry had any experience of TMS/LINX functionality. Therefore, neither of the objectives set out in the business case for change have been met.

In addition to this lack of use in GB and the relatively fast progression in the EU railway, it suggests that the standard needs to be reviewed and potentially revised to ensure it remains relevant and effective in the current technological and procurement landscape. Alternatively, it could be withdrawn if adhering to IRS-09040, or another protocol, is deemed efficient and effective for the C-DAS implementation in the UK railway.

b. Deviations – No deviations or non-compliances have been raised or authorised against RIS-0711-CCS issue one.

c. Current projects or proposals being processed – there are no projects or proposals being processed.

d. Amendments and clarifications – No amendments or clarifications have been published for RIS-0711-CCS issue one.

e. Enquiries – No enquiries related to RIS-0711-CCS issue one have been submitted to RSSB.

f. Research projects – No research projects are investigating the C-DAS data protocol defined by RIS-0711-CCS issue one.

g. Regulations – There are no specific regulations directly addressing the C-DAS data interface set out in RIS-0711-CCS.

h. National technical specification notices (NTSNs) and European standards – The ETCS Baseline 4 includes specifications for ATO over ETCS, which provide advisory speed and other C-DAS functions to drivers during manual operation. However, it lacks an interface specification for the internal data services outlined in RIS-0711-CCS.

i. Changes in technology – The architecture described in this standard seems to be one of the implemented architectures. As technologies have evolved, more details need to be gathered.

j. Are there any barriers to adoption? – At this time, it is unknown if there are any specific barriers to adoption.

k. Any other observations
    a. Scope: The scope of this standard (Section 1.3 in RIS-0711-CCS) supports an independent C-DAS option (non-ATO over ETCS for ETCS and not fitted trains). The

industry may need to prepare Interface Requirements for C-DAS for the ATO over ETCS solution, necessitating a review to determine whether this is covered within this standard or elsewhere.

b. Alignment: The alignment between RIS-0711-CCS and the SFERA protocol (IRS-90940) may need to be analysed.

c. Development and procurement: Ongoing C-DAS development and procurement activities and their requirements have been investigated, but no findings have been identified at this stage.

4. Discussion

4.1 Review outcome

4.1.1 The preliminary review of the RIS-0711-CCS standard has identified several issues regarding its suitability. Since its publication in December 2018, the application of technology and procurement for C-DAS in the UK railway has not been actively updated, making the standard potentially outdated. The industry must decide whether to revise the standard or possibly withdraw it in favour of the IRS-09040 standard, which is more aligned with the EU railway sector. Additionally, the ongoing Speed Management Programme may necessitate changes to the standard, but its impact is still uncertain. The C-DAS architecture in RIS-0711-CCS may not reflect the latest technological advancements, necessitating further information gathering to ensure alignment with current and future developments.

4.1.2 To address these issues, the industry should either reach a consensus on withdrawing the standard or conduct a comprehensive review to determine its relevance and effectiveness. This review should include:

1) Investigating the implementation supporting the trial on Great Western Railway and assessing whether this solution, which is not SFERA, is suitable for GB mainline railway;

2) Collecting information on technological advancements, especially comparing to the approach taken in the SFERA protocol by the UIC;

3) Engaging with stakeholders including DAS Board members to raise awareness of RIS-0711-CCS and NR's C-DAS documents, identify gaps and areas for improvement, ensuring that future developments align with industry needs and best practices; and

4) Monitoring the Speed Management Programme's impact on C-DAS requirements. This process will ultimately lead to a potential revision or withdrawal of the standard.

5. Recommendations

5.1 The standard committee(s) will be asked to:

a DISCUSS the outcome of the five-year review, the consultation comments and draft responses and the proposed recommendation:

Action required:

I. Withdraw the standard if the necessity of the standard is not justified during the consultation period; or

II. Carry out a follow up-review within one year.

b APPROVE/SUPPORT as appropriate:

The lead standards committee to approve the recommendation, the draft responses to consultation and the next review date.

The support standards committee(s) to support the recommendation.

c APPROVE/SUPPORT the review process.

The lead standards committee to approve the review process is concluded.

RSSB completion:

Standards committee	**Meeting date**	**Decision**	**Minute numbers**		**Next review date approved by the lead standards committee**
			Pre-consultation review	**Post-consultation review**	
Control command signalling (CCS)		Approved			
Rolling Stock		Supported			