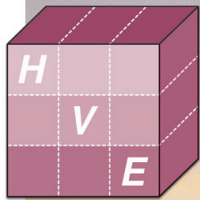


# HANG TEN

AT THE

# 2008 HVE FORUM



Holiday Inn on the Bay  
San Diego, California  
February 18-22, 2008

## WORKSHOPS

- Advanced HVE Case Studies Using *EDSMAC4*, *SIMON* and *DyMESH*
- Using *EDCRASH*, *EDSMAC*, *EDSMAC4*, *EDSVS* and *EDVTS* in HVE-2D
  - Creating and Enhancing Environments Using the 3-D Editor
  - *DyMESH* 3-D Collision Model Overview and Applications
  - Multi-Occupant Human Impact Simulation Using *GATB*
  - Importing Scene Drawings as Environment Models
  - 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
  - Multi-Vehicle Collisions Using *EDSMAC4*
  - Building Vehicles for HVE and HVE-2D
    - Simulating Blow-outs and Rollovers
    - Details of the HVE Vehicle Model
    - HVE and HVE-2D User's Groups
    - Advanced HVE-2D Case Studies
    - Powerful Tips and Techniques
    - Recording Simulation Movies
    - Brake System Simulation
    - HVE White Paper Session
    - ABS Simulation



~~ANIMATION~~

WORKSHOP REGISTRATION

ENGINEERING DYNAMICS CORPORATION • 8625 SW Cascade Blvd., Suite 200 • Beaverton, OR 97008 USA  
Phone 503.644.4500 • Fax 503.526.0905 • email: [forum@edccorp.com](mailto:forum@edccorp.com) • [www.edccorp.com](http://www.edccorp.com)

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DyMESH (Patent No. 6,195,625) and SIMON are registered trademarks of Engineering Dynamics Corporation. GATB is a trademark of Collision Engineering Associates, Inc.

# 2008 HVE Forum

## Workshop Schedule

February 18 - 22, 2008  
 Holiday Inn - On The Bay  
 San Diego, CA USA

	Room	Monday**	Tuesday	Wednesday	Thursday	Friday
8:30 a.m.	A	Advanced HVE - Part I	Advanced HVE - Part III	Advanced HVE - Part V	Playback Editor & Simulation Movies: Learning the Basics	Building a Vehicle for HVE & HVE-2D
** Monday 8:30 am - 9:00 am Opening Remarks in General Session Meeting Room	B				Advanced 3D Environments: Part I - Data Collection	Using Scene Drawings as Environment Models
	C	Advanced HVE-2D - Part I	Advanced HVE-2D - Part III	Advanced HVE-2D - Part V	Truck Brakes: Using SIMON, GBF and EDSMAC4 in your analysis	EDSMAC4: Model Overview
	D	3D Vehicles - Part I: Details of the HVE Vehicle Model	DYMESH Collision Algorithm	3D Vehicles - Part IV: Blowouts & Rollovers	Theoretical and Applied Vehicle Dynamics Part I	Theoretical and Applied Vehicle Dynamics Part III
12:00 p.m. -1:30 p.m.		Lunch Break	Lunch Break	Lunch Break	Lunch Break	End of 2008 HVE Forum
1:30 p.m.	A	Advanced HVE - Part II	Advanced HVE - Part IV	HVE Users Group	3D Editor: Functionality, Friction Zones & Importing Models	
	B			HVE-2D Users Group (1:30 - 3:00)	Advanced 3D Environments: Part II - Using Rhinoceros	
	C	Advanced HVE-2D - Part II	Advanced HVE-2D - Part IV	HVE White Paper Session (3:15 - 5:00)		
	D	3D Vehicles - Part II : SIMON	3D Vehicles - Part III: HVE Brake Designer & ABS Model		Theoretical and Applied Vehicle Dynamics Part II	
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	

# ADVANCED HVE

## Advanced HVE - Parts I, II, III, IV and V

Instructors: Wesley D. Grimes and Kenneth S. Baker

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  
Part V - Wednesday, 8:30 AM



### 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 of the 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 of the motto, "We model reality, not simplicity." They will also have 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.

**NEW MATERIAL  
FOR 2008!**

# ADVANCED *HVE-2D*

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

Instructors: Joseph H. Canova and 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  
Part V - Wednesday, 8:30 AM

### 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.

# COMMERCIAL VEHICLE SIMULATION

## Truck Brakes: Using GBF, *EDSMAC4* and *SIMON* in Your Analysis

Instructor: Wesley D. Grimes and Kenneth S. Baker

Time: Thursday, 8:30 AM



### Description:

The purpose of this workshop is to show the student how to apply the tools in *HVE* to analyze heavy truck braking issues. 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, three different *HVE* tools will be demonstrated. First, using the hand calculations, *EDSMAC4* will be used to study vehicle braking events. The GBF (Graphical Brake Forces) program will then be used to demonstrate how to calculate the brake forces directly within *HVE*, and the calculated values will be used in the *EDSMAC4* model. The *SIMON* model, working in conjunction with the *HVE Brake Designer*, will also be used to analyze different brake performance issues.

Upon completing this workshop, the student will be able to better study braking 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.**

**NEW WORKSHOP  
FOR 2008!**

# 3-D VEHICLE SIMULATION

## 3-D Vehicle Simulation, Part I: Details of the *HVE* Vehicle Model

Instructor: Terry D. Day  
Time: Monday, 9:00 AM

### Description:

The purpose of this workshop is to acquaint the student with the details of the complete *HVE* Vehicle model. This model is used in the *SIMON*, *EDVSM* and *EDVDS* simulations. The following material is covered:

- Complete walk-through of the *HVE* Vehicle Editor. This includes the Sprung Mass, Suspensions, Tires, Brakes, Drivetrain and Steering Systems.
- Details regarding the sources of the data.
- Description of how each parameter is used.
- Description of how each parameter influences vehicle handling and simulation.

Upon completing this workshop, the student will understand all vehicle parameters as required to achieve valid simulation results. The student will also gain an understanding of how various parameters affect vehicle handling.

## 3-D Vehicle Simulation, Part II: *SIMON*

Instructor: Terry D. Day  
Time: Monday, 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 (CONT'D)

### 3-D Vehicle Simulation, Part III: *HVE* Brake Designer & ABS Model

Instructor: Terry D. Day  
Time: Tuesday, 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 ABS and the *HVE* ABS Simulation Model. Specifically, the course will cover:
- An overview of ABS and current ABS methodologies
  - A detailed discussion of the *HVE* ABS Simulation Model user interface and how various parameters are used.
  - The updated model for displaying skidmarks from tires on ABS-equipped vehicles
  - Examples comparing maneuvers with ABS-equipped and non-ABS-equipped vehicles

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

### 3-D Vehicle Simulation, Part IV: Blowouts and Rollovers

Instructor: Terry D. Day  
Time: Wednesday, 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.

# NEW MATERIAL FOR 2008!

# COLLISION SIMULATION

## **DyMESH 3-D Collision Algorithm, Version 2**

Instructor: Terry D. Day  
Time: Tuesday, 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*.
- *DyMESH Integration into SIMON* – The student learns how *DyMESH* 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 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 simulation problems. The workshop will include a special emphasis on the differences between *DyMESH* versions 1 and 2.

# NEW MATERIAL FOR 2008!

## **EDSMAC4: Model Overview**

Instructor: Terry D. Day  
Time: Friday, 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.

# CREATING SIMULATION MOVIES

## Playback Editor and Simulation Movies: Learning the Basics

Instructor: Joseph H. Canova and Daniel Peralta

Time: Thursday, 8:30 AM

### Description:

The purpose of this workshop is to acquaint the student with the capabilities of the Playback Editor. 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.
- Creating a Playback Window - The student will learn how to combine multiple simulations into a Playback 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 Simulations - The student will learn how to use the *HVE* video compression system to create and store a real-time video of the current sequence in the Playback Window.

Upon completing this workshop, the student will be able to view and print output reports, trajectory simulations and variable output tables, and create a Playback Window that includes a multiple-event accident sequence. The student will also be able to create and replay simulation movies, and to output simulation movies to other formats.

# BUILDING VEHICLE MODELS

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

Instructor: Joseph H. Canova and 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.

# USING THE 3-D EDITOR

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

Instructor: Joseph H. Canova and Daniel Peralta

Time: Thursday, 1:30 PM

### 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 workshop will cover the basic functionality of the 3-D Editor, develop simple environment models to reinforce the concepts, and then focus on importing and enhancing DXF format models for use in simulations and reconstructions.

The following material is anticipated to be addressed:

- Basic Overview - The student will learn the basic capabilities of the 3-D Editor, including creating surfaces, boxes, spheres, cylinders and text.
- Editing Overview - The student will learn how to edit the geometry and material attributes of previously created environments.
- Using Friction Factors - The student will learn about GetSurfaceInfo(), the basic object types (*Road*, *Friction Zone* and *Other*), and how to edit an object's 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, sidewalks and others.
- Saving Files - The student learns various methods of saving imported files, including saving the environment for use in other cases or saving objects into the library for use in later environments.
- 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 the Environment Editor.
- Creating a Complete Environment – The student will build a complete environment using the individual items created in this workshop.

Multiple examples will be explored by the students using handouts or materials provided in the workshop. Attendees are encouraged to bring their laptops along with their AutoCAD (or similar) CAD software in order to produce sample DXF files for import into their *HVE* or *HVE-2D* software. The CAD application used for examples provided by the instructor will be AutoCAD.

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 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 other cases.

# BUILDING ENVIRONMENT MODELS

## Using Scene Drawings as Environments

Instructor: James P. Sneddon

Time: Friday, 8:30 AM

### Description:

The purpose of this workshop is to acquaint the student with the proper techniques for creating and importing scene drawings for use in *HVE* and *HVE-2D*. The following material is covered:

- Drawing Site Diagrams using a CAD program
- Importing .dxf files using the Environment Editor
- Adding surfaces and text using the 3-D Editor
- Defining Friction Zones using the 3-D Editor
- Texture mapping aerial photos

Upon completing this workshop, the student will understand the basic concepts for creating a simple environment model from a scene drawing.

## Advanced 3-D Environments, Part I – Data Collection

Instructor: James P. Sneddon

Time: Thursday, 8:30 AM

### 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, NURBS modeling software and the 3-D Editor, a terrain model will be built of a real-world roadway example.

- Review of actual site and identification of key elements
- Planning terrain model requirements
- Data collection
- Discussion of surveying methods

Upon completing this workshop, 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 provide them with a model for use in *HVE*.

## Advanced 3-D Environments, Part II – Using Rhinoceros

Instructor: James P. Sneddon

Time: 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, NURBS modeling software and the 3-D Editor, a terrain model will be built of a real-world roadway example. This workshop uses Rhinoceros extensively.

- Create a rough 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 3<sup>rd</sup> party CAD or NURBS modeling software
- Quality check the finished terrain model by driving on it

Upon completing the Advanced 3-D Environments workshops, the student will be able to build detailed models of any roadway or terrain required for their simulation studies.

# USERS GROUP MEETINGS

## **HVE Users Group Meeting**

### Open Forum Discussion about *HVE*

Moderator: Wesley D. Grimes

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 list of Wish List items will also be developed during the Advanced *HVE* workshops and presented to the group 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 list of Wish List items will also be developed during the Advanced *HVE-2D* workshops and presented to the group 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 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.

# VEHICLE DYNAMICS

## Theoretical and Applied Vehicle Dynamics, Part I

Instructor: L. Daniel Metz  
Time: Thursday, 8:30 AM

### Description:

This workshop will provide an overview of vehicle dynamics concepts discussed in greater detail in the EDC Theoretical and Applied Vehicle Dynamics course. The following material will be discussed in this workshop:

- Introduction to Vehicle Dynamics
- Tire Mechanics
- Control Theory Concepts

Upon completing this workshop, the student will have an increased understanding of the basic concepts of vehicle dynamics.

## Theoretical and Applied Vehicle Dynamics, Part II

Instructor: L. Daniel Metz  
Time: Thursday, 1:30 PM

### Description:

This workshop will provide an overview of dynamic and transient model concepts discussed in greater detail in the EDC Theoretical and Applied Vehicle Dynamics course. The following material will be discussed in this workshop:

- 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.

## Theoretical and Applied Vehicle Dynamics, Part III

Instructor: L. Daniel Metz  
Time: Friday, 8:30 AM

### Description:

This workshop will provide a hand-on understanding of vehicle dynamics by performing simulations of vehicle handling maneuvers using *HVE*. The students will work through several computer exercises of real-world proving ground tests.

Upon completing this workshop, the student will have greater understanding of vehicle dynamics by the use of simulations to reinforce concepts presented in lecture. Students wishing to further their understanding are encouraged to attend the EDC Theoretical and Applied Vehicle Dynamics course.

# 2008 HVE FORUM

## Registration

February 18 -22, 2008  
 Holiday Inn - On The Bay  
 San Diego, CA USA

Please select the workshops you would like to attend from the schedule below. You may only register for one workshop per time slot. Because space is limited in each workshop, pre-registration to secure a spot in the workshops is strongly recommended. You will be advised if a selection is no longer available. Please note that your selections are not guaranteed until your payment is received.

Special hotel room rates of \$165 + tax per night have been arranged for your stay at the Holiday Inn – On The Bay in San Diego during the 2008 HVE Forum. To receive this special room rate, you must reserve your room directly with the Holiday Inn– On The Bay Reservations Coordinator, Martha Verneti at 619.358.6015 or by using the online reservation system [Reservation](#) link on the HVE Forum page of the EDC website. Be sure to indicate the Group Code 'HVE' to receive the special rate when making a reservation.

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

**Monday, 8:30 – 9:00 a.m.**

- Welcome & Opening Remarks

**Monday, 9:00 a.m.**

- Advanced HVE: Part I of V
- Advanced HVE-2D: Part I of V
- 3D Vehicles Pt. I: Details of the HVE Vehicle

**Monday, 1:30 p.m.**

- Advanced HVE: Part II of V
- Advanced HVE-2D: Part II of V
- 3D Vehicles, Pt II: SIMON

**Tuesday, 8:30 a.m.**

- Advanced HVE: Part III of V
- Advanced HVE-2D: Part III of V
- DyMESH Collision Algorithm

**Tuesday, 1:30 p.m.**

- Advanced HVE: Part IV of V
- Advanced HVE-2D: Part IV of V
- 3D Vehicles Pt III: HVE Brake Designer & ABS Simulation Model

**Wednesday, 8:30 a.m.**

- Advanced HVE: Part V of V
- Advanced HVE-2D: Part V of V
- 3D Vehicles Pt. IV: Blowouts & Rollovers

**Wednesday, 1:30 p.m.**

- HVE & HVE-2D Users Groups and HVE White Paper Session

**Thursday, 8:30 a.m.**

- Simulation Movies: Learning the Basics
- Truck Brakes: Using SIMON, GBF and EDSMAC4
- Advanced 3D Environments: Pt. I
- Theoretical & Applied Vehicle Dynamics I

**Thursday, 1:30 p.m.**

- 3D Editor: Functionality/Friction Zones
- Advanced 3D Environments: Pt II
- Theoretical & Applied Vehicle Dynamics II

**Friday, 8:30 a.m.**

- Building a Vehicle for HVE & HVE-2D
- Using Scene Drawings as Environments
- EDSMAC4: Model Overview
- Theoretical & Applied Vehicle Dynamics III

**Hotel Reservation:**

- Yes, I am going to stay at the Holiday Inn - On The Bay using the online reservation system at [www.hisandiegoonthebay.com](http://www.hisandiegoonthebay.com) or the [Reservation](#) link on the HVE Forum page of the EDC website. (Use the Group Code 'HVE' to receive the special rate of \$165 +tax per night. You may also call the hotel directly at 619.358.6015.)

I plan to arrive on Feb \_\_\_\_\_, 2008.

I plan to depart on Feb \_\_\_\_\_, 2008.

- No, I am going to stay at a different location of my own choosing.

**Bringing a Computer:**

- Yes, I am going to bring a laptop computer and use HVE/HVE-2D during the workshops.
- I am not bringing a laptop computer.

**2008 HVE Forum T-Shirt Order:**

All 2008 HVE Forum attendees will receive a complimentary T-shirt. My size is:

Medium Large X-Large XX-Large

Other: \_\_\_\_\_

**Attendee Information:**

Name \_\_\_\_\_

Company/Agency \_\_\_\_\_

Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

Email \_\_\_\_\_

**Forum Cost in US\$:**

	By 12/31/07	After 12/31/07
<b>5 Days</b>	\$ 995	\$ 1,195
<b>3 Days</b>	\$ 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 18, 2008.  
 A 50 % refund is allowed up to Feb 1, 2008.  
 No refund is allowed after Feb 1, 2007.

# 2008 HVE FORUM - HOTEL INFORMATION

The 2008 HVE Forum will take place at the Holiday Inn – On The Bay in San Diego, California. Special hotel room rates of \$165 + tax per night have been arranged for your stay at the Holiday Inn – On The Bay during the 2008 HVE Forum. To receive this special room rate, you must reserve your room directly with the Holiday Inn – On The Bay Reservations Coordinator, Martha Vernetti at 619.358.6015 or by using the online reservation system [Reservation](#) link on the HVE Forum page of the EDC website. When making the reservation, be sure to indicate the Group Code 'HVE' in order to receive the special rate.

The special room rate is only offered to 2008 HVE Forum attendees while space is available in the room block or until January 10, 2008. It is strongly recommended to make your reservations as soon as possible.

## Hotel Address:

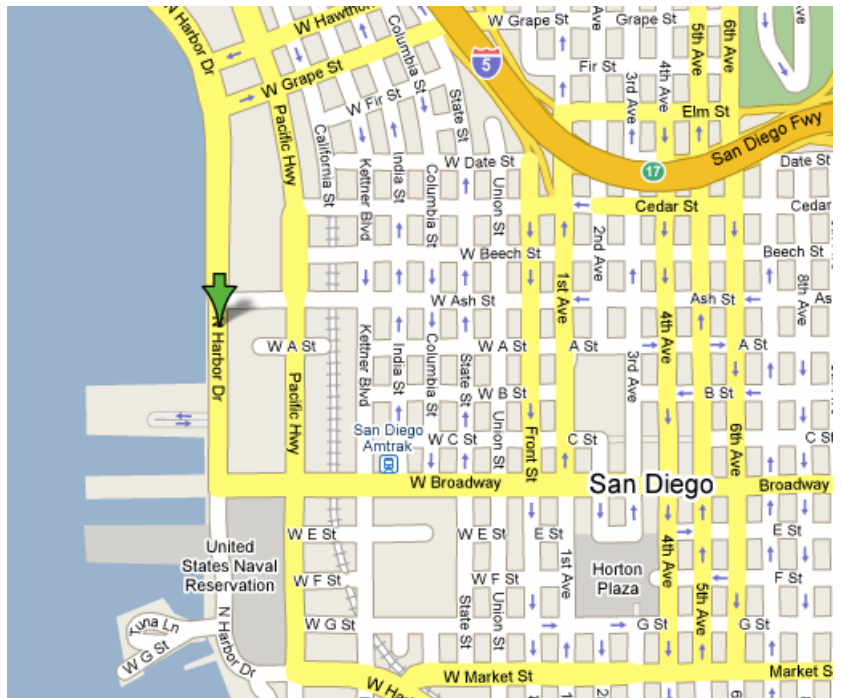
Holiday Inn San Diego - On The Bay  
1355 North Harbor Drive  
San Diego, CA 92101 USA

Phone: (619) 232-3861  
Fax: (619) 232-4924  
Website: [www.hisandiegoonthebay.com/](http://www.hisandiegoonthebay.com/)

## About The Hotel:

The Holiday Inn San Diego - On The Bay offers a convenient hotel location, and San Diego waterfront destination. Just a splash away from San Diego International Airport, Cruise Ship Terminal, Convention Center, Petco Park, and footsteps to Downtown Gaslamp Quarter. This hotel provides an ideal setting for the 2008 HVE Forum, within close proximity to a selection of restaurants, shopping and other activities. On-site amenities include:

- Each guest room has been recently renovated and also may provide a panoramic view of the water or the downtown city skyline from a furnished balcony.
- Dining choices ranging from convenience to elegance. Select from Hazelwood's San Diego Bayside Deli, Elephant & Castle English Pub or Ruth's Chris Steak House.
- Complimentary Airport Shuttle
- On-site Business Center
- Fitness Center and Swimming Pool
- High-speed Internet Access
- Easy Access from other parts of San Diego –  
Subway Station Name: San Diego Trolley



## Airport Transportation Suggestions:

### **San Diego International (SAN)**

Distance: 1.5 MI/2.4 KM • Complimentary Airport Shuttle • Taxi Fee: \$10.00

## Hotel Parking:

Distance: On Site • Self Parking: \$20.00 + tax • Valet Parking: \$24.00 + tax

## Other Hotels Nearby:

A wide variety of other accommodations are available nearby. If you find that your choice of room at the Holiday Inn – On The Bay is not available, please call EDC Customer Service for a list of other nearby hotels.

# SEE YOU IN SAN DIEGO!