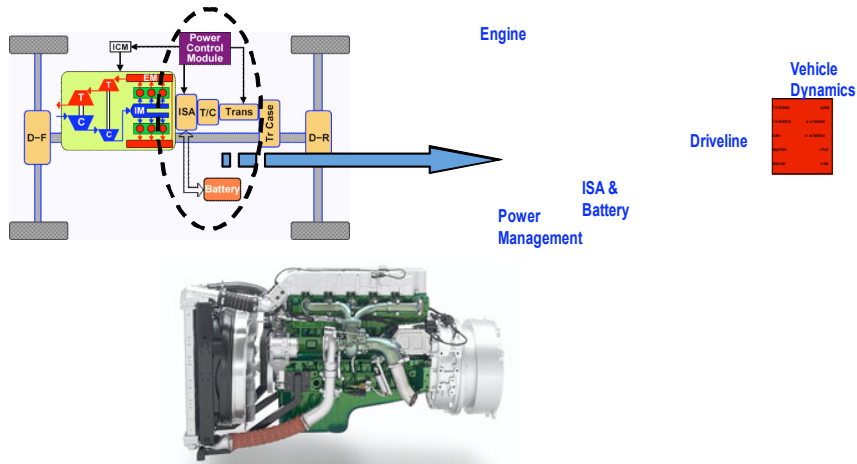


# Hybrid propulsion for a range of vehicle applications

Automotive Research Center: Hybrid vehicle research



Predictive models of energy conversion and storage components, integrated hybrid system simulation, and advanced algorithms for optimizing design and control are the key to determining the true fuel economy potential of novel concepts

## Objective:

- Develop physics-based models
- Integrate models into predictive and easily reconfigurable hybrid vehicle simulations
- Develop methodologies for optimizing the design and power management of complex hybrid systems

## Approach:

- Utilize advanced models and algorithms to optimize hybrid system design and supervisory control for maximum efficiency
- Consider new concepts and energy conversion options for a range of vehicle duty cycles; integrate controllable accessories

## Impact:

- Hybrid vehicles have the potential to significantly improve fuel economy and emissions.
- In case of heavy vehicles, hybridization is the only approach that enables large improvements. Other opportunities for improving fuel economy are limited.
- Novel simulation tools and advanced integrated test facilities enable realizing the full potential of a given hybrid concept

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## Facilities and Infrastructure

- Computational facility for simulation-based research
- Engine test-cells with full transient capability capable of generating data for model development and validation