Project introductions

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- FR SAM: Nadège Faul, Vedecom
- EU Headstart: Bernard Hillbrand, ViF
- EU L3Pilot: Satu Innamaa, VTT



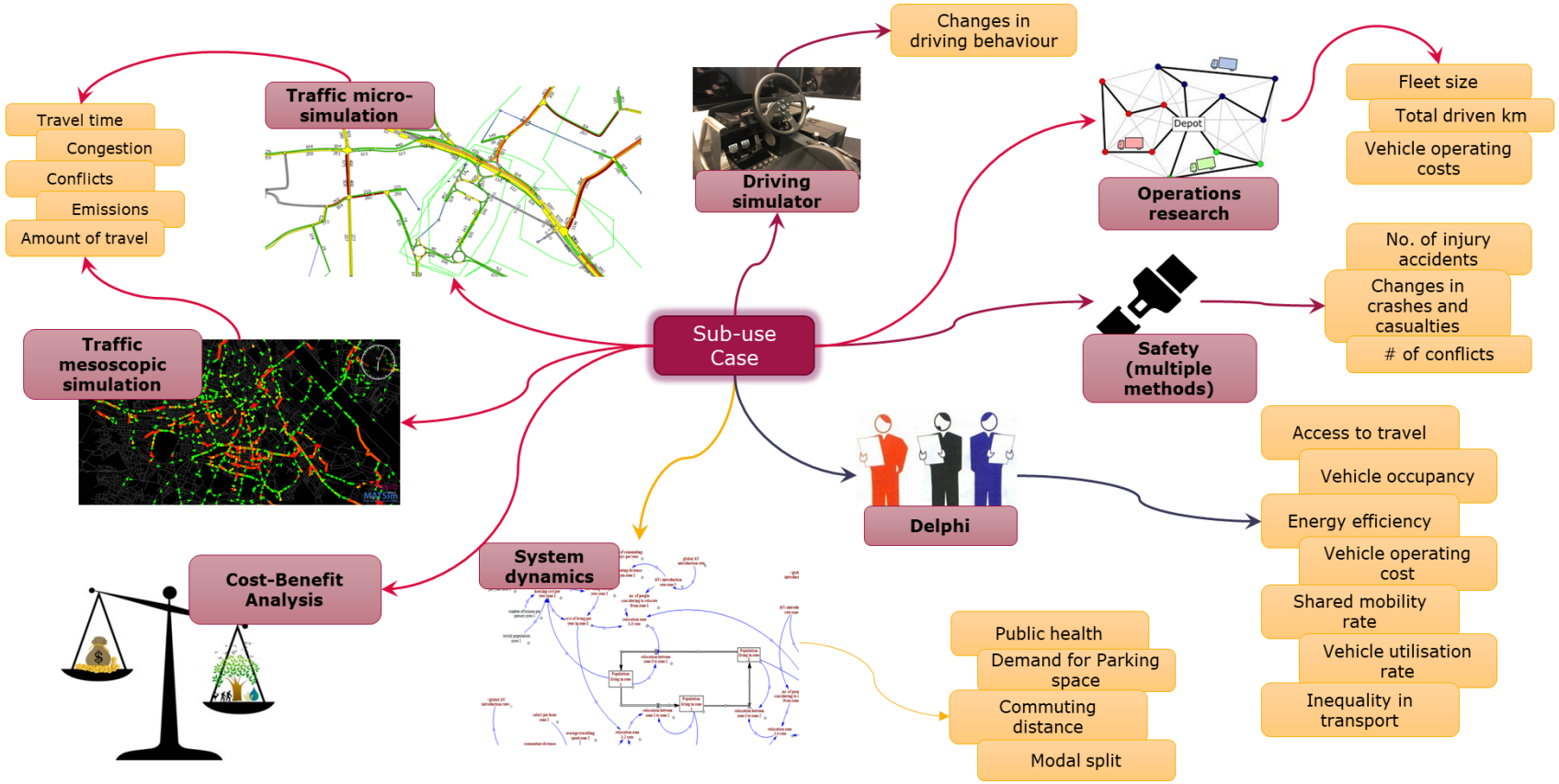

ARCADE

Project introduction

- LEVITATE - Societal **Lev**el **I**mpacts of Connec**t**ed and **A**utoma**t**ed Vehicl**e**s
  - EU Horizon 2020 – Grant agreement No. 824361
- City-level forecasts
- Project goal
  - To incorporate the methods (those come from objective 3) within a **new web-based policy support tool** to enable **city and other authorities** to forecast impacts of CATS on urban areas.
  - To develop a range of **forecasting and backcasting** scenarios and baseline conditions
  - To establish **a multi-disciplinary methodology** to assess the short, medium and long-term impacts of CATS
  - To apply the methods and **forecast the impact of CATS** over the short, medium and long term
- Project size (person months)
  - **566**

Methodology in your project

- Evaluation framework – widely applicable for field-trials, evaluate systems and technologies.
- Scalable to regional and national level.
- Transferable to other cities/regions/nations.
- Can form the basis of common evaluation methodology



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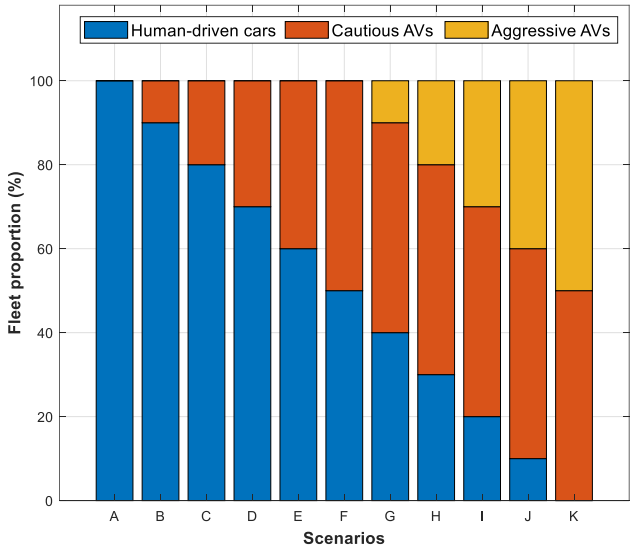
Methodology gaps

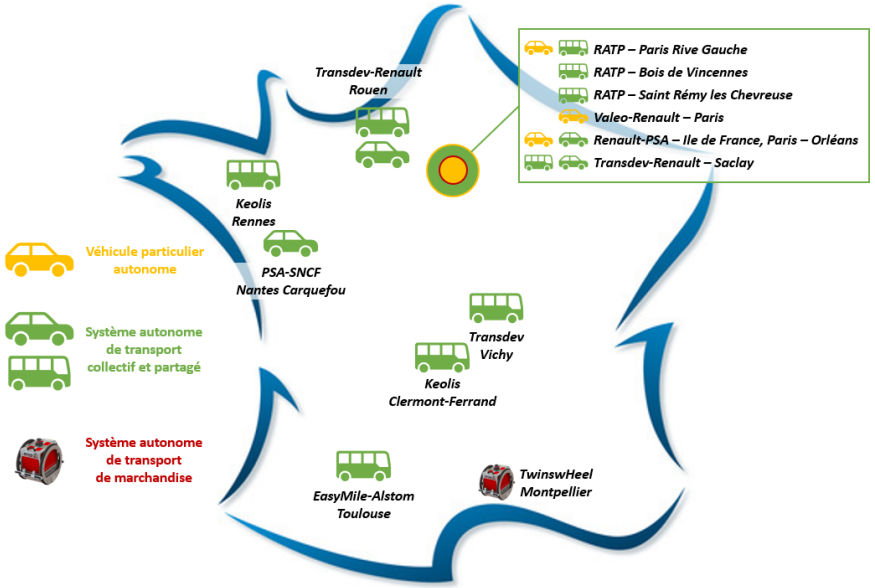
- Common assumptions about CAVs – driving characteristics, phases of generation
  - Driving characteristics based on human driver models
  - Phase-wise introduction of ‘cautious’ and ‘aggressive’ AVs.
- Changes in human behaviour
  - Assumption made as an input
- What gaps in evaluation methodology do you foresee beyond your project?
  - Common “functional requirement of AVs” framework
  - Impacts on vulnerable road users and traffic microsimulation
  - Merging of multiple evaluation methods



Project introduction : SAM

SÉCURITÉ
ACCEPTABILITÉ
MOBILITÉ AUTONOME

- Project started in June 2019, 36 months
- Use cases addressed : automated driving, valet parking, VTC, mobility services, public transport, urban delivery
- 13 demo sites, 18 industrial and academic partners
- Total budget : over 100M€
- Objectives : to deliver the methodologies, data and evaluation results to evaluate the safety, acceptance and overall impacts of automated driving and mobility services



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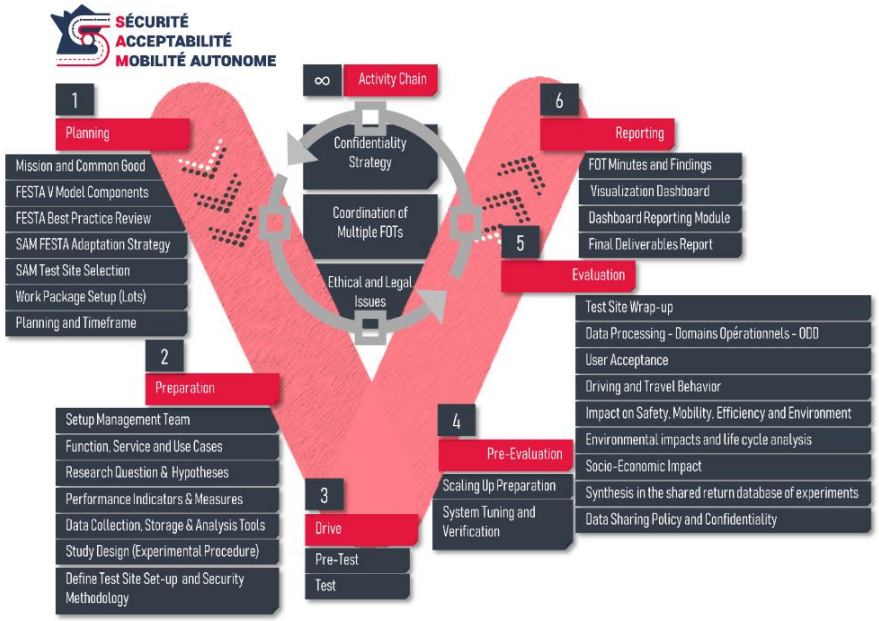
Methodology in your project

- Methodology used
  - The overall approach of the project has been built on the FESTA methodology, based on the best practices (inc. L3Pilot), and adapted to the local circumstances of SAM.
  - The major phases are preparation, driving and evaluation, anc coordination of multiple FOTs. The main adaptations were required for the coordination, preparation and evaluation phases
- SAM legacy
  - The adaptation guideline of FESTA for multi-vehicle, multi-service, and multi-FOT project
  - The data models (tools, storage and formats) and the data flow description



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Methodology gaps: SAM

- What gaps in evaluation methodology have you found in your project?
  - Reference for coordinating multiple FOT (monitoring tools, confidentiality issues, legal issues..)
  - Lack of baseline for service evaluation, acceptance, etc..
  - Definition of data flow architecture, data models and formats..
  - Structure of the scaling-up model
  - Assessment mapping model (data evaluation architecture)
- What gaps in evaluation methodology do you foresee beyond your project?
  - Common description methodologies for vehicles, services, functions, use cases, etc…
  - Lack of data (operational data, willingness to share data, open data..)
  - Scale of experimentation in terms of catchment area, technical maturity, size of the fleet, target users

HEADSTART

Harmonised European Solutions for Testing Automated Road Transport

- **Call identifier:** ART-01-2018
- **Type:** RIA
- **Duration:** 01.2019 – 12.2021 (36 months)
- **Budget:** 6M€
- **Consortium:** 17 partners
- **Coordinator:** Applus IDIADA, Mr. Álvaro Arrue, Project Manager
- HEADSTART will define testing and validation procedures of CAD functions including:
  - its key enabling technologies (i.e. communication, cyber-security, positioning)
  - by cross-linking of all test instances such as simulation, proving ground and real-world field tests
  - to validate safety and security performance according to the needs of key user groups (technology developers, consumer testing and type approval)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824309.

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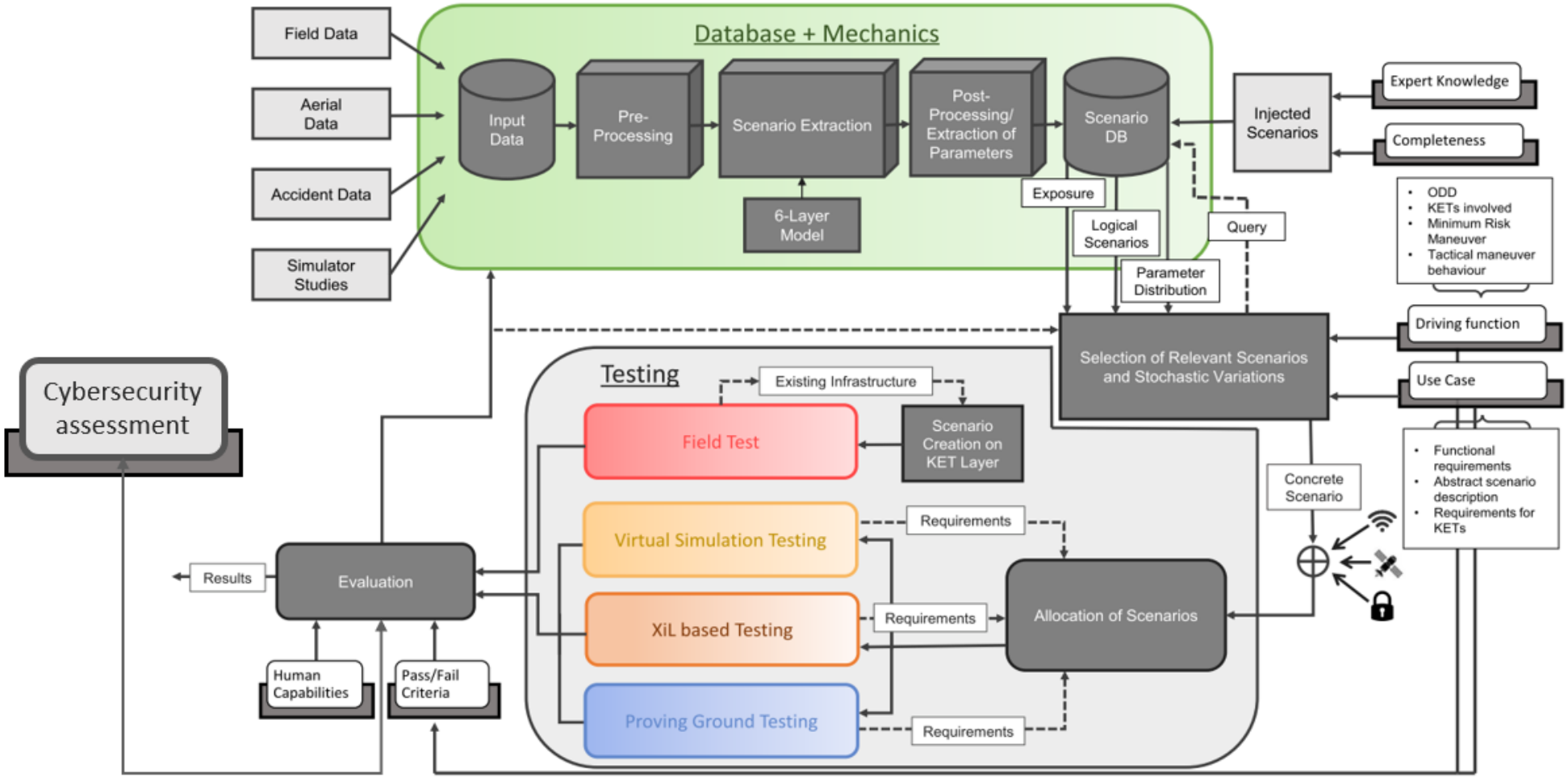
HEADSTART Methodology



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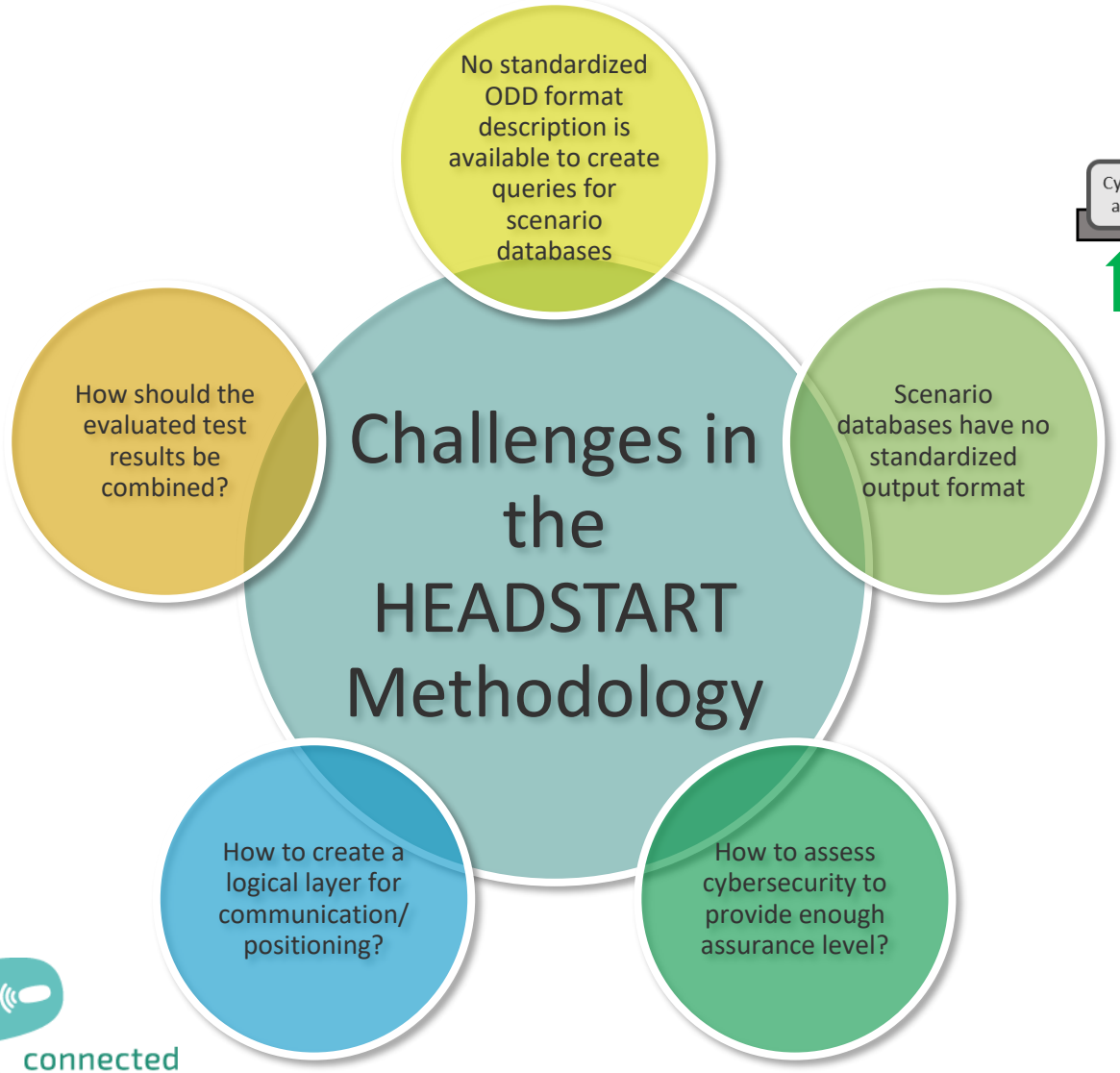
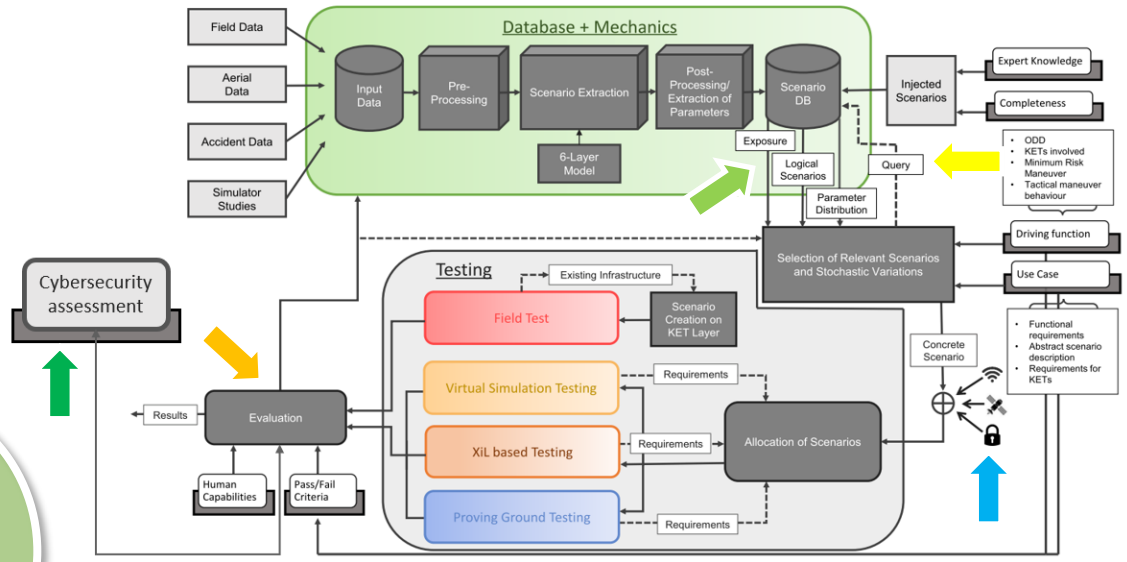
Methodology gaps

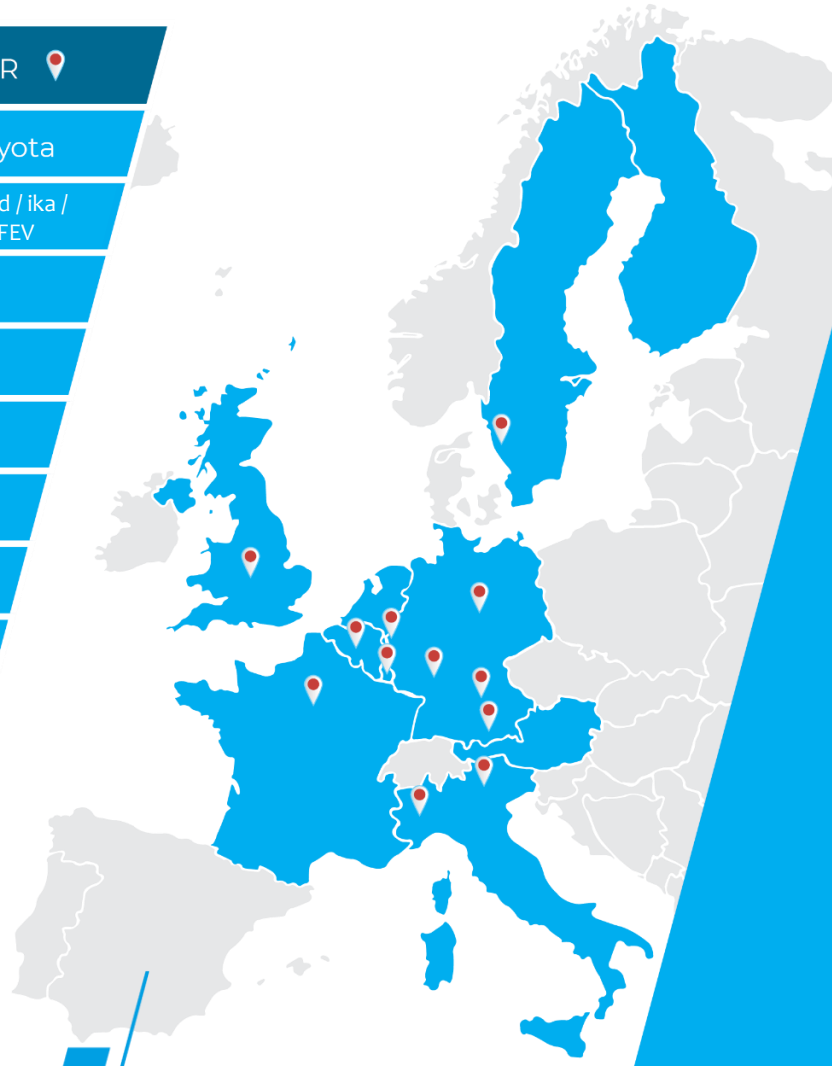




L3Pilot in short

- Project objective
  - To assess the acceptance and the socio-economic impact of conditionally automated passenger cars by conducting real-world experiments in Europe with AD functions: motorway, urban, parking
- Project size
  - 34 partners, 50 months, 68 M€
  - 1000 drivers, 100 cars, 10 countries

COUNTRY / REGION / PARTNER	
BE / Brussels	Toyota
DE / Aachen, Cologne	Ford / ika / FEV
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	



L3Pilot Driving Automation

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L3Pilot Methodology - What could we offer for CEM?

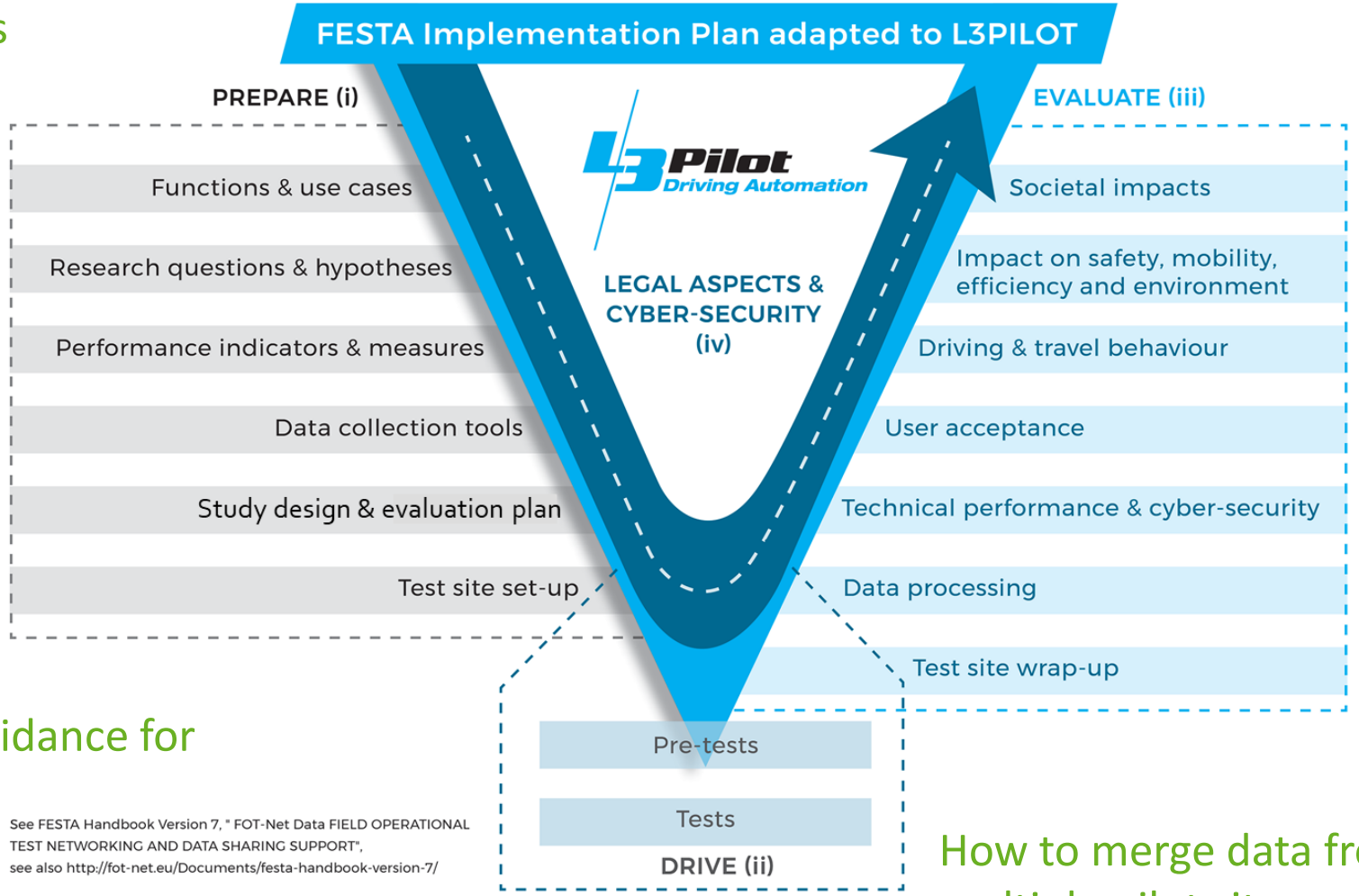
FESTA V adapted for AD pilots

Principles for selection of RQs and deriving PIs

Common data format

Questionnaires (Scales, set of basic questions)

Practical guidance for pilot sites



See FESTA Handbook Version 7, " FOT-Net Data FIELD OPERATIONAL TEST NETWORKING AND DATA SHARING SUPPORT", see also http://fot-net.eu/Documents/festa-handbook-version-7/

Example for use of snapshot approach in socio-economic impact assessment

Principles for scaling up

Principles for driving situation based evaluation

Counterfactual simulation of driving situations

How to merge data from multiple pilot sites respecting confidentiality of data

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Methodology gaps

Methodological gaps found? L3Pilot solutions?

- Gap between prototype testing and the scenarios in impact assessment
  → Concept of 'Mature ADF'
- Lack of single data source to define target accidents and travelling inside ODD of each AD function
  → Principles for combination of multiple sources
- Principles for merging data from multiple pilot sites without compromising the privacy of OEMs
  → Use of 'driving scenarios'
- How to make the best use of many different experimental procedures?
  → Understand all the experiments well, link all experiments to research questions for which they can contribute
- How to assess acceptance and mobility impacts if pilots are conducted with safety drivers?
  → Use of passenger seat participants, supplementing data with surveys and focus groups
- How to predict future for the socio-economic impact assessment?
  → Use snap-shot approach to assess only impact of automated driving, no prediction needed

What gaps in evaluation methodology do you foresee beyond your project?

- Detailed modelling of AD functions in commercial simulation tools
- Methods for evaluating impacts on certain accident types
- Good overview of traffic environments in urban environments
- Prediction of alternative futures to go beyond snap-shot approach in the socio-economic impact assessment

L3Pilot Driving Automation