

# Implementing a Global, Modular HIL Strategy for Automotive Electronics

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# Executive Summary

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1. PSA Overview 2015

2. PSA Challenges

3. Integration & Verification

4. PSA - IPG partnership

# PSA Groupe - Overview 2015

At 31 December 2015



Largest car maker in Europe with 11.5% of the market

**EUROPEAN LEADER**  
in terms of CO<sub>2</sub> emissions

**104.4g** of CO<sub>2</sub>/km



**2015**  
REVENUE  
**54.7 Bn€**



**184,107**  
Employees worldwide

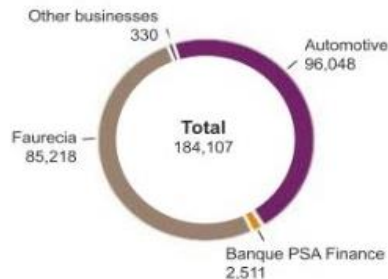
**EUROPE LEADER**  
in light commercial vehicles

**19.5%** of the market

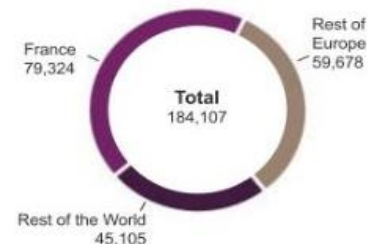
## EMPLOYEES

At 31 December 2015 (including Française de Mécanique Sevelnord)

Number of Employees by Subsidiary Worldwide



Number of Employees by Region



# PSA Challenges

Connected Services

Alternative Powertrain

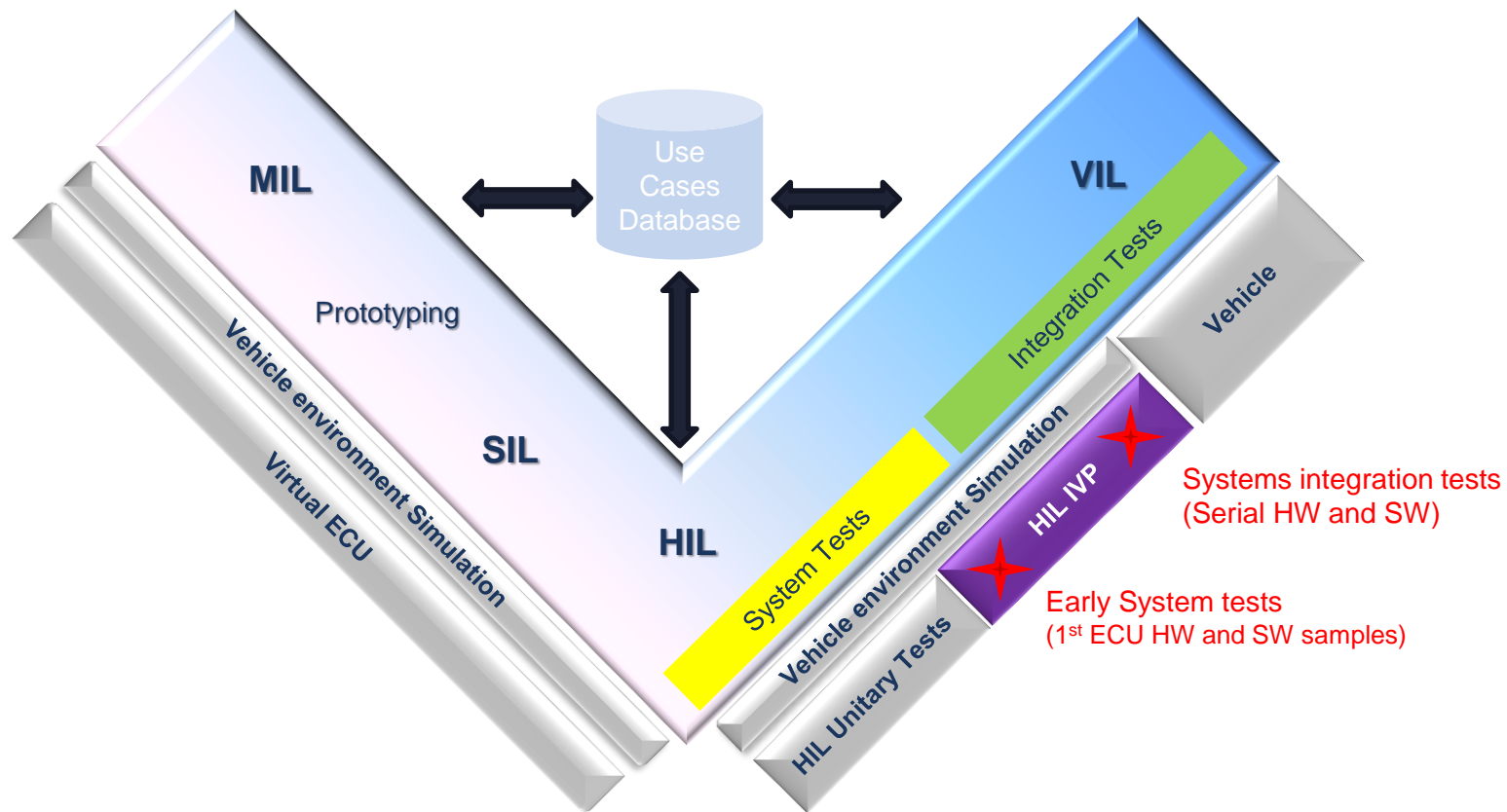
Autonomous Car

## ADAS KPIs:

- **100 functions / 2000 signals**
- **60 ECUs in a EEA** on several networks
- **300-350 components** for diversity management
- Safety requirements : **100 Functional hazardous events with Gravity 4**, of which 40 ASIL C&D



# Integration & Verification Platform – Development Cycle



# Integration & Verification - Platform (IVP)

## IVP V3:

- Automated Test Engine
- Synchronized functions activations
- Error handling: DTC injection



## IVP V2:

- ECU Model if ECU is missing
- Data Storage and analysis tool

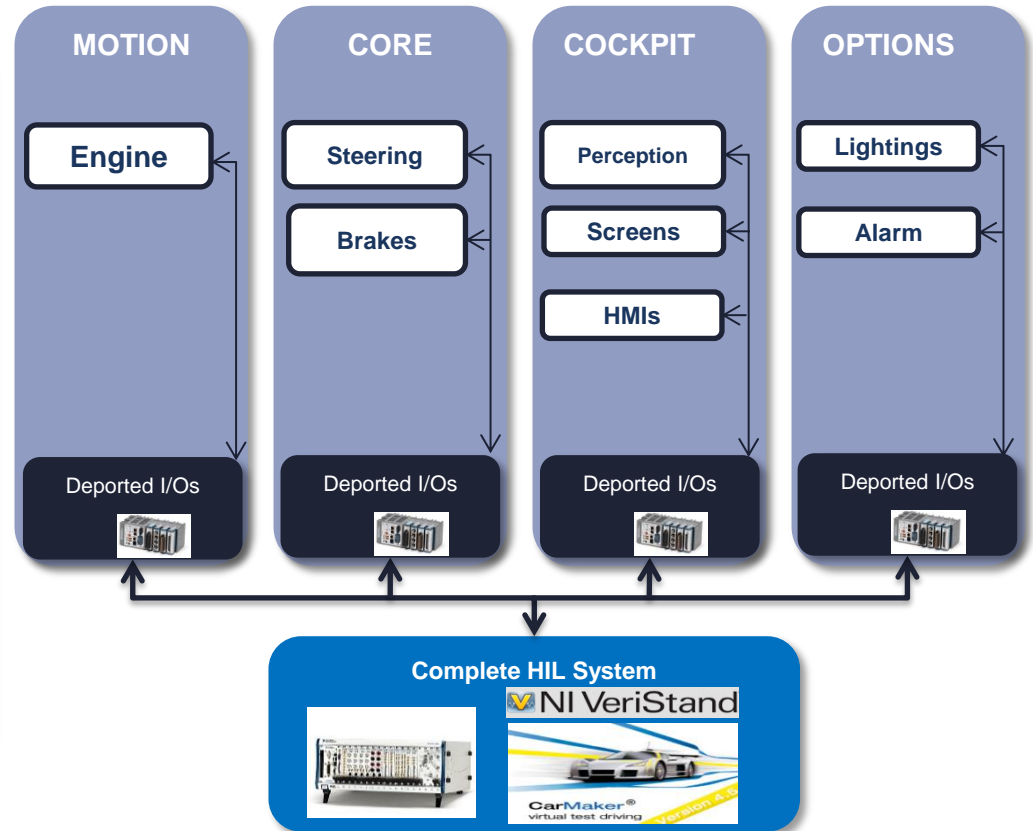


## IVP V1:

- HIL: ADAS functions coverage
- Interfaces with Unitary test Benches

## IVP V0

- All ECUs present
- Modular construction
- HIL: Engine's environment simulation



## Open Software Platform

Software **Compliance** with National Instruments real time target

**PSA feed back experience** into Drive Line and Perception ECUs simulation



# IPG : Expected

IPG : PSA supplier for new ECU HIL solution

IPG Skills :

- Agility
- Cheap
- Audacious (Solutions with high added value for the customer)

Partnership to reach an Autonomous vehicle in compliance with ISO 26262 norm.





# Integration & Verification Platform – Business Impact

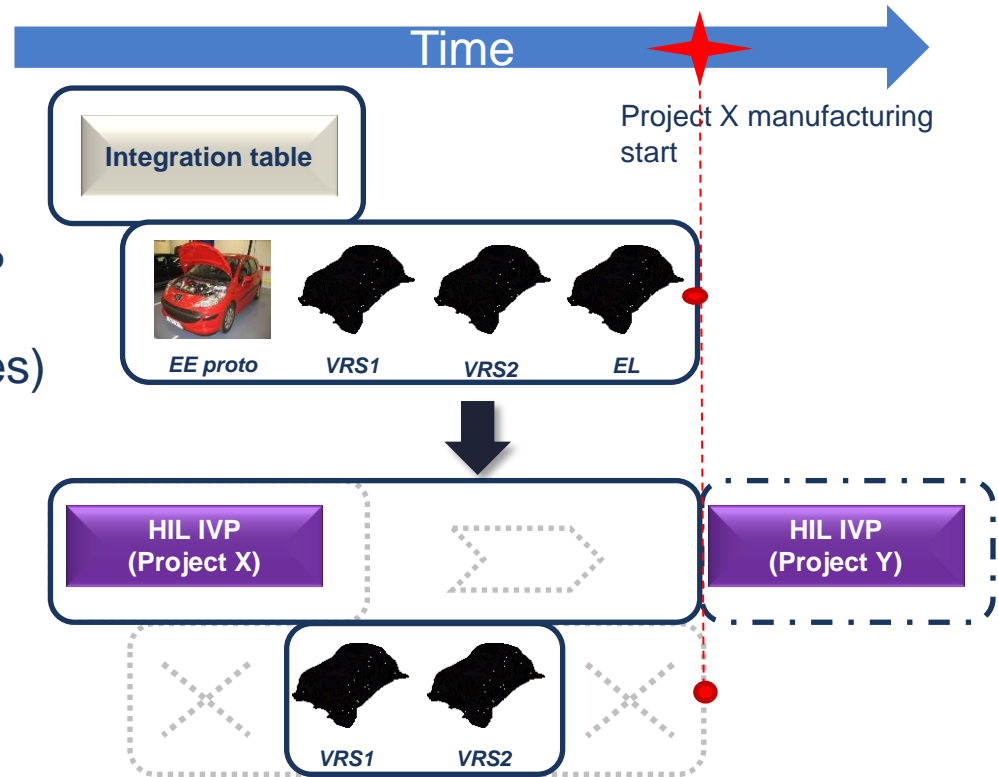
Car Prototypes reduction by ~30%

Tests Bench use time increase by 100%

Early HW and SW validation (1<sup>st</sup> samples)

- Early Bug fix
- Time-to-Market reduction

Reuse IVP structure for new vehicle project



Thank you for your  
attention

See you soon on our  
brands stands

