



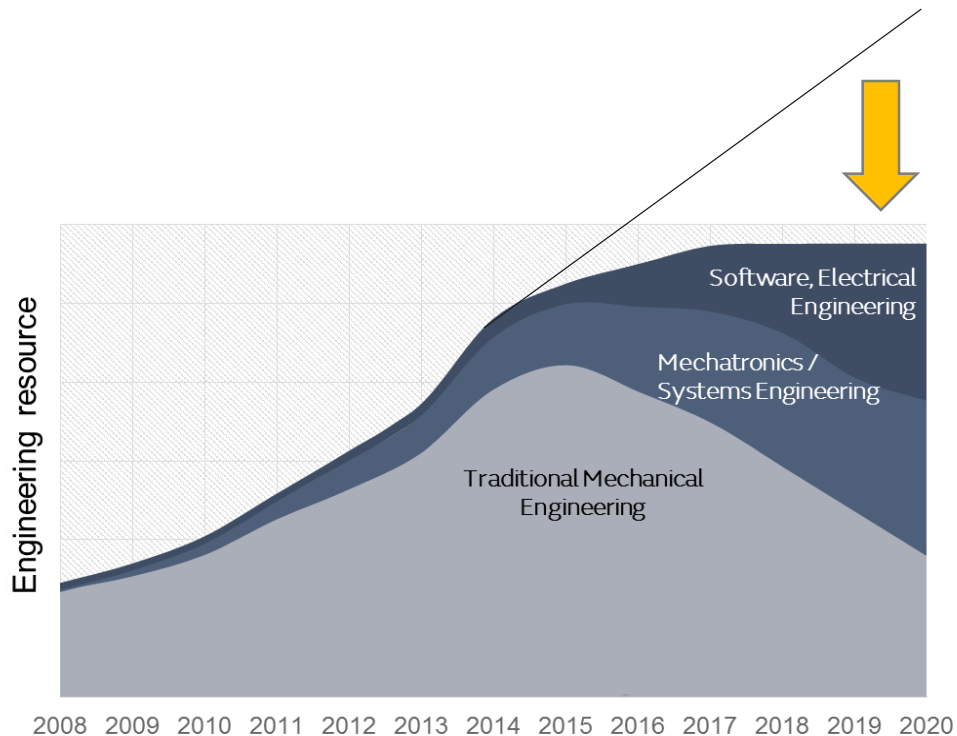
SIMULATION V ATOMS

ALTAIR TECHNOLOGY CONFERENCE – 21ST MAY 2019

Nuno Lourenço
Body Engineering CAE
Jaguar Land Rover

SIMULATION V ATOMS

MULTI-INDUSTRY ENGINEERING CHALLENGE



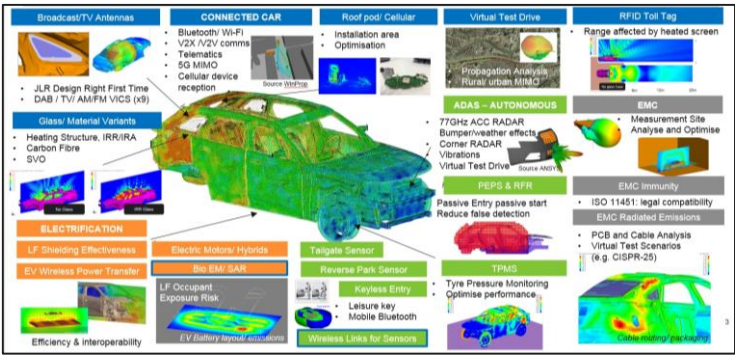
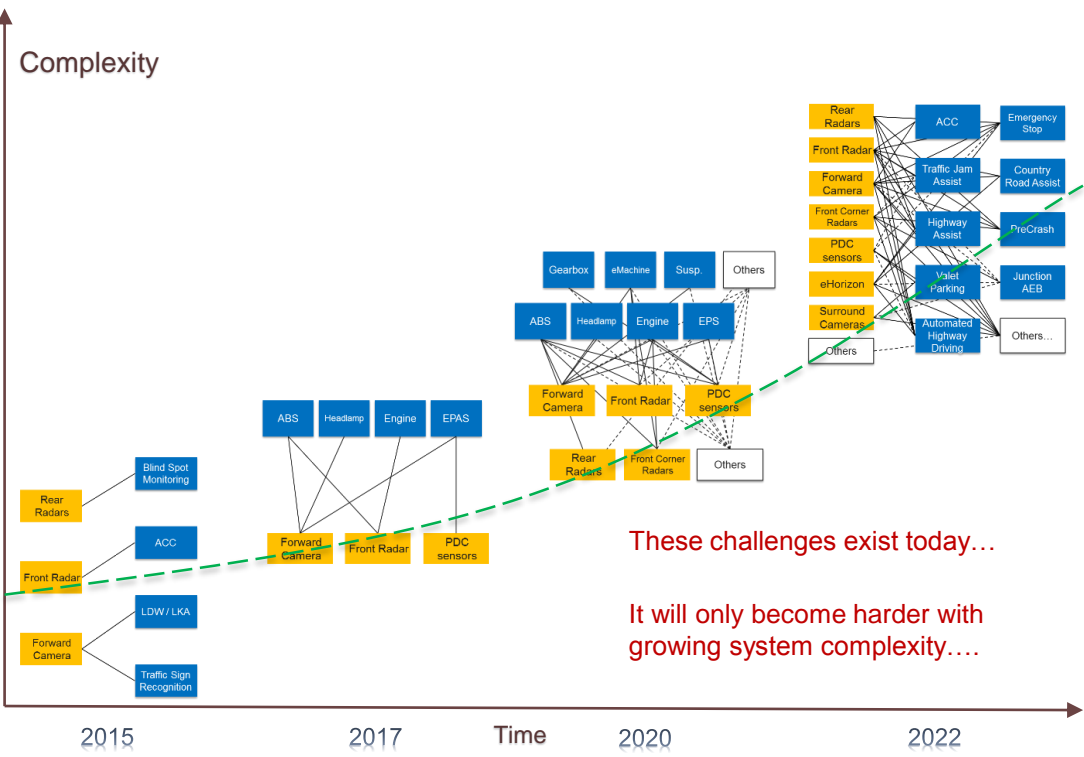
Quality of Requirements Management Must Accompany Multi-Disciplinary Engineering

SIMULATION V ATOMS

COMPLEXITY INCREASING AT AN EXPONENTIAL RATE

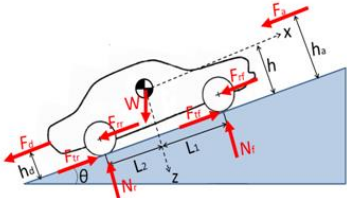
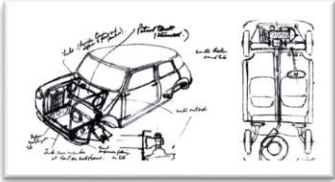


SYSTEM ARCHITECTURE IN ADAS DOMAIN

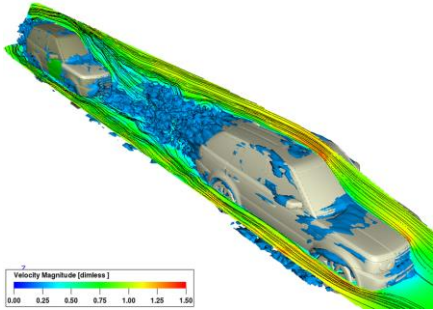
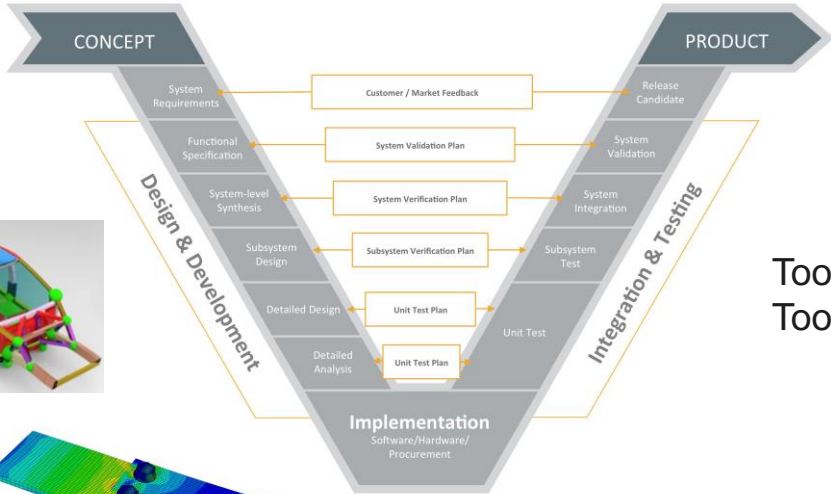
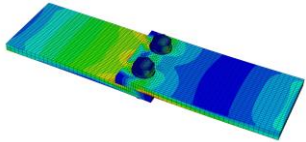
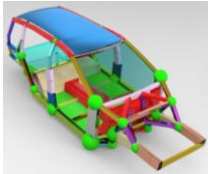


SIMULATION V ATOMS

WHY ATOMS?



Simulation used
for Requirements
Development



Too Complex
Too focused on System Verification

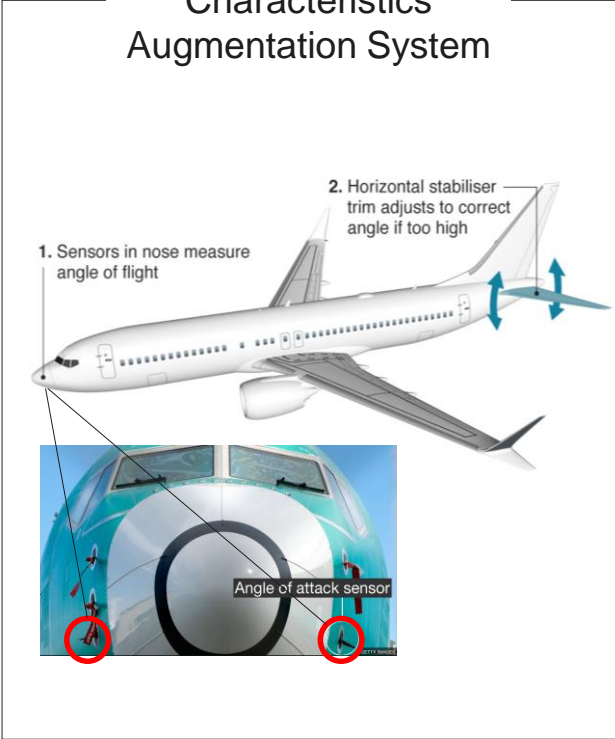
We Need “Atomic Level” Requirements

SIMULATION V ATOMS

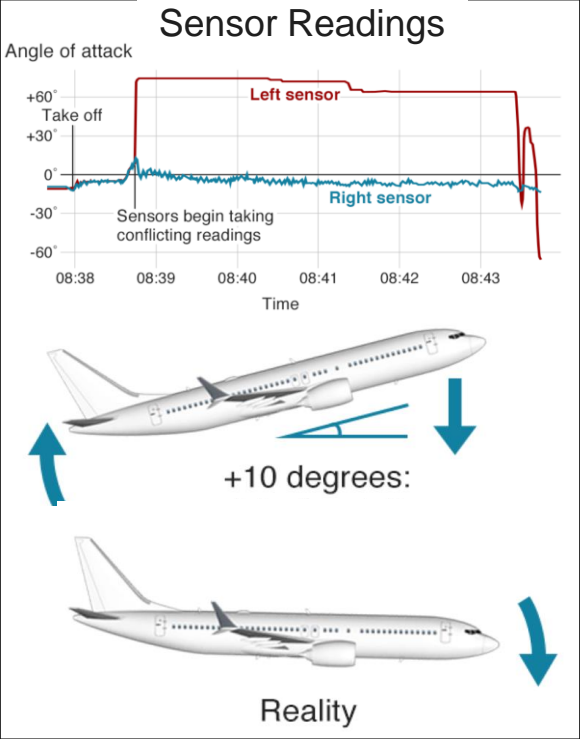
WHY IS IT IMPORTANT?



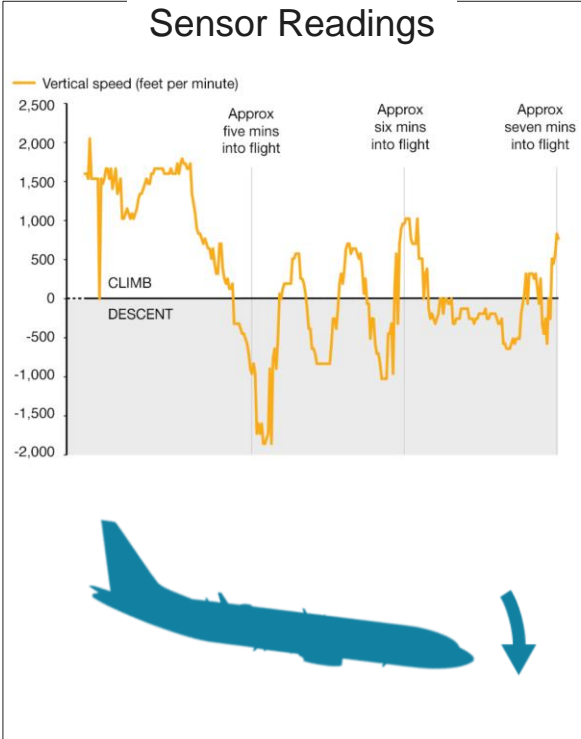
Manoeuvring Characteristics Augmentation System



Conflicting Sensor Readings

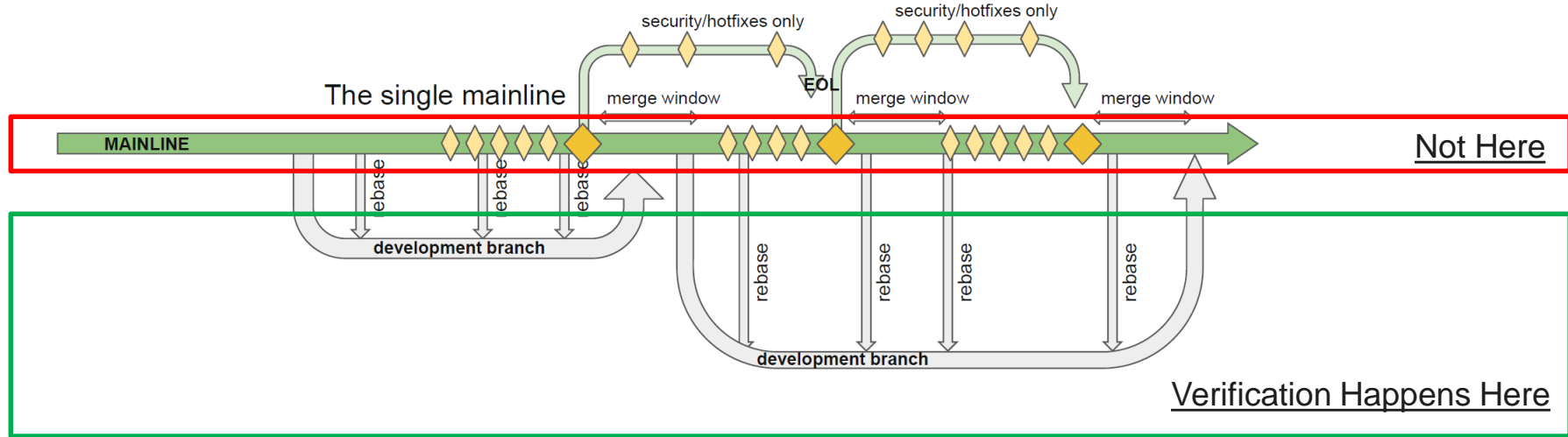


Conflicting Sensor Readings



SIMULATION V ATOMS

MUST CHANGE MECHANICAL ENGINEERING TO SOFTWARE MODEL



Simplicity Handles Complexity - Most Simulation Engineers are Embracing Complicatedness

SIMULATION V ATOMS

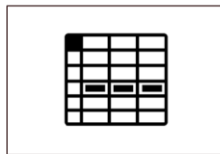
RIGHT TOOL FOR THE RIGHT JOB



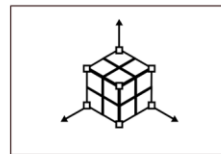
Sketches
Only Concepts



Hand Calculations
Basic Calcs can provide perfect results



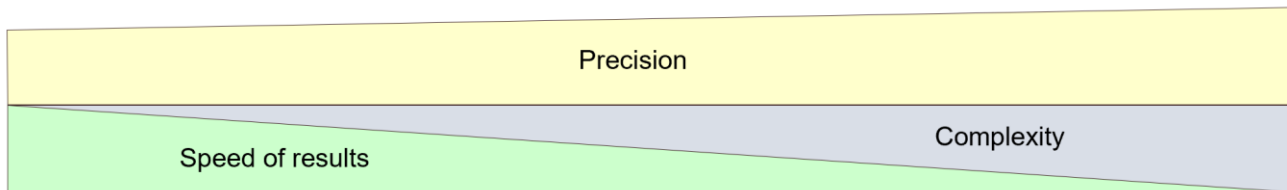
1D CAE
CarMaker, Matlab, Excel



3D CAE
A variety of tools



MDO
Multi-Disciplinary Optimisation
Multiple parameters



Use High-end Tools to Define & Manage Requirements
Embrace Simple Tools and Simple Models for Verification at the Atomic Level



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