Piloting Automated Driving on European Roads

ARCADE Data sharing workshop

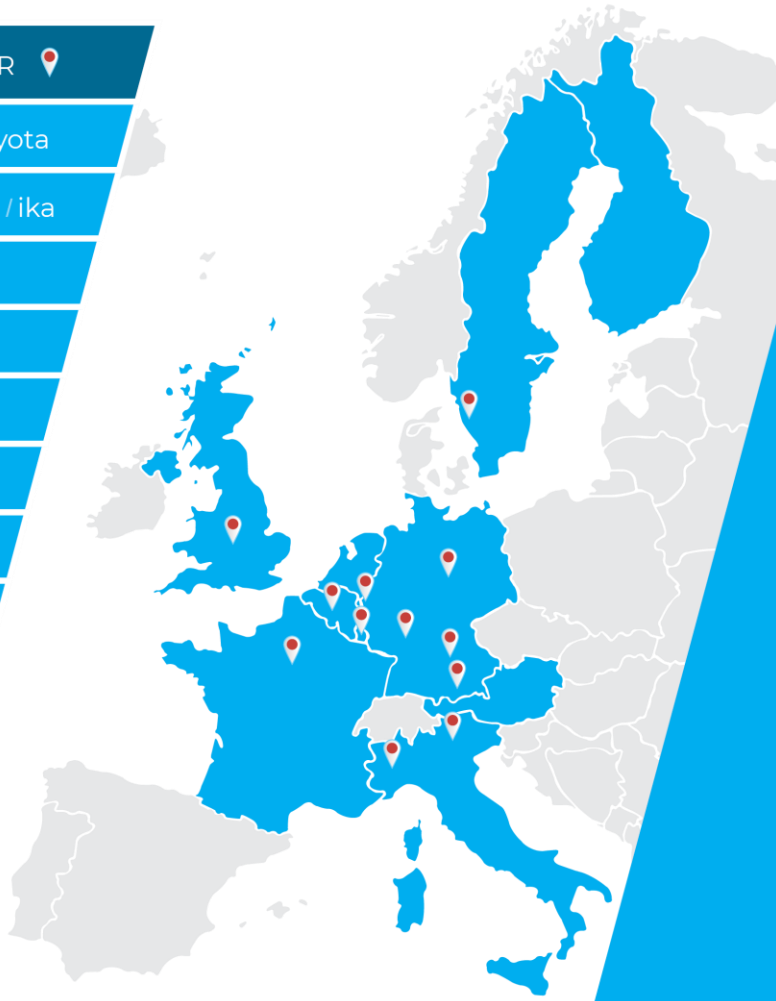
Virtual event, Feb 25th 2021

Yves Page, RENAULT

RENAULT
Passion for life

Pilots across Europe

COUNTRY / REGION / PARTNER	
BE / Brussels	Toyota
DE / Aachen, Cologne	FEV / ika
DE / *UK* / *BE*	Ford
DE / Munich	BMW
DE / Offenbach	Honda
DE / Wolfsburg, Hamburg	VW
DE / Ingolstadt	Audi
FR / Paris and other regions	REN / PSA
IT / Turin, Trento	CRF
DE / *FR* / *LU*	Aptiv
SE / Gothenburg	Volvo
UK / Coventry	JLR
+ Cross-border activities	



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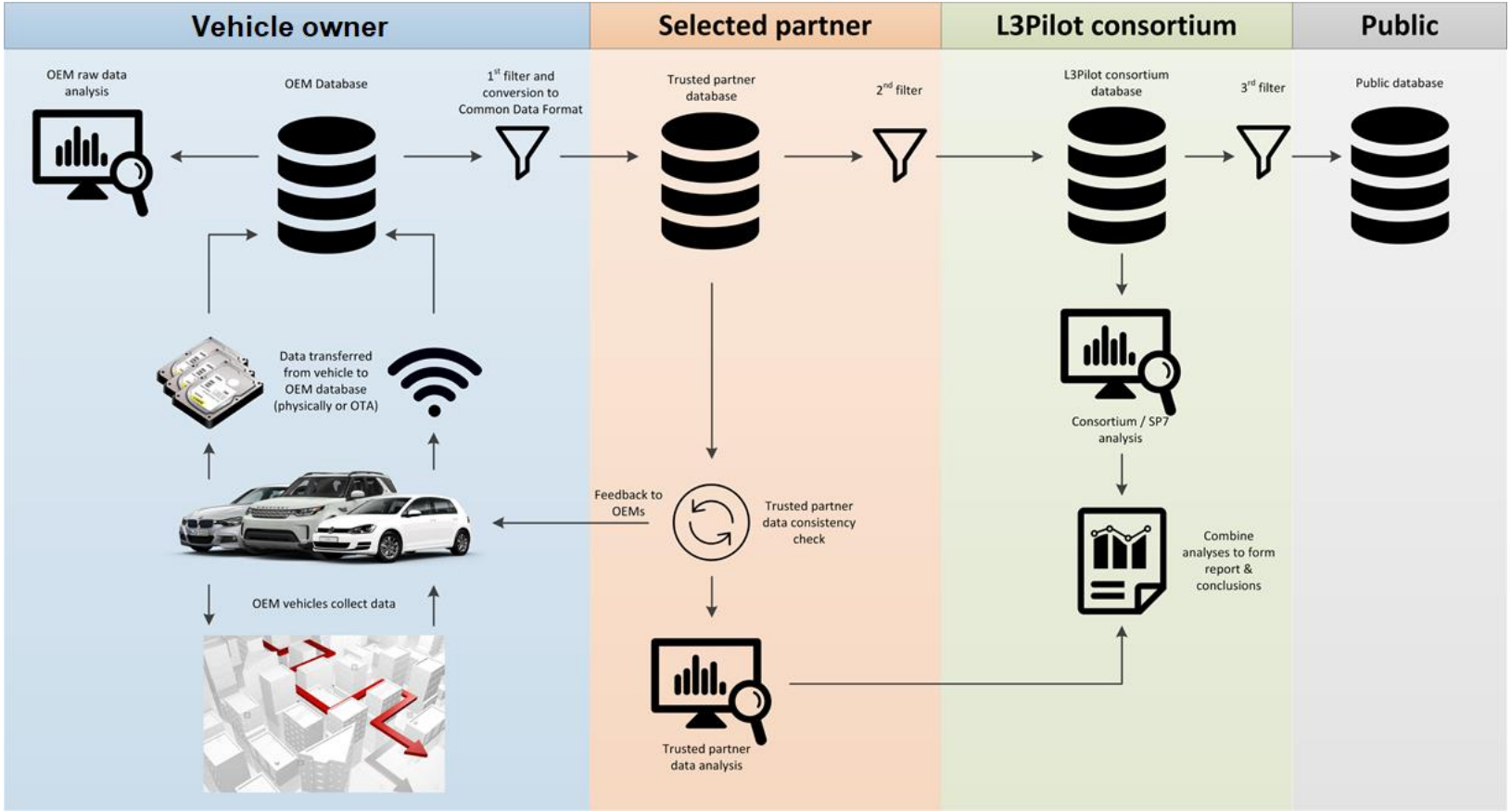
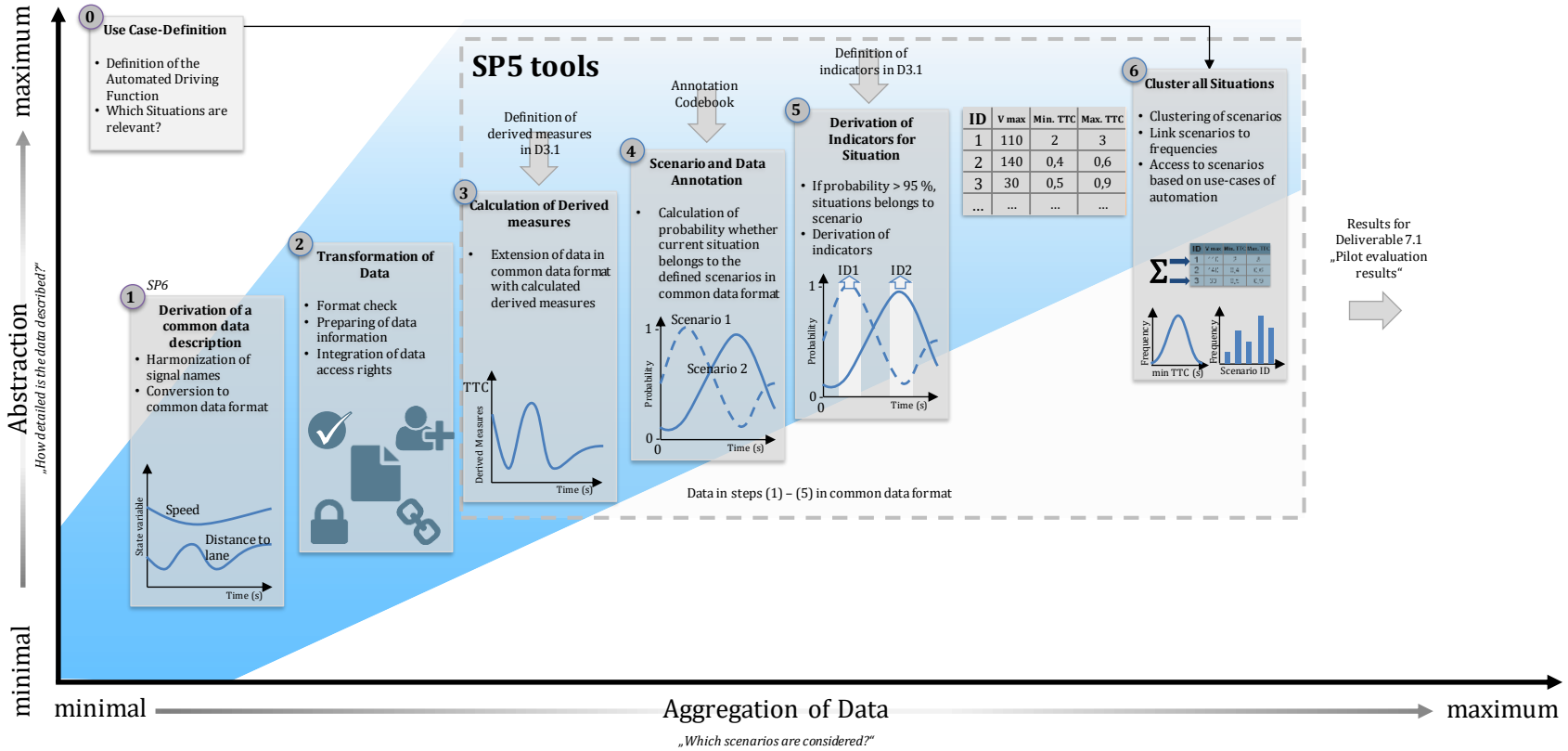

Vehicle owner
Selected partner
L3Pilot consortium
Public
OEM raw data analysis
OEM Database
1st filter and conversion to Common Data Format
Trusted partner database
2nd filter
L3Pilot consortium database
3rd filter
Public database
Data transferred from vehicle to OEM database (physically or OTA)
Consortium / SP7 analysis
Feedback to OEMs
Trusted partner data consistency check
Combine analyses to form report & conclusions
OEM vehicles collect data
Trusted partner data analysis


maximum
Abstraction
„How detailed is the data described?"
minimal
0
Use Case-Definition
• Definition of the Automated Driving Function
• Which Situations are relevant?
SP5 tools
Definition of derived measures in D3.1
Annotation Codebook
Definition of indicators in D3.1
1
SP6
Derivation of a common data description
• Harmonization of signal names
• Conversion to common data format
State variable
Speed
Distance to lane
Time (s)
2
Transformation of Data
• Format check
• Preparing of data information
• Integration of data access rights
3
Calculation of Derived measures
• Extension of data in common data format with calculated derived measures
TTC
Derived Measures
Time (s)
4
Scenario and Data Annotation
• Calculation of probability whether current situation belongs to the defined scenarios in common data format
Scenario 1
Scenario 2
Probability
Time (s)
5
Derivation of Indicators for Situation
• If probability > 95 %, situations belongs to scenario
• Derivation of indicators
ID1
ID2
Probability
Time (s)
ID | V max | Min. TTC | Max. TTC
1 | 110 | 2 | 3
2 | 140 | 0,4 | 0,6
3 | 30 | 0,5 | 0,9
... | ... | ... | ...
6
Cluster all Situations
• Clustering of scenarios
• Link scenarios to frequencies
• Access to scenarios based on use-cases of automation
Frequency
min TTC (s)
Scenario ID
Data in steps (1) – (5) in common data format
Results for Deliverable 7.1 „Pilot evaluation results"
minimal
Aggregation of Data
maximum
„Which scenarios are considered?"

L3Pilot Consolidated database

- Facilitates merging of performance indicators across pilot sites per driving scenarios
- Aggregated, pseudonymous data uploaded by
  - 11 vehicles owners for motorway
  - 3 vehicle owners for urban
- Aggregated data can be downloaded by analysis partners.

- Scenarios types created by common processing framework
  - Uninfluenced (free) driving (+chunked instances)
  - Following/approaching a lead vehicle (+chunked instances)
  - Driving in traffic jams
  - Cut-ins
  - Lane changes
  - Incidents (forward, rear, side)
  - *Extended scenario list for urban driving (crossing, turning, laterally moving objects)*

Thank you for your kind attention.

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