The Driving Force
in Autonomous Driving

ADMT

Developing and Implementing ASAM OpenODD

3/18/2026

Classification: Public

Who is ADMT?

Who we are

ADMT Powered by Volkswagen Commercial Vehicles

ADMT = Autonomous Driving
Mobility and Transport as a Service

ADMT is an affiliate company of
Volkswagen Commercial Vehicles.

Volkswagen Commercial Vehicles is the first Volkswagen Group brand that will introduce full autonomous driving (SAE Level 4) using the ID. Buzz vehicle base and integrated 3rd party automated driving systems.

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Who we are

ADMT Powered by Volkswagen Commercial Vehicles

Introducing Mobility and Transport as a Service in urban environments.

Providing SAE Level 4-ready or SAE Level 4-equipped vehicles as well as and intelligent vehicle fleet services & mobility platform solutions.

Currently tests are running in Hamburg and Munich (Germany) as well as in Oslo (Norway) and Austin (Texas, US).

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History

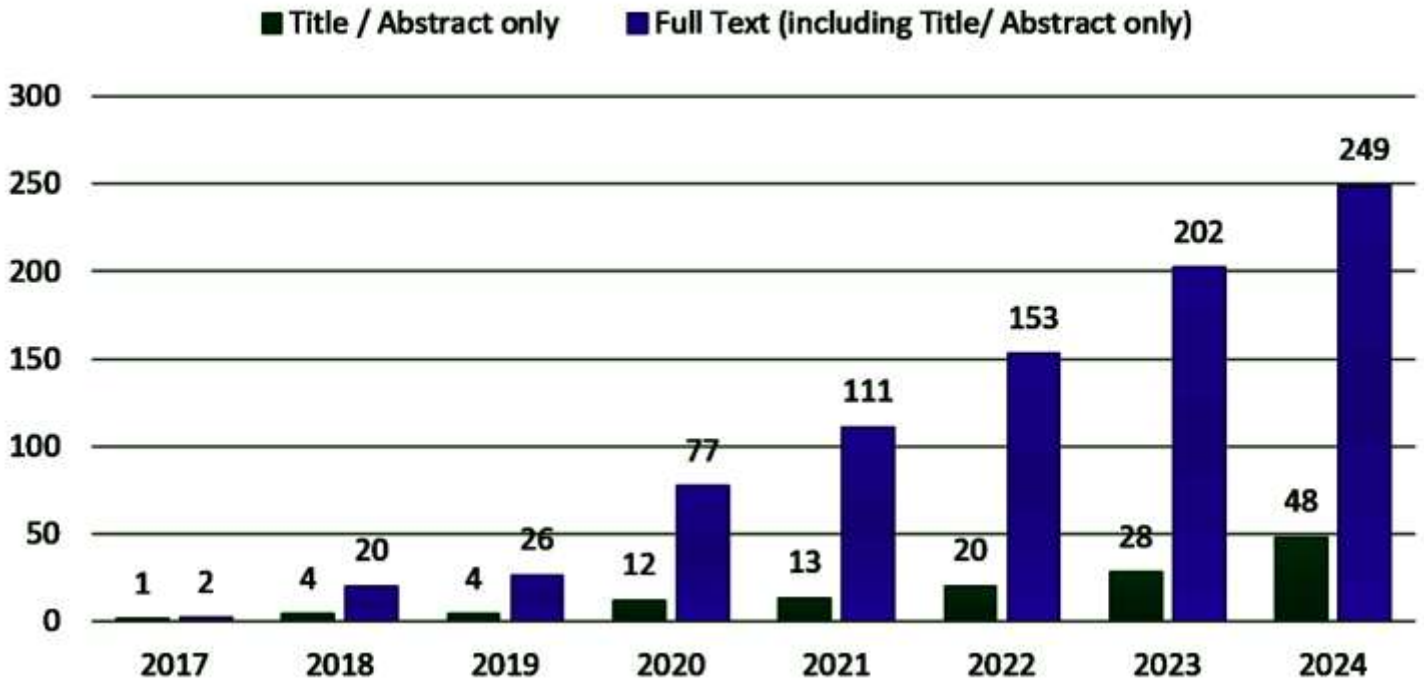
History

The concept of Operational Design Domain is rather new. It got introduced 2018 and got more and more popular.

Industry is already adopting the concept while research is still working on the topic.

Even regulation is already including the topics into regulations (e.g., UN regulation on ADS Safety).

Terms, their usage and level of detail still often get mixed up.



Number of publications discussing Operational Design Domain in IEEE Xplore between 2017 and 2024.

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Terms and Definitions

Terms and Definitions

Operational Design Domain (ODD)	Defines the operating conditions under which an automated driving system is designed to function. Conditions include scenery and dynamic elements as well as environmental conditions or time-of-day restrictions. They do not include behavior of the automated driving system as well as other traffic participants. ODD is location independent.
Taxonomy	Set of hierarchically organized concepts (terms) that are used to define and categorize various elements and objects relevant to ODD (building bricks of the ODD).
Operation Area	Is the geographical limited area in that the driving automation system is operating. The operation area can have omissions. A single ODD covers numerous operation areas.
Current Operational Domain (COD)	It describes environmental conditions at a specific location and time using the taxonomy concepts of the ODD.

Best Practices

Operational Design Domain

Best Practices

UL 4600 Evaluation of Autonomous Products

Includes automated driving system and other vehicles conditions and behavioral rules which are not part of ODD (but which are covered by scenarios).

AVSC00002202004 Best Practice for Describing an Operational Design Domain: Conceptual Framework and Lexicon

ODD examples are limited by explicitly named roads (service area) but do not detail road design elements as given in the lexicon section.

ISO 34503 Road Vehicles — Test scenarios for automated driving systems — Specification for operational design domain

Proposing contradicting modes to define ODD and propose a too generic taxonomy.

Unfortunately, these best practices are outdated theory but still the only basis public authorities can build upon.

Operational Design Domain

Technical Specification Format

ISO 34503 Road Vehicles — Test scenarios for automated driving systems — Specification for operational design domain

Defines a simplified list of ODD statements (based on a qualifier, attribute and attribute value per statement) which leave a lot of room for interpretation.

ASAM OpenODD®

Provides a taxonomy agnostic model to represent modularized ODD in different technical formats to support storing, processing as well as being readable by machine and humans.

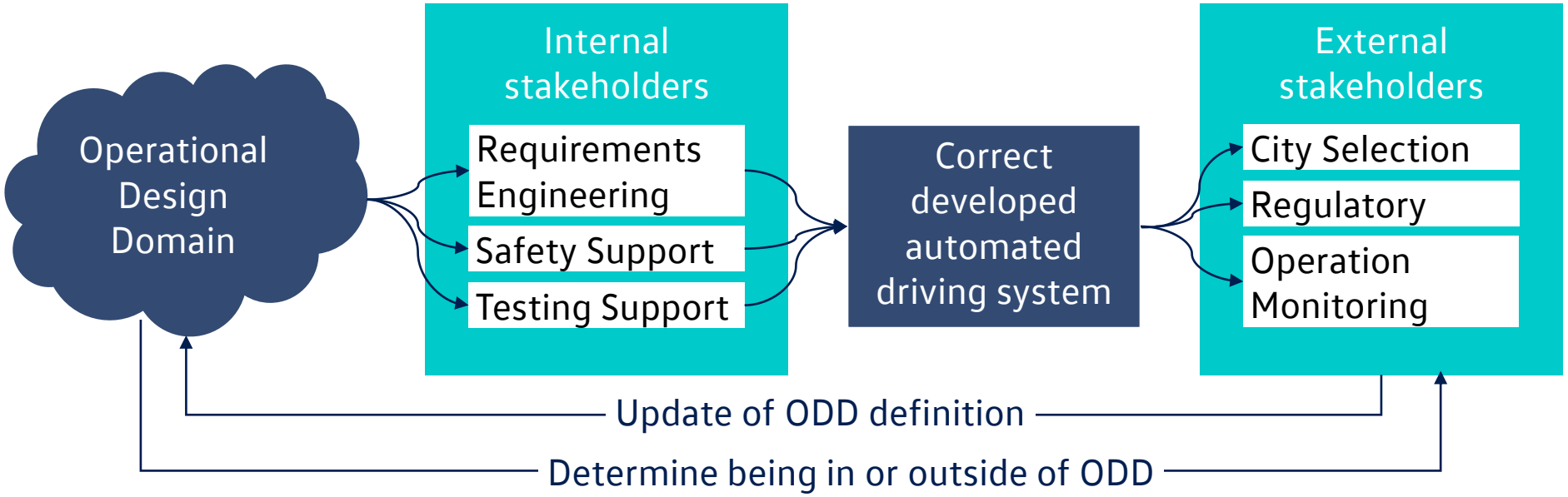
ASAM OpenODD® approach is a good starting point for a reliable technical realization.

Scope of a Technical Standard

Scope of a Technical Standard

ODD as Single Point of Knowledge used by various Stakeholder

Initially scope was only on input for scenario-based testing, but ODD definition is required in more process steps for developing, testing, approving and operating of automated driving systems.



Fortunately, scope was extended to be a real open standard for exchanging modularized ODD definitions (even with translations of the taxonomy).

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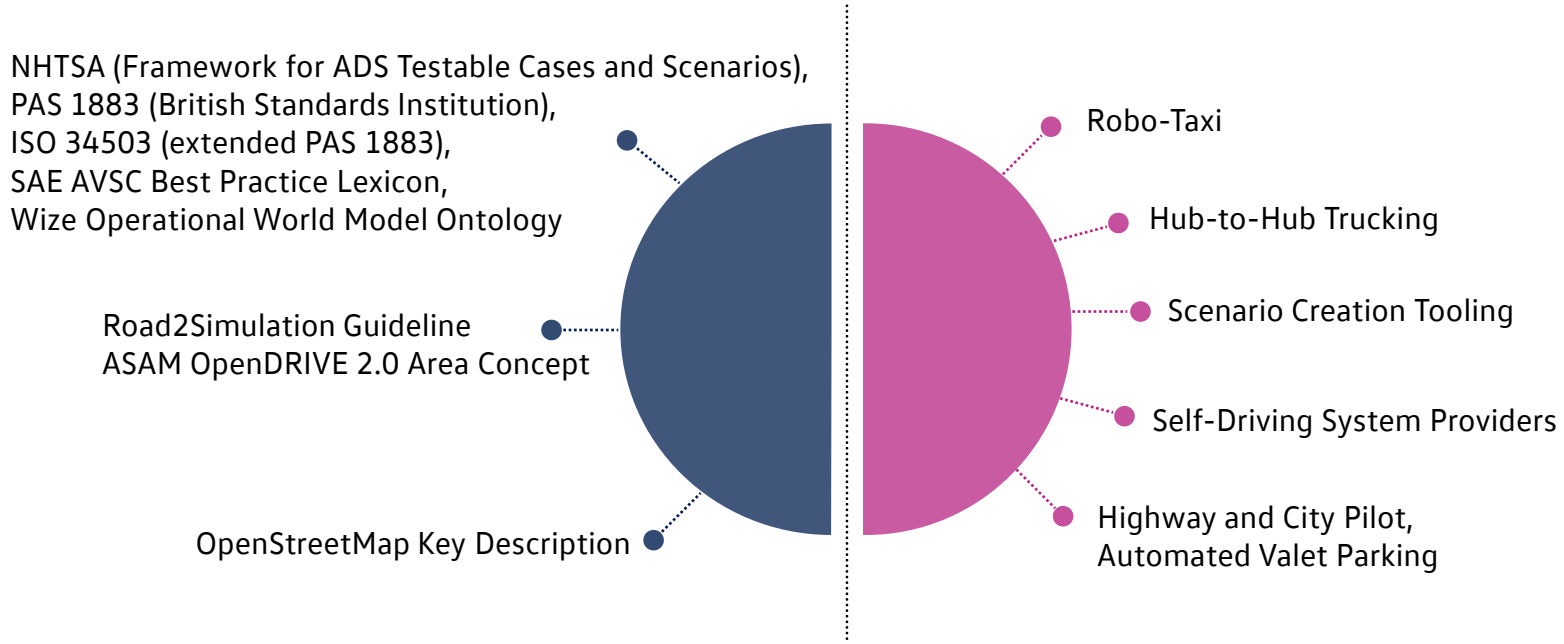
Building Necessary Assets

Building Taxonomy

Group-wide comprehensive Set of Terms

Lacking comprehensive and well-defined taxonomies, in-house development incorporated different use cases and available public definitions.



Taxonomy is defined from human perspective and abstracts country-specific elements.
It helps to interchange and re-use ODD module definition and work on a common understanding.

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Building ODD Management Tool

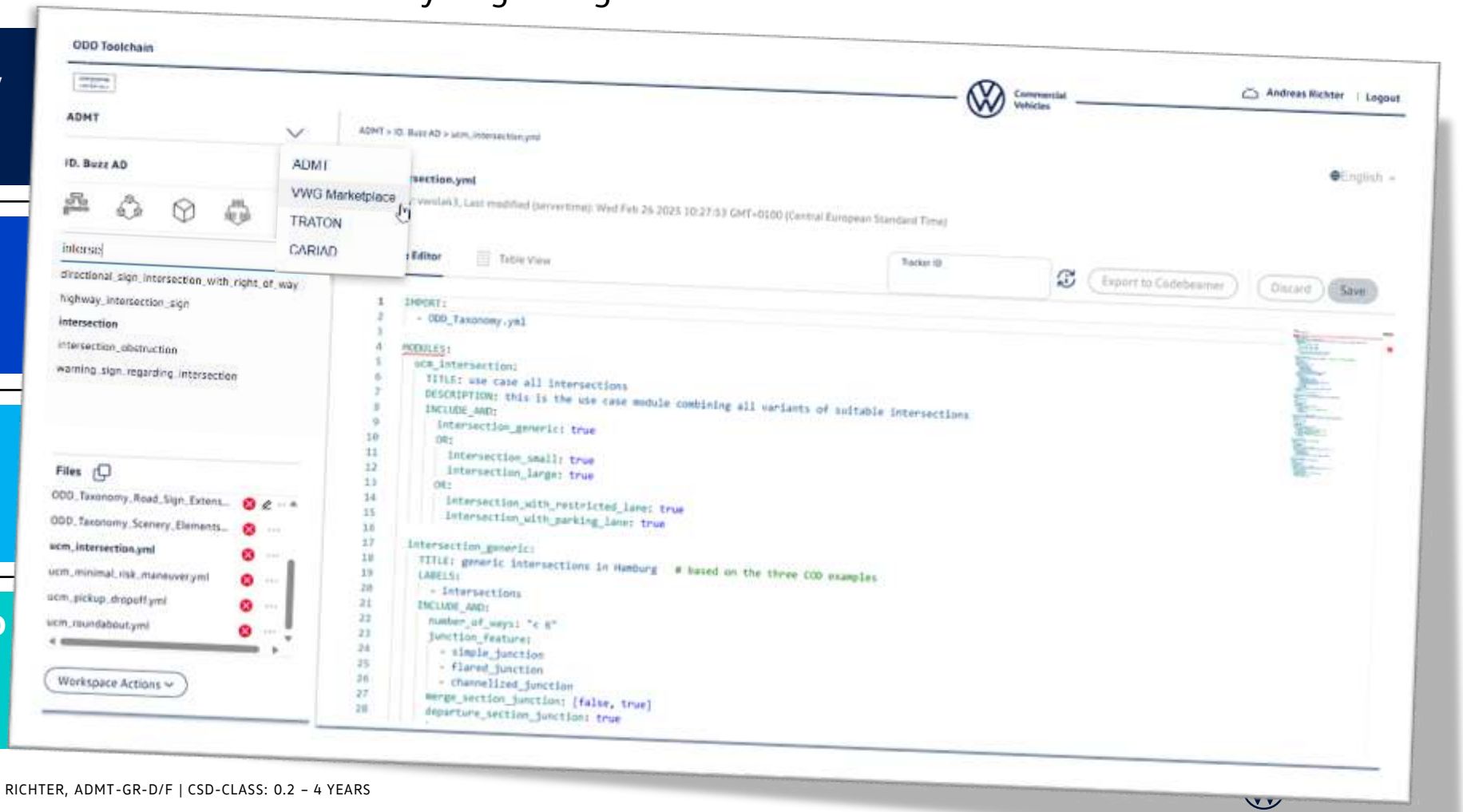
Lacking off-the-shelf application for developing and managing ODD definition and related assets in-house development adopted technical standard from the very beginning.

Full validation of taxonomy and ODD definitions

Multi-language support for taxonomy concepts

Enterprise-ready by separation of concerns

Interfaces towards scenario creation and requirements management



Incorporating in Scenario Creation

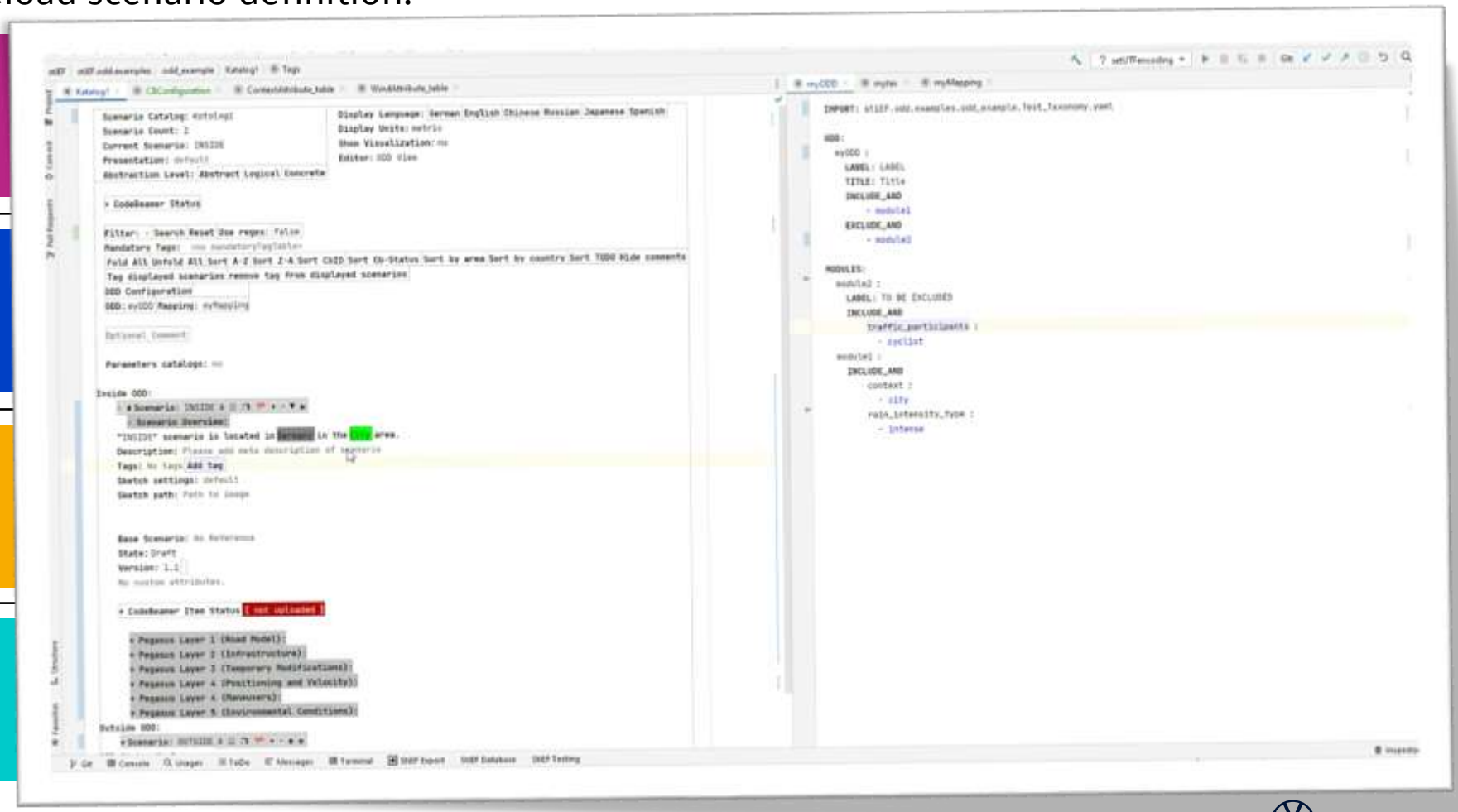
stiEF – scenario-accompanied, text-base, iterative Evaluation of automated driving Functions – imports ODD definition to preload scenario definition.

Natural language definition based on BSi PAS 1889

Multi-language support for taxonomy concepts

Exports scenario and road definition formats

Interfaces towards requirements management



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Utilizing Geodata Analysis

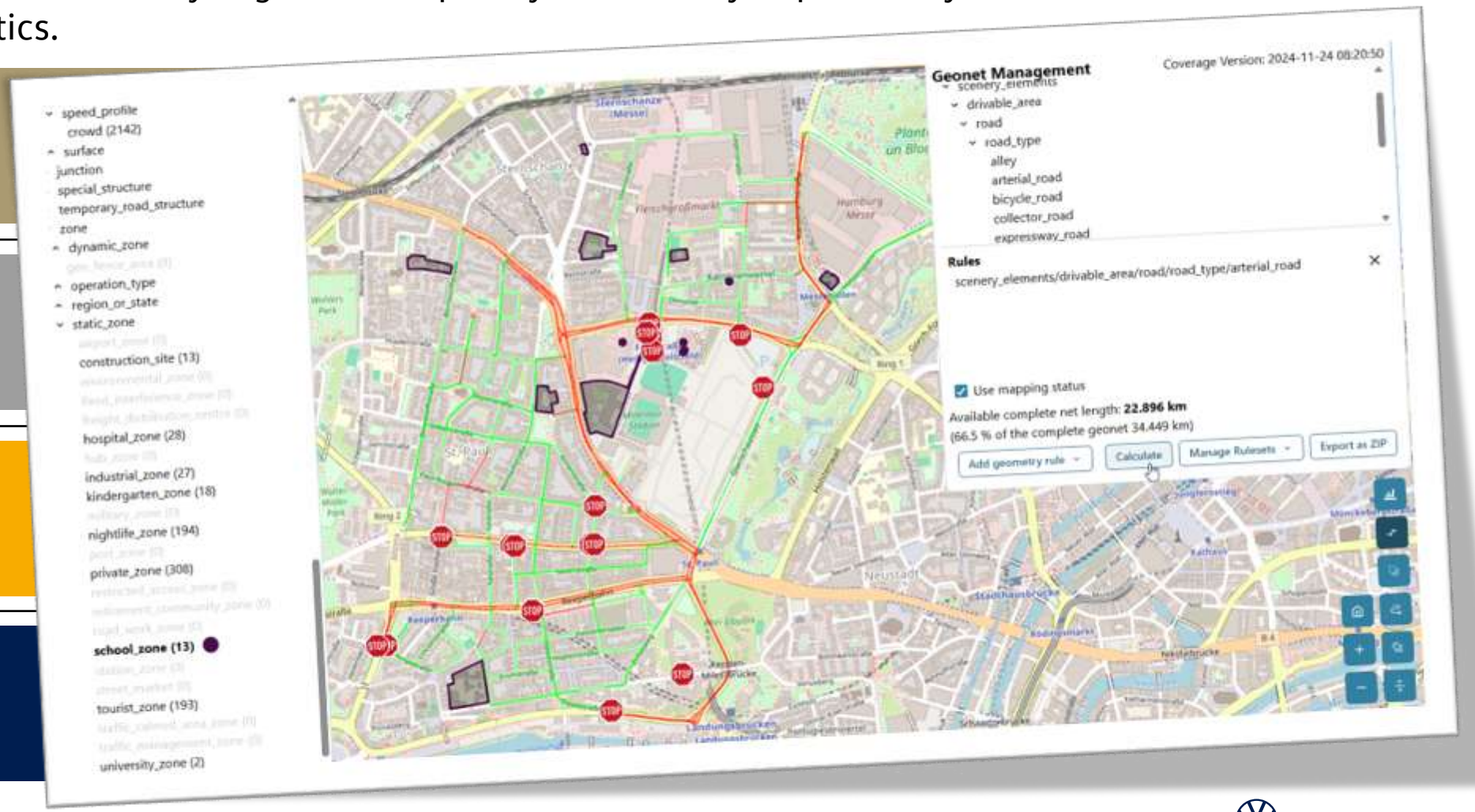
Assessing new operation areas and analyzing their complexity for mobility impact analysis as well as to create tests routs and derive statistics.

Geodata preprocessing and mapping to taxonomy concepts

Complex analysis based on ODD module definitions

Exports use case specific statistics, test routes or road networks

Annotate nodes and edges with maneuver primitives



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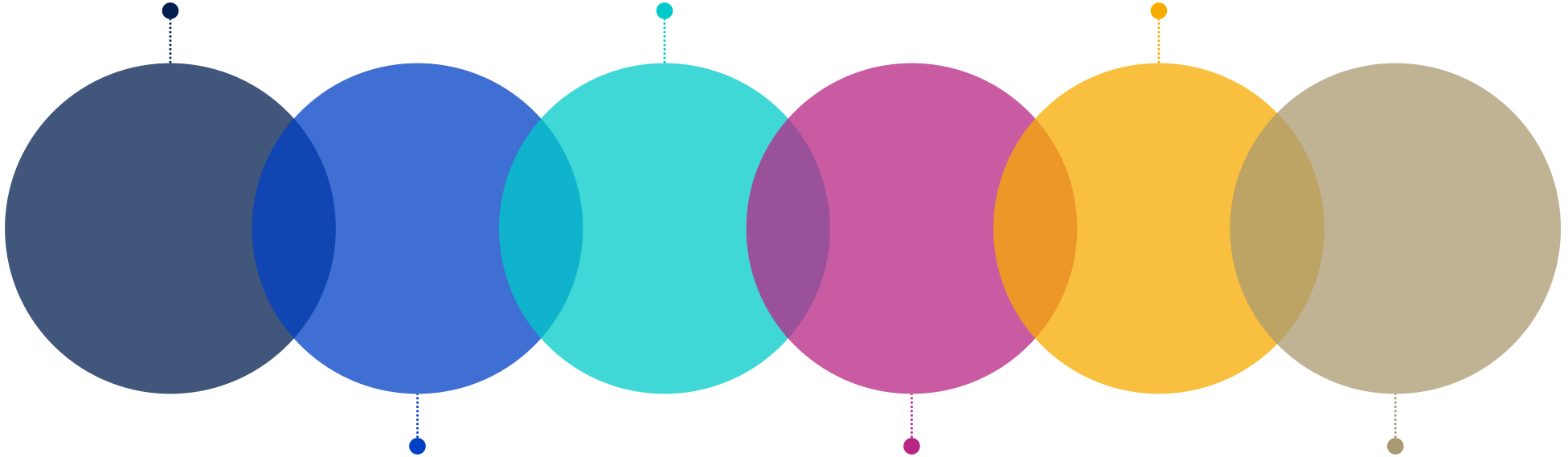
Summary

Summary



Terms
Don't mistake Operational Design Domain with service area and/or scenarios!

Stakeholder Needs
ODD definition needs to be unambiguously readable by humans as well as machines.

Geodata Analysis
Assessing operation areas by preprocessing and analyzing geodata from various sources.

ODD Definition
Flat list representation of current best practices are misleading and modularized definition for more significance will be necessary.

Tooling
Use enterprise-ready applications to develop and manage ODD and scenario definitions.

Documentation
Bringing all data and definitions together for homologation.

Implementing ODD definition as single point of knowledge by utilizing standardized technical format.

Curious?
Contact

You want to dig deeper into the topics of Operational Design Domain, scenario-based testing, and homologation of Autonomous Driving Systems?

Dr. Andreas RICHTER

ADMT GmbH

Autonomous Driving Function,
ADMT-GR-D/F

+49 1522 2923683

andreas.richter7@volkswagen.de

Feel free to get in touch!

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Thank you.