CNTARC 中汽中心 | NTCAS 全国汽车标准化技术委员会
National Technical Committee of Auto Standardization

ISO TC22/SC33/WG9
Test scenarios of automated driving systems

General status report

China Automotive Technology and Research Center Co.,Ltd
China Automotive Standardization Research Institute
2023.5

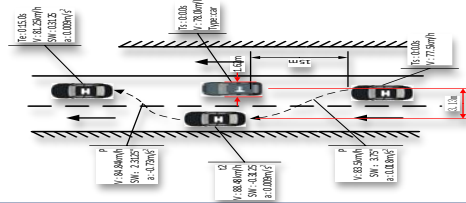**Real scenario**

Parking

Rain

Urban road

Highway

Data collection and processing

Virtual scenario

Urban road

Highway

Realistic testing scenario

Roundabout

Feature

Authenticity

From the actual running of the vehicle

Definability

Can be expressed by language or graphics

Measurability

Can quantify the characteristic parameters

Replicability
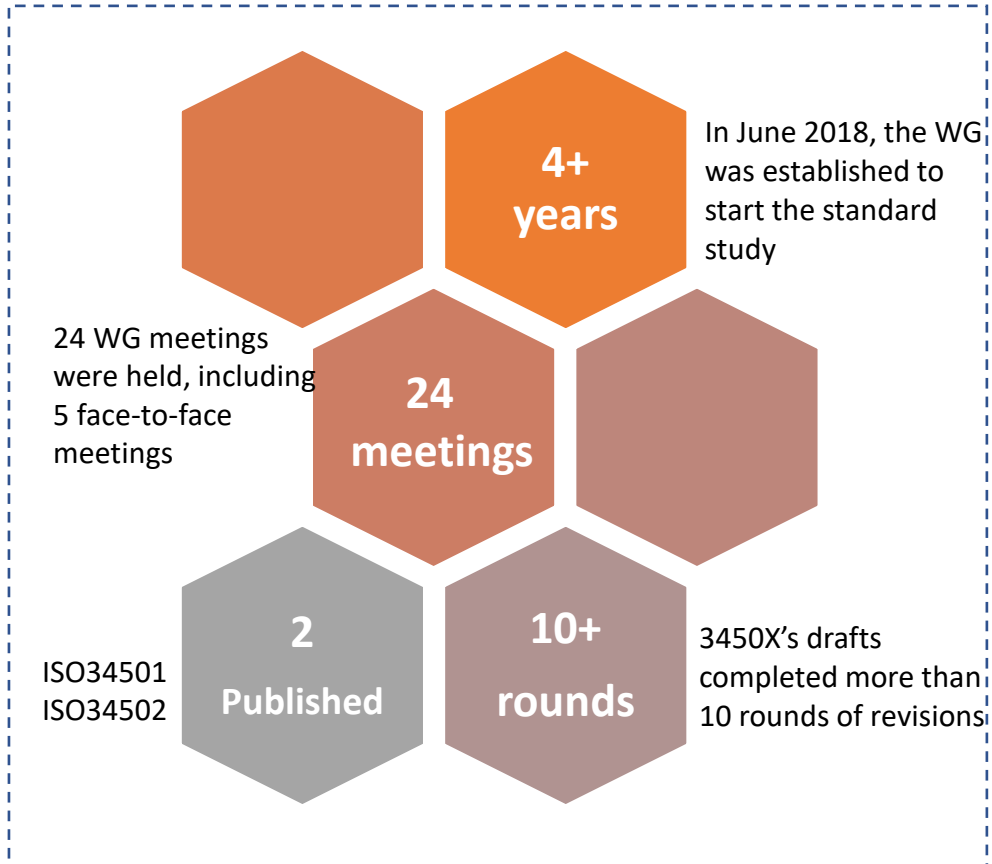
Suitable for repeated use

Adjustability

Adjust according to actual changes

Universality

Unified format is recommended

4+
years

In June 2018, the WG was established to start the standard study

24 WG meetings were held, including 5 face-to-face meetings

24
meetings

ISO34501
ISO34502

2
Published

10+
rounds

3450X's drafts completed more than 10 rounds of revisions

Standard Projects' Scopes
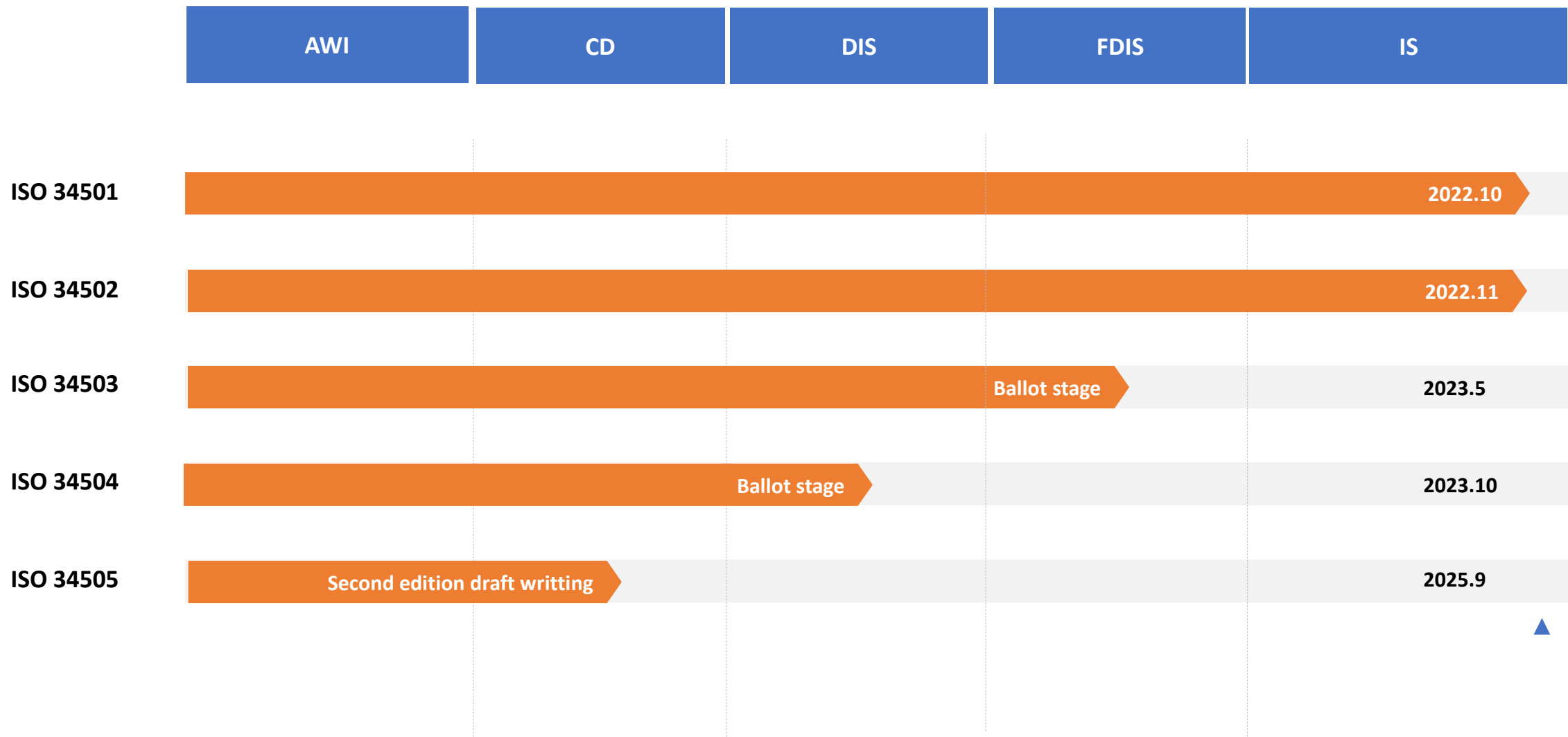
Standard title	Project Leader	Scope
ISO34501: Road Vehicles—Test scenarios for automated driving systems — Vocabulary	**China**	Serves as a dictionary to help unify the use of terms and definitions of test scenarios in the ISO3450X standard
ISO34502: Road Vehicles—Test scenarios for automated driving systems —Scenario based safety evaluation framework	**Japan&Germany**	An engineering framework and scenario-based security assessment process are described to identify trigger conditions and associated hazards that affect the intended function of the system, and to assess whether the system can be protected from unreasonable risks
ISO34503: Road Vehicles—Test scenarios for automated driving systems —Taxonomy for operational design domain	**UK&Japan**	The basic elements of ODD is defined by taxonomy, and the format to describe those elements of ODD is proposed
ISO34504: Road Vehicles—Test scenarios for automated driving systems—Scenario categorization	**Germany&NL**	Classify scenarios qualitatively or quantitatively by labeling them
ISO34505: Road Vehicles—Test scenarios for automated driving systems—Scenario Evaluation and Test Case Generation	**China&Germany**	This standard defines a methodology to evaluate the test scenarios and provides a procedure extending test scenarios to test cases for a given function in a traceable way based on the testability. This standard also defines necessary characteristics of a test case that include but not limited to test initialization, test stimulation, test steps, pass/fail-criteria and expected results etc.
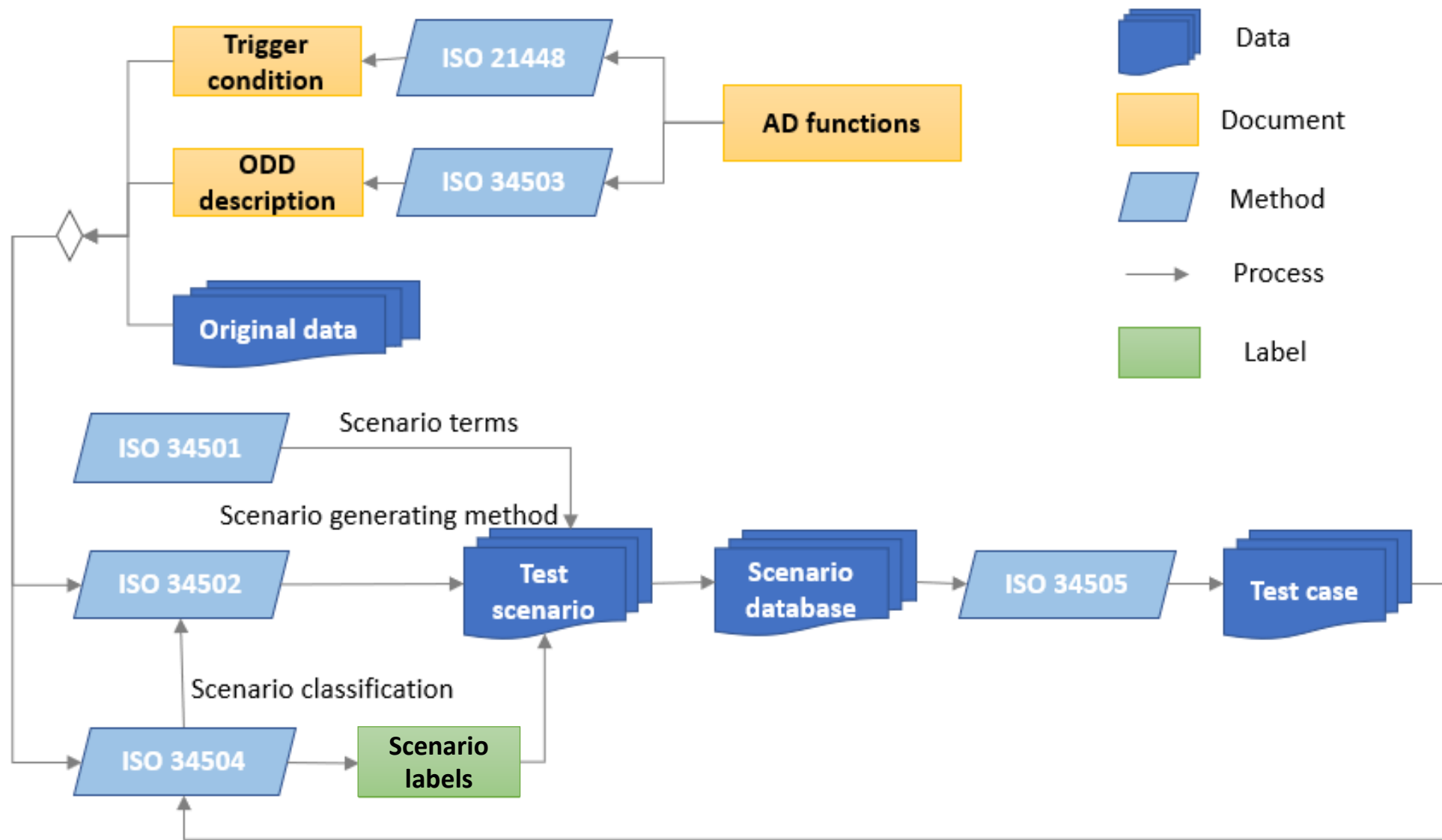
Standard Projects' Latest Status

	AWI	CD	DIS	FDIS	IS

ISO 34501 — 2022.10

ISO 34502 — 2022.11

ISO 34503 — Ballot stage — 2023.5

ISO 34504 — Ballot stage — 2023.10

ISO 34505 — Second edition draft writting — 2025.9

Communication and Cooperation

- **Continually communicate with other test scenario research organizations and establish liaison relationships**
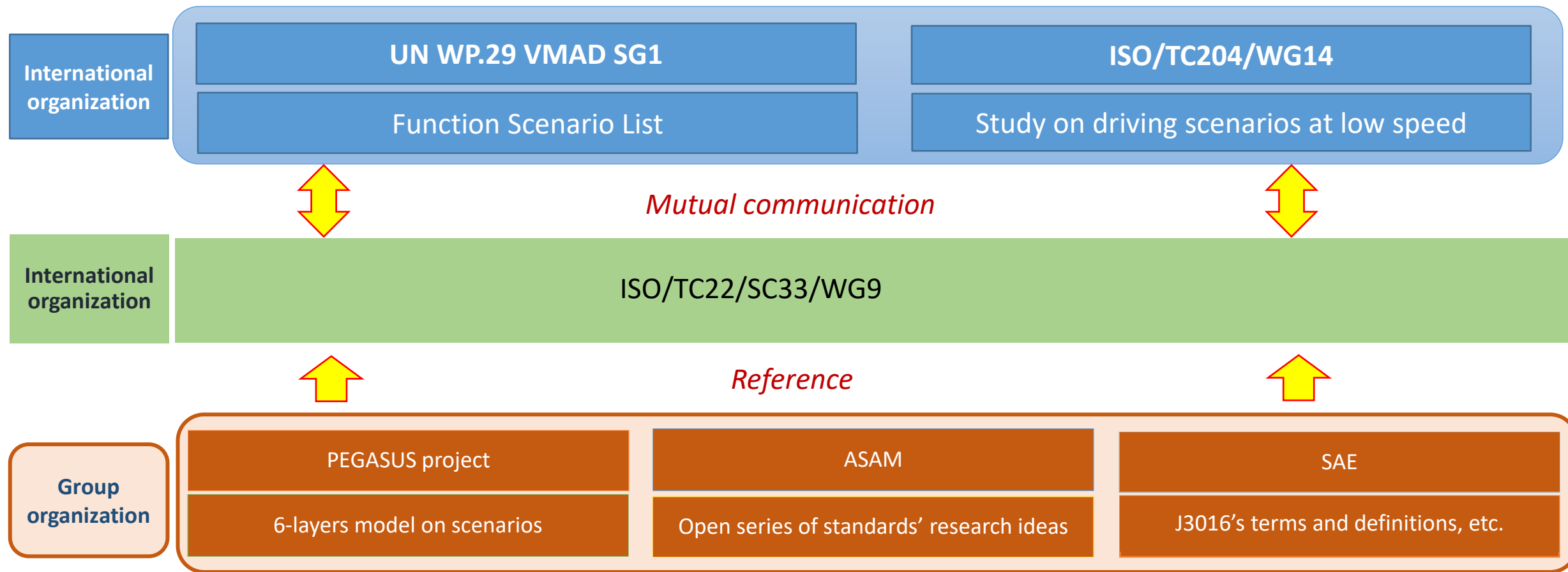
International organization	UN WP.29 VMAD SG1	ISO/TC204/WG14
	Function Scenario List	Study on driving scenarios at low speed

Mutual communication

International organization	ISO/TC22/SC33/WG9

Reference

Group organization	PEGASUS project	ASAM	SAE
	6-layers model on scenarios	Open series of standards' research ideas	J3016's terms and definitions, etc.

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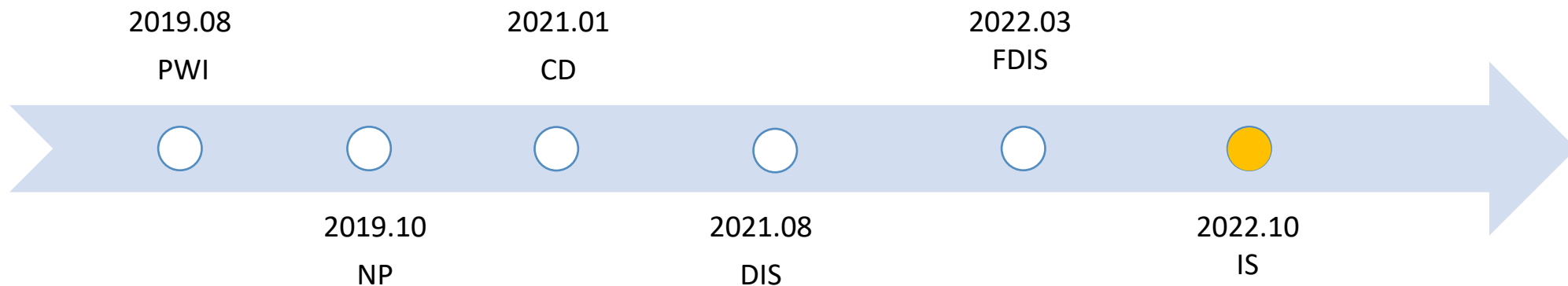
ISO TC22/SC33/WG9
Test scenarios of automated driving systems
ISO 34501 Status report

China Automotive Technology and Research Center Co.,Ltd
China Automotive Standardization Research Institute
2023.5

- **Status:** Published

- **Publication date:** 2022.10

- **Techinical Committee:** ISO/TC 22/SC 33 Vehicle dynamics, chassis components and driving automation systems testing

- **Project Leader:** Hang SUN(China)

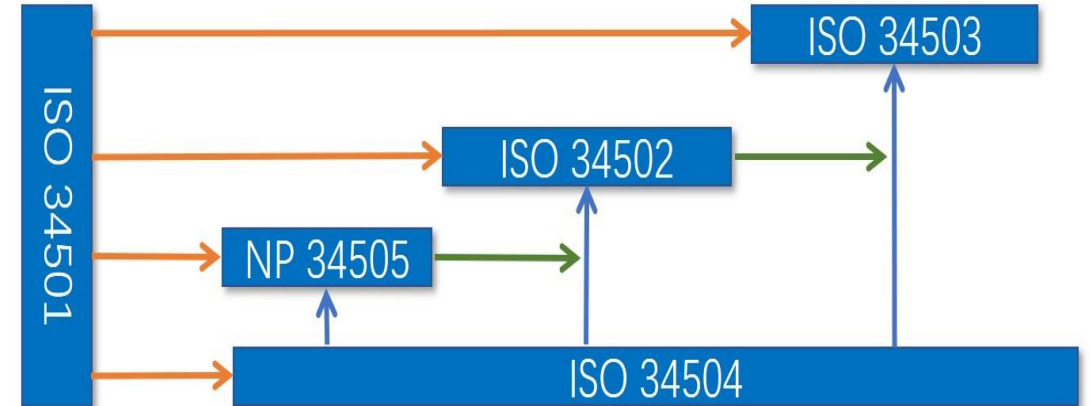| 2019.08 PWI		2021.01 CD		2022.03 FDIS	
○	○	○	○	○	●
	2019.10 NP		2021.08 DIS		2022.10 IS

General introduction

Scope

➤ The document specifies terms and definitions of test scenarios for Automated Driving Systems (ADSs), e.g. key elements, classification.

➤ The contents are intended to be applied to ADS of Level 3 and above defined in ISO/SAE PAS 22736 .

Purpose

➤ Acting as a dictionary which can provide basic ideas and clarifying interrelations of the terms commonly used in scenario engineering

Relationship with other 3450X

ISO 34501 → ISO 34503

ISO 34501 → ISO 34502

ISO 34501 → NP 34505

ISO 34501 → ISO 34504

NP 34505 → ISO 34502

ISO 34502 → ISO 34503

ISO 34504 → NP 34505

ISO 34504 → ISO 34502

ISO 34504 → ISO 34503

Reference to many significant technical projects, documents and standards

Germany PAGASUS

UK MUSICC

US SAE

Japan SAKURA

ISO 21448 SOTIF

ISO 26262 Functional safety

ASAM OPEN Series

10+ editions

3.1	automated driving system
3.2	system under test
3.3	subject vehicle
3.4	scenario
3.5	test scenario
3.6	scene
3.7	entity
3.8	static entity
3.9	dynamic entity
3.10	surrounding environment
3.11	dynamic environment
3.12	scenery
3.13	event
3.14	trigger
3.15	action
3.16	actor
3.17	situation
3.18	manoeuvre
3.19	attribute
3.20	tag
3.22	functional scenario
3.23	abstract scenario
3.24	logical scenario
3.25	concrete scenario
3.26	operation design domain
3.27	dynamic driving task
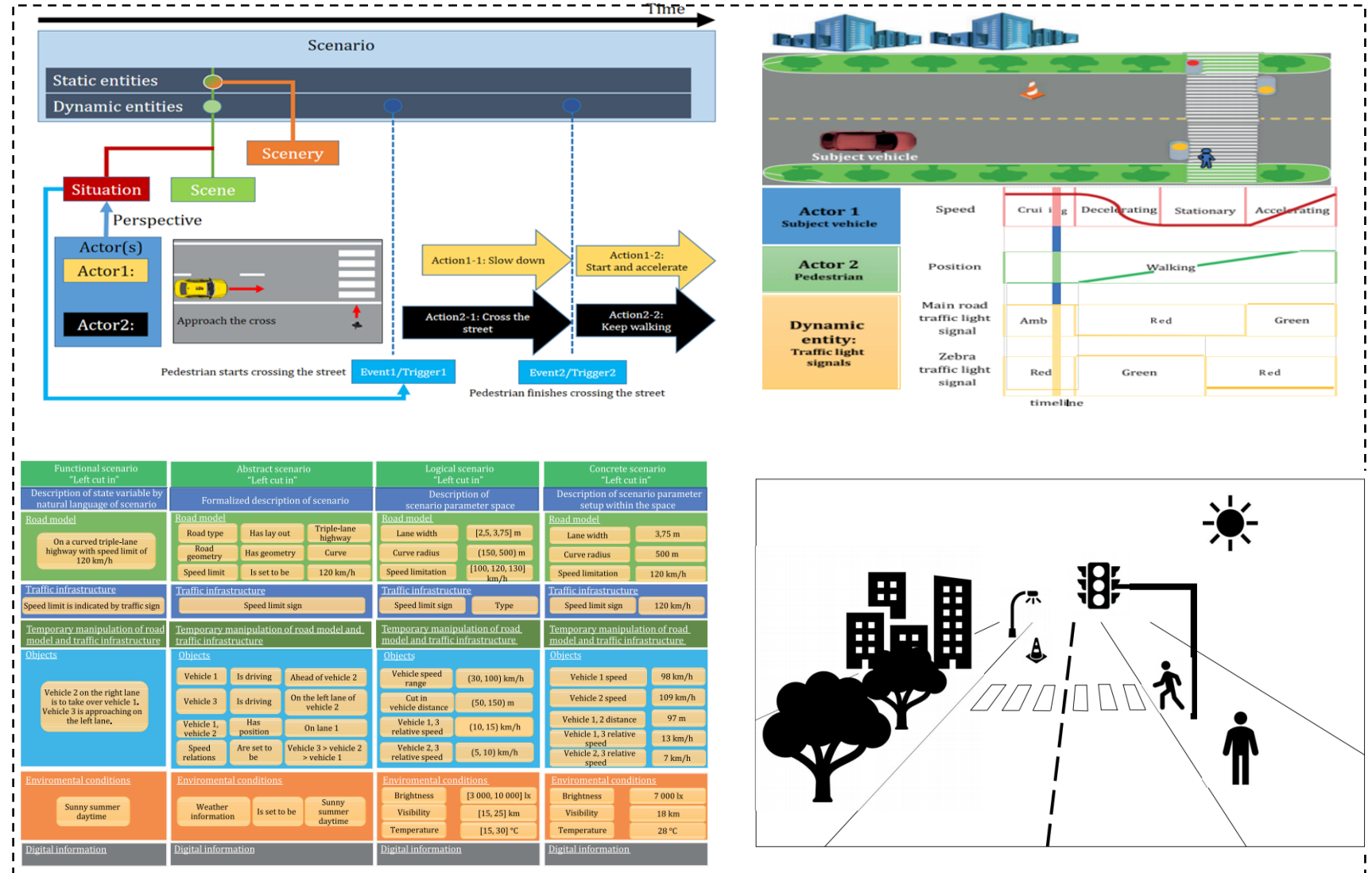
Specify the definition of terms related with scenario

Clarify the technical logic relationship of terms

Major Milestone:

- 10-2018 Meeting in Sweden: First Working Group Meeting
- 07-2019 Meeting in China: NP for 34501-34504, PWI for 34505
- 04-2021: 34501 & 34502 CD ballot approved
- 03-2022: 34501 & 34502 DIS ballot approved
- 08-2022: 34504 CD ballot approved
- 09-2022: 34503 DIS ballot approved, NP for 34505
- **10-2022: 34501 & 34502 IS published**
- 05-2023: 34503 FDIS approved, ready to be published, 34504 DIS ballot approved

Upcoming Meetings:

- 06-2023 Meeting in Germany: New projects discussion
- 09-2023 Meeting TBD: Finalizing 34504 and CD draft for 34505

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