



Department
for Transport

Update from the DfT

Darren Capes FIHE FIET
Road Infrastructure Technology Team

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For release



Department
for Transport

Digital Vehicle Services Framework

Developing a set of deliverable
connected vehicle use cases



What are Connected Services?



Connected Vehicles

means any type or age of vehicle or person in a vehicle that can generate, transmit and receive and process data.*

Connected Services

refers to digital applications aimed at all users, from road authorities to road users.

Users and recipients of Connected Services

want to use their preferred digital channels to receive high-quality information relative to their needs.

*Royal Automotive Club Foundation Definition – Driven by Data, Revisited 2023



Digital Vehicle Services (DVS) Framework



Provides a framework

For considering the range of likely services that we will see on our road network and in vehicles over the next ten to fifteen years.

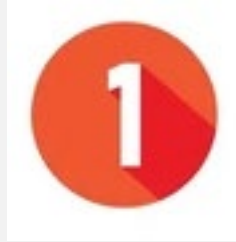
Provides a way of thinking about service delivery challenges.

Plans for the future

It allows services to be ordered into groups that can be delivered now, or in the future.

It provides a mechanism for considering policy and investment in the CV sector.

The Three Connected Infrastructure / Vehicle STREAMS



STREAM ONE

(Infrastructure to Vehicle)

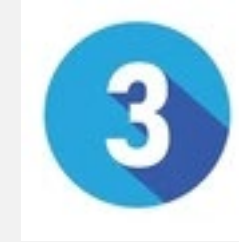
“Connected services provide the opportunity for migrating rules and directions that govern road use from the roadside into the vehicle”



STREAM TWO

(Vehicle to Infrastructure)

“Connected services provide opportunities for using vehicle derived data to better understand the state of the network”



STREAM THREE

(two-way connectivity)

“Connected services can automate management of vehicles and payment for services”

The Three Connected Infrastructure / Vehicle



Description of the road.

Road geometry, signs and regulations.

Strategic Information.

Roadworks, closures, diversions and significant disruption.

Other sources of height information.

Tactical Information.

GLOSA, incident alert, blue light, VRU location.

Physical attributes.

Road surface condition, environmental conditions.

Situational awareness.

Travel times, congestion, queuing, vehicle behavior, eCall and collisions.

Understanding the network.

Support for digital twins, regional planning and modelling, PT priority

Managing activity.

Kerbside management, access restrictions, blue badge, ULEZ access

Paying for services.

Parking, tolling, congestion charging, EV charging.

Single accounts for payments and transactions.

Services are already being delivered on UK roads that align with the three Steams.

Services being delivered today



Satellite
navigation

Optimised
Traffic and
Transit Data
Services

Safety related
traffic
information

EV charging

Enhanced
Maintenance

Based on the 'Unlocking the potential of Connected Services in the UK' outline business case briefing pack, WSP for DfT, 2025

Future services that also align with the three Streams show promise, but more needs to be done to maximise their potential

Future services that demonstrate the art of the possible



In-Vehicle
Signage
(IVS)

Green Light
Optimisation
Speed
Adaption
(GLOSA)

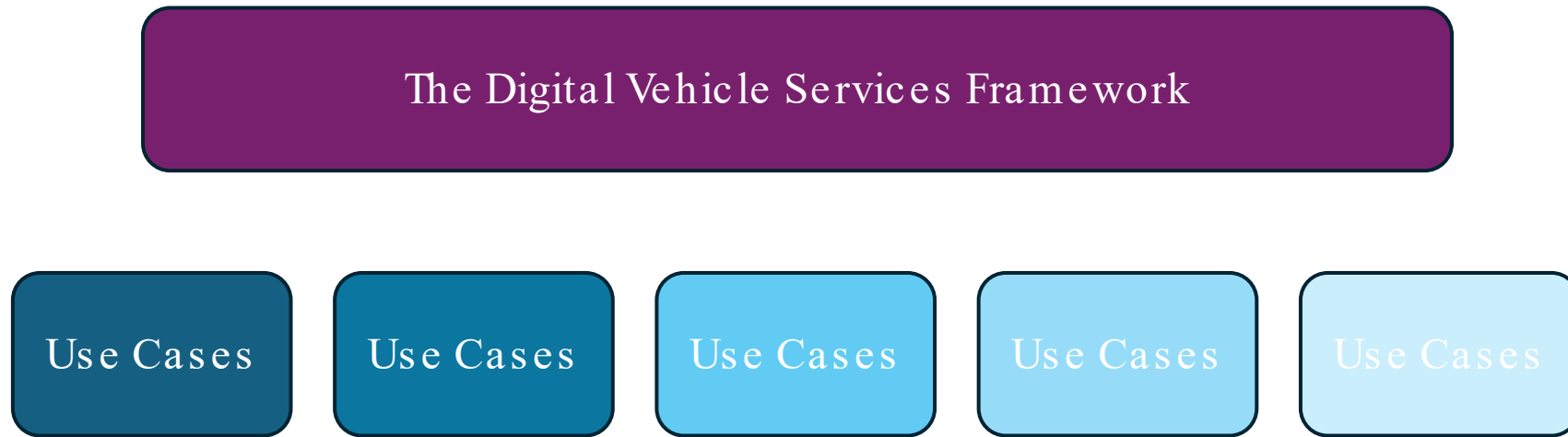
Road Works
Warning
(RWW)

Hazard
Location
Notifications
(HLN)

Public
Transport and
Asset
Management

Based on the 'Unlocking the potential of Connected Services in the UK' outline business case briefing pack, WSP for DfT, 2025

The Digital Vehicle Services Framework



The Digital Services Framework starts with a set of USE CASES

These set out at a high level what connected data will deliver for users at a high level

By users, we could mean the travelling public or road operators

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Use Cases

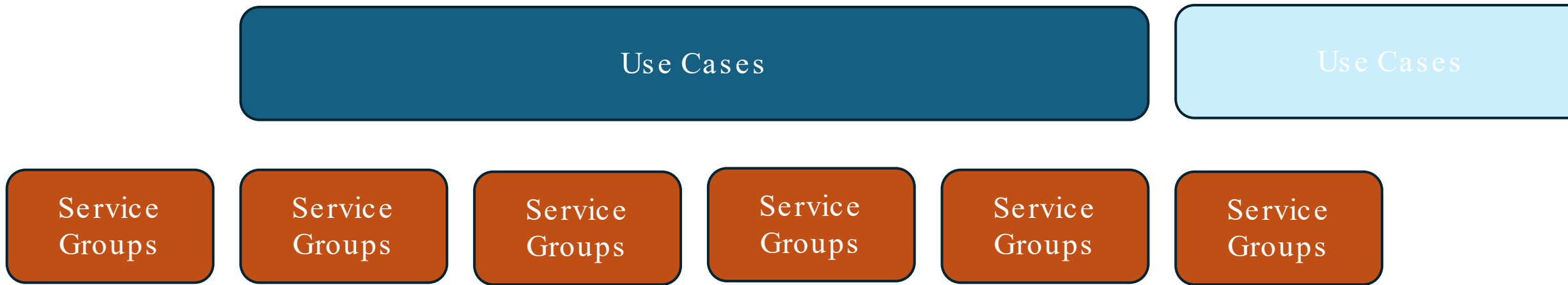
Use Cases

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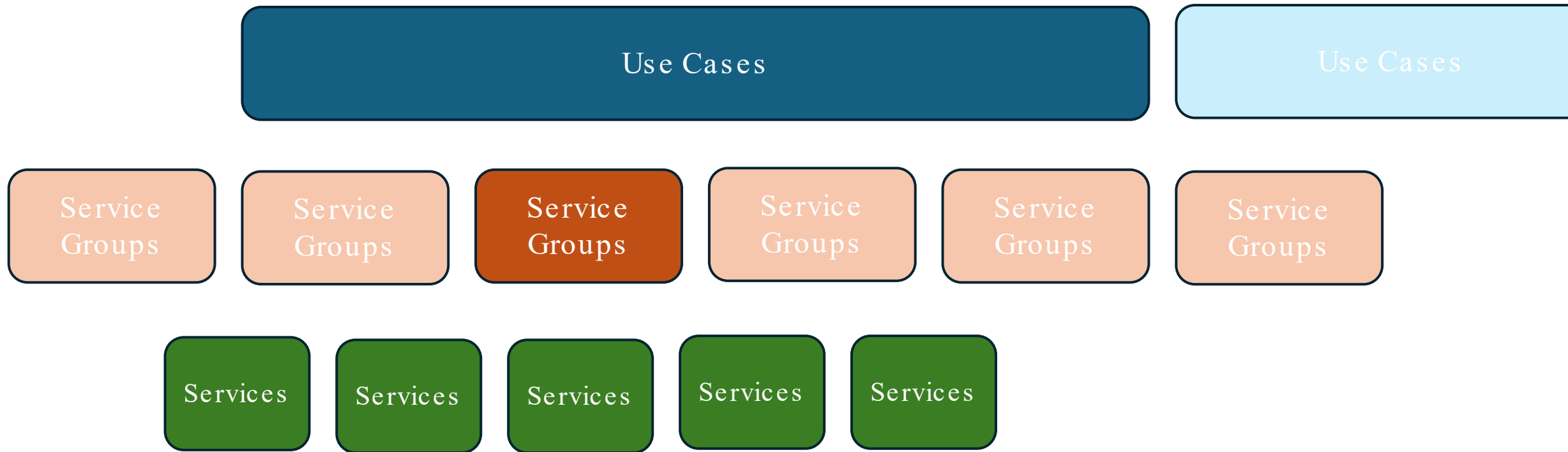
The Digital Vehicle Services Framework



Within the Use Cases are SERVICE GROUPS.

These describe groups of similar services we could deliver to users.

The Digital Vehicle Services Framework



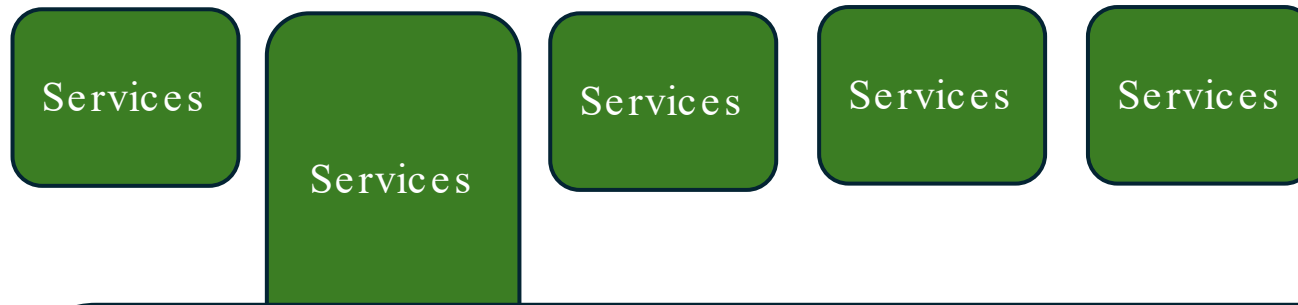
The services groups contain the actual service definitions that we expect to see operational in the UK in the future

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The Digital Vehicle Services Framework



“Vehicle Connectivity makes it possible to provide real-time notifications and warnings to built-in systems and vehicle occupants about possible hazards. These notifications and warnings are based on received information, integrated with direct sensing by the vehicle”.

The Service definitions are narrative and written in plain English

The Digital Vehicle Services (DVS) Framework - Use Case Groups

DVS starts by defining SEVEN main service GROUPS;

Use Case Group	Description
A	Safety and Emergency
B	Traffic Management
C	Advanced Vehicle Capabilities
D	In-Vehicle Experience and Convenience
E	Vehicle Management and Maintenance
F	Support for Authorities
G	Fleet and Logistics

Derived from the UNECE (United Nations Economic and Social Council, Economic Commission for Europe) ECE/TRANS/WP.29/2025/2 report examining “Vehicular communications definition, types, value, uses, and considerations”. Report to the 195th session of the Inland Transport Committee of the World Forum for Harmonization of Vehicle Regulations. Submitted by the Informal Working Group on Intelligent Transport Systems

The Digital Vehicle Services (DVS) Framework - Use Case Groups

Theme	Use Case	Description	CV Mode	Public / Private	Infra Impact	Ongoing DfT Activity?	Comments Impact
		Vehicle-to-X (V2X) communications enable: 1) Vehicle-to-Vehicle (V2V) communications between vehicles to exchange information on location, speed, direction, and other data; 2) Vehicle-to-Infrastructure (V2I) communications between vehicles and infrastructure (e.g., traffic lights, road signs, etc.) to exchange information on location, speed, direction, and other data; 3) Vehicle-to-Pedestrian (V2P) communications between vehicles and pedestrians to exchange information on location, speed, direction, and other data.	On-Board Vehicle Network	Public / Private / Both	High impact on infrastructure		
A Safety and Emergency	A1 Safety information for vehicle occupants	A1.1 Vehicle connectivity enables it possible to provide real-time notifications and warnings to both in-vehicle and vehicle occupants about possible hazards. These notifications and warnings are based on received information, integrated with driver sensing for the vehicle.	On-Board Vehicle Network	Public	Low-Medium impact on infrastructure		
		A1.2 Vehicle connectivity enables it possible to report various types of possible road hazards, allowing for a more comprehensive risk assessment.	On-Board Vehicle Network	Public	Low-Medium impact on infrastructure		
		A1.3 Notifications and warnings include, but are not limited to, information about wrong-way driving, traffic congestion, vehicle presence, stopped vehicles, vehicles with excessive weight, presence and direction of emergency vehicles, and other road hazards.	On-Board Vehicle Network	Public	Medium-High impact on infrastructure		
	A2 Safety information for road transport operations	A2.1 Vehicle connectivity enables it possible for both in-vehicle to transmit real-time information to their surroundings, allowing road transport infrastructure operators to improve their traffic management operations. These real-time notifications and warnings can be used to improve service operations, information and overall traffic management, security leading to infrastructure improvements or can be used for notifications on variable message signs (VMS).	On-Board Vehicle Network	Public	Medium-High impact on infrastructure		
		A2.2 Vehicle connectivity enables it possible to improve conditions for first responders and emergency services by providing real-time information about location, road status, and other conditions, from various traffic users.	On-Board Vehicle Network	Public	Medium-High impact on infrastructure	Initial DfT	
	A3 Emergency services	A3.1 Vehicle connectivity enables it possible to improve conditions for first responders and emergency services by providing real-time information about location, road status, and other conditions, from various traffic users.	On-Board Vehicle Network	Public	Medium-High impact on infrastructure	Initial DfT	

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The Digital Vehicle Services (DVS) Framework - Use Case Groups

The full list of DVS Service Definitions is being developed and the moment

We will be socialising this with the sector over the coming months.

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Development of the Digital Vehicle
Services Framework will be continuing.

Watch this space...

A wide-angle photograph of a two-lane asphalt road stretching into the distance. The road is flanked by dark, silhouetted hills under a dramatic sky with scattered white clouds. A bright sun is low on the horizon, creating a strong lens flare and illuminating the scene. Painted on the left side of the road, in large white letters, are the years 2025, 2026, 2027, 2028, and 2029, arranged in a perspective that makes them appear to recede into the distance along the road's edge.

2025
2026
2027
2028
2029



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For consultation

DRAFT, for consultation