# Towards a robust verification methodology for CAVs

Virtual, 9 -10 September

SUMMER SCHOOL 2020

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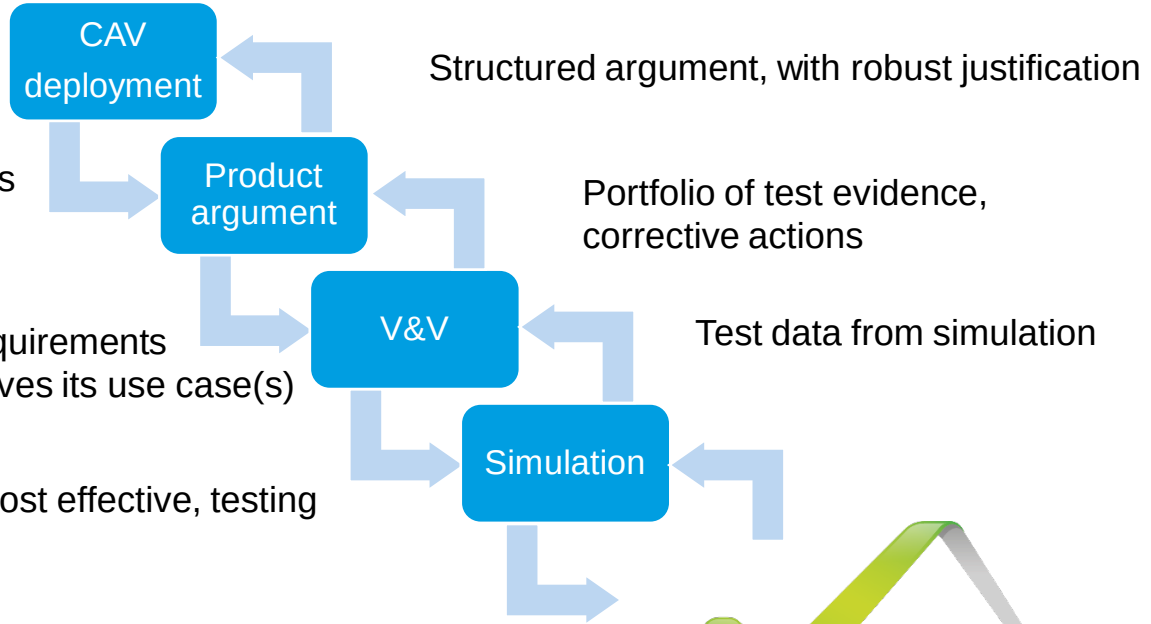
# Project context




Prove and demonstrate system is **functional**, **safe** and **robust**

**Verify** the system meets its requirements
**Validate** that the system achieves its use case(s)

L3Pilot Driving Automation

# Consortium members

aimsun.

UNIVERSITY OF LEEDS

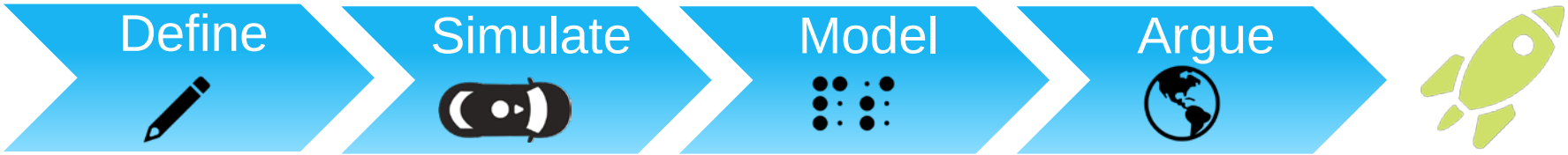
*VeriCAV is supported by*

Centre for Connected & Autonomous Vehicles

Innovate UK

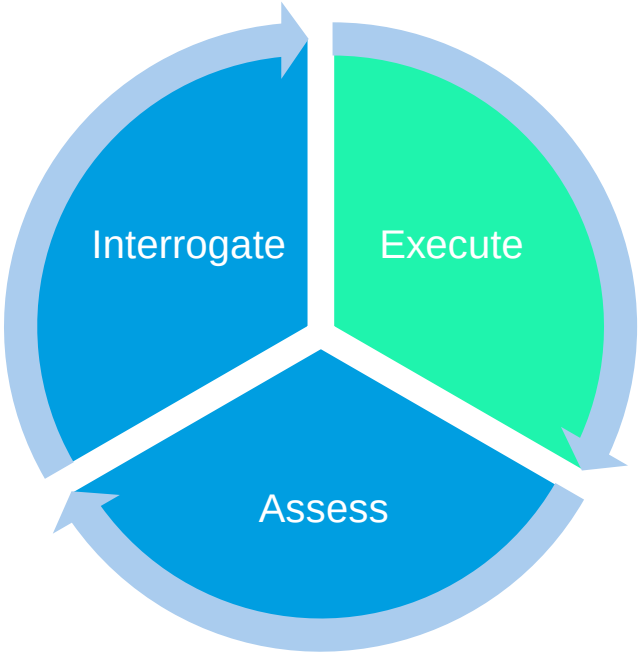
L3Pilot Driving Automation

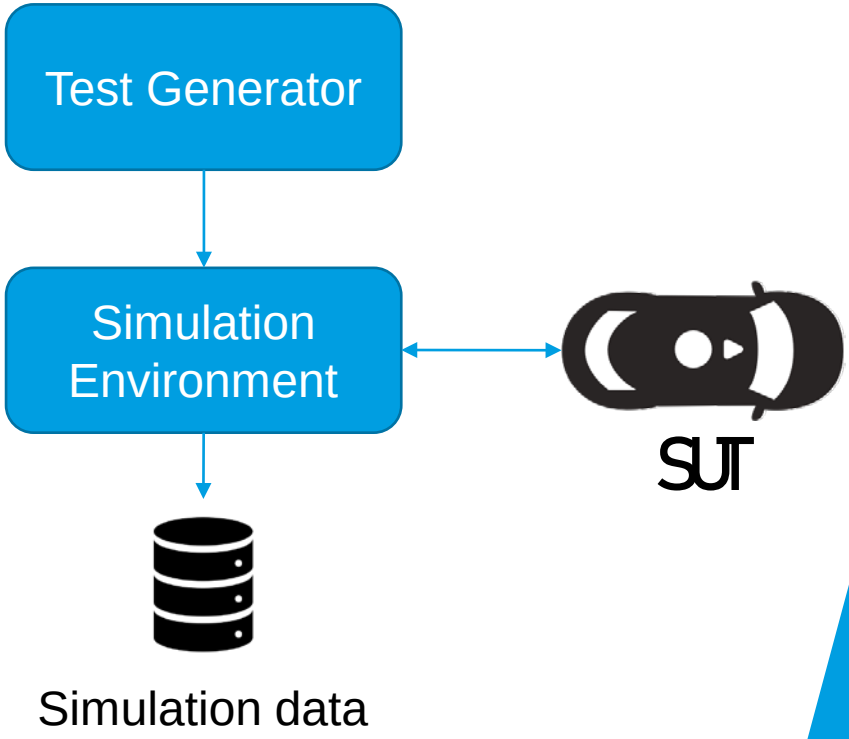
VeriCAV



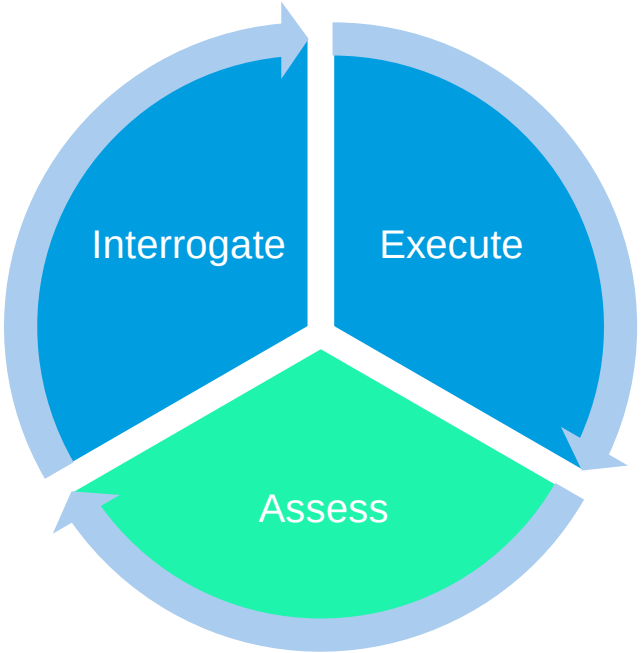

L3Pilot Driving Automation

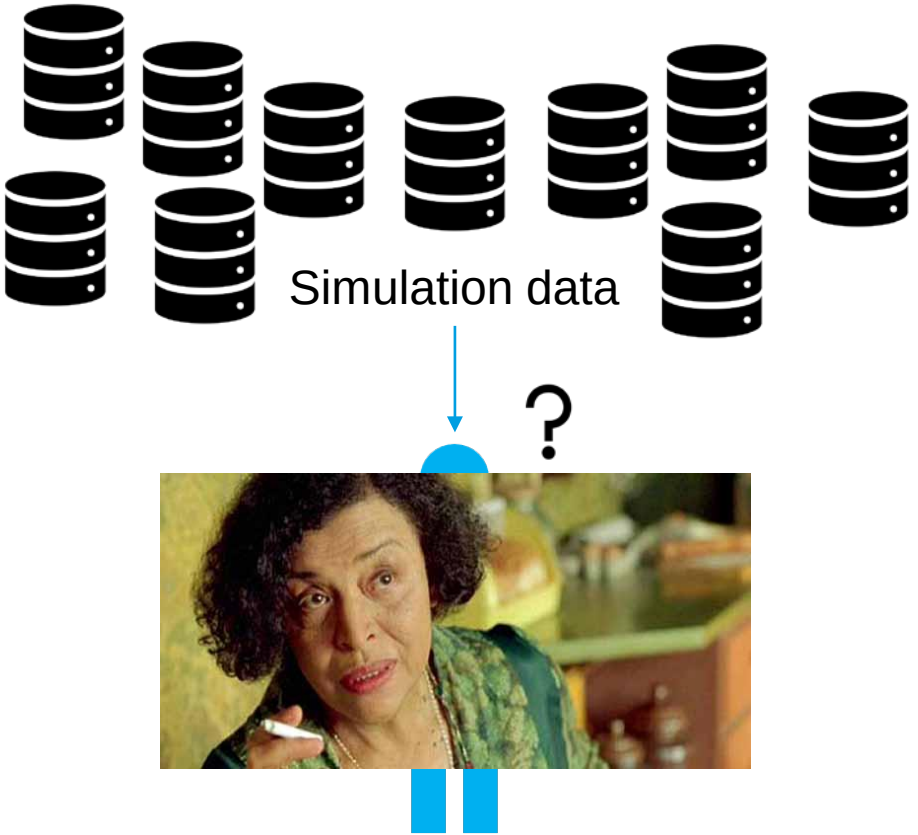
# Simulate


Interrogate
Execute
Assess


Test Generator
Simulation Environment
SUT
Simulation data

# Simulate



# VeriCAV Test Oracles: An Overview

Simulation data

- Ego telemetry data
- Actor telemetry data
- Road geometry

Context

- Manoeuvre(s)
- Complexity


Performance

- TTC
- Rear Cross Time
- Intel RSS
- Occupant comfort
- Energy Efficiency
- + Your own custom metrics

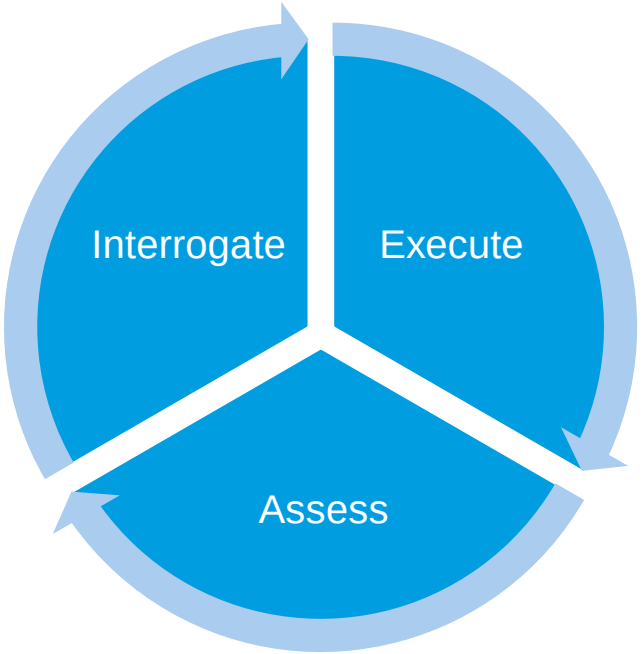
# VeriCAV Test Oracles: An Overview

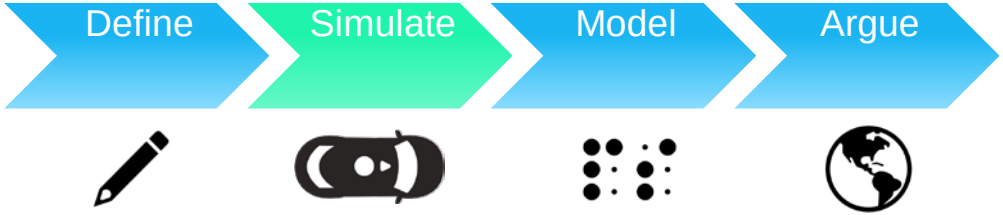
Context


Performance

Pass/Fail

# Summary




- VeriCAV can generate & **execute** large numbers of scenario variations.
- We use context aware “Test Oracles“ to **assess** the holistic performance of the SUT
- Pass/Fail result uses an intelligent combination of metrics
- The result is then used to build surrogate **models** of the system for further interrogation of performance, coverage assessment and risk analysis

# Final thoughts...

Is anyone ready for:

- The mindset shift of developing L2 features to L3+
- Managing through life support of safety critical systems
- To retrain entire product development teams in new ways of working

Using **intelligent test tools** is required to interpret the vast amounts of data

- VeriCAV are using these to analyse ADS performance using surrogate models, and adaptive scenario generation

# Thank you for your kind attention.


Presenter 1
Contact details
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