S N O W B O X

S N O W B O X ARCTIC AUTONOMOUS DRIVING

ISO 34500 serie: Test scenarios for ADS Operational Design Domain, ODD

SNOWBOX – test area for conneted automated vehicles (CAV)

Snowbox provides winter and cold testing environment and facilities for CAV technologies. It combines public roads, cross-border corridors as well as independent proving grounds with its partners. The facilities are completed with professional snow-how knowledge, engineering and information services, and digital infrastructure to contribute self-driving vehicle industry to obtain weather-proof technological and worldwide scalable solutions.

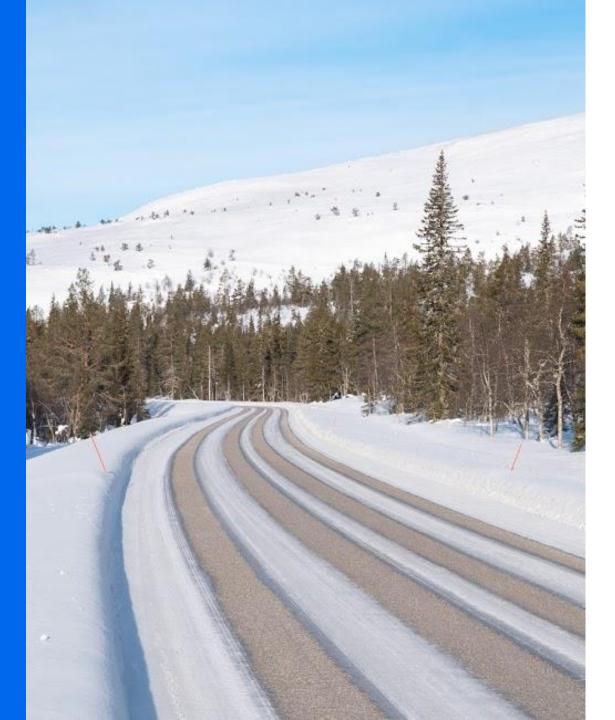




ISO 34500 – TEST SCENARIOS FOR ADS

- Simulation
- Proving ground
- Open environment testing
- Terms and definitions
- Structure and processes
- Taxonomy
- Test scenarios

- Standardisointiin vaikuttaminen
- Standardien hyödyntäminen omassa toiminnassa
 - > Snowbox strategia
 - > liiketoiminta
- Verkostoituminen

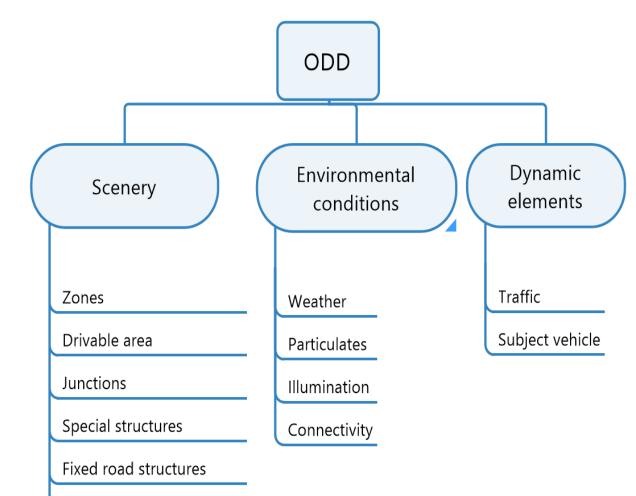


S N O W B O X

Operational Design Domain, ODD

- Operating conditions under which a given driving automation system or feature thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of certain traffic or roadway characteristics.
- Defining the limitations is more important than capabilities
- ODD is especially for higher levels of automation – SAE level 3 and 4

A TOP-LEVEL TAXONOMY OF THE ODD ATTRIBUTES



Temporary road structures

- Scenery: non-movable elements of the operating environment
- Environment: weather and other atmospheric conditions
- **Dynamic elements:** all movable objects and actors in the operating environment

infrastructuretoadPhysicalStaticipped rangePhysicalStaticihoulder or kerbPhysicalStaticitoad markingsPhysicalStaticiraffic signsPhysicalStaticiraffic signsPhysicalStaticimagePhysicalStaticimagePhysicalStaticimagePhysicalStaticimagePhysicalStaticimagePhysicalStaticimage-Dynamicimage-DynamicimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalStaticimageDigitalDynamicimageDigitalDynamicimageDigitalDynamicimagePhysical/DigitalDynamicimageDigitalDynamicimageDigitalDynamicimageDigitalDynamicimageDigitalDynamicimageDigitalDynamic	The list of ODD attributes produced in 2017-2019 by EU EIP and MANTRA			
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	Infrastructure maintenance	Physical/Digital	Dynamic	
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	Digital twin of road network	Digital	Dynamic	

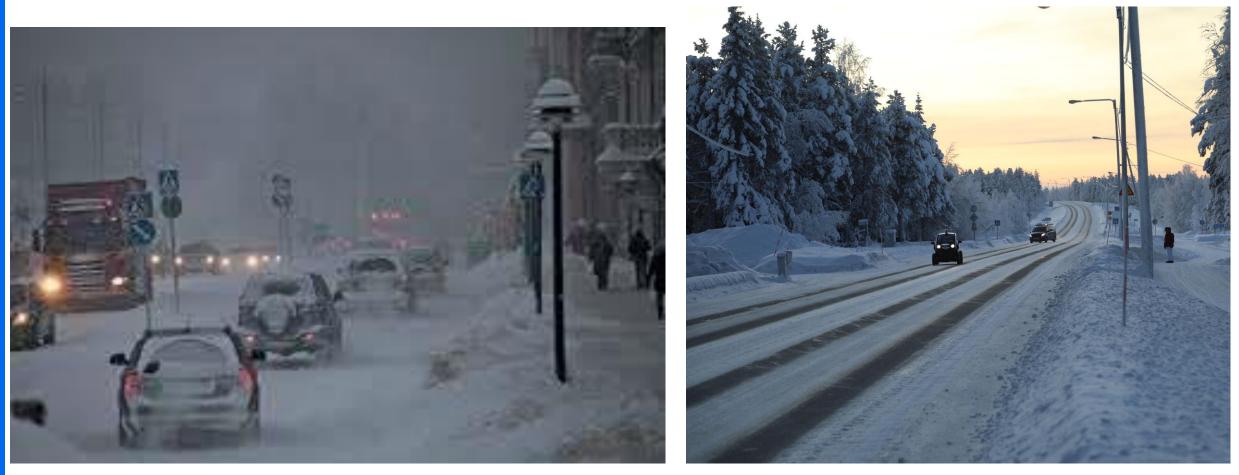
Roadway Surfaces - Surface de la route			
Asphalt	Yes		
Asphalte			
Concrete	Yes		
Béton			
Mixed= Asphalt + concrete	Yes		
Grating	No		
Grille (e.g. grille d'égoût)			
Brick	No		
Pavés			
Dirt	No		
Poussières, Saletés sur la route			
Gravel	No		
Graviers			
Scraped road	No		
Route grattée			
Speed bumps	No		
Ralentisseurs			
Potholes	No		
Trous / Nids de Poule			
Grass	No		
Herbe			
Roadway Edges & Markings			
Bords de route & Signalisation horizontale & Bords de route			
Lane markers	Yes = Clear markers		
Simulication hunicantale	$O_{\rm eff} = 0.0000000000000000000000000000000000$		

Belgian brick road (Routes pavées Belges)



ISO 34503 Taxonomy for ODD

2 layers of Finnish ODD: Slush and Snowbox



END-USERS / STAKEHOLDERS POINT OF VIEW

- It may also be seen from **the perspective of the end-user** as the operating environment in which a system should be able to operate safely
- Allow end users (e.g. insurers, regulators, service providers, national, local and regional government), operators and regulators to reference a minimum set of ODD attributes and performance requirements in their procurements.