



HARMONISED EUROPEAN SOLUTIONS
FOR TESTING AUTOMATED ROAD TRANSPORT

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Project coordinator



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

Applus⁺
IDIADA

Outline


- ✓ The HEADSTART project
- ✓ The HEADSTART methodology
- ✓ The HEADSTART procedures
- ✓ Conclusions and next steps

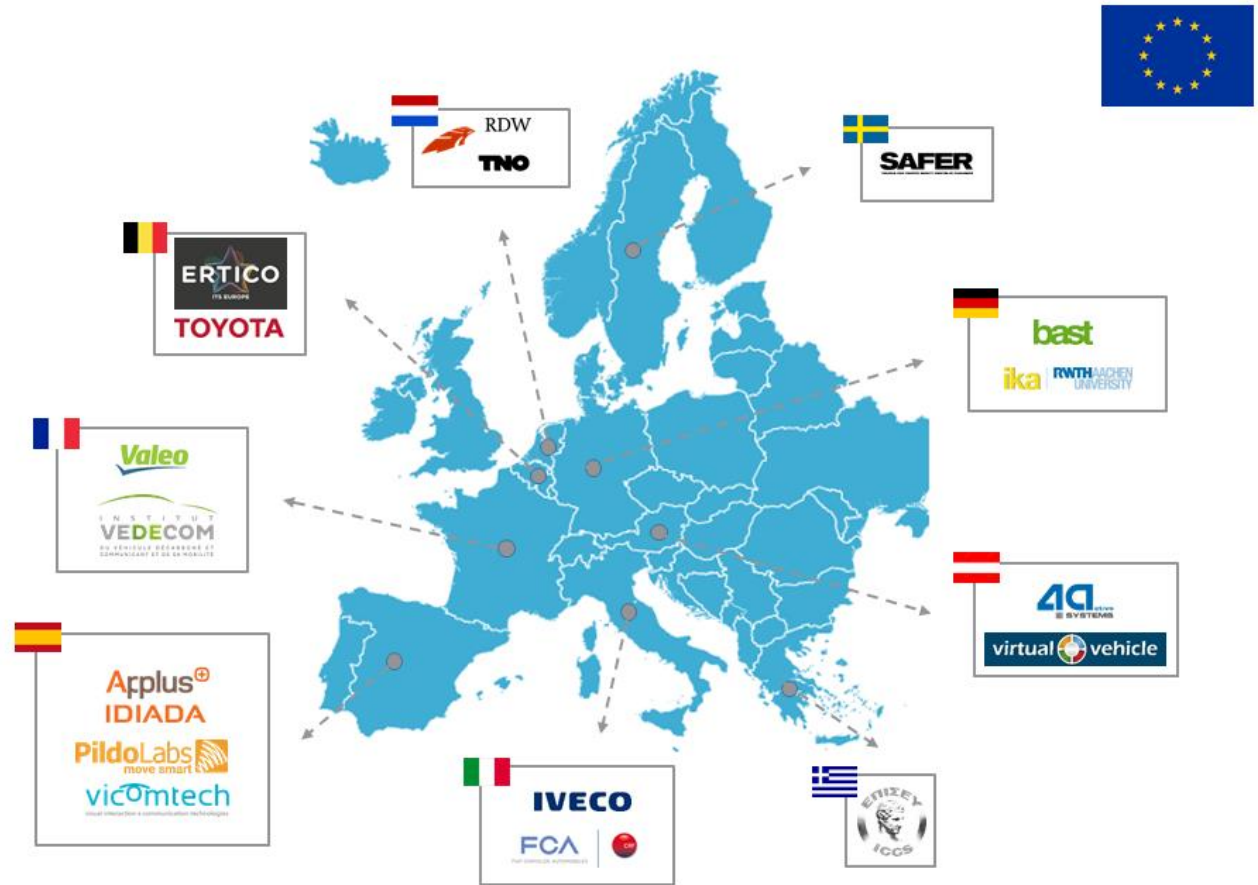
HEADSTART project facts

- ✓ Call identifier: ART-01-2018
- ✓ Type: RIA
- ✓ Duration: 01.2019 – 12.2021 (36 months)
- ✓ Budget: 6M€
- ✓ Consortium: 17 partners
- ✓ Coordinator: Applus IDIADA, Mr. Álvaro Arrúe, Project Manager
- ✓ Dissemination Manager: ICCS, Dr. Angelos Amditis, Research Director
- ✓ Website: <https://www.headstart-project.eu>
- ✓ Social media:  / HEADSTART_EU
 / HEADSTART-PROJECT
 / HEADSTART project
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HEADSTART Consortium

- ✓ 7 research centres
- ✓ 2 Technical Services
- ✓ 3 Euro NCAP laboratories
- ✓ 4 OEMs
- ✓ 2 Tier-1s
- ✓ 3 coordinators of H2020 ART calls

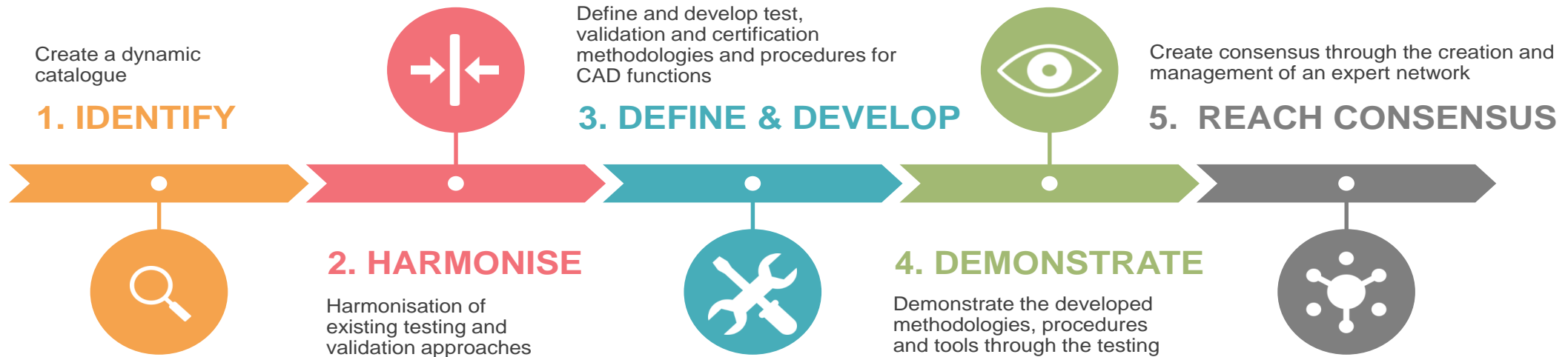
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Project's Objectives

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)



Technical Results up to M18

List of Deliverables M1 – M18

Del. #	Deliverable Title	Lead Beneficiary	Due Date
D1.1	State of innovation of existing initiatives and gap analysis	IKA	M6
D1.2	Stakeholders and user group needs	VEDECOM	M6
D1.3	Technical and functional requirements for KETs	SAFER	M9
D1.4	Functional requirements of selected use cases	SAFER	M9
D2.1	Common methodology for test, validation and certification	IKA	M12
D2.2	Extension of the common methodology for the HEADSTART KETs	CRF	M14
D3.1	Procedure pipeline definition	Virtual Vehicle	M18

All finished deliverables available
in

www.headstart-project.eu

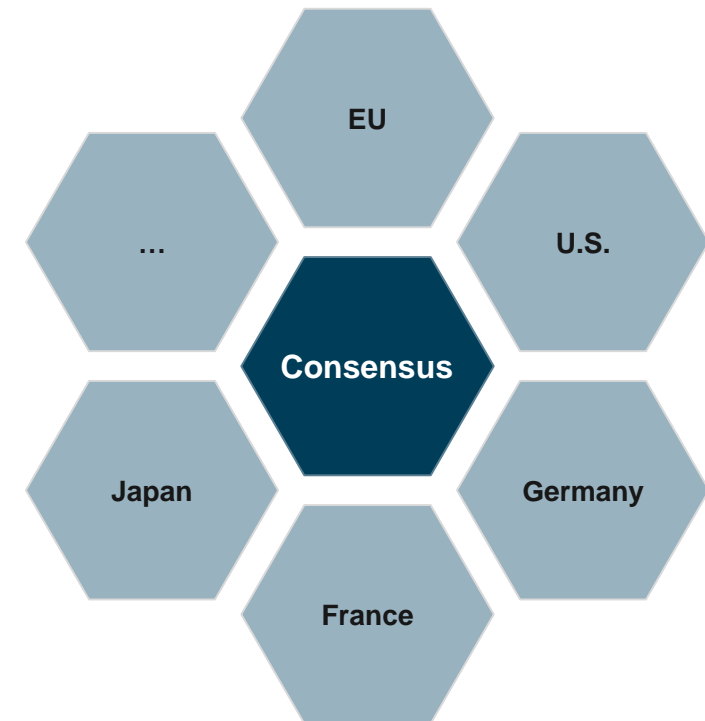
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HEADSTART Methodology approach

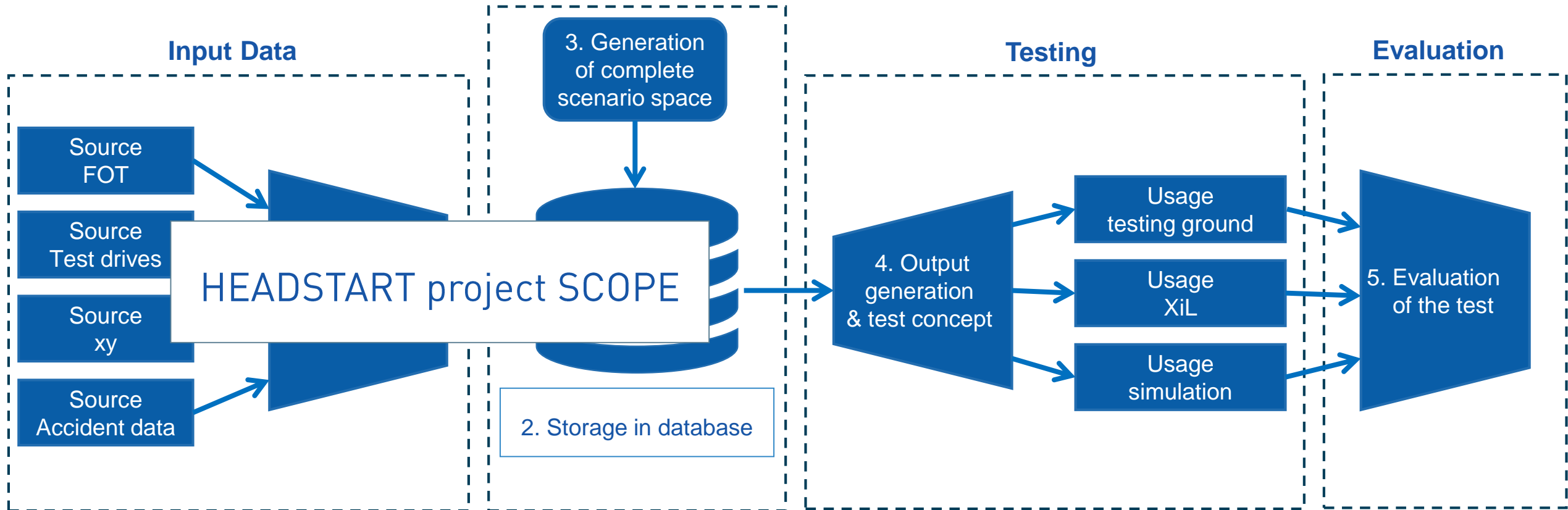
Where does the HEADSTART Methodology come from?

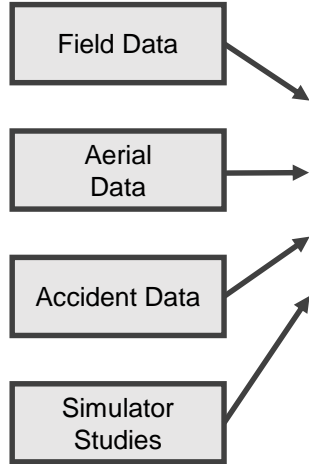
- ✓ State of the art analysis of international and national projects
- ✓ Harmonization of present and past projects
- ✓ Utilizing common databases to analyse data
- ✓ Testing of selected relevant scenarios
- ✓ Inputs from: PEGASUS, MOOVE, SAKURA, STREETWISE, ENABLE-S3 and many other projects...
 - ✓ Can be found in D1.1, D1.2, D1.3 and D1.4
 - ✓ www.headstart-project.eu

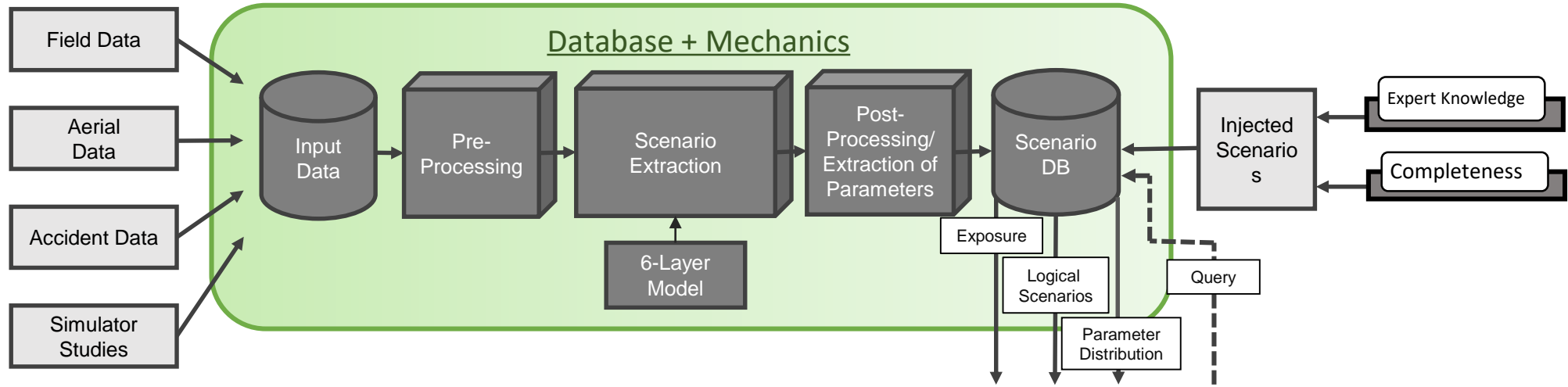


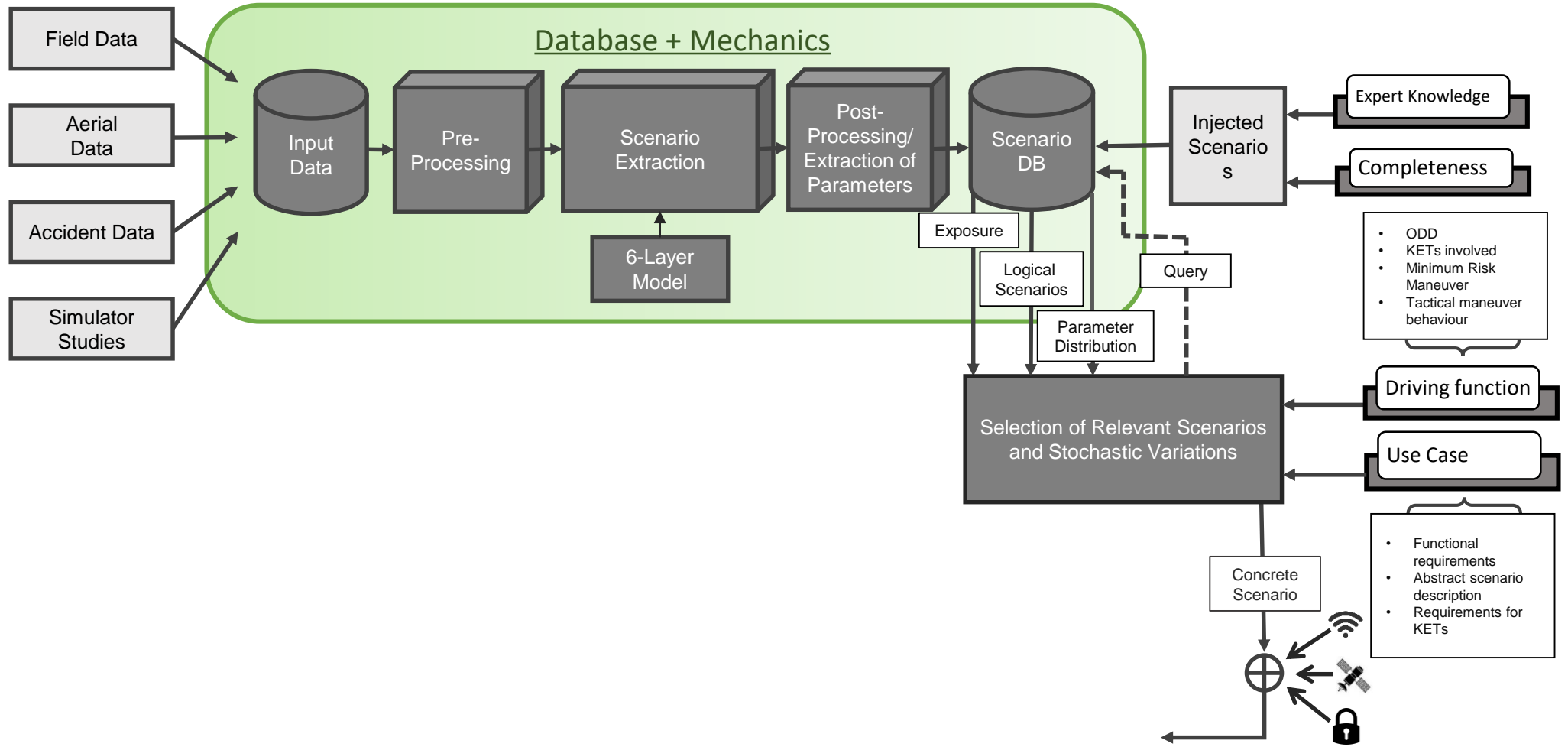
Overall Methodology

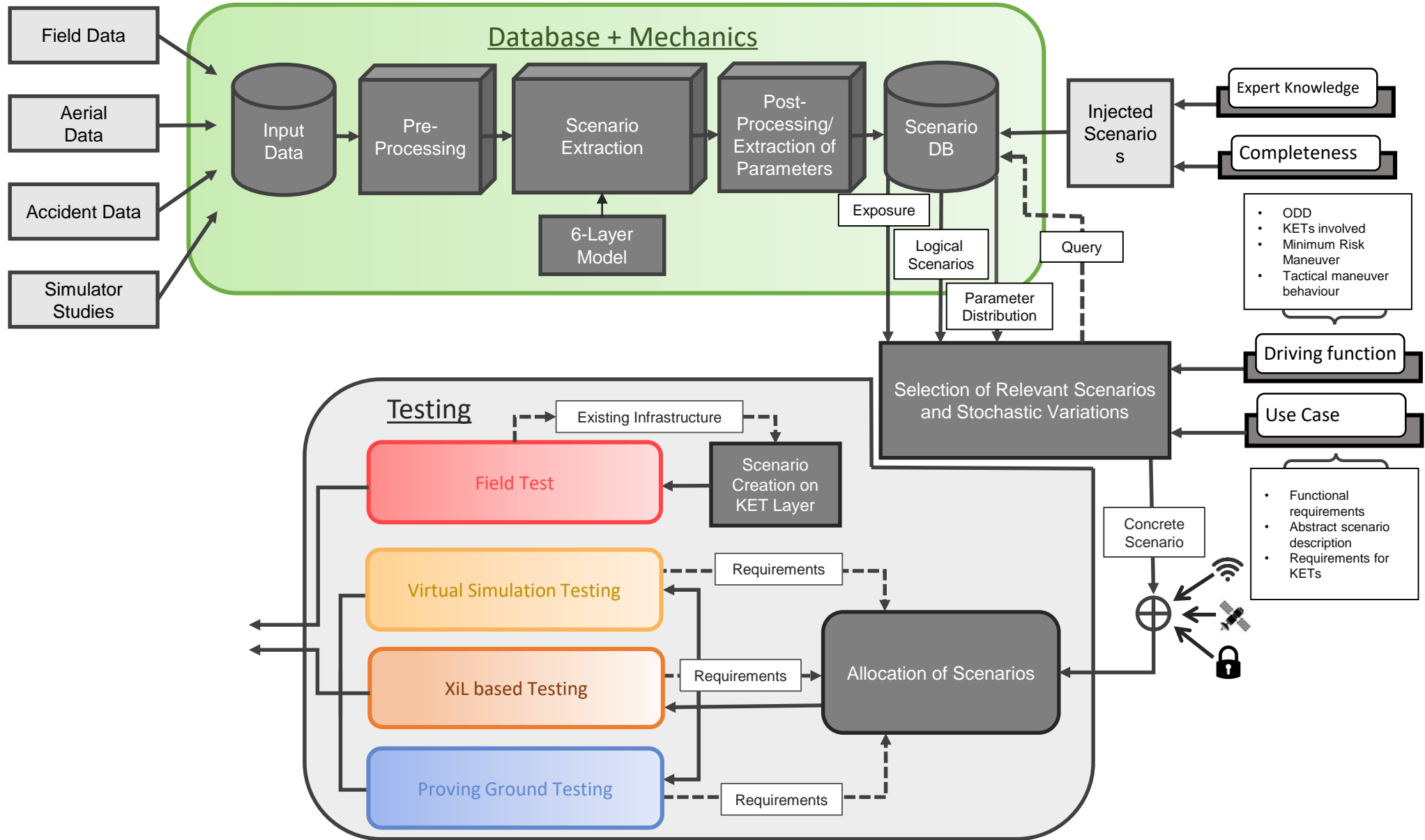
Data Collection

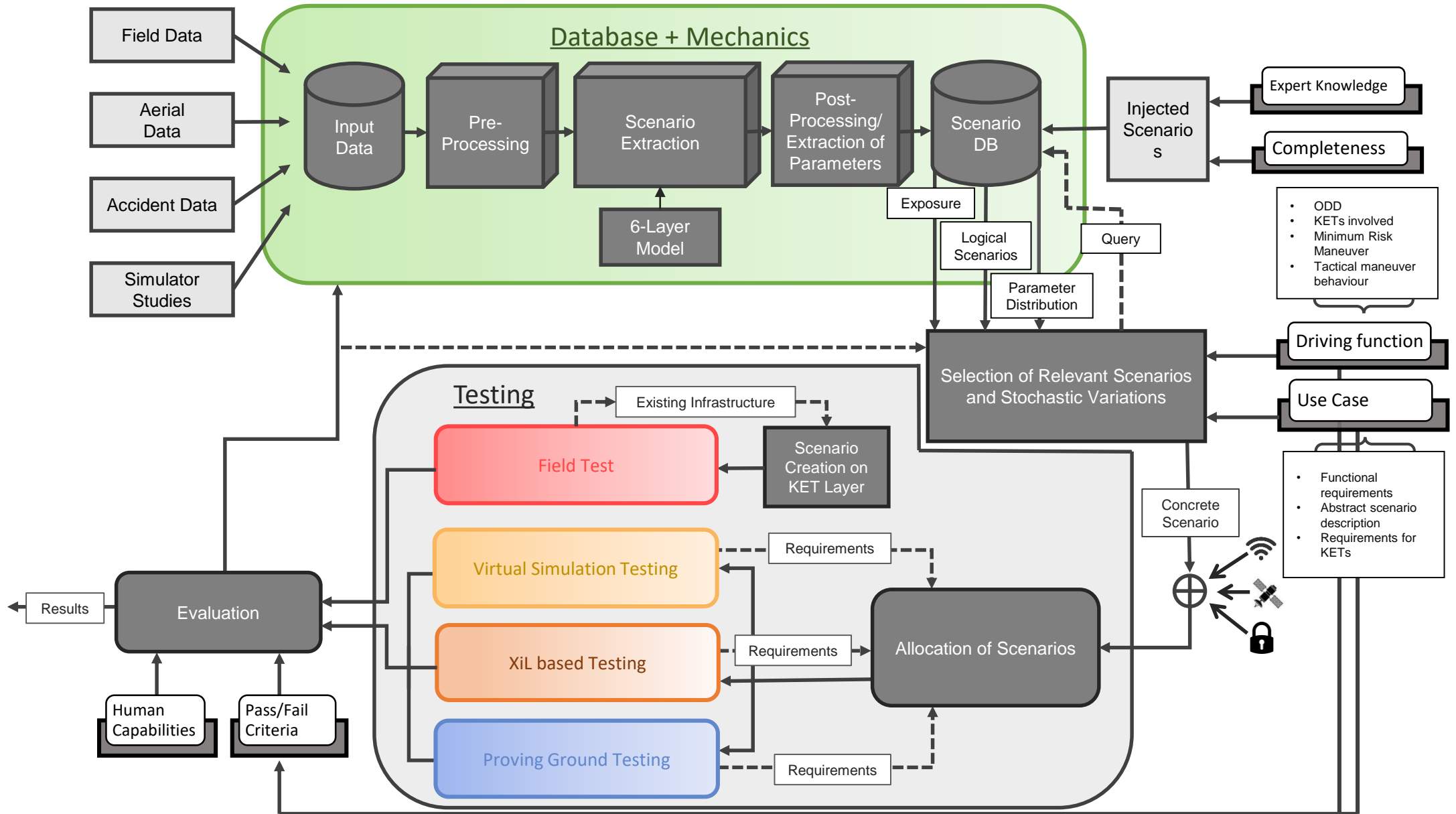












Open Scenario – Open Drive

Layer 6

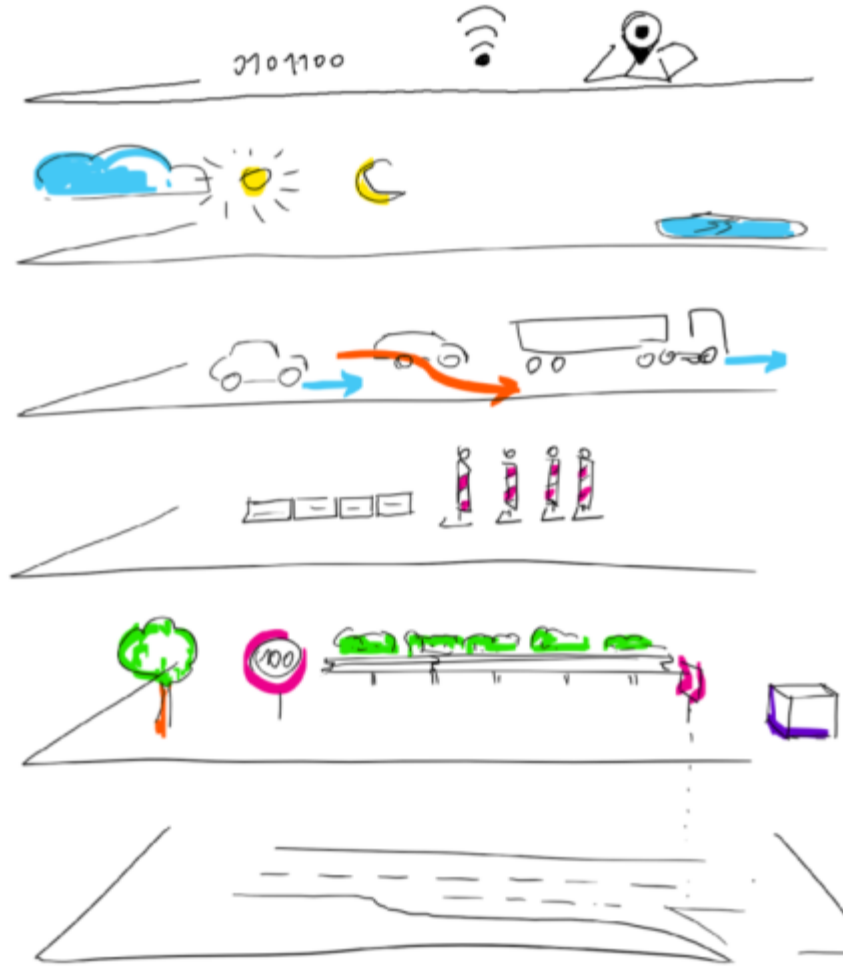
Layer 5

Layer 4

Layer 3

Layer 2

Layer 1



Digital information

e.g. V2X information on traffic signals, digital map data

Environmental conditions

e.g. Light situation, weather (rain, snow, fog)

Moving Objects (4a → Ego ; 4b → Others)

e.g. Vehicles, pedestrians, other moving objects

Temporal modifications and events

e.g. Road construction, traffic cones, fallen trees

Road furniture and Rules

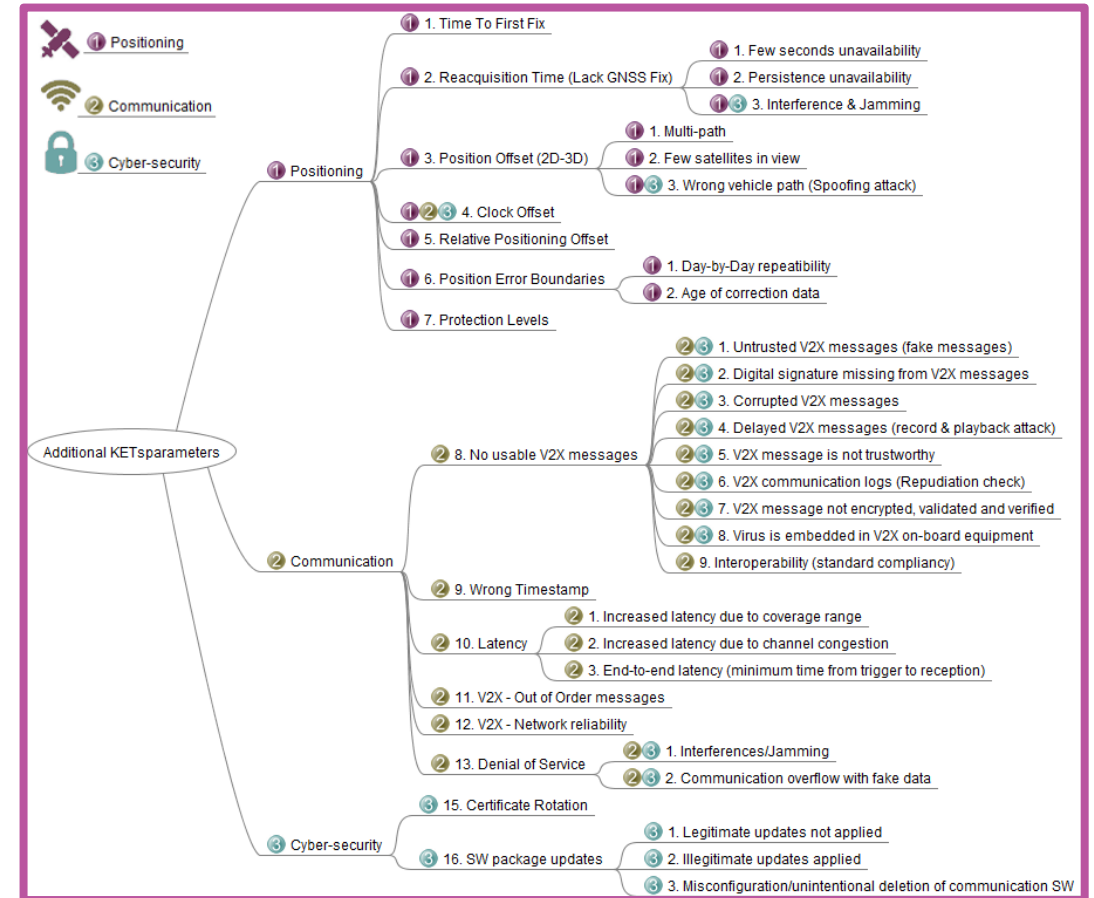
e.g. Traffic signs, railguards, lane rules, bot dots

Road layer

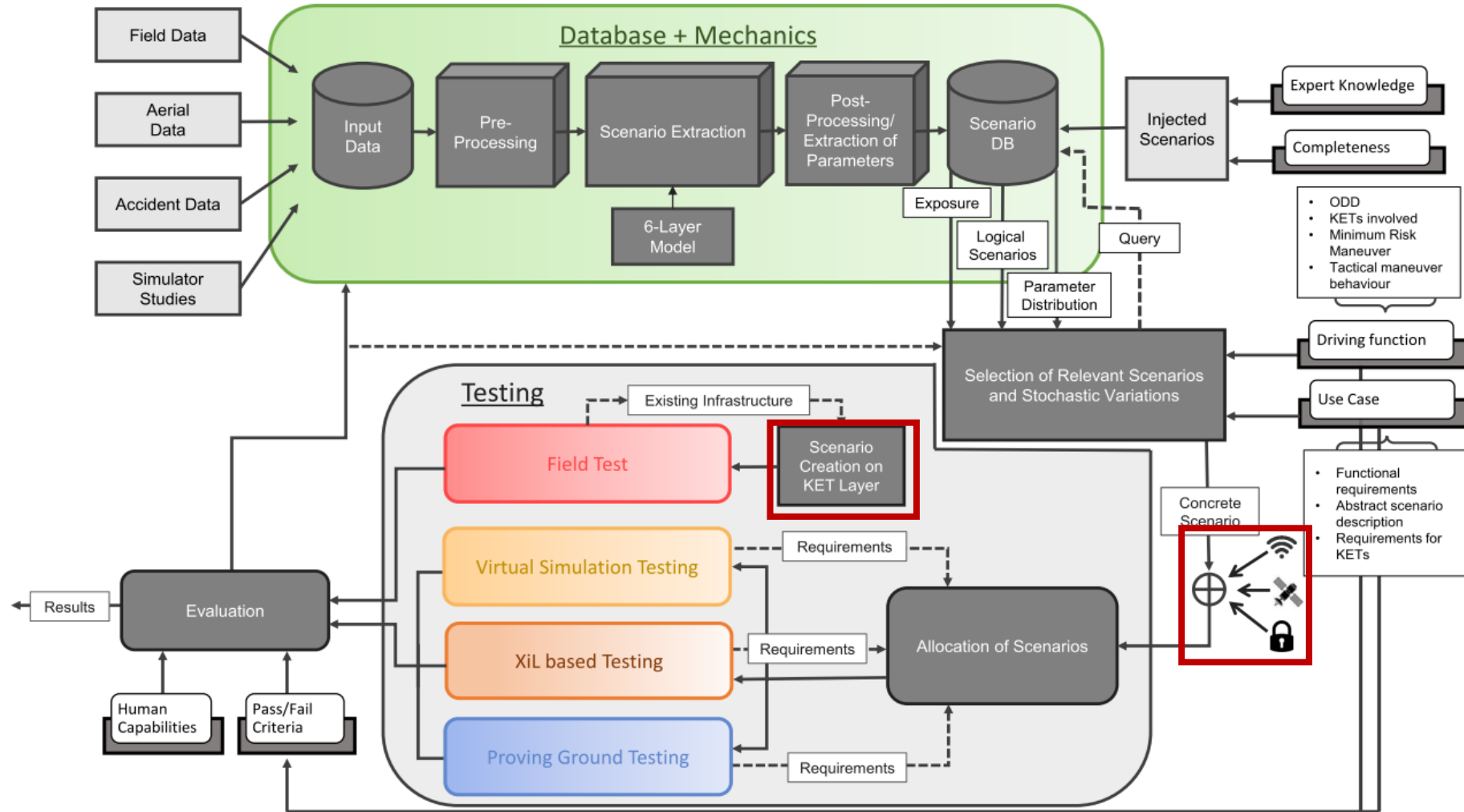
e.g. Road geometry, road unevenness, lane logic

KETs within the methodology

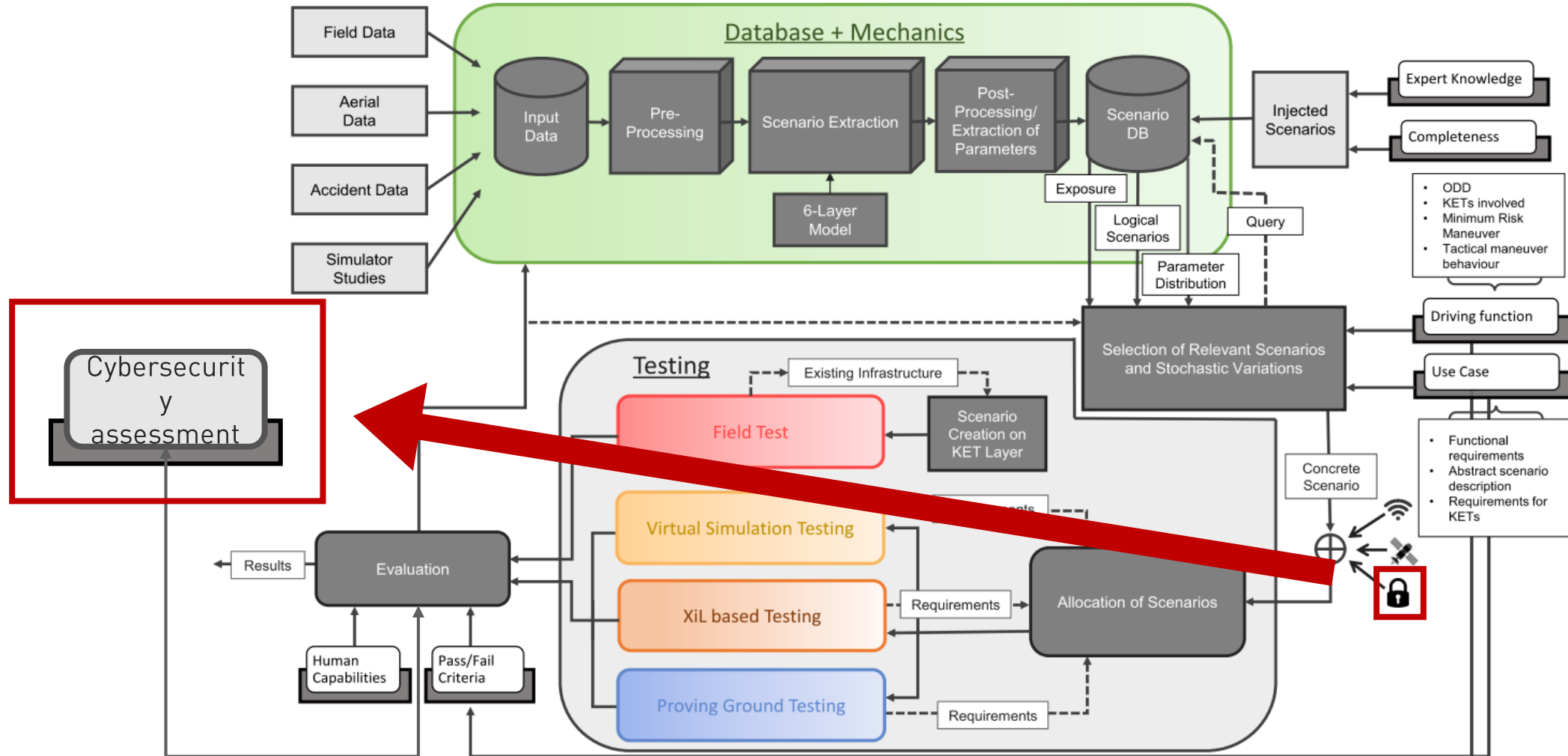
- ✓ New information channels
 - V2X communication
 - Positioning dependent on other Layers
- ✓ Adding new parameters to be tested
 - Top-Level parameters to be arbitrary from the used hardware
 - Use V2X as “Sensor”
- ✓ Cyber-Security needs to be treated in a special way
 - Simple parameters can be connected to parameters
 - Special treatment for in-depth analysis



KETs within the methodology



KETs within the methodology

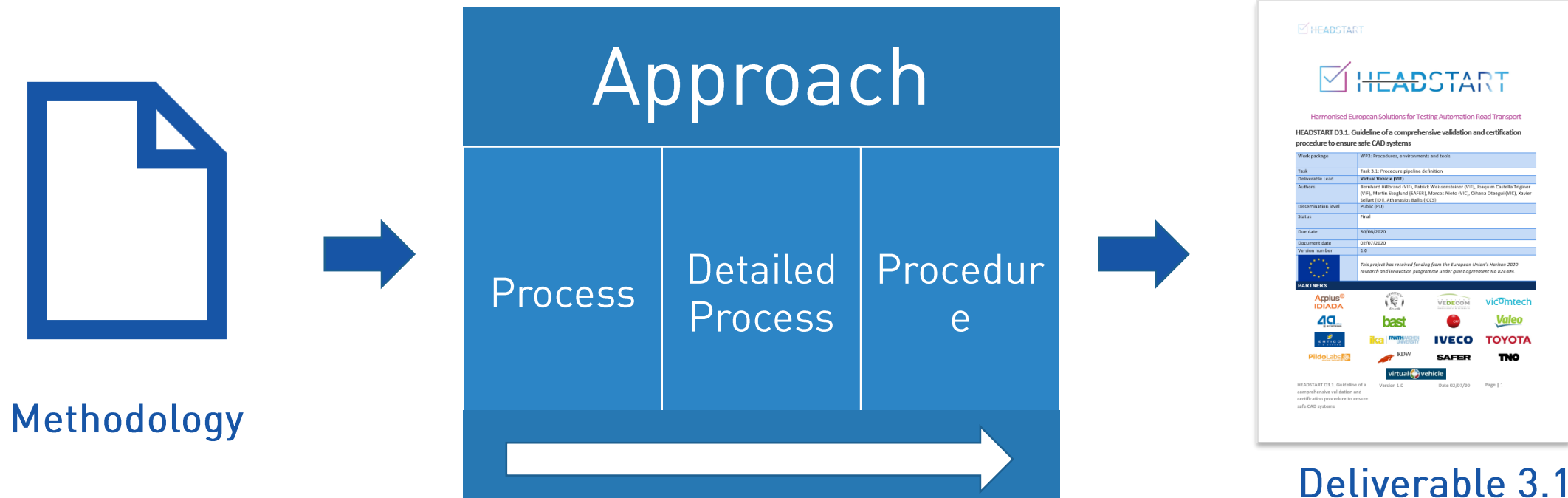


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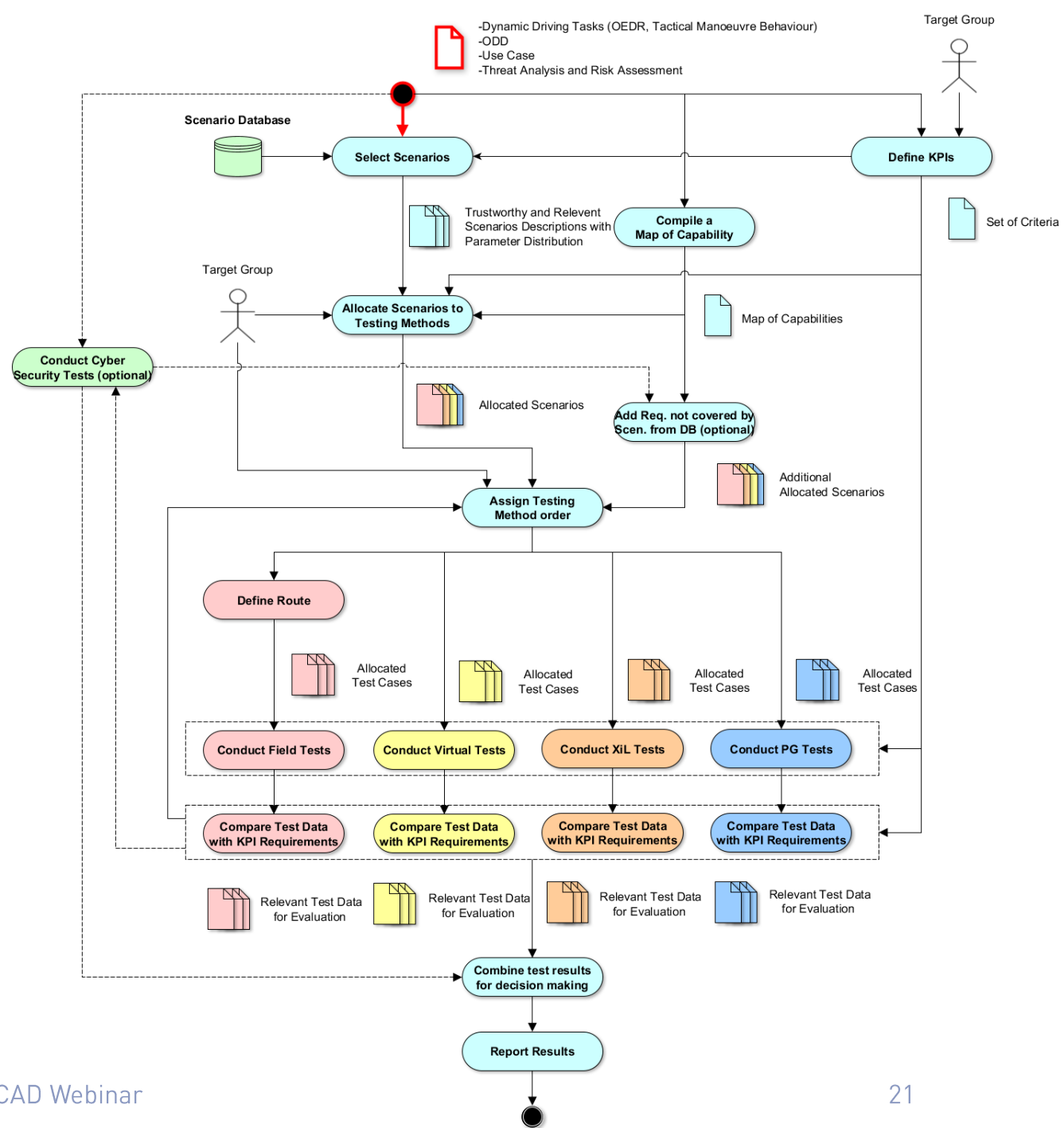
Process vs. Procedure

- ✓ A process is a set of interrelated or interacting activities which transforms inputs into outputs. It's about **what to do**.
- ✓ A procedure is a specified way to carry out an activity or a process. It's about **how to do it**.

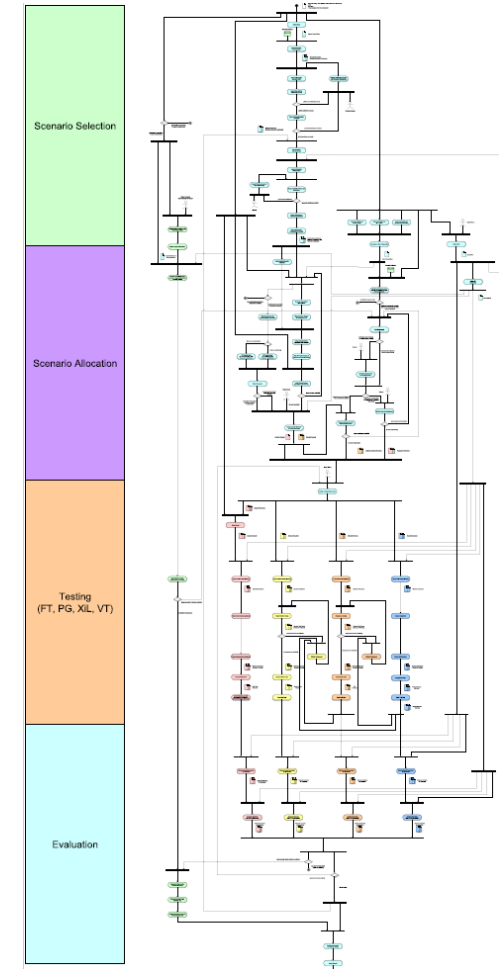
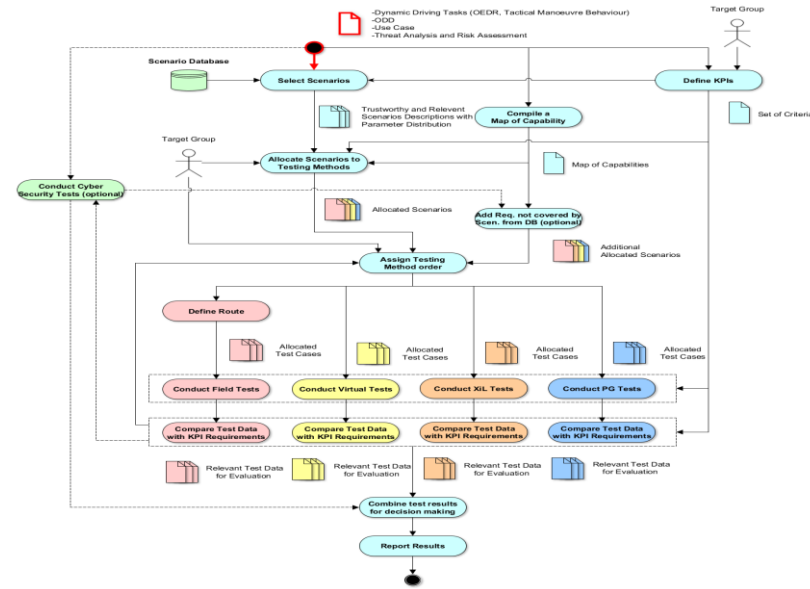
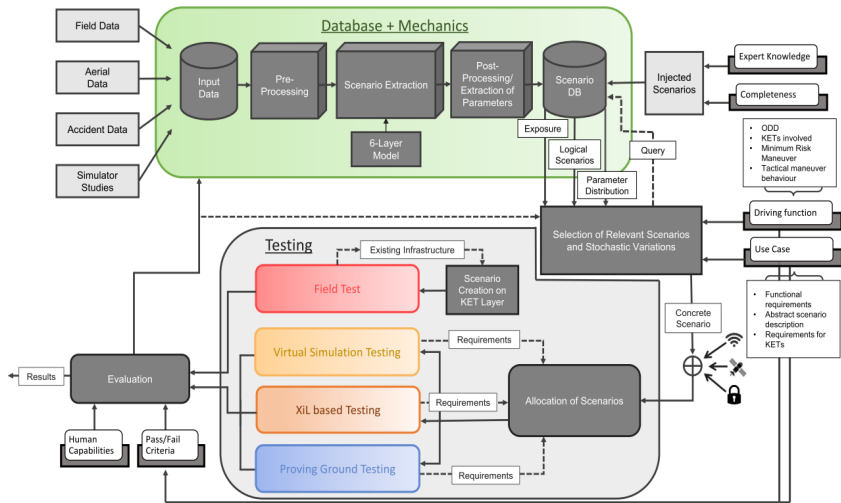


High-Level Process

- ✓ Scenario Selection
- ✓ Scenario Allocation
- ✓ Testing Method Coordination
- ✓ Field Testing
- ✓ Virtual Testing
- ✓ XiL Testing
- ✓ Proving Ground Testing
- ✓ Cyber Security
- ✓ Evaluation



Methodology and procedure in a nutshell



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Conclusions

- ✓ State-of-the-art assessment is publicly available
 - Information from worldwide projects
 - Functional requirements for AD but also KETs

- ✓ The HEADSTART Methodology is a living process
 - Need for expert input to refine the methodology is welcomed
 - KETs have been considered in the whole process
 - Keep the Methodology harmonized and applicable for different databases

- ✓ The procedure allows us to continue with the actual implementation of the whole validation process
 - Some KETS are naturally integrated (V2X + positioning)
 - Some require specific paths (cybersecurity)
 - Cooperation on Open Scenario extension/enhancement is ongoing

Next Steps

- ✓ Current development of a testing tool chain for the project
 - Including simulation / virtual testing / test track testing / Field tests
 - Harmonization of queries to external DBs

- ✓ This will be demonstrated next year for the chosen Use Cases:
 - Highway Pilot
 - Traffic Jam Chauffeur
 - Truck platooning

- ✓ Demonstations planned in second semester of 2021

Cooperate with HEADSTART project

EXPERT GROUP PARTICIPATION

- Join as associated partner and our expert group
- Join the discussion group of your interest:
 - Cyber-security
 - Communications (V2X)
 - Positioning
 - Scenario selection
 - Consumer testing (NCAP)
 - Type approval
- Provide needs and requirements and evaluate project (intermediate) results

JOINT TESTING ACTION

- ✓ Joint cooperation between both projects for testing validation and certification purposes
- ✓ Align your project with the harmonized methodology and tools developed within HEADSTART
- ✓ Become one of our use cases!

Please let us know about your interest and join our distribution list.

Website: www.headstart-project.eu

Contact: info@headstart-project.eu

Stay connected with HEADSTART

- ✓ Visit HEADSTART website

www.headstart-project.eu

- ✓ Follow our Social Media:

 [@HEADSTART_EU](https://twitter.com/HEADSTART_EU)

 HEADSTART-PROJECT

 HEADSTART project (Group)

 @HeadstartEUproject

- ✓ Reach us via an e-mail:

info@headstart-project.eu

- ✓ Sign up to our newsletter:

<https://lists.iccs.gr/www/subscribe/headstart-news>

- ✓ Get in touch with our partners

HEADSTART Partners





HEADSTART

Thank you!

Any questions?

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