Design OptiMisation for effi cient EVs based on a USer-centric approach

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DOMUS

Increasing EV's driving range through user-centric cabin design modifications, innovative solutions for comfort perception, efficient management, and advanced assessment methods.

www.domus-project.eu

OBJECTIVES

The overall objective of the **DOMUS** project is to reduce the overall energy consumption of future EVs in order to increase the electric range by 25% for different ambient conditions.

This will be achieved by an in depth understanding of comfort perception of EV users before developing reliable methodologies for designing and assessing the full vehicle context from a user-centric perspective, investigating radically new cabin designs and delivering innovative components, systems and control strategies to meet customer expectations.

RESULTS

- **DOMUS** will develop, integrate and demonstrate new components, systems and control strategies for EVs that are energy efficient, comfortable, safe, configurable and cost effective.
- **DOMUS** will achieve an increase of 25% of the electric drive range of EVs compared to their 2016 reference models.
- **DOMUS** will generate knowhow about user's perception of comfort and corresponding cabin requirements for future mass-market oriented efficient EVs.

IMPACT

The **DOMUS** project will contribute to a wider adoption of EVs by the general public and accelerated transition towards the production of low and zero emission vehicles, in particular, battery EV and (plug in) hybrid EVs.

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* The Concept-i represents the vision of Toyota on future EV mobility.
This concept is not directly related to the DOMUS-Project

- **Project Start** 11/2017
- Priority Factors for estimating comfort 04/2018
- New Methodology for novel EV cabin designs virtual assessment 11/2018
- Regulation Strategies Unified cabin active comfort system 03/2019
- Low-Inertia Components - Seats - Dashboard - Trim/body panels 07/2020
- Thermal Insulation Components - PCM liner - Glazing 07/2020
- Cabin Mock-up Physical demonstrator of energy-efficient EV cabin design 09/2020
- Results Validation by demonstrator physical testing 03/2021
- **Completion** Exploitation of project results 03/2021
- ~ 2025
  - Industralization Steps
  - Supporting Measures (Infrastructure, Regulation, Standards)
  - New Research Direction

APPROACH

User comfort perception and vehicle element models (WP1)

Use cases: Urban, Commuting, Autonomous, Leisure

Comfort Perception models

Generic cabin models

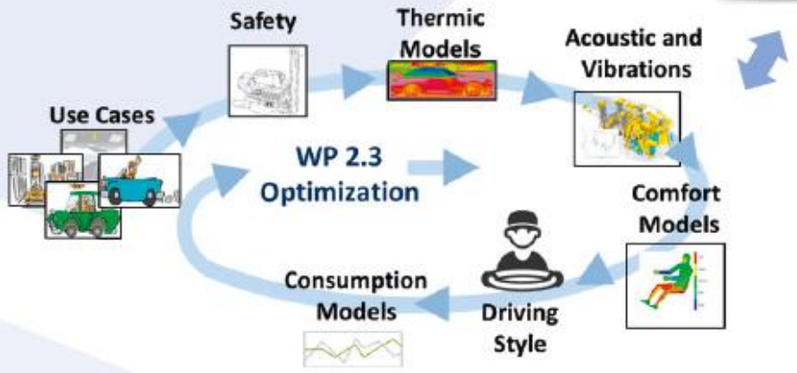
Thermo & fluid models

Acoustic and vibration models

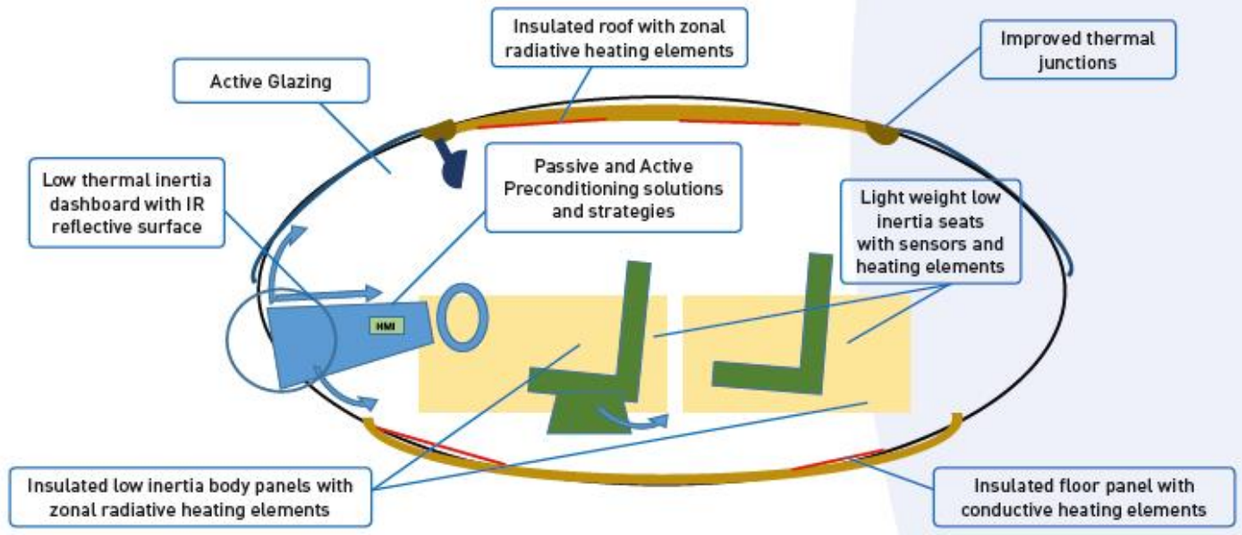
Safety models

Consumption models

Advanced cabin design & virtual assessment (WP2)



Instrumental innovations in components, systems and controls for EVs (WP3, WP4 and WP5)



Integration, validation and impact assessment (WP6)

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