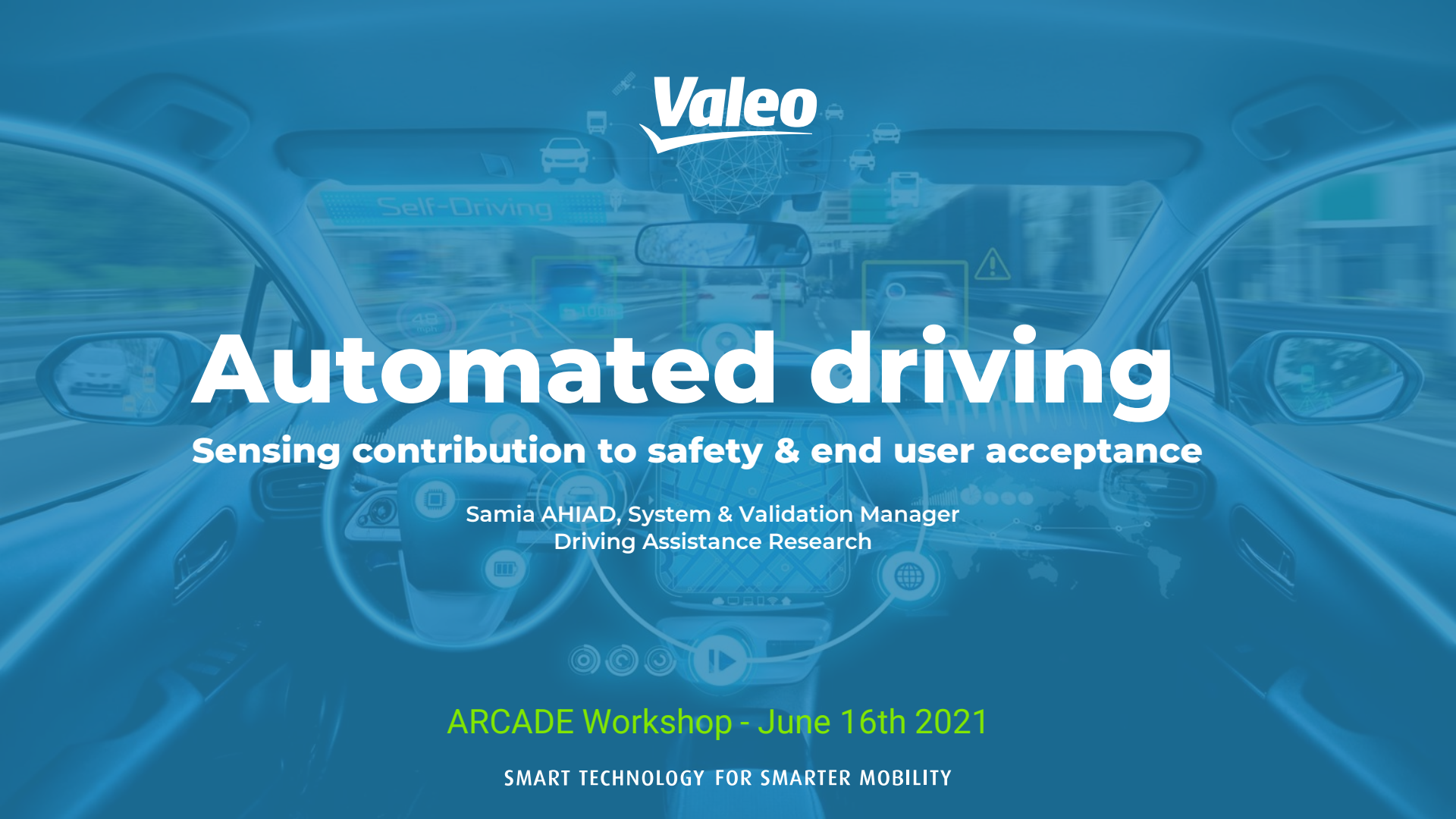


Automated driving

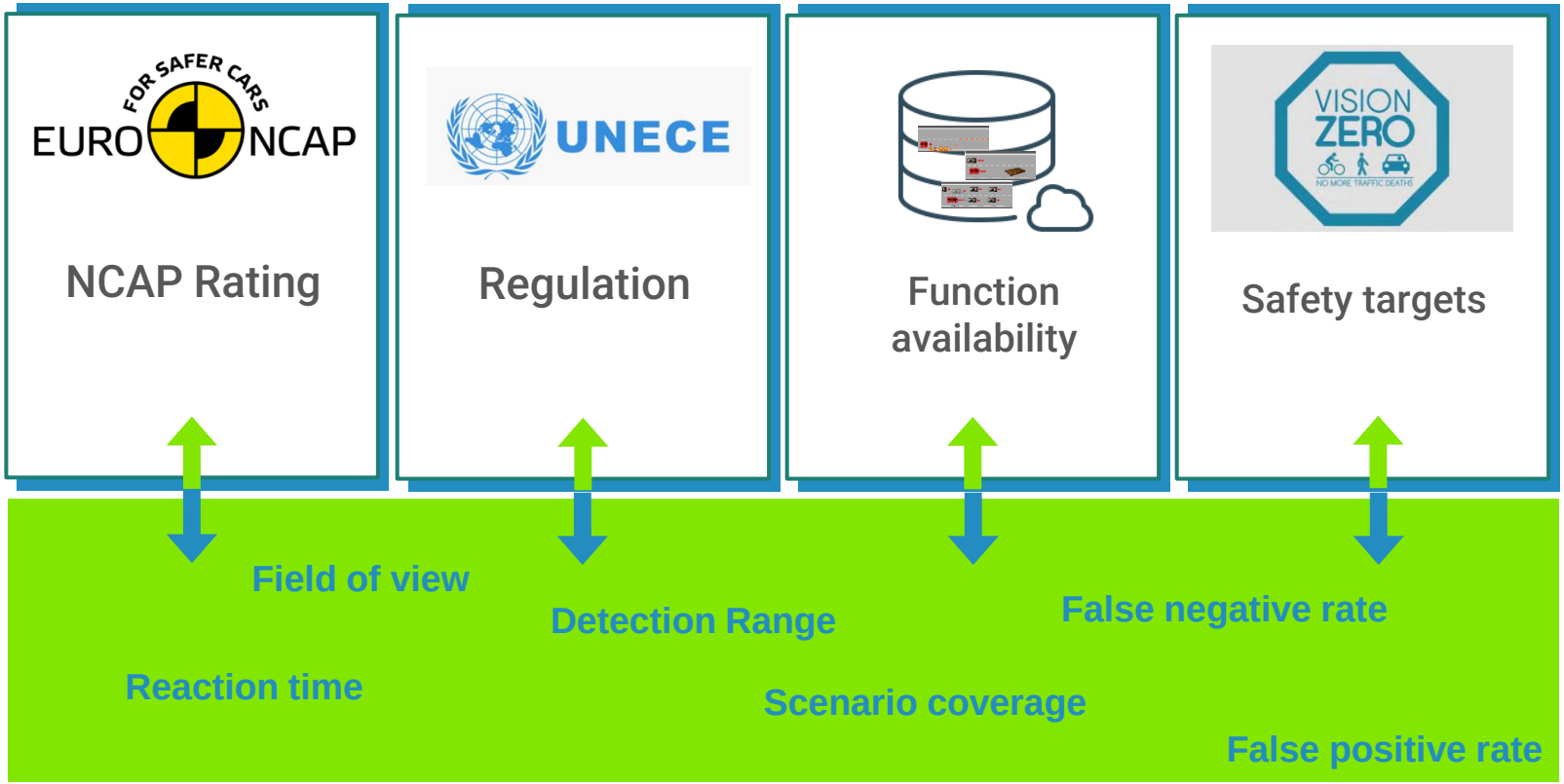
Sensing contribution to safety & end user acceptance

Samia AHIAD, System & Validation Manager
Driving Assistance Research

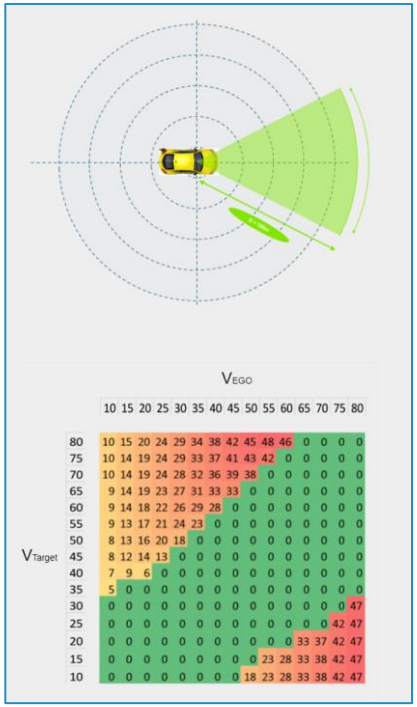
ARCADE Workshop - June 16th 2021

SMART TECHNOLOGY FOR SMARTER MOBILITY

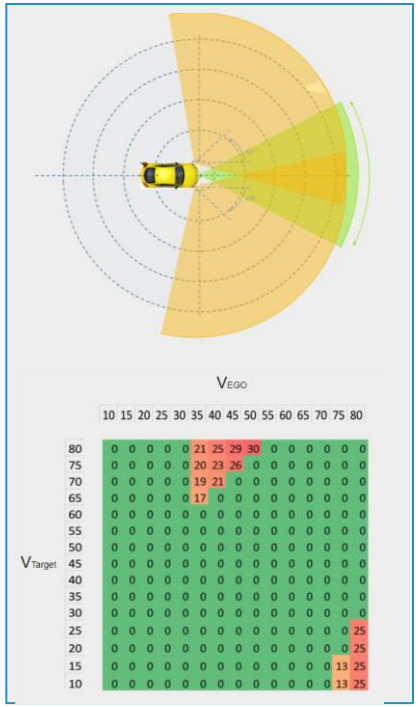
User Acceptance & Safety are dependent on Sensing capabilities



NCAP assessment



SCP C2C - sensing 1



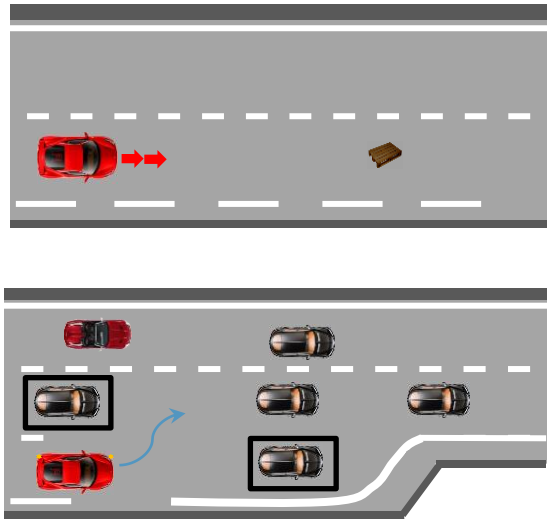
SCP C2C - sensing 2

- Euro NCAP rating is one of the main user acceptance criteria
- Sensing system is most dimensioning factor
- Scenarios number expected to explode in the near future
- Simulation becoming a major pillar starting at 2023

TOWARD AN INDUSTRY STANDARD FOR VIRTUAL MEANS AND QUALIFICATION ?

Regulation

Toward higher speeds and additional features as automatic lane change



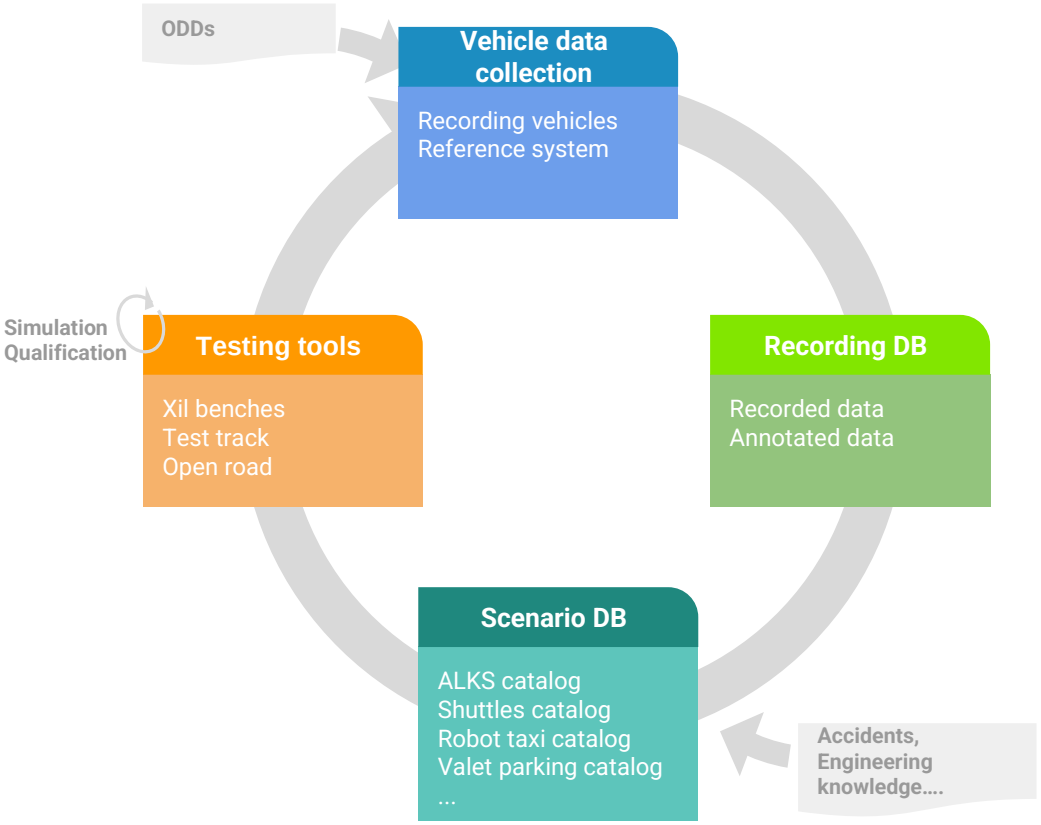
At 130 kph, detection ranges up to 250 m might be required

- In addition to avoiding collisions, the ADS shall behave at least as good as a skilled human driver (or a safety model)
- Higher ranges & resolution to handle high operating speed
- Redundancy, Diversity & Sophisticated fusion strategies required to handle TP/FP rates

LANE CHANGE & DETECTION OF DIVERSE OBJECTS AT HIGH SPEED TO INCREASE THE FUNCTION AVAILABILITY

Valeo

Scenario database



- Target mileage not fully achievable by real data compain;
- Redundancy & Driving policy required for target decomposition
- Scenarios are basis for monitoring the availability & safety indicators

COLLABORATION CAN ACCELERATE DATABASE INDUSTRIALIZATION & SCALABILITY

Valeo

Safety target

ODD related Accidentology

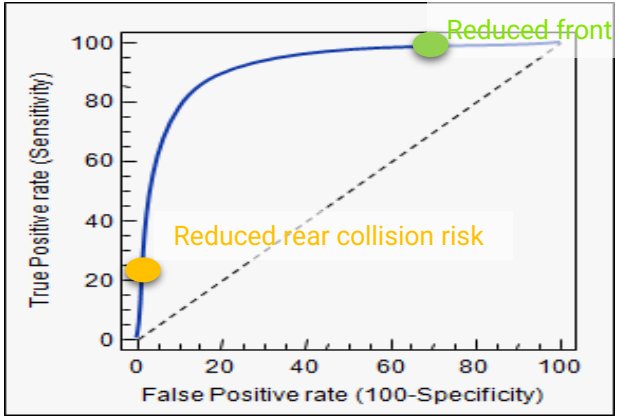
Safety Enhancement factor

Statistical confidence margin

Function quantitative target

Perception quantitative target

Sensor FP/FN target rate



- Targets are specific to operating domain, they can be derived from accidentology
- Machine learning FP/FN rates should be derived from quantitative targets
- Redundancy & Sophisticated fusion required to reach targets

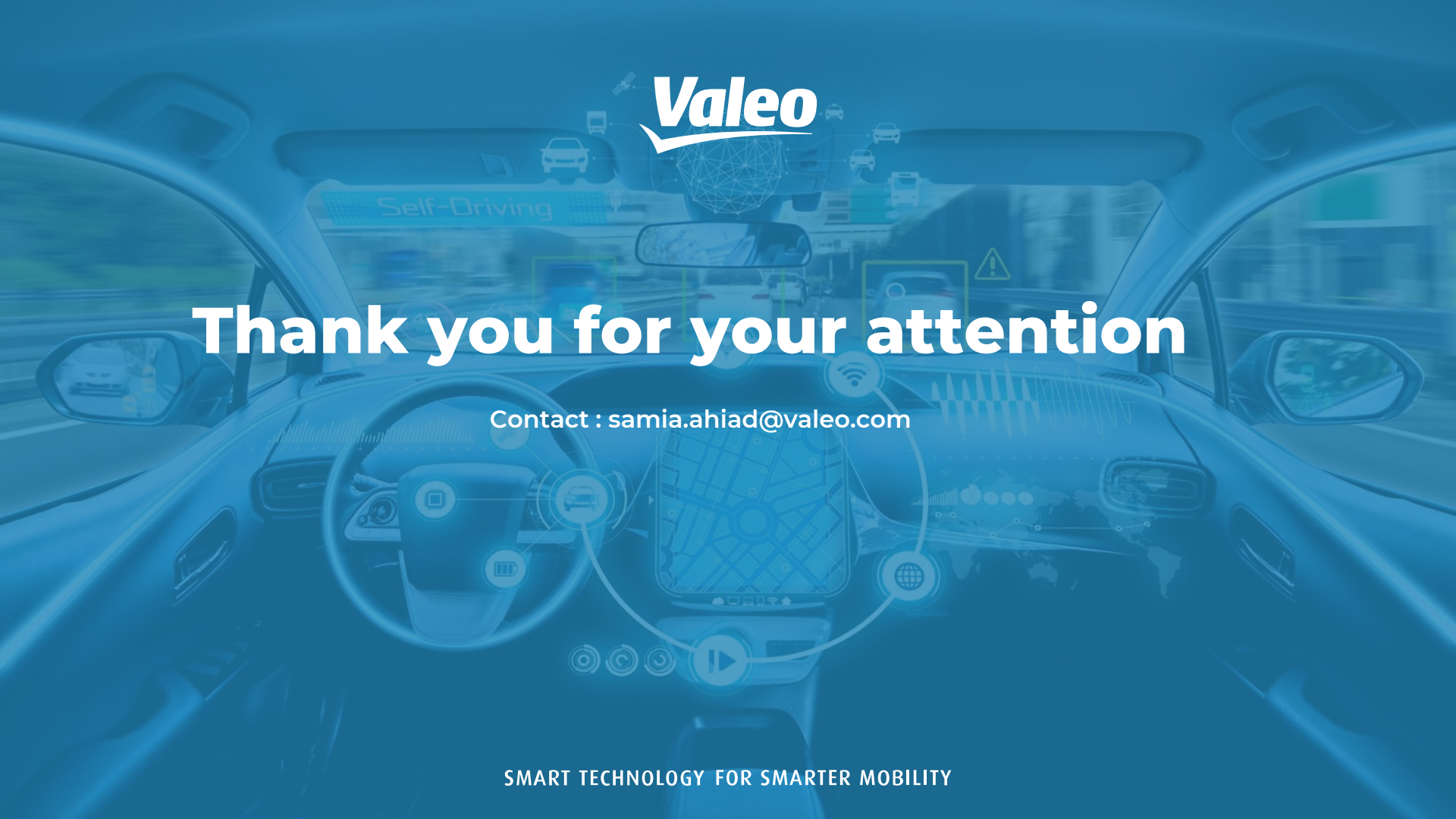
OVERALL METHODOLOGY FOR POSITIVE RISK DEMONSTRATION IS TECHNOLOGY AGNOSTIC AND SHOULD BE STANDARDIZED

Valeo

SUM UP

- Valeo sensors roadmap aligned with end user expectations for Safety & Availability

- Next steps of collaboration & homologation preparation :
  - Virtual data qualification to leverage more simulation
  - Scenario database industrialization & scalability
  - Building standards for positive risk balance demonstration


Valeo
Self-Driving
Thank you for your attention
Contact : samia.ahiad@valeo.com
SMART TECHNOLOGY FOR SMARTER MOBILITY