

Final Event
24-25th of May 2022

Round table discussion: future European projects



Powerful **A**dvanced **N**-Level **D**igital **A**rchitecture
for models of electrified vehicles and their components



Panel members

 **Alain Bouscayrol**

Professor in Electrical Systems

University of Lille

Coordinator of PANDA

 **Omar Hegazy**

Professor in EPOWERS Research Group

Vrije Universiteit Brussel

Coordinator of ACHILLES and ASSURED

 **Valentin Ivanov**

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System and vehicle simulation engineer

VALEO, France

 **Gabriel Mihai Sirbu**

Project manager

Renault Group Romania



Zoom in







The global view

Paris agreement

-  Limit global warming to +2 C

European Union

-  Net-zero greenhouse gas emissions by 2050
-  100% zero-emission cars in 2035

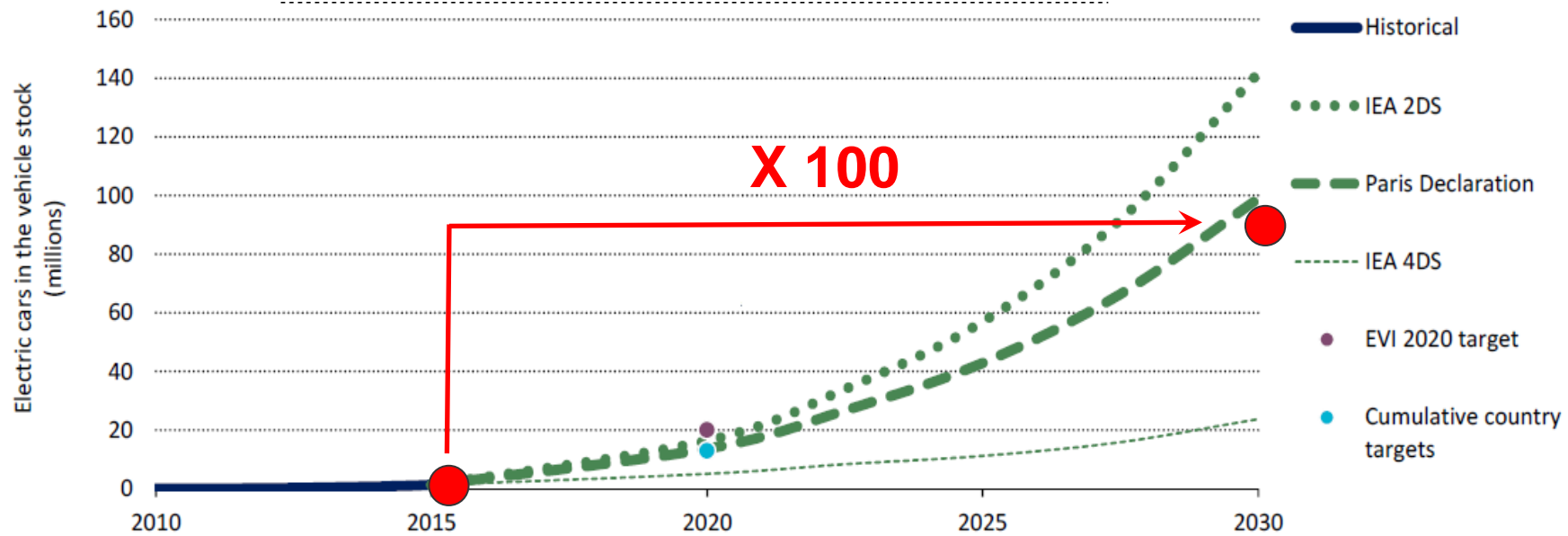
US:

-  50% electric vehicle (EV) target for 2030

- “Why the automotive future is electric”, McKinsey, September 2021
- <https://pfa-auto.fr/wp-content/uploads/2021/10/Feuille-de-route-filie%CC%80re-auto-a%CC%80-2030-vF.pdf>



The global view



Note: 2DS = 2°C Scenario; 4DS = 4°C Scenario.

From 1 M to 100 M of EVs in 15 years

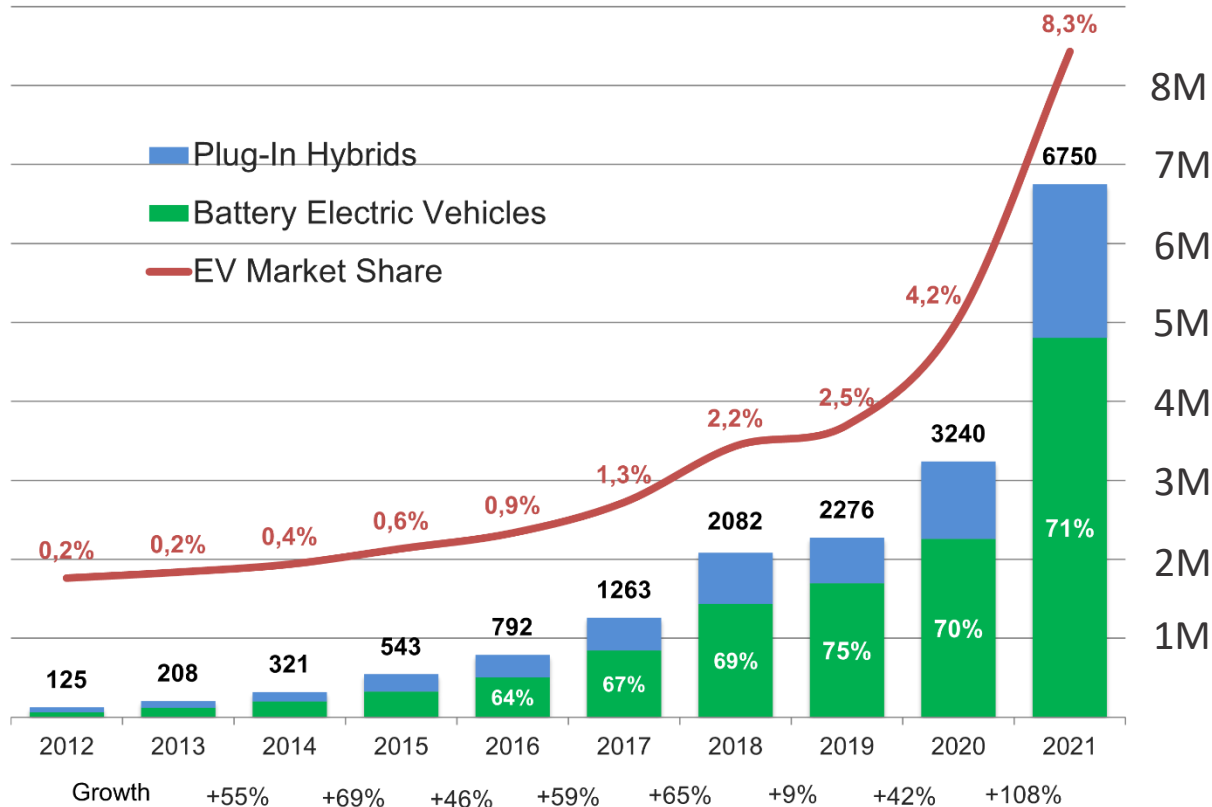


The market view



GLOBAL BEV & PHEV SALES ('000s)

EV VOLUMES



- 🐼 **Investments by industry:**
- 🐼 >\$400 billion since 2012
- 🐼 ~\$100 billion since 2020

<https://www.ev-volumes.com/>



“Why the automotive future is electric”, McKinsey, September 2021







The European view



Clean and competitive solutions for all transport modes

-  Technological progress, but GHG emissions not in line with Paris Agreement
-  Intensify research and innovation, across all transport modes

EU vision:

-  Accelerated uptake of zero tailpipe emission solutions
-  Innovative mobility concepts for people and goods
-  A more circular economy
-  Ensure supply of materials

The mobility view



- 🐼 **Shift in mobility:**
 - 🐼 Electrification
 - 🐼 Connected driving
 - 🐼 Autonomous driving
 - 🐼 Shared mobility

“Mobility’s net-zero transition: A look at opportunities and risks” McKinsey, April 2022





The automaker view

🐼 **Large technology shift**

- 🐼 Electrification
- 🐼 Growing share of software
- 🐼 Growing complexity

🐼 **Customer expectations**

- 🐼 Higher expectations (electrification, connectivity, etc.)
- 🐼 No compromise on hardware quality
- 🐼 Same cost level, preferably less

🐼 **Strong momentum for EV's, but:**

- 🐼 costs for hardware almost optimized
- 🐼 profitability is low, slightly above breakeven at best
- 🐼 McKinsey: 12 out of 16 analyzed EVs have negative profit margins

“Electrifying the bottom line: How OEMs can boost EV profitability”, McKinsey, November 2021

Automotive market: pretty heavy weather



The power of simulations



multi-level
models for
BEV

remote
HiL testing
xEVs

multi-level
models for
xEVs

Cloud / EMR based
multi-level
models for
xEVs

	OBELICS gain	XILforEV gain	VISION-xEV gain	PANDA Gain
Vehicle comparisons	50%		25%-35%	40%
Tested solution	50%		25%-35%	50%
Components Optimization	50%-75%	50%	40%	50%

<https://obelics.eu/>

<https://xil.cloud/>

<https://vision-xev.eu/>





www.project-panda.eu



The simulation view



Simulations

-  What is the future role?
-  What are the main challenges?
-  Which problems can it solve?
-  Which problems can it NOT solve?





Let's discuss!

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