Microsoft
Eclipse Foundation SDV
EclipseCon 2022
Eclipse Chariott / Ibeji Update

October 25th
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Simplify and enhance In-Vehicle application development
Extensible, open and dynamic architecture

Capability oriented model for App-to-App and App-to-Digital Twin Communications

Digital representation of vehicle state and its capabilities
At a glance...

- Community driven
- Secure
- Dynamic and extensible
- Componentized
- Single and Multi Node
- Platform and cloud agnostic

Cloud Connector

Applications
- Application 1
- Application n

Application Programming Model

In-Vehicle Digital Twin

Vehicle Integration Providers

Developed in cloud, delivered in the vehicle
Cabin Temperature: 20
Cabin Temperature: 21
Cabin Temperature: 22
Cabin Temperature: 23
Cabin Temperature: 24
Cabin Temperature: 25
Cabin Temperature: 26
Cabin Temperature: 27
Changing aircon state to: true
Air conditioning: true
Send notification: "The car is now being cooled."
Setting UI message to: "The car is cooled, no need to worry."
Battery level: 99
Cabin Temperature: 20
Cabin Temperature: 21
Cabin Temperature: 22
Cabin Temperature: 23
Cabin Temperature: 24
Cabin Temperature: 25
Cabin Temperature: 26
Cabin Temperature: 27
2nd Contribution Day
Eclipse Chariot at a Glance

- Remote API based **programming model**
  - gRPC proto is the contractual API
  - Common operations (inspect, read, write, invoke, discover, etc.)
- Richer **brokering system** modeling after COA
- **Dynamic Discovery** supporting direct app to app communication incl. streaming
- **Inspection of the system** allowing lighting up features in applications
- Readying it for **integration with Ibeji** (in-vehicle Digital Twin)
Ibeji – Vehicle Provider DTDL and Vehicle Digital Twin in Action

Vehicle Integration Providers

DTDL

In-Vehicle Digital Twin

Intents: Discovery, Subscribe, Invoke

Vehicle Store

Parse

```json
{ "@id": "DogMode:OnOffSwitch;1", "contents": [ { "@type": [ "Property", "RemotelyAccessible" ], "name": "DogMode_OnOffSwitch", "description": "DogMode on-off switch may be either 'on' or 'off'.", "schema": "string", "remote_access": [ { "@type": "Endpoint", "url": "grpc://localhost:8010", "operations": [ "inspect", "read", "subscribe", "invoke", "discover" ] } ] } ]}

{ "@id": "HVAC:FanSpeed;1.0", "contents": [ { "@type": [ "Property", "RemotelyAccessible" ], "name": "HVAC_FanSpeed", "description": "Fan Speed, 0 = off, 100 = max", "schema": "integer", "remote_access": [ { "@type": "Endpoint", "url": "grpc://localhost:8010", "operations": [ "inspect", "read", "subscribe", "invoke", "discover" ] } ] } ]}
```
Closing Remarks

Project has been approved for publication by Eclipse!

A detailed walkthrough recording is available at Eclipse Chariott Project website.
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Thank YOU.

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