Applying VSS Formats to Gather OTA Update Metrics in eSync

A Genivi Alliance Liaison Project Initiative

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eSync Alliance

Working together for OTA Updates and Diagnostics

Agenda

1. Introduction to eSync and the eSync Alliance
2. eSync Alliance / GENIVI Liaison
3. Use Case: eSync OTA Metrics in VSS Format
4. Questions / Discussion

eSync ALLIANCE

The eSync Alliance

A Multi-Company Initiative to Standardize OTA Updates and Diagnostics

OEMs

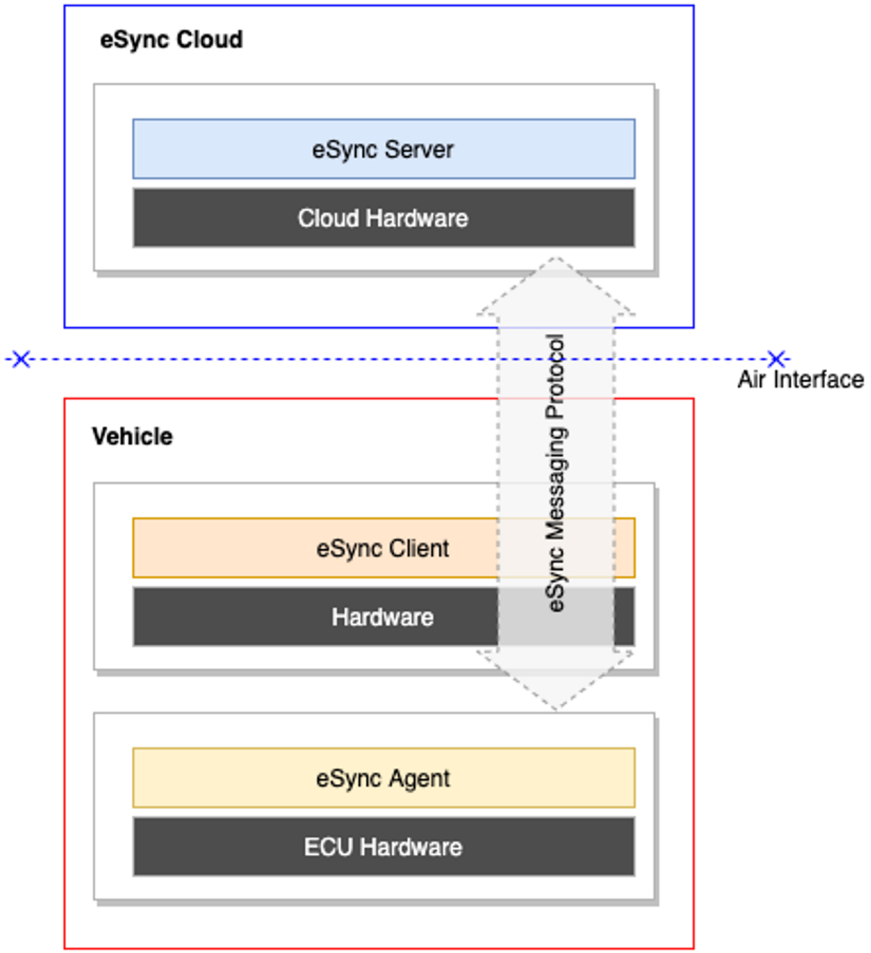
Tier 1s

Tier 2s

Cloud Services

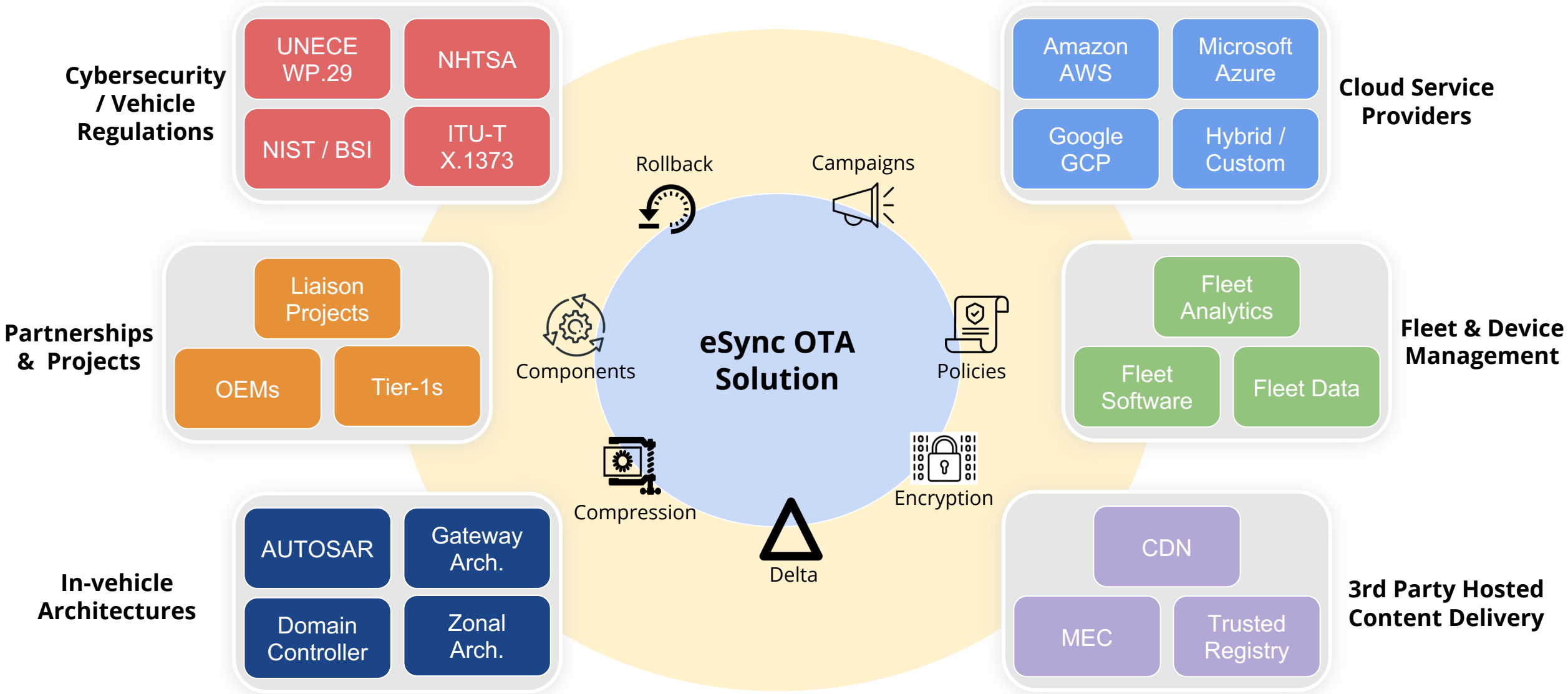
ALPSALPINE · APTIV · DSA · excelfore · faurecia clarion ELECTRONICS · HELLA · JOYNEXT 切联智行 · mobica · molex · RENESAS SYSTEMS · ZF

eSync Bi-Directional Data Pipeline

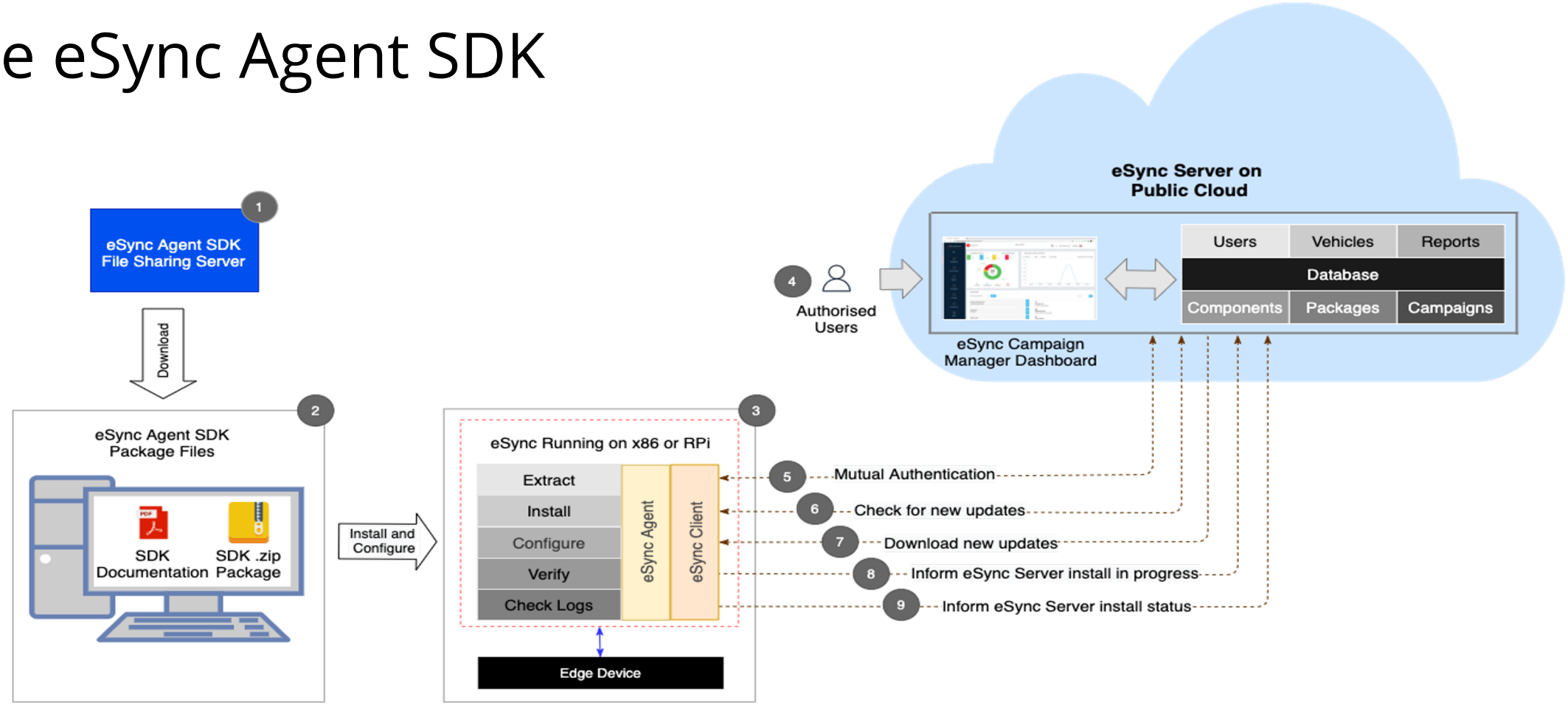


- Data Pipeline from Server in Cloud to Devices in Vehicles
  - OTA Software Updates
  - Edge Device Data Gathering
- eSync Specifications: “Server-Client-Agent” Model
  - Flexible to Widest Variety of In-Vehicle Architectures
  - Scalable to Any Number of Edge Devices
  - Accessible to Any Participant of the eSync Eco-System
- eSync is Agnostic of:
  - Cloud Infrastructure
  - Device Operating Systems
  - Payload / Data Format
- eSync is In Production with 6 OEMs Worldwide
  - Europe, China, Japan

eSync Ecosystem



The eSync Agent SDK



- Downloadable eSync SW
  - Simple hardware setup / installation for working OTA
- Functional eSync Server Account
  - Upload signed SW components
  - Create SW packages
  - Deploy, monitor and manage campaigns

- Template Agent can be Customized to Edge Devices
- Extensive Documentation for OTA Update Process, Writing Agents, and Customizing Policies

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Two Organizations Working Together

LIAISON AGREEMENT
April 2021

EXHIBIT A
WORK AREAS

Initial Focus: GENIVI CVII Initiative and eSync Specification for Data Gathering

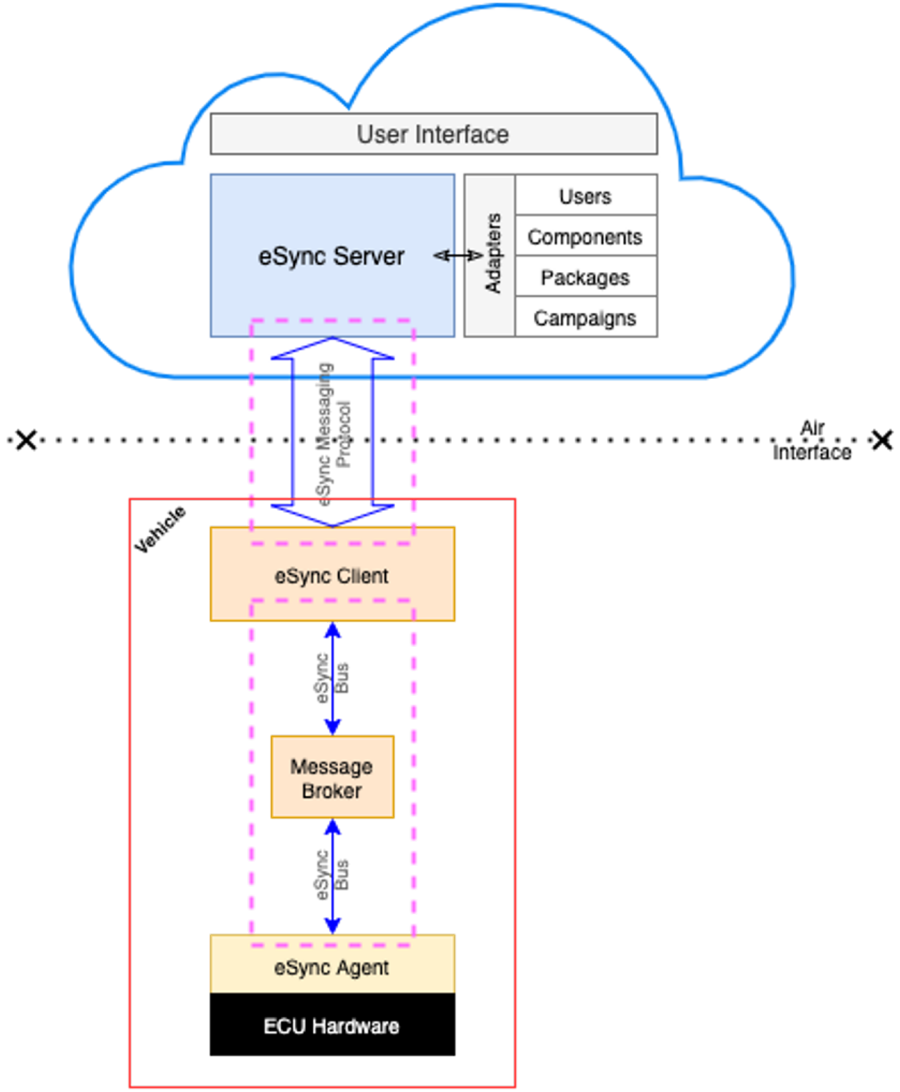
Goal: To develop APIs for an automotive industry standard / common data model / common service catalog

Activities may include:

- Joint technical discussions
- Demonstrator / proof-of-concept projects

…

Opportunity for Joint Demonstrator / PoC



- GENIVI CVII VSS Initiative
  - Vehicle Signal Specification
  - Standardizes in-vehicle data format
  - Describe in YAML with type, datatype, variable

- eSync Data Opportunity: OTA Update Metrics
  - Between eSync Server & eSync Client
  - Within eSync Client
  - Between eSync Client and eSync Agent(s)
  - Within eSync Agent
  - Between eSync Agent and Edge Device

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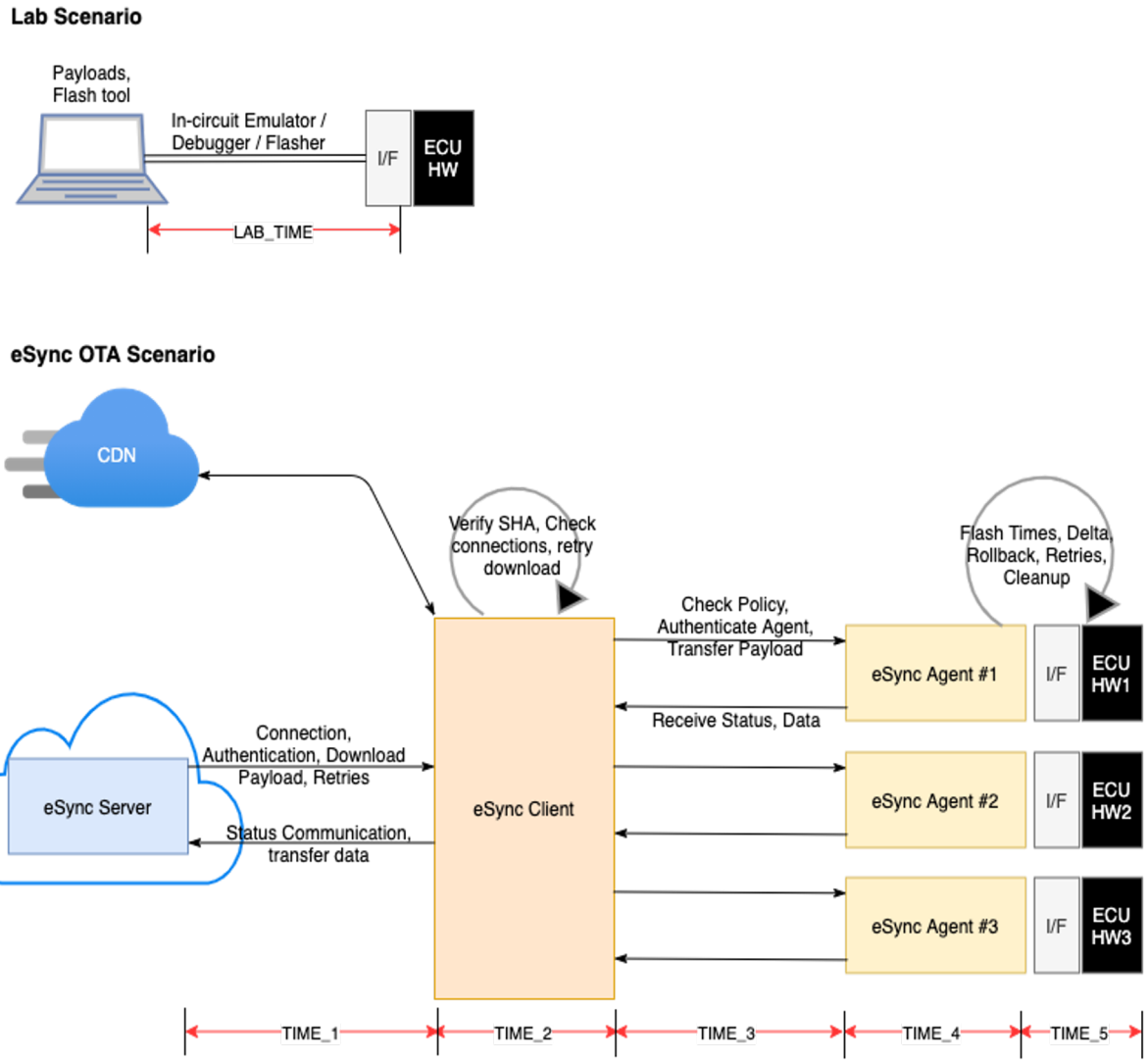
Lab Environment vs. Automotive OTA



- Measure Time to Update Edge Device in Lab Setup / Environment

- Many Factors in OTA Performance
  - eSync Server: Sign, upload, store, create campaign, deploy, monitor updates
  - eSync Client: Download updates, manage service interruptions, verify updates, check policies, transfer updates
  - eSync Agent(s): Decrypt update, check policies, program edge devices with update, retries on failure, rollback

Examples of OTA Update Metrics in eSync

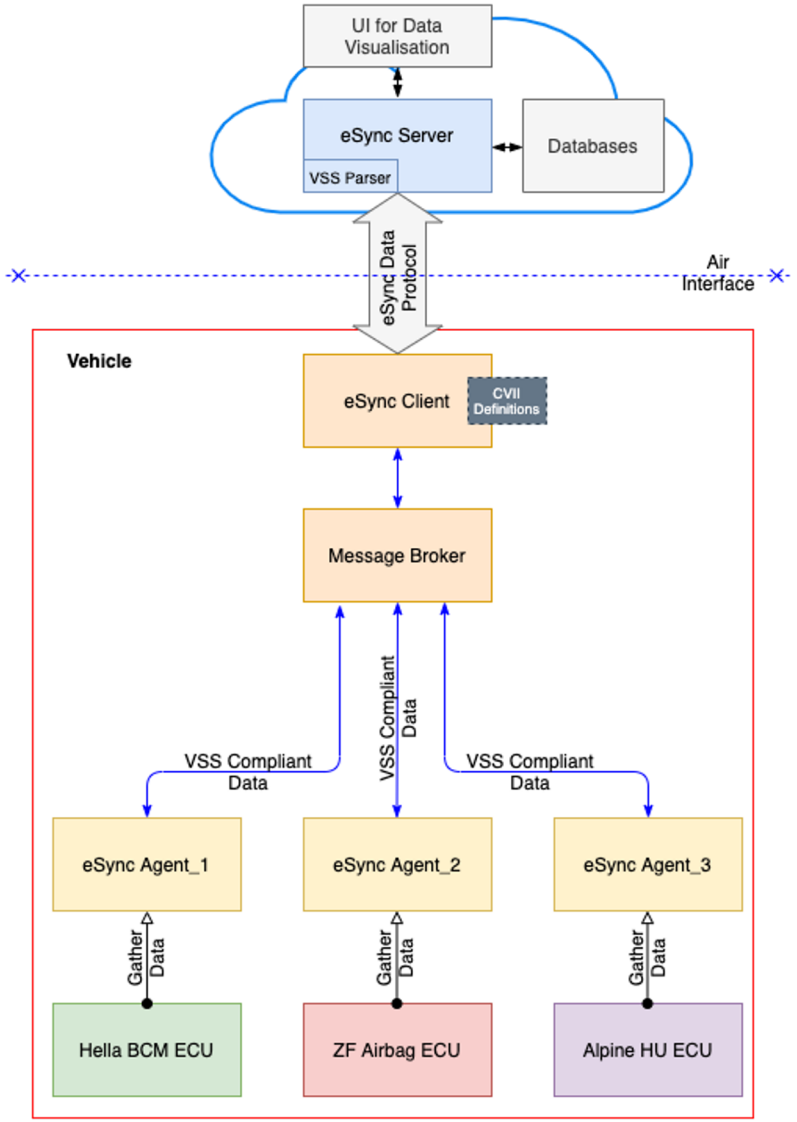
Vehicle to Infrastructure (V2X) Metrics

- Authentication & connection times
- Type of Network Connection
  - 4G/5G/WiFi
  - Speed (kbps)
  - Signal Strength (db)
- Type of Cloud
- Payload size, download times, retries, reconnections

In-Vehicle Metrics

- SHA verification times
- Encryption / decryption times
- In-vehicle network type & speeds
  - CAN, LIN
  - Flexray, MOST
  - Ethernet
- Payload size, policy check times, transfer times
- Delta reconstruction & rollback retries

Proof-of-Concept: Building a Practical Use-Case with VSS



- GENIVI Alliance VSS Initiative
  - Standardizes in-vehicle data format
  - Describe in YAML with type, datatype, variable
- eSync Agent Adapted to:
  - Make use of a VSS library (written by eSync Alliance)
  - Encapsulate OTA metrics in VSS format
  - Compress and encrypt VSS formatted data
  - Send to eSync Client to push eSync Server
- eSync Server Adapted to:
  - Parse VSS formatted data, store in database
  - Show device OTA metrics on a Grafana dashboard

eSync ALLIANCE

GENIVI®

Collaborating on Automotive Data Standardization

Questions and Discussion