

RED HAT
SUMMIT

How Container Technology Inspires Automotive Development

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Boston, May 6, 2019

Challenges In Automotive Development

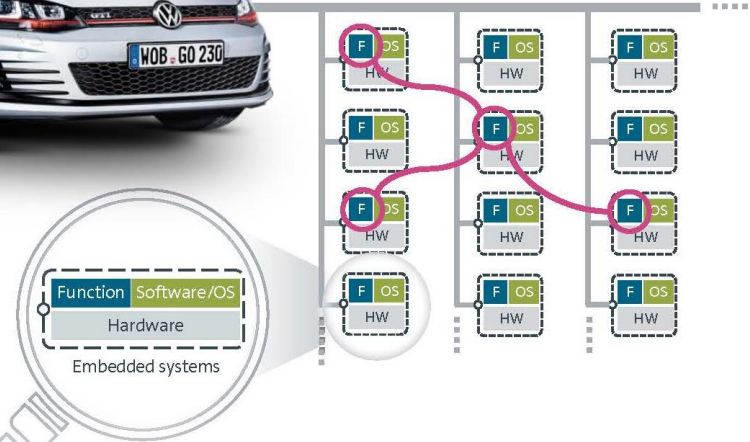
Increasing Complexity In Integration Testing



Each

- ▶ **Combination Of Components**
- ▶ For Each **Model**
- ▶ And Each **Software Version** And **Equipment Line**

Needs To Pass The Integration Testing Process!



Challenges In Automotive Development

Integration Of E/E Vehicle Functions

Virtual Environment

Virtual Vehicle

Virtual Driver

System Under Test



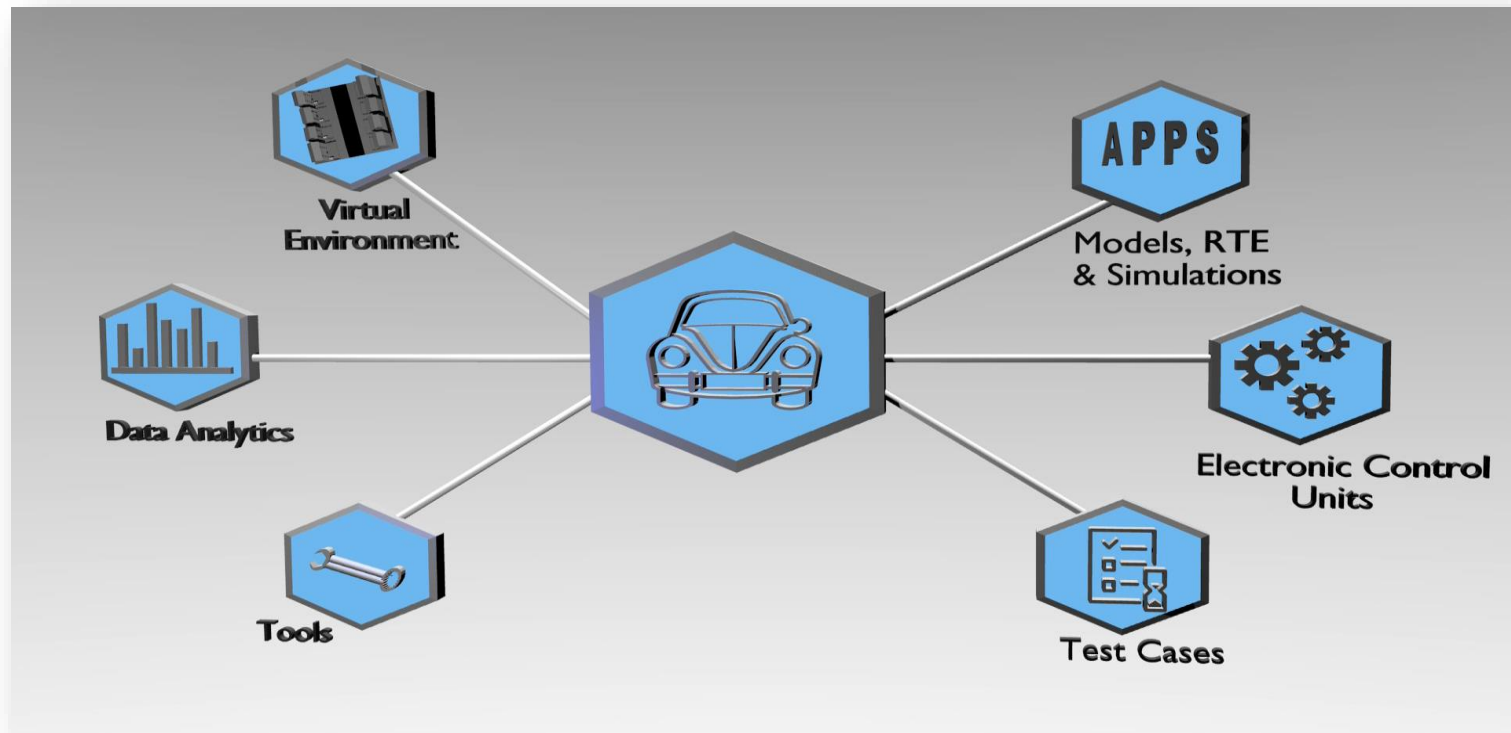
Challenges In Automotive Development

Massive Scalability And Automation Required



Challenges In Automotive Development

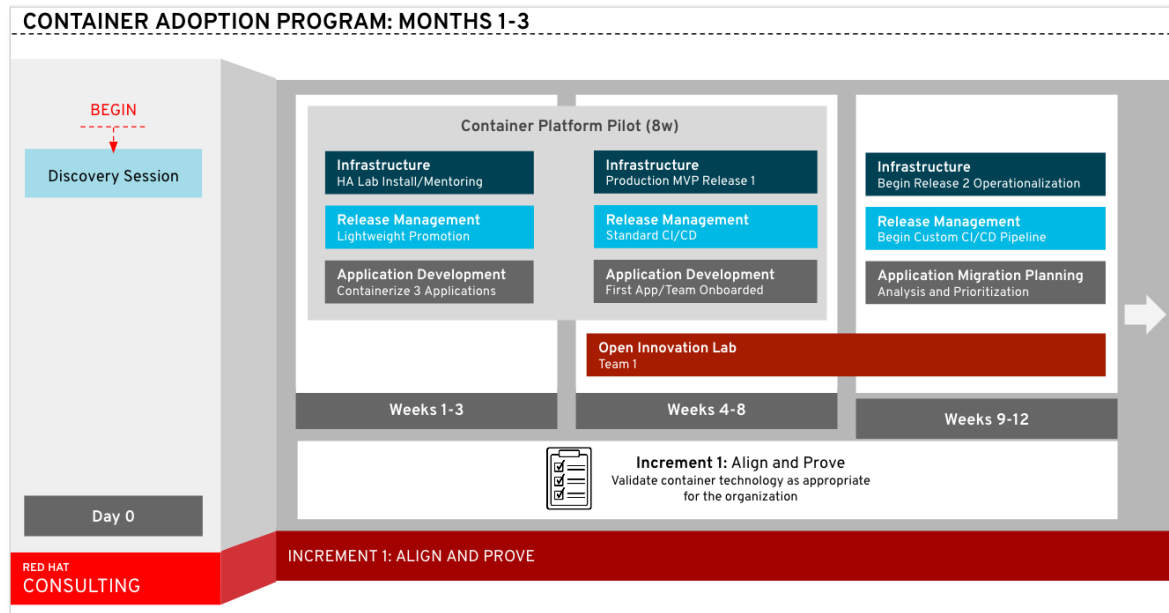
Massive Scalability And Automation Required



Our Journey To Containers

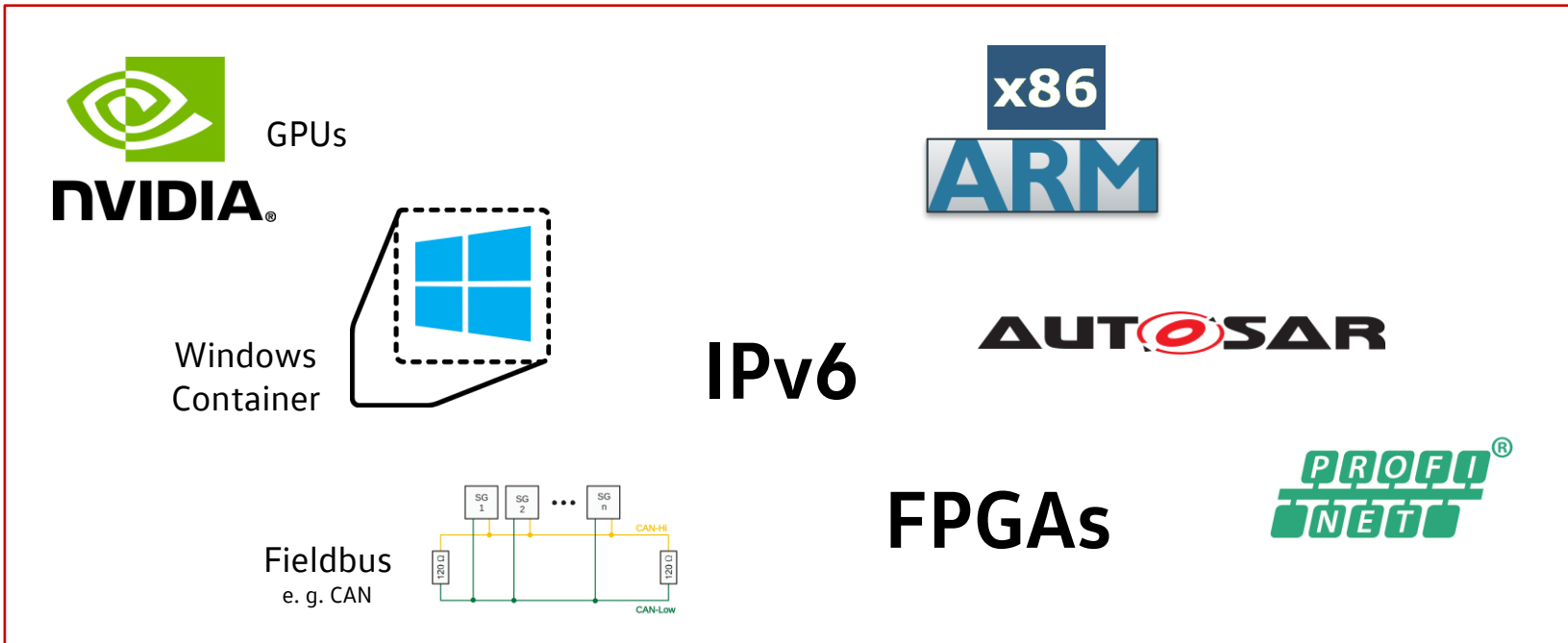
How Volkswagen Gets Started

- ▶ Technical Proof Of The Use Case
- ▶ Infrastructure Setup
- ▶ Red Hat Open Innovation Labs



Our Journey To Containers

Mastered And Upcoming Technical Challenges



Our Journey To Containers

Description Of Details On Virtual Test Environment (VTE)



OpenShift Native Architecture

- ▶ Kubernetes At The Core

Temporal, Short Lived Environments

- ▶ VTEs Created For A Certain Period Of Time And Then Deleted

Asynchronous, Event-Driven

- ▶ VTEs Pull Tests From Central System When Ready

Isolated

- ▶ SDN Ensures Network Isolation For Multicast Discovery

Auto Healing

- ▶ Possible To Restart VTEs In Case Of Failure

Standards & API-Driven

- ▶ OpenAPI, AMQP, EIP

Our Journey To Containers

Outlook On Future Components

Extend OpenShift into 3rd Party Hardware

- ▶ Achieve Hardware In The Loop (HiL)
- ▶ Virtual Kubelet Running On Custom Hardware e.g. ECUs, Real Time Computers
- ▶ All Test Components Physical And Virtual Managed And Controlled By OpenShift



Cloud Bursting

- ▶ On Premise And Also On Microsoft



Developer Workflow

- ▶ Custom Resource Definitions
- ▶ Operators



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If you are interested please join our recommended sessions during Red Hat Summit 2019.

“How Volkswagen used Microservices and Automation to develop Self-Service Solutions”

Wednesday, May 8, 2019, 11:15 am | Discovery Zone