Digiteq Automotive

AI at Digiteq Automotive

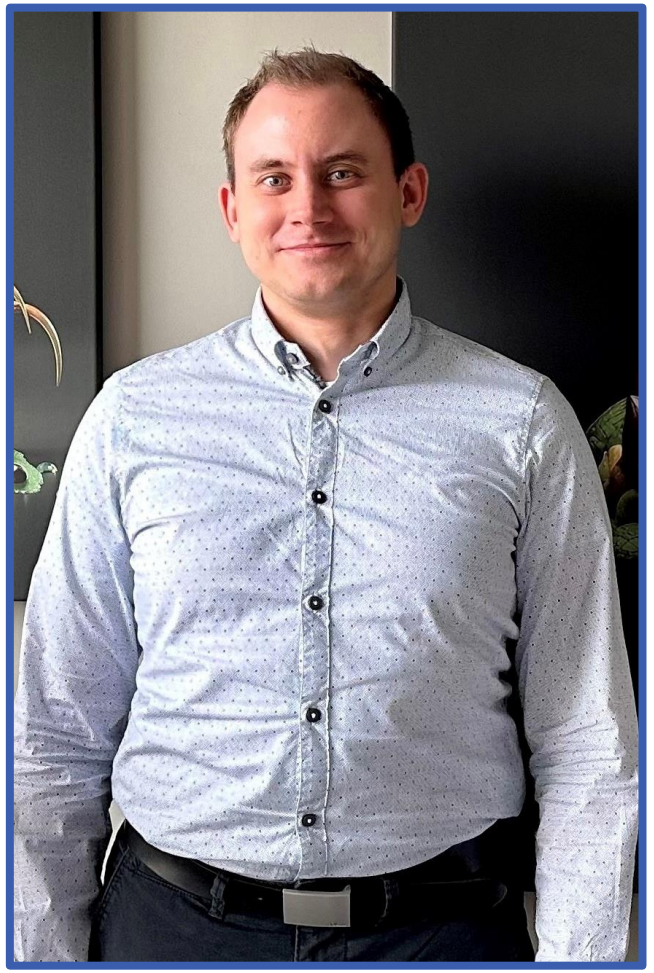
Ondřej Székely

A Volkswagen Group Company

Speaker Introduction

Ondřej Székely

- 2 years at Digiteq Automotive
- AI engineer
  - Member of *Automated Driving Alliance by CARIAD and BOSCH*
    - Generic Object Detection team
  - Ex-member of *Multi-Task Learning team*
  - Responsible for DQ AI infrastructure
- 7 years at IBM
  - „full-stack“ AI consultant & engineer
  - AI team leader



About the Company

Digiteq Automotive is a 100% subsidiary of Volkswagen Group

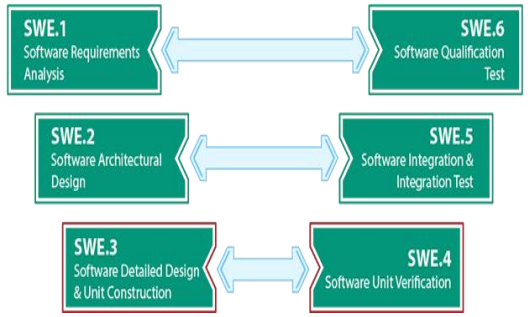
CARIAD
A VOLKSWAGEN GROUP COMPANY

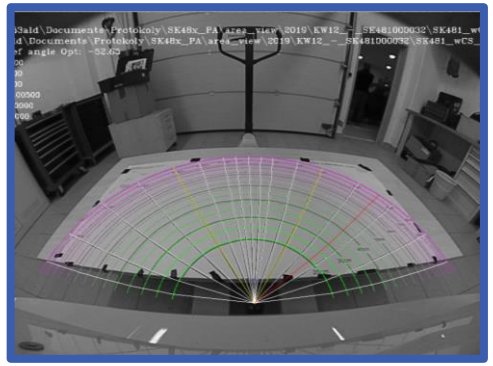
51 %

CARIAD is a 100% owned subsidiary of Volkswagen Group

ŠKODA

49 %





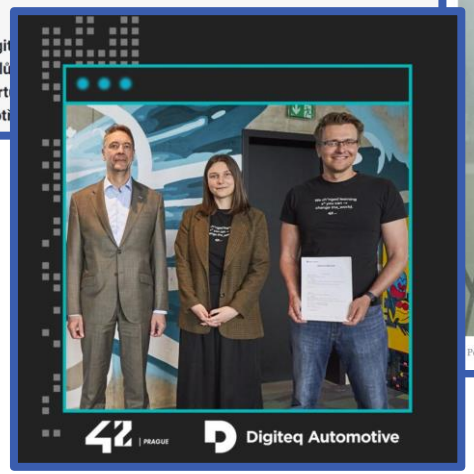
Predevelopment

Series SW Development

Complex Testing

Applications

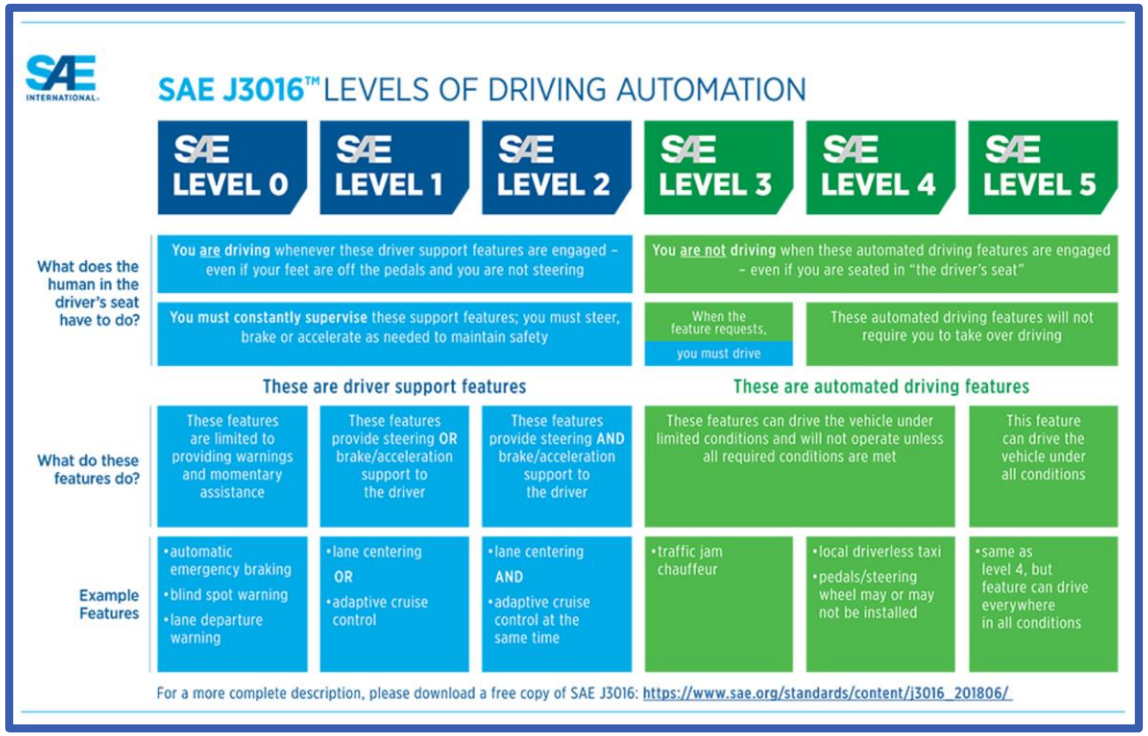
DQ Public Relationship



The Automated Driving Alliance

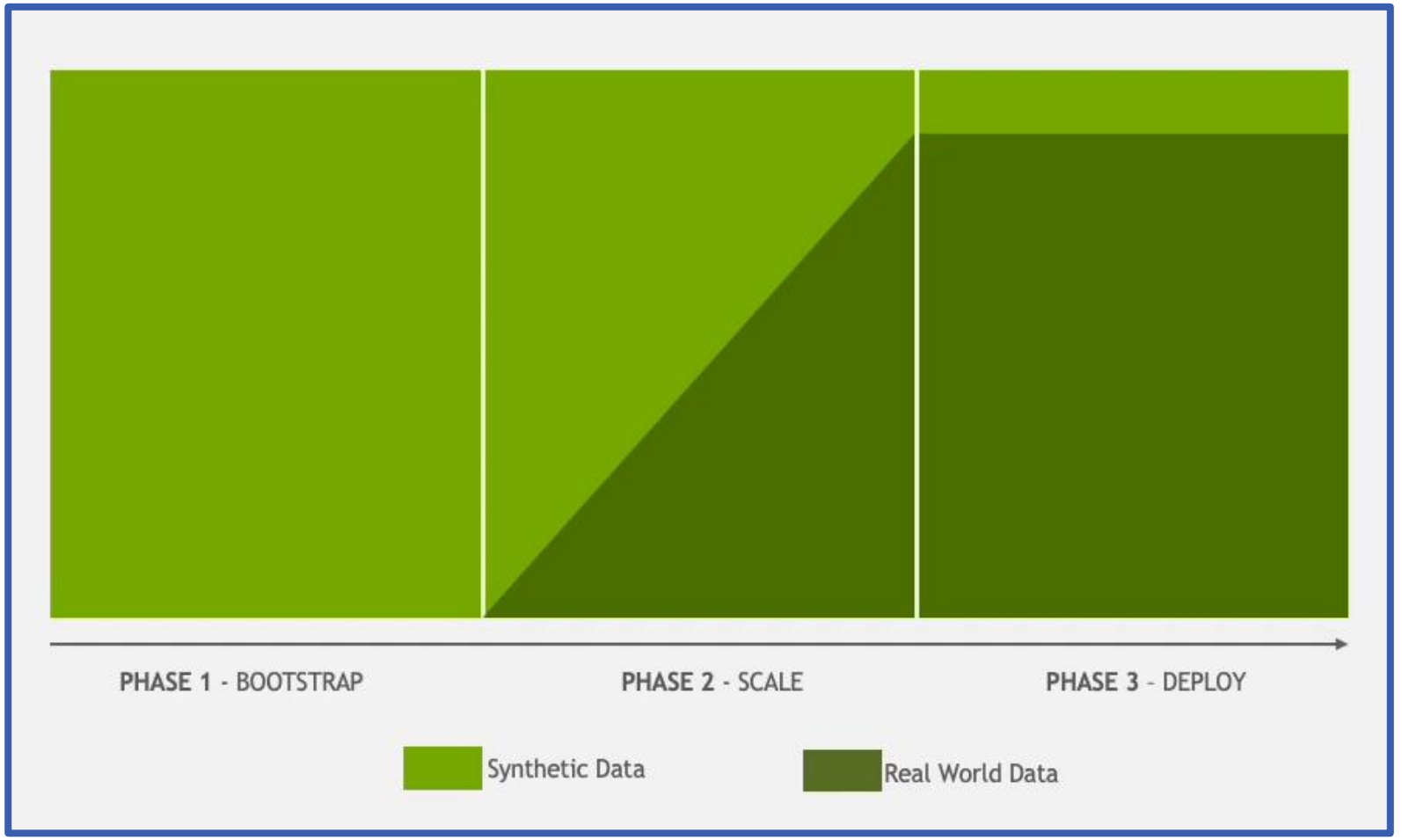
a partnership between CARIAD and Bosch Mobility

Automated Driving Alliance
By CARIAD and Bosch



"One of the world's biggest automotive manufacturers + one of the world's biggest automotive suppliers = one giant leap for automated driving."

Why Synthetic Data?



https://www.nvidia.com/en-us/on-demand/session/gtcspring23-se50004/

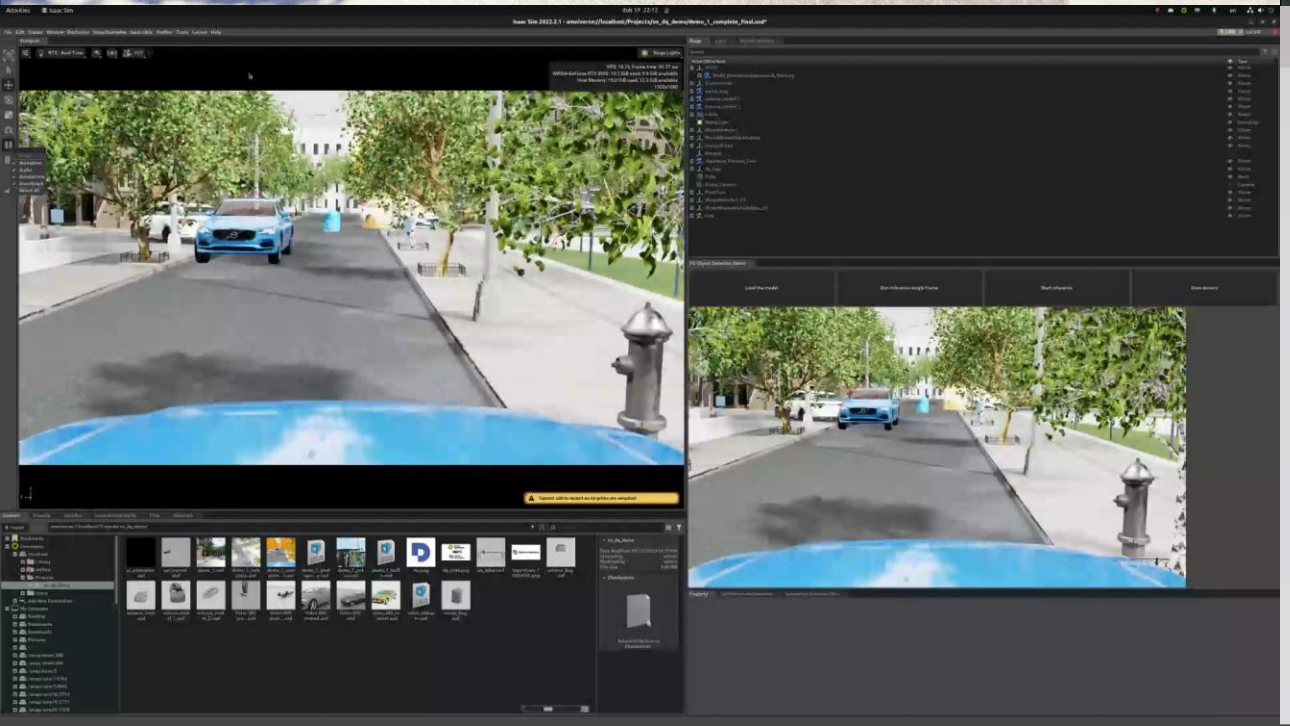
NVIDIA Omniverse

OpenUSD

NVIDIA MDL

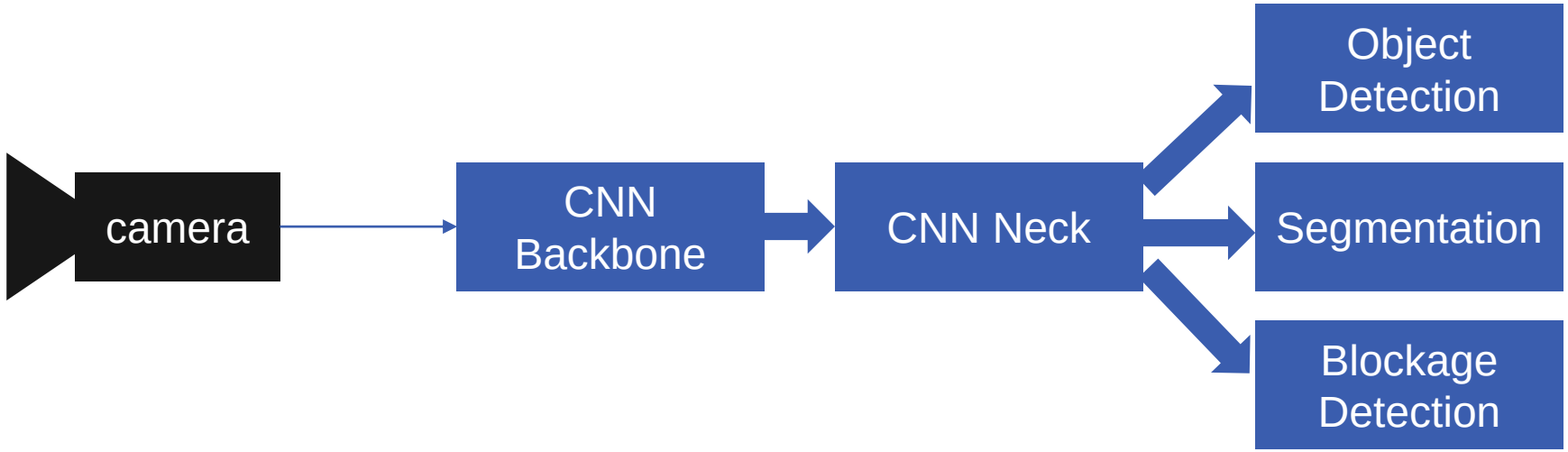

NVIDIA
OMNIVERSE
MEETS
Digiteq
Automotive


RTX - Real-Time
VehicleVelocityFollowCamera0
ŠKODA
ENYAQ
iV

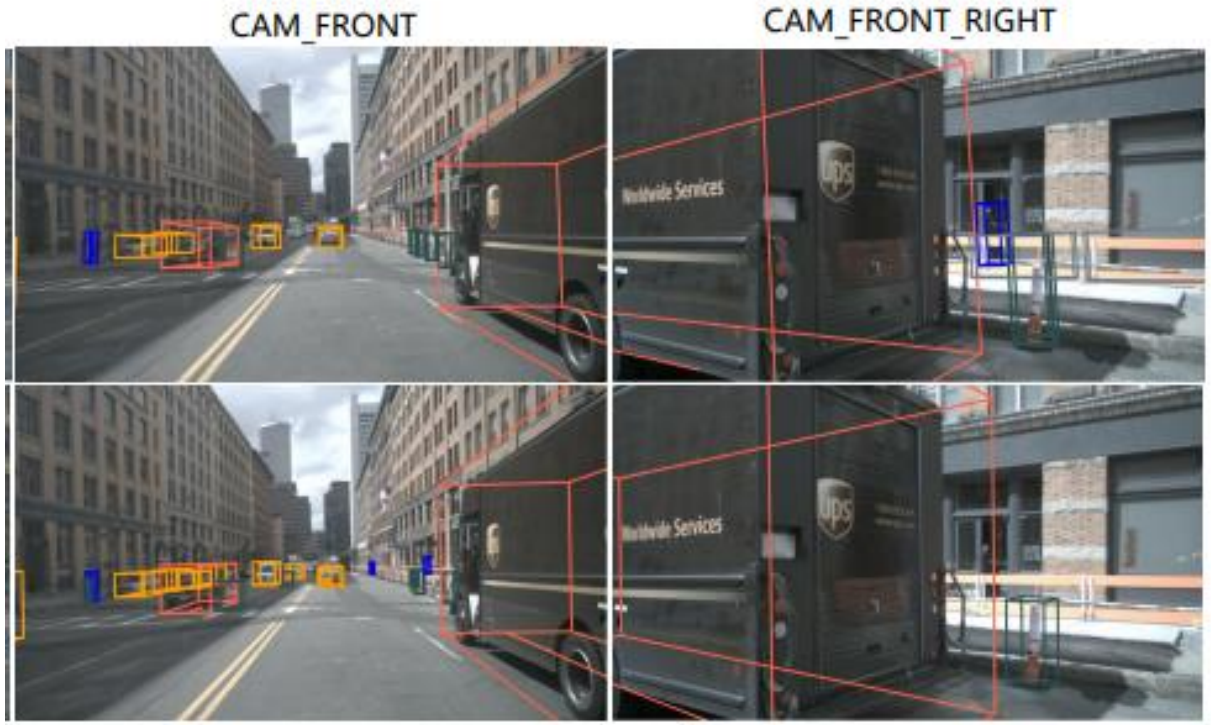



ŠKODA
iV

Visual Perception Using Classical NN Design

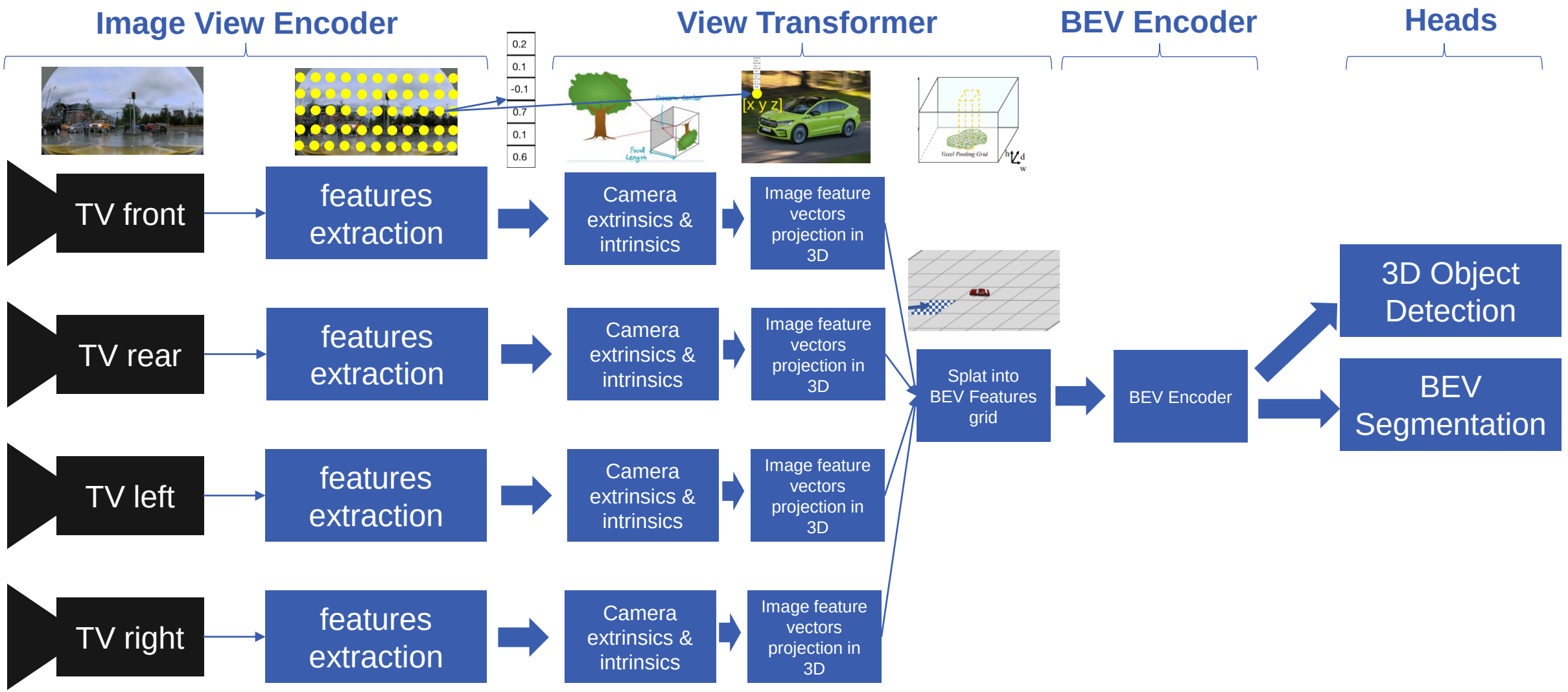


Single Camera Limitations



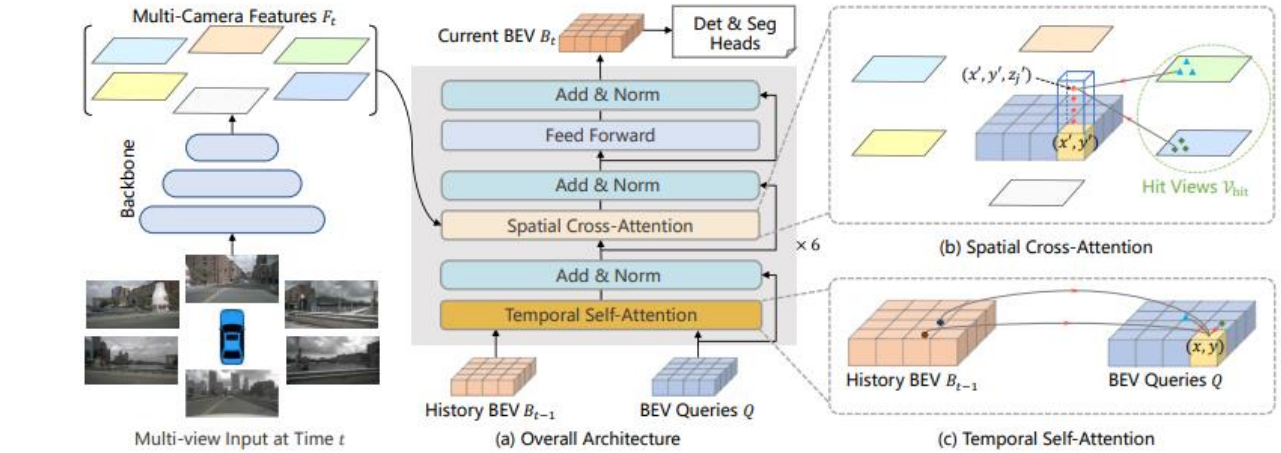
BEVFormer

Bird’s Eye View



Bird’s Eye View

Tesla AI Day 2022



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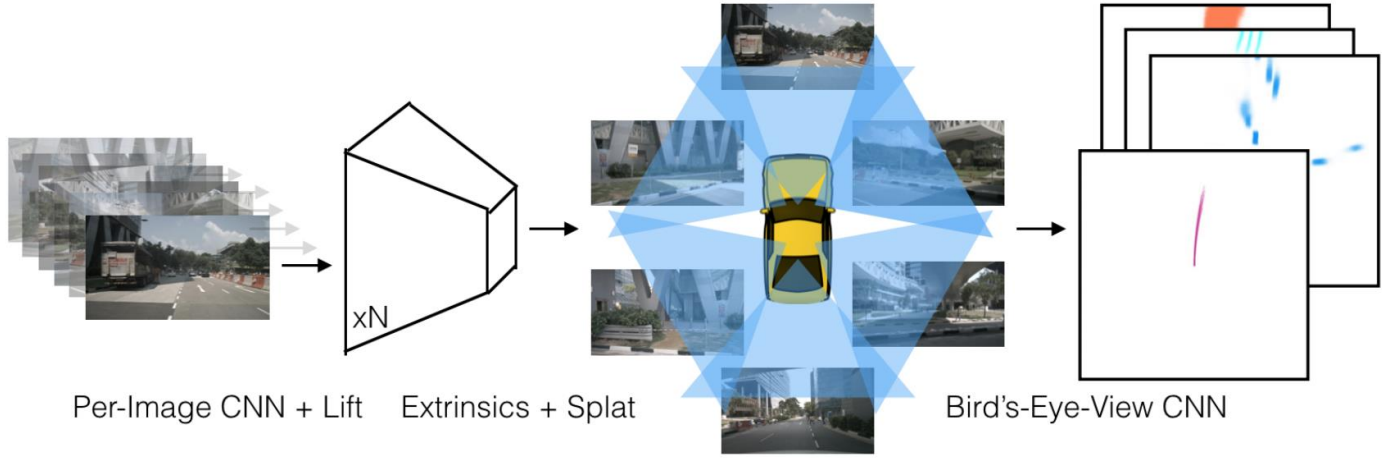


LSS

AI in Automotive

Is automotive ready for AI?

FuSa (Functional Safety/ISO 26262)

- How to ensure functional safety in case there is a system failure. Some examples of system failures are: loss of steering assist, electronic park brake failure, a fault in collision avoidance, and unintended airbag deployment. These are all malfunctions caused by electrical or electronic systems failure
- Complying with this standard helps automakers detect, manage, and/or mitigate the effects of system and hardware failures
- Not enough to cover all AV engineering challenges => SOTIF

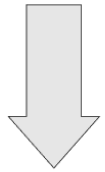
SOTIF (Safety of the Intended Functionality ISO 21448:2021)

- Ensuring the safety of autonomous vehicles in unknown situations (without system failure). The situation can be caused by limited sensor range, different weather/lighting conditions, unexpected objects or human behavior
- It lays out how to best prevent, control, and/or mitigate safety hazards that can occur without a system failure taking place. SOTIF applies to systems like advanced driver assistance systems, which can face safety hazards without failing themselves.

AI in Automotive

Is automotive ready for AI?

- ISO 8800 is intended for **safety-related systems** in **road vehicles** that utilitze **Artificial Intelligence (AI)** and specifically **Machine Learning (ML)** techniques.



Addresses **all phases** of the ML **development & deployment lifecycle**

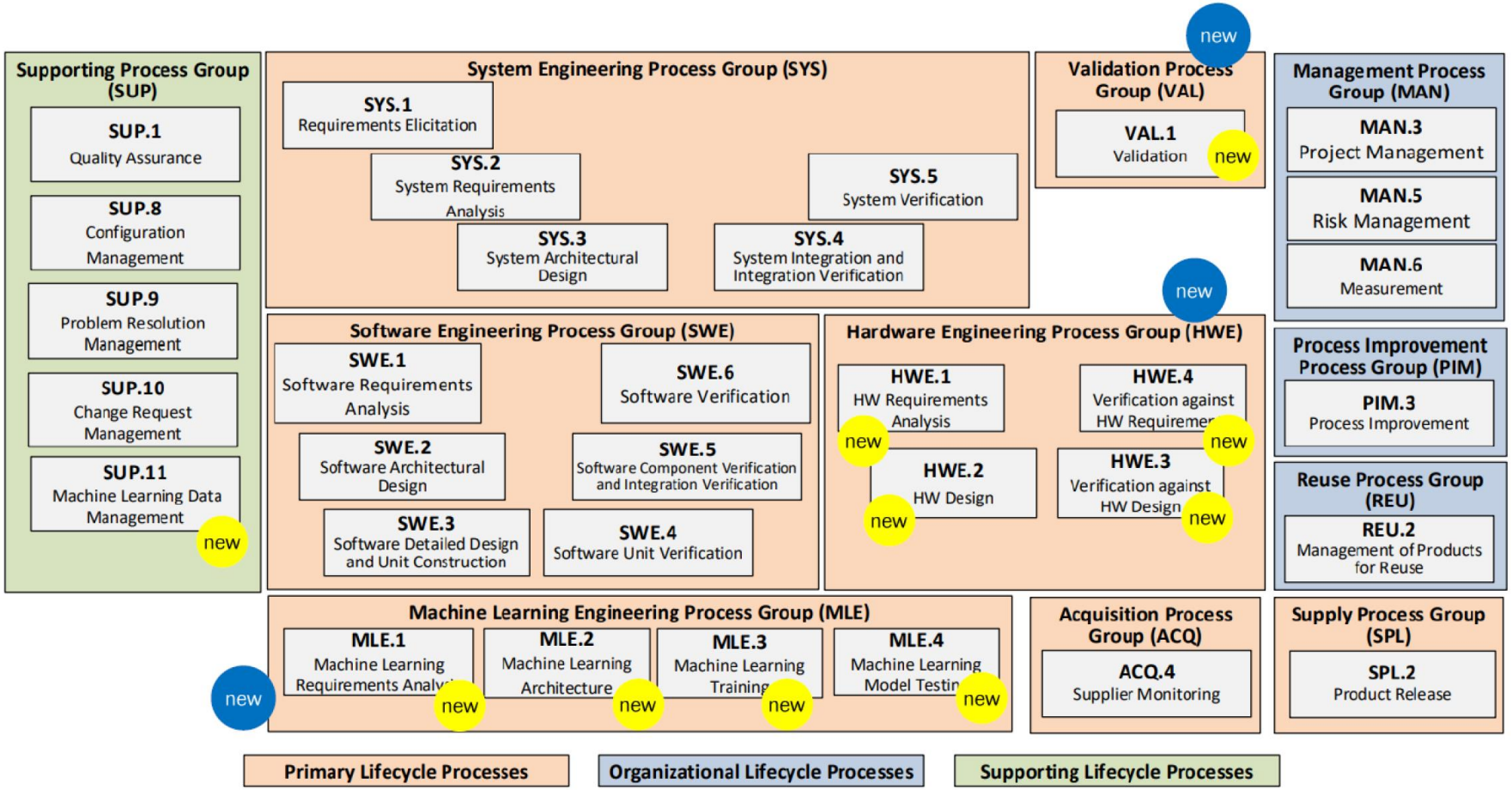
Addresses **identification & mitigation of risk** arising due to use of **AI** techniques

Structured into clauses with 4 main parts following the development lifecycle

70 normative requirements that need to be fulfilled resulting in safety artifacts

AI in Automotive

Is automotive ready for AI?

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