



# TRUSTED VEHICLE



# OUR SPEAKER'S

## Agenda

- Our Process
- Our vehicle mobility, research and engineering services
- Trusted Vehicle (Connected Mobility)
- Use cases & Demo
- Case Study
- Our Automotive Service Offerings in partnership with AWS



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# WE HAVE A PROCESS TO HELP OUR CLIENTS DEVELOP A USE CASE ROADMAP BASED ON BRAND AND BUSINESS GOALS

## Where to Play      What to Design      How to Build      How to Run



Identify Paths for Connected Innovation Opportunities



Validate New and Enhanced Business Models



Design Connected Products, Services & Experiences



Assess Current Delivery Models & Technology Capabilities



Define Operating Models & Optimize the Connected Organization



Define & Recommend and Launch Smart Products & Platforms



Deliver Smart Support Services

## Phase I      Phase II      Phase III

### Discovery 5-7 Weeks

- Inside-out and outside-in research to uncover key insights across customer, category, and commercial shifts in mobility and in the context of the Dana's key capabilities and investments
- Synthesis of key insights into strategic hypotheses articulating and prioritizing potential growth avenues for Dana

### Gameboard 5-7 Weeks

- Strategic vision definition to guide the Diana's mobility go-to-market choices, value proposition and future new products and service development
- Refinement and synthesis of prioritized strategic hypotheses into a gameboard of opportunity spaces delineating where the Dana will play in the future of the mobility ecosystem

### Concepts 5-7 Weeks

- Generation of early-state concepts that solve for customer and commercial needs within 1-2 selected gameboard opportunity spaces
- Prioritization and selection of concepts based on evaluation regarding customer appeal, commercial size, feasibility and strategic rationale

### Solutions 5-7 Weeks

- Inside-out and outside-in research to uncover key insights across customer, category, and commercial shifts in mobility and in the context of the Dana's key capabilities and investments



## Focus of Current Approach



# WE ENABLE ON-VEHICLE CONNECTED MOBILITY SERVICES WITH OUR ENGINEERING AND RESEARCH CAPABILITIES

## Vehicle to Cloud Platforms



Automotive E/e (hw & sw)



Communications



Cloud & Analytics



Maas Telematics



Predictive X



EV Services



Ad/adas Services



Mobile Commerce



Driver Experience

## Vehicle-to-Everything Use Case Domains

Enabling the Software-defined Vehicle

Ultra-reliable, Low Latency Communications

Data-driven Insights from Ubiquitous & Secure Cloud

- Fleet & Rental Management
- Logistics
- Cold Chain
- Theft Detection & Recovery
- Platooning
- Load/Unload Assistance
- Predictive Maintenance
- Predictive Scheduling
- Predictive Inspection
- Predictive Costing & Pricing
- UBI
- EV Battery Management
- EV Load v Range
- EV Charging Route Planning
- Sustainability Scorecard
- Robo Valet
- Long Haul Handoff Logistics
- Remote Monitoring & Operations
- Quick Service Restaurants
- Vehicle sharing
- Vehicle as a Service:
- Road Condition
- Weather
- Parking
- Drowsy/Distracted Driver
- Driver Behavior
- Streaming Entertainment
- Every window as a display

Digital Cloud Platform, Analytics, AI/ML, Test Automation, Cybersecurity & Agile DevOps

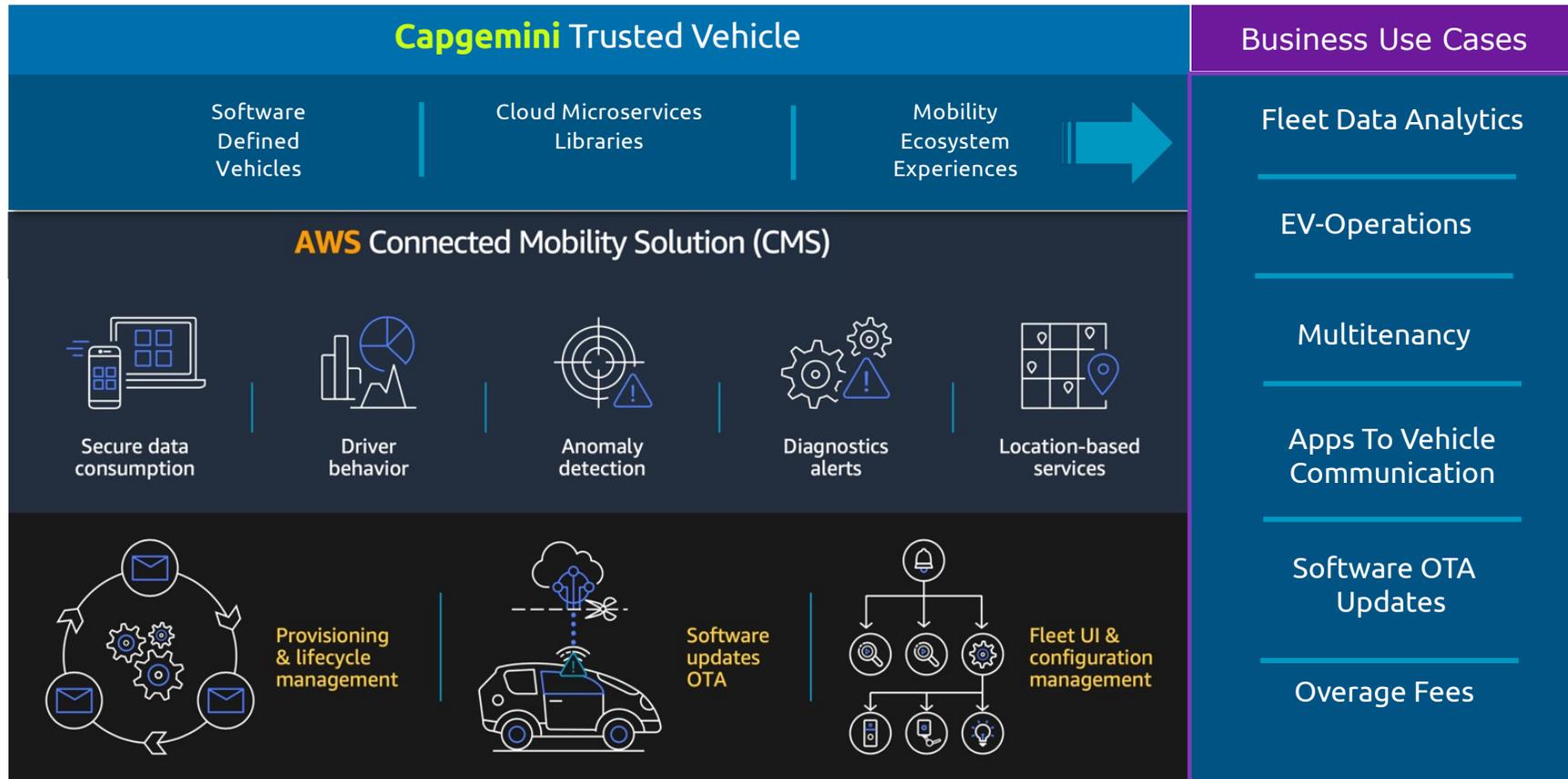
5G, IOT Edge Compute

AD & ADAS, V2X, SW-defined Cockpit Experience, EV, Cybersecurity



# TRUSTED VEHICLE (CAR TO CLOUD TO CONSUMER) ON AWS CMS

Our next generation partnership with AWS enables OEMs to define, design and deliver next generation connected capabilities to their drivers their passengers

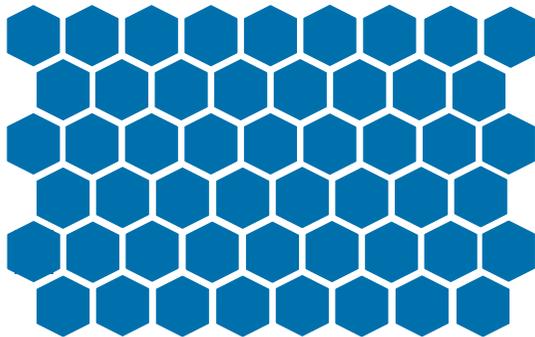




# WE FAST TRACK CONNECTED MOBILITY USES CASES WITH OUR CLOUD MICROSERVICES LIBRARIES

1 Start with a DCP solution blueprint aligned to your needs

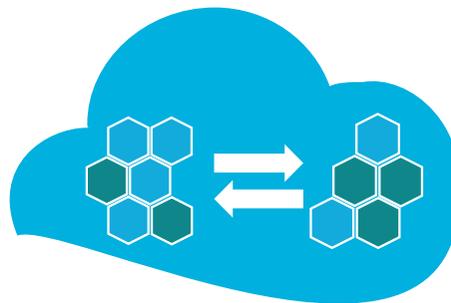
## Solution blueprints



Solution Blueprints capture Cappgemini's experience and point-of-view on digital transformation

2 Select DCP core and industry-specific modules to immediately accelerate and enhance your application

## API marketplace



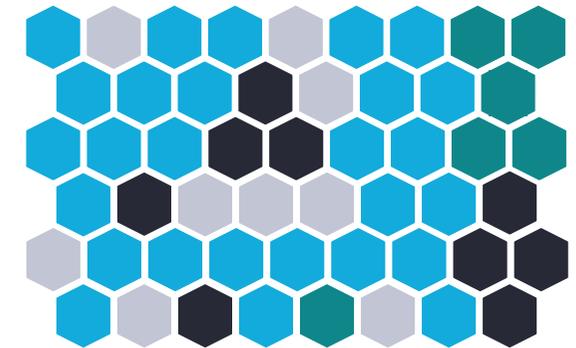
Core DCP Acceleration    Industry Specific DCP

DCP modules are business logic components with APIs that align to DCP solution blueprints



3 Customize or develop additional modules as required to complete the solution

## New application



Core DCP Acceleration    Custom    Industry Specific DCP    External

New applications gain 30-50% acceleration of new applications using DCP

# OUR CATALOGUE OF SOLUTION BLUEPRINTS FOR TRUSTED VEHICLE (1/2)



## Vehicle Onboarding

Create Supplier	Create User	Register Vehicle
Activate Vehicle	Map User Vehicle	Manage Data Plan



## Vehicle Data Ingestion

Vehicle TCU Provision	Bulk Activation	Software OTA Update	Vehicle Charge Status	Remote Vehicle Tracking	Speed Alert
Anomaly Detection	Diagnostic Alerts	TCU Data Ingestion	Vehicle Trip Tracking	Remote Trip Statistics	



## Value Enabled Services

Voice Registration	Command Activation	Anomaly Detection	Diagnostic Alerts	Get Weather Info	Payment Authorization
Create Trip	Find Station	Curfew Alert	Dealer Scheduling	Conversation Commerce	



## Vehicle Security

Detect Expiring Certs	Secure Connection	Certificate Rotation
Live Feed Streaming	Geofence Alert	



# OUR CATALOGUE OF SOLUTION BLUEPRINTS FOR TRUSTED VEHICLE (2/2)



## Vehicle Subscription

Setup Assistance	Create Account	Update Account	Authorize Services	Alerts
Manage Bill Receipt	Add Email Details	Contact Services	Schedule Maintenance	



## EV Services

Register EV Account	Update Account	Authorize Session
Calculate Idle Charge	EV Status	EV Receipt



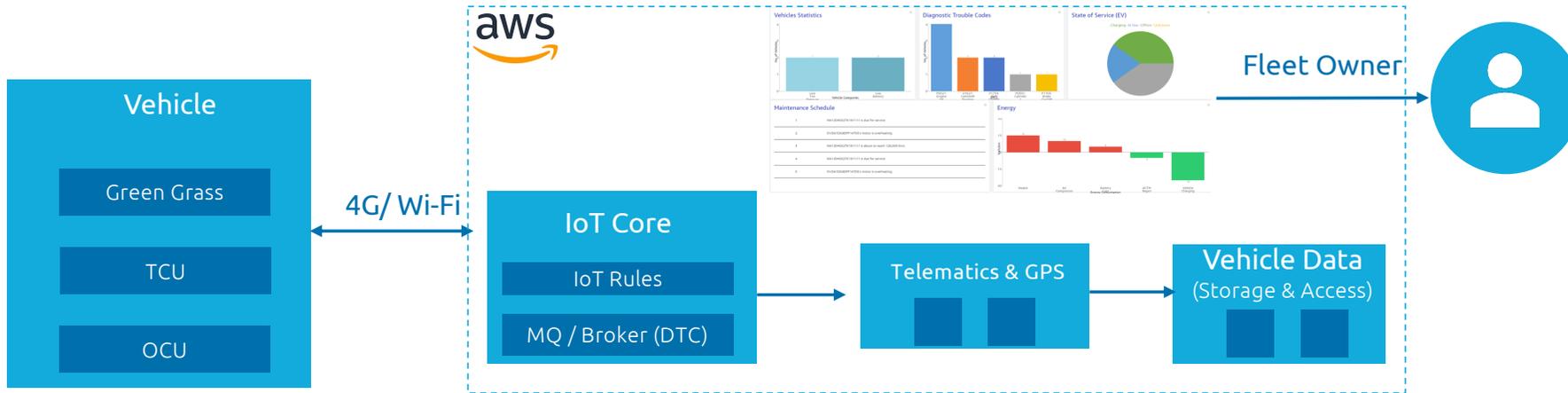
## Remote Vehicle Management System

Remote Honk / Flash	Car Finder	Remote Start	Vehicle Health
Remote Door Lock	Remote Vehicle Status	Valet Alert	

# ANALYTICS DASHBOARD



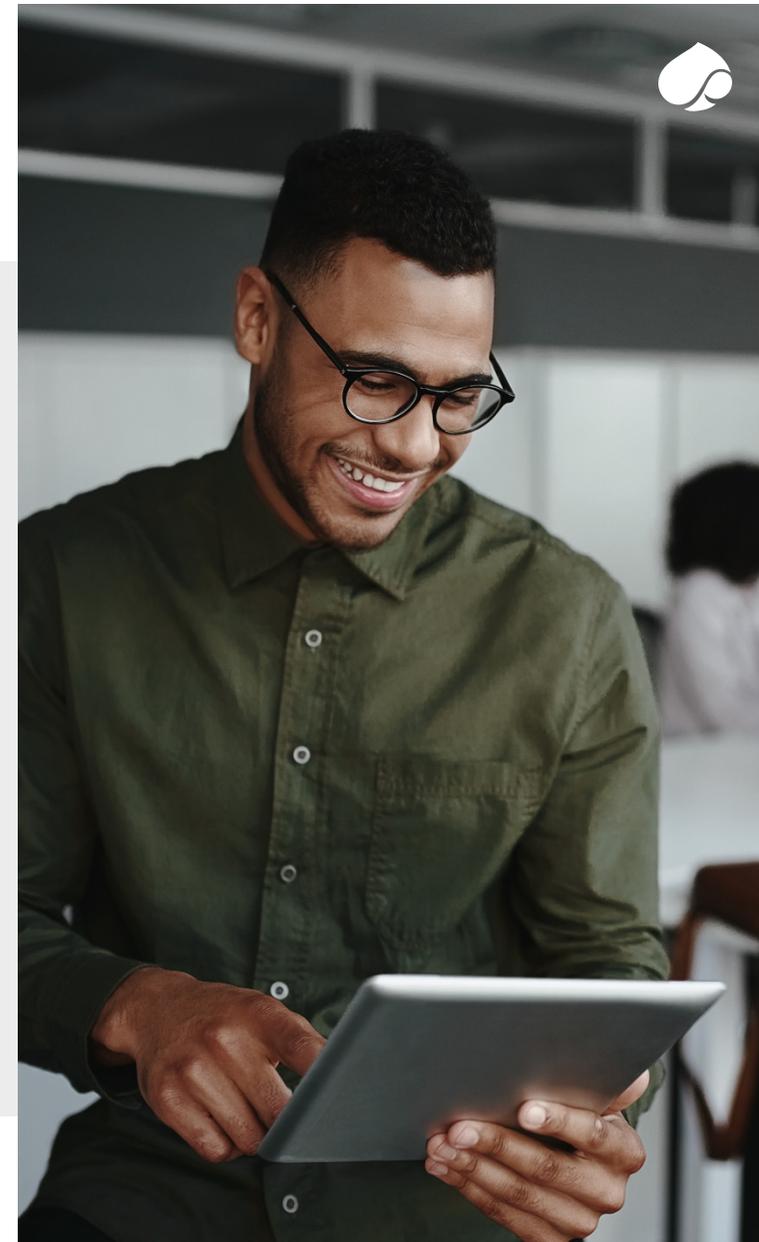
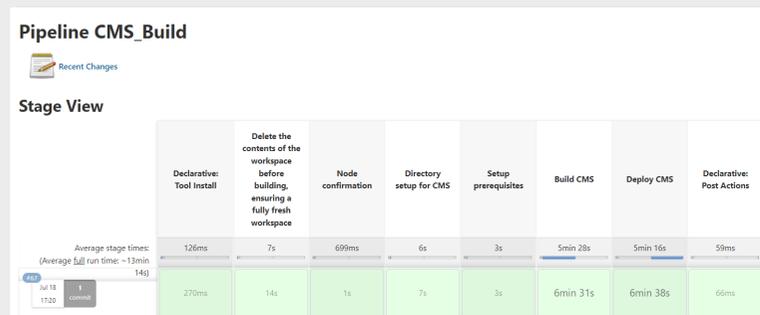
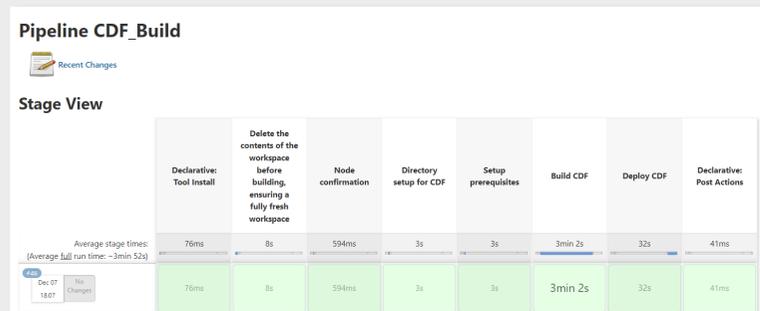
Monitor the entire fleet in one place, allowing informed decisions based on real-time data. Elevate fleet's observability by displaying various metrics around energy efficiency, maintenance, trouble codes, and vehicle's operational status.



- **State of Service:** Helps to keep track of the current state of fleet. Shows how many vehicles are online, charging, or offline, allowing us to manage fleets more efficiently.
- **Energy: Tracks** how much energy is consumed by the fleet over a period of time such as daily, weekly and monthly.
- **DTC:** Diagnostic trouble codes renders a helping hand in detecting any malfunction of vehicles and helps the driver to a great extent for the maintenance and repair purposes of a vehicle.
- **Low Battery:** Crucial battery health is displayed for EVs to ensure that the battery packs are working at their maximum efficiency.
- **Low Tire Pressure:** Reliably monitors the inflation pressure in real-time and in the event of pressure loss below a safe threshold, it immediately alerts in order to take action.
- **Maintenance Schedule:** Maintenance schedule displayed per vehicle can proactively avoid or reduce vehicle breakdowns, consisting of inspections and scheduled repairs that are typically based on time or usage.

# WE IMPLEMENTED DEVOPS ENABLING ONE CLICK DEPLOYMENTS FOR ALL CMS PACKAGES

- Used AWS CDK, which is powered by AWS CloudFormation, to setup the cloud infrastructure
- Integrated with Code Pipeline, Jenkins and GitHub Actions as a tool for workflow orchestration and Continuous Delivery





# WE HAVE DEPLOYED BELOW FEATURES FOR OUR CLIENTS

## Fleet Data Analytics



- These charts offer a visual representation of various parameters such as vehicles with low battery, low tire pressure, fault codes and also energy related information of the vehicles.

## EV-Operations



- Accurately estimating the state of charge (SOC) and state of health (SOH), is crucial to keep the vehicle under safe state and maximize their performance.

## Multitenancy



- Multi-Tenancy enables the vehicles to be identified based on the group, so every Fleet Management user can view only the vehicles for the group to which they are associated.

## Apps To Vehicle Communication



- This simplifies communication between different IoT devices on a network. By mitigating connectivity issues, they help keep all devices on a network synchronized.

## Overage Fees



- If the vehicle is being charged for more than the allocated 20 minutes, then the calculated overage fees will be applicable to the respective electric vehicle owner.

## Software OTA Updates



- Software Over the Air Updates helps in bug fixes, security fixes, or the feature update is required for the betterment of the device and keeping it updated with latest software.



# LARGE ELECTRIC BUS MANUFACTURER

## Fleet Management, Remote Monitoring, and Telematics Analytics for reliable and sustainable transport



**Challenge:** Sustainable & reliable Fleet Management solution providing telematics data ingestion and software OTA update as key features, Quick time to market & Agile architecture, and Domain knowledge & Technology expertise.



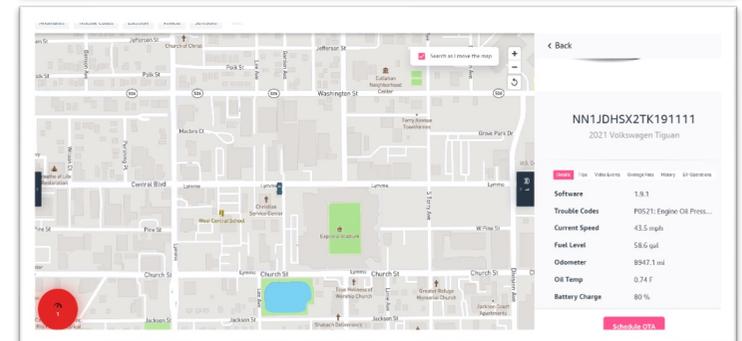
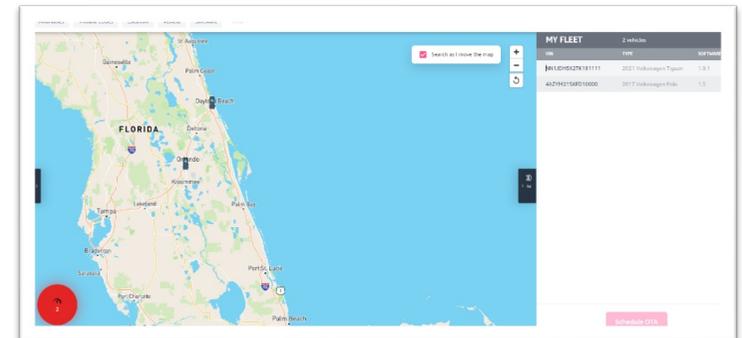
**Solution:** Cappgemini's Trusted Vehicle solution in collaboration with AWS CMS, allowed client to easily and securely connect buses, and build innovative, new mobility features & applications that run at the edge, and in the cloud at a global scale supporting next generation use cases with new driver, passenger and fleet management experiences.



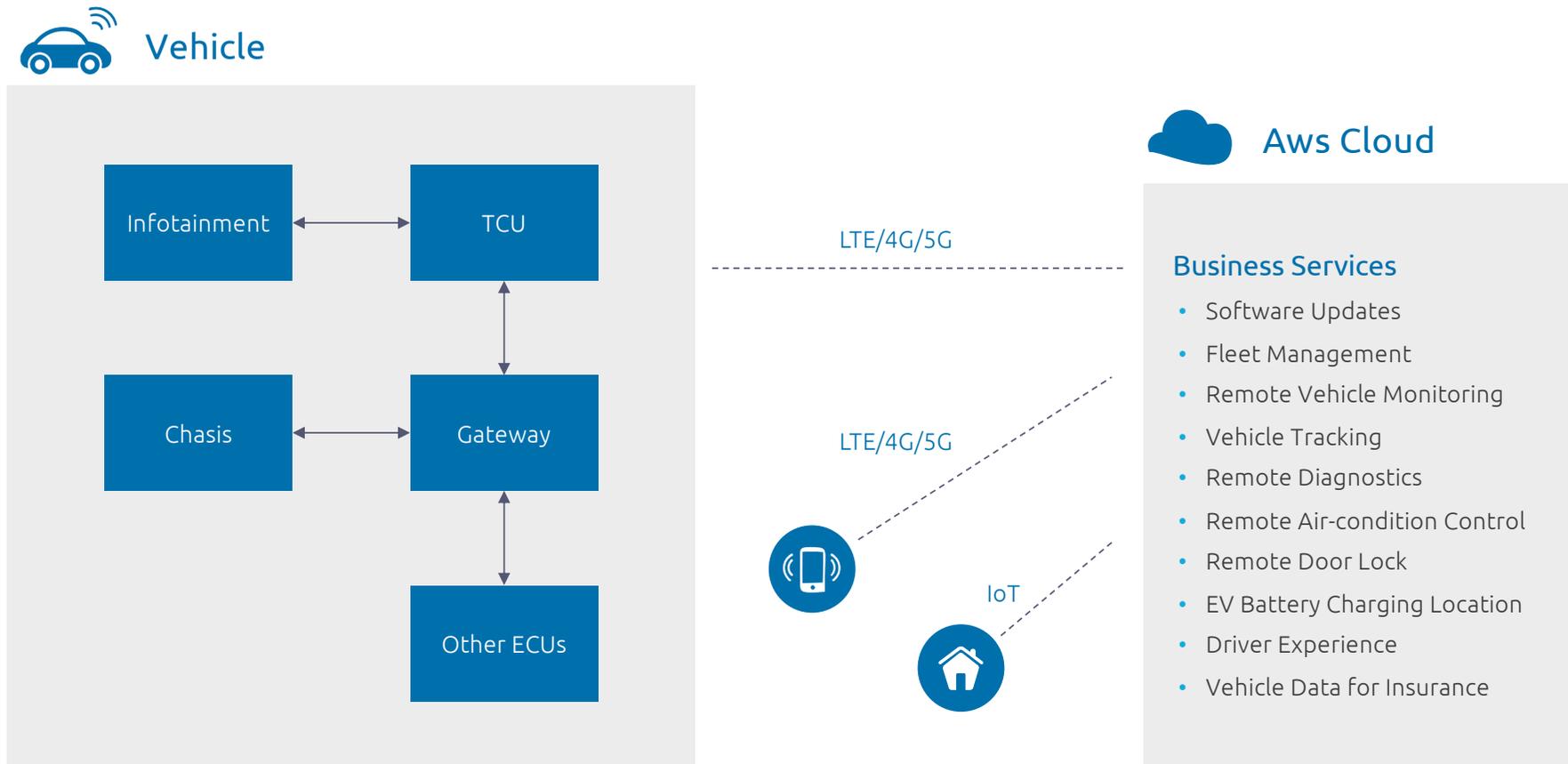
DCP's Automotive solution blueprint for accelerated development helped customer to understand Cappgemini's capability of connected vehicle uses cases, that reduces time to market.



Cappgemini's expertise on AWS services, IoT platform, and engineering helped providing solution for high volume telemetry ingestion, and processing in near real time with industry knowledge of vehicles control unit, signal network (CAN), and trouble code transformation (J1939 protocol).



# OUR TRUSTED VEHICLE CONCEPTUAL ARCHITECTURE OF BUSINESS SERVICES BUILT ON TOP OF CMS





# AWS AUTOMOTIVE FOCUS WITH CAPGEMINI ACCELERATORS

- Hamilton
- Connected Mobility
- Closed Loop Operations, Digital Worker Management

## Software-defined Vehicle



The vehicle is evolving into a software-defined digital platform and empowering the design and development teams to deliver on changing consumer value expectations

## Connected Mobility



In a software driven era, technology unlocks the power of your data to build intelligent, personalized features and revenue-generating mobility services

## Digital Customer Engagement

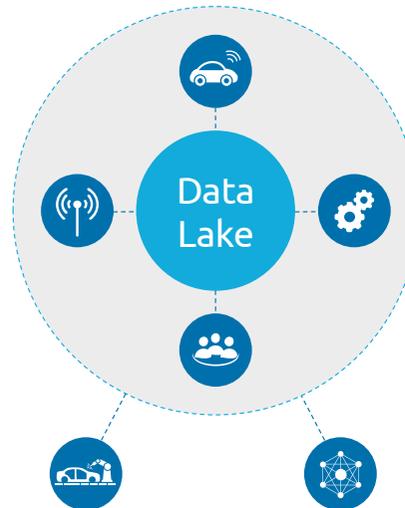


Increase customer engagement with relevant marketing content, personalized digital experiences, and real-time data analysis

## Manufacturing



Realize improved manufacturing operations and overall equipment effectiveness by enabling data driven real time decisions leveraging existing shop floor data and innovative technologies



## Autonomous Vehicle Development

Amazon's 20 years of experience with autonomous systems, robotics, and machine learning taught us how to accelerate our customers AV development with purpose-built AWS solutions



## Product Engineering

Customers can use AWS and partner enabled solutions to develop new and innovative products at faster pace by collaborating with multiple suppliers and OEMs across a single platform



## Supply Chain

Gain end-to-end real-time visibility and insights beyond immediate suppliers to build a resilient, intelligent and cost-effective supply chain with unprecedented efficiency



- Driving Assistance and Systems Validation (DASV)
- Trusted Logistics

**AWS has taken an industry focused approach to its GTM and Product Strategy. Capgemini has followed that strategy with accelerators to match AWS's Automotive sector approach.**



## About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 325,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fuelled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2021 global revenues of €18 billion.

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