



Accelerate Engineering Decisions With Data-Driven Insights

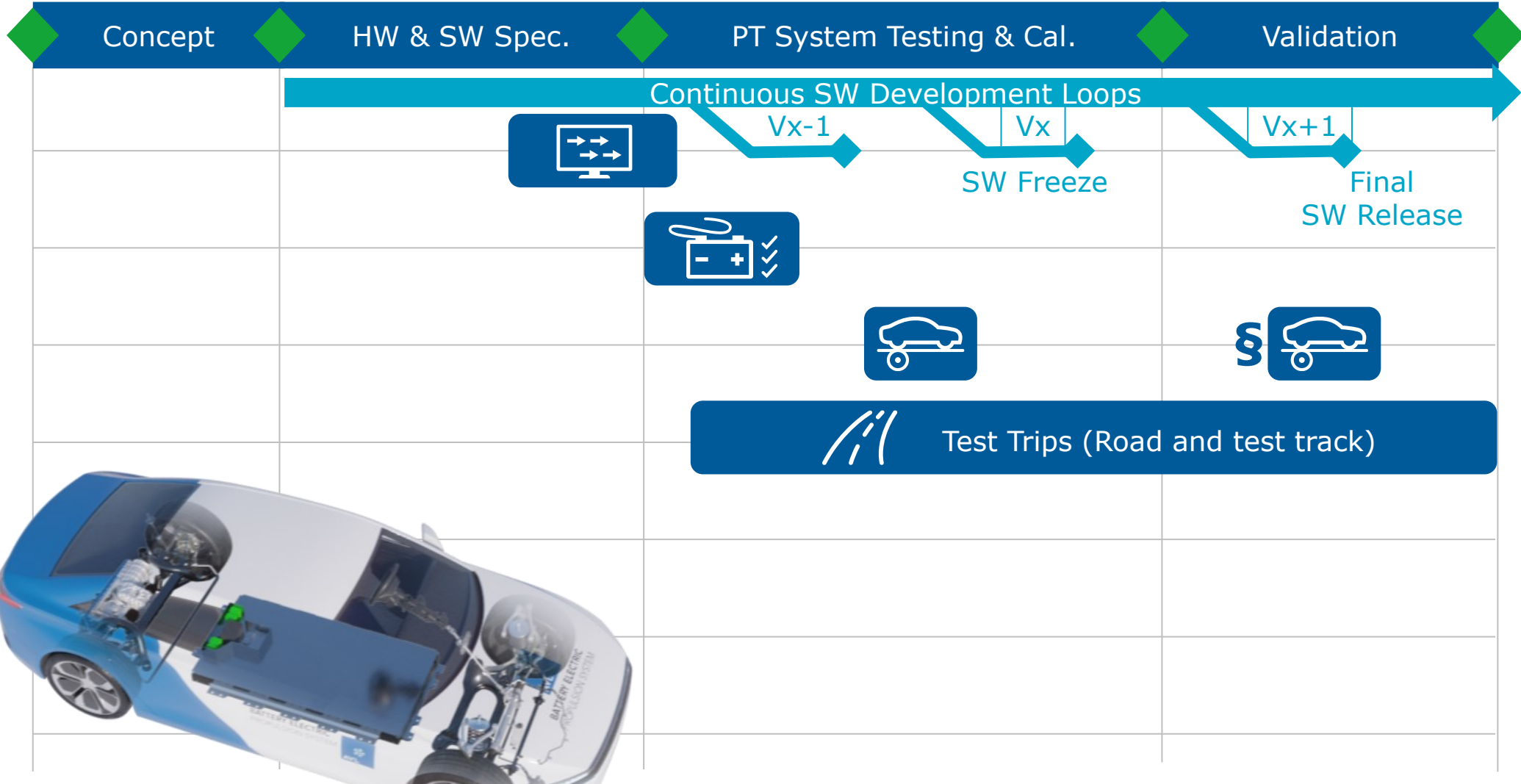
AVL Data Analytics™

Concept definition

Start of Testing

Data Freeze

SOP



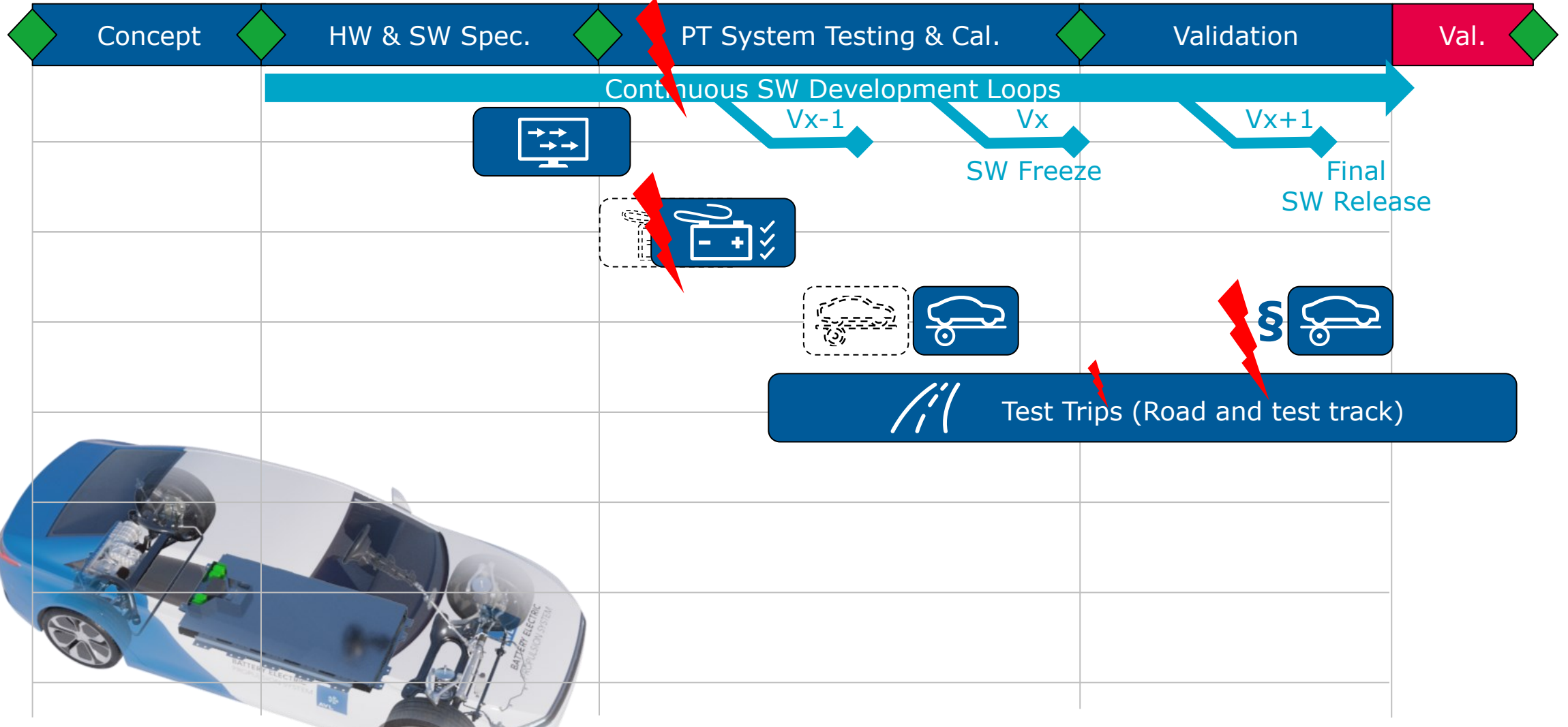
TRADITIONAL APPROACH

Concept definition

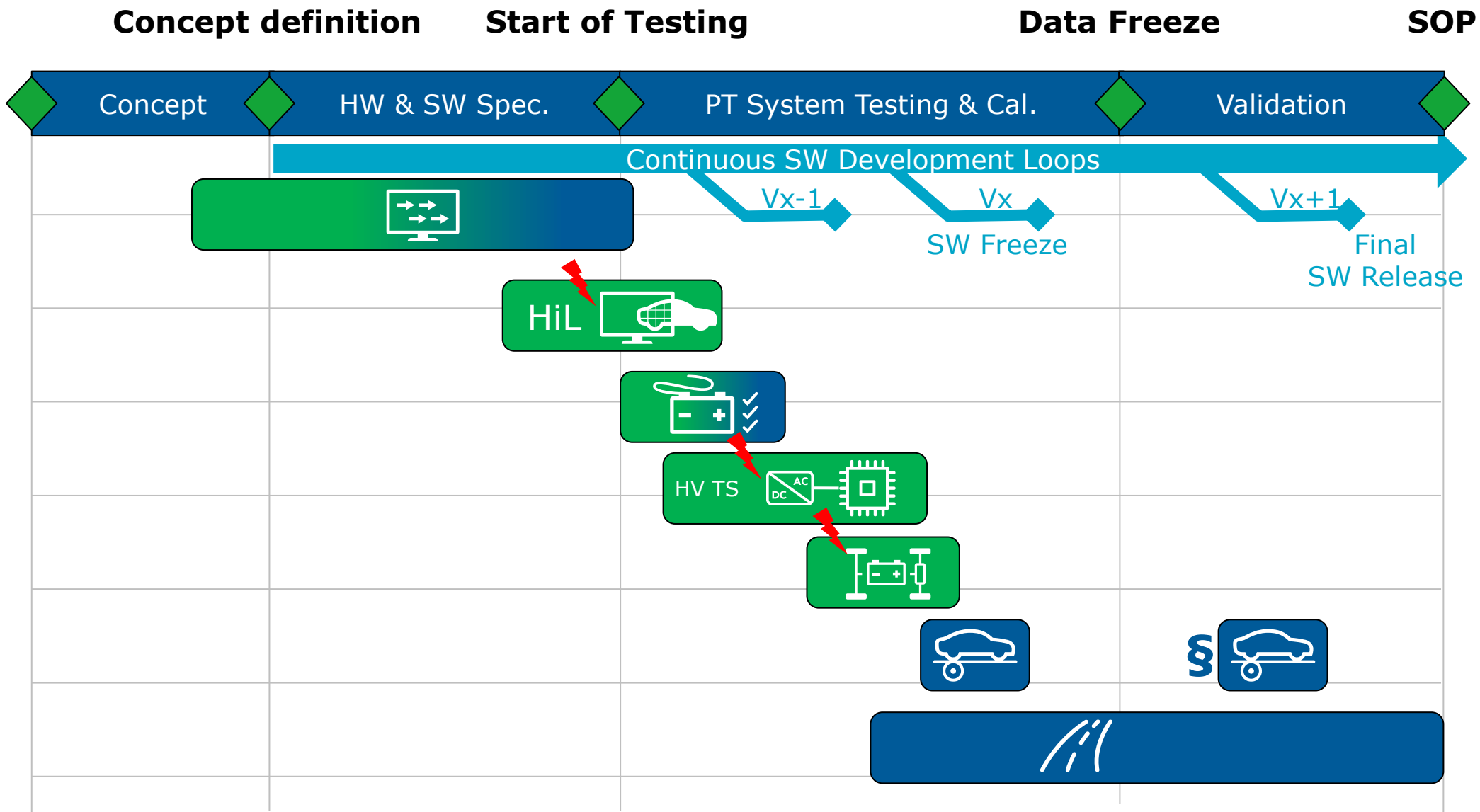
Start of Testing

Data Freeze

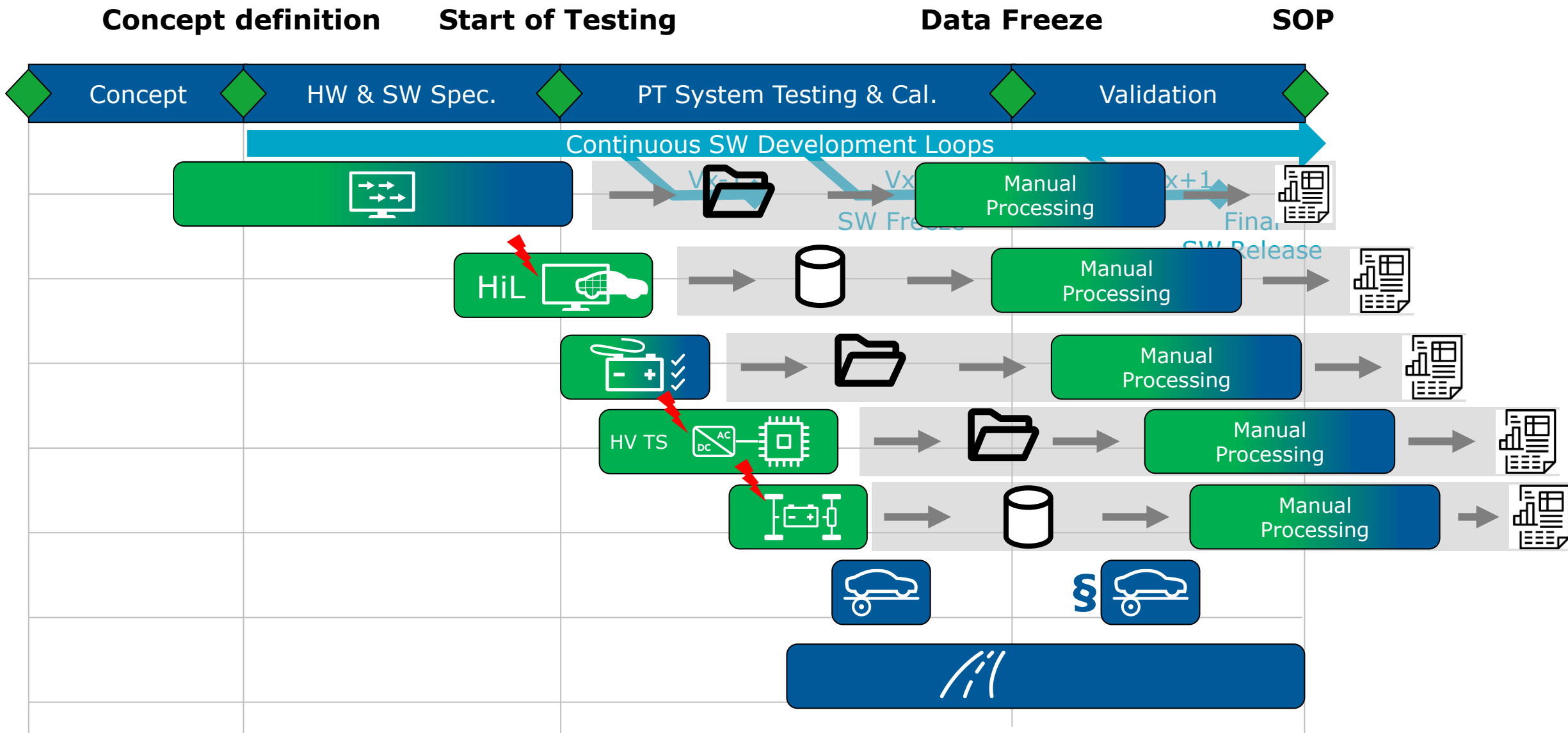
SOP



ISSUES WITH TRADITIONAL APPROACH

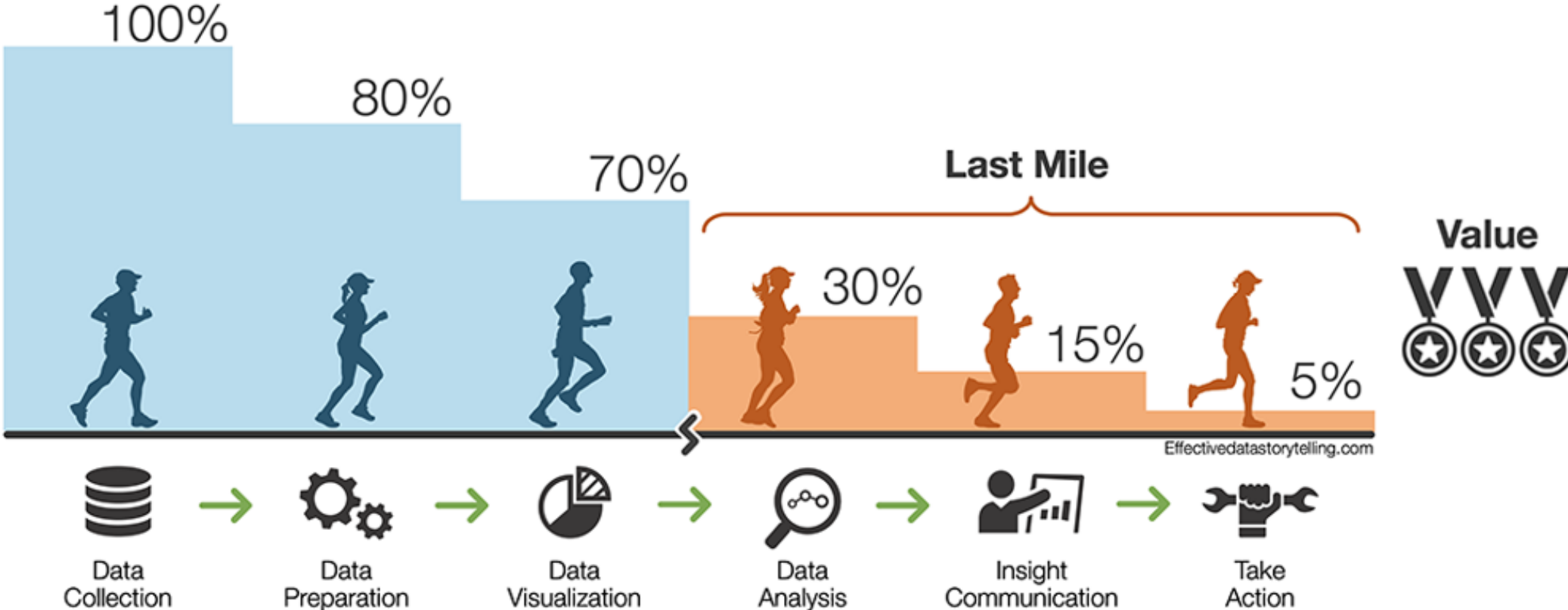


TRADITIONAL APPROACH WITH EARLY TESTBED USE ENSURES EARLY ISSUE DETECTION & SOLVING!



INCOMPARABLE TEST CASE, UNTRACEABLE STORAGE AND INEFFICIENT PROCESSING

Where Is Your Position in the Data Analytics Marathon ?



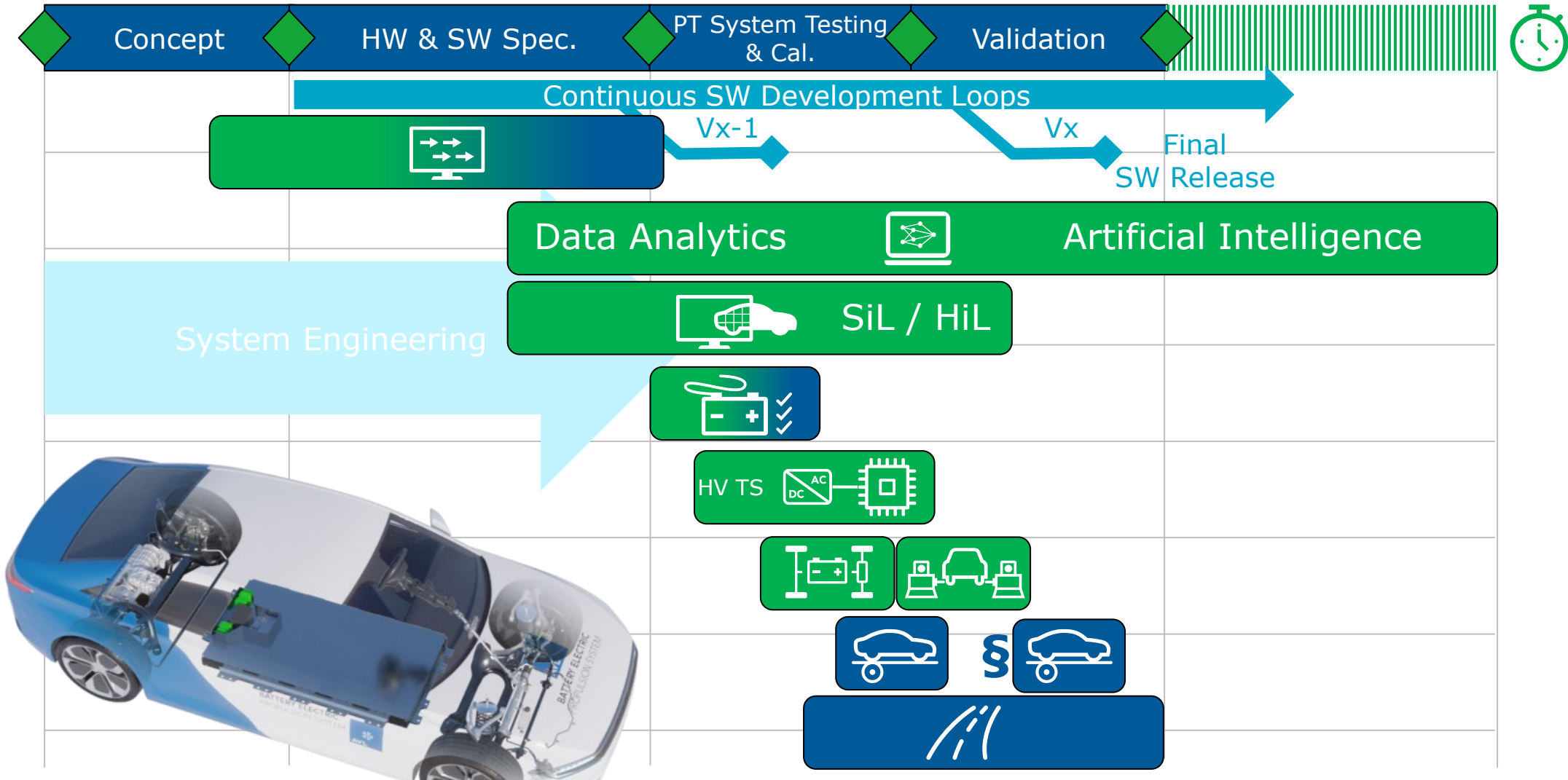
Source: Forbes.com

Concept definition

Start of Testing

Data Freeze

SOP



INNOVATIVE APPROACH IN POWERTRAIN DEVELOPMENT!

AVL Data Analytics™

Accelerate engineering decisions
with data-driven insights



Boosting Engineering Efficiency



Observe the expected and show the outliers
(Fully automated and traceable decision basis: product maturity)

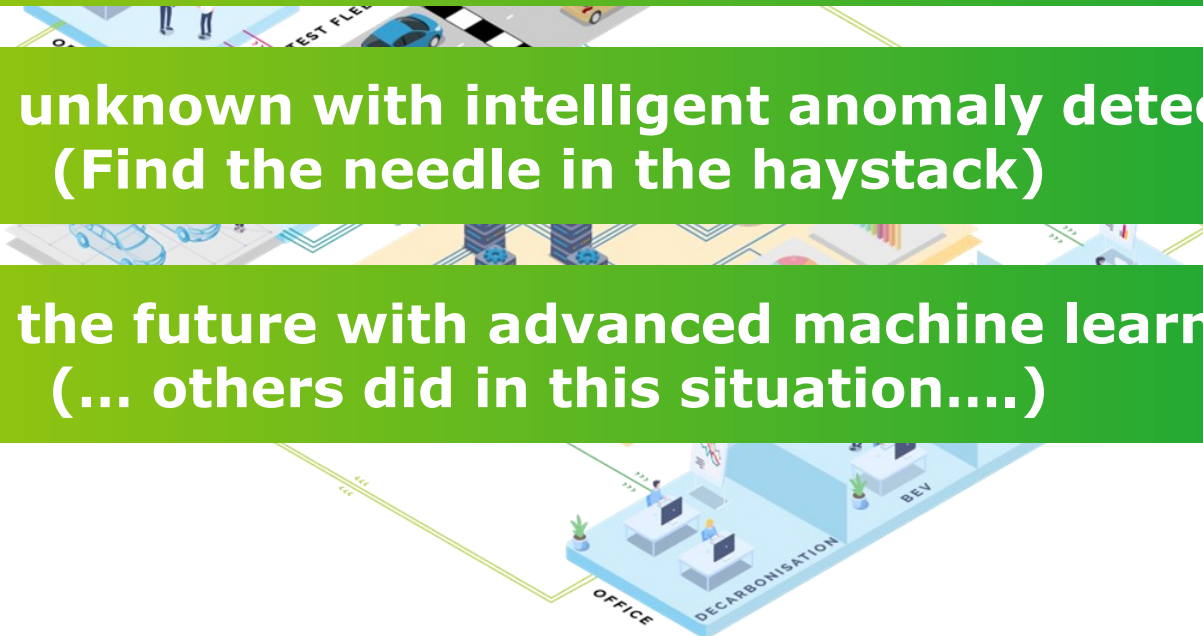
Efficiency gains in validation & calibration through automation

Find the unknown with intelligent anomaly detection
(Find the needle in the haystack)

Event-based, traceable and focused on exceptions (why)

Predict the future with advanced machine learning
(... others did in this situation....)

Augmented decisions through predictions (ML)



Event-Based Analytics

Focus On Aggregated Information

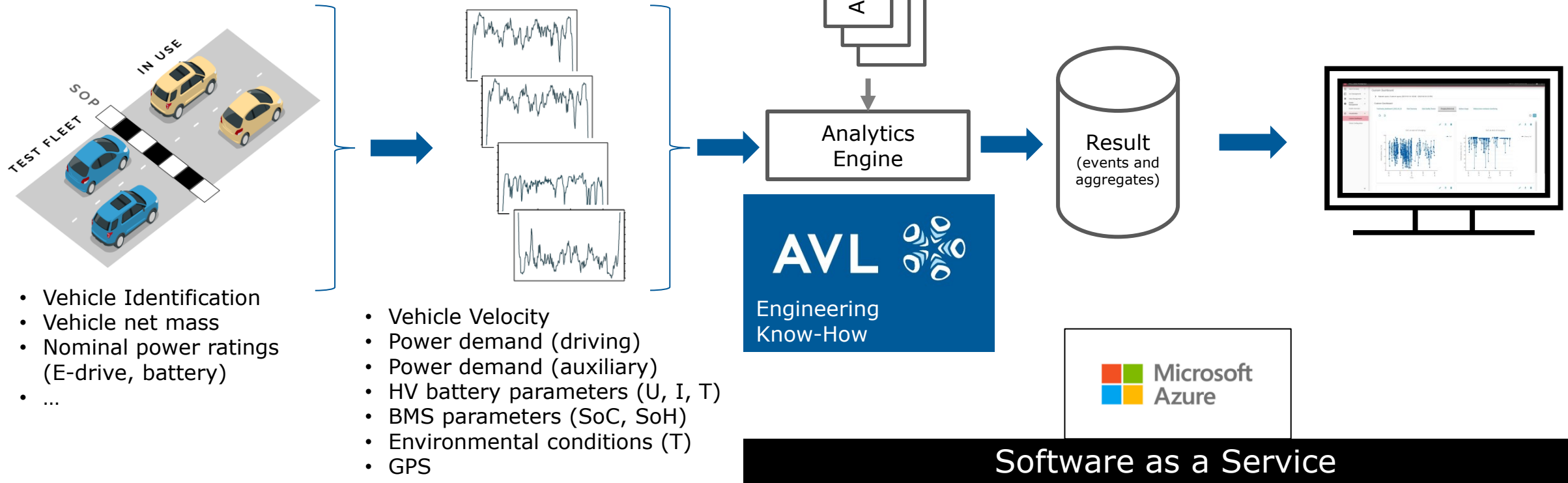
Meta Data

Time series data

Standardized analytics

Aggregated insights

Interactive Analytics



Transform Data Streams to Application Specific Insights

AVL DATA ANALYTICS™

Toolboxes

Powered by AI and ML

Fleet	BEV	HEV	ADAS
Battery	Damage	Calibration	End of line

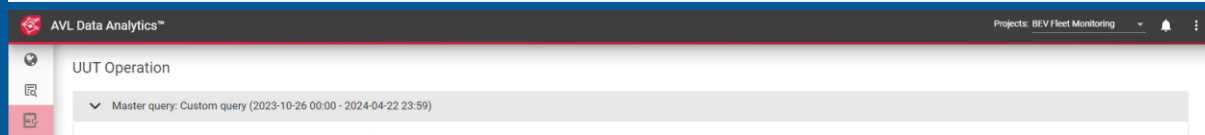
Software as a Service powered by



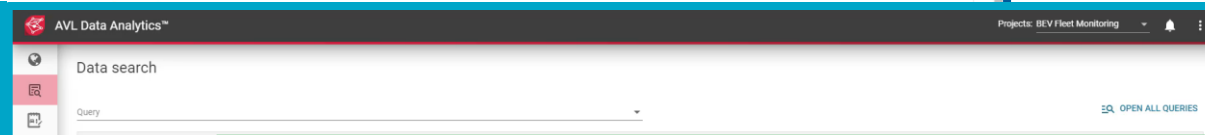


Web base Engineering Frontend

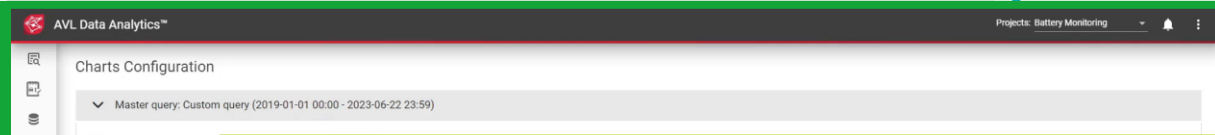
UUT Operation



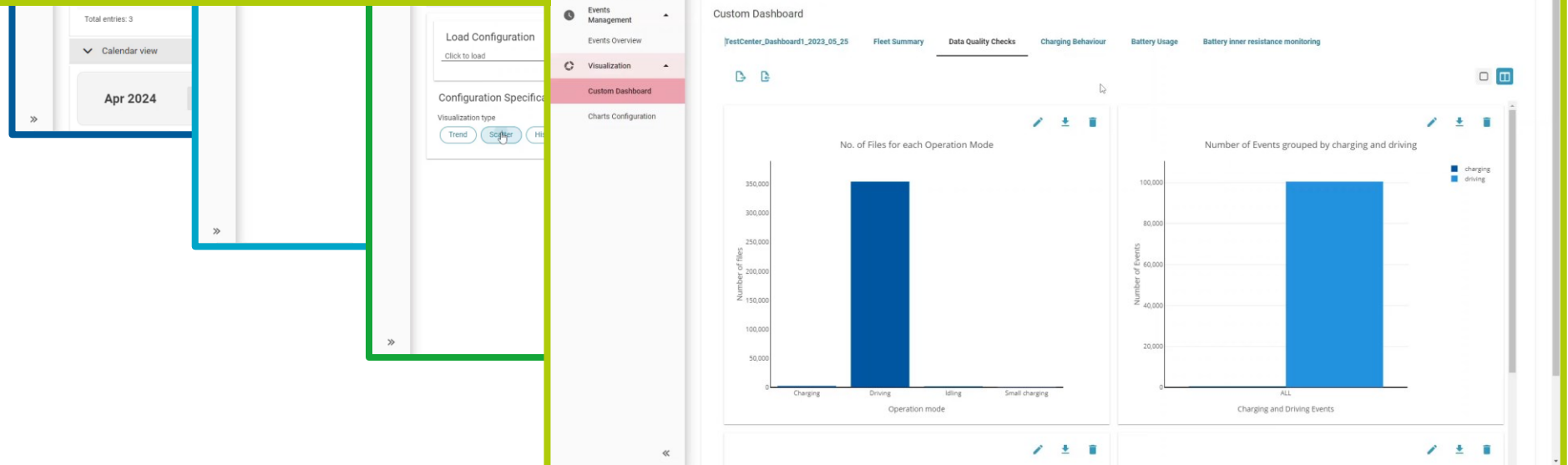
Data Search



Ad-hoc Analytics



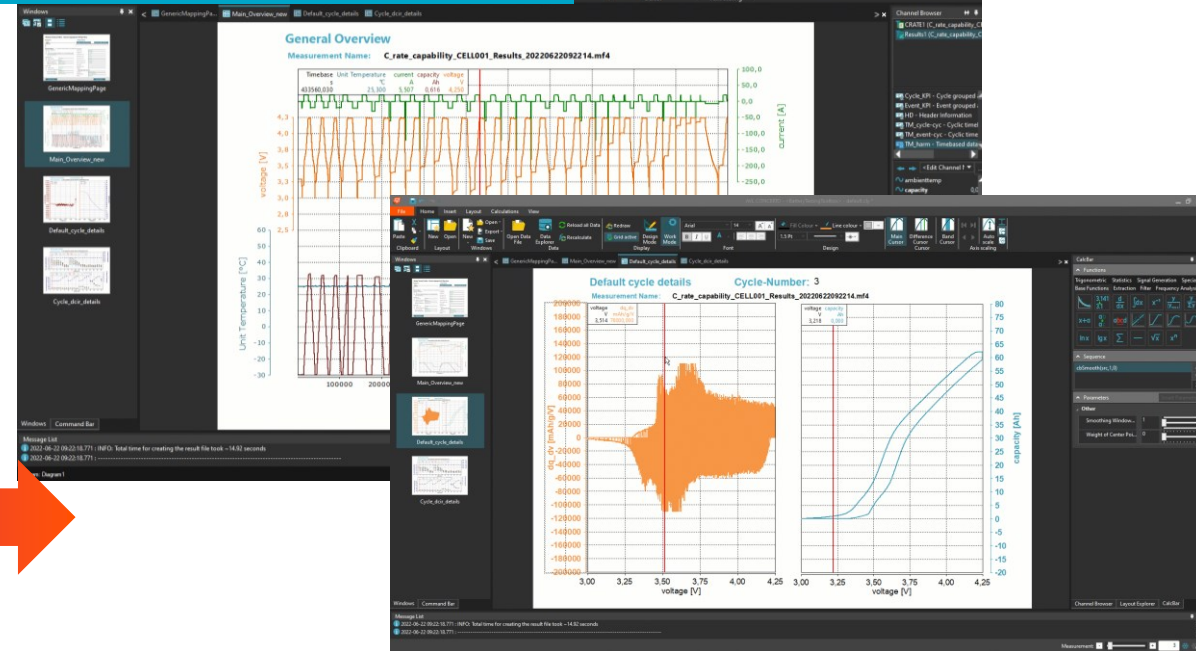
Dashboarding



Benefits: Web based data analytics to get a complete overview of the testing results

Quickly Navigate the Data to Find the Root Cause

Deep Dive



From Analytics

To Data and Take Decision



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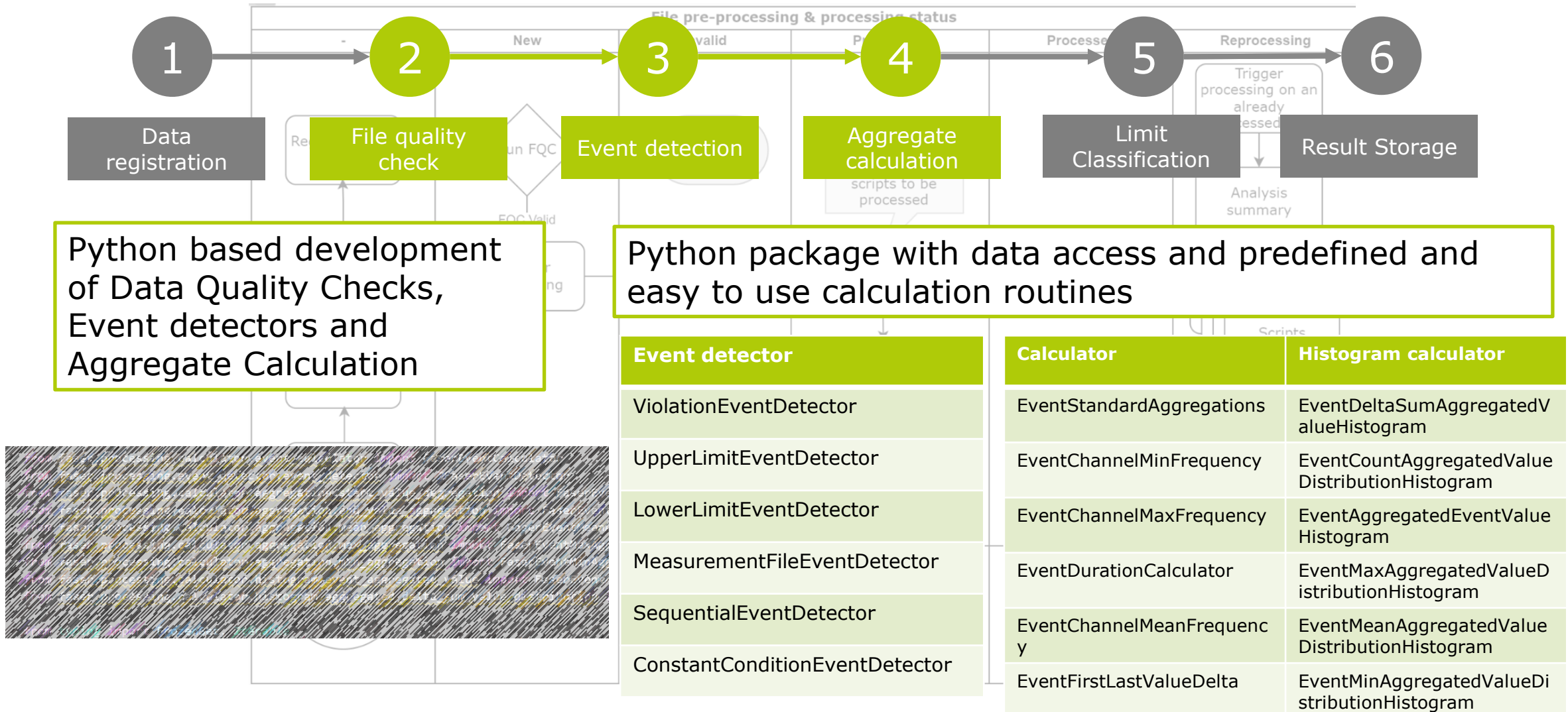
AVL Concerto™

**Benefits: Save time in analyzing only the data that is needed.
Navigate directly to the root cause in a view clicks.**



Application Development

How to write your own analytics



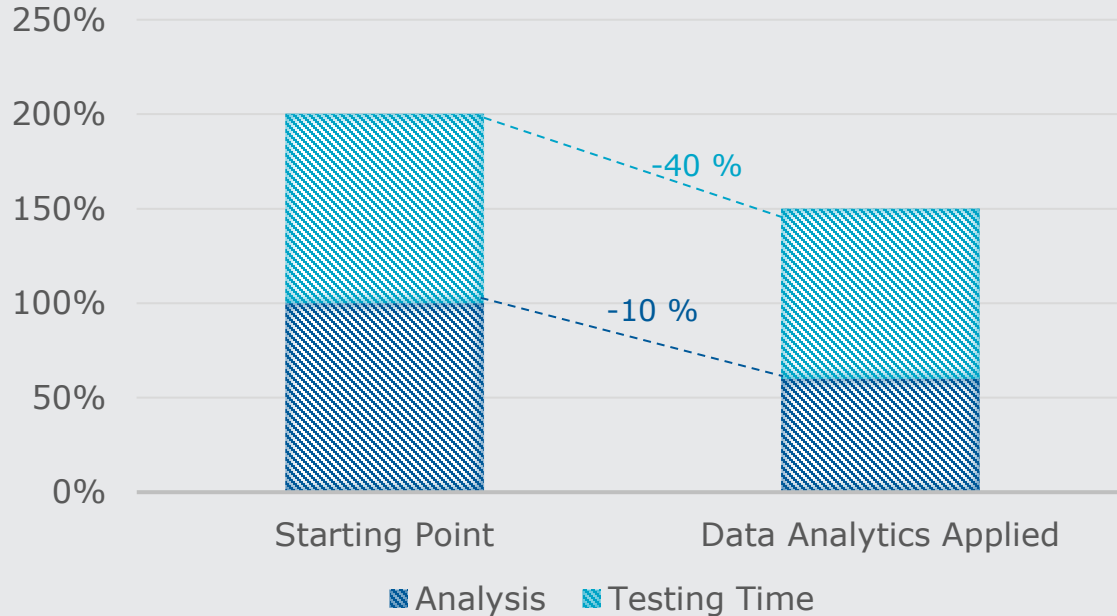


Benefits

ROI of AVL Data Analytics & Processing

Efficiency Increase with AVL Data Analytics

Typical project: Cell characterisation



Basis: Characterisation projects over 2 years testing time

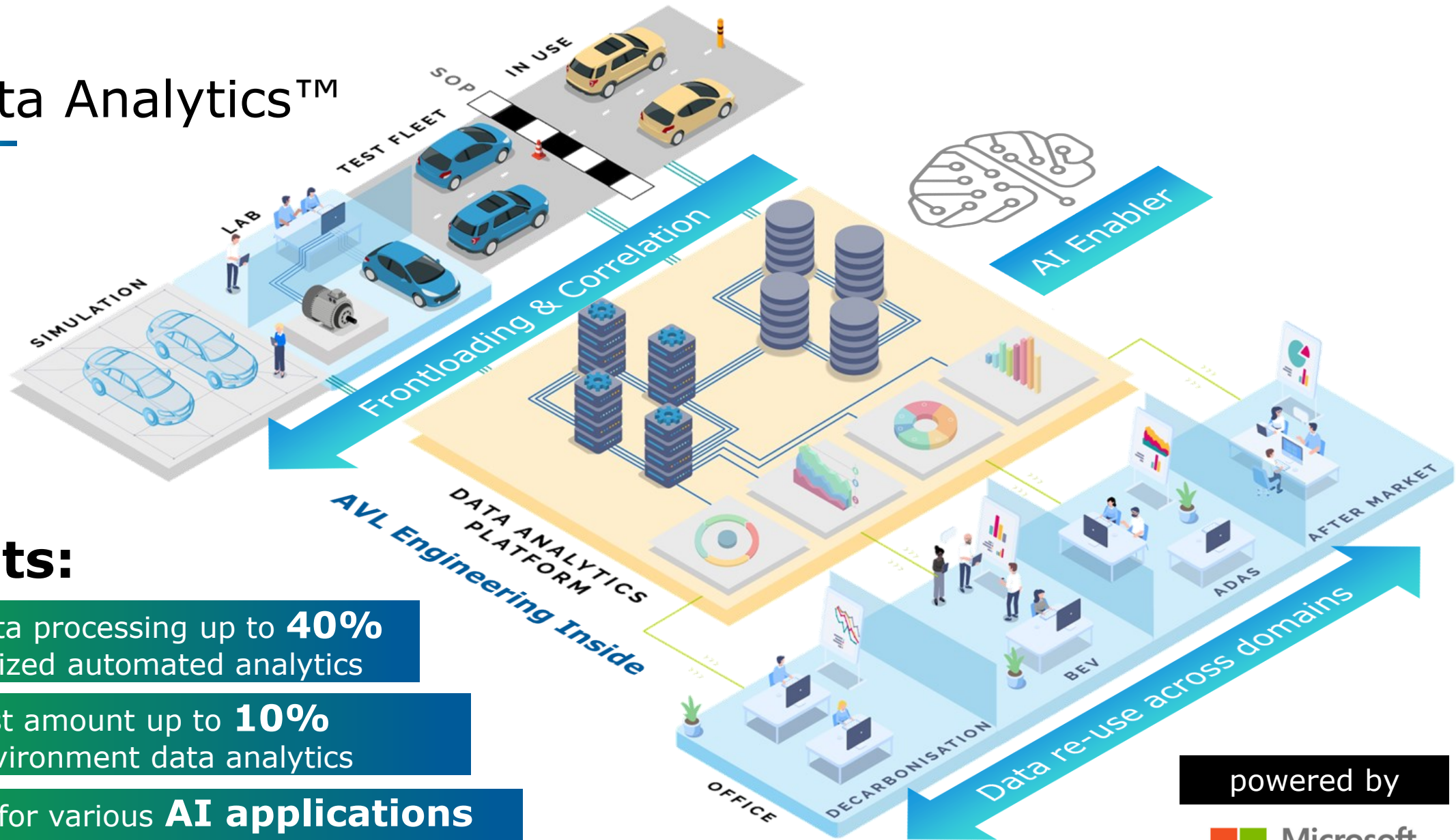
Potential savings:

-40% Analytics
Manpower

Due to automation and focused root cause analysis

Testing time **-10%**
Due early anomaly detection and AI prediction

AVL Data Analytics™



Benefits:

Reduced data processing up to **40%** by standardized automated analytics

Reduced test amount up to **10%** by cross environment data analytics



Basis for various **AI applications** for further efficiency gains

powered by





Accelerated development

by reuse of existing data.



Seamless correlation

by data analytics methodology applied to all validation results.



Interactive Exploration

of thousands measurements enabled by the big data technology stack



Democratization of data

via re-use and self-service analytics to realize a huge cost saving potential.

Reduce Development Cost and Time

Benefits

Improve Quality

Tailored
Toolboxes



Battery
Testing



Fleet
Monitoring



Predictive
Maintenance

...

Base for
AI and Machine
Learning

Product



AVL Data Analytics™



Data
Sources



An aerial photograph of a winding asphalt road through a dense green forest. Several cars are visible on the road, including a blue car, a white car, and a red car. The road curves from the top left towards the bottom right. A white rectangular box is overlaid on the road, containing the text 'AVL' and a logo of a bicycle wheel.

AVL



Thank You