

CDL Project Status Update

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CDL Introduction



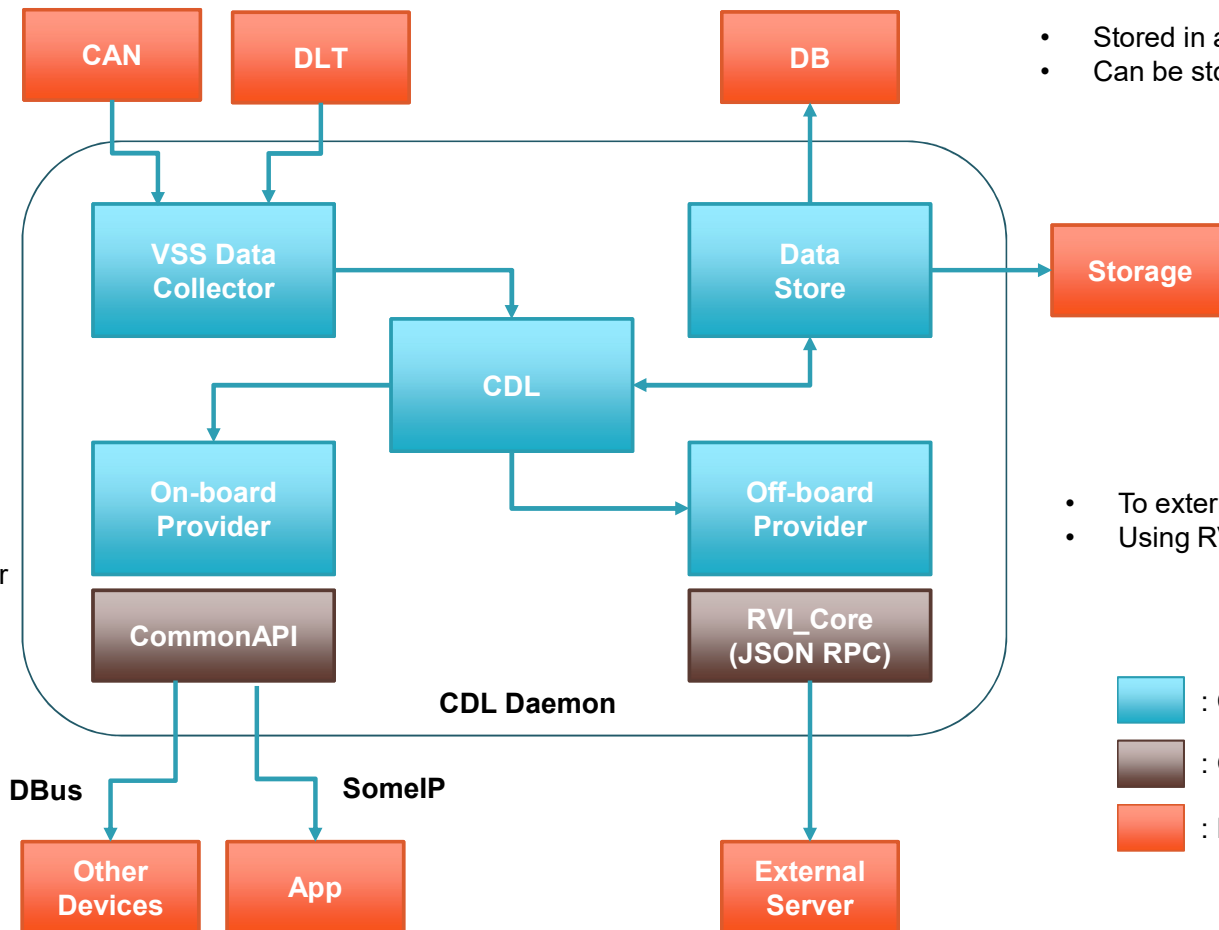
What is CDL?

- Car Data Logger
- CDL is responsible for **collecting**, **storing** and **providing** the car data
 - Car data related to..
 - Diagnostic, navigation, infotainment, information on vehicle itself, driver specific information, functional status, DLT, ...
 - But, not limited to a specific list or pre-defined items
 - Collection of car data
 - Collection of user specified car data by configuration set
 - Store of car data
 - In a specific format configured by the user as database or file
 - Provide of car data
 - To other GENIVI components or cloud server of outside the vehicle requiring specific car data

Architecture of CDL

- Use VSS via. VSI
- Managed by configuration (JSON)

- To other internal module or applications
- Using CommonAPI



- Stored in a specific format (ex. JSON)
- Can be stored to database

- To external server
- Using RVI-core

- : CDL Component
- : GENIVI Component
- : External Component

Configurations

- You can collect and manage car data you want by configuration of 'DataConfig.json'
- Configuration defines which car data will be collected how frequently
- Event data is also defined separately

```
DataConfig.json x
{
  "Cycle":
  {
    "1000":
    [
      "Signal.Drivetrain.Transmission.Speed",
      "Signal.Chassis.SteeringWheel.Angle",
      "Signal.Chassis.SteeringWheel.Extension",
      "Signal.Drivetrain.FuelSystem.AverageConsumption"
    ],
    "2000":
    [
      "Signal.Drivetrain.InternalCombustionEngine.Torque",
      "Signal.Drivetrain.InternalCombustionEngine.TPS",
      "Signal.Chassis.Accelerator.PedalPosition",
      "Signal.Chassis.Brake.PedalPosition"
    ],
    "3000":
    [
      "Signal.Chassis.Axle.Row1.Wheel.Right.Tire.Pressure",
      "Signal.Chassis.Axle.Row1.Wheel.Left.Tire.Pressure",
      "Signal.Chassis.Axle.Row1.Wheel.Right.Tire.Temperature",
      "Signal.Chassis.Axle.Row2.Wheel.Right.Tire.PressureLow",
      "Signal.Drivetrain.InternalCombustionEngine.Power"
    ]
  },
  "Event":
  [
    "Signal.Drivetrain.Transmission.Gear",
    "Signal.Body.Mirrors.Left.Heater.Status",
    "Vehicle.Light.Front.Left",
    "Vehicle.Light.Front.Right"
  ]
}
```

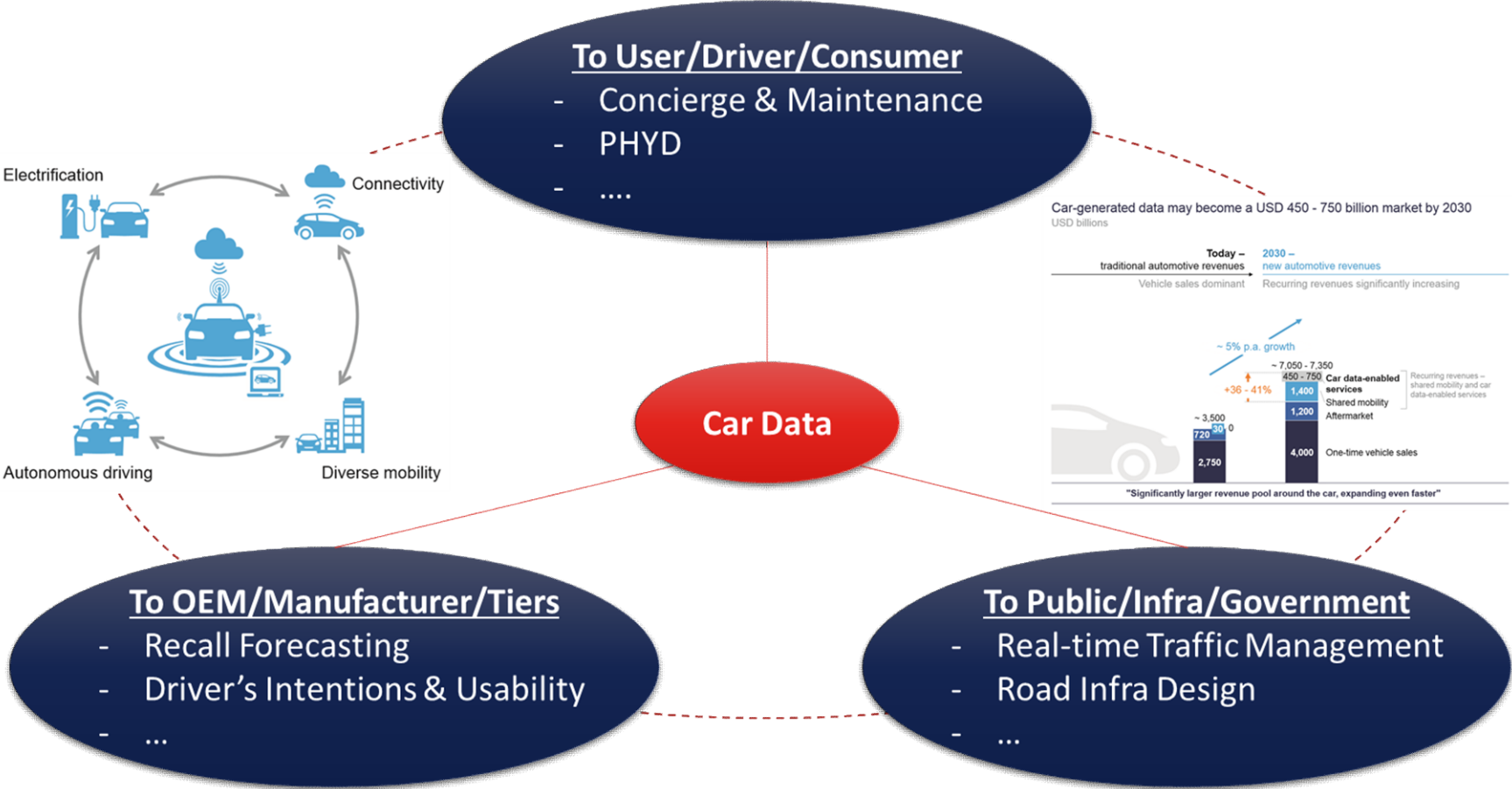
Project Status Overview

- Since 2014
- Registered as P2-PC in Miranda release (11.0)
- CDL concept demo is integrated into GDP12
- Focusing on implementing proof of concept for AC
- Preparing submission CDL as AC

Overview of Car Data Use Case



Car Data Usage Trend



* McKinsey Advanced Industry (Mar 2016) - Car data: paving the way to value-creating mobility, Perspectives on a new automotive business model





Use Cases

Value creation models		Use cases	
<p>Generating revenues</p> 	<p>Direct monetization Selling products, features, or services to the customer</p>	<input type="radio"/> Over-the-air software add-ons	<input type="radio"/> Usage-based tolling and taxation
		<input type="radio"/> Networked parking service	<input checked="" type="radio"/> "Gamified"/social-like driving experience
		<input checked="" type="radio"/> Tracking/theft protection service	<input checked="" type="radio"/> Fleet management solutions
		<input checked="" type="radio"/> Vehicle usage monitoring and scoring	<input type="radio"/> Remote car performance configuration
		<input checked="" type="radio"/> Connected navigation service	<input type="radio"/> In-car hot spot
		<input type="radio"/> Onboard delivery of mobility-related contents/services	
		<input type="radio"/> Onboard platform to purchase non-driving-related goods	
		<p>Tailored advertising Leveraging car data to push individual offerings to customers</p>	<input checked="" type="radio"/> Predictive maintenance
	<input type="radio"/> Targeted advertisements and promotions		



Use Cases

<p>Reducing costs</p> 	<p>R&D and material costs reduction</p> <p>Gathering product field data for development</p>	<input type="radio"/> Warranty costs reduction	<input type="radio"/> Data-/feedback-based R&D optimization
	<p>Customers' costs reduction</p> <p>Analyzing actual usage patterns to reduce repair and downtime costs</p>	<input type="radio"/> Traffic-data-based retail footprint and stock level optimization	
		<input checked="" type="radio"/> Usage-based insurance – PAYD/PHYD	<input type="radio"/> Car pooling
		<input checked="" type="radio"/> Driving style suggestions	<input type="radio"/> P2P car sharing
	<input type="radio"/> E-hailing	<input type="radio"/> Trucks platooning	
<p>Improved customer satisfaction</p> <p>Better tailoring product/services to customer needs</p>	<input type="radio"/> Early recall detection and software updates		
<p>Increasing safety and security</p> 	<p>Reducing time for intervention</p> <p>Collecting and forwarding warnings in real time, pointing in the right direction</p>	<input checked="" type="radio"/> Driver's condition monitoring service	<input type="radio"/> Aggregated car data-based CCTV service
		<input type="radio"/> Improved road/infrastructure maintenance and design	<input checked="" type="radio"/> Road laws monitoring and enforcement
		<input type="radio"/> Breakdown call service	
		<input type="radio"/> Emergency call service	

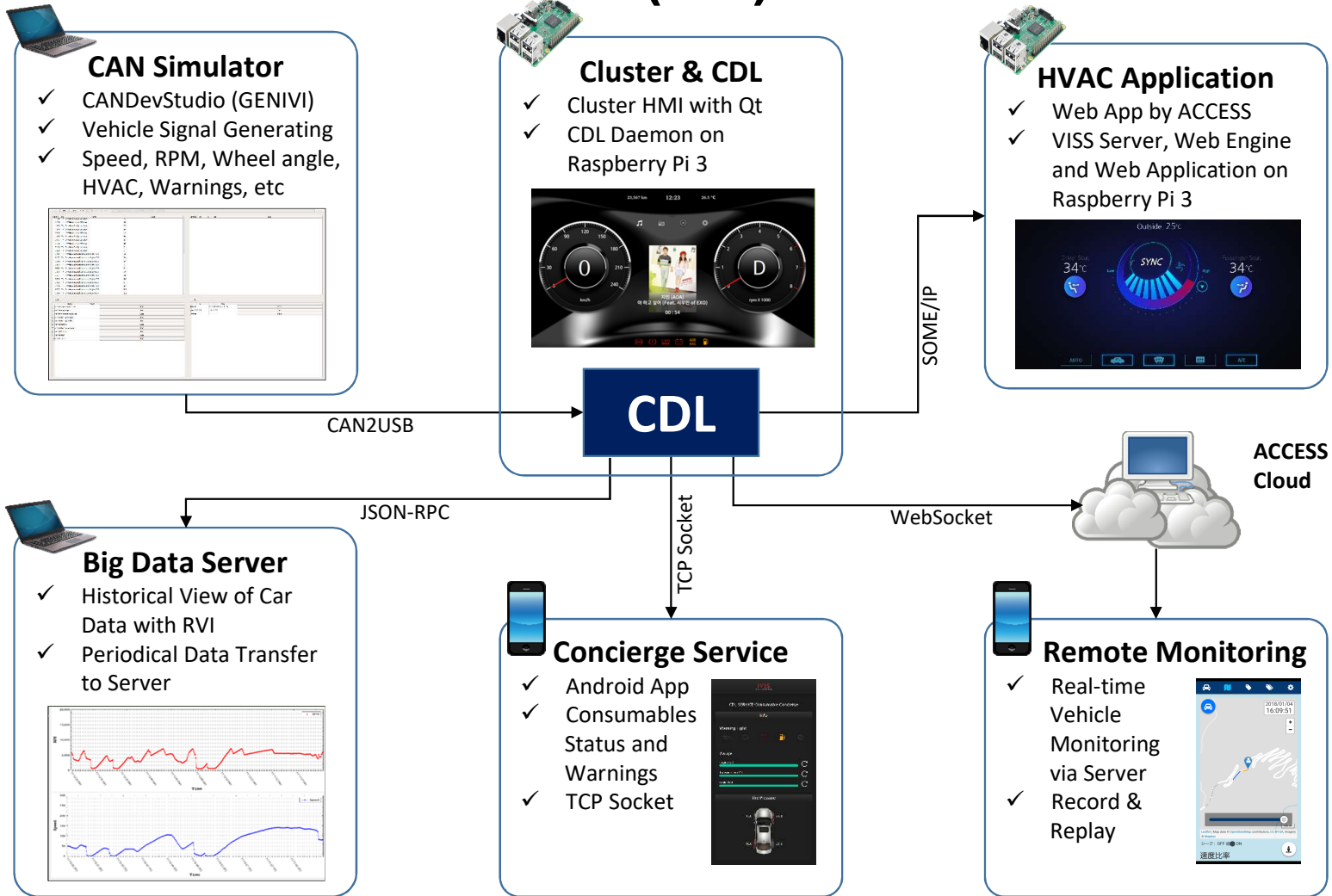
18th AMM Showcase



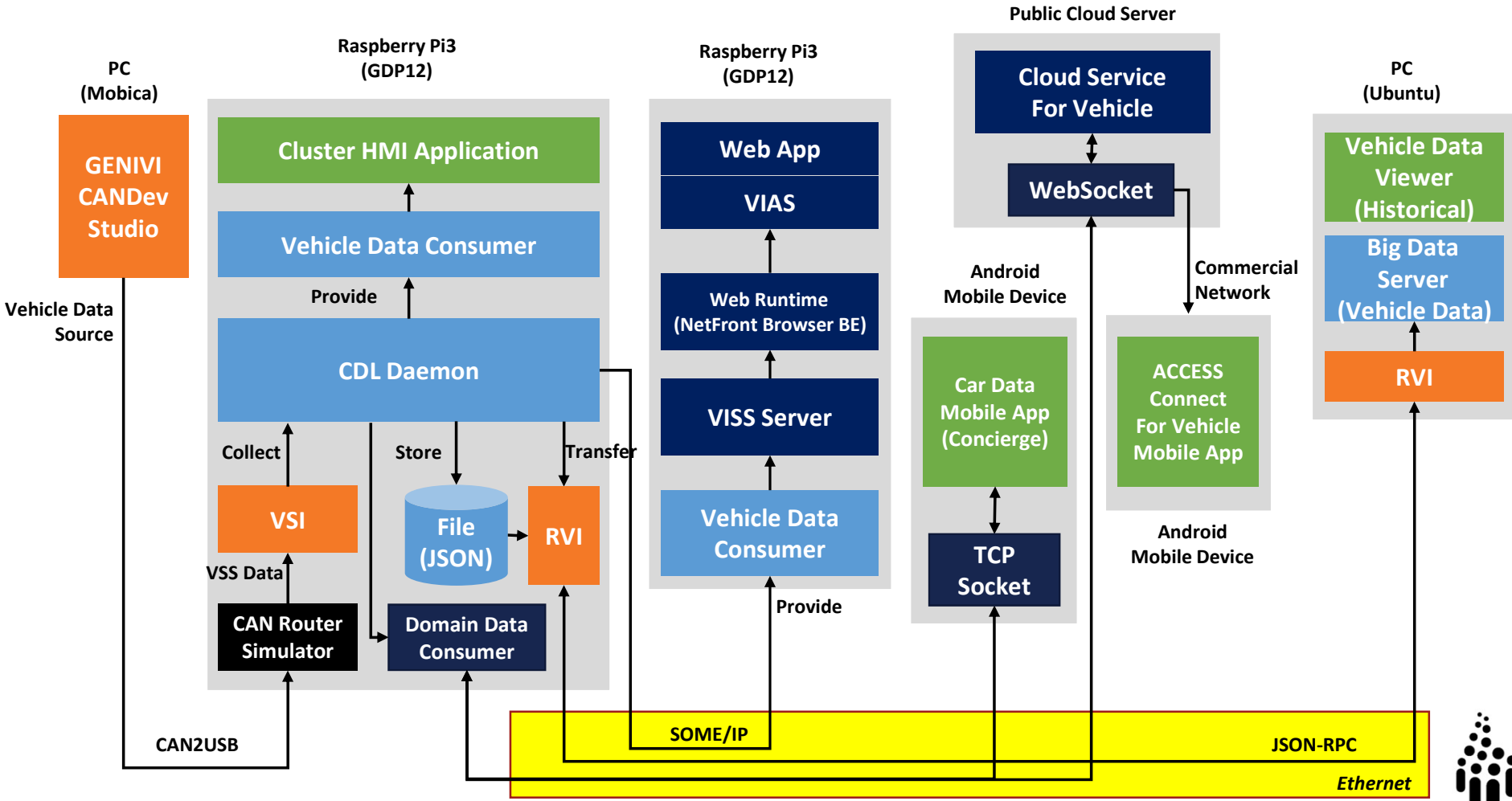
Showcase History

AMM	Schedule	Key Concepts	Remarks
16 th (GB)	Spring 2017	Accompanying Various GENIVI Component	<ul style="list-style-type: none"> - Vehicle Simulator - VSS/VSI - RVI_Core - CommonApl DBus/SomeIP
17 th (KR)	Fall 2017	Collaboration	<ul style="list-style-type: none"> - ACCESS's WebApp - CANDevStudio - Security with On-board Authentication & Data Encryption
18 th (DE)	Spring 2018	<u>Interaction with Outer World</u>	<ul style="list-style-type: none"> - Cloud Server - Android Apps

18th GENIVI AMM in Munich (DE)

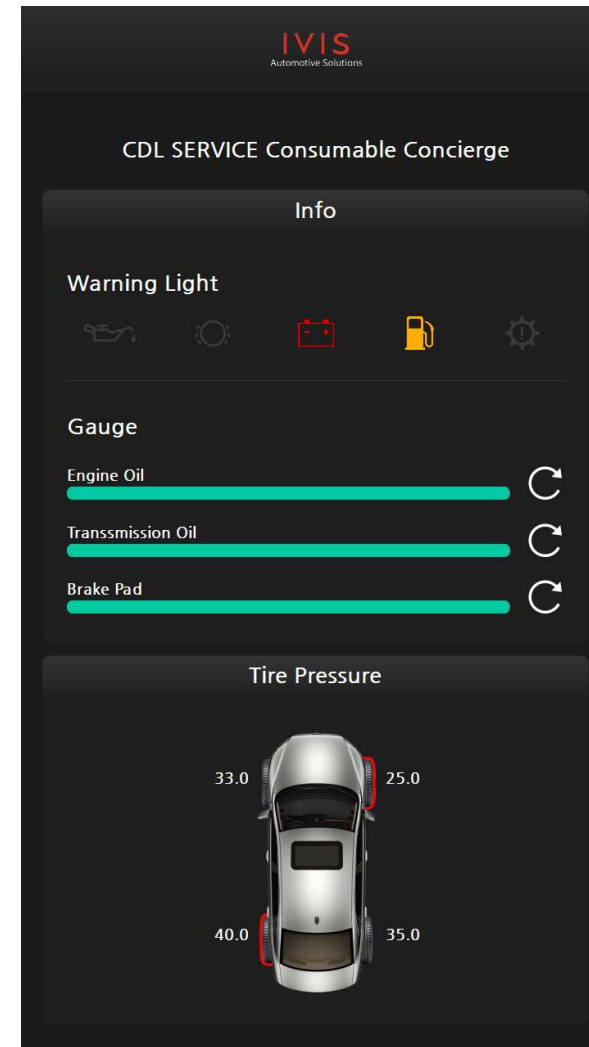


18th GENIVI AMM in Munich (DE)

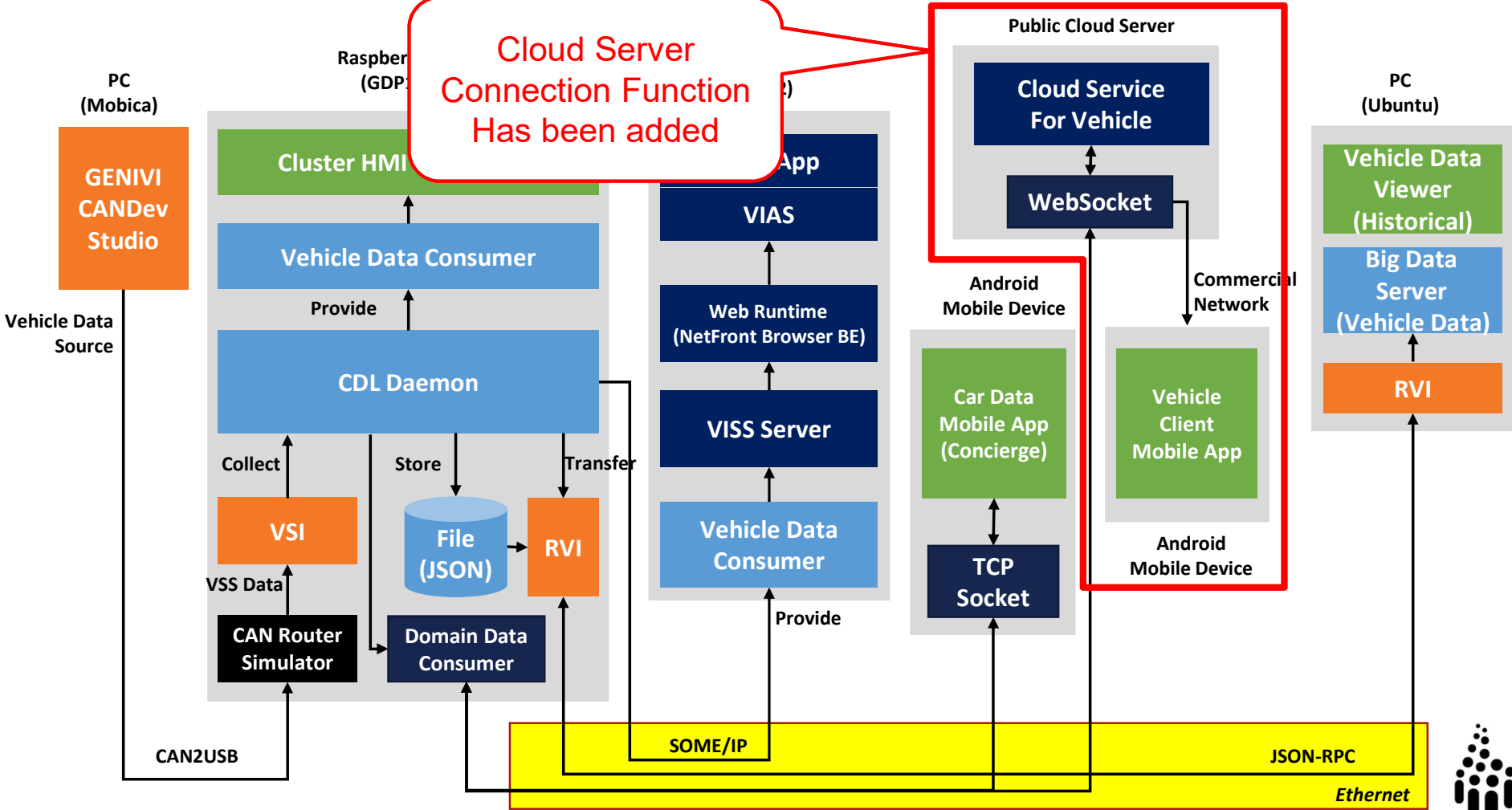


Concierge Service App

- Concept
 - Real-time car data transmission to driver's mobile app
 - Pre-configured warnings and consumable status are notified
 - Navigation to the nearest service center (TBD)



Cloud Service Architecture



Server Side Architecture

- Expected functions in Cloud Service for Vehicle

- User Management
- Mover (e.g. Vehicle) Management
- Mover / User Relation Management for Security
- Group/Organization Management
- Map Service Framework
- Big Data Analysis
- Visualization
- Etc.

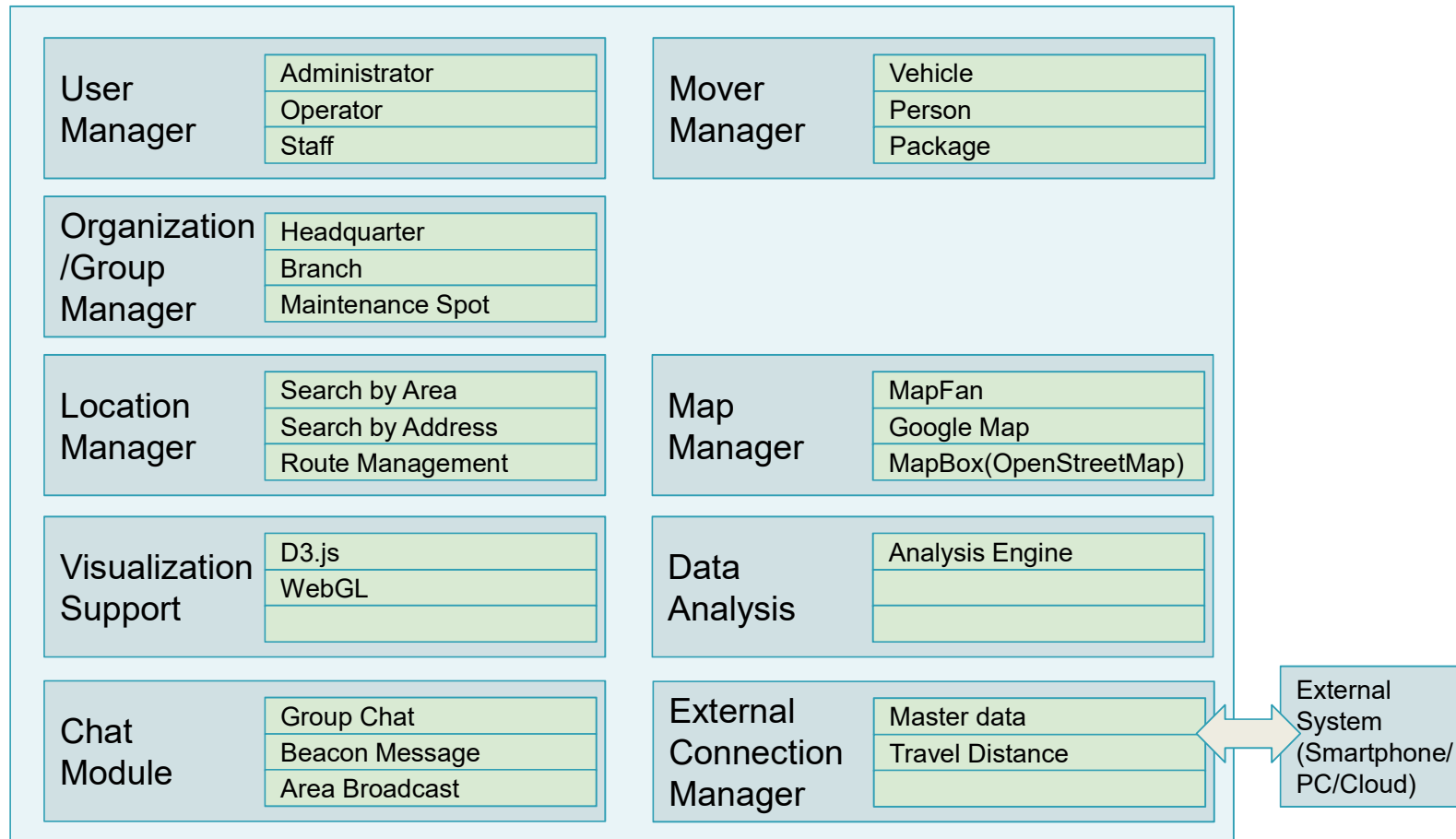


- Use cases

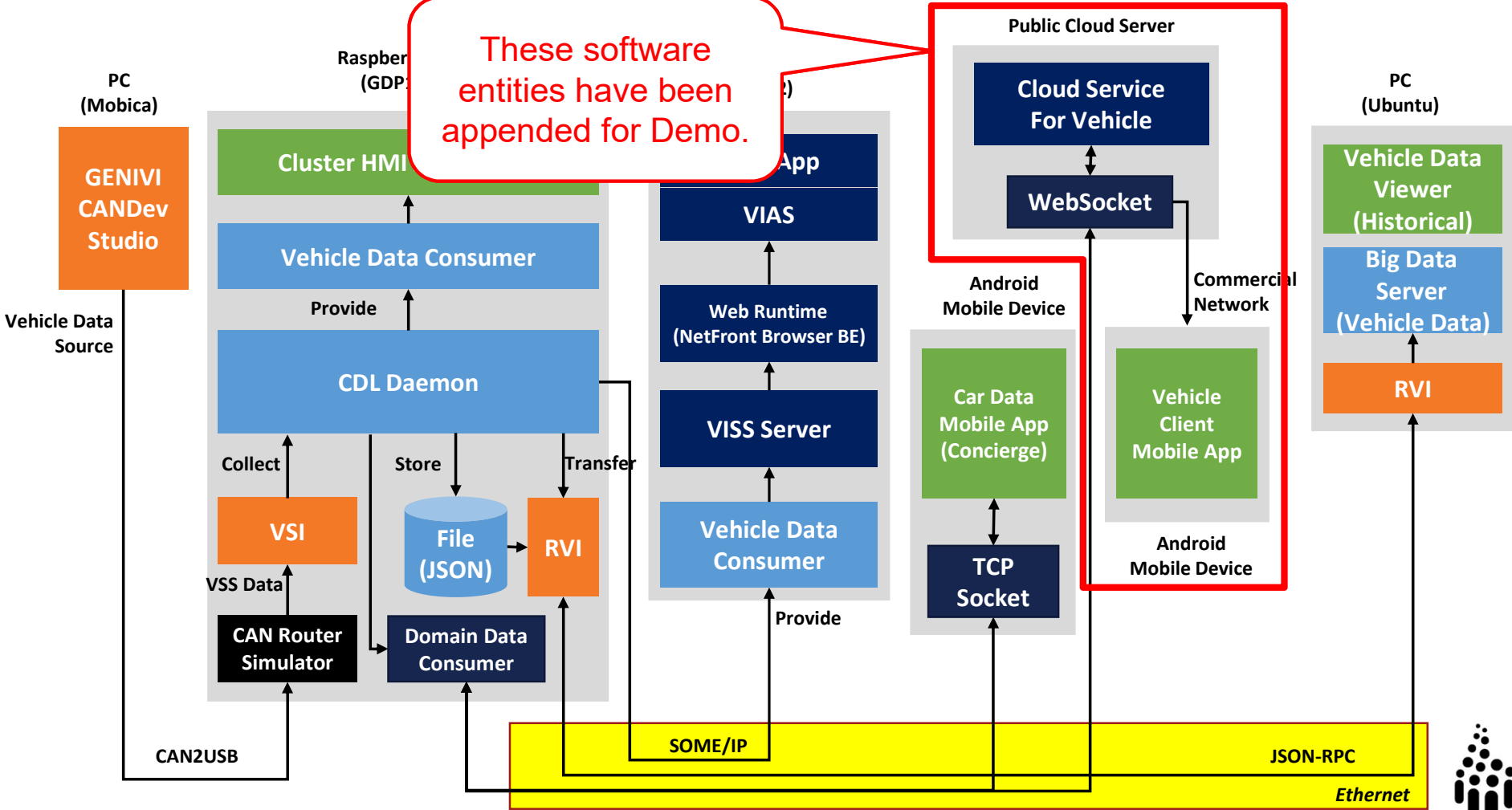
- Carrier/Delivery Business, Taxi, Car Share, IoT Car Insurance, etc

Cloud Service Architecture

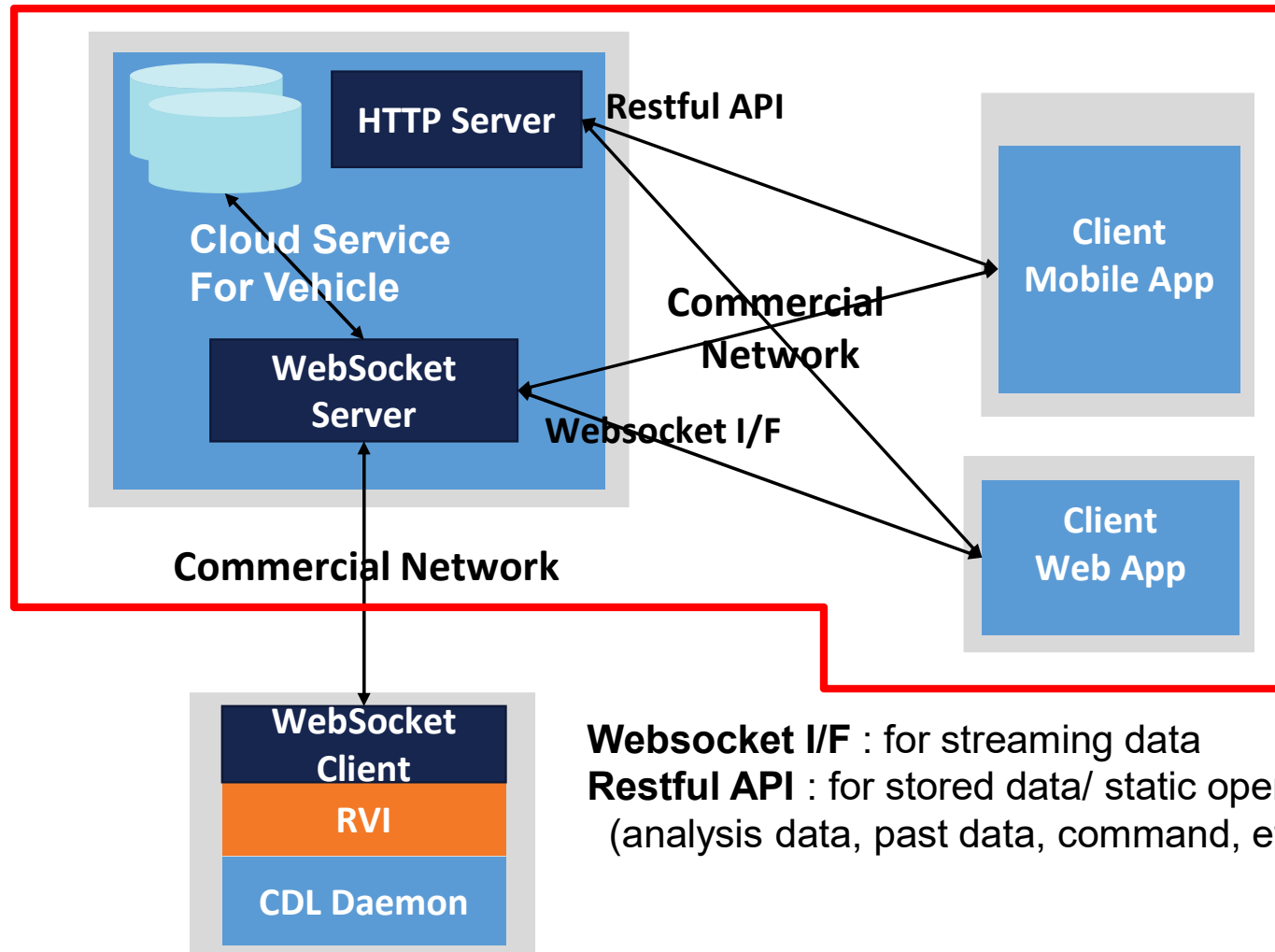
- ACCESS's Cloud Service for Vehicles Concept



Cloud Service Architecture



Cloud Service and Client Application

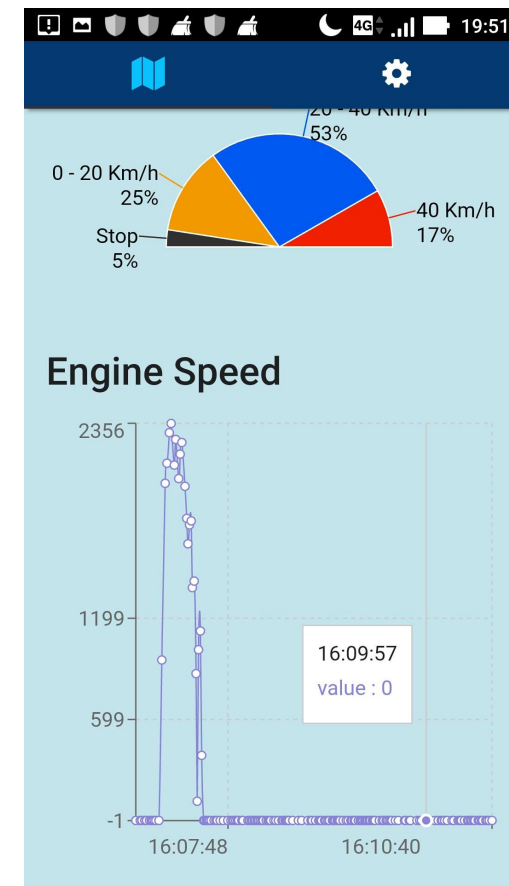


Client Mobile Application

- Mobile App for Demo Showcase

- Functions

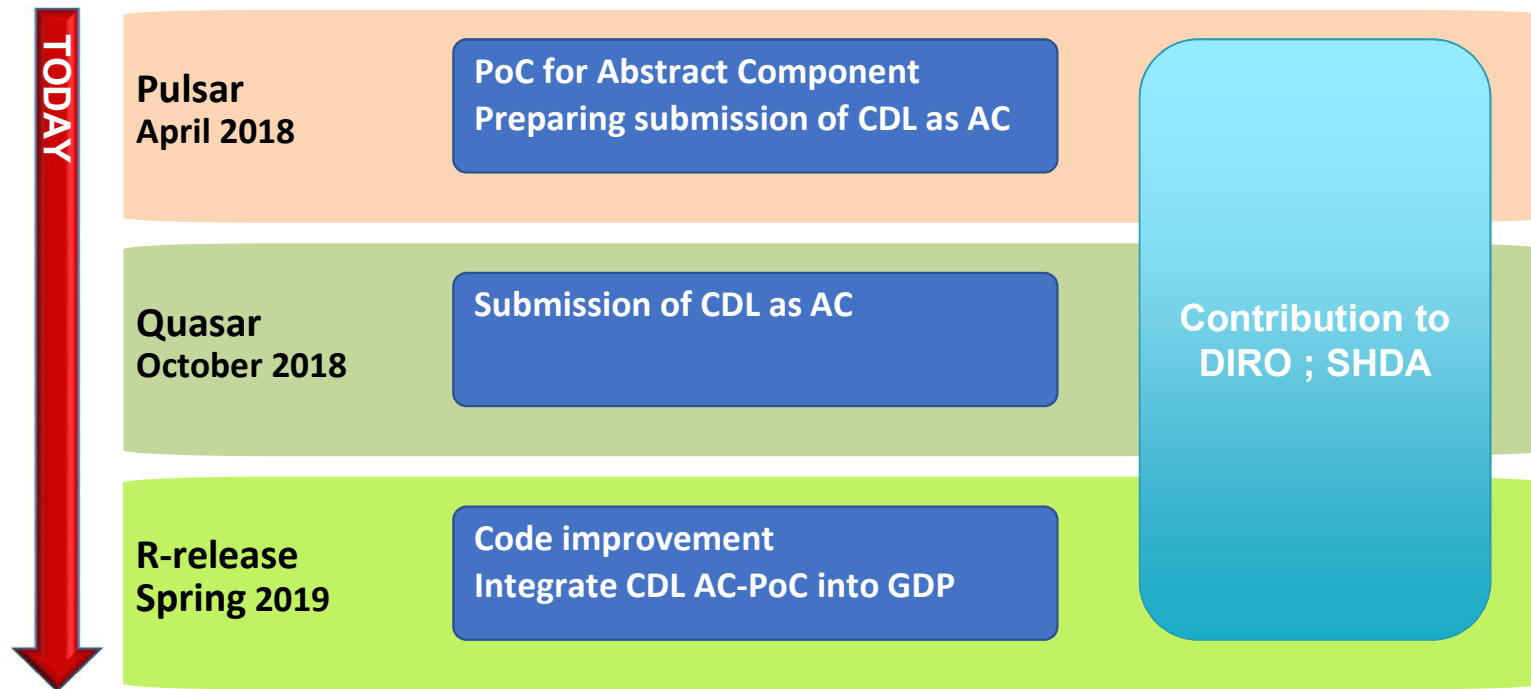
- Monitor Vehicle Position with data from CDL
 - Visualize driving information
 - Record and Replay



CDL Roadmap and Action Items



CDL Project Roadmap



Future Action Items

- Machine Learning and AI
 - Giving LIFE to car data
 - Building the context and meaning of car data as a 'model'
- Practical Usages
 - What do we want to do with car data
 - Various requirements from various stakeholders
- Security
 - Inter-EG collaboration

Thank you!

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Contact us: help@genivi.org

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