Final Event
24-25th of May 2022

Powerful Advanced N-Level Digital Architecture
for models of electrified vehicles and their components

VEEM Feedback

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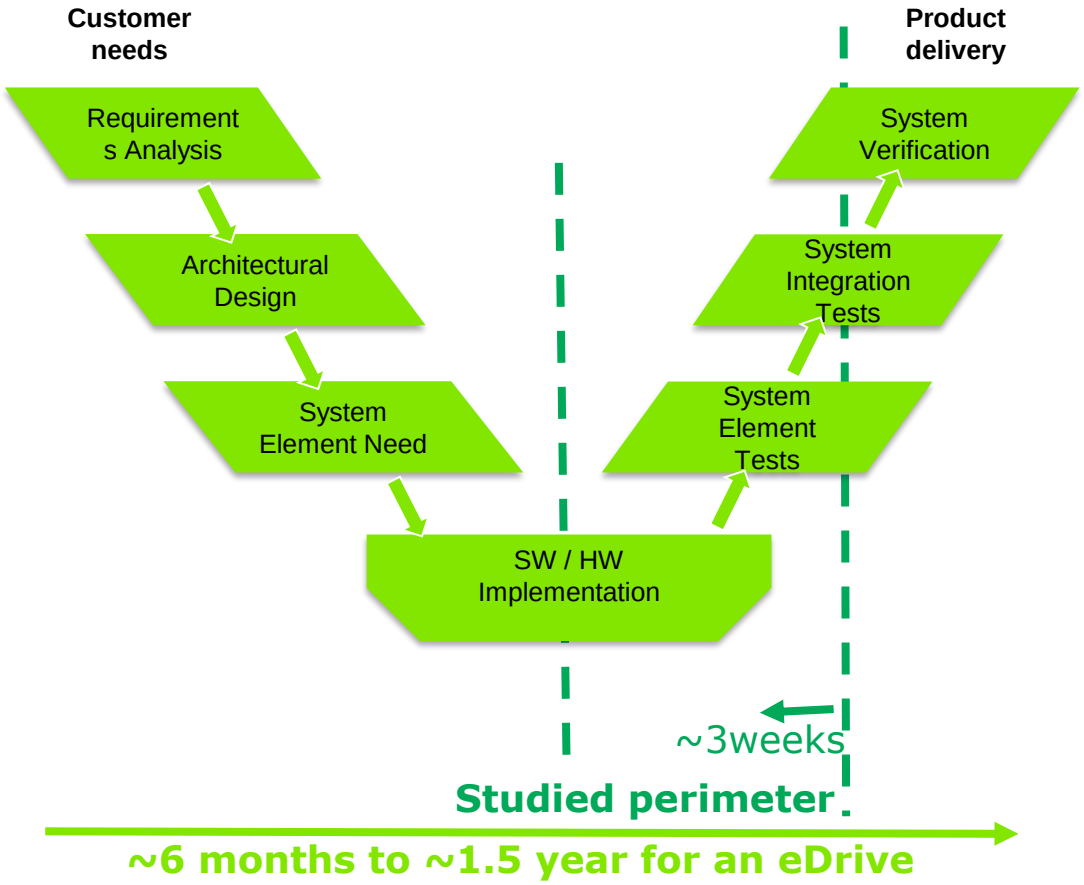
European project benefits

- From an Industrial point of view, the European project is an opportunity to:
  - Exchange with academic partners
  - Share Knowledge and experience with other industrial partners
  - Develop common methods with OEMs and suppliers
- It is, as well, a financial opportunity to increase innovation

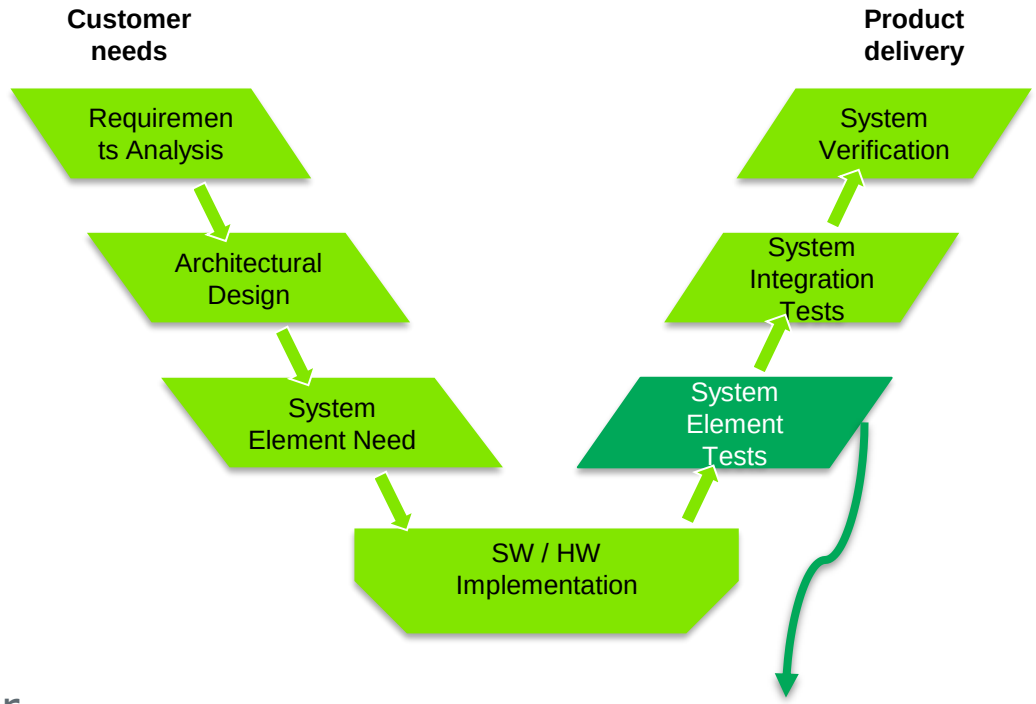
PANDA’s approach benefits

- **Deployment of the Energetic Macroscopic Representation (EMR) method**
  - to interface different models
    - time calculation vs precision
  - to help building the control schematic of the desired system
- **Usage of cloud computing** to facilitate co-simulations between different partners’ systems
- **Decrease the development time of a new electrified vehicles**
  - by showing the efficiency of using HIL testing instead of real testing in many cases.



Valeo’s specific interest in PANDA

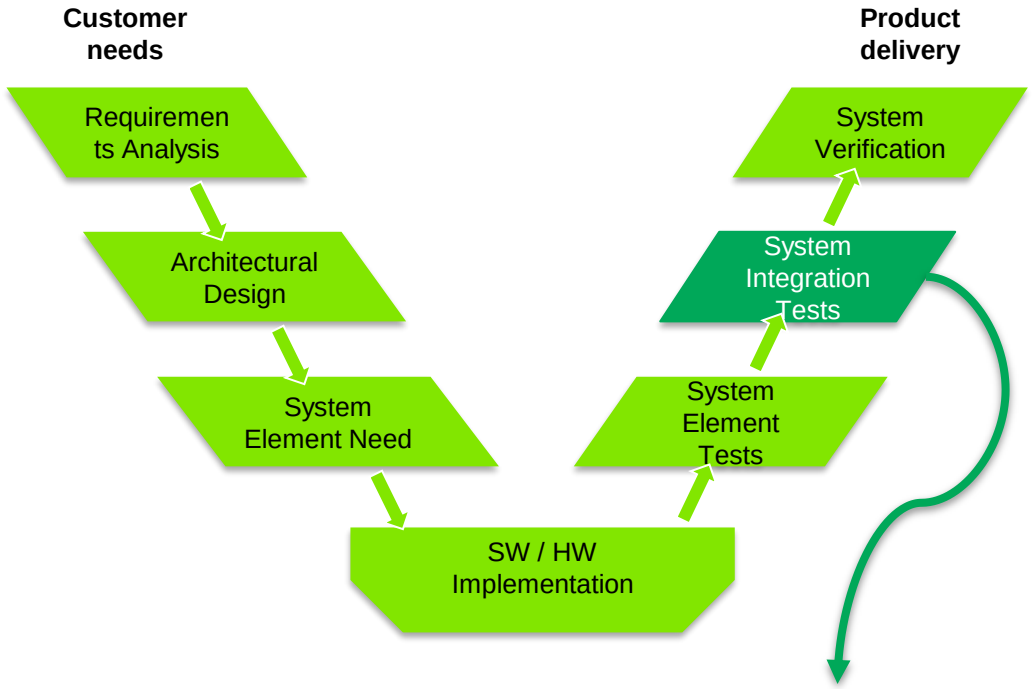
- **eDrive Modelling**
  - Improve eDrive different models (knowledge & behaviour)
  - Improve their representativity (vs time calculation):
    - Losses maps based model (fast) & thermal model with derating (more precise)…
  - Demonstrate the possibility to share models with confidential issue
    - MATLAB Simulink © blackbox model can be used efficiently in Simcenter AMESIM ©
- **eDrive Testing**
  - Have measurements on HIL, test benches, and demo-car
  - Reduce the test number/duration/cost: 4 weeks on benches vs 5 days of simulation



Validation time reduction using simulation & HIL testing

Valeo’s specific interest in PANDA

- **P-HEV Simulation**
  - Have a P-HEV model corresponding to the Valeo’s demo-car
  - to show hybridization benefits earlier using simulation
  - Develop an energy management strategy for the studied demo-car
  - strategy with ULille
  - in parallel of the vehicle retrofit
- **P-HEV Testing**
  - Measurements on HIL and demo-car to validate simulation results
  - Evaluate the time needed and difficulties to retrofit a demo-car (several months)



Validation time reduction using simulation & HIL testing

Conclusion

- 36 months + 6 months with some difficulties due to covid pandemic
  - unfortunately mostly online events instead of face to face meetings

But for Valeo, PANDA was a success:

- Various models were developed and validated.
- Employing EMR approach is suitable for vehicle modeling and control design.
  - EMR was well implemented in Simcenter AMESIM ©.
- Blackbox models in Simcenter AMESIM ©
  - Good way to deal with confidentiality.
- Carbon care
  - PANDA's carbon footprint calculation approach proposed by ULille was used to enrich VEEM's approach.

Thanks to all partners and coordinators

End of presentation

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824256.