



**MINISTÈRE
CHARGÉ
DES TRANSPORTS**

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Agenda item 4(g)



SCENARIOS BASED DESIGN, VALIDATION AND HOMOLOGATION FRENCH VIEWS

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Design, validation, homologation are using scenarios

LEGACY

Accumulating real world driving data then recorded data replay for design & validation of SOTIF

Mileage ~ M or B km
Resimulation, but no or few Simulation

ADAS and AD L2, 3 & 4 validation / safety proof through scenarios mandatory

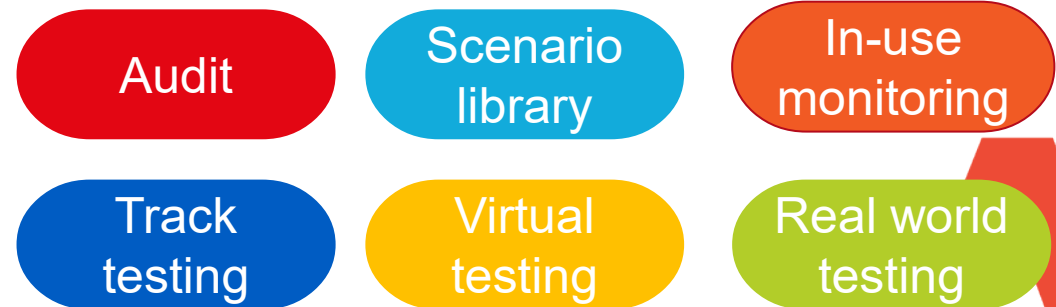
 21448 2020	 Multipillar approach 2020	 UN R 152 UN R157 NATM	 ADS ACT EU 2022/1426	 FR law LOM 2019-2022
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SAFETY BY DESIGN

Validation by scenarios representative from real world driving data, data from accidentology & risk analysis

IMPROVED SAFETY using RETEX
Simulation & Scenarios as a Safety proof

MULTI-PILLAR APPROACH



State of the art approach

FOR DESIGN, VALIDATION (SOTIF BUT NOT ONLY), & HOMOLOGATION

- **Real World Driving, Simulation and Scenarios capitalisation are necessary, to mitigate unintended behaviours**
 - Perception e.g. scenarii/objects driving to false Positive or False Negative events.
 - Decision e.g. a wrong decision occurs during this scenario
 - Cooperation with humans inside or outside the vehicle
- **Region dependency might deserve attention (traffic signs, road infrastructure)**
- **Scenario library initiatives are already on-going ... since 2019 PFA position is to promote scenarios libraries interoperability.**



Why a common scenarios library in France ?

- **The worldwide ecosystem recognizes that the validation of automated driving & transport systems' safety is based on scenarios:**
 - Usable by manufacturers during design and physical or virtual validation phases and for « safety » demonstration
 - Generated by combinatory approach through scenarios parameter/descriptors
 - Usable for the Product General Safety
- **To contribute to the definition of scenarios for the homologation**
- **To define the state of the art for the industry and the authorities**
- **To be used also in the French authorization of Automated Road Transport System owing to national framework (LOM law).**

ADScene

An industrial scenarios library
for ADAS & ADS design, validation and homologation

app.adscene.io

(Limited access)





Welcome to ADScene

Come on in

Browse the most relevant scenarios for your AD systems

[Get Started](#)

Scenarios Manager

Create scenarios, See containers.

Scenarios Manager

Create scenarios, See containers.

Scenarios Browse

Find your scenario, Show statistics.

Scenarios Browse

Find your scenario, Show statistics.

Documentation

Datamodel reference.

Documentation

Datamodel reference.

ADSCENE: a solution to take up the challenge of scenario database

- At state-of-the-art for designing, validating & homologating automated driving functions
- A multi-partner scenario database

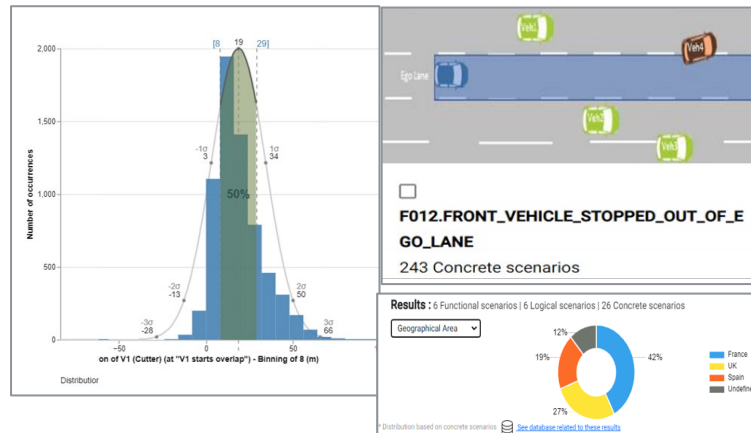
A secured, industrial SaaS platform providing analysis & management tools

Data content

Scenario types	Data input type	Data available
Real-world driving data	<ul style="list-style-type: none"> > Real-world driving data > Corner cases 	<ul style="list-style-type: none"> > 110 logical scenarios > ~ 2 millions concrete scenarios
Incidents (near crash)	<ul style="list-style-type: none"> > French & European database 	<ul style="list-style-type: none"> > ~ 70 concrete scenarios
Accidents	<ul style="list-style-type: none"> > Reports on accidents involving bodily injuries in French, Germany & USA 	<ul style="list-style-type: none"> > ~ 500 concrete scenarios
Expertise & Regulation / NCAP	<ul style="list-style-type: none"> > Regulations & NCAP > OEM expert knowledge on critical driving situations 	<ul style="list-style-type: none"> > 150 scenarios available > To be defined

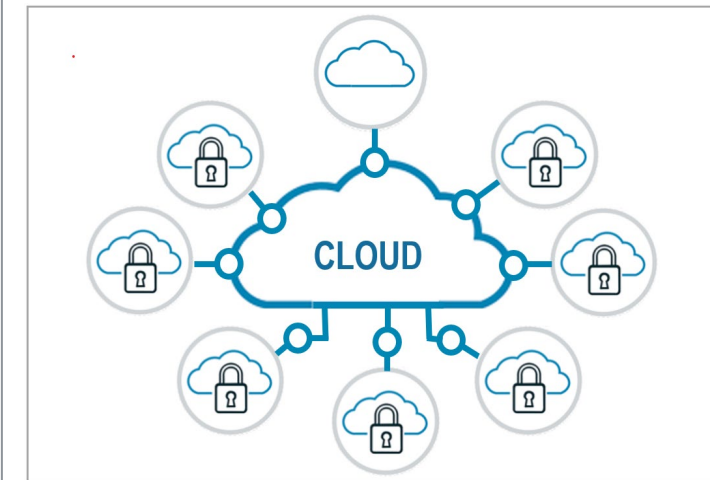
A multisource approach

Features & tools



- Creation of scenarios
- Creation of usecases & test protocols
- Scenario browser & data visualisation
- Management of statistics from scenarios
- Link to simulation software

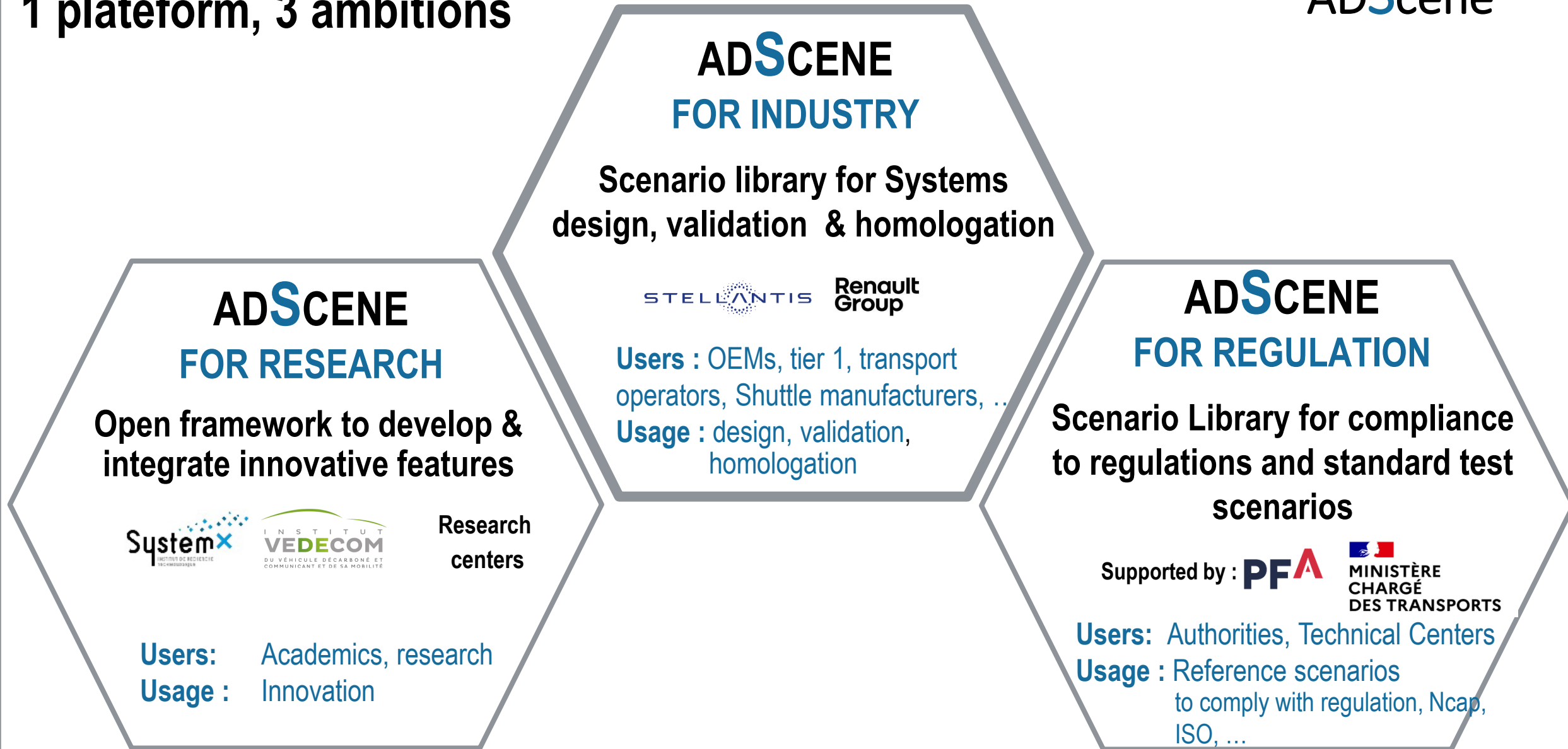
Secured environment



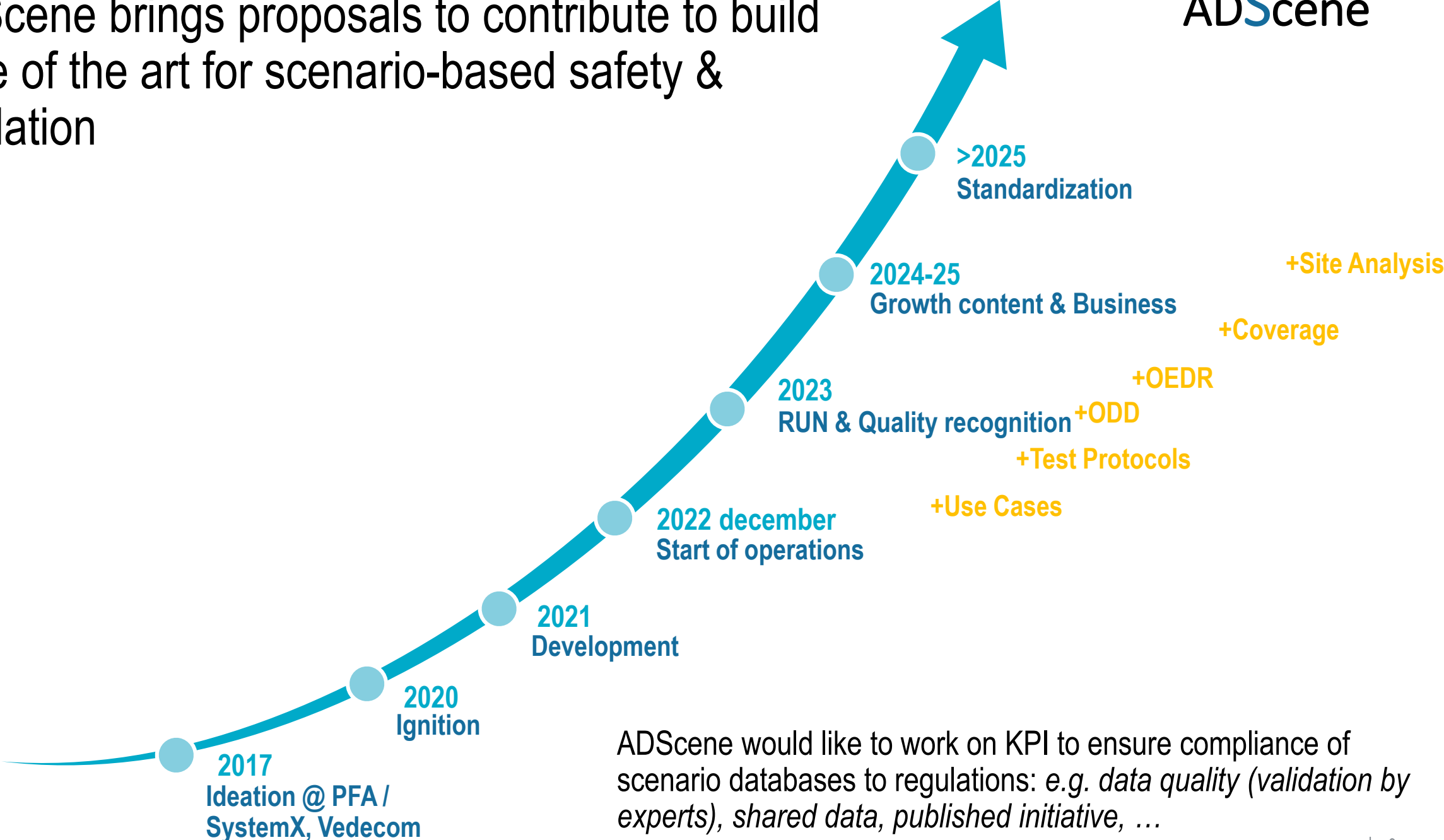
- Private environment for each OEM
- Shared environment for collaborative activities
- Easy to interface

1 platform, 3 ambitions

ADScene



ADScene brings proposals to contribute to build state of the art for scenario-based safety & validation



ADScene would like to work on KPI to ensure compliance of scenario databases to regulations: *e.g. data quality (validation by experts), shared data, published initiative, ...*



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**THANK YOU
MERCI**