

**NAFEMS**  
americas events



The International Association for the Engineering  
Modeling, Analysis and Simulation Community

**CONFERENCE PROGRAM & AGENDA**

# Engineering Analysis & Simulation in the Automotive Industry

**Electrification & Advanced Lightweighting Techniques**

*April 27th, 2017 | Troy, MI*

[nafems.org/americas](http://nafems.org/americas)

**Keynotes** from Honda R&D Americas, Inc. on "CAE for Lightweight Vehicle Development" & Ford Motor Co. on "The Case for Electrification and Opportunities - Role of CAE"

**Three Tracks** with presentations from industry, software providers, researchers, and academia

**Panel Discussion led by Ford Motor Company** on Electrification, Advanced Lightweighting Techniques, and more



## **Contact Information**

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*As government demands aggressive Fuel Economy and CO2 carbon emissions requirements, it has become imperative for engineers to look for new and inventive solutions to meet the imposed demands to deliver fuel efficient clean vehicles. These are being achieved by intense efforts of electrification of powertrains, as well as aggressive weight reduction efforts imposed during the vehicle development.*

*Automotive manufacturers and suppliers are already asked to develop innovative, safe, and dependable vehicles to market as efficiently as possible; meeting environmental requirements through electrification and light weighting solutions while also addressing fluctuating consumer needs adds yet another complex element into the automaker's task.*

*Topics presented and discussed at this conference will address various questions, such as:*

- *What CAE techniques are being used to drive various powertrain electrification design alternatives (i.e., HEVs, PHEVs, EBVs, etc.)?*
- *What are the methods used for modeling and simulation of advanced composites/ plastics to drive light weighting design?*
- *What solutions are available to help me with the evaluation of these technologies, based on demonstrated successful applications?*
- *What steps should I take when exploring the widening technology landscape?*

### Conference Overview

NAFEMS and participating speakers will cover these topics, and more, at, "Engineering Analysis & Simulation in the Automotive Industry: Electrification & Advanced Lightweighting Techniques." Located at the MEC in Troy, MI, attendees from the major automotive manufacturers and suppliers will gather at this annual event, in a pre-competitive manner, to exchange ideas, identify best practices, and drive the near-future direction of technology.

This event aims to deliver information and insights on critical topic areas in a manner that maximizes the "take-away" value for attendees. An event agenda and concept championed by several leading figures in the automotive industry will provide the opportunity to learn about the latest technologies and practices, which attendees can later share and apply within their own organizations.

### Sponsors

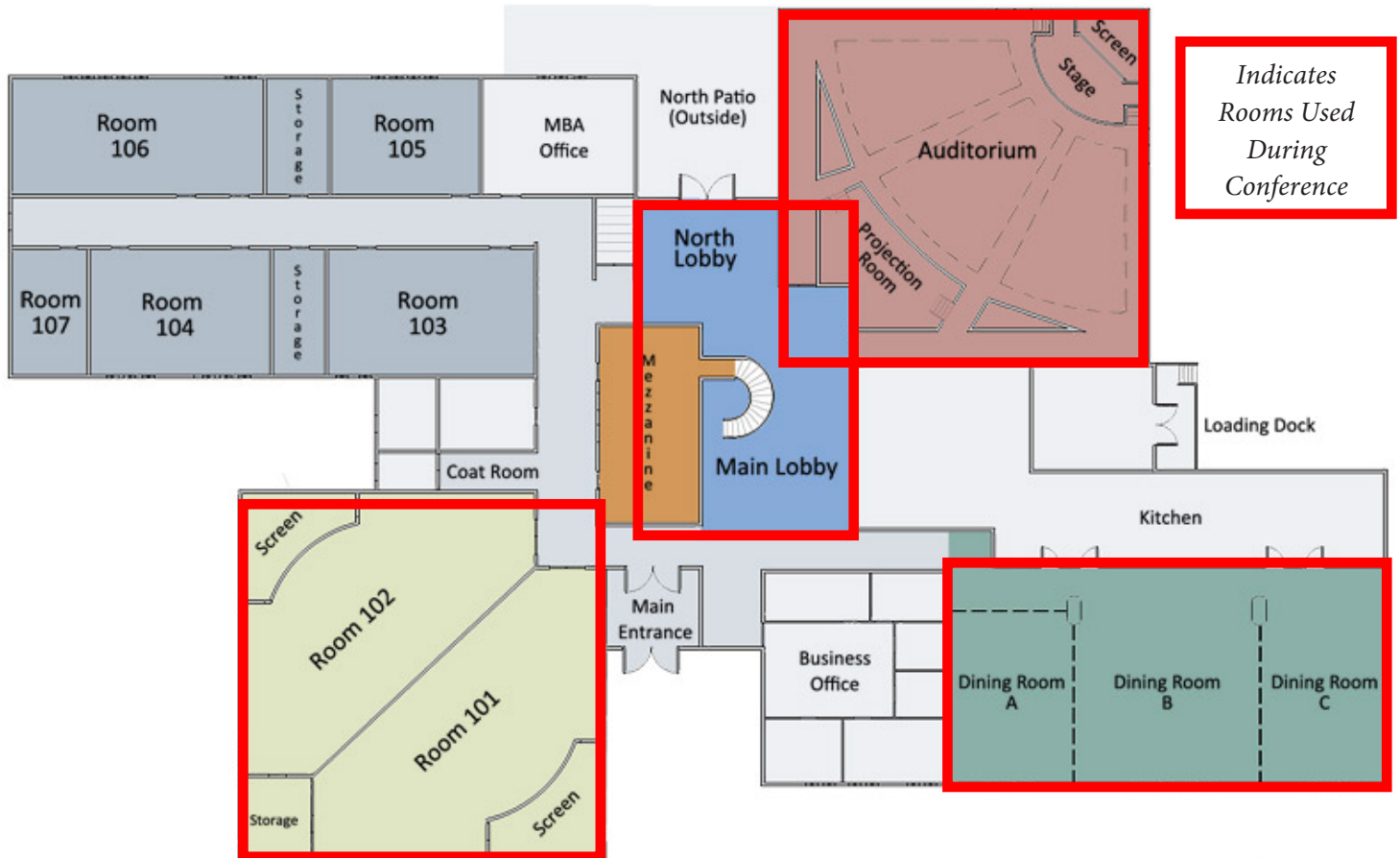
*We would like to extend a special thanks to the sponsors of the 2017 NAFEMS Americas Conference on Engineering Analysis & Simulation in the Automotive Industry: Electrification & Advanced Lightweighting Techniques. Please be sure to visit and speak with each of our sponsors during the conference to see and hear about the latest advancements in their technologies.*



# AGENDA - Thursday, April 27th

	<b>Plenary Session: Auditorium</b>		
9:00	<b>Welcome &amp; Introduction</b> A. Wood, Americas Regional Representative, NAFEMS <b>CAE for Lightweight Vehicle Development</b> D. Detwiler, Chief Engineer, Honda R&D Americas, Inc. <b>Case for Electrification and Opportunities - Role of CAE</b> V. Anand Sankaran, Executive Technical Leader & Chief Engineer, Ford Motor Company		
10:40	Break in Foyer		
	Room 101	Room 102	Auditorium
11:10	<b>LIGHTWEIGHTING (A)</b> Chair: M. Felice, Ford Motor Company <b>Advanced Anisotropic Damping Modeling for Improved Engine Design for NVH</b> A. Zouani, Ford Motor Company  <b>Finite Element Analyses of Adhesively Bonded Composite-Steel Joints for Lightweighting Applications</b> Y. Yang, EWI	<b>LIGHTWEIGHTING (B)</b> Chair: D. Detwiler, Honda R&D Americas, Inc. <b>A Gateway to Optimization, Lightweighting and Optimization-led Design</b> A. Farahani, ETA Engineering Tech. Assoc.  <b>Material Reduction via Modeling and Simulation at Cummins</b> B. Tickel, Cummins Engine Company	<b>CASE STUDIES (SESSION 1)</b> Chair: M. Ladzinski, NAFEMS <b>Optimization as a Driver for Innovate Lightweight Solutions</b> Dassault Systèmes Simulia Corp. <b>Private and Public Cloud HPC for CAE Simulation: Benefits and Challenges</b> TotalCAE <b>Simpleware: 3D Image Data to Simulation Synopsys</b>  <b>Design of Automotive Structures Using Multi-Model Optimization</b> Altair Engineering, Inc.
12:20	Lunch in Dining Room		
1:20	<b>LIGHTWEIGHTING (C)</b> Chair: A. Zouani, Ford Motor Company <b>Statistical Calibration Case Study: Fatigue Modeling</b> R. Goffee, SmartUQ  <b>Validating Lightweight Materials for Automotive Applications</b> J. Higgins, Autodesk	<b>ELECTRIFICATION</b> Chair: K. Meintjes, CIMdata <b>Simulation of the Impact of Advanced Light-weight Materials on Electromagnetic Systems in Automobiles</b> D. Johns, CST of America (a Dassault Systèmes Simulia Company)  <b>Optimization of Electromechanical Devices</b> P. Wendling, Altair Engineering, Inc.	<b>CASE STUDIES (SESSION 2)</b> Chair: M. Ladzinski, NAFEMS <b>Autodesk Manufacturing Simulation Stops the Guess Work</b> Autodesk <b>Engineering the Electric Vehicle Revolution</b> Esteco  <b>CAE Driven Optimization of Vehicle for Mass Reduction</b> Detroit Engineered Products <b>FutureSteelVehicle, An ACP Process Case Study</b> ACP OpDesign
2:30	Break in Foyer		
3:00	<b>LIGHTWEIGHTING (D)</b> Chair: K. Meintjes, CIMdata <b>Vehicle Structure Response Comparison Between Steel and Composite Brackets/Reinforcements: A Preliminary Finite Element Analysis Study</b> R. Makwana, Detroit Engineered Products  <b>Crashworthiness Prediction of Composite Vehicle Structures</b> S. Xiao, Michigan State University	<b>ELECTRIFICATION</b> Chair: M. Felice, Ford Motor Company <b>Analytical Study on Electric Motor Whine Radiated from Hybrid Vehicle Transmission</b> Z. Fu, Ford Motor Company  <b>Hybrid Electric Vehicle FMI-based Design Optimization</b> A. Froidmont, Noesis Solutions	<b>CASE STUDIES (SESSION 3)</b> Chair: M. Ladzinski, NAFEMS <b>NVH Simulation in Powertrain Electrification</b> AVL <b>Engineering License Analysis and Simulation with Usage Metering</b> OpenIT <b>Capturing Large Deformation in Multibody Dynamics</b> MSC Software <b>Engineering Analytics for the Automotive Industry</b> SmartUQ
4:10	<b>PANEL DISCUSSIONS: Auditorium</b> - ELECTRIFICATION - LIGHTWEIGHTING Led by M. Felice, Ford Motor Company		
5:20	<b>Networking Reception in Foyer</b>		

## MEC Floor Plans



### Exhibit Hall (Lobby Areas)

*Exhibitors* [^] [UgVW

- Dassault Systemes SIMULIA Corp.
- TotalCAE
- Synopsys
- Altair Engineering
- ESTECO
- Autodesk
- Detroit Engineered Products (DEP)
- ACP OpDesign
- AVL
- Open iT
- MSC Software
- SmartUQ

### Conference Venue

Management Education Center  
 811 W. Square Lake Road  
 Troy, MI 48098



### NAFEMS

As the only non-profit international association dedicated to the analysis, simulation, and systems engineering community, NAFEMS has established itself as the leading advocate for establishing best practices in engineering simulation. Over 30 years later, industry end-users, software and hardware solutions providers, researchers, and academic institutions continue to recognize NAFEMS as a valued independent authority that operates with neutrality and integrity. NAFEMS Americas supports over 300 member companies located in the Americas region who are actively engaged in the analysis, simulation, and systems engineering community.

### NAFEMS Americas Steering Committee Members

- Rodney Dreisbach (The Boeing Company, Retired), Chairman
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