



Highly Automated Driving Test Center

Dylan Dawson, Business Developer
Tech Day, San Jose, 2018 Nov. 8



Elektrobit

Development is underway!

The HAD Test Lab is an end to end tool chain for development in the autonomous driving space

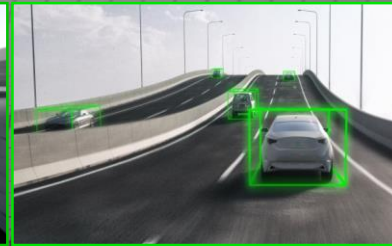
Data
Recording



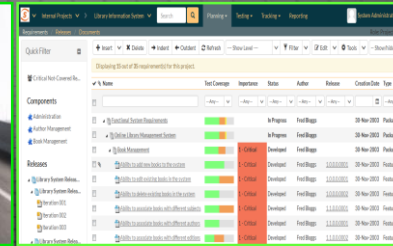
Scenario
Generation



Data
Enhancement



Test Case
Management



Test
Execution



Test
Post-Processing



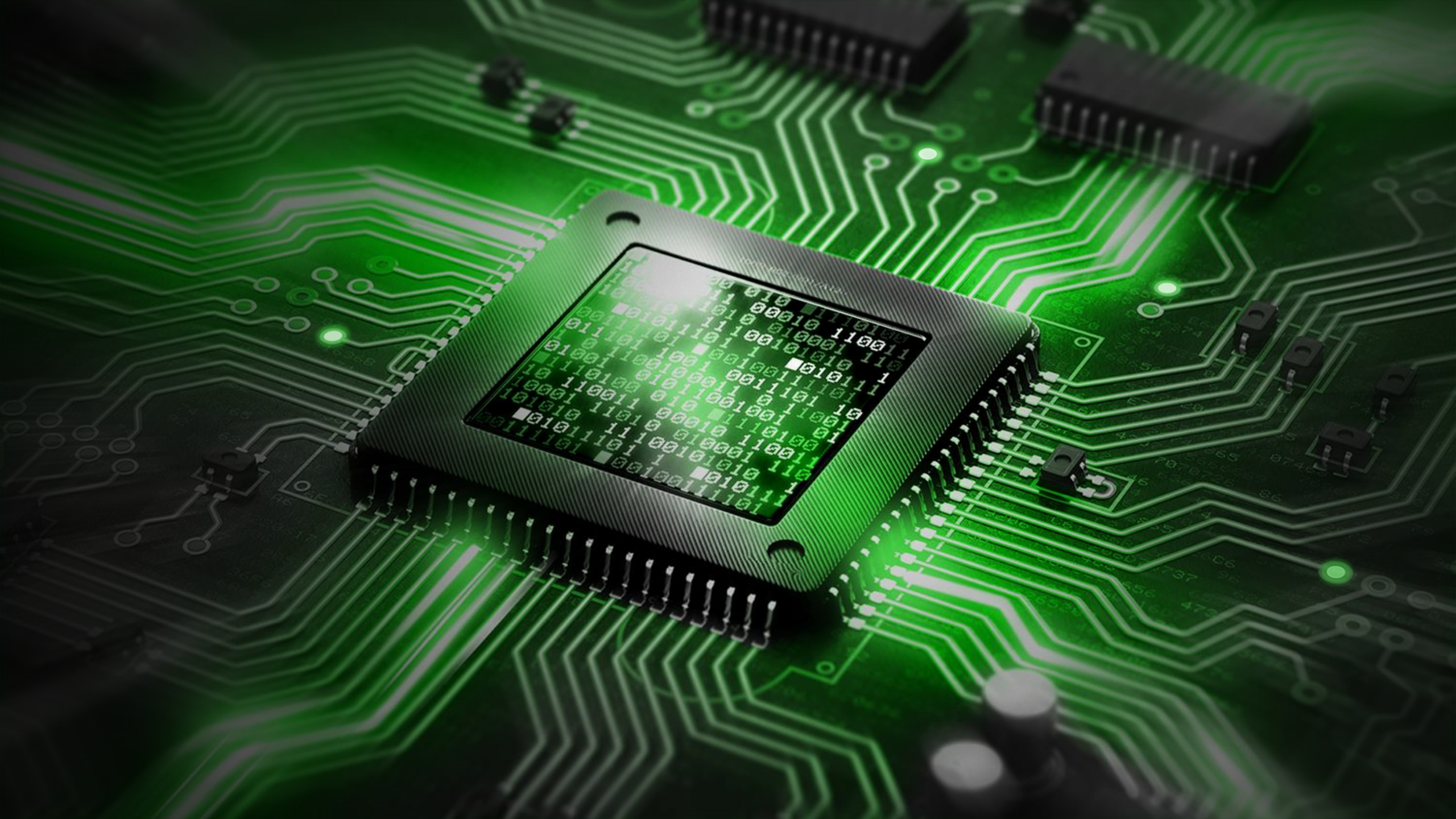
How safe
is safe enough?



Let's work together
to close the gap
between vision
and reality.







Verification and validation of automated driving.

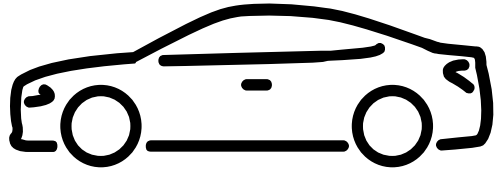




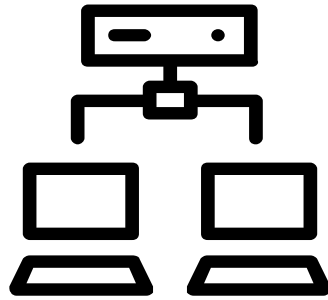


**150 million
to 8.8 billion
test miles.**

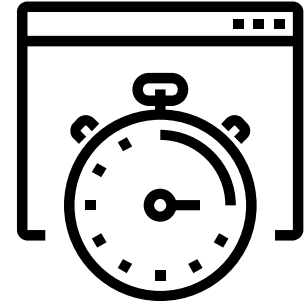




6 years

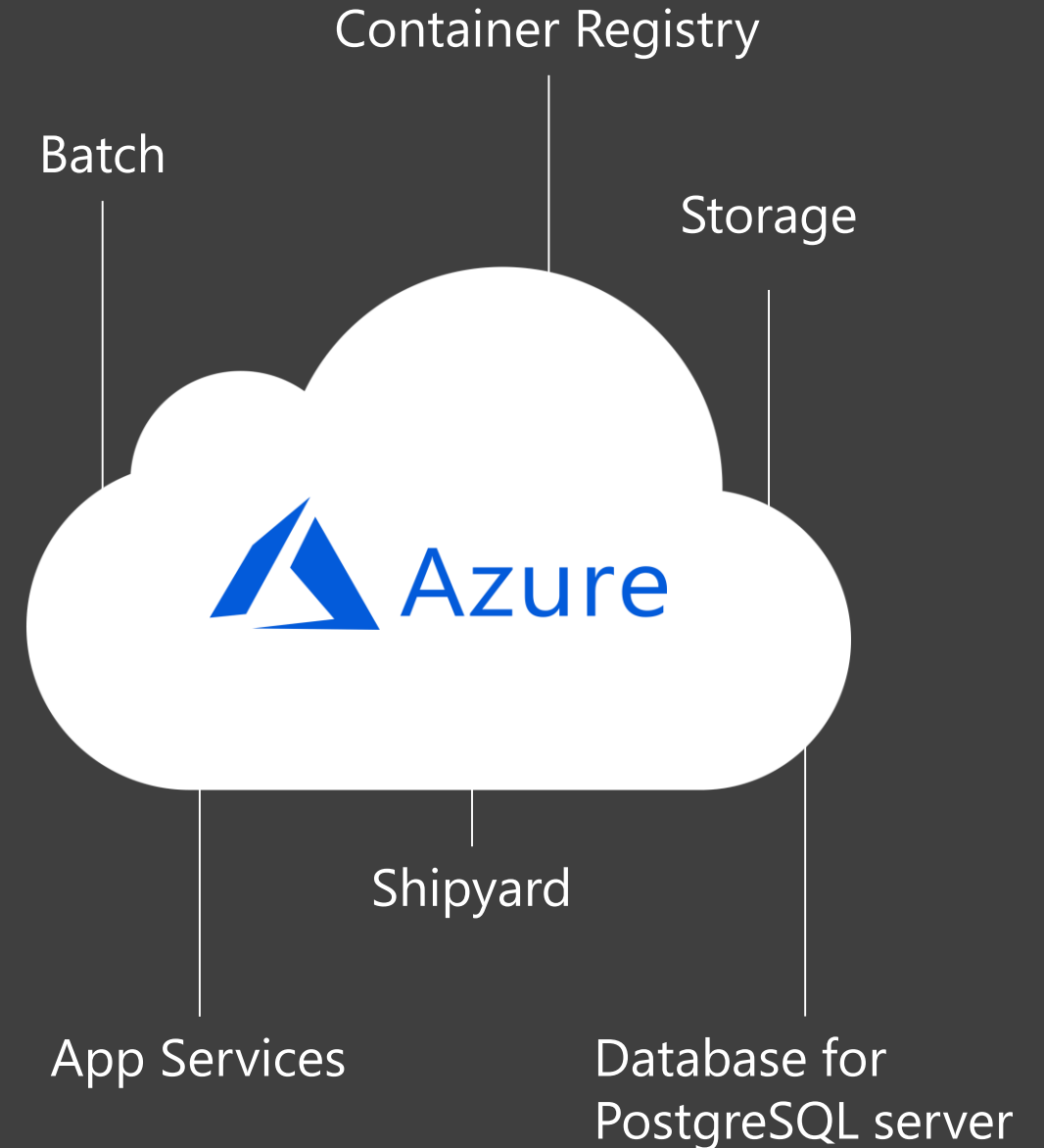


5 years



2 weeks

Test Center for automated driving built with Microsoft Azure.



Test Center Workflow



Automated Driving Test Data Platform

Database



Raw Data



Label Ground Truth



Scenarios



Test Cases



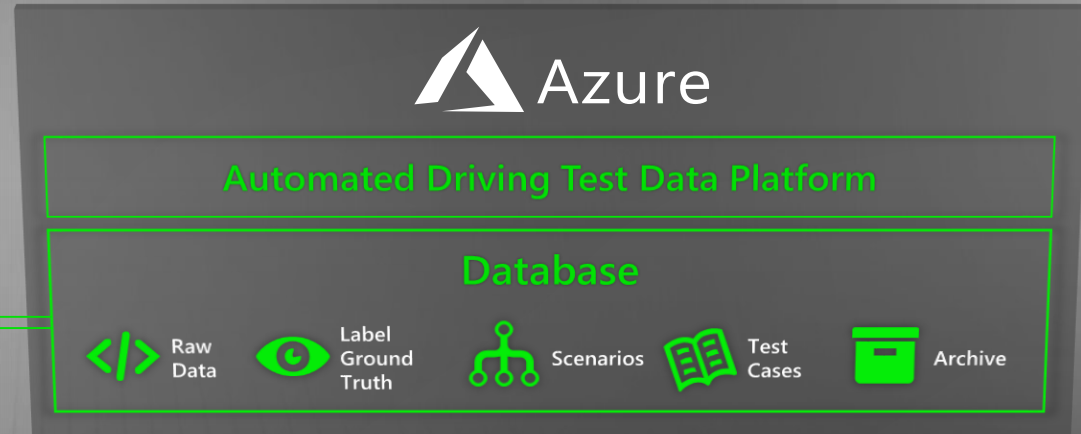
Archive

Test Center Workflow

Test drive recording



Scenario generation

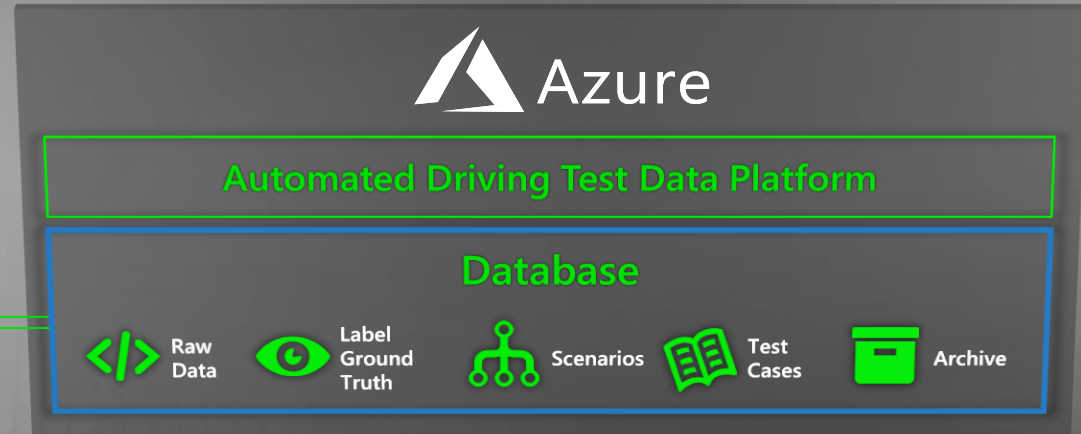


Test Center Workflow

Test drive recording



Scenario generation



Test Center Workflow

Test drive recording



Automated Driving Test Data Platform

Database



Raw Data



Label Ground Truth



Scenarios



Test Cases



Archive

Scenario generation



Data Enhancement



Test Case Management



Test Execution



Test Post-processing



Test Center Workflow



Automated Driving Test Data Platform

Database

- Raw Data
- Label Ground Truth
- Scenarios
- Test Cases
- Archive

Test drive recording



Scenario generation



Data Enhancement



Test Case Management



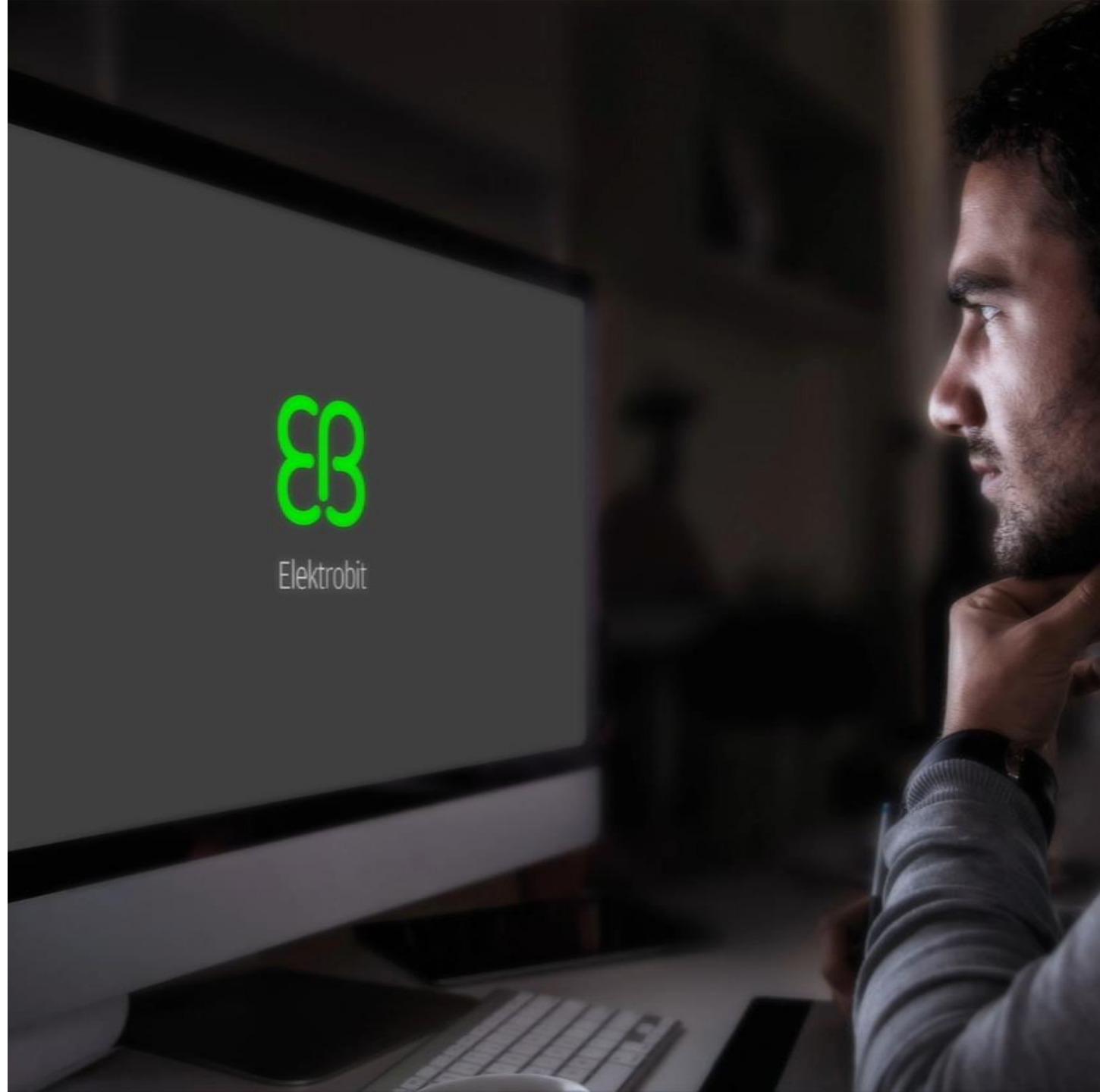
Test Execution



Test Post-processing



**Database with
millions of real
and virtual
driving scenes.**



ADTF Control

00:00:02.100 DS_Grid_Validation_Example
 #6799 (6%) (00:00:31.944) DS_grid_validation_recorded_data
 1 Updates/s default description

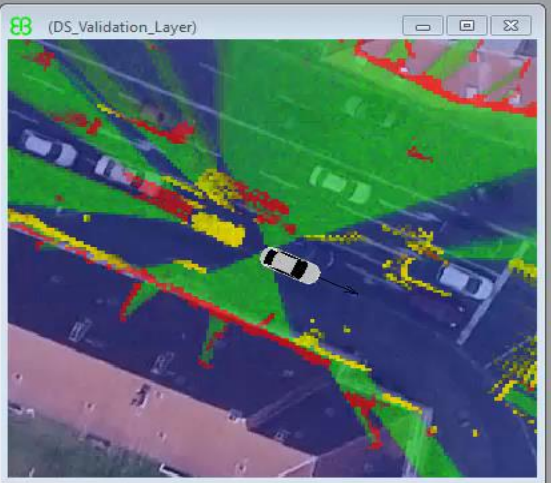
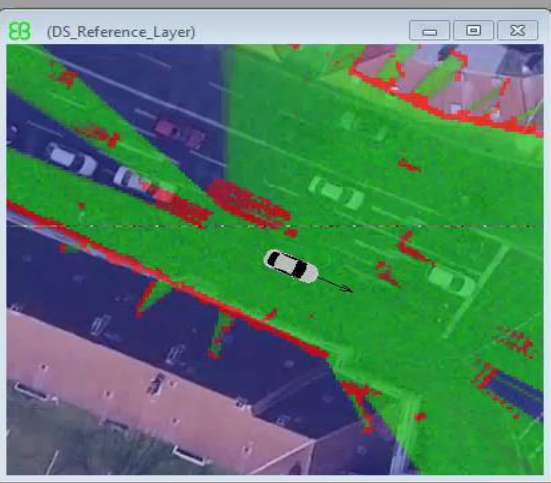
Property Browser

Show only changeable properties?

No Yes Harddisk_Player

Property	Value

Component Tree Project Tree Property Browser



KPI results for DS occupancy validation

Occupied state KPI
 0.1268 RMS

Not Occupied state KPI
 0.3166 RMS

Unknown state KPI
 0.3646 RMS

Overall KPI
 0.4993 RMS

The grid validation filter creates a third grid, using the data provided by the first two grids. The DS Validation Layer is displayed in a separate window.



Elektrobit

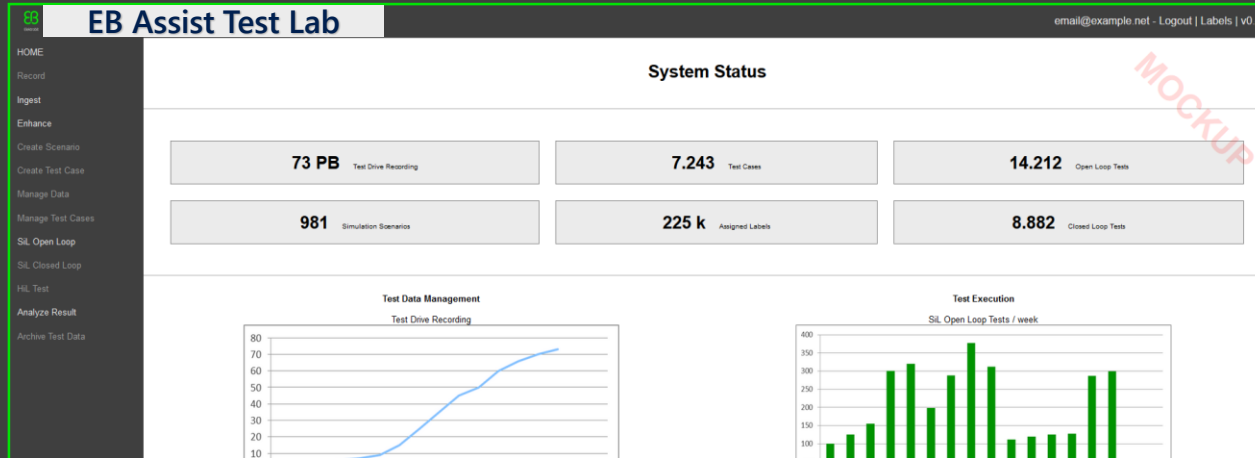
EB's Activities

(Test Lab Development roadmap)



Elektrobit

Test Lab – binding product to front end interface

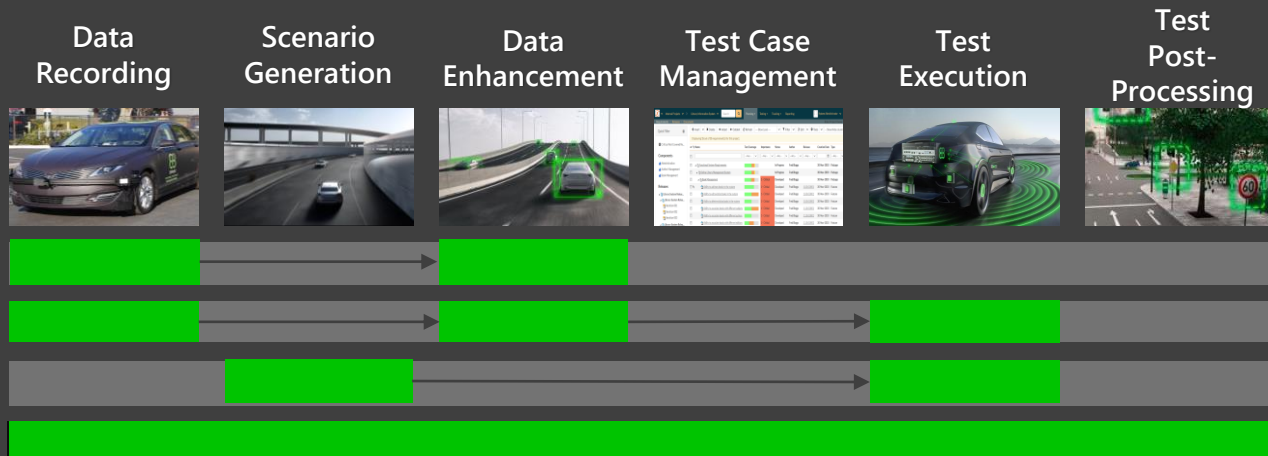


Demos

- Along the customer journey
- Informed by customers specific pains
- Target: test MVP features and define MVP scope

Minimal Viable Product (MVP):

- customer can use it without guidance
- High quality & reliable core functionality
- "Go to market ready"



- Demo 1: Nov '18, Equinix data ingestion using EB tools
- Demo 2: Dec '18, Test execution with customer code element
- Demo 3: Feb '19, IDEA: Simulation – according to upc. standard
- Demo: 4 May '19, Test Case Management + Test Post Processing

**Flexible and scalable
infrastructure.**



**Test Center for
automated driving.**

Let's connect!





Elektrobit



DYLAN DAWSON

Business Developer

Dylan.dawson@elektrobit.com

www.elektrobit.com