

COVESA AMM, 16<sup>th</sup> – 18<sup>th</sup> April 2024, Gothenburg, Sweden

# **In-Vehicle API (joining forces with AUTOSAR)**

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# In-Vehicle API (joining forces with AUTOSAR)

## Agenda

- Introduction in the Collaboration AUTOSAR / COVESA (incl. SDV-alliance)
- Concept for the in-vehicle API AUTOSAR / COVESA
- Migration of VSS to OpenAPI-spec
  - Conversion vspec to ontology (conversion of “.” → “-”, “\_”, “none”)
  - Error Codes
  - Swagger compatibility
  - Python server linked to KUKSA-val
- Outlook (Async API and safety/realtime API)

# In-Vehicle API (joining forces with AUTOSAR) Collaboration AUTOSAR + Eclipse + SOAFEE + COVESA

On CES 2024



dreamkit and popup poster

Honda, Volvo, AWS expressed interest.

# In-Vehicle API (joining forces with AUTOSAR) SDV-Alliance Integration Whitepaper available (by digital.auto)

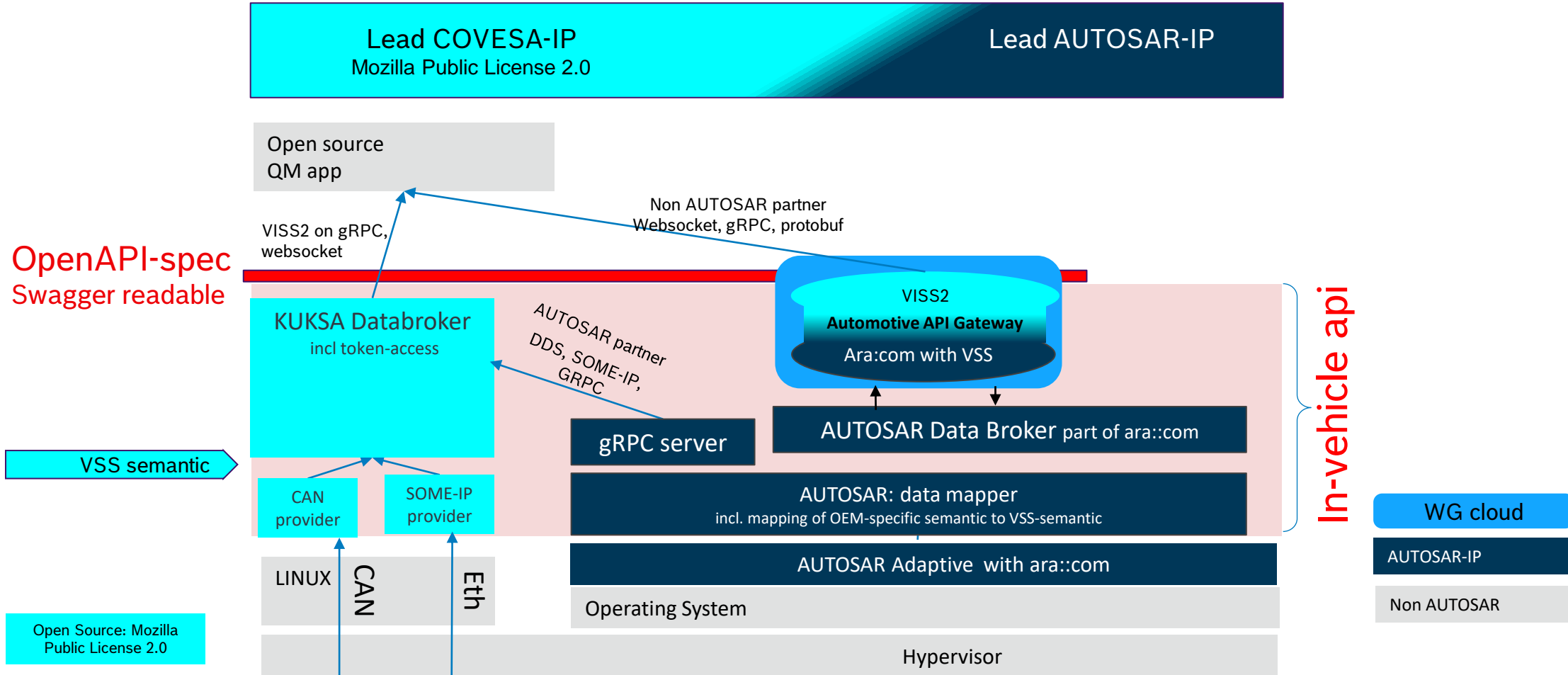


[SDV Alliance Integration Blueprint 20240109.pdf \(covesa.global\)](#)



# AUTOSAR-COVESA Worksplit (Bosch-proposal)

## Concept for the **in-vehicle** API AUTOSAR / COVESA



M/NET | 14.04.2024

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# AUTOSAR-COVESA Worksplit (Bosch-proposal)

## Migration of VSS.vspec to OpenAPI-spec

Design options for a common API:

Premisses: VISS V2-core compatible: [https://raw.githubusercontent.com/w3c/automotive/gh-pages/spec/VISSv2\\_Transport.html#status-codes](https://raw.githubusercontent.com/w3c/automotive/gh-pages/spec/VISSv2_Transport.html#status-codes)

Dimensions	Parameters					
Status/error codes	VISS2	http	gRPC			
Protocols	Websocket	µ-Protocol	http	SOME-IP	DDS	mqtt
Modelling the VSS-tree-structure	separate json-structure	integrated in Aspect-model				
VSS-separator replacing "." with	"_" underscore	"-" minus	none			
1:1 call or 1:n calls	1:1 OpenAPI	1:n AsyncAPI	1:n arXML-Tool			
Link to embedded Data	KUKSA-val	AUTOSAR API-gateway	ara:com			

# Migration of VSS to OpenAPI-spec

## API Status codes-Proposal

### VISS.V2 Status-codes

### http-Status-codes

#### § 4.1 Status Codes

[VISS version 2-Transport \(github.com\)](https://github.com)

[RFC 2616: Hypertext Transfer Protocol -- HTTP/1.1 \(rfc-editor.org\)](https://www.rfc-editor.org/rfc/rfc2616)

The server implementation *SHALL* support the error numbers listed in the table below, with the associated reason and message fields, for all supported transport protocols.

The client *SHOULD* support any status code defined in [RFC2616].

Error Number (Code)	Error Reason	Error Message
400 (Bad Request)	bad_request	The request is malformed.
400 (Bad Request)	invalid_data	Data present in the request is invalid.
401 (Unauthorized)	expired_token	Access token has expired.
401 (Unauthorized)	invalid_token	Access token is invalid.
401 (Unauthorized)	missing_token	Access token is missing.
403 (Forbidden)	forbidden_request	The server refuses to carry out the request.
404 (Not Found)	unavailable_data	The requested data was not found.
503 (Service Unavailable)	service_unavailable	The server is temporarily unable to handle the request.

Open runtime answer

Can be retrieved, when the debugger service is authorized

mandatory

	Option extension	Example
409	Ressource is busy	Do not open door during driving
500	Internal Server Error	Major Async API-server/broker error

optional

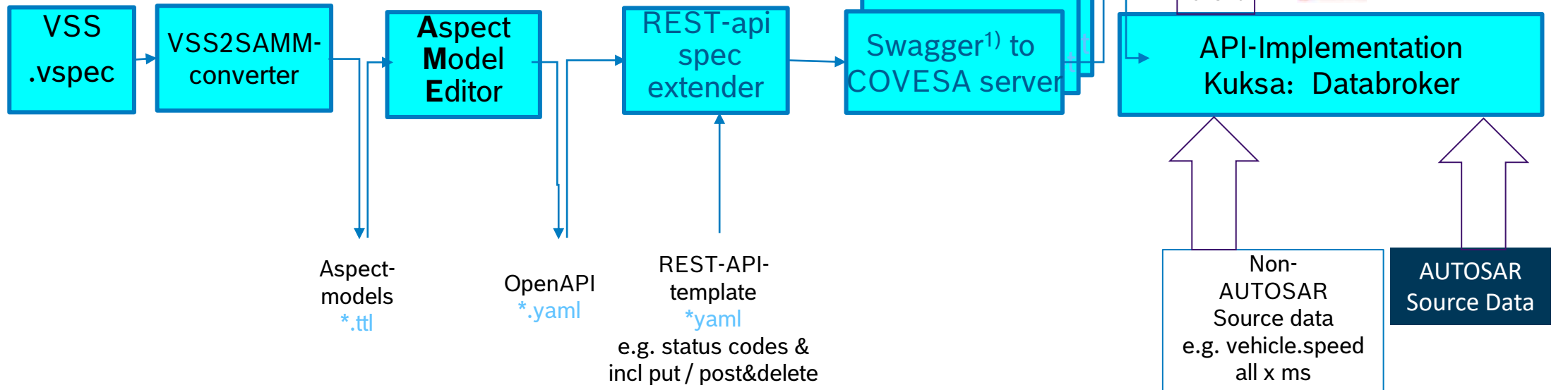
# Migration of VSS to OpenAPI-spec Extension COVESA on-board Workflow

Non AUTOSAR

AUTOSAR-IP

Open Source: Mozilla  
Public License 2.0

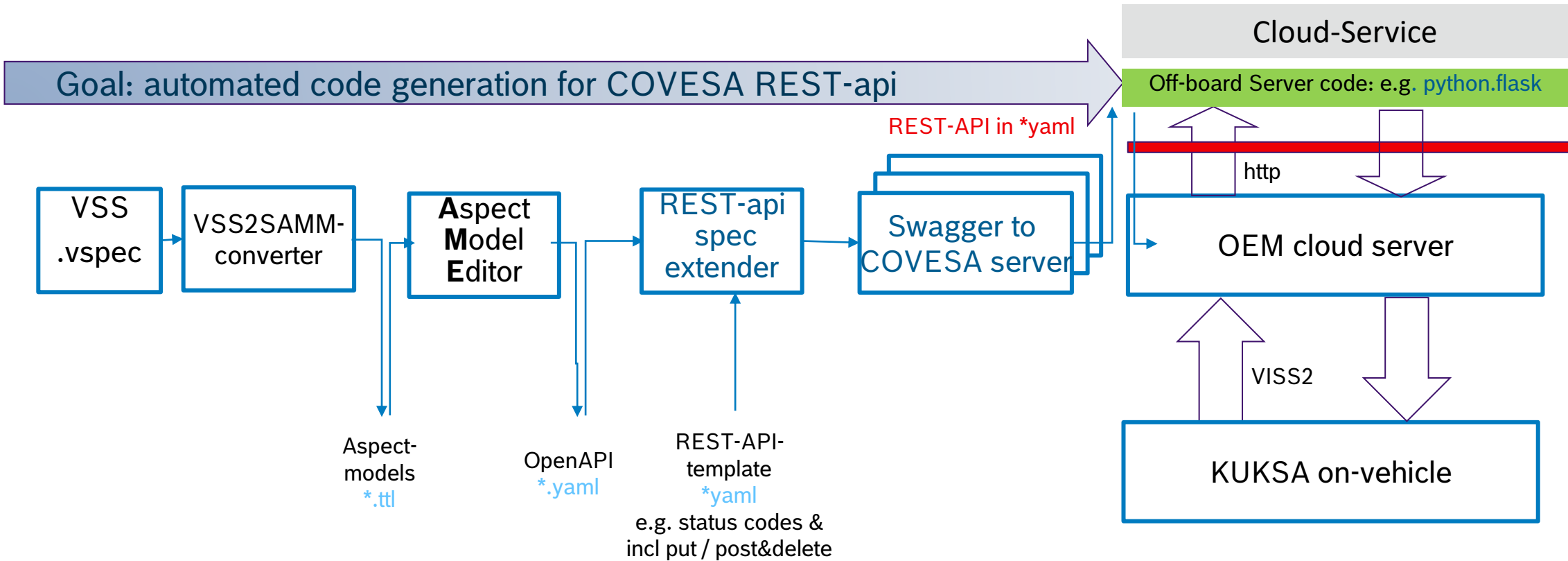
Goal: automated code generation for COVESA REST-api





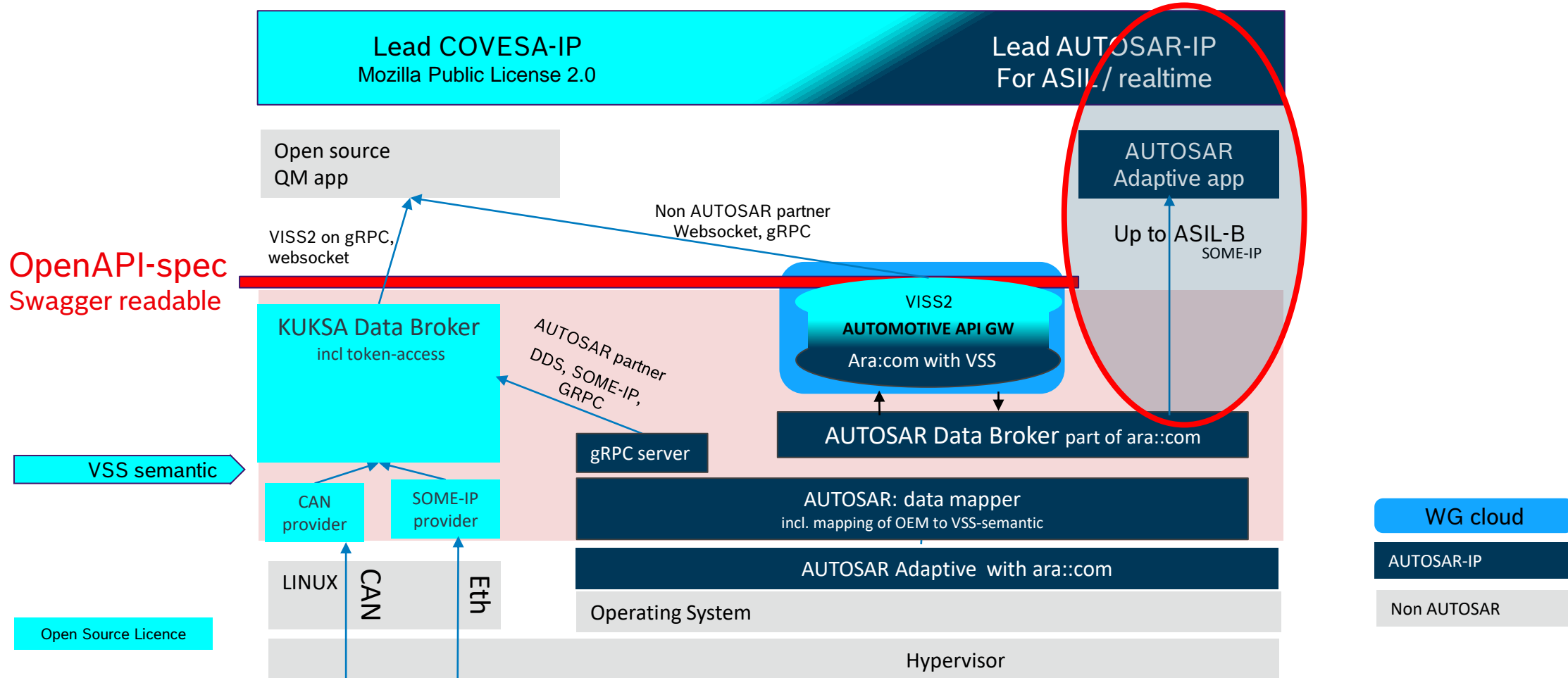
# Migration of VSS to OpenAPI-spec

## Re-use of API-server off-board



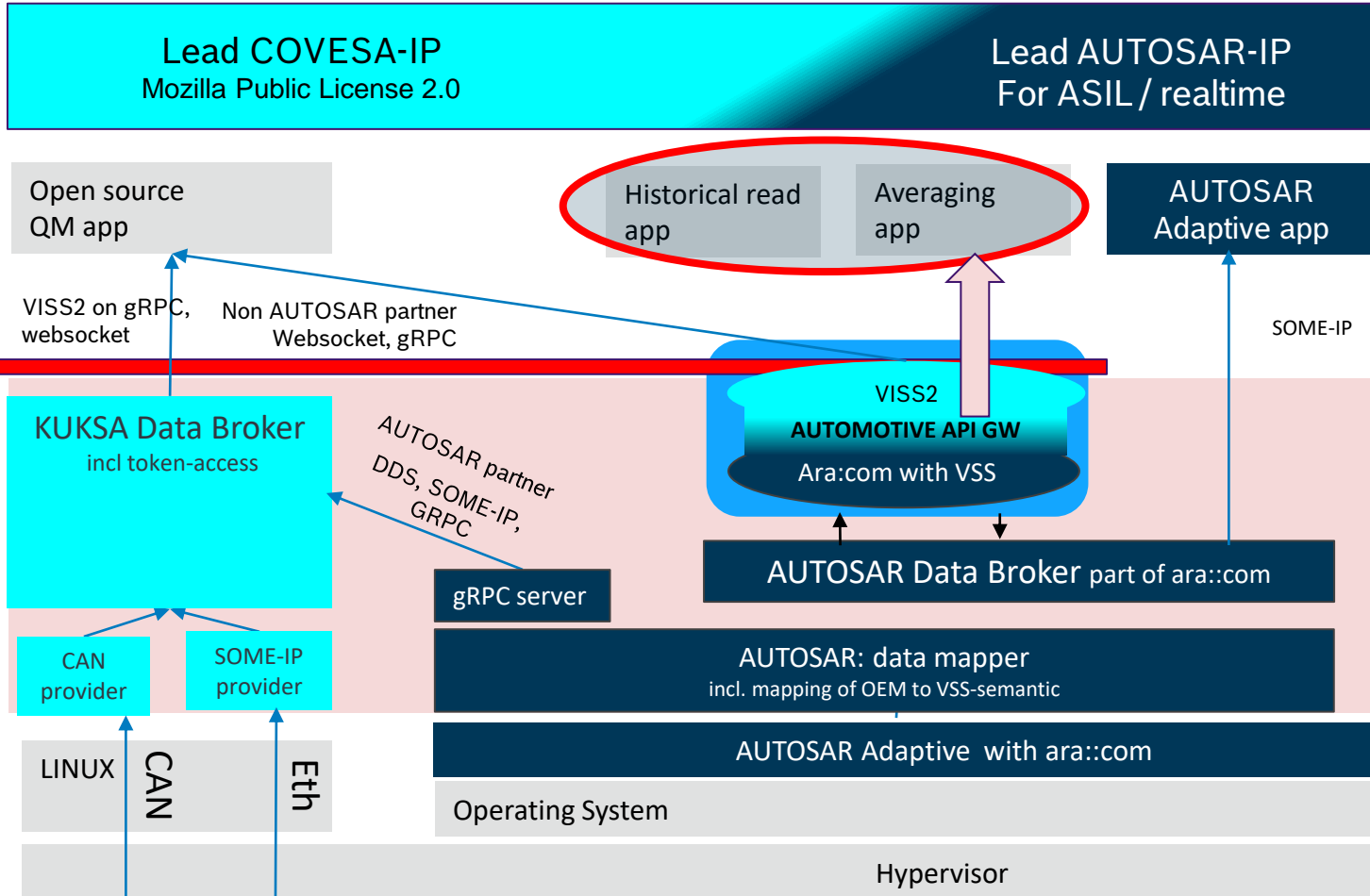
# AUTOSAR-COVESA Worksplit (Bosch-proposal)

## Concept for the in-vehicle API AUTOSAR / COVESA



# AUTOSAR-COVESA Worksplit (Bosch-proposal)

## Some thoughts about VISS3



### Proposal:

#### Allocating

- historical read / time-based filter
  - averaging
- on top of the API → as app (preparing VISS2-next gen functionality)

What is your comment?

# AUTOSAR-COVESA Worksplit (Bosch-proposal)

## Outlook

Proposal: Each VSS release will publish as an OpenAPI (REST API)

### Next steps:

- API spec to be released in data expert group
- Extension to Async API (1:n signal-flow)
- Ensuring the compatible API with AUTOSAR API-gateway of WG “cloud”
  - First AUTOSAR concept in 11/2024 expected
- Discuss in-vehicle-API with FMS-consortium
- Starting set-up of ISO-standardization of in-vehicle API
- Extend API on safety/real-time performance (e.g. meta-data for cycle time, resolution, ...)

# AUTOSAR-COVESA Worksplit (Bosch-proposal)

## Multi-Nations approach for ISO



*Invitation to join the ISO standardisation of a "VSS-based in-vehicle API"  
contact [achim.henkel@de.bosch.com](mailto:achim.henkel@de.bosch.com)*

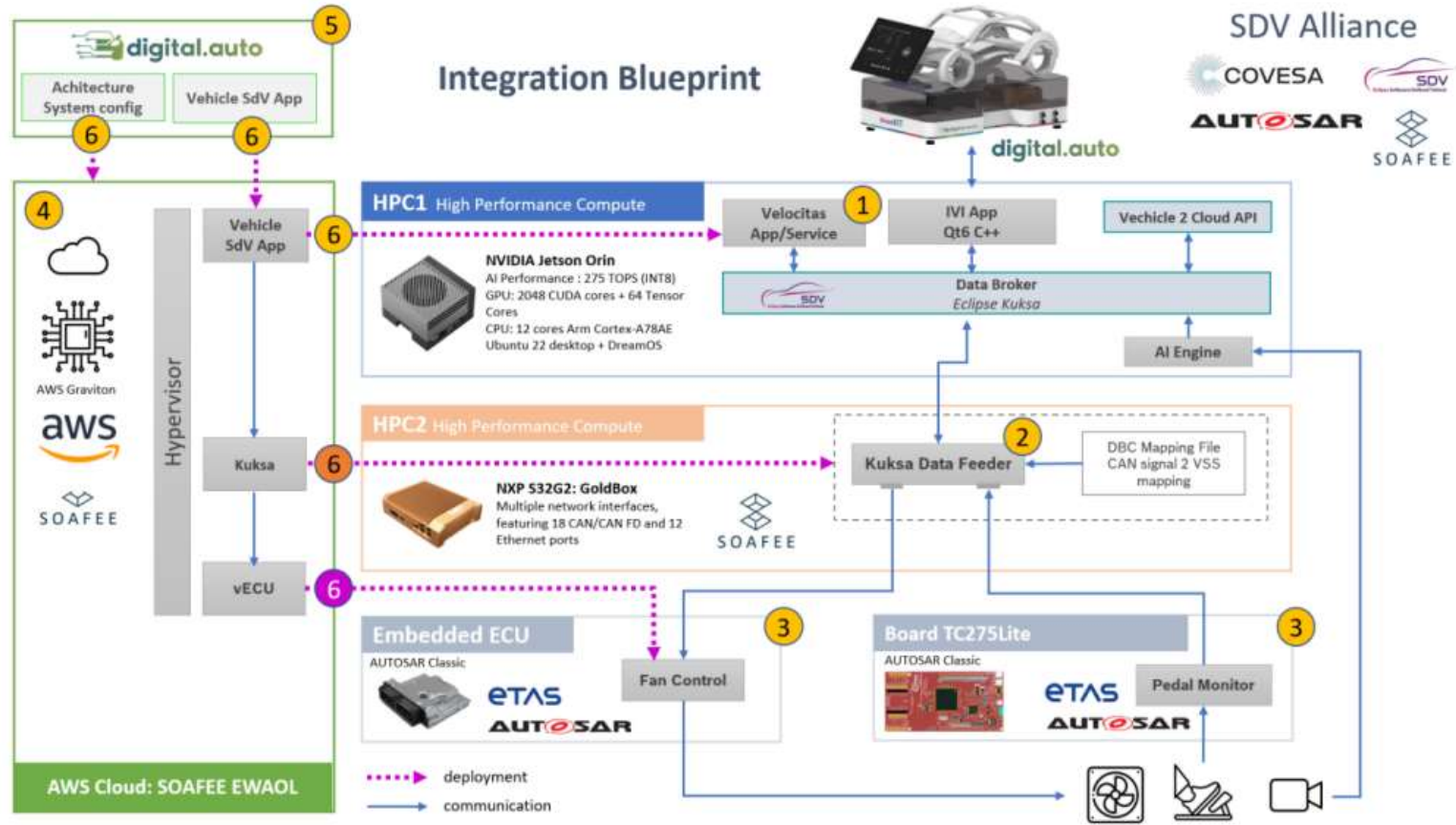
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# Thank you

to ETAS/VOS Martin Lunt, BD/XDC Kostadin Ivanov, ETAS Sebastian Schild

# In-Vehicle API (joining forces with AUTOSAR)

## SDV-Alliance Blueprint available (by digital.auto)



# CVT Symposium 2024 | 13.03.2024

## FMS (future concept) - proposal how to bridge to 3<sup>rd</sup> party apps

