

# Dynamic of (a) driveline as a system of a complex component using virtual prototyping methods/techniques/tool

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Organized by Automotive Cluster Euregio Meuse Rhine2012  
October 6th, 2011

## CALL FOR PRESENTATION

### Keywords

Multi-Body Simulation, Finite Element Analysis, Vehicle Dynamics, Driveline.

### Overview

The Automotive Cluster of the Euregio Meuse Rhine is organizing a workshop around driveline design and analysis in the field of vehicle dynamics using numerical simulation. The purpose of the workshop is to give the opportunity to industrials and universities to express their experiences and needs in the field of vehicle dynamics, more precisely in terms of design and validation of the vehicle driveline. This workshop is dedicated to lead a future European project in this field. It aims at collecting information on the way components are analysed and to look for a methodology to improve components quality.

The workshop focuses on driveline component analysis in the field of car/trucks/busses. Attendees will be asked to briefly present their company, their applications in the field of vehicle component design and limitations they are facing or desired improvements.

Nowadays the requirements to reduce fuel consumption and environmental pollution are increasing in automotive industry. In order to reach this goal, the current trend in industry addresses the enhancement of reliable simulation tools to develop reliable drive train models. In this way, there is a need to model completely the car from the motor to the vehicle dynamics including the transmission components, such as differential, gear box or clutch. The driveline modelling would allow to improve the performance not only of the transmission devices, but also of the other subsystems of the vehicle. Indeed, the transmission components strongly interact with the engine, the car body and the suspensions. For instance, some noise and vibrations can be generated by the differentials and transmitted in the whole car structure with a direct impact on the comfort of the passengers. To this end, an accurate mathematical model is needed to improve the performances of these mechanical systems and decrease their weight. Nevertheless the

modelling of discontinuities and nonlinear effects is not trivial and often leads to numerical problems.

## Planning:

- 15<sup>th</sup> of September 2011: Deadline for abstract submission in the shape of a short summary (15-20 lines);
- 20<sup>th</sup> of September 2011: publication of a program;
- 30<sup>st</sup> of September 2011: Deadline for presentation submission illustrating the topics presented in the abstract;
- 6<sup>th</sup> of October 2011: Workshop;

## General information:

Your proposal (15-20 lines) should include:

- Information about the author/speaker : title, full name, position, company, address, department, phone number, e-mail address;
- Company presentation ;
- Activity in car/truck/buses component design and analysis;
- Collaboration with tier suppliers, OEM, manufacturer: who and in which way;
- Limitations, needs and expected improvements.

## General objectives:

- Generalize the introduction of flexibility and non-linearity for dynamic simulation;
- Define comprehensive specifications for components;
- Improve component design (mass reduction and increased lifetime);
- Improve collaboration by increasing communication while respecting a certain level of confidentiality.

## Requirements:

- Lack of comprehensive specifications for components
  - Improve communication between partners : OEM  $\leftrightarrow$  TIER, TIER  $\leftrightarrow$  TIER;
  - Improve prediction techniques.

## Impacted actors:

- Tier suppliers;
  - Software editors;
  - Measurement centers;
  - Universities;
  - OEM (in a second step);
  - Others;
- Language = English

## The proposals have to be sent to:

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