PERPETUUM PROGRESS

Empowering Autonomous Mobility

Sobirania de dades i International Data Spaces **20.09.2023**

Oriol Torres – CTO Perpetuum Progress GmbH

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PORTFOLIO OVERVIEW

Engineering Services

Scenario & Track Services

Digital Twin & Scenario

Consulting

Credible Simulation

Proving Simulation Reliability

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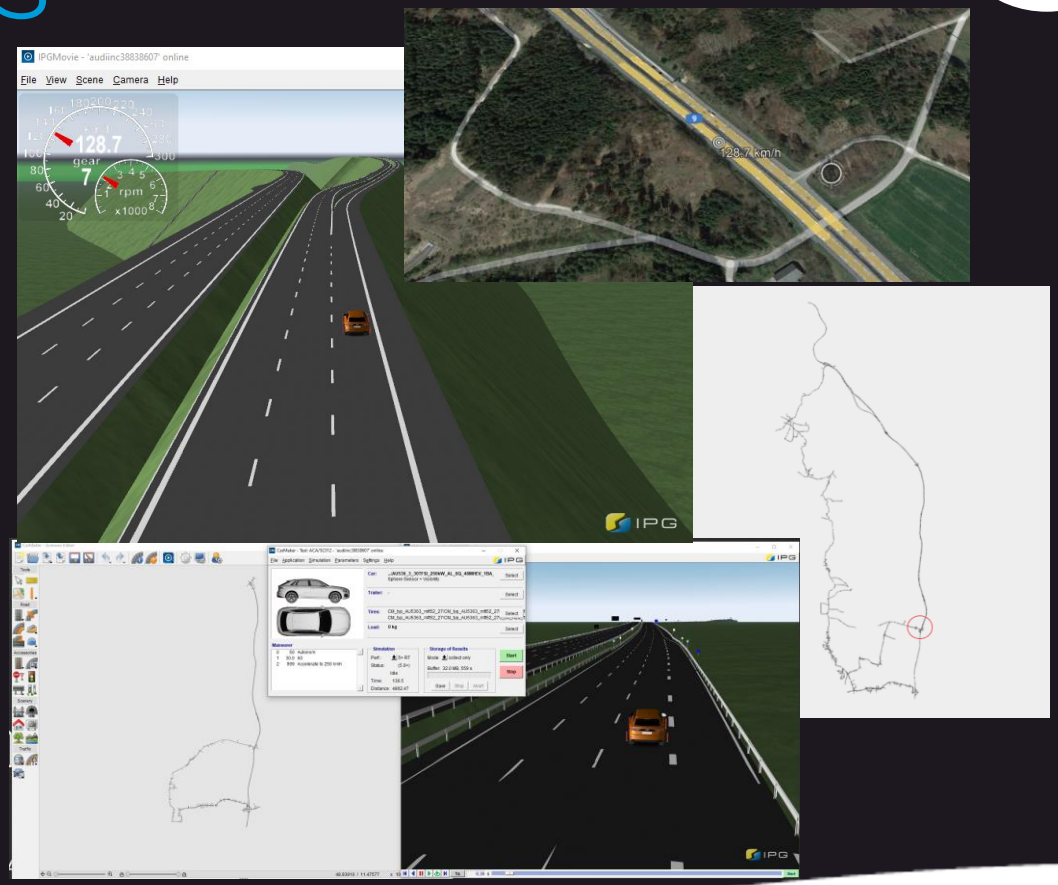
ENGINEERING SERVICES

- Developing Custom Software Tools to Boost the Development Process
- Professional Software Development Process
- Merging Tools and Systems to Create “Digital Twins” of Real Environment
- Creating Digital Twins: Tracks & Scenarios



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ENVIRONMENT OVERVIEW

PARTICIPATING IN STANDARD **DEVELOPMENT**

TRANSFERRING RESEARCH RESULTS **TO INDUSTRY**

COMMONSENSE

HD Sensor Data for Simulation

Consortium: Conti, THI, FMS

gaia-x

UNECE R157 ALKS Simulation

Consortium (20):
BMW, Conti, DLR, msg, Fraunhofer, et. al.

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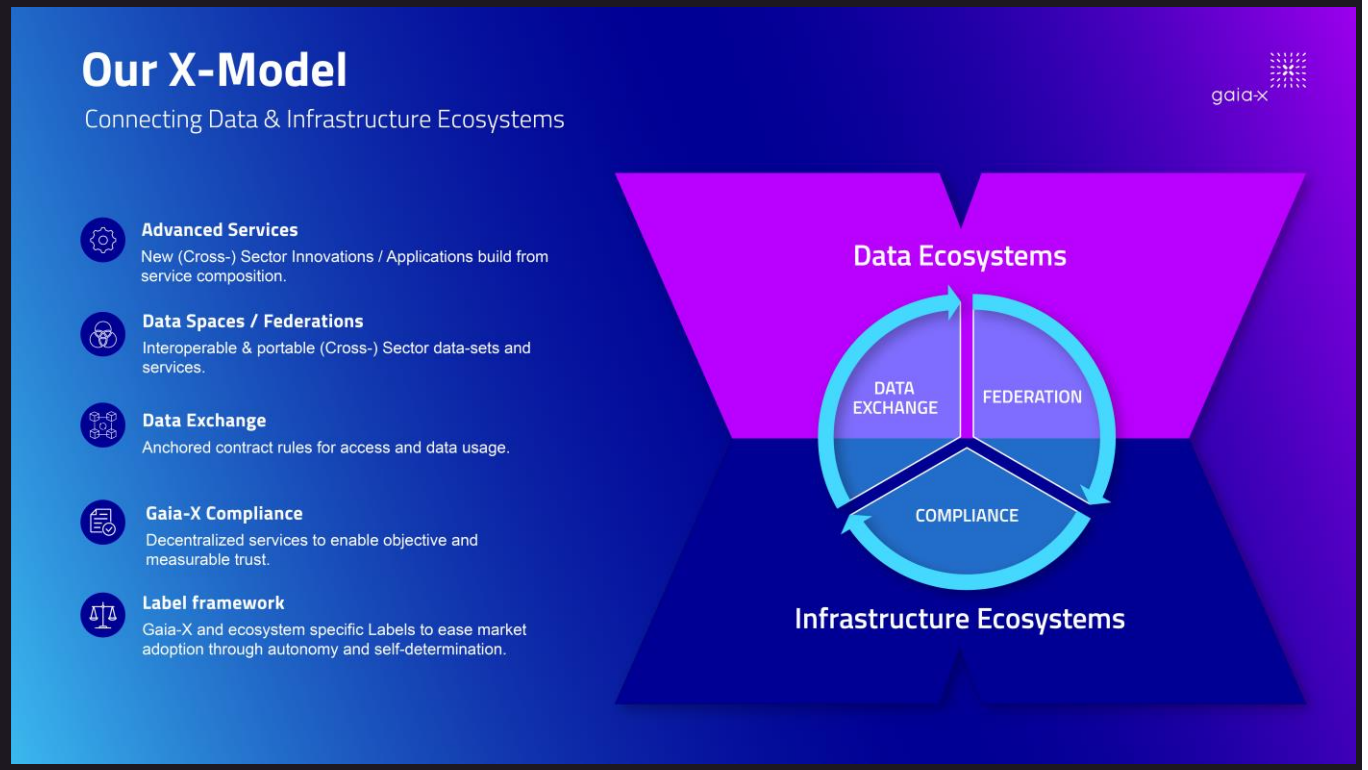
GAIA-X

∞ A Federated and Secure Data Infrastructure

- Goal is to establish an ecosystem, whereby data is shared and made available in a trustworthy environment.



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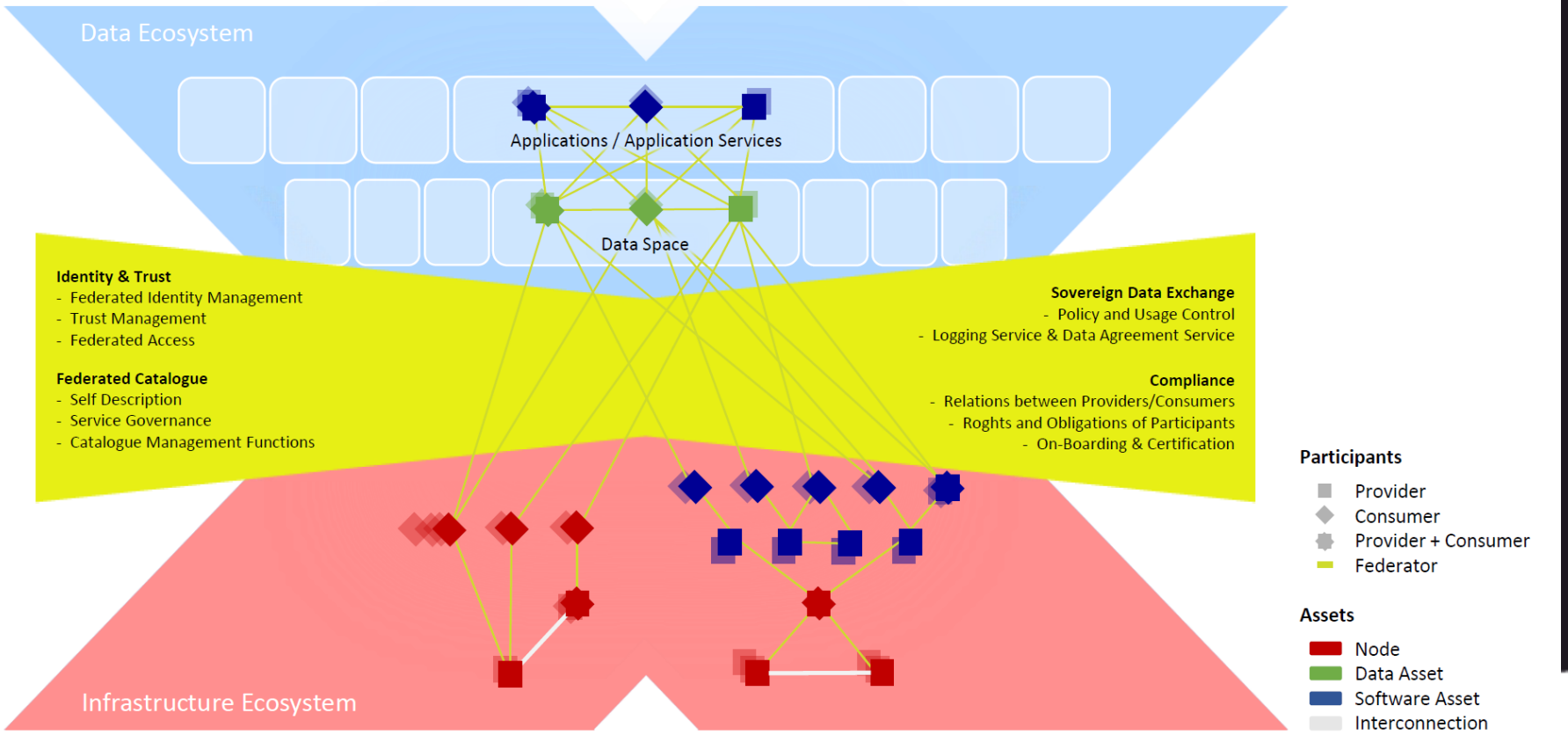
GAIA-X Federated Services



Governance Framework: GAIA-X Policy Rules and GAIA-X Architecture of Standards

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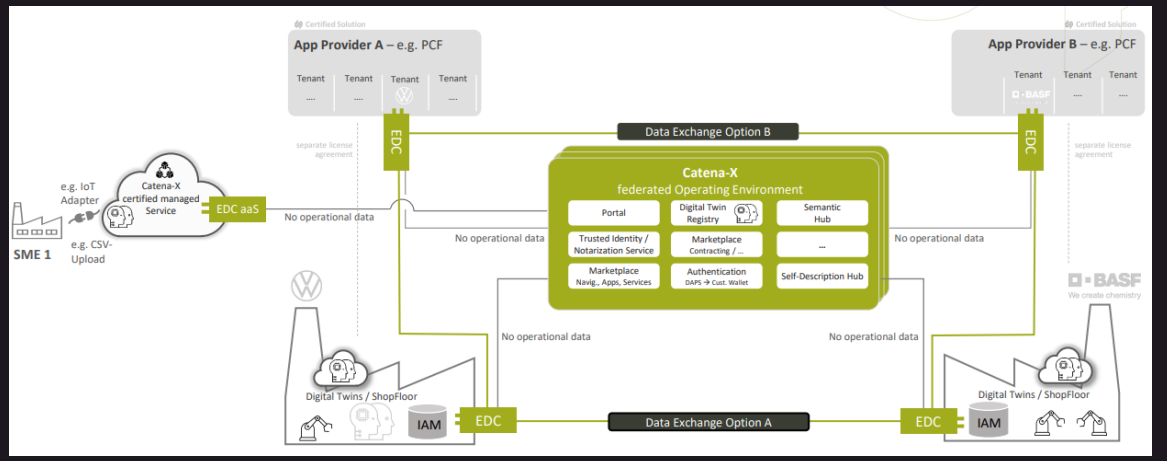
Automotive & Mobility Data Spaces

∞ CATENA-X

- The Catena-X Automotive Network creates the first open and collaborative data ecosystem.
- Examples: Carbon footprint , Traceability in Automotive Value Chain



∞ Mobilithek / Mobility Data Space

- access to open mobility data and enables the B2B exchange of data offers

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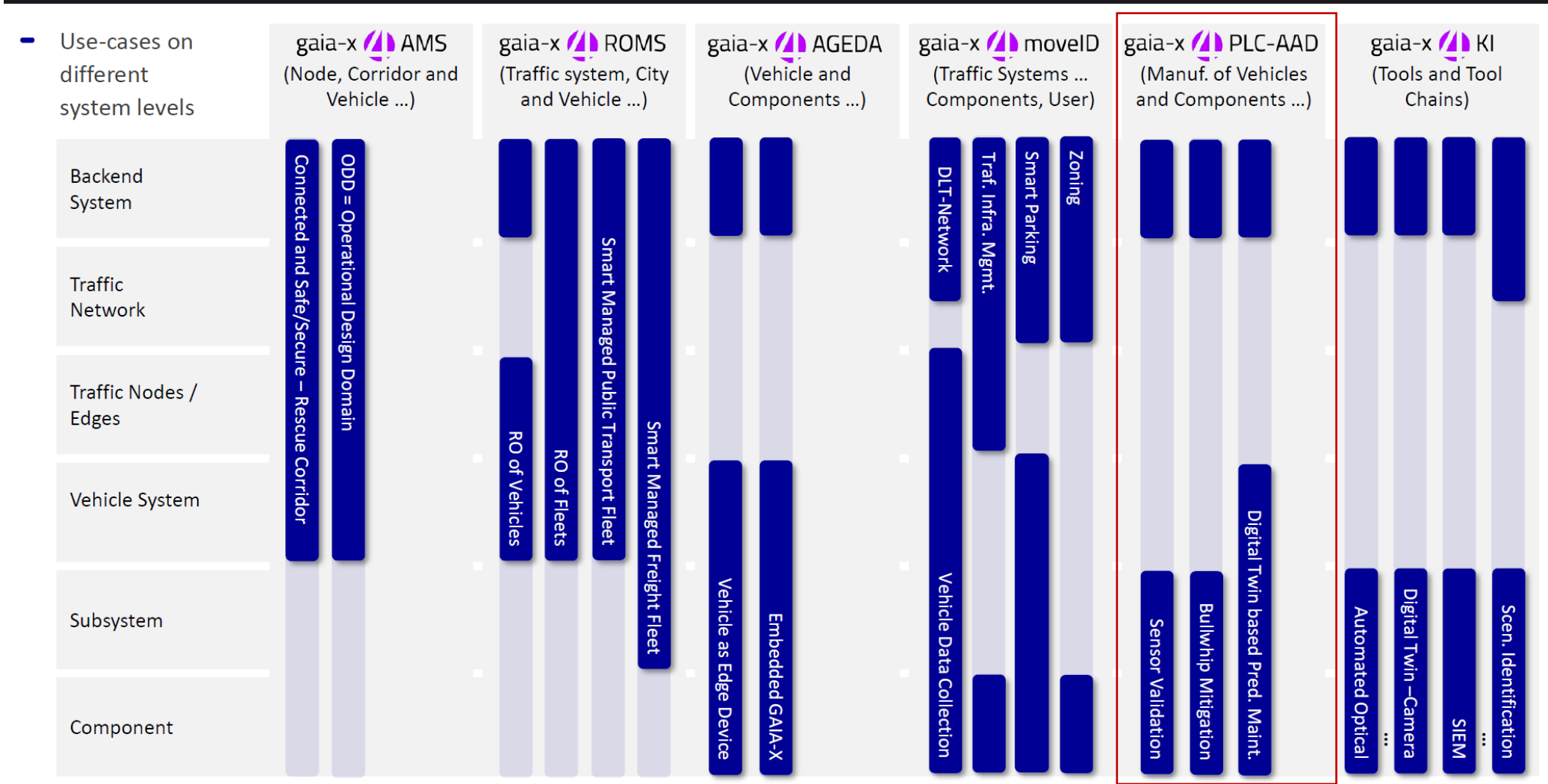
GAIA-X 4 Future Mobility



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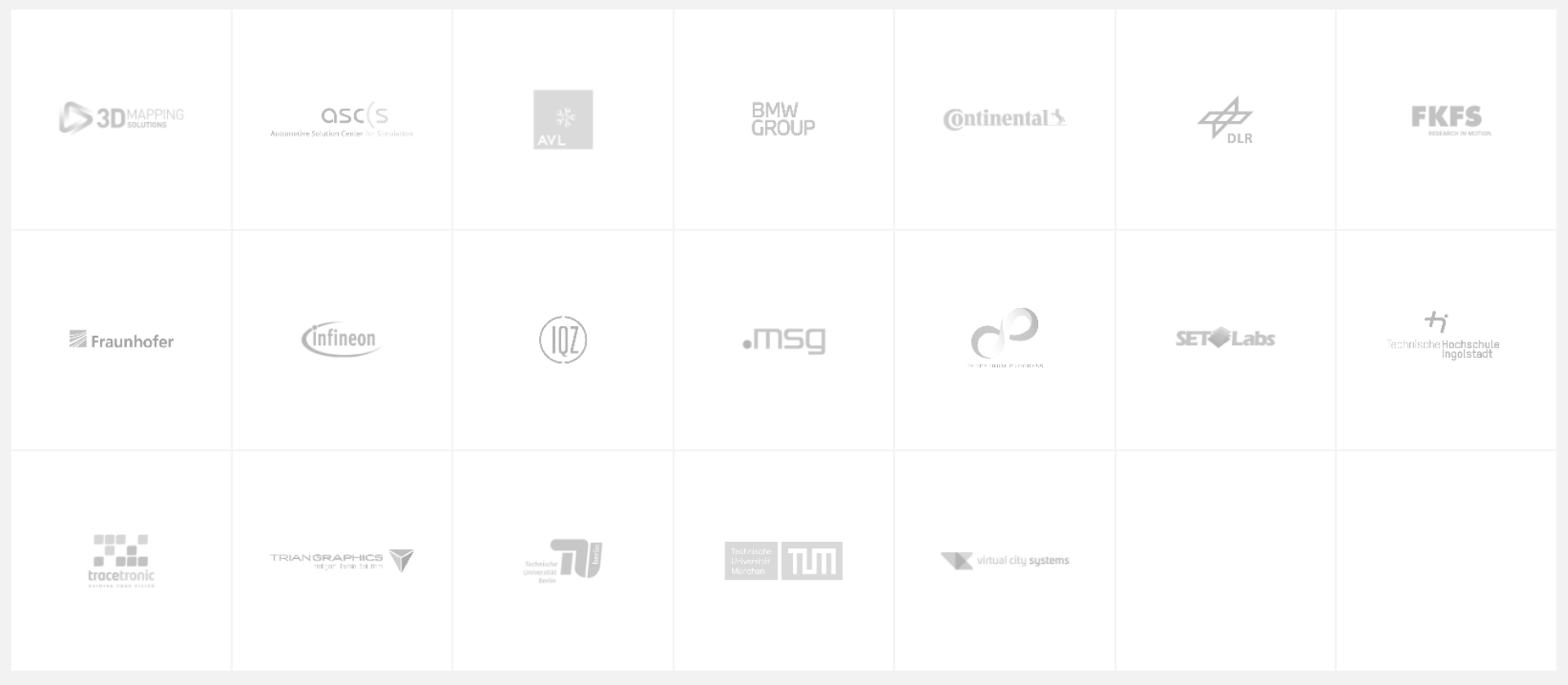
GAIA-X 4 PLC-AAD : Partners



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GAIA-X 4 PLC-AAD : ADAS Development

∞ Use Cases on Virtual Validation

- Automated Lane Keep Systems
- Sensor Development

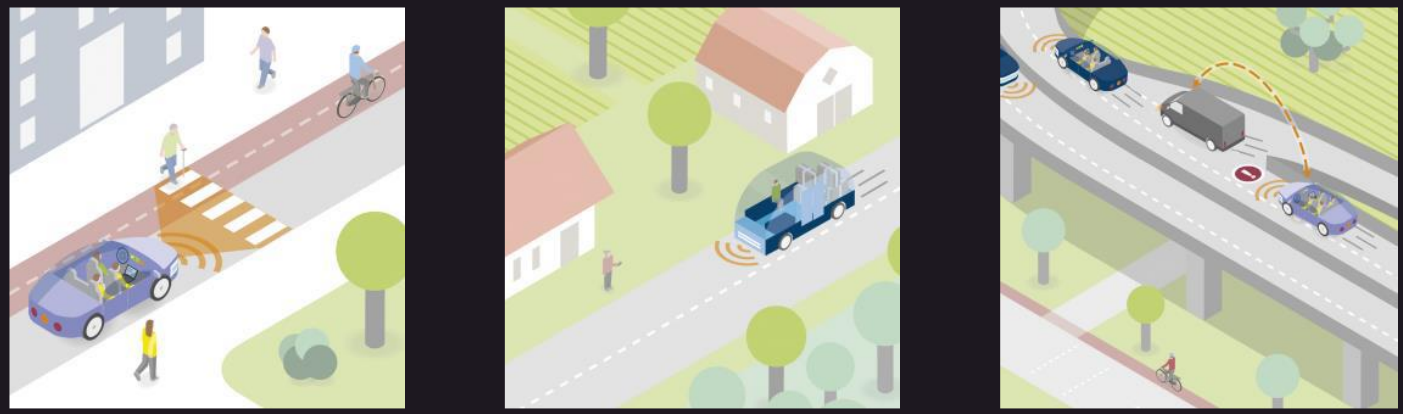

Figure: acatech Studie – Neue autoMobilität II

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GAIA-X 4 PLC-AAD : Data Exchange

∞ Data Assets

- Maps : ODR Files
- Scenarios: OSC Files
- Sensor & Vehicle Components Models

∞ Algorithm & Tools Assets

- Simulators : ADAS Simulation ex. CARLA
- Validation Tools : Quality Checkers
- Metadata Extractors

∞ Roles: Data User / Data Provider

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GAIA-X 4 PLC-AAD : Further Components

∞ SHACL Shape to restrict asset description

∞ EDC Connector: framework agreement for sovereign, cross-organizational data exchange.

- Identity, contract offering, data transfer, ….

∞ Blockchain Extension

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OVAL

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Engineering Services

Scenario & Track Services

Digital Twin & Scenario

Product Development

OVAL Data Space

Simulation Asset Management

Consulting

Credible Simulation

Proving Simulation Reliability

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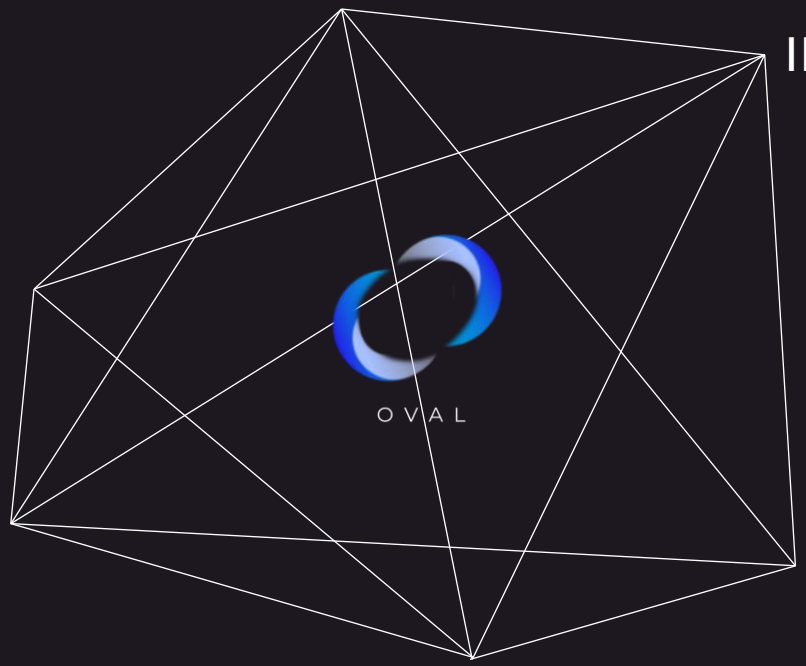
Perpetuum Progress DATA ECOSYSTEM SOLUTION

WEB 3 Ecosystem

IP Protection

Basis for Simulation and Virtual Validation



Breaking down data “silos” across companies

Quality & Traceability Management

GAIA-X Compatibility

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USE CASE :
As a Function Developer I need a track where I can test my algorithm with:

- Quality-Tested Digital Tracks
- Instant Use
- Transparent Costs and Contracting

Function Developer

Q-Checker Results for Track

Data Space

Q-Checker Query

Q-Checker

① Compute Job

Track File

[OVAL-Based]

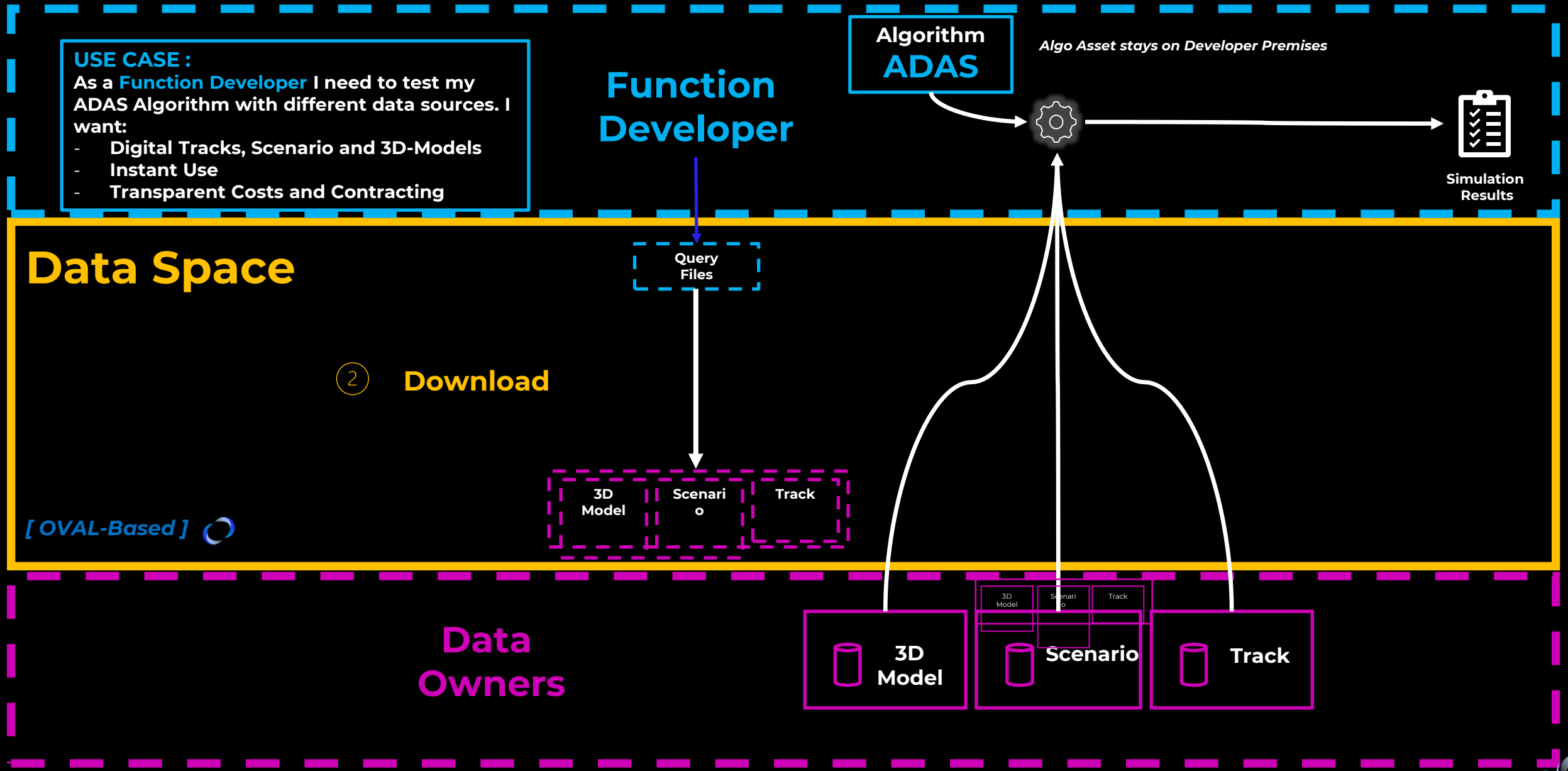
Data Owners

3D Model

Scenario

Track

Data Asset stays on Owner Premises


USE CASE :
As a Function Developer I need to test my ADAS Algorithm with different data sources. I want:
- Digital Tracks, Scenario and 3D-Models
- Instant Use
- Transparent Costs and Contracting
Function Developer
Algorithm
ADAS
Algo Asset stays on Developer Premises
Simulation Results
Data Space
Query Files
2
Download
3D Model
Scenari o
Track
[OVAL-Based]
Data Owners
3D Model
Scenario
Track

USE CASE:
As a HD Map provider I want to keep the IP over my tracks so that I can generate sustainable business models out of it.

Function Developer

Algorithm
ADAS

Algo Asset stays on Developer Premises

Simulation Results

Data Space

Query Files

③ Lease

Track including Metadata

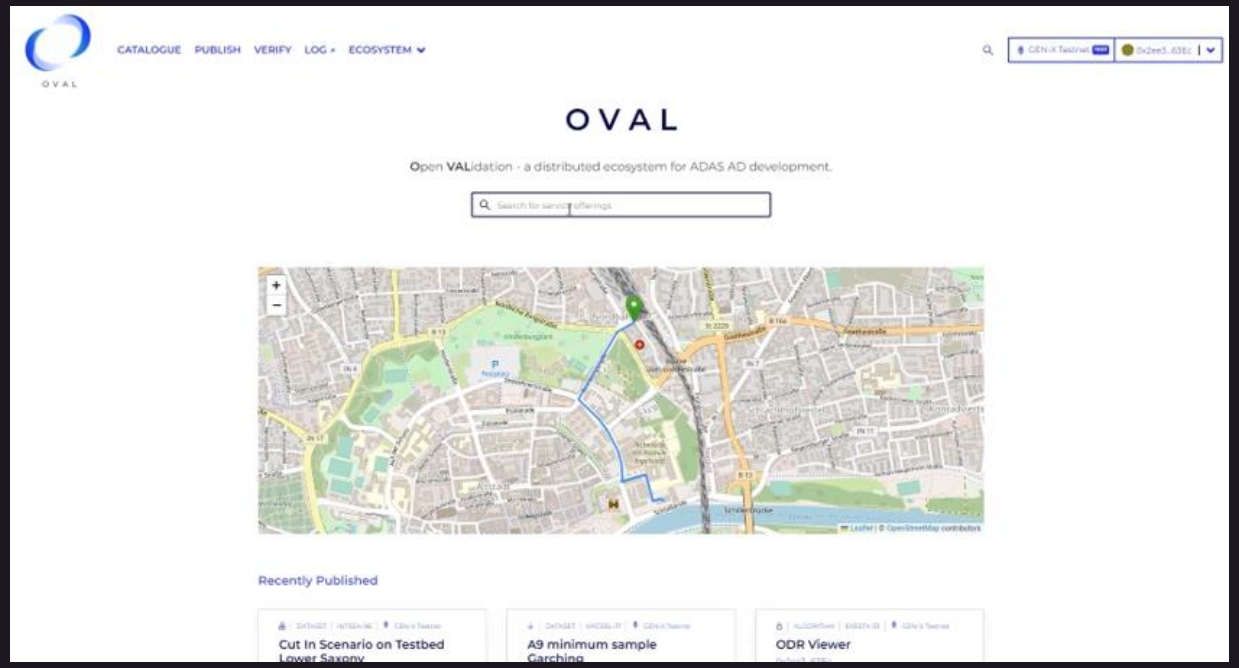
[OVAL-Based]

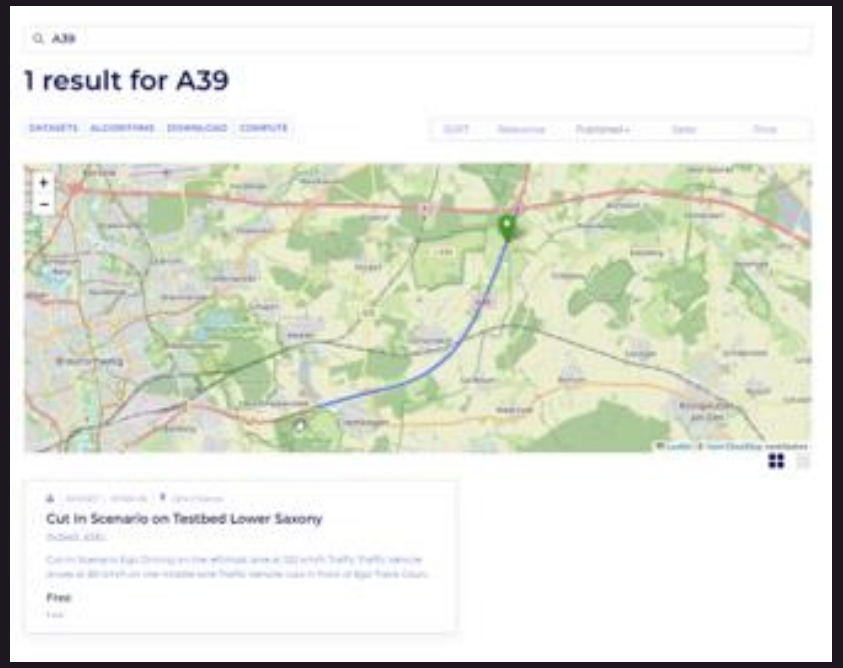
Map Provider

Trac k

Track

OVAL - DATA SPACE





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Vision

∞ Virtual Homologation

- UNECE 157 „.... approval of vehicles with regard to Automated Lane Keeping Systems”
  - “Simulation tool and mathematical models for verification of the safety concept may be used....., in particular for scenarios that are difficult on a test track or in real driving conditions.”

PERPETUUM PROGRESS

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