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Reports of informal working groups

Telematic applications: HGV eCall HGV data concept

Transmitted by European Committee for Standardisation (CEN)

CEN TC278 (ITS) WG15 eSafety

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HGV eCall HGV data concept

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1. HGV eCall - Status

eCall standards for cars and light vehiclesare approved and in final pre publication editing.

eCall standards were designed for light vehicles, but there is no technical reason why eCall may not be used for any class of vehicle

Work on an eCall HGV data concept commenced in WG15 in 2010.Discussions with UN OTIF JWG /RID/WP-TDG commenced in June 2011

As a result of these discussions the HGV eCall HGV data concept Draft Deliverable has been revised in July 2011 and August 2011.

2. Characteristics of eCall

eCall is a post incident emergency system that uses the 'TS12' emergency telephone system.. **It can only be used in an emergency.**

(Transfer of data from goods vehicles to roadside in non-emergency situations is handled by the ISO 15638 (TARV) series of standards. –more detail of this is provided below)

eCall, when triggered from the vehicle, works by creating a priority TS12 voice channel communication between the vehicle and a 'Public Service Answering Point' (PSAP).

Before voice contact is established between the PSAP operator and the occupants of the vehicle, eCall sends a 'Minimum Set of Data' about the vehicle and the situation, as data in a voice channel, down the line to the PSAP. eCall then opens the voice channel to enable the PSAP operator to speak to the occupants of the vehicle.

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3. Objective of Discussions with UN OTIF JWG/RID/WP-TDG June 2011:

- To see if it is practicable to use common data concepts
- To offer eCall HGV data concepts (all or part) to WP-TDG

eCall has short/mid term objectives for HGV eCall

- To offer goods vehicles the same eCall facility as those for private vehicles
- To provide better (load related) data to PSAPs in the event of an incident

OTIF/ECE RID have long term objectives for using telematics to monitor goods vehicles carrying dangerous (ADR) goods

The objective of the meeting was to see where there was common interest, and if possible, have a common data concept to cover all, or at least some, of both groups requirements

4. Outcomes of the meeting

Many of the objectives concerning identifying vehicles and vehicle position were indeed common, but there were some differences in approach and in what was identified as ‘essential data’ concerning the cargo.

Requests for changes from JWG RID, and how they have been accommodated (or remain intractible) are addressed on the following sections

4.1 If you can’t accommodate ALL data requirements, simply provideA URL link

Recognising the physical limitation of the eCall technology, it was proposed that if all the JWG requirements for data could not be met because of message length it would be better to simply provide a URL link.

An early data concept element within the optional additional data specified in the eCall HGV Data Concept Deliverable now does this.

Further, the specification states that if you provide this link, you need provide no other data.

However, HGV eCall still provides the option of providing data directly through eCall

4.2 Tanker or trailer?

JWG required to know if the cargo was a tanker(s) or other goods load

The eCall HGV data concept now identifies the conveyance type (tanker/non tanker), and the number of types of ADR goods on board (up to ten or ‘more than 10’); it also identifies empty but uncleaned, and mixed loads.

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4.3 10 ADR identifications required

JWG Chair (and subsequent papers) identified that at least 10 ADR codes should be able to be characterised.

The eCall HGV data concept can identify up to 14 ADR codes, and can characterise 4 of them (data space limitation prevents more, but the URL to that information exists in all cases).

4.4 ADR Characterisation

For characterisation, JWG requires UN no preceded by UN, classification code in accordance with ADR 5.4.1.1.1, and package group

eCall HGV data concept characterisation provides the UN classification code in accordance with ADR 5.4.1.1.1 (format nnnn) and the packaging group (i,ii,iii)

In a data size restricted environment it makes no sense to transmit static information such as 'UN', this can be added by the receiver software

4.5 Alarms

The eCall HGV data concept also provides the opportunity to warn of up to 8 alarm conditions if they were present at the time of the incident

- Leakage
- Fire
- Temperature
- Shock
- Pressure
- Orientation
- Other
- x [reserved for future use]).

5. What eCall could not accommodate

JWG requested 'ADR number plus classification codes + subsidiary risk information'

This would require considerable data, and whether for the 4 eCall characterised ADRs or the 10 requested ADR characterisations, would not fit into the limited space available via the in-band modem.

However, WG15 contends that for at least 3 reasons, this is not a sensible request for data to be sent through the ether- even if eCall had no data size constraint:

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Why the ADR characterisation request does not make sense for over/air communications in an emergency environment

Firstly, it is not disputed that a PSAP, or other emergency or monitoring service, needs access to this data..... This is not challenged. However:

Reason 1 – Not good practice in an emergency situation

It is a general rule in emergency communications to minimise the amount of data sent to maximise its chance of receipt in difficult circumstances (line busy, poor reception etc)

The characterising data requested is 'static data', that is- it is defined in ADR 5.4. That data is available to the PSAP/Receiver and can be downloaded and made available for reference in advance of any incident using landline/internet connections. It does not change dynamically from cargo to cargo.

Therefore knowledge of the UN ADR code, and packaging code is all that is required to be sent via the eCall or other emergency or monitoring communication.

Knowledge of the ADR code allows reliable automatic software look up of the full detail of the relevant part of ADR 5.4.1.

There is simply no need to send this data in an eCall or ADR message over the air in potentially difficult circumstances as it can be preloaded. All that is needed is the ADR code and packaging type code.

Reason 2 – URL already available to source this data

Secondly, the option to simply provide a URL to a website where all the relevant information exists is already an option (see 4.1 above).

Obtaining this information from that source will be more reliable than over a mobile phone connection in potentially very difficult transmitting conditions (even if there was no restriction on the size of data concept)

Reason 3 – Maintenance

When you come to revise the ADR list for whatever reason, if you try to carry this additional information on-board the vehicle, you will be reliant on many and diverse hauliers to update the information. This cannot make sense.

Any emergency service provider/PSAP that is up to date enough to use this technology you may assume has a link to the internet, and it would be far more sensible to provide download

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or access to the current version of ADR from normal landline communications than rely on hauliers to be up to speed and reprogramme their trucks.

SUGGESTION : 'App' for smartphone

Indeed if you really want to be up to speed and have this data to hand for the emergency service provider 'on the scene', may I suggest that you could serve this best by devising and making available an 'app' for smartphones, that the emergency serviceman on the spot could use to get access to the full set of up to date information.

This would be a far better route than loading a vehicle on-board unit with data and no guarantee that the haulier programming it into the vehicle memory is up to date

6. ISO 15638 – Telematics Applications for Regulated Vehicles (TARV)

eCall is a system to be used in emergencies.
ISO 15638 TARV is a system to be used in regular fleet operations.

It can use any available wireless communication network

ADR data could be an additional on-board 'app'

The following few pages are a 'teaser' to inform you about TARV. If you deem it appropriate, I can provide a more full presentation at a later meeting.

6.1 Introduction to TARV

Many ITS technologies have been embraced by commercial transport operators and freight owners, in the areas of fleet management, safety and security. Telematics applications have also been developed for governmental use. Such regulatory services in use or being considered vary from country to country, but include electronic on-board recorders, vehicle charging, digital tachograph, on-board mass monitoring, vehicle access monitoring, hazardous goods tracking and e-call. Additional applications with a regulatory impact being developed include, fatigue management, speed monitoring and heavy vehicle charging based on mass, location, distance and time.

In such an emerging environment of regulatory and commercial applications, it is timely to consider an overall architecture (business and functional) that could support these functions from a single platform within a commercial freight vehicle that operate within such regulations. International Standards will allow for a speedy development and specification of new applications that build upon the functionality of a generic specification platform. A suite of standards deliverables is required to describe and define the framework and requirements so that the on board equipment and back office systems can be commercially designed in an open market to meet common requirements of jurisdictions.

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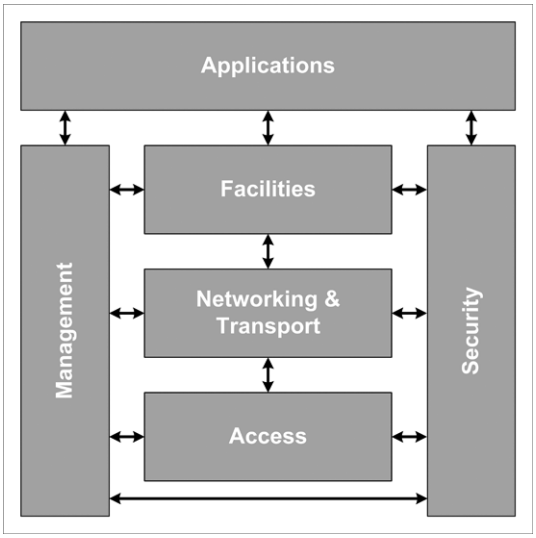
This suite of standards addresses and defines the framework for a range of cooperative telematics applications for regulated* commercial freight vehicles (such as access monitoring, driver fatigue management, speed monitoring, on-board mass monitoring and charging). The overall scope includes the concept of operation, legal and regulatory issues, and the generic cooperative*** provision of services to regulated commercial freight vehicles** using an on-board ITS platform. The framework is based on a (multiple) service provider oriented approach provisions for the certification and auditing of service providers.

This suite of standards deliverables will:

- provide the basis for future development of cooperative telematics applications for regulated commercial freight vehicles. Many elements to accomplish this are already available. Existing relevant standards will be referenced, and the specifications will use existing standards (such as CALM) wherever practicable.
- allow for a powerful platform for highly cost-effective delivery of a range of telematics applications for regulated commercial freight vehicles.
- a business architecture based on a (multiple) service provider oriented approach
- address legal and regulatory aspects for the certification and auditing of service providers.

This suite of standards deliverables is timely as many governments (Europe, North America, Asia and Australia/New Zealand) are considering the use of telematics for a range of regulatory purposes. Ensuring that a single in-vehicle platform can deliver a range of services to both government and industry through open standards and competitive markets is a strategic objective.

****Cooperative ITS applications, in this context, are defined as the use of an in-vehicle ITS platform to meet both commercial and regulatory needs from a (functionally) single on-board platform.*



ITS station architecture high level view
(Source: ISO 21217)

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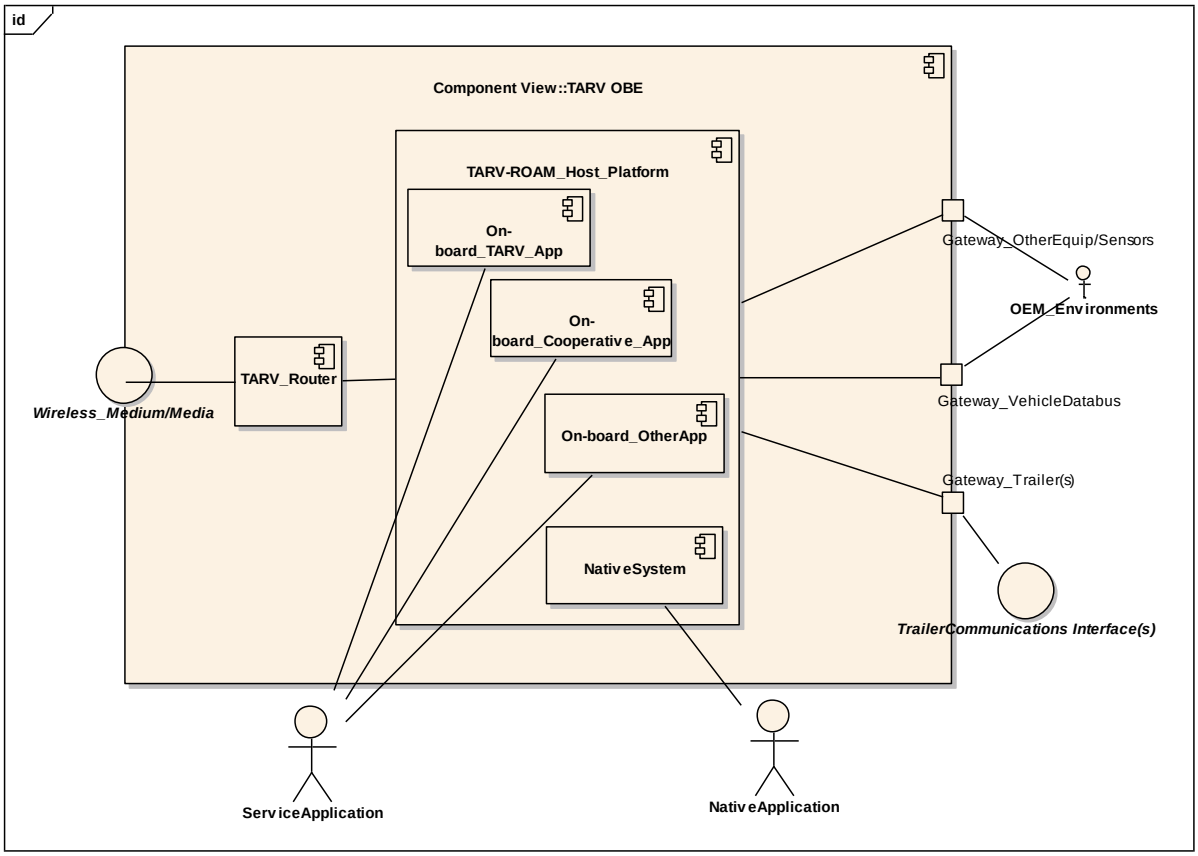

TARV On board Equipment component decomposition

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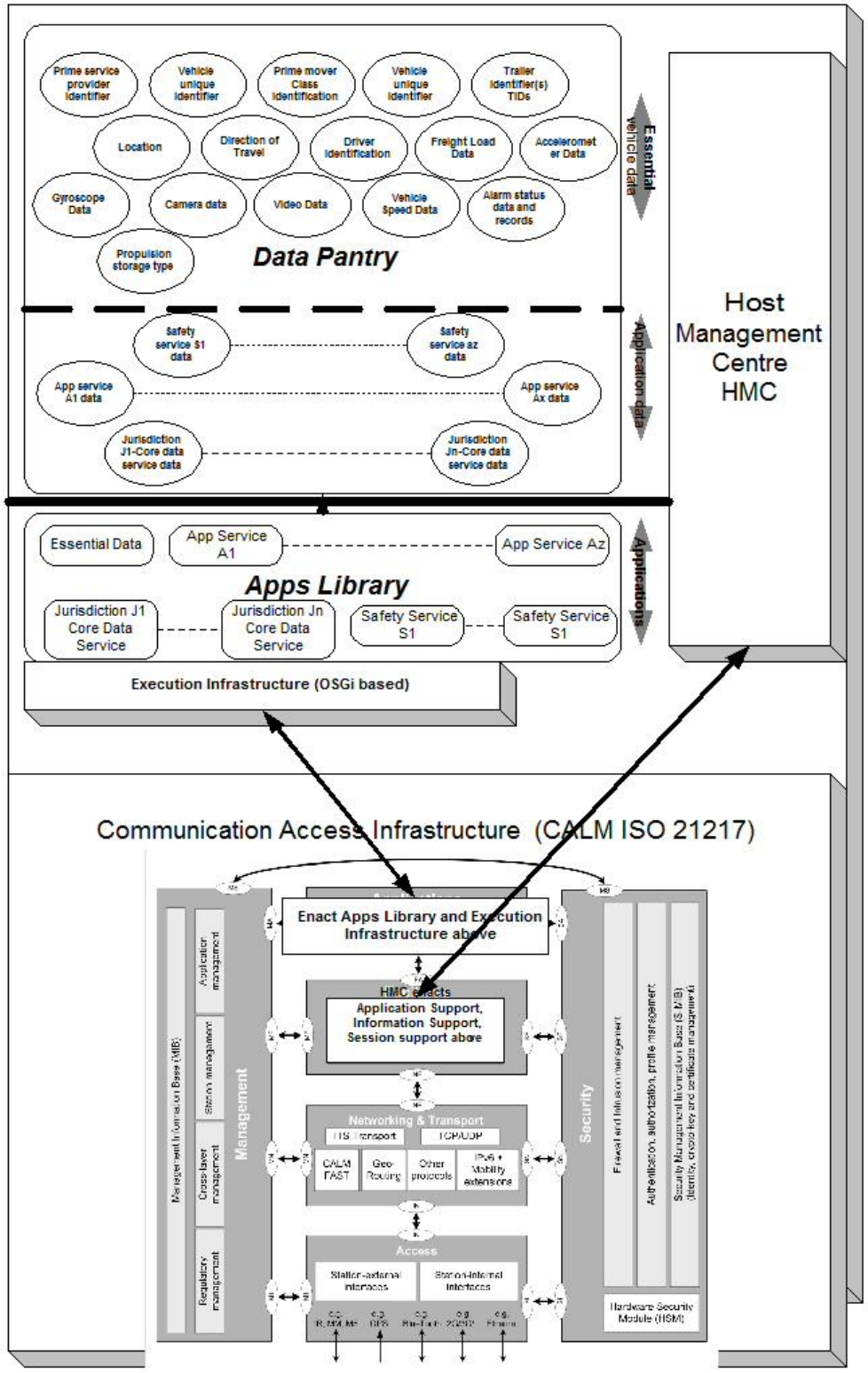

TARV-ROAM Layered Architecture and the role of OSGi

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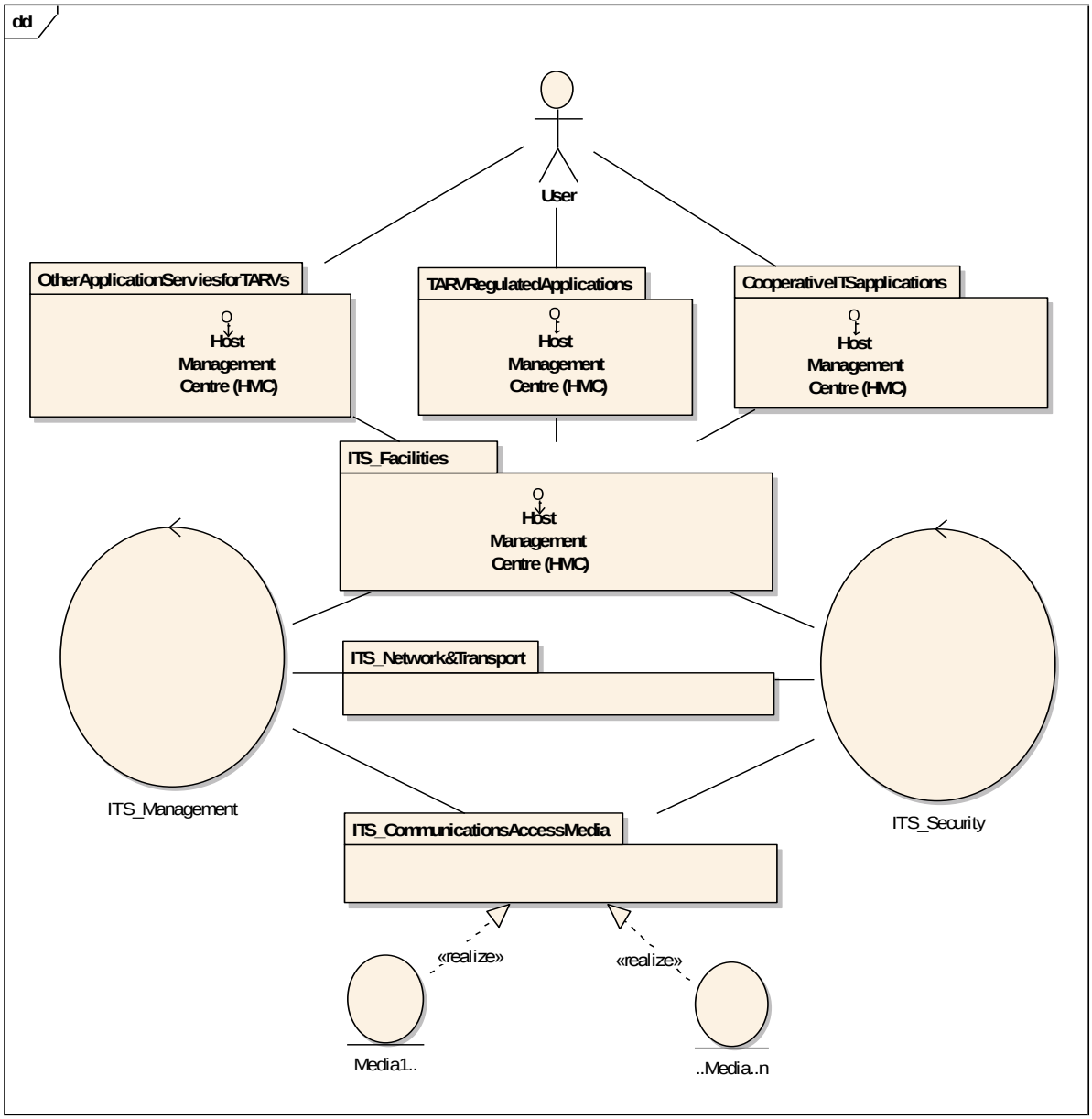

UML representation of TARV-ROAM communication diagram

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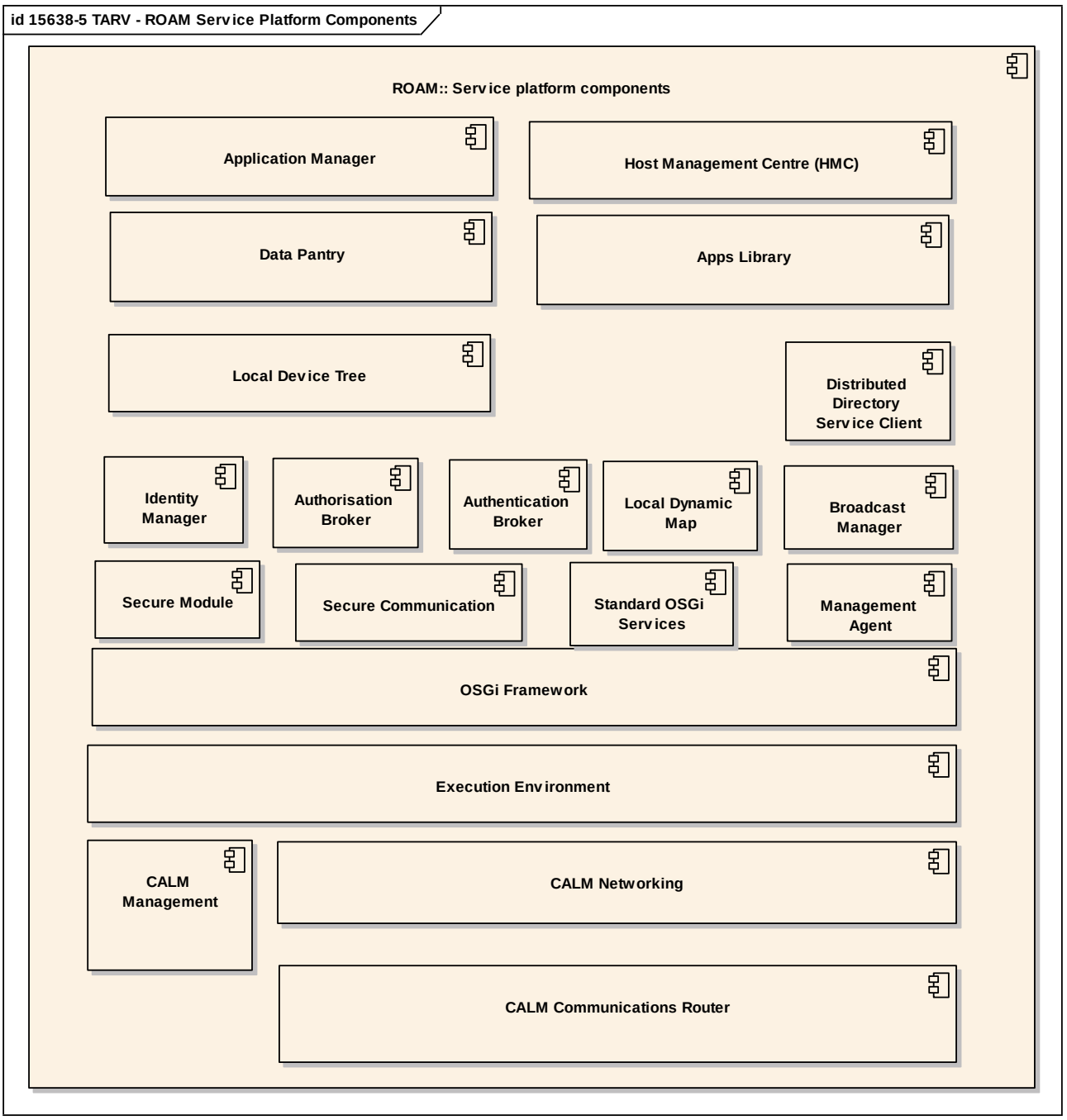

TARV–ROAM service platform components

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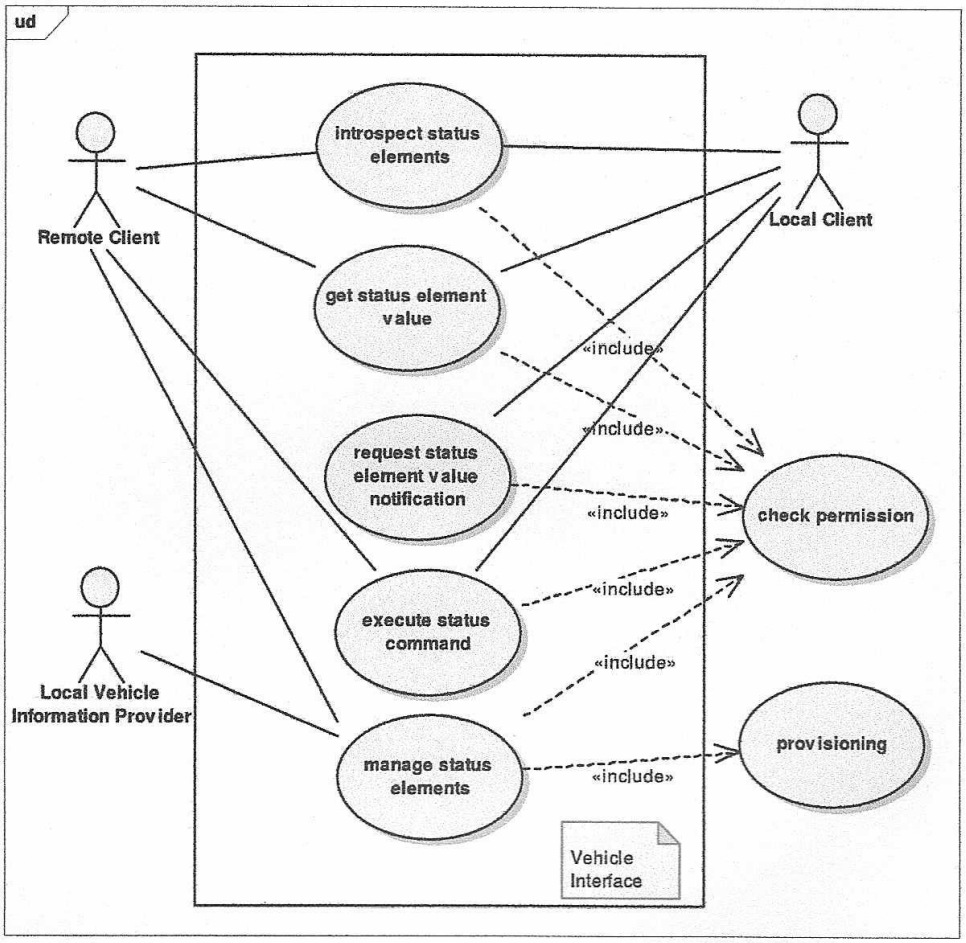

Data/device tree use cases

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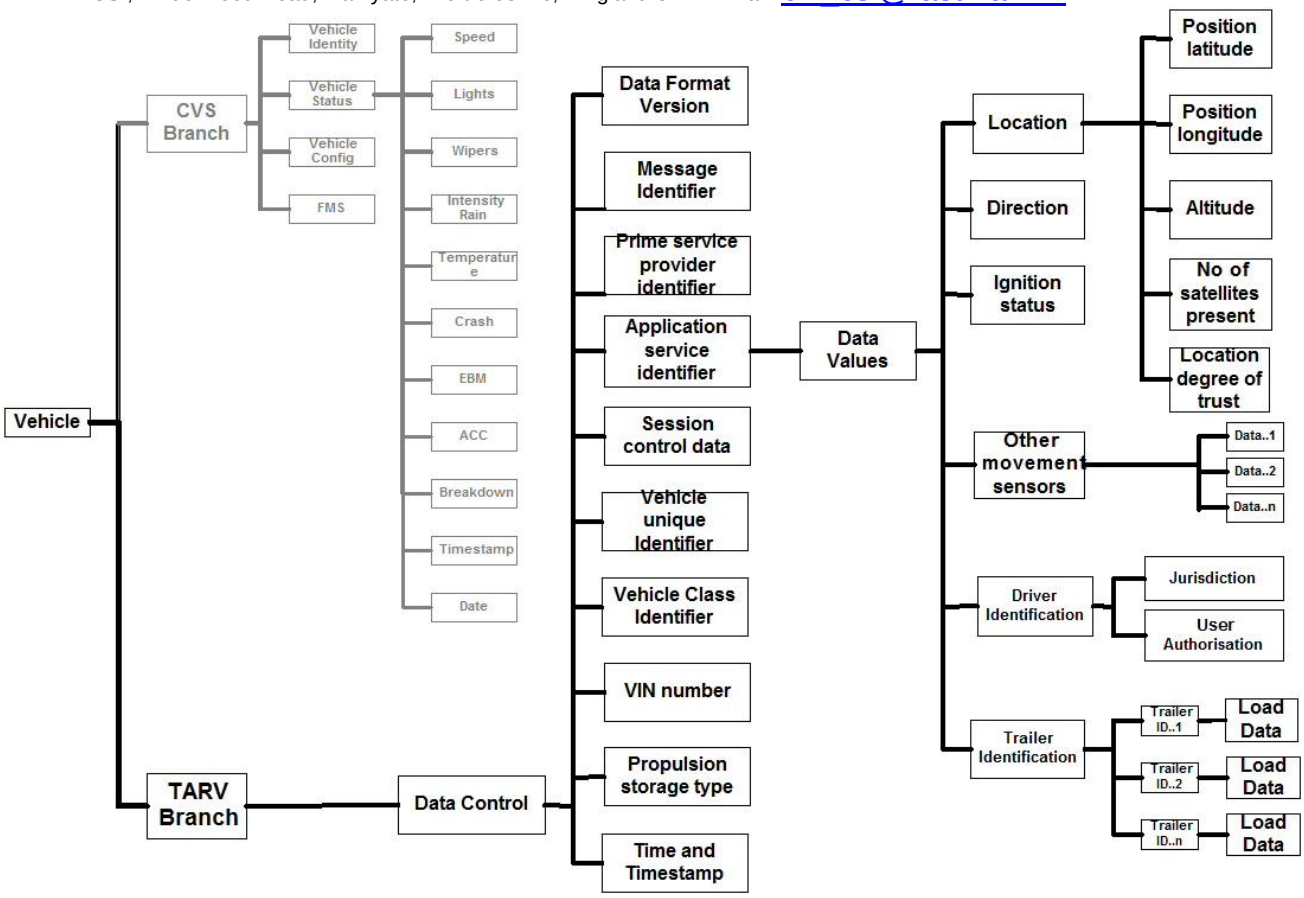

TARV-ROAM local data tree

At a later date I could provide a briefing on TARV/ISO 15638 if requested

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Jont Editor ISO 15638 parts 1,2,3,4,5,6,7