



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

<https://project-panda.eu/>

Research Innovation Action

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Virtual product development and production of  
all types of electrified vehicles and components

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## Publishable Executive Summary

Leader: Dr. Calin HUSAR (SISW), Participants: SISW, ULille and TY

PANDA project provides a unified organisation of digital models to seamlessly integrate virtual and real testing of all types of electrified vehicles and their components.

Organization formalism, such as Energetic Macroscopic Representation (EMR), have therefore been developed to improve and speed-up the development of virtual electric vehicle models.

Simcenter Amesim, an 1D simulation platform from physical (structural) libraries with block-diagram (functional) capabilities was selected to be the multi-power platform for Stand-Alone and Cloud-computing.

Based on the EMR formalism, the Simcenter Amesim software has been extended by developing a dedicated library to apply the EMR methodology to be used as foundation of PANDA. The library reduces the simulation development time by offering predefined modules for electric vehicle models and facilitates the development of new custom EMR simulations. The simulation development process is explained and demonstrated, and the report closes with the conclusions.

## Acknowledgement

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*Table 1: Project Partners*

| #  | Type | Partner | Partner Full Name                       |
|----|------|---------|---|
| 1  | UNIV | ULille  | Université de Lille                     |
| 2  | IND  | SISW    | Siemens Industry Software SRL           |
| 3  | UNIV | VUB     | Vrije Universiteit Brussels             |
| 4  | IND  | VEEM    | VALEO Equipement Electriques Moteur SAS |
| 5  | UNIV | UTCN    | Universitatea Tehnica Cluj Napoca       |
| 6  | SME  | TY      | Tajfun HIL (Typhoon HIL)                |
| 7  | UNIV | UBFC    | Université Bourgogne Franche-Comté      |
| 8  | SME  | UNR     | Uniresearch BV                          |
| 9  | IND  | RTR     | Renault Technologie Roumanie            |
| 10 | SME  | Bluways | BlueWays International bva              |
| 11 | IND  | TUV     | TUV SUD Battery GmbH                    |



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