



GRIMALDI STUDIO
LEGALE



WAVESTONE



2nd Workshop

Pilot on **Fair and equal data sharing for cooperative, connected and automated mobility**

Shared Server Solution architecture needs and the pilot design

Big Data and B2B platforms: the next big opportunity for Europe
EASME/COSME/2018/004

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Medium-sized Enterprises



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Shared Server
solution
architecture and
pilot needs

/ 02

Items

Architecture - The main roles

The main products of Shared Server

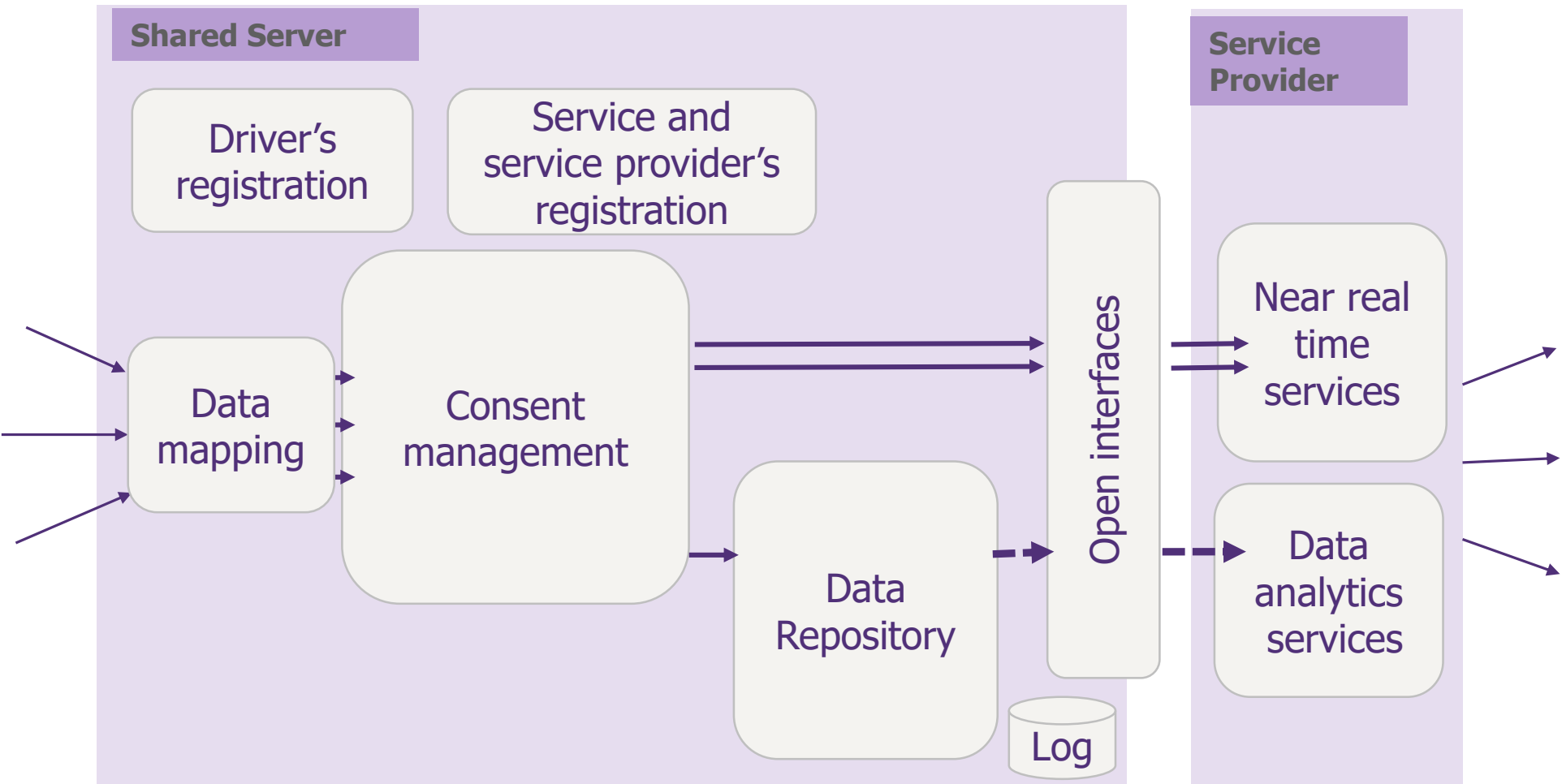
Data complexity – Mapping data

Latency barriers – Streaming data technology

2000ms – Why it is important

Three outcomes from the first workshop that should be considered

Architecture - The main roles



The main products of Shared Server

Streaming data

Streaming Data is data that is generated continuously by thousands of vehicles, which typically send in the data records simultaneously in small sizes.

They filtered on the fly concerning drivers' consents and they become immediately available to the service providers.

Data at rest

Data at rest is data that have been stored into the repository after the initial processing and filtering of incoming in-vehicle data concerning the drivers' consents.

They may stored in several forms and media systems such as relational databases, non-SQL data storages, data blobs even in cold storage for long preservation if needed.

The best of both worlds

	Stream processing	Batch processing
Data scope	Queries or processing over data within a rolling time window, or on just the most recent data record	Queries or processing over all or most of the data in the dataset
Data size	Individual records or micro batches	Large batches of data
Performance	Requires latency in the order of seconds or milliseconds	Latencies in minutes to hours
Analyses	Simple response functions, aggregates, and rolling metrics	Complex analytics

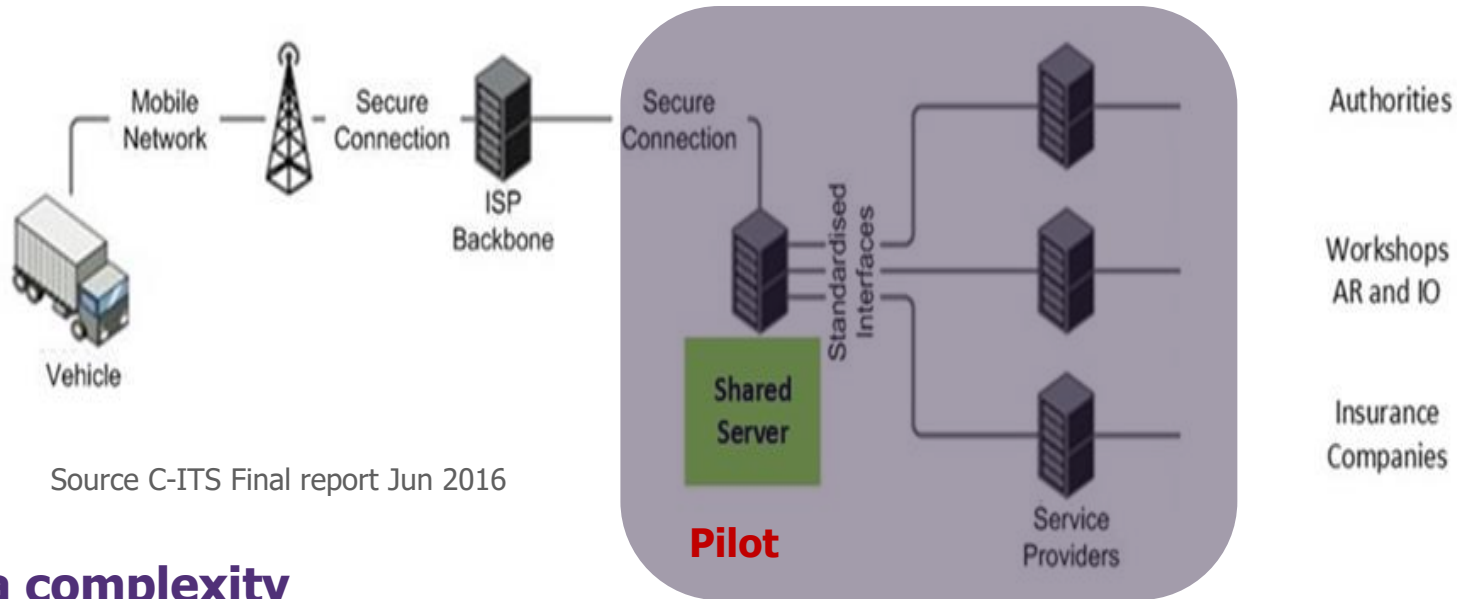
Source <https://aws.amazon.com/streaming-data/>



The main technical challenges

Latency barriers

The time delay between the transmission of the in-vehicle data until the response of a service from the driver's smartphone

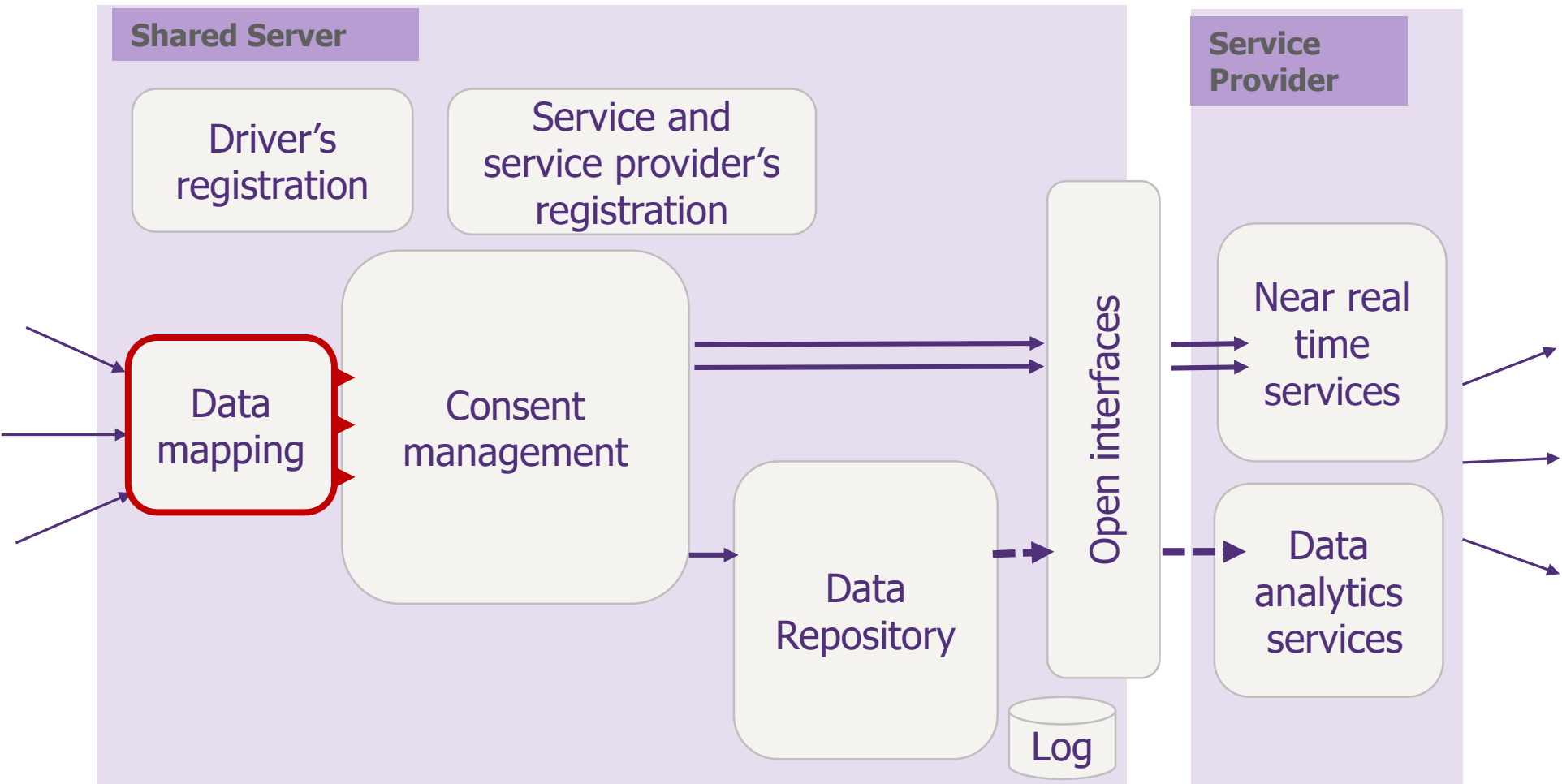


Source C-ITS Final report Jun 2016

Data complexity

Tackling the complexity and variety of the in-vehicle data among the different manufacturers and types approval of the vehicles

The main roles – Data mapping



Data complexity – Mapping data



Different semantics



Different measurement units



Different data types

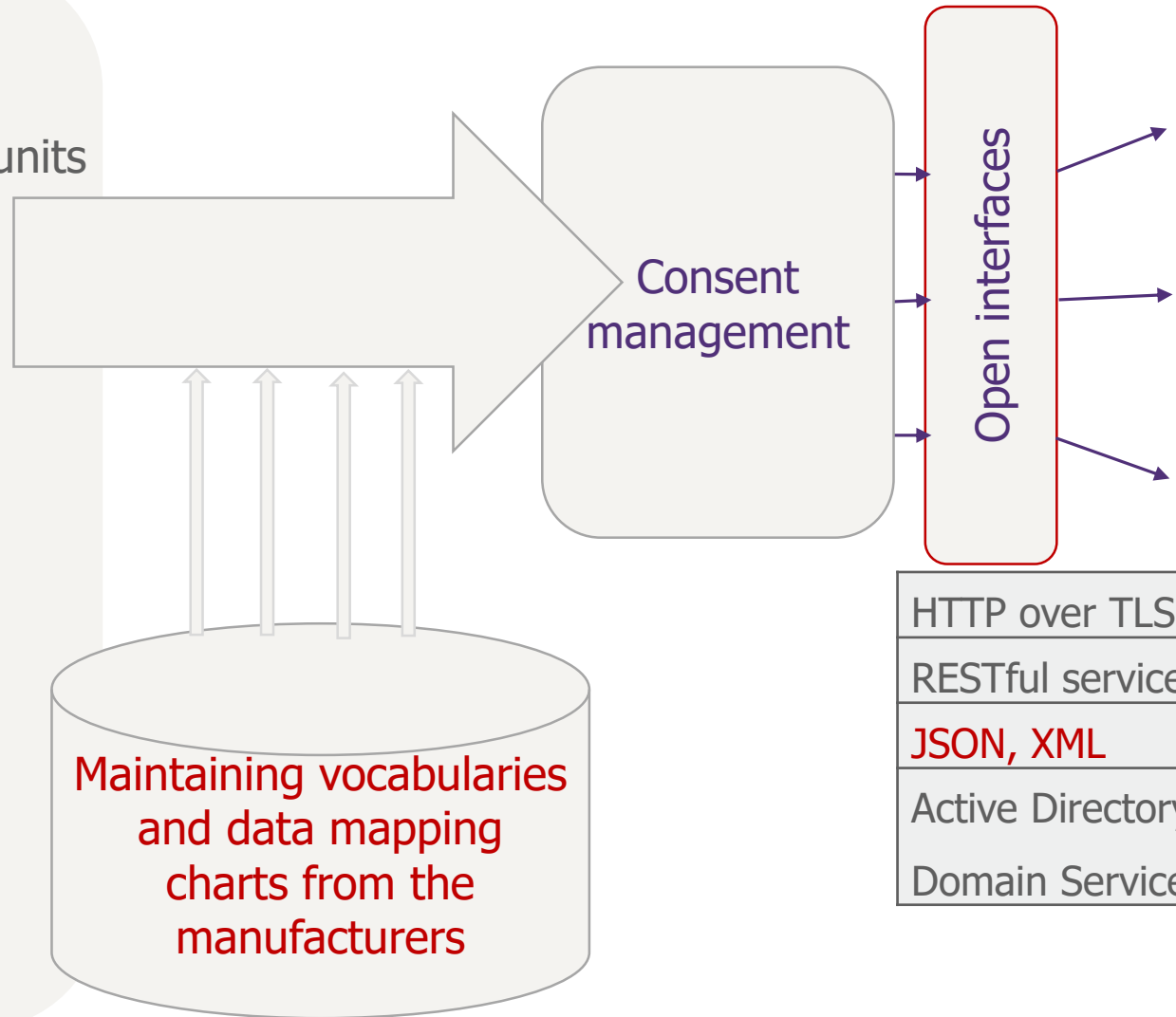


Different encoding

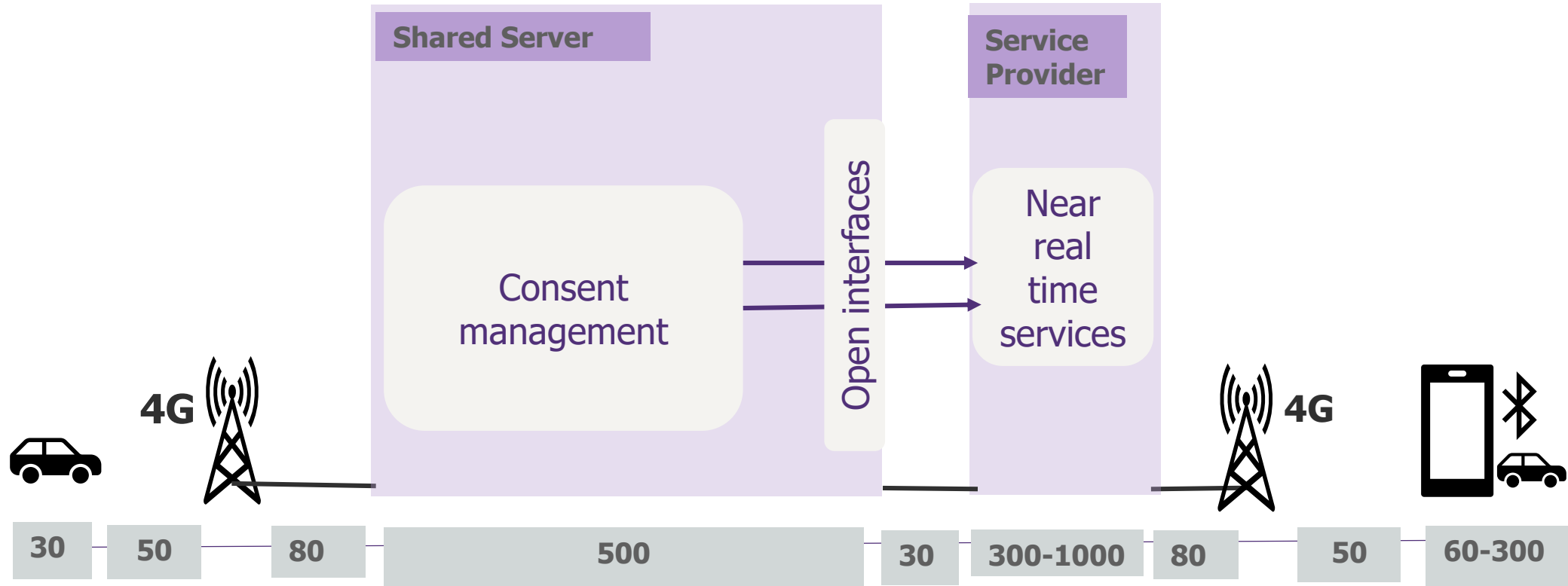


Different versions

... for each manufacturer and type approval



Latency barriers – Streaming data technology



**Less than 2000ms with 4G!
That's our CHALLENGE**

2000ms – Why it is important



Thanks to streaming data technology the processing time has impressively reduced **for specific tasks**.



Most of the C-ITS services of “day 1” and “day 1.5” that has been classified as “**likely based on ITS-G5 communication**” may be deployed **with 4G**



Excluding highly time critical applications road safety services may be deployed by Shared Server data

**The scope of Shared Server
may be expanded to near-
real time services**

Three outcomes from the first workshop that should be considered



Alternative data flows - If the data are **received by the manufacturer through the Shared Server** then product liability issues will arise, and the manufacturer **could not be liable** for the vehicle anymore.



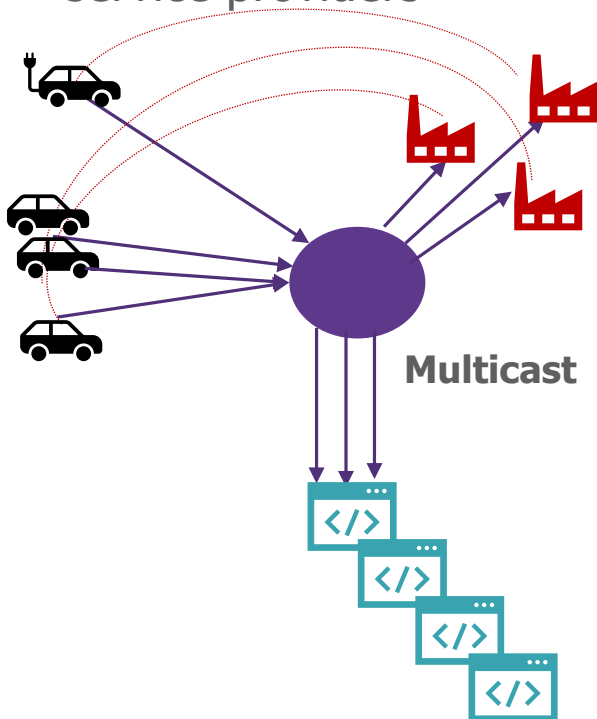
“If you touch it you own it” - If the Shared Server get into the processing of the data, doing corrections or **transformations and applying semantic annotation** then Shared Server will assume **sole liability** towards the service providers for the data content.



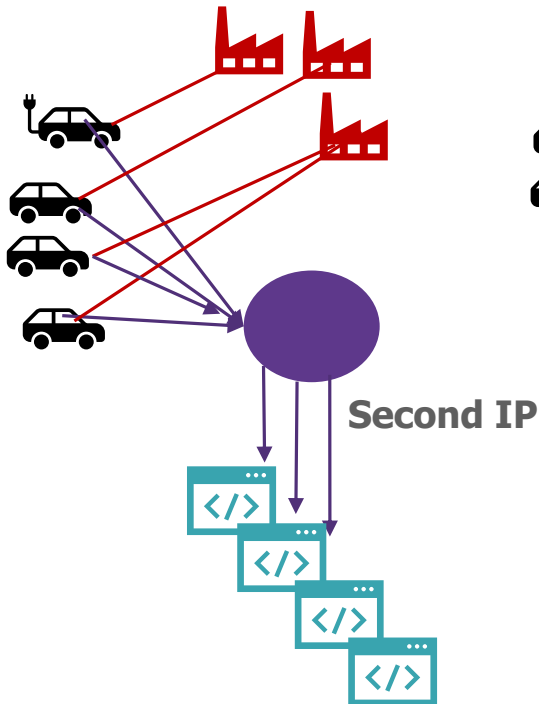
Shared Server **should be restricted** in the role of providing data in a secure way and maintaining the privacy of the drivers. The participants underlined **that segregation of duties** is very important to mitigate the **“the winner takes all”** threat.

1. Outcomes from the first workshop – Alternative data flows

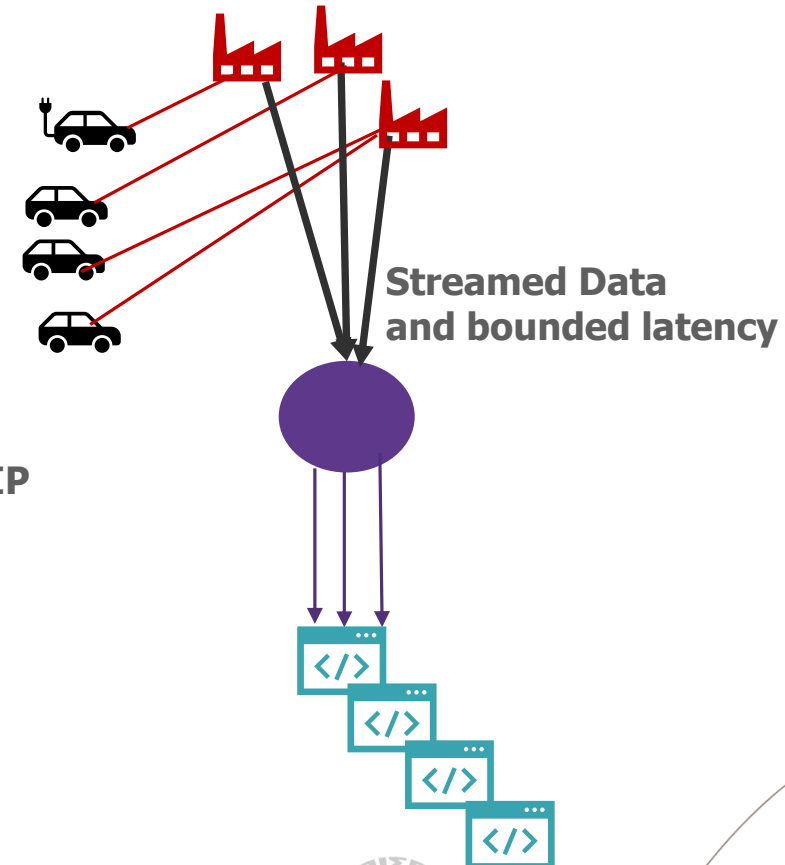
Data are transmitted to the Shared Server and then are multicast to the manufacturers' and service providers



Data are transmitted to the Shared Server simultaneously to the manufacturers' servers

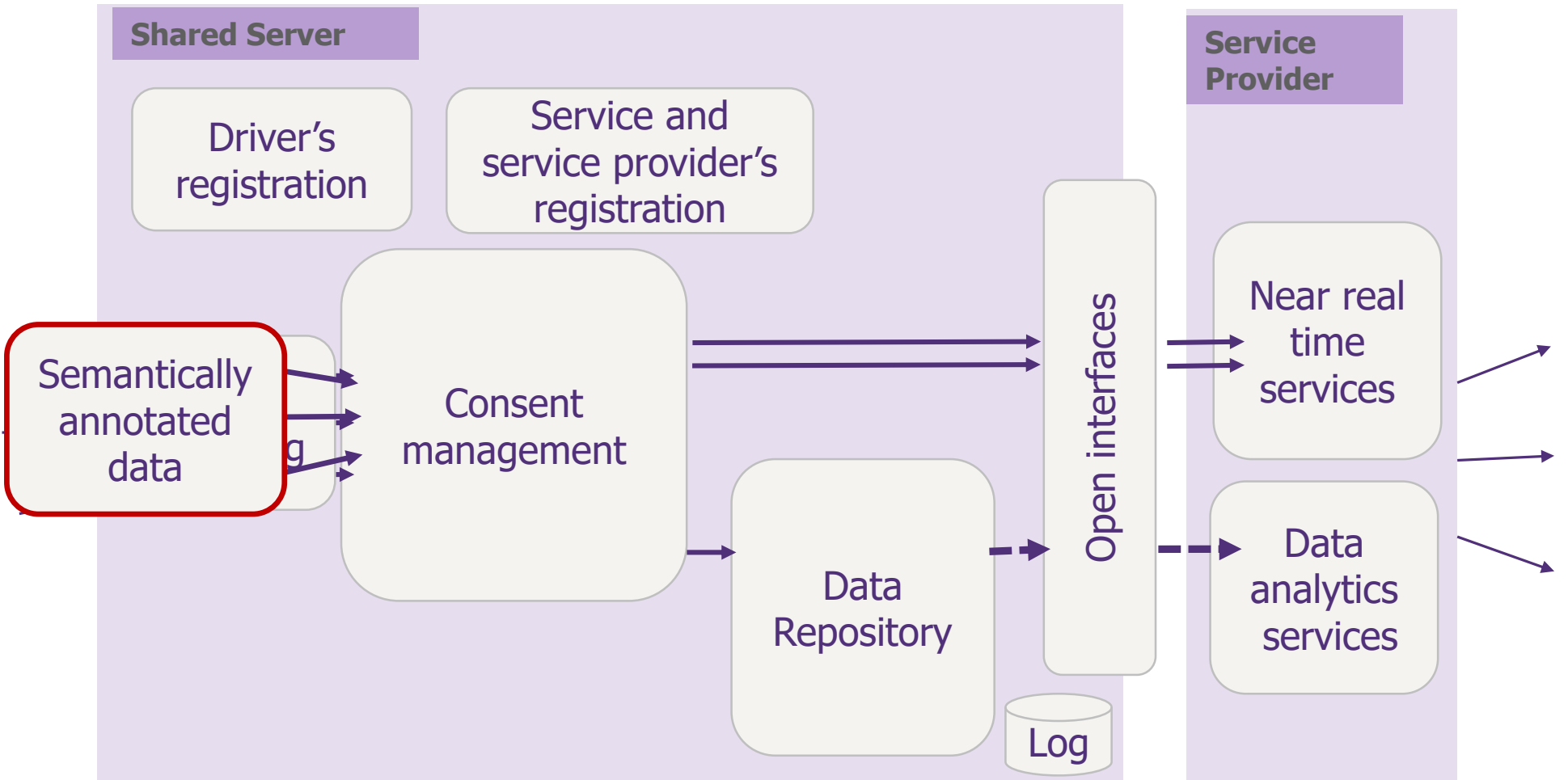


The server of the manufacturer streams data with specified upper latency bound



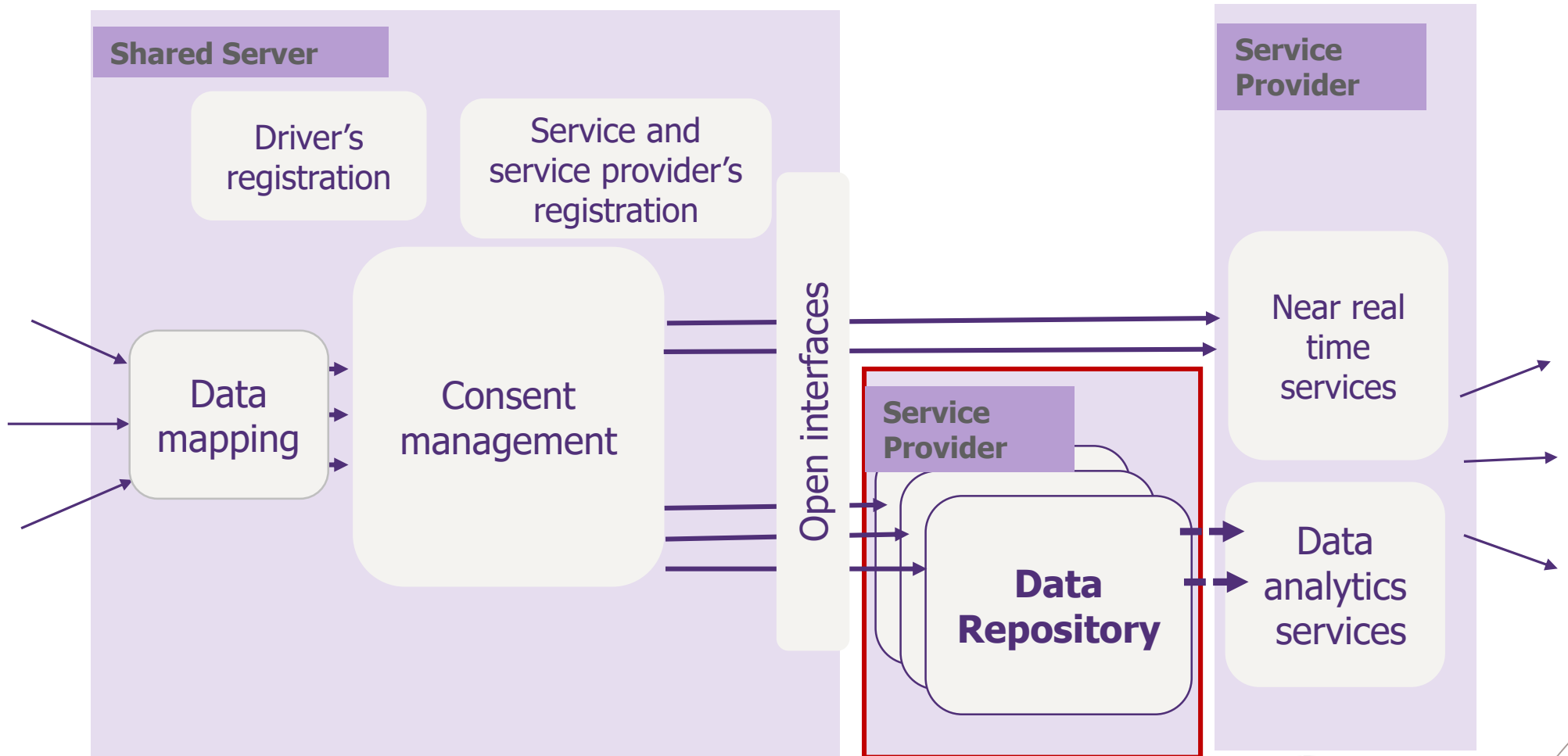
2. Outcomes from the first workshop – "If you touch it you own it"

Data are annotated either **by the Electronic Control Unit (ECU)** of the vehicle before transmitting them via ISP to the Shared Server or **by the manufacturer's server before streaming** them to the Shared Server



3. Outcomes from the first workshop – “The winner takes all” threat

Data repository services and the exploitation of “**data at rest**” fits better to be a job executed **by the service providers**. It is a promising and fast-developing field and therefore should be available **to the competition of service providers**





The secondary roles

