



BT Modeller[®]

*Liquid Vehicle Dynamics for
Chassis
Embedded System
Development*

BT Modeller

BT Modeller - Challenge

Liquid Vehicle Dynamics

BT Modeller - Solution

Features

Supported Simulation Types

Project Management

BT Modeller - Results

Highly Validated against Experimental Data & ADAMS/Car

ADAMS/Car User Meeting 2015: Validation Case Study

BT Modeller - Application

Applications - Chassis Development

Applications - Embedded System Development

BT Modeller - Buy

Standard / Custom Implementation

Know-How

BT Modeller - Challenge

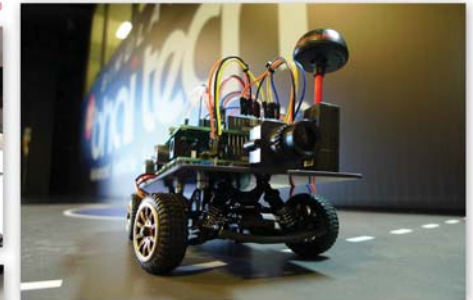
Modern vehicle dynamics is employed in a wide range of applications such as SIL, HIL, HHIL testing or embedded systems.

A new vehicle component or embedded system is usually tested using above simulation techniques in the subsequent stages of development.

Human & Hardware in-the-loop



Interactive Rescaled Reality



Driving Simulator



Software in-the-loop

BT Modeller - Challenge

We think that consistent and robust vehicle dynamics information is only guaranteed if the same vehicle model is employed along the entire development process.

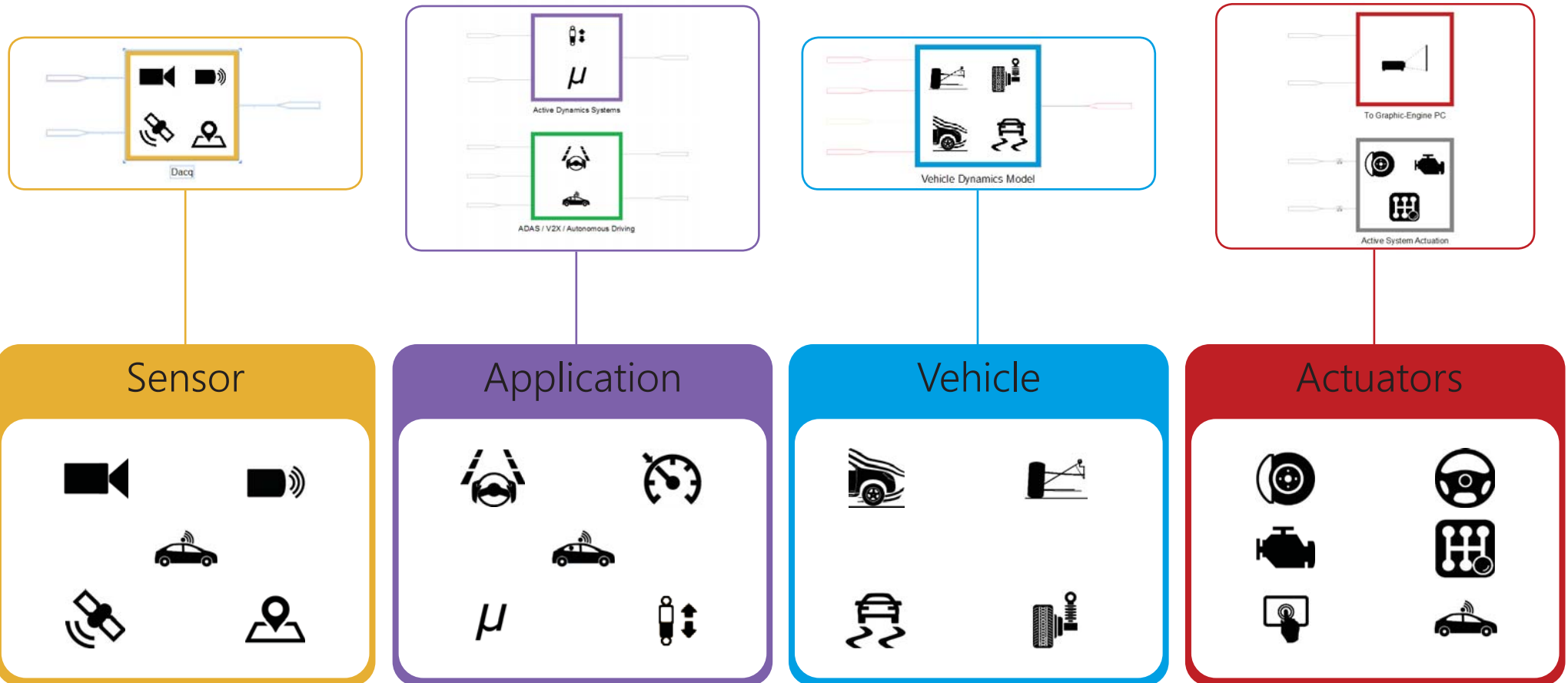
Therefore, the implementation of a vehicle model meeting the requirements of different simulation/embedded applications represents the ultimate challenge.

In one word, a “liquid” implementation of vehicle dynamics.



BT Modeller - Solution

LIQUID VEHICLE DYNAMICS



BT Modeller - Solution

SUPPORTED SIMULATION TYPES



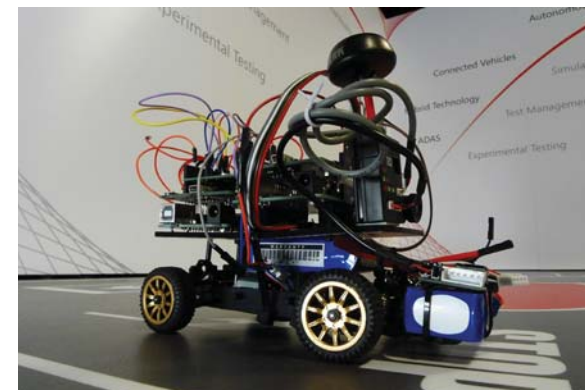
Software In-the-Loop



Human & Hardware In-the-Loop



Driving Simulator



Interactive Rescaled Reality

BT Modeller - Solution

FEATURES

VEHICLE MODEL

Plain Simulink[®] Vehicle Model*

Real-Time Execution or Faster

HIL Testing

Extended I/O Interface



* Simulink[®] License required to run BT Modeller only.
No additional Simulink[®] library related licences are required.

BT Modeller - Solution

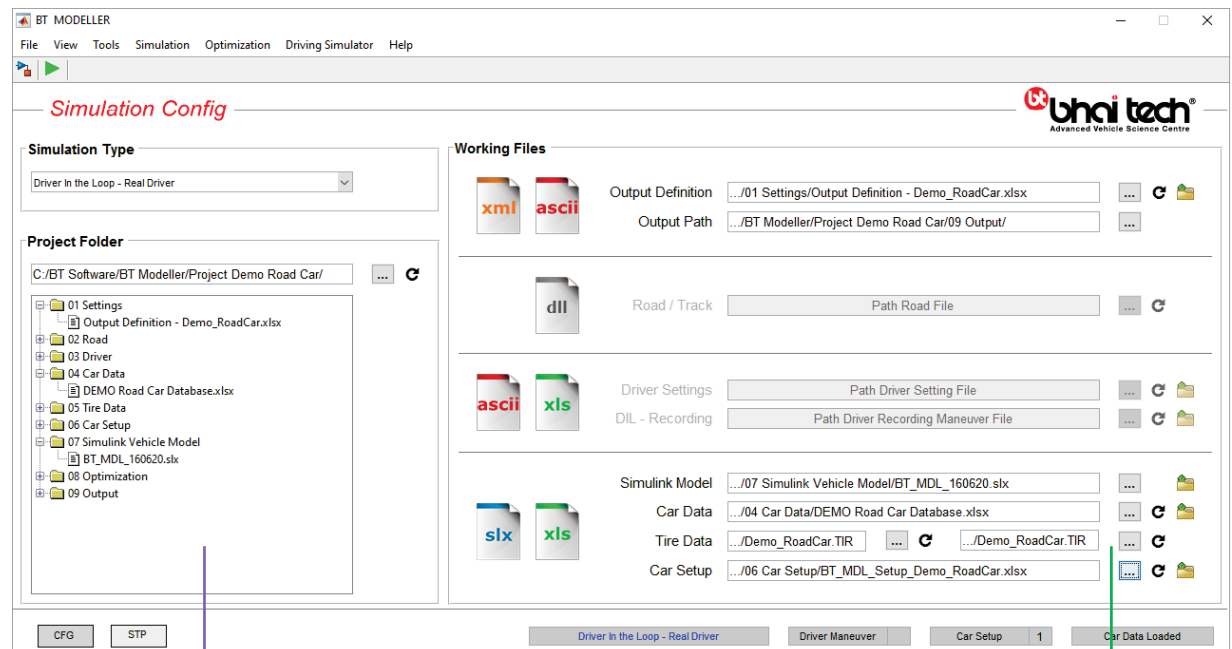
PROJECT MANAGEMENT

SIMULATION PROJECT MANAGEMENT

All data from the simulation project are available
in the project folder
(e.g. vehicle model, vehicle definition files)

SIMULATION PROJECT SETUP

The graphical user interface has been developed
to allow quick & easy management of the large
amount of data needed to setup the simulation



Manage Simulation
Project

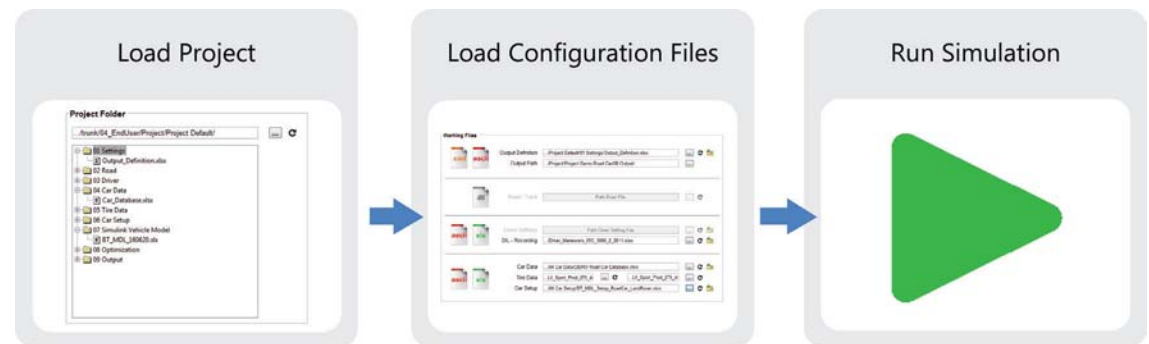
Manage Project
Setup

BT Modeller - Solution

PROJECT MANAGEMENT

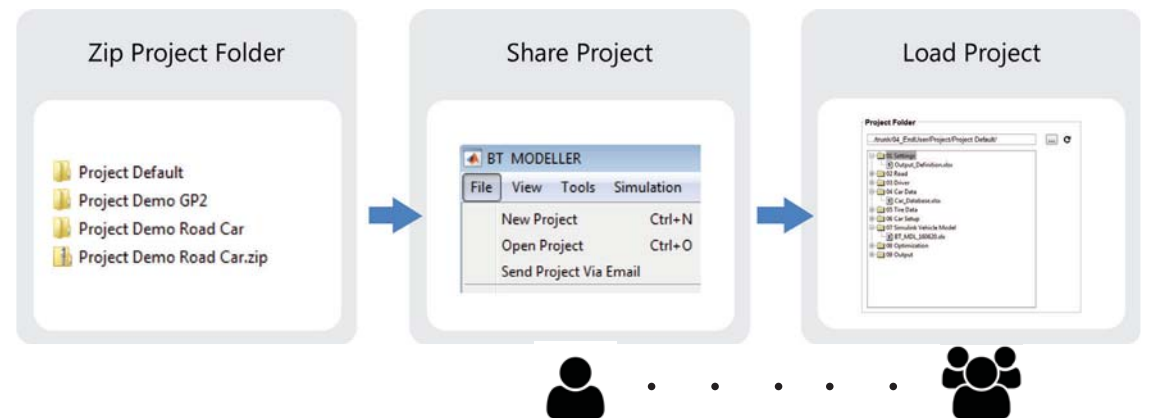
LOAD & RUN

Load configuration files for the project into the Graphical User Interface and do simulation work without the need to open the Simulink vehicle model



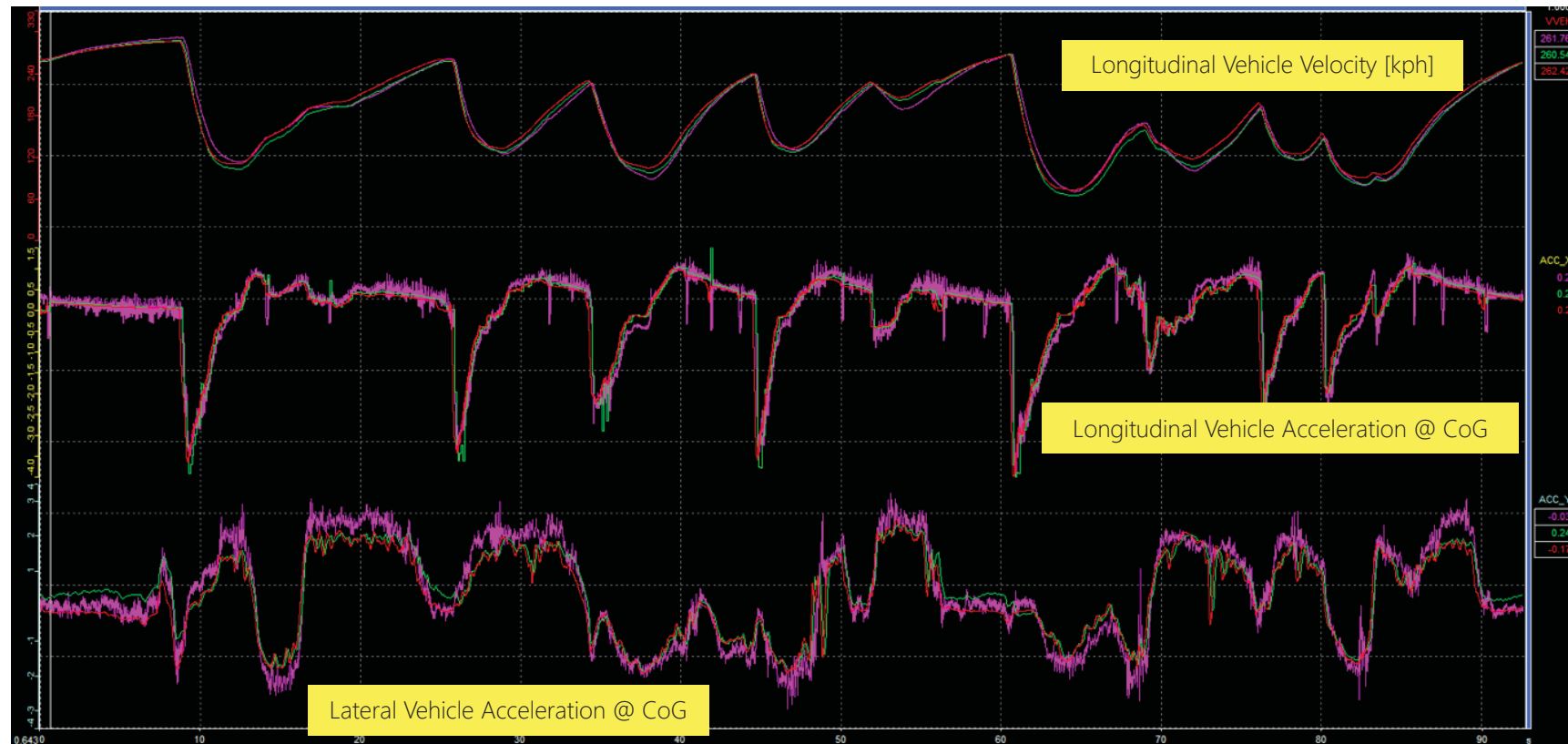
SIMULATION PROJECT SHARING

Zip simulation project folder containing all information and make it readily available to other colleagues for further simulation work or analysis



BT Modeller - Results

ADAMS/CAR USER MEETING 2015: VALIDATION CASE STUDY



Experimental Data from a lap at Barcelona Circuit

ADAMS/Car

BT Modeller

BT Modeller - Results

ADAMS/CAR USER MEETING 2015: VALIDATION CASE STUDY

PART I

Determining the Limit Performance of a GP2 Race Car: from
Reality to Multibody and Analytical Simulation - Part I



PART II

Determining the Limit Performance of a GP2 Race Car: from
Reality to Multibody and Analytical Simulation - Part II

Professional
MotorSport
WORLD EXPO 2015

BT Modeller - Application

CHASSIS DEVELOPMENT

✓ SUSPENSION DESIGN



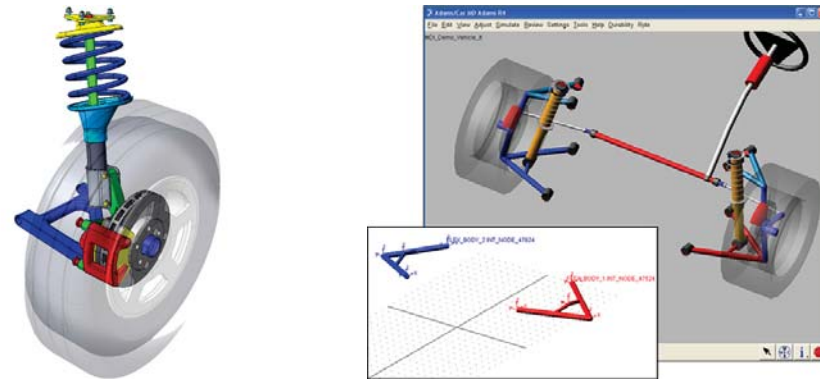
✓ AERODYNAMICS



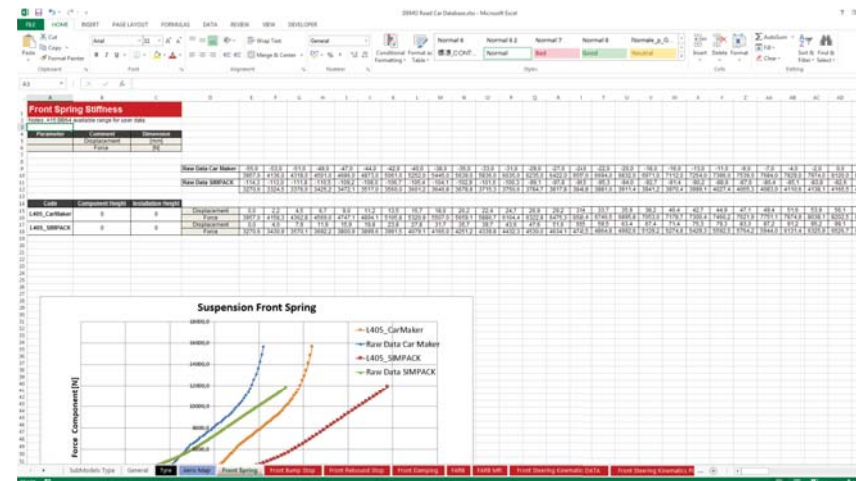
✓ RIDE



✓ HANDLING



Courtesy of MSC Software (Adams/Car)

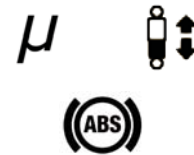


BT Modeller Vehicle Model Setup: Suspension Kinematics Data Import

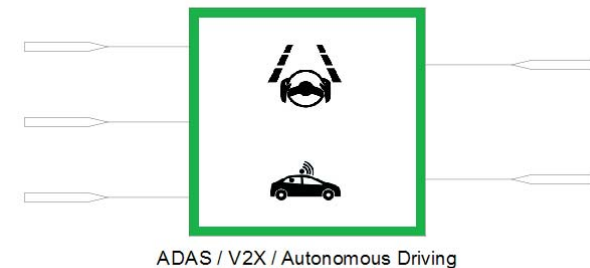
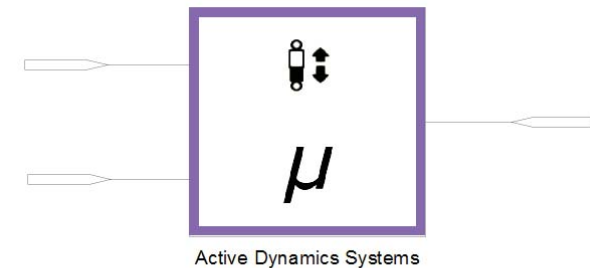
BT Modeller - Application

EMBEDDED SYSTEM DEVELOPMENT

✓ ACTIVE DYNAMICS / SAFETY SYSTEMS



✓ ADAS / V2X / AUTONOMOUS DRIVING



BT Modeller - Buy

STANDARD / CUSTOM IMPLEMENTATION

STANDARD IMPLEMENTATION

The know-how (intellectual property) for such technology is implemented and delivered to the customer in the form of protected MATLAB[®] Simulink sub-systems (Simulink vehicle model). The sub-systems can be then easily integrated/interfaced in the desired environment using default block I/O signals.

CUSTOM IMPLEMENTATION

The I/O signal interface of the protected sub-systems can be customized as well as some internal modeling aspects according to client needs for the specific application.

BT Modeller - Buy

KNOW HOW

KNOW-HOW

The know-how (intellectual property) for such technology is implemented and delivered to the customer in the form of open MATLAB[®] Simulink sub-systems (Simulink vehicle model).

Extensive documentation about the ideas and theory behind the system implementation as well as detailed description of the implementation itself are also delivered to the customer.

