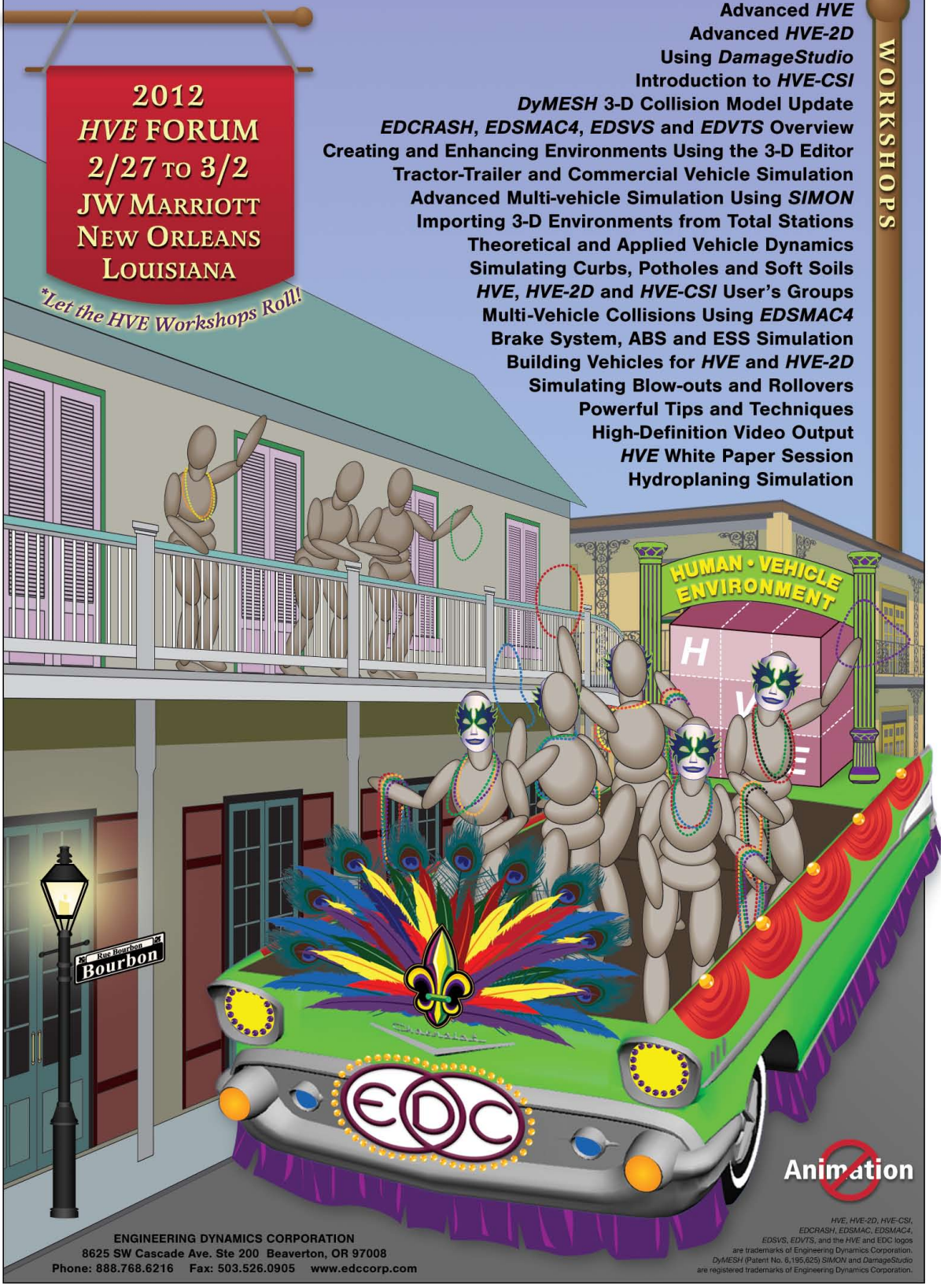
Laissez les HVE Cours de Formation Rouler!*

2012
HVE FORUM
2/27 TO 3/2
JW MARRIOTT
NEW ORLEANS
LOUISIANA

*Let the HVE Workshops Roll!

WORKSHOPS

- Advanced *HVE*
- Advanced *HVE-2D*
- Using *DamageStudio*
- Introduction to *HVE-CSI*
- *DyMESH* 3-D Collision Model Update
- *EDCRASH*, *EDSMAC4*, *EDSVS* and *EDVTS* Overview
- Creating and Enhancing Environments Using the 3-D Editor
- Tractor-Trailer and Commercial Vehicle Simulation
- Advanced Multi-vehicle Simulation Using *SIMON*
- Importing 3-D Environments from Total Stations
- Theoretical and Applied Vehicle Dynamics
- Simulating Curbs, Potholes and Soft Soils
- *HVE*, *HVE-2D* and *HVE-CSI* User's Groups
- Multi-Vehicle Collisions Using *EDSMAC4*
- Brake System, ABS and ESS Simulation
- Building Vehicles for *HVE* and *HVE-2D*
- Simulating Blow-outs and Rollovers
- Powerful Tips and Techniques
- High-Definition Video Output
- *HVE* White Paper Session
- Hydroplaning Simulation



ENGINEERING DYNAMICS CORPORATION
8625 SW Cascade Ave. Ste 200 Beaverton, OR 97008
Phone: 888.768.6216 Fax: 503.526.0905 www.edccorp.com

Workshop Registration

2012 *HVE* Forum

Workshop Schedule*

Feb 27 – Mar 2, 2012
JW Marriott
New Orleans, LA USA

	Room	Monday**	Tuesday	Wednesday	Thursday	Friday
8:30 a.m.	A (General Session)	Advanced *HVE* - Part I	Advanced *HVE* - Part III	Using *DamageStudio*	*DyMESH* 3-D Collision Model	3D Vehicles - Part IV: Blowouts & Rollovers
** Monday 8:30 am – 9:00 am Opening Remarks in General Session Meeting Room	B	Advanced *HVE-2D* – Part I	Advanced *HVE-2D* – Part III	Heavy Vehicle Brake Simulation in *EDSMAC4*	Advanced 3D Environments: Part I	Building a Vehicle for *HVE* & *HVE-2D*
	C	*HVE* & *HVE-2D* System Overview	Using *EDSMAC* & *EDSMAC4*	3D Editor: Functionality, Friction Zones & Importing Models	*EDSMAC4*: Model Overview	STARS: Madymo Occupant Analysis & PreScan Visualization
	D	Introduction to *HVE-CSI* - Part I	Introduction to *HVE-CSI*- Part III	STARS: Madymo Occupant Analysis & PreScan Visualization	Theoretical and Applied Vehicle Dynamics Part I	Theoretical and Applied Vehicle Dynamics Part III
	E					
12:00 p.m. -1:30 p.m.		Lunch Break (On Your Own)	Lunch Break (On Your Own)	Lunch Break (On Your Own)	Lunch Break (On Your Own)	End of 2012 *HVE* Forum
1:30 p.m.	A	Advanced *HVE* - Part II	Advanced *HVE* - Part IV	*HVE* Users Group *HVE-2D* Users Group *HVE-CSI* Users Group (1:30 – 3:00) *HVE* White Paper Session (3:15 – 5:00)	3D Vehicles - Part II: *HVE* Brake Designer & ABS Model	
	B	Advanced *HVE-2D* – Part II	Advanced *HVE-2D* – Part IV		Advanced 3D Environments: Part II	
	C	Using *EDCRASH*	Using *EDSVS* & *EDVTS*		Simulation Movies: HD Video Output	
	D	Introduction to *HVE-CSI*- Part II	Introduction to *HVE-CSI*- Part IV		Theoretical and Applied Vehicle Dynamics Part II	
	E		3D Vehicles - Part I : *SIMON*			
5:00 p.m. - 6:00 p.m.		Social Hour - Event Room (5:00 – 7:00 pm)	Social Hour - Hotel Lounge	Social Hour - Hotel Lounge	Social Hour - Hotel Lounge	

Rev. 11/17/11

* Workshop Schedule May Be Subject To Change

INTRODUCTION TO *HVE-CSI*

Introduction to *HVE-CSI* - Parts I, II, III and IV

Instructor: Joseph H. Canova
Times: Part I - Monday, 9:00 AM
Part II - Monday, 1:30 PM
Part III - Tuesday, 8:30 AM
Part IV - Tuesday, 1:30 PM

Description:

This two-day workshop series is designed for the new *HVE-CSI* user who wants to learn how to use the capabilities of *HVE-CSI* to reconstruct vehicle crashes and loss-of-control scenarios using the *EDCRASH* and *EDSMAC* physics programs. Each workshop builds upon experiences from the previous workshop, so students should plan to attend all parts.

The following material will be covered:

- Learning The *HVE-CSI* User Interface.
  - Using the Main Menu and Toolbars to efficiently work in the Vehicle, Environment, Event and Playback Editors.
  - Using the Viewer Thumbwheels or Set Camera dialog to adjust the display.
  - Learning how your inputs and outputs are saved within the case file and *HVE-CSI* installation folder.
  - Identifying your standard work flow when reconstructing a crash using *HVE-CSI*.
- Creating Vehicles
  - Using the Vehicle Wizard to add vehicles from the database that match those needed for your reconstruction.
  - Editing tire properties, such as slide friction and cornering stiffness values.
  - Editing vehicle stiffness coefficients to match those calculated from crash tests or other reference sources.
- Creating Environments
  - Working with an aerial photograph or other overhead image file of the crash site.
- Creating *EDCRASH* Events
  - General overview of the *EDCRASH* reconstruction program.
  - How to enter the crash site evidence required for momentum-based and/or damage-based calculations.
  - Understanding your initial results and the effects of changes to your inputs.
  - Real world example – The student will work through an example using *EDCRASH* to determine vehicle speeds at impact and loss-of-control.
- Creating *EDSMAC* Events
  - General overview of the *EDSMAC* simulation program.
  - How to enter the vehicle and scene evidence required for the simulation of your loss-of-control or crash scenario.
  - Understanding your initial results and the effects of changes to your inputs.
  - Real world example – The student will work through an example using *EDSMAC* to simulate a loss-of-control and collision scenario involving passenger cars, vans, pickups or sport-utility vehicles.
- Creating Outputs
  - How to select and print the various Output Reports produced by each event.
  - How to select and display time-dependent Variable Output parameters produced by a simulation.
  - How to select and display Trajectory Simulations produced by a simulation.
  - How to create and save a real-time AVI file of a simulation displayed in the Playback Window.
  - How to access references to validation studies and technical publications that support your reconstruction.

Upon completion of the workshops, the student will have a basic understanding of how to use *HVE-CSI* to reconstruct vehicle crashes and loss-of-control scenarios.

Students are strongly encouraged to bring their computers to work through examples in this series of workshops.

INTRODUCTION TO *HVE* & *HVE-2D*

HVE & HVE-2D System Overview

Instructor: Kenneth S. Baker
Time: Monday, 9:00 AM

Description:
The purpose of this workshop is to introduce the student to the basic features and capabilities of *HVE & HVE-2D*. The following material is covered:

- Basic Overview – The student will learn about the capabilities and enhancements of the *HVE & HVE-2D* simulation environments.
- User Interface – The student will learn how to use the Vehicle Editor, Environment Editor, Event Editor, and Playback Editor.

Upon completing this workshop, the student will understand the fundamentals of using *HVE* & *HVE-2D* and will be prepared to apply these fundamentals in other workshops at the *HVE* Forum.

Using *EDCRASH*

Instructor: Kenneth S. Baker
Time: Monday, 1:30 PM

Description:
The purpose of this workshop is to familiarize the student with the basic features and capabilities of *EDCRASH* in real world applications. The following material is covered:

- Basic Overview – The student will learn about the capabilities and enhancements of *EDCRASH*.
- Real world example – The student will work through a case study which showcases the capabilities of *EDCRASH*.

Upon completing this workshop, the student will be able to take advantage of the extended capabilities of *EDCRASH* in the *HVE* or *HVE-2D* simulation environment.

Using *EDSMAC & EDSMAC4*

Instructor: Kenneth S. Baker
Time: Tuesday, 8:30 AM

Description:
The purpose of this workshop is to familiarize the student with the basic features and capabilities of *EDSMAC* and *EDSMAC4* in real world applications. The following material is covered:

- Basic Overview – The student will learn about the capabilities and enhancements of the programs.
- Real world examples – The student will work through case studies which showcase the capabilities and also the differences between *EDSMAC* and *EDSMAC4*.

Upon completing this workshop, the student will be able to take advantage of the capabilities of *EDSMAC* and *EDSMAC4* in the *HVE* or *HVE-2D* simulation environment.

Using *EDSVS* & *EDVTS*

Instructor: Kenneth S. Baker
Time: Tuesday, 1:30 PM

Description:
The purpose of this workshop is to familiarize the student with the basic features and capabilities of *EDSVS* and *EDVTS* in real world applications. The following material is covered:

- Basic Overview – The student will learn about the capabilities and enhancements of the programs.
- Real world example – The student will work through a case study which showcases the capabilities.

Upon completing this workshop, the student will be able to take advantage of the capabilities of *EDSVS* and *EDVTS* in the *HVE* or *HVE-2D* simulation environment.

Students are strongly encouraged to bring their computers to work through examples in this series of workshops.

Advanced *HVE*

Advanced *HVE* - Parts I, II, III and IV

Instructors: Wesley Grimes
Times: Part I - Monday, 9:00 AM
Part II - Monday, 1:30 PM
Part III - Tuesday, 8:30 AM
Part IV - Tuesday, 1:30 PM

Description:

This workshop series is designed for the user who really wants hands-on exposure using *HVE* to simulate vehicle handling, crashes and rollovers. If you're looking to learn solid, proven techniques for applying *HVE* to your work and gain a thorough understanding of how to analyze complicated 3-D vehicle motion using *HVE* in examples applicable to the real-world, then this is the workshop series for you.

Attendees to this workshop series should be very familiar with the use of all editors (Vehicle, Environment, Event and Playback) of the *HVE* 3-D simulation environment, as they will be used extensively in the workshops. Attendees should also be prepared to use physics models such as *EDSMAC4* and *SIMON,* as well as the *DyMESH* 3-D collision model during the workshops. Students will explore the advantages and limitations of using *EDSMAC4* and *SIMON* to analyze non-trivial vehicle motion, as well as special collision types.

Each workshop builds upon experiences from the previous workshop, so students should plan to attend all parts. It is highly recommended that each student bring their own laptop computer to use during the workshops.

Upon completion of the workshops, the student will have a solid understanding and greater insight into the full capabilities of the physics models for real-world applications, which will help improve their accuracy, their efficiency and their workflow as a user.

Students are strongly encouraged to bring their computers to work through examples in this series of workshops.

Advanced *HVE-2D*

Advanced *HVE-2D* - Parts I, II, III and IV

Instructors: James P. Sneddon
Times: Part I - Monday, 9:00 AM
Part II - Monday, 1:30 PM
Part III - Tuesday, 8:30 AM
Part IV - Tuesday, 1:30 PM

Description:

This workshop series is designed for the user who really wants hands-on exposure to using *HVE-2D* to simulate and reconstruct vehicle crashes and potential loss-of-control scenarios. The student will edit environments, build and edit vehicles and then use these objects in simulation studies based upon examples applicable to the real-world. If you're looking to learn solid, proven techniques for applying *HVE-2D* to your work, then this is the workshop series for you.

Attendees of this workshop series should be familiar with the use of all of the editors (Vehicle, Environment, Event and Playback) of the *HVE-2D* simulation environment, as they will be used extensively in the workshops. Attendees should also be prepared to use physics models such as *EDCRASH* and *EDSMAC4* during the workshops.

Each workshop builds upon experiences from the previous workshop, so students should plan to attend all parts. It is highly recommended that each student bring their own laptop computer to use during the workshops.

Upon completion of the workshops, the student will have a solid understanding of how to use the actual vehicles and the actual roadways in their simulations and reconstructions. They will also have greater insight into the capabilities of the physics models for real-world applications, which will help improve their accuracy, their efficiency and their workflow as a user.

Students are strongly encouraged to bring their computers to work through examples in this series of workshops.

3-D Vehicle Simulation

3-D Vehicle Simulation, Part I: *SIMON*

Instructor: Terry D. Day
Time: Tuesday, 1:30 PM

Description:

The *SIMON* (SImulation MOdel Non-linear) vehicle simulation model is the first vehicle simulation model built by EDC from the ground up. *SIMON* incorporates not only new, object-oriented design technologies, it also is the first model to use all of *HVE*'s advanced features. The following materials are covered:

- Basic Model Overview - The student learns about the basic features incorporated into the *SIMON* program.
- Vehicle Dynamics Model – The student learns how a truly 3-dimensional vehicle dynamics model is designed and implemented.
- *SIMON* Extended Options - The student learns about options for performing single vehicle and articulated vehicle simulations, and for performing true 3-dimensional collision simulations using EDC's patented *DyMESH* technology.
- *SIMON* Output – The student learns about all the output parameters produced by SIMON, and how to debug and improve simulation results by evaluating the output parameters.
- Examples - This workshop provides numerous examples of the use of *SIMON* for vehicle handling and collision studies. A special emphasis is placed on reviewing and understanding *SIMON's* output variables to improve analysis and interpretation of complex events and maneuvers.

Upon completing this workshop, the student will understand *SIMON*'s general design assumptions and feature set.

3-D Vehicle Simulation, Pt II: *HVE* Brake Designer & ABS/ESS Simulation Models

Instructor: Terry D. Day
Time: Thursday, 1:30 PM

Description:

In this workshop the student will learn the theoretical basis and practical application of the *HVE* Brake Designer. Specifically, the course will cover:

- Free-body analysis of various brake types
- Temperature model for drum brakes
- Using the *HVE* interface to simulate a complete brake system, from the brake pedal to the wheel brake assemblies
- Examples using the *HVE* Brake Designer for parametric studies and ways to accurately simulate a failed brake system

The student attending this workshop will also learn about the *HVE* ABS and ESS Simulation Models. Specifically, the course will cover:

- An overview of ABS/ESS and current ABS/ESS methodologies
- A detailed discussion of the *HVE* ABS and ESS Simulation Models user interface and how various parameters are used.
- The updated model for displaying skidmarks from tires on ABS/ESS-equipped vehicles
- Examples comparing maneuvers with ABS/ESS-equipped and non-ABS/ESS-equipped vehicles

Upon completing this workshop, the student will have the background and practical knowledge necessary to incorporate custom brake and ABS/ESS simulation models into their *HVE* vehicle simulations.

3-D Vehicle Simulation, Part III: Blowouts and Rollovers

Instructor: Kenneth S. Baker
Time: Friday, 8:30 AM

Description:

The purpose of this workshop is to acquaint the student with the use of *EDVSM* and *SIMON* for studying complex accident scenarios involving tire blow-out, traversing soft soil, curb impact and vehicle rollover. The following material is covered:

- *HVE* Tire Blow-out Model - The student is exposed to the analytical method used to simulate air loss in a tire. Model parameters are investigated and tire modeling effects are studied.
- Using *EDVSM* and *SIMON* to Study Rollover – The student learns basic techniques for simulating rollovers, including the influence of friction, terrain discontinuities, CG height, suspension characteristics and driver inputs.
- Vehicle Body vs. Ground Interaction – The student learns how *EDVSM* and *SIMON* model the interaction forces and moments between the vehicle body and terrain during a rollover.
- Tire-Terrain Models - The student is introduced to the *HVE* Radial Spring, Sidewall Impact and Soft Soil Tire-Terrain models, and how they differ from the Point Contact model that is commonly used.
- Examples - This workshop provides several examples using *EDVSM* and *SIMON* to study tire blow-outs and rollovers. Validations for *EDVSM* and *SIMON* and the *HVE* Tire Blow-Out Model are included.

Upon completing this workshop, the student will be able to use *EDVSM* and *SIMON* to study tire blow-outs, soft soil traversals, curb impacts and vehicle rollovers.

COLLISION SIMULATION

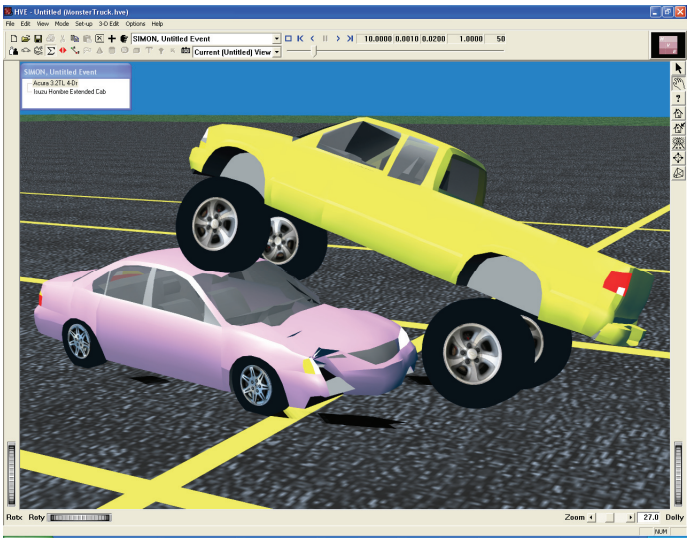
DyMESH 3-D Collision Model, Version 3

Instructor: Terry D. Day
Time: Thursday, 8:30 AM

Description:

The purpose of this workshop is to acquaint the student with the capabilities of the updated *DyMESH* collision model. The following material is covered:

- Basic *DyMESH* Overview - The student is exposed to the basic modeling approach used by *DyMESH*, and how *DyMESH* calculates forces between vehicles.
- Modeling of Wheel Impact – The student learns how *DyMESH* calculates forces acting on a vehicle's wheels (new for *DyMESH* Version 3).
- *DyMESH* Integration into *SIMON* – The student learns how *DyMESH* Version 3 is incorporated into the *SIMON* model to provide a complete simulation of a collision event.
- *DyMESH* Output Parameters – The outputs resulting from a collision simulation are presented and explained.
- *DyMESH* Validation - Validations are presented providing examples of the use of *DyMESH* for vehicle vs. vehicle and vehicle vs. barrier crashes.



Upon completing this workshop, the student will understand the theory of *DyMESH* and its applications to real-world 3-dimensional collision and rollover simulation events. The workshop will include a special emphasis on the differences between *DyMESH* versions 2 and 3.

EDSMAC4: Model Overview

Instructor: Kenneth S. Baker
Time: Thursday, 8:30 AM

Description:

The purpose of this workshop is to acquaint the student with the modeling procedures and capabilities of the *EDSMAC4* simulation model. The following material is covered:

- General overview of the *EDSMAC4* simulation model
- Detailed discussion of the improvements to the collision model and comparison with *EDSMAC*
- Detailed discussion of the articulated vehicle model
- Examples – This workshop provides several examples using *EDSMAC4* to simulate collisions involving passenger vehicles and heavy trucks.

Upon completing this workshop, the student will understand the basic concepts and capabilities of the *EDSMAC4* simulation model.

Damage Analysis Tools

Using *DamageStudio*

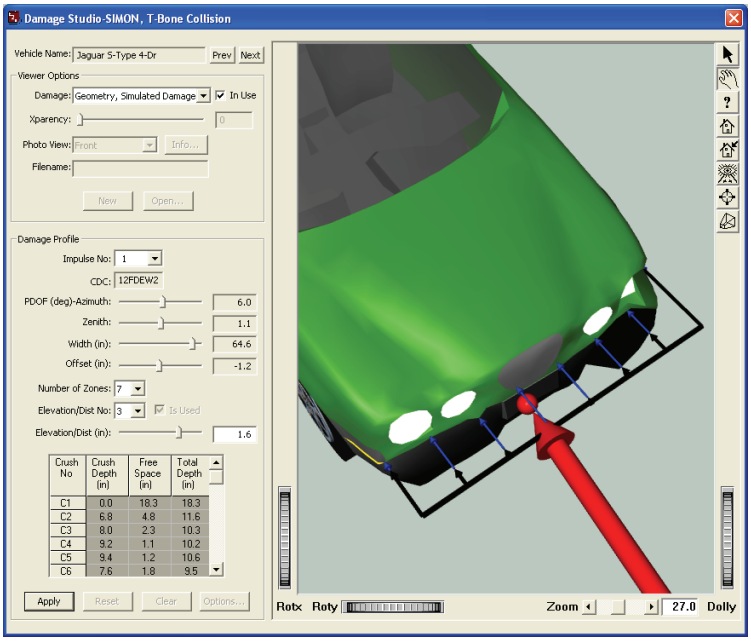
Instructor: Terry D. Day
Time: Wednesday, 8:30 AM

Description:

The goal of this workshop is to provide both a theoretical and a practical basis for *DamageStudio*. The theoretical basis delves into the physics of collision mechanics and how *DamageStudio* captures that information. The practical basis uses a hands-on approach, providing real-world examples.

The following topics are covered:

- High-level Overview
  - What is *DamageStudio*?
  - Which physics models use *DamageStudio*?
  - Differences between *DamageStudio* and current methods and options
- Description of CollisionData
  - Included parameters
  - Integration into SIMON
  - Integration into EDSMAC4
- Description of *DamageStudio*
  - Viewer options
  - Damage profile options
- *DamageStudio* Applications and Examples (Hands-on)
  - 2-Car collision
  - Rollover



Upon completing this workshop, the student will be able to understand how *DamageStudio* produces the damage information presented in the Collision Data report and the *DamageStudio* viewer, and to apply *DamageStudio* to individual cases involving vehicle collisions and rollovers.

COMMERCIAL VEHICLE SIMULATION

Heavy Vehicle Brake Simulation in *EDSMAC4*

Instructor: James P. Sneddon
Time: Wednesday, 8:30 AM

Description:

The purpose of this workshop is to show the student how to analyze heavy truck braking issues when using *EDSMAC4*. The S-cam brake system will be reviewed, and simple hand-calculations based on the Heusser equations published in SAE 910126 will be shown. Once these equations and concepts are presented, the calculated values will be used in the *EDSMAC4* model to study vehicle braking events.

Upon completing this workshop, the student will be be able to study issues and crashes involving trucks where braking is a part of the analysis.

This workshop is intended for experienced *HVE* and *HVE-2D* users, but all levels are encouraged to attend as the concepts presented are extremely powerful and beneficial for all users.

HUMAN SIMULATION

STARS – Madymo Occupant Analysis & PreScan Visualization

Instructor: Mike Brown
Time: Wednesday, 8:30 AM
Friday, 8:30 AM

Description:

The purpose of this workshop is to showcase the features and capabilities of the recently launched STARS software suite. The STARS software consist of three products MADYMO-for-STARS, Prescan-for-STARS and HVE-CSI (although it is compatible with any current HVE product). MADYMO is the industry leading occupant analysis software as used by the majority of the world's automotive manufacturers. This powerful toolset is now available to collision investigators via a new custom built user interface allowing users to quickly and easily evaluate the latest ATD and Human Body models using the crash pulse as developed in their HVE software.

The workshop will cover the basic functionality of the tools as well as demonstrate the unique capabilities of each of the included products. The following material will be covered:

HVE-CSI Software

- Setting up and running a vehicle-to-vehicle collision simulation to generate a crash pulse.

PRESCAN-for-STARS Software

- Generating 3D environments and motion paths.
- Setting cameras, viewpoints and trajectories.
- Changing environmental conditions i.e. Fog, precipitation and multiple light sources.

MADYMO-for-STARS Software

- Setting up vehicle interior models including seating positions in order to match a required vehicle setup.
- Defining the required occupant sizes and types i.e. ATD or Human body Model.
- Setting up the restraint systems i.e. seatbelts, airbags and interior contact surfaces.
- Running a MADYMO simulation.
- Post processing the produced injury values and kinematic data.
- Overview of upcoming features for the next release of the software.

Multiple examples will be explored by the students using hand outs or materials provided in the workshop. Attendees are encouraged to bring their laptops along and demo copies of the software will be provided.

Upon completing this workshop, the student will be able to use the STARS software suite to analyse and make assessments on occupant injuries plus kinematic movements.

Using the 3-D Editor

3-D Editor: Functionality, Friction Zones & Importing Models

Instructor: Daniel Peralta
Time: Wednesday, 8:30 AM

Description:

The purpose of this workshop is to expose the student to the features and capabilities of the 3-D Editor. The 3-D Editor can be used for creating simple environment models or for enhancing imported DXF or VRML format environment models. Most importantly, the 3-D Editor is the only tool for assigning friction factors to areas of the environment model.

The following material is covered:

- Basic Overview - The student will learn the basic capabilities of the 3-D Editor, including creating surfaces, boxes, spheres, cylinders and text. The student will also learn how to edit the geometry and material attributes of previously created environments.
- Using Friction Factors - The student will learn about GetSurfaceInfo(), object types (*Road*, *Friction Zone* and *Other*), and Friction Factor.
- Object Precedence - The student learns about object hierarchy and how *HVE* deals with tunnels, bridges, overlapping surfaces and any other issues related to object precedence using examples such as an oil slick, speed bump and sidewalks.
- File Types - The student learns more about the various types of file formats supported by *HVE*.
- Pre-processing Environment Models - The student learns how to prepare an environment model in AutoCAD for importing into *HVE*.
- Using Aerial Photos – The student learns how to build a scaled surface and properly apply an aerial photo or bitmap image to the surface.

Upon completing this workshop, the student will be able to use the 3-D Editor to create and edit virtually any type of drivable surface, as well as import DXF or VRML files created in AutoCAD, Rhinoceros, 3DStudio (or other programs) into the Environment Editor and save them in the case file or as a separate file available for use in future cases.

Creating Simulation Movies

Simulation Movies: HD Video Output

Instructor: Daniel Peralta
Time: Thursday, 1:30 PM

Description:

The purpose of this workshop is to acquaint the student with the capabilities of the Playback Editor and the new HVE Video Creator. The following material is covered:

- Creating and Printing Reports - The student will learn how to select and print the various output reports produced by each event.
- Variable Output - The student will learn how to select and print time-dependent parameters produced by each simulation event.
- Creating Trajectory Simulations - The student will learn how to select Trajectory Simulations produced by each simulation event.
- Viewer Basics - The student will learn how to use the two basic methods available for setting the view: Viewer Thumb Wheels and Set Camera dialog.
- Using the Video Creator - The student will learn how to combine multiple simulations into the Video Creator Window. The "rules of precedence" will be addressed.
- Object-based Cameras - The student will learn how to attach the view (camera) to a moving object (e.g., vehicle). The use of a "Camera Car" is also addressed.
- Creating Real-time Simulation Videos - The student will learn how to use the new *HVE* Video Creator to create a real-time HD video of the current sequence in the Video Creator.

Upon completing this workshop, the student will be able to view and print output reports, traj sims and variable output tables. The student will also be able to create a multiple-event accident sequence, and create and replay high definition simulation videos in multiple video formats.

BUILDING ENVIRONMENT MODELS

Advanced 3-D Environments, Part I & II

Instructor: James P. Sneddon
Times: Part I - Thursday, 8:30 AM
Part II - Thursday, 1:30 PM

Description:

The purpose of this workshop is to extend a *HVE* User's abilities to build detailed terrain models for their simulation studies. Using a combination of CAD tools, Rhinoceros NURBS modeling software and the 3-D Editor, a terrain model will be built of a real-world roadway example.

The following material is covered:

- Review of actual site and identification of key elements
- Planning terrain model requirements
- Discussion of surveying and data collection methods
- Creating a preliminary terrain model
- Add additional roadway markings such as center lines and fog lines
- Establishing mesh density and surface normal orientation
- Importing 3-D Environment from 3rd party CAD or COGO software
- Quality checking the finished terrain model using simulations of vehicles driving on the surface

Upon completing the Advanced 3-D Environments workshops, the student will understand the methodology used to build a preliminary model and be able to acquire point data themselves, or work with a surveying company to develop a model for their use in *HVE*. Additionally, the student will be familiar with the processes required to build detailed models of any roadway or terrain required for their own detailed simulation studies.

BUILDING VEHICLE MODELS

Building a Vehicle for *HVE* & *HVE-2D*

Instructor: Daniel Peralta
Time: Friday, 8:30 AM

Description:

The purpose of the workshop is to familiarize the student with the processes and standards EDC uses to build vehicles for *HVE*. The following material is covered:

- Vehicle Data Files- The student is presented with a detailed overview of the process used by EDC for obtaining the necessary vehicle data and for reducing these data into the form required by the *HVE* Vehicle Data structure. A sample Vehicle Data File is reviewed in detail.
- Vehicle Geometry Files- The student is presented with an overview of how to create a vehicle geometry file using a digitizer, as well as customize the geometry using 3-D CAD software. This will provide the user with an outline for creating a geometry file and tools for customizing the appearance of a vehicle.
- Building Your Own Vehicles – The student is presented with a detailed overview of the process to customize a generic vehicle from the Generic Database in *HVE* and *HVE-2D* by editing data parameters and geometry file. The process of saving this customized vehicle into the User Database for use in future cases is also discussed.

Upon completing this workshop, the student will have a good outline to follow for building a vehicle for *HVE* and *HVE-2D* and the necessary tools for customizing its appearance and data parameters.

VEHICLE DYNAMICS

Theoretical and Applied Vehicle Dynamics, Parts I, II and III

Instructor: L. Daniel Metz
Times: Part I - Thursday, 8:30 AM
Part II - Thursday, 1:30 PM
Part III - Friday, 8:30 AM

Description:

This workshop will provide an overview of vehicle dynamics and dynamic and transient model concepts discussed in greater detail in the EDC Theoretical and Applied Vehicle Dynamics course. This workshop will also provide a hand-on understanding of vehicle dynamics by performing simulations of vehicle handling maneuvers and proving ground tests using *HVE*.

The following material will be discussed in this workshop:

- Introduction to Vehicle Dynamics
- Tire Mechanics
- Control Theory Concepts
- Dynamic/Transient Handling Models
- Dynamic/Transient Acceleration Models
- Dynamic/Transient Ride Models

Upon completing this workshop, the student will have an increased understanding of dynamic and transient models related to vehicle dynamics. Students wishing to further their understanding are encouraged to attend the regular EDC Theoretical and Applied Vehicle Dynamics course.

Students are strongly encouraged to bring their computers to work through examples in this series of workshops.

HVE WHITE PAPER SESSION

HVE White Paper Session

Moderator: Joseph H. Canova
Time: Wednesday, 3:15 PM

Description:

This session is an opportunity for *HVE* users to showcase their skills to other *HVE* users, as well as to non-*HVE* users who may require the services of a consultant. The following subjects may be addressed in the presentations:

- *HVE* Case Studies
- Innovative Tips and Techniques Using *HVE*
- Any Application of *HVE* Showcasing its Capabilities (especially events involving important 3-dimensional vehicle behavior)

Papers from each year's *HVE* White Paper Session are made available to download directly from the Library section of the EDC website, thereby expanding the awareness of the work beyond just the attendees of the *HVE* Forum.

Four presentations are scheduled for this session.

USERS GROUP MEETINGS

HVE Users Group Meeting

Open Forum Discussion about *HVE*

Moderator: Kenneth S. Baker
Time: Wednesday, 1:30 PM

Description:

The purpose of this workshop is to provide and encourage an open forum for discussing user's experiences with *HVE*. The *HVE* Users Group Meeting has several goals:

- Creative Applications - Experience has shown there are often several different ways to approach a problem using *HVE*. Usually one method stands out as the superior method. Users are encouraged to come to this meeting ready to share their experiences with other users.
- Wish List - Users are encouraged to come to this meeting with their Wish List of improvements or added functionality that would be helpful in their use of *HVE*. A Wish List will also be compiled during the Advanced *HVE* workshops and presented during this meeting.
- Pipeline to EDC - Personnel from EDC will be in attendance; however, they shall play the role of listeners, rather than active participants. EDC's goal is to learn directly from *HVE* users what they like now and need most in the future.

HVE-2D Users Group Meeting

Open Forum Discussion about *HVE-2D*

Moderator: James P. Sneddon
Time: Wednesday, 1:30 PM

Description:

The purpose of this workshop is to provide and encourage an open forum for discussing user's experiences with *HVE-2D*. The *HVE-2D* Users Group has several goals:

- Creative Applications - Experience has shown there are often several different ways to approach a problem using *HVE-2D*. Usually one method stands out as the superior method. Users are encouraged to come to this meeting ready to share their experiences with other users.
- Wish List - Users are encouraged to come to this meeting with their Wish List of improvements or added functionality that would be helpful in their use of *HVE-2D*. A Wish List will also be compiled during the Advanced *HVE-2D* workshops and presented during this meeting.
- Pipeline to EDC - Personnel from EDC will be in attendance; however, they shall play the role of listeners, rather than active participants. EDC's goal is to learn directly from *HVE-2D* users what they like now and need most in the future.

HVE-CSI Users Group Meeting

Open Forum Discussion about *HVE-CSI*

Moderator: Joseph H. Canova
Time: Wednesday, 1:30 PM

Description:

The purpose of this workshop is to provide and encourage an open forum for discussing user's experiences with *HVE-CSI*. The *HVE-CSI* Users Group has several goals:

- Creative Applications - Experience has shown there are often several different ways to approach a problem using *HVE-CSI*. Usually one method stands out as the superior method. Users are encouraged to come to this meeting ready to share their experiences with other users.
- Wish List - Users are encouraged to come to this meeting with their Wish List of improvements or added functionality that would be helpful in their use of *HVE-CSI*. A Wish List will also be compiled during the Introduction to *HVE-CSI* workshops and presented during this meeting.
- Pipeline to EDC - Personnel from EDC will be in attendance; however, they shall play the role of listeners, rather than active participants. EDC's goal is to learn directly from *HVE-CSI* users what they like now and need most in the future.

2012 *HVE* FORUM Registration

Feb 27 – March 2, 2012
JW Marriott
New Orleans, LA USA

Please select the workshops you would like to attend from the schedule below. Because space is limited in each workshop, pre-registration to secure a spot is strongly recommended. Your selections are not guaranteed until your payment is received.

A special room rate of $179.00 +tax per night has been arranged for your stay at the JW Marriott during the 2012 *HVE* Forum. To receive this special room rate, you must reserve your room directly with the JW Marriott by calling the hotel at 888.364.1200. When making your reservation, be sure to refer to the 'EDC 2012 HVE Forum' in order to receive the special rate.

Tentative Workshop Selection: Please sign me up for the following workshops: (Select only one workshop per time slot)

Monday, 8:30 a.m.
Welcome & Opening Remarks
(meet in General Session room)

Monday, 9:00 a.m.
- ❍ Advanced *HVE*: Part I of IV
- ❍ Advanced *HVE-2D:* Part I of IV
- ❍ *HVE* & *HVE-2D* System Overview
- ❍ Introduction to *HVE-CSI*: Part I of IV

Monday, 1:30 p.m.
- ❍ Advanced *HVE*: Part II of IV
- ❍ Advanced *HVE-2D:* Part II of IV
- ❍ Using *EDCRASH*
- ❍ Introduction to *HVE-CSI*: Part II of IV

Tuesday, 8:30 a.m.
- ❍ Advanced *HVE*: Part III of IV
- ❍ Advanced *HVE-2D:* Part III of IV
- ❍ Using *EDSMAC* & *EDSMAC4*
- ❍ Introduction to *HVE-CSI*: Part III of IV

Tuesday, 1:30 p.m.
- ❍ Advanced *HVE*: Part IV of IV
- ❍ Advanced *HVE-2D:* Part IV of IV
- ❍ Using *EDSVS* & *EDVTS*
- ❍ Introduction to *HVE-CSI*: Part IV of IV
- ❍ 3D Vehicles. Pt. I: *SIMON*

Wednesday, 8:30 a.m.
- ❍ Heavy Vehicle Brake Simulation in *EDSMAC4*
- ❍ 3D Editor: Functionality/Friction/Importing
- ❍ Using *DamageStudio*
- ❍ STARS: Madymo Occupant Analysis

Wednesday, 1:30 p.m.
Users Groups and *HVE* White Paper Session
❍ *HVE* ❍ *HVE-2D* ❍ *HVE-CSI*

Thursday, 8:30 a.m.
- ❍ *DyMESH* 3D Collision Model
- ❍ Advanced 3D Environments: Pt. I
- ❍ *EDSMAC4*: Model Overview
- ❍ Theoretical & Applied Vehicle Dynamics I

Thursday, 1:30 p.m.
- ❍ 3D Veh. Pt. II: *HVE* Brake Designer & ABS/ESS Simulation Models
- ❍ Advanced 3D Environments: Pt II
- ❍ Simulation Movies: HD Video Output
- ❍ Theoretical & Applied Vehicle Dynamics II

Friday, 8:30 a.m.
- ❍ 3D Veh. Pt. IV: Blowouts & Rollovers
- ❍ Building a Vehicle for *HVE & HVE-2D*
- ❍ Theoretical & Applied Vehicle Dynamics III
- ❍ STARS: Madymo Occupant Analysis

Hotel Reservation:
❍ Yes, I am going to stay at the JW Marriott and will make my reservation by calling the hotel directly at 888.364.1200. (Refer to the Group Code of 'EDC 2012 HVE Forum' to receive the special rate of $179+ tax per night.)

I plan to arrive on Feb/Mar _____ , 2012.
I plan to depart on Feb/Mar _____ , 2012.

Bringing a Computer:
❍ Yes, I am going to bring a laptop computer to use the software during the workshops.

2012 *HVE* Forum T-Shirt Order:
All 2012 *HVE* Forum attendees will receive a complimentary T-shirt. My size is:

Medium Large X-Large XX-Large

Other:_____

Workshop Handouts:
I want to receive my handouts in the selected format (choose only one option):
- ❍ Digital format on USB drive
  or
- ❍ Printed format in *HVE* Forum Notebook

Attendee Information:

Name _____

Company/Agency _____

_____

_____

Mailing Address _____

Phone _____

Fax _____

Email _____

Forum Cost in US$:

	By 12/31/11	After 12/31/11
5 Days	$ 995	$ 1,195
3 Days	$ 845	$ 1,045

Payment Method:
- ❍ Purchase Order #:_____
- ❍ Check (Enclosed)
- ❍ Charge My: (Circle One)

Visa / MasterCard / American Express

Account #: _____

Expiration: _____

Signature: _____

Cancellation Policy:
A full refund is allowed up to Jan 15, 2012.
A 50 % refund is allowed up to Jan 31, 2012.
No refund is allowed after Feb 1, 2012.

ENGINEERING DYNAMICS CORPORATION • 8625 SW Cascade Ave., Suite 200 • Beaverton, OR 97008 USA
Phone 888.768.6216 • Fax 503.526.0905 • Email: forum@edccorp.com • www.edccorp.com

2012 *HVE* Forum - Hotel Information

The 2012 *HVE* Forum will take place February 27 – March 2, 2012, at the JW Marriott in New Orleans, Louisiana. Special hotel rates of $179 + tax per night have been arranged for your stay during the 2012 *HVE* Forum. To receive this special rate, you must reserve your room directly with the JW Marriott by calling the hotel at 1-888-364-200. When making your reservation, be sure to refer to the 'EDC 2012 HVE Forum' in order to receive the special rate.

The special room rate is only offered to 2012 *HVE* Forum attendees while space is available in the room block or until February 4, 2012. It is strongly recommended to make your reservations as soon as possible.

Hotel Address:

JW Marriott New Orleans
614 Canal Street
New Orleans, LA 70130 USA

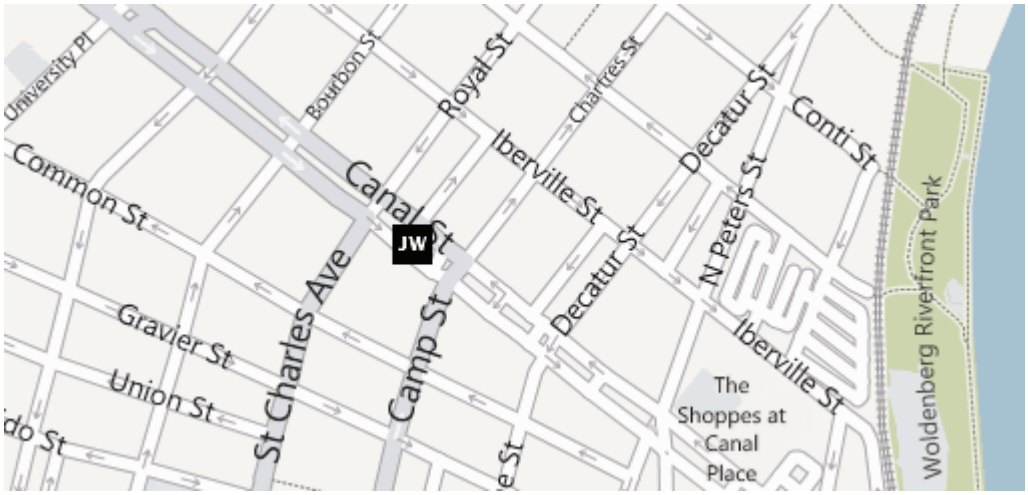
Phone: 504-525-6500
Toll Free: 888-364-1200
Website: http://www.marriott.com/hotels/travel/msyjw-jw-marriott-new-orleans/

About The Hotel:

"Depart from ordinary French Quarter hotels and discover the epitome of district class and old-world charm at the JW Marriott New Orleans, a premier Canal Street hotel centrally located in the Business District and one block from the excitement of Bourbon Street. For guests looking to explore, the Aquarium, Insectarium, Harrah's Casino and historic St. Charles Street are only minutes from this luxury hotel in New Orleans. Experience the soul of the Big Easy combined with the elegance of classic charm from the JW Marriott New Orleans, a destination hotel in the French Quarter.." - *excerpt from the JW Marriott New Orleans website*.

On-site amenities include:

- 30 floors, 487 luxury hotel rooms with modern décor, vibrant colors and distinguished design
- One outdoor saltwater pool, cardiovascular equipment and weights
- Business center available 24 hours a day, allowing you to check email, and print your boarding pass
- Convenient dining choices on-site: Shula's Steak House & Lounge, Irvin Mayfield's Club, Lobby Lounge



Airport Transportation Suggestions:

Louis Armstrong New Orleans International Airport (MSY)

New Orleans Airport Shuttle - $20 one way – reservation required – Call 504-522-3500

Taxi fare (estimated) - $33 one way

Hotel Parking:

Valet parking only - $35 Daily Fee – No large or high vehicles allowed

Other Hotels Nearby:

If you find that your choice of room at the JW Marriott New Orleans is not available, please call EDC Customer Service for other hotels nearby.

See You In New Orleans!