Ricardo Software
Powertrain CAE Solutions

IGNITE 2018.1 New Features

Delivering Excellence Through Innovation & Technology

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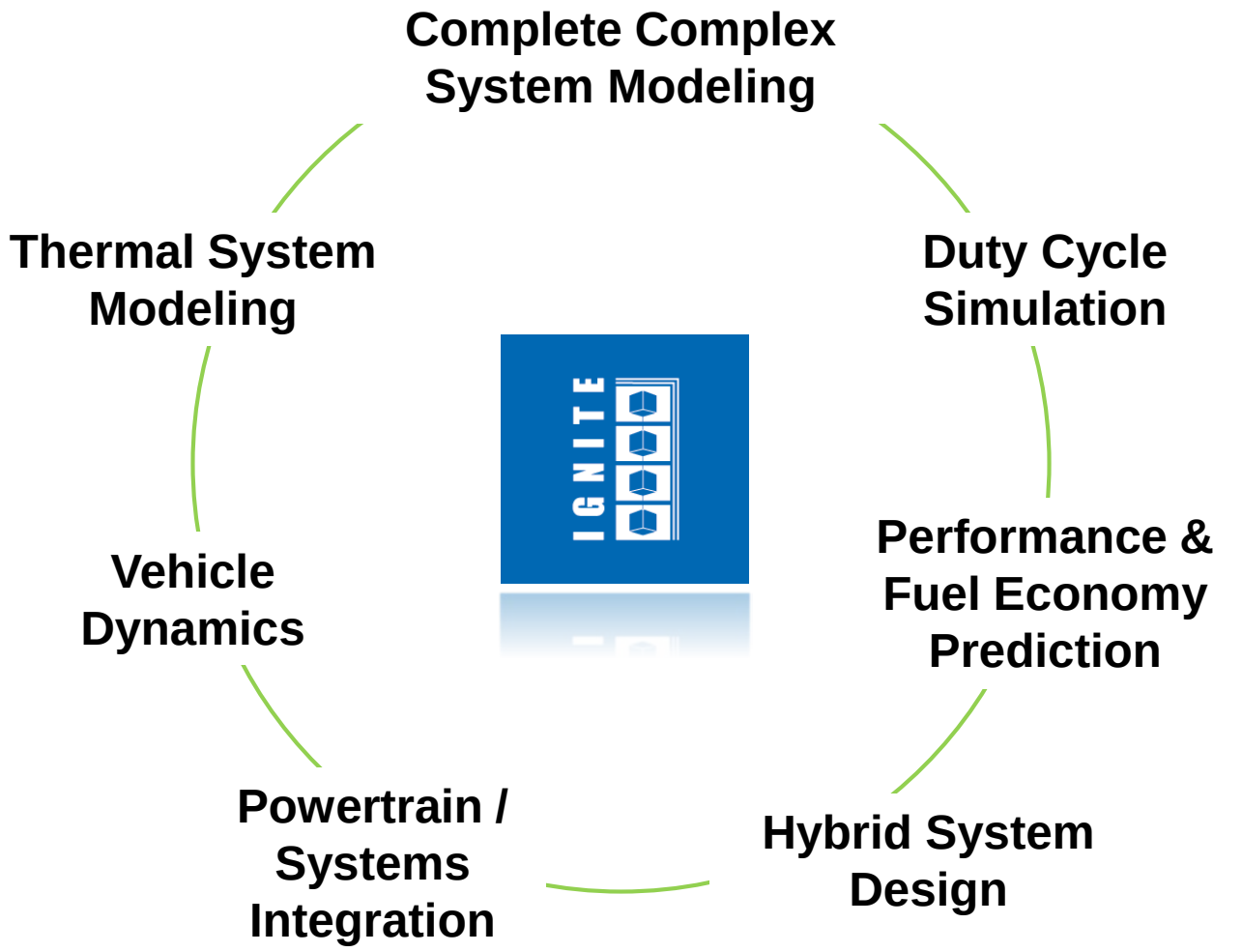
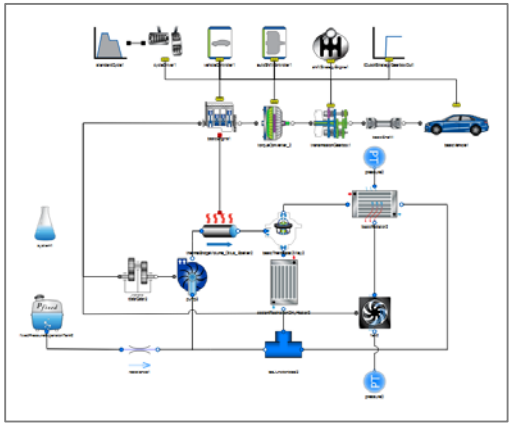
IGNITE is a Modelica-based environment for the modeling and simulation of complex physics-based systems

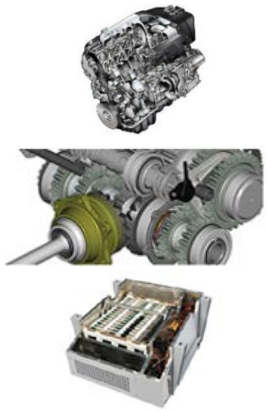


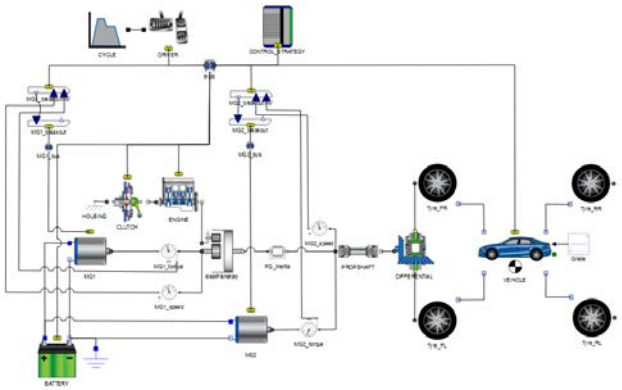


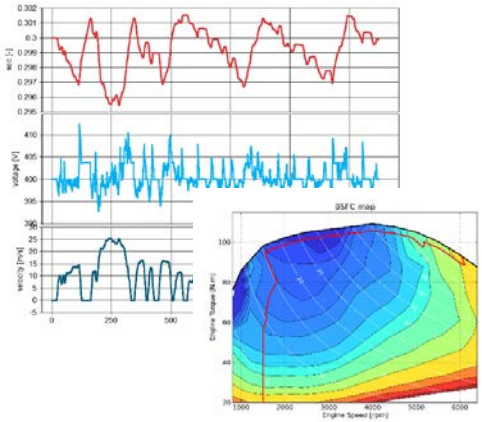
What is IGNITE?

Modelica-based environment for

modeling and simulation of (automotive) systems







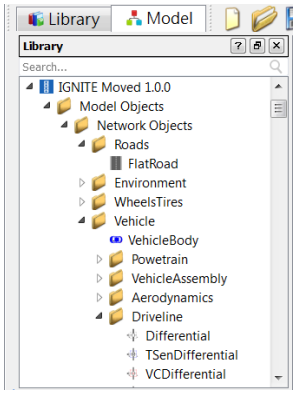
A flexible, integrated Modelica based environment for multi-domain systems analysis

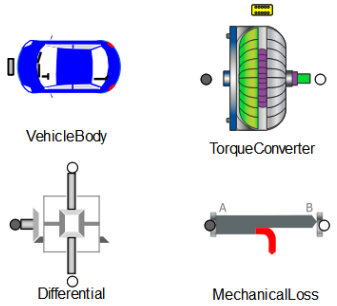
Libraries to cover different cross domain problems containing various fidelity components

Concept → Technology Exploration → Detailed Design

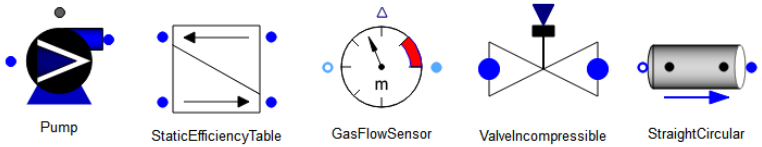
IGNITE Key Characteristics

- Ricardo library development
  - Powertrain
  - Controls
  - Vehicle Dynamics
  - 1-D thermal fluid



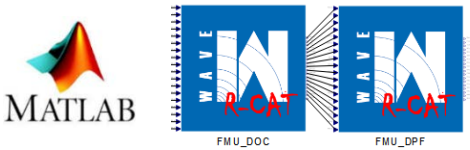


- Growing Support for Modelon Libraries
  - 7 Modelon libraries supported as of 2017.1

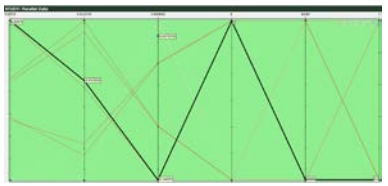


- Flexibility by Functional Mock-up Interface
  - OCT Solver

- Co-Simulation Interface
  - WAVE-RT & RCAT *(1-D gas-dynamics engine coupling, emissions)*
  - MATLAB/Simulink *(detailed control system integration / development)*



- Postprocessor / Design & Optimization via HEEDS



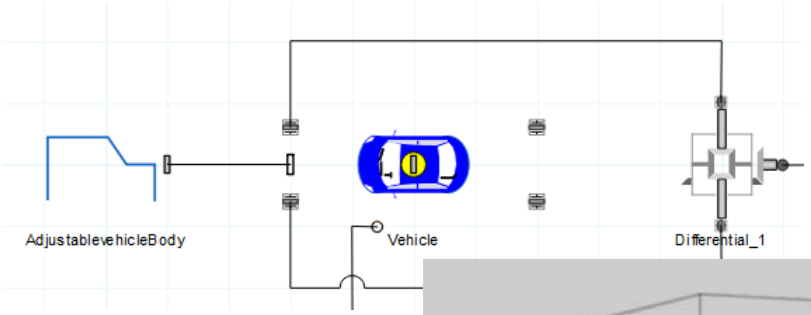
IGNITE 2018.1

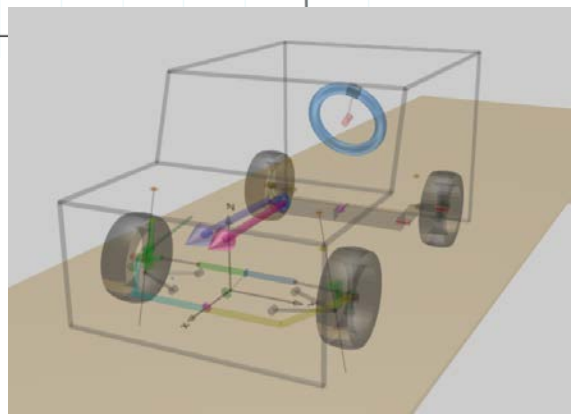
- Release featuring
  - IMoved library for vehicle dynamics applications
  - Powertrain library fixes

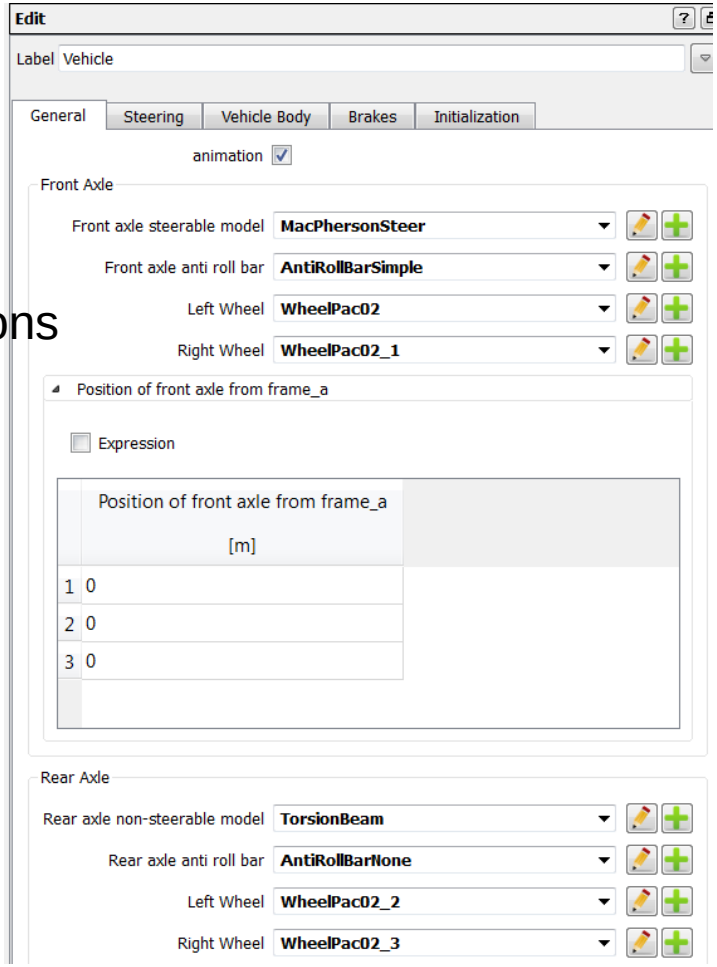
10 DOF Vehicle Assembly

capability

- Prepopulated skeleton components
- Data access via reference objects
- Interfaces for external connections
- Visualization template
  - IMoved library for vehicle dynamics applications
  - Powertrain library fixes



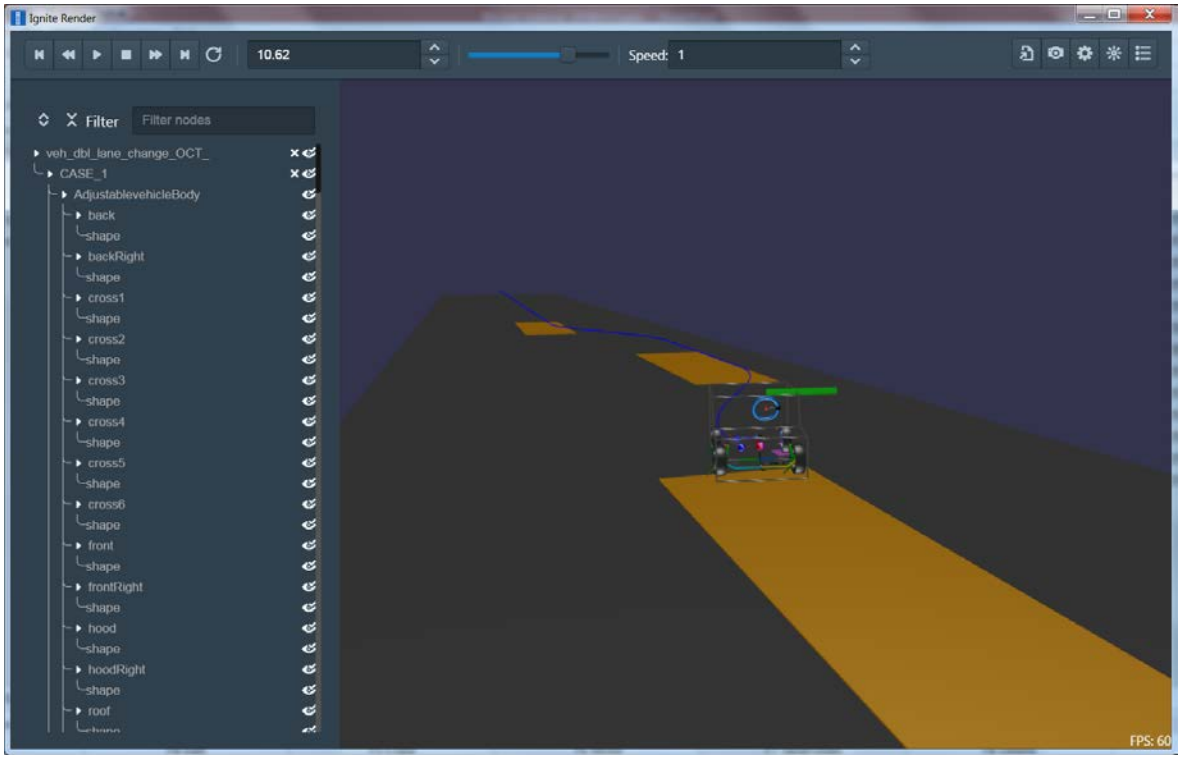




Vehicle Simulation - Animations

capability and usability

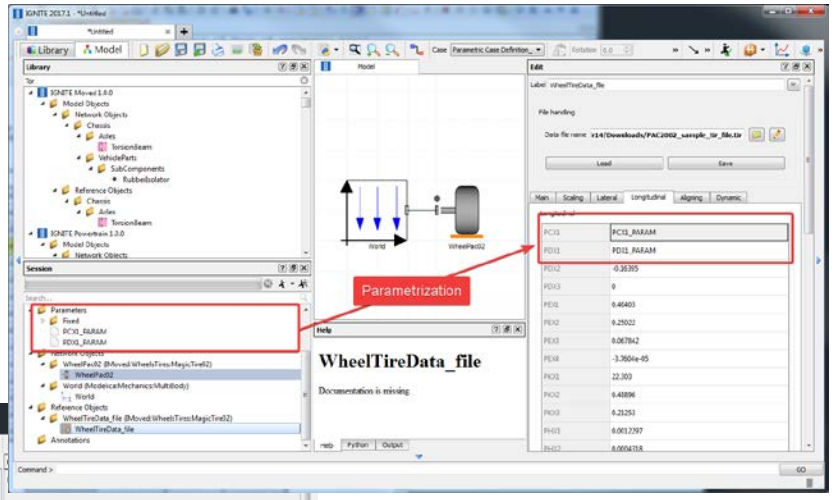
- Visualization
  - Road profile
  - Forces
  - Tire contact
  - Vehicle frame
  - Suspension geometry
  - Motion
- Results automatically generated from IGNITE
- Camera to follow objects
- Component tree
  - Case comparison
  - Visibility control
- Animation controls
  - Replay and loop
  - Animation speed

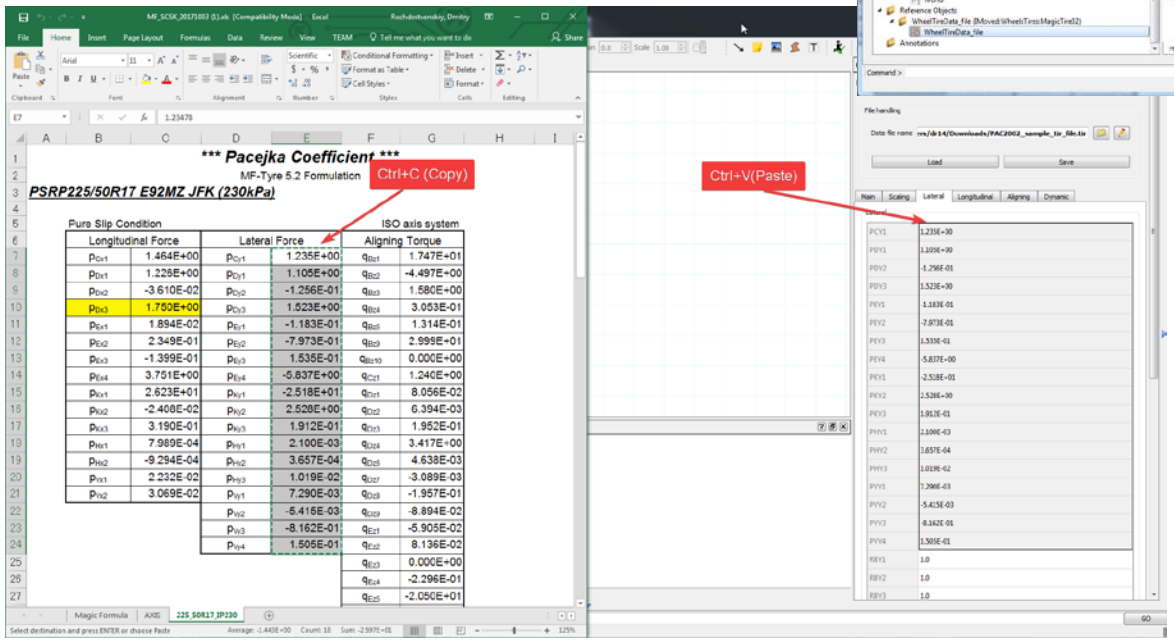


Tire Data Import for Magic Tire

usability

- Tire data container reading standard TIR file
- Data import via copy/paste from MS Excel
- Option to link the tire properties to IGNITE parameters for tire related parametric studies

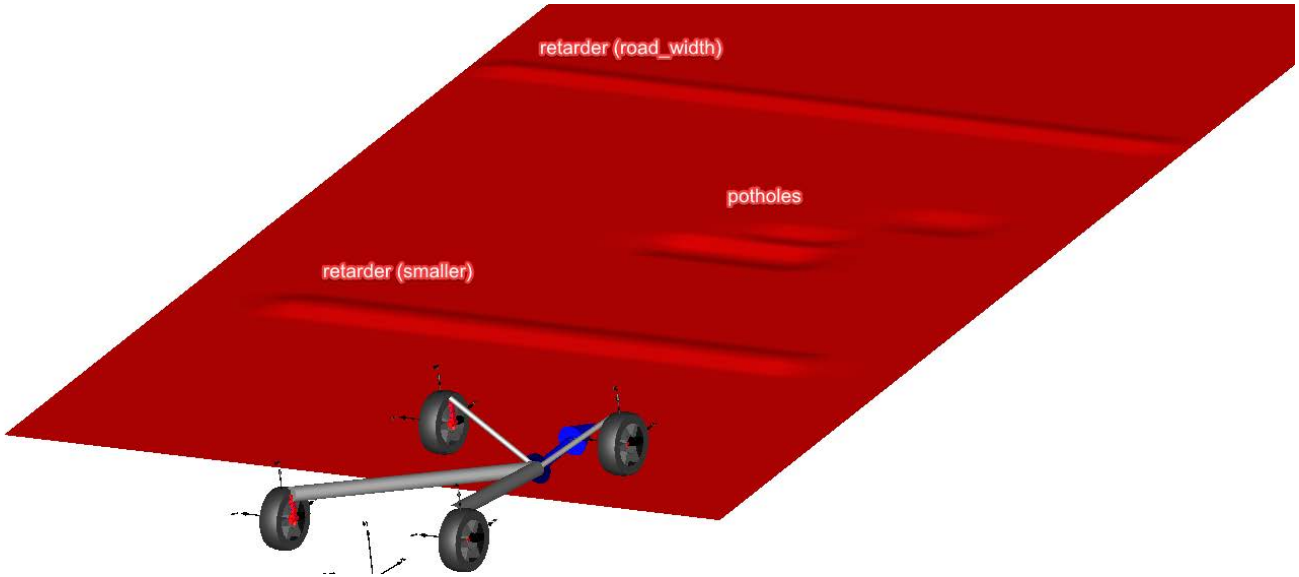




Road definition and design

capability

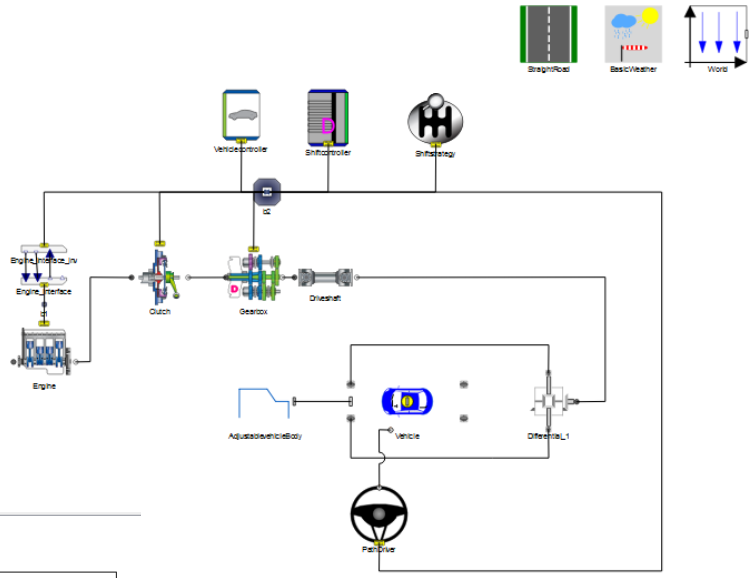
- Road animation
- Path definition as a sub-element of the road
- Vertical profile imposed on the surface
  - Defined retarders or potholes on the road patch
  - Defined by the road data measurement
  - Currently a single point of contact (given by the tire model used)
- Bank angle and gradient profile

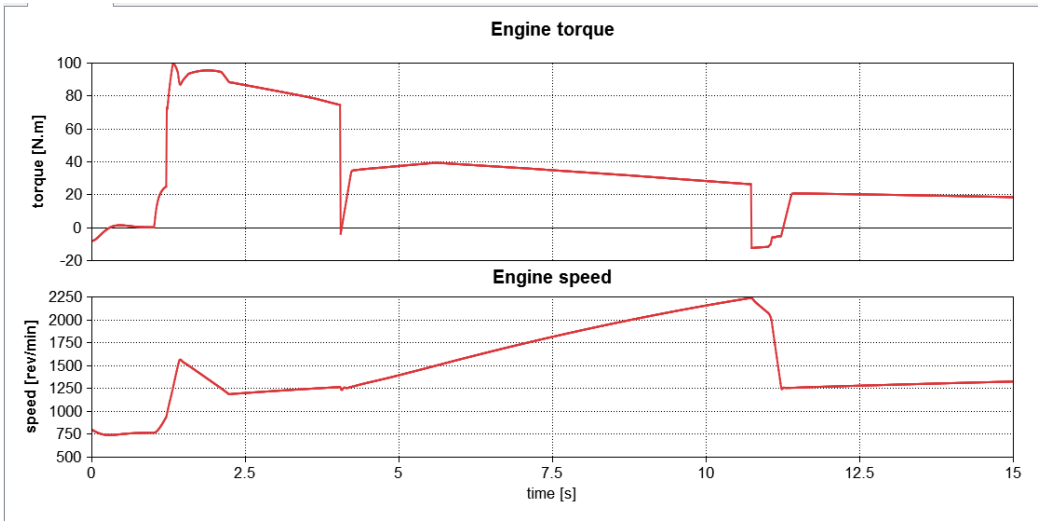


Connection to the Powertrain Library

flexibility and usability

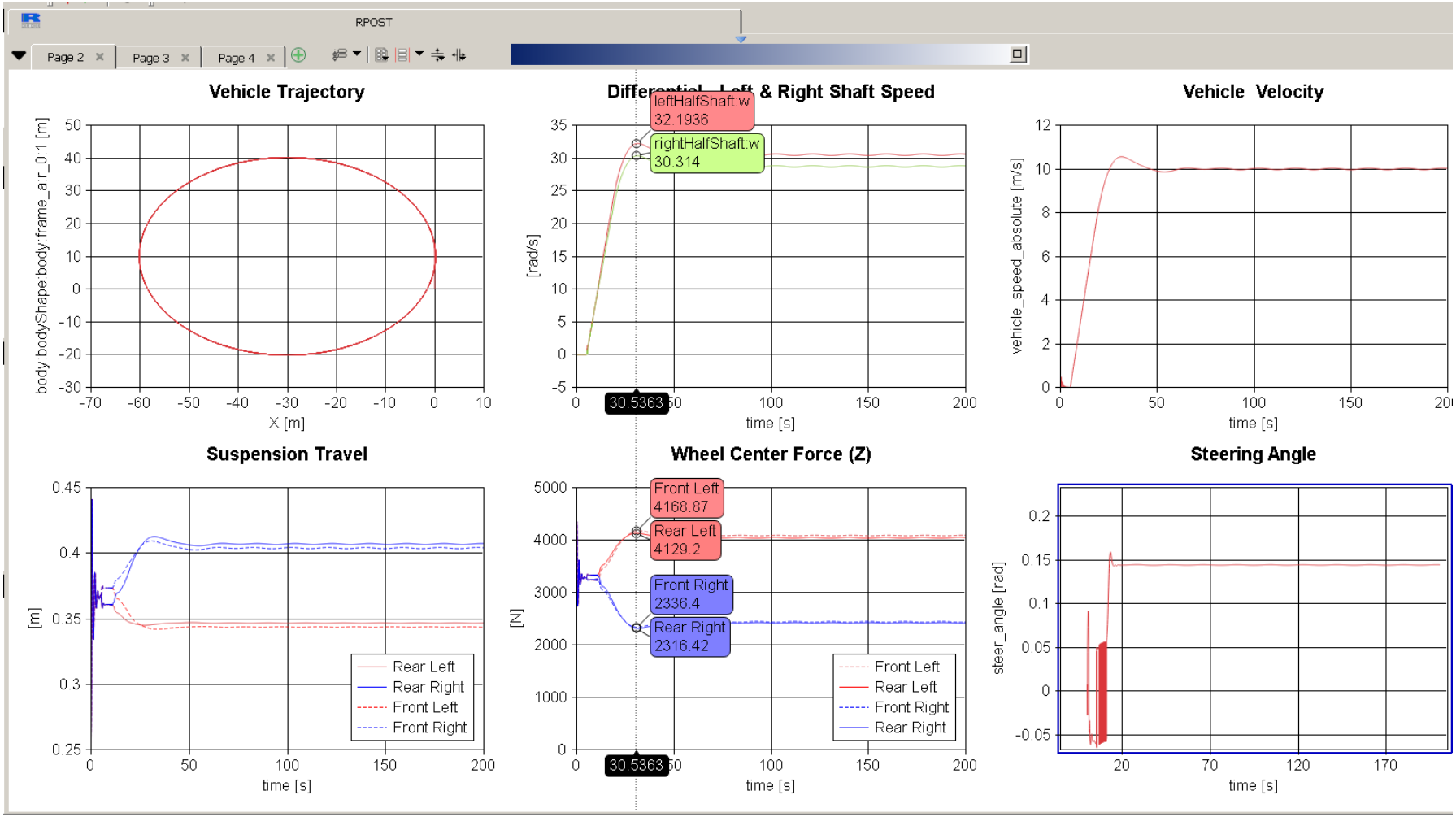
- IMoved fully compatible with Powertrain Library
- Interfaces support building different layouts
- PathDriver replacing the CycleDriver
- The impact of the powertrain changes on the vehicle handling





Link to RPOST
definition of the custom templates

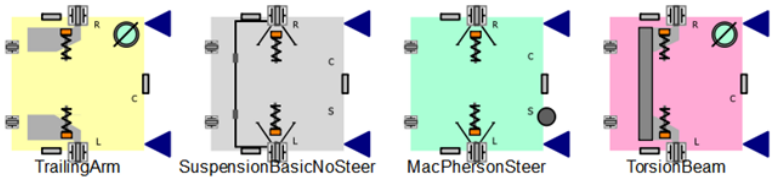
usability



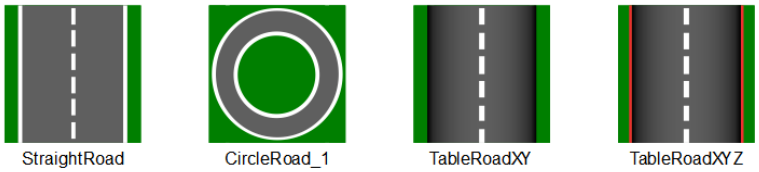
Components overview

capability

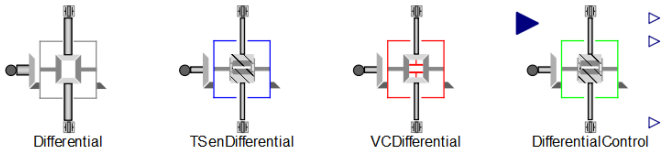
Axles



Roads



Differentials



Drivers