Create an exchange of VIN over CAN between trailer and truck.

DOITS have proposed to ACEA's TF HDEI FMS standardisation group to support introduction of a functionality that will enable the exchange of trailer and truck VIN over CAN.

TF HDEI FMS Standardisation Group initial agreement for VIN exchange over CAN.

TF HDEI has confirmed their wish to support that trailer VIN transmitted over CAN will be delivered via rFMS to the truck.

In June 2017 a specification for technical standard was requested that was delivered, see below "DOITS Proposal" in October 2018. A positive decision was received from TF HDEI in October 2018.

Background.

Modern fleet owners want to know the unique identification of their tractors and trailers. It is used for optimizing their logistic services by their ERP software platforms, but also for immediate operational intervention if a tractor is coupled to an incorrect trailer.

The preference is to use the full Vehicle Identification Number (VIN, having 17 characters), because that is the only identification in the Western world that is standardized, legalized and verifiable by comparing it to the vehicle type plate. Most tractors already provide their tractor VIN as a data item on the dashboard display and to the outside world by their telematics gateway (FMS gateway). Using the tractor information, fleet owners complain nowadays because of the lack of standardized trailer information, where the trailer VIN is one of the most important data-items, but is not available in most tractors or their telematics gateways.

Fleet owners do experience that some of the ACEA truck manufacturer members are already mirroring trailer data items (like trailer weight/axle load and tire pressure data) on their FMS gateway, the DCC2X/DID-0xF190 method is already implemented and used by at least one of the European truck manufacturers for presenting trailer VIN information, together with trailer tire pressure data, on the internal tractor dashboard display since 2016. These manufacturer developments are creating a demand on the telematics suppliers to provide those data items in general for every truck brand and type, where the fleet owners perceive those data items as being standardized already, which is not the case at the moment.

The trailer VIN data item is at this moment only standardized in the ISO-11992 "Road vehicles - Interchange of digital information on electrical connections between towing and towed vehicles" standard, which was introduced in 1998 and is adapted as standard by the trailer and EBS manufacturers. The structure of ISO-11992 is similar to SAE J1939, from which a subset is also used by the European FMS-standard.

The trailer VIN data item can be found in the following two sub-standards of ISO 11992, which specify the communication of the data item for each of 1 to 5 trailers:

1. ISO 11992-2 ("Application layer for brakes and running gear"): message RGE23 "Running gear equipment #2/3" (additional tire data). RGE23 is introduced in 2003, but the trailer VIN data item is only added, to this message, as a new data item in the 2014 release of the standard.
2. ISO 11992-4 ("Diagnostic communication"): message DCC2X-1P "Diagnostic communication channel" as a response to requesting the trailer VIN by Data Identifier DID-0xF190. The combination DCC2X/DID-0xF190 is defined and mandatory, since the introduction of the ISO 11992-4 standard in 2005.

DOITS Proposal

The DOITS group have requested the HDEI/BCEI working group to consider to incorporate the provision of the above trailer VIN data items in the next FMS/rFMS standard release.

The DOITS group would like to propose to mirror the resulting information of both implementations of above ISO 11992 trailer VIN data items to the FMS-gateway: the RGE23 (broadcast) messages and the DCC2X/DID-0xF190 (request-response sequence) responses, which are available on the tractor-trailer connection.

The reasons for this technical proposal:

- RGE23 is only available from trailers build in 2015 or later. It could be transmitted by the FMS gateway in the same repetition rate as ISO11992: 1000 milliseconds and the original source address of the trailer stays intact (0xA8 – 0xC8).
- DCC21/DID-0xF190 is already available on most trailer systems since 2007 (tested for trailers with Wabco, Haldex and Knorr Bremse EBS systems). We propose that the internal tractor requests (one for each up to 5 trailers) are sent sequentially in a batch every 10 seconds, resulting in 4 VIN data frames per trailer which could be re-transmitted by the FMS gateway, with the original trailer source address intact.

Status.

-TF HDEI confirms there is a common wish to capture the Trailer VIN to be able to deliver this to 3:rd parties via FMS and/or rFMS.

-The quality of ID data from the trailer i.e. the VIN is poor today and correct VIN is only possible to capture from maybe 10-15% of the existing trailer fleet.

-TF HDEI is positive to that DOITS work on increasing the penetration of existing trailers, manufactured from 2005 and forward, to deliver the correct VIN.

- TF HDEI has no objections against using the below proposed standards to establish the communication of VIN from the trailer to the truck:

> - ISO 11992-2 ("Application layer for brakes and running gear"): message RGE23 "Running gear equipment #2/3" (additional tire data). RGE23 is introduced in 2003, but the trailer VIN data item is only added, to this message, as a new data item in the 2014 release of the standard.
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> - ISO 11992-4 ("Diagnostic communication"): message DCC2X-1P "Diagnostic communication channel" as a response to requesting the trailer

VIN by Data Identifier DID-0xF190. The combination DCC2X/DID-0xF190 is defined and mandatory, since the introduction of the ISO 11992-4 standard in 2005.

When there is trailer VIN data sent to and possible to retrieve from the truck electronic system, TF HDEI will make that data available through FMS/rFMS

It is important to note that the role of TF HDEI is solely to be responsible for what is delivered via FMS and rFMS, not how to technically the trailer VIN is captured, transmitted and stored in the truck.

A key to make this exchange of VIN over CAN a significant contribution to the transport industry is to be able to implement this functionality also into the existing fleet of trailers. Necessary technology is on board in the EBS systems delivered to trailers manufactured from 2007 and onward.

To deliver the benefits it is decisive to tap in the correct VIN number into the trailers EBS systems. Today there is a too low quality of the VIN data in the older systems (trailers delivered before 2015) and these have to be upgraded with the ambition to cover an AS HIGH PROPORTION OF EXISTING EUROPEAN TRAILERS AS POSSIBLE.

To achieve this it requires a co-operation between trailer manufacturers, EBS suppliers and other parties involved in maintaining and servicing trailers.

DOITS HAVE TAKEN ON THE CHALLENGE TO COORDINATE AND OPTIMIZE THE IMPLEMENTATION OF CORRECT VIN NUMBER IN THE TRAILERS EBS SYSTEMS.