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LSTC Livermore Software Technology Corp.

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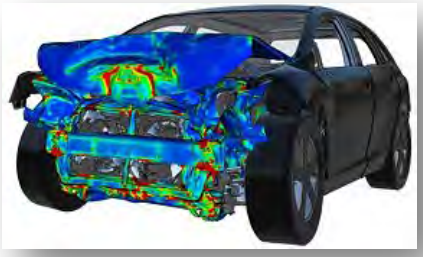
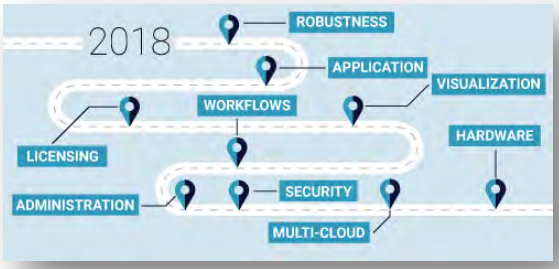
In Memoriam, Dr. Richard H. MacNeal

Tesla - Aerospace News

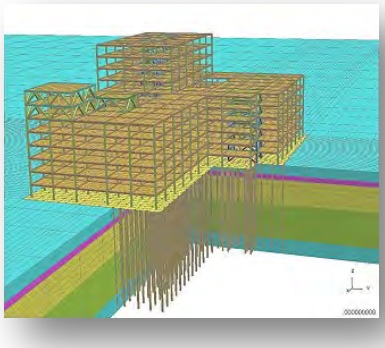
BETA CAE Systems



RESCALE



1st LS-DYNA Users' Meeting for Building and Civil applications
Wednesday 14th March 2018, Livermore, CA



The publication's focus is engineering technical solutions/information.

FEA Engineering Solutions

www.feapublications.com

Contact: Marsha - mv@feainformation.com

FEA Information China Engineering Solutions

Simplified and Traditional Chinese

Contact: Yanhua - yanhua@feainformation.com

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BETA SIMULATION SOLUTIONS

MSC Materials Sciences Corporation — Engineering the Future of Materials.® — ISO 9001:2008 CERTIFIED

eta

esi get it right®

JSOL

恒士达科技 Hengstar Tech.

Oasys The Software House of Arup

rescale

Finite Element Analysis Predictive Engineering

FEA Not To Miss

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LSTC and Arup are delighted to invite you to the 1st LS-DYNA Users' Meeting for Building and Civil applications that will take place in Livermore on Wednesday 14th March 2018.

Sections

LS-DYNA Metal Forming New Features
LS-DYNA New Features
China Conference Paper Showcase

Announcement and Call for Papers
15th German LS-DYNA Forum 2018

October 15 - 17 2018, Bamberg, Germany
www.dynamore.de/forum2018-e

In Memorium - We have lost a pioneer in engineering,
an icon among the software developers.
All engineering will miss, Dr. Richard H. MacNeal

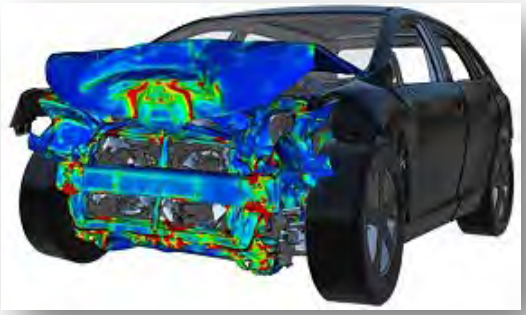
Dr. MacNeal (on the right)
Robert Schwendler (on the left)

Please visit FEA Participants at the 15th International LS-DYNA Conference booth(s)

100	ETA	www.eta.com
101	Oasys	www.oasys-software.com/dyna/en /
103	DatapontLabs	www.datapointlabs.com/
107	JSOL	www.jsol.co.jp/english/cae
201	BETA Simulation Solutions	www.beta-cae.com /
301	Predictive Engineering	www.predictiveengineering.com
303	Shanghai Hengstar Technology	www.hengstar.com
400	DYNAmore GmbH & LSTC	www.lstc.com
401	FEA Information	www.feainformation.com

If you have any questions, suggestions or recommended changes, please let us know.
Contact: Marsha mv@feainformation.com

Developing CAE software systems for all simulation disciplines. Products: ANSA pre-processor/ EPILYSIS solver and META post-processor suite, and SPDRM, the simulation-process-data-and-resources manager, for a range of industries, incl. the automotive, railway vehicles, aerospace, motorsports, chemical processes engineering, energy, electronics…



BETA CAE Systems announces the release of the new ANSA/EPILYSIS/META suite v17.1.4.

This maintenance release is focused on the correction of identified issues and is addressed to those who wish to continue to use the v17.1x branch with its issues resolved and not upgrade to v18.x.

The most important enhancements and fixes implemented are listed below.

Enhancements in ANSA

- Data management: From now on, each time ANSA opens a subsystem from SPDRM, it reads along the .xml file exported by SPDRM with the subsystem's metadata and ensures that the SPDRM values prevail over those found within the file.
- Safety: Pedestrian: Only the Bonnet entities are now considered for the creation of the Rear Bonnet Reference Line instead of the complete outer trim.
- NVH Console: It is now possible to run multiple Configurations through Assembly > Run Multiple.

Known issues resolved in ANSA

- Data management: Subsystems: GEB_GN entities located in a subsystem would fail to be saved in ANSA DM.
- Connections & Assembly: In certain cases, executing Auto connect for bolt type connections could lead to unexpected termination.
- Batch Meshing: Applying the batch mesh tool could result in the inversion of some Faces' orientation.

DECKs

- ASCII STL: Files with more than 80 characters per line could not be read properly upon Input/ Output.
- Switching between decks might result in unexpected termination for databases with composite properties.

MORPH

- The Magnitude of Volume entities would fail to be updated after Morphing.

Enhancements in META

- Modal Response & FRF Assembly: Significant performance improvements for the calculation of FRF Assembly Animations.
- User Toolbars: Harmonized H3-05 v1.5, H3-50 v1.0.1 dummies and LSTC H3-50 dummies are now supported in the Occupant Injury Criteria Toolbar.

Known issues resolved in META

- Read Results: The EKE Kinetic Energy from Nastran SOL103 could not be read in META.
- A/LC Points: The A/LC Points of a 2d model can be found and loaded from the definitions of the respective 3d model (if already loaded).
- Managing Curve Data: The issue with incorrect X-Axis unit system transformations for Nastran curves is now fixed.
- Project Files & METADB: Unexpected termination could occur when saving a new metadb from a loaded project using "Save Visible" option.
- File Export: Unexpected termination could occur when exporting curves in ISO format

BETA CAE Systems India - Open Meeting in Bangalore
March 1, 2018 - Sheraton Grand Bangalore

BETA CAE Systems India - Open Meeting in Pune
March 6, 2018 - The Westin Pun

BETA CAE Systems Nordic - Open Meeting
March 20, 2018 - Lindholmen Conf. Center & Science Park

d3VIEW is a data to decision platform that provides out-of-the box data extraction, transformation and interactive visualizations. Using d3VIEW, you can visualize, mine and analyze the data quickly to enable faster and better decisions.

d3VIEW is a data to decision platform that provides out-of-the box data extraction, transformation and interactive visualizations.

Using d3VIEW, you can visualize, mine and analyze the data quickly to enable faster and better decisions.

Overview - d3View can integrate with any High Performance Computing (HPC) systems to submit and track jobs, perform complex data transformations using a rich library of templates that can help turn data to information, help visualize thousands of data using rich powerful visualizations, export to reports to share and collaborate.

HPC Interactions - Using the HPC application, you can submit and track simulation or non-simulation jobs that require compute resources…

Visualize your Data - View your data using extensive library of visualizations to understand your information and to help you make decisions quickly….

Introducing Peacock beta - View your 3D data using our native Multi-threaded GPU-Powered Visualizer….

Track Key Performance Targets and Indexes
Define and track key performance targets across simulations and tests to help you identify your design performance…

Design of Experiments (DOE) Data Visualizer - Viewing data from your DOE runs can be challenging when running simulations on the cloud or on-premise HPC system..

Experimental Data - d3VIEW's data to decision framework supports storing, organizing and visualization of experimental data…

Author: Christian Frech christian.frech@dynamore.de Contact: forum@dynamore.de

Announcement and Call for Papers

15th German LS-DYNA Forum 2018

October 15 - 17 2018, Bamberg, Germany

www.dynamore.de/forum2018-e

Call for Papers

DYNAmore kindly invites you to participate at the 15th German LS-DYNA® Forum 2018 and encourages you to actively contribute to the conference agenda by submitting a presentation about your experience with the LSTC product range. Participation without a presentation is also worth-while to exchange your knowledge and discuss new solution approaches with other users. Besides presentations from users, there will be also selected keynote lectures of renowned speakers from industry and universities as well as developer presentations from LSTC and DYNAmore. The popular workshops on various topics will also be continued.

We hope that we have stimulated your interest and are looking forward to receiving your abstract and to seeing you in Bamberg.

Attending

In user presentations from industry and academia you will learn more about the software packages LS-DYNA®, LS-OPT®, LS-TaSC™ and LS-PrePost®, as well as their application possibilities for virtual product design.

Presenting

Communicate your work with international colleagues to share knowledge and to stimulate discussions with other users about new solution approaches.

Exhibiting and sponsoring

If you want to contribute, please request additional exhibitor and sponsoring information.

Venue

Welcome Kongresshotel Bamberg
Mußstraße 7, 96047 Bamberg, Germany
www.welcome-hotels.com/welcome-kongresshotel-bamberg

Conference languages

German and English

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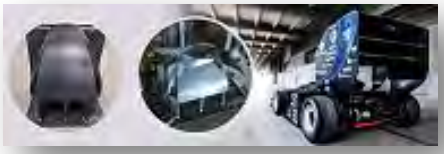
A leading innovator in Virtual Prototyping software and services. Specialist in material physics, ESI has developed a unique proficiency in helping industrial manufacturers replace physical prototypes by virtual prototypes, allowing them to virtually manufacture, assemble, test and pre-certify their future products.



Avoiding physical crash tests with ESI Virtual Performance Solution

Read Article at: **www.esi-group.com**

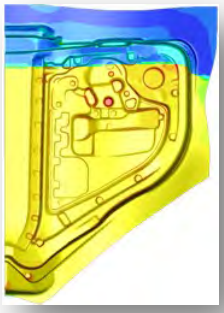
"Using ESI Virtual Performance Solution to investigate the performance of a composite crash absorber completely virtually enabled us to complete the structure's design efficiently. Within a couple of days, the students learned how to use the software effectively and were capable of carrying out complex chained analyses". ichal Vašíček, Project Consultant Czech Technical University in Prague (ČVUT)

Challenge: When a group of students at the Czech Technical University in Prague (ČVUT) began working on a "Formula Student Vehicle" project, they immediately opted for Carbon Fiber Reinforced Polymer (CFRP) to build the crash absorber so they could "go fast and be safe" on the track. However, they had to abide by a strict timespan for design and manufacturing and stay within a tight budget, allowing no room for error.

Story: In the automotive industry, especially motor sports, crash absorbers made of Carbon Fiber Reinforced Polymer (CFRP) are widely used because they have the best energy dissipation capacity to weight ratio amongst engineering materials. The team at ČVUT knew this well, but they also knew the challenge of designing and manufacturing these structures efficiently.

Benefits: The students were able to avoid physical crash tests of their CFRP race car thanks to ESI Virtual Performance Solution (VPS), using only virtual coupon tests of the CFRP material to validate the material model. This enabled them to move swiftly to the design optimization of the crash absorber structure. The capability of VPS to complete multiple simulations on a single core model allowed the team to thoroughly examine various geometries of the absorber at any given time. The End to End solution supported the project goals, which were met entirely within the allotted time and budget.

ETA has impacted the design and development of numerous products - autos, trains, aircraft, household appliances, and consumer electronics. By enabling engineers to simulate the behavior of these products during manufacture or during their use, ETA has been involved in making these products safer, more durable, lighter weight, and less expensive to develop.



Inventium Suite - From Concept to Product.

The Inventium Suite is an enterprise-level CAE software solution.

Inventium offers a streamlined product architecture which provides users access to all of the suite's software tools. By design it offers a high performance modeling and post-processing system, while providing a robust path for the integration of new tools and third party applications.

PreSys - Works the Way You Do

Inventium's Core FE Modeling Toolset, PreSys is the successor to ETA's VPG/PrePost and FEMB products. PreSys offers an easy to use interface, with drop-down menus and toolbars, increased graphics speed and detailed graphics capabilities. These types of capabilities are combined with powerful, robust and accurate modeling functions.

VPG - Analyze Mechanical Systems Accurately

VPG delivers a unique set of tools which allow engineers to create and visualize, through its modules--structure, safety, drop test, and blast analyses.

DYNAFORM - Complete Die System Simulation Solution

The most accurate die analysis solution available today. Its formability simulation creates a "virtual tryout", predicting forming problems such as cracking, wrinkling, thinning and spring-back before any physical tooling is produced.

NISA - Solving Engineering Challenges

NISA is a robust & comprehensive Finite Element Analysis (FEA) software toolset for engineering analysis. For over three decades scientists, engineers & researchers have come to depend on NISA to solve their most complex engineering problems. It can be used on its own or with PreSys

Training DYNAFORM

www.eta.com/training

March 21 - 22 - April 18 - 19

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FEA Not To Miss, is a weekly internet blog on helpful videos, tutorials and other Not To Miss important internet postings. Plus, a monthly email blog.

Welcome to Monday - grab a cup of coffee, tea or protein drink and join me for FEA Not To Miss Monday

Postings every Monday on what you have missed

www.feantm.com

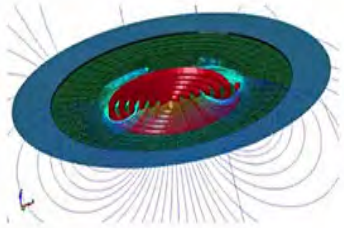
The next few weeks I will concentrate on tutorials. Learn - Learn - Learn Time!

NO, you won't have any pop quizzes or tests, I promise. Just coffee, and tutorials - relax and learn.

And, we will start with Electromagnetics and LS-OPT (optimization)

SO grab that #2 pencil (do they still use those?)

Monthly blog sent via email directly to your mailbox - Send your name and email to feaanswer@aol.com Subject "add blog"

	**This is the fifth part of a series of videos regarding the EM solver which explains the physics, keywords and main concepts for Electromagnetic forming, welding, bending applications.**
	**Parameter Identification test - DYNAmore Nordic - This video demonstrates how to perform a material paramter identification using LS-OPT.... During the optimization, LS-DYNA is used to simulate the test scenario.**

Hengstar Technology

www.hengstar.com

Shanghai Hengstar Technology sells and supports LSTC's suite of products and other software solutions. These provide the Chinese automotive industry a simulation environment designed and ready multidisciplinary engineering needs. Sales, Consulting, Training & Support.

Hongsheng Lu welcomes you to Shanghai Hengstar Technology

Distributor in China, for FEA and CAE needs for engineers, professors, students, consultants.

Contact us for our LS-DYNA training courses, such as

- Crashworthiness Simulation with LS-DYNA
- Restraint System Design with Using LS-DYNA
- LS-DYNA MPP
- Airbag Simulation with CPM
- LS-OPT with LS-DYNA

Our classes are given by experts from LSTC USA, domestic OEMs, Germany, Japan, etc. These courses help CAE engineers to effectively use CAE tools such as LS-DYNA to improve car safety and quality, and therefore to enhance the capability of product design and innovation.

Sales & Consulting - Besides solver specific software sales, distribution and support activities, Shanghai Hengstar offers associated training and consulting services to the Chinese automotive market since April 1st, 2013

Solutions - Our software solutions provide the Chinese automotive industry, educational institutions, and other companies a mature suite of tools - powerful and expandable simulation environment designed and ready for future multidisciplinary CAE engineering needs.

Shanghai Hengstar provides engineering services, consulting and training that combine analysis and simulation using Finite Element Methods such as LS-DYNA.

hongsheng@hengstar.com
Shanghai Hengstar Technology Co., Ltd
http://www.hengstar.com

Shanghai Enhu Informatio n Technology Co., Ltd
http://www.enhu.com

JSOL supports industries with the simulation technology of state-of-the-art. Supporting customers with providing a variety of solutions from software development to technical support, consulting, in CAE (Computer Aided Engineering) field. Sales, Support, Training.

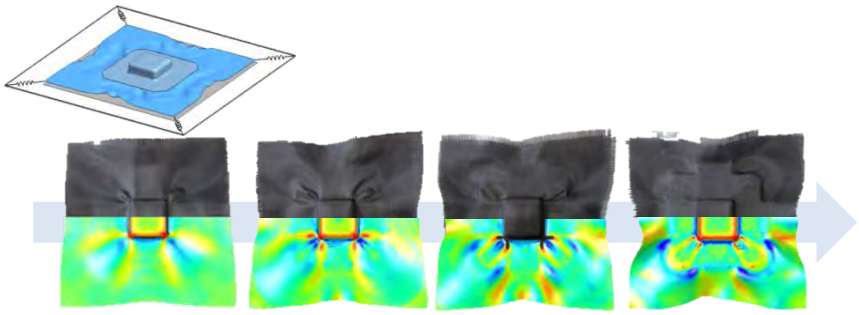
For Article and higher resolution **Contact; cae-info@sci.jsol.co.jp**

J-Composites - New tool series for process and process-chain simulations of composite materials

JSOL Corporation, a Japanese LS-DYNA distributor, released the J-Composites series. A series of new software tools to help LS-DYNA users easily conduct process/process-chain simulations of fiber reinforced composites.

Fiber reinforced composites are good alternatives for metals used in load transmission structures. The increasing requirement for high performance and weight reduction in industry has gradually expanded the use of composites. Finite element analysis as an alternative approach for experimental study is effective in designing fiber reinforced composite products because there are many design parameters. Process/process-chain simulations are especially important because the performance of the final composite part strongly depends on changes in fiber orientation during the process. In this context, JSOL is developing the J-Composites series. A series of new software tools to help LS-DYNA users easily conduct process/process-chain simulations of fiber reinforced composites.

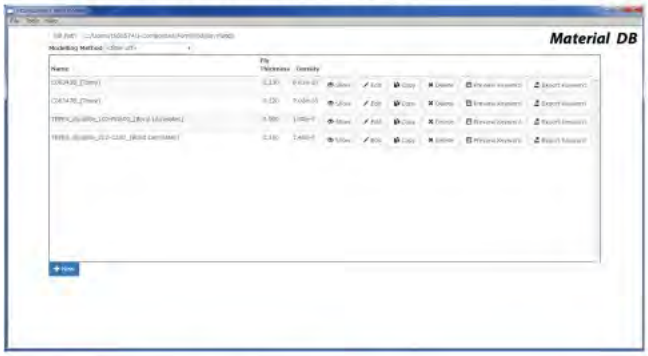
The first software tool, called J-Composites/Form Modeler, was released in August 2017, in Japan. This tool is for creating FE models for continuous fiber reinforced composite forming simulation. Users can create models that, when used with LS-DYNA, will accurately predict the macroscopic forming behavior of laminate plies made of dry fabric and thermoplastic/thermoset pre-pregs. Through simulation, this tool can help the user detect forming defects like wrinkling, fiber bridging and rupture, which leads to reduced development time and cost.



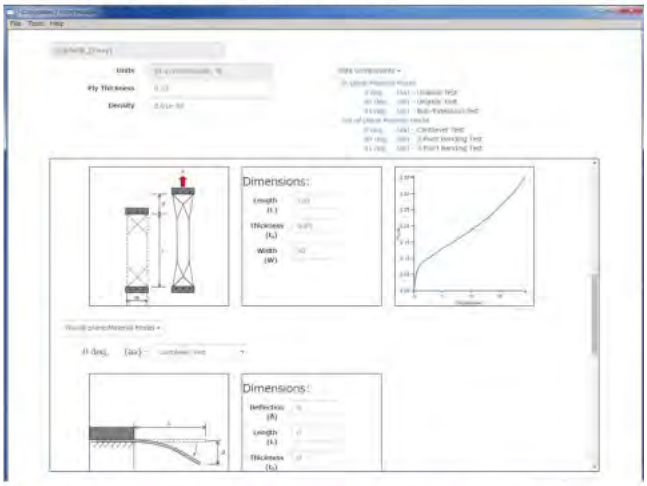
Accurate prediction of wrinkle development (Carbon fiber fabric)

The key features of Form Modeler are easy build-up of material models with automatic parameter identification based on material testing results, efficient setup of laminate modeling with the easy-to-use UI, and the mapping of forming information to crash simulation models.

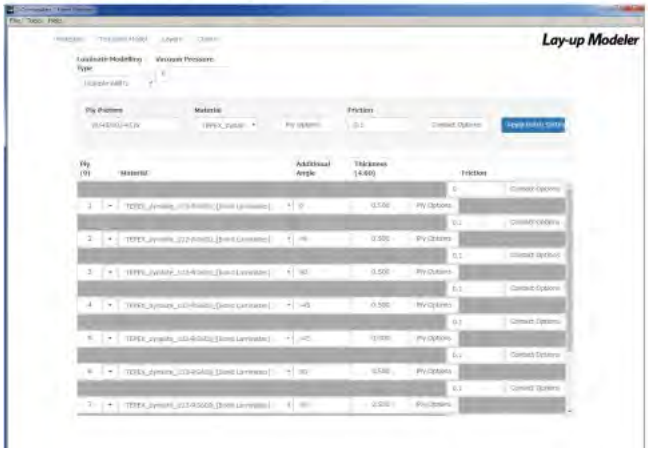
Standard material database included



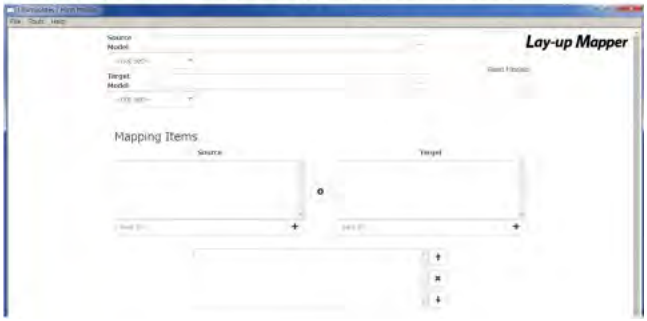
Material parameter identification



Setup laminate composition



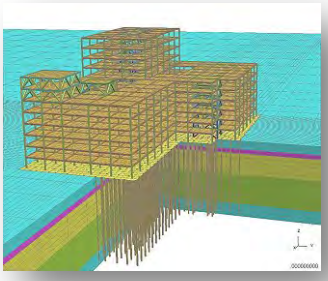
Forming information mapping to crash model



Main functions of Form Modeler

Contact; JSOL Corporation, Engineering Technology Division, cae-info@sci.jsol.co.jp

A team of engineers, mathematicians, & computer scientists develop LS-DYNA, LS-PrePost, LS-OPT, LS-TaSC, and LSTC's Dummy & Barrier models.



Soil-Structure Interaction – Seismic analysis model © Arup

Invitation to the 1st LS-DYNA Users' Meeting for Building and Civil Applications Contact: Francois.Lancelot@arup.com

LSTC and Arup are delighted to invite you to the 1st LS-DYNA Users' Meeting for Building and Civil applications that will take place in Livermore on Wednesday 14th March 2018, LSTC, 7374 Las Positas Road, Livermore, CA 94551

This event is designed as a complementary communication and information platform for the LS-DYNA community with a particular focus on building, civil infrastructure, offshore, geotechnical and seismic applications.

This Users' Meeting will be a special opportunity for Consultants, Engineering companies, Contractors, Researchers, Industry Experts and LSTC Developers to learn about and share experiences on:

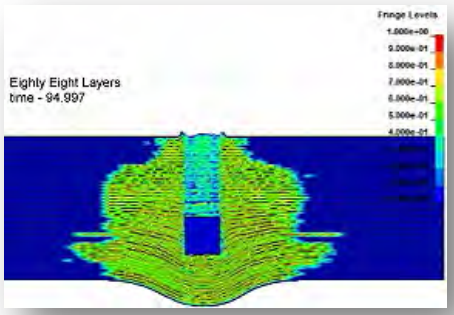
- The use of LS-DYNA on large building and civil projects
- The latest developments in concrete, structural steel and construction material modelling
- The latest developments in soil and geo-seismic material modelling
- Soil-structure interaction applications and seismic performance based analysis
- General simulation trends, hot topics and current challenges for Building and Civil applications

Key speakers will include Experts from the industry and developers from LSTC and Arup.

Preliminary Agenda	**8:30 – 9:00** : Registration **9:00 – 10:30** : LS-DYNA applications on projects by industry experts TBC **10:30 – 11:00** : Break and networking **11:00 – 12:30** : Material models and special features for Building and Civil applications - Confirmed speakers: Richard Sturt (Arup), Ushnish Basu (LSTC), Len Schwer (SE&CS), Yuli Huang (Arup) TBC **12:30 -13:30** : Lunch, sponsored by Arup **13:30 – 15:00** : On-going research and validation studies – Presentations by academic researchers and industry players TBC **15:00 – 15:30** : Break and networking **15:30 – 16:30** : Open discussion – Current simulation challenges in the built environment – Next steps
Presenters	We invite all attendees to contribute to the sessions by showcasing their LS-DYNA project work or research. Please send us a short abstract of your presentation for review and selection to Francois.Lancelot@arup.com. And please contact us to register your attendance

Providing engineering services to the composites industry since 1970. During this time, we have participated in numerous programs that demonstrate our ability to: perform advanced composite design, analysis and testing; provide overall program management; work in a team environment; and transition new product development to the military and commercial sectors.

MAT162 is a material model for use in LS-DYNA that may be used to simulate the onset and progression of damage in unidirectional and orthotropic fabric composite continua due to 3D stress fields. This failure model can be used to effectively simulate fiber dominated failures, matrix damage, and includes a stress-based delamination failure criterion. This approach to predicting interlaminar failure is advantageous in cases when locations of delamination sites (i.e., interlaminar crack initiation surfaces) cannot be anticipated.

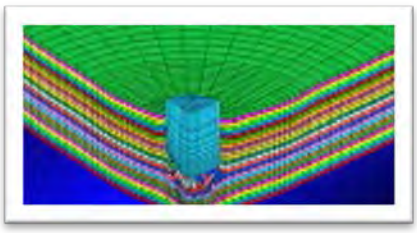


Simulation Movie

Penetration and Perforation of Moderately Thick Composites

Examples are located at www.ccm.udel.edu/software/mat162/examples /

Example 1:
Sphere Impact on a Composite Laminate
Example 2:
Sphere Impact on a Perfectly Clamped Composite Plate
Example 3:
Sphere Impact on Elliptical Carbon/Epoxy Tube



High Velocity Impact of Square Plate using MAT161/162

www.youtube.com/watch?v=NgjncjfLKGw

Oasys Ltd is the software house of Arup and distributor of the LS-DYNA software in the UK, India and China. We develop the Oasys Suite of pre- and post-processing software for use with LS-DYNA.

Tutorials

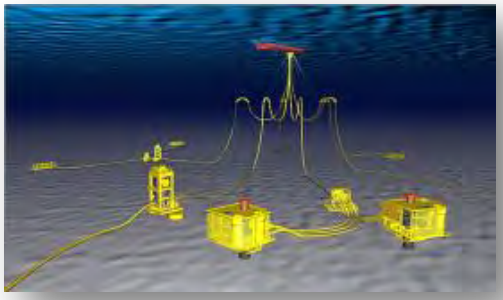
- **Oasys PRIMER Top-Tips**
  Download our Top-Tips document for guidance on some often overlooked features in PRIMER to help you get the most out of the software. Recommended for new and long-term users alike.
- **Oasys PRIMER Tutorial**
  This tutorial will give the user an introduction to the main features of Oasys PRIMER.
- **JavaScript Tutorial**
  This tutorial will give the user an introduction to the JavaScript functions in Oasys PRIMER and Oasys D3PLOT**.**

- **Oasys PRIMER Spotweld & Connections Tutorial**
  This tutorial will introduce the user to the spotweld and connections functions in Oasys PRIMER.
- **Oasys PRIMER Seat and Dummy Positioning Tutorial**
  This tutorial will introduce the user to the dummy positioning function and also seat positioning using the mechanism function in Oasys PRIMER.
- **Oasys PRIMER Seat Belt Fitting Tutorial**
  This tutorial will introduce the user to the seat belt fitting function in Oasys PRIMER.

D3Plot Tutorials

- **Oasys D3PLOT Top-Tips**
  Download our Top-Tips document for guidance on some often overlooked features in D3PLOT to help you get the most out of the software. Recommended for new and long-term users alike.
- **Oasys D3PLOT Tutorial**
  This tutorial will give the user an introduction to the main features of Oasys D3PLOT

Predictive Engineering provides finite element analysis consulting services, software, training and support to a broad range of engineering companies across North America. We strive to exceed client expectations for accuracy, timeliness and knowledge transfer. Our process is both cost-effective and collaborative, ensuring all clients are reference clients.



Advanced LS-DYNA Analysis to Simulate Fluid Drag, Vortex Shedding on Undersea Cables

Excerpt: Read this complete article at:
Advanced LS-DYNA Analysis to Simulate Fluid Drag, Vortex Shedding on Undersea Cables

Analysis: LS-DYNA

Dynamic Simulation of Autonomous Guided Heavy-Lifting Deep Sea Cables

This project leverages the ability of LS-DYNA to interactively incorporate user-defined loading to create a dynamic simulation that can numerically capture the fluid structure interaction (FSI) of the surrounding fluid without the expense of a full-on CFD simulation.

We really don't have any specialty as FEA consultants except how to figure out how to model complex systems. This project is no different and even its name is complex. What makes it unique is that we are simulating the dynamic movement of tensioned cables as they are whipped back and forth by sea currents during a heavy-lift operation. It is a common problem that we are solving for many off-shore operations where heavy cables are used to moor, lift, pump or tow objects.

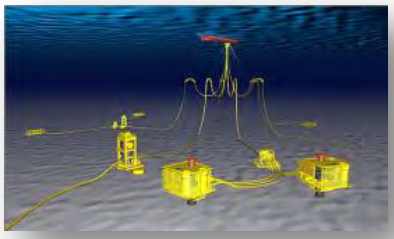


Figure 1 provides a graphic overview of various sub-sea cable uses. These cables see dynamic loads in operation and from fluid-structure-interaction (FSI) due to vortex shedding and added mass effects. Our work demonstrates a numerically elegant manner to simulate the FSI forces acting on large diameter high-modulus polyethylene rope (Spectra) during a deep-sea heavy lift operation…

Offering industry-leading software platforms and hardware infrastructure for companies to perform scientific and engineering simulations. Providing simulation platforms that empower engineers, scientists, developers, and CIO and IT professionals to design innovative products, develop robust applications, and transform IT into unified, agile environments.

A Sneak Peek at Rescale's Product Roadmap for 2018 – Part 1

Dave Anselmi - January 29, 2018

https://blog.rescale.com/

As we move into 2018, here at Rescale we're excited to keep our momentum as one of Silicon Valley's fastest growing enterprise software companies, and more specifically keep advancing the state of the art for HPC in the cloud.

Our product team was busy in 2017. Last year we added the following to our platform: 25 new architectures including Skylake, access to the newest NVIDIA GPU offerings P100 and V100, new bare metal providers and integration partners. Enhancing our HPC workflow support, we introduced reusable clusters and in-browser SSH, added support for large DOEs, and made significant optimization framework and ANSYS RSM improvements. Licensing-wise, we added on-demand, pay-per-use licensing for ANSYS and for LS-DYNA, provided license availability-based queuing for STAR-CCM+ and ANSYS, and introduced license server access automation (via our new startup program). We introduced in-browser desktops for native cloud pre- and post-processing. For enterprise administrators, we introduced deposit pricing support, expanded spot pricing regions, and increased administrative control of workflows, budgets, and data limits. To keep your data secure, we also added advanced connection security and outbound internet blocking for companies. And finally, we provided early access to Intel's latest architectures via our ScaleX Labs.

And there's more coming. In 2018, whether you're an engineer who needs HPC or you manage your organization's IT and HPC resources, we have something in the pipeline for you. You can look forward to seeing a number of new features and improvements in the areas of cloud robustness, application software, licensing, desktop and visualization, HPC workflows, enterprise organization administration, security and compliance, data transfer and management, and hardware. Keep reading below part 1 of a two-part blog series that will give you a deeper dive into our roadmap in each of these areas.

Cloud Robustnes Rescale makes it ridiculously easy to spin up a high-performance cluster in the cloud so you can start running jobs to completion almost immediately. Spinning up a high-performance cluster directly on the public cloud is a complex task. After navigating all the steps, it takes only one missed configuration option to get a sub-performant cluster. But that's not all—even after you've successfully deployed hundreds of high-powered nodes in the same placement group (to minimize internode latency) and your multi-hour (or multi-day) job is successfully processing, one or more of those nodes may fail. Whether that's due to hardware issues or spot market preemption, these are issues public cloud providers don't include in their SLA, but Rescale transparently handles for you.

Specifically, our Spot market offerings are constantly being tuned and optimized to provide you the lowest cost with highest SLA possible. In addition, to ensure the successful completion of your job and minimize your jobs' time-to-results, in 2018 we will deliver a framework for stalled job and slow job identification and automatic checkpoint restart.

Application Software

One of Rescale's greatest features is the hundreds of HPC applications we provide and support. We currently deploy more than 280 ported and tuned applications on our platform and are always adding more (and additional versions of each). Last year we added 80 new applications and 443 new versions, and we're on track to increase those numbers considerably in 2018.

In addition, we're enhancing your ability to deploy your own applications on Rescale, so you can provision your own software in multiple cloud providers with a minimum of clicks.

Finally, we are very proud of our highly-skilled engineering staff, who embody thousands of hours of deep experience in each of the applications we support and are directly available via live chat through our ScaleX platform. In 2018, we're growing our team to deliver the best support possible.

Licensing - please visit the site for information: https://blog.rescale.com/

That's all for now! Check back in a week for a rundown on the rest of our product roadmap. In the meantime, if you're interested in becoming an early adopter for any of our updates mentioned above, please don't hesitate to contact us directly at support@rescale.com and we will make sure you are one of the first to be able to give it a try!

This article was written by Dave Anselmi.

CAE software sale & customer support , initial launch-up support, periodic on-site support. Engineering Services. Timely solutions, rapid problem set up, expert analysis . material property test Tension test, compression test, high-speed tension test and viscoelasticitiy test for plastic, rubber or foam materials. We verify the material property by LS-DYNA calculations before delivery.

www.feapublications.com - Our January issue highlighted:
Impact Analysis of Reinforced Concrete Walls Using LS-DYNA: Application to Impact of Wind-Blown Vehicles due to Tornadoes, **M. Madurapperuma & K. Niwa - Terrabyte Corporation**

For the entire list of products, within each category, please visit Terrabyte Website

FE analysis

- LS-DYNA is a general-purpose FE program capable of simulating complex real world problems. It is used by the automobile, aerospace, construction, military, manufacturing and bioengineering industries.
- ACS SASSI is a state-of-the-art highly specialized finite element computer code for performing 3D nonlinear soil-structure interaction analyses for shallow, embedded, deeply embedded and buried structures under coherent and incoherent earthquake ground motions.

CFD analysis

- AMI CFD software calculates aerodynamics, hydrodynamics, propulsion and aero elasticity which covers from concept design stage of aerocraft to detailed design, test flight and accident analysis.

EM analysis

- JMAG is a comprehensive software suite for electromechanical equipment design and development. Powerful simulation and analysis technologies provide a new standard in performance and quality for product design.

Metal sheet

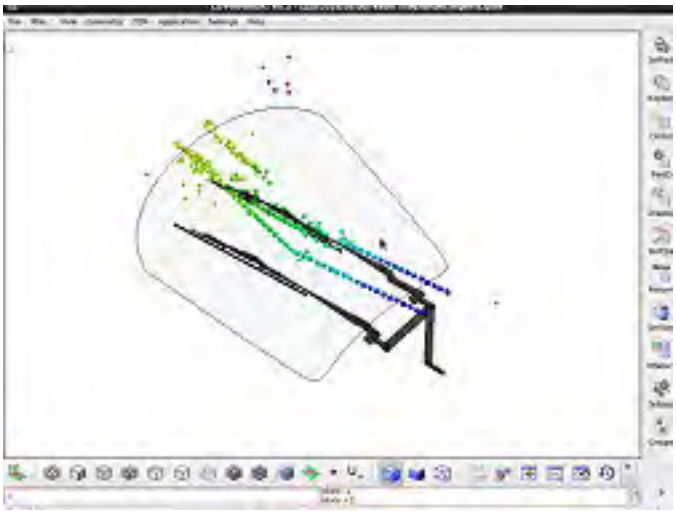
- JSTAMP is an integrated forming simulation system for virtual tool shop based on IT environment. JSTAMP is widely used in many companies, mainly automobile companies and suppliers, electronics, and steel/iron companies in Japan.

Pre/ Post

- **PreSys** is an engineering simulation solution for FE model development. It offers an intuitive user interface with many streamlined functions, allowing fewer operation steps with a minimum amount of data entry.
- **JVISION** - Multipurpose pre/post-processor for FE solver. It has tight interface with LS-DYNA. Users can obtain both load reduction for analysis work and model quality improvements.

Biomechanics

- **The AnyBody Modeling System**™ is a software system for simulating the mechanics of the live human body working in concert with its environment.



Ramesh Venkatesan, ramesh@kaizenat.com

Kaizenat Technologies Pvt. Ltd.

A 3- dimensional FE model of wiper blade assembly is developed and then validated at component level using model analysis.

FEM-MBD-DEM was used to simulate a wiper with water and windshield using LS-DYNA (Multi Physics Solver).

The joints are modeled using *CONSTRAINED_JOINT_COOR… Cards. The water particles are modeled as DES (Discreate element spheres). A coupling between water and wiper blades is defined using *DEFINE_DE_TO_SURFACE_COUPLING . The wiper blades are modeled by *MAT_OGDEN_RUBBER (MAT_77_O), the results from the rubber can be used to calculate Wear and Fatigue.

Some of the Important Cards Used:

*CONSTRAINED_JOINT_COOR_RIGID
*CONTROL_DISCRETE_ELEMENT
*DEFINE_DE_INJECTION
*DEFINE_DE_TO_SURFACE_COUPLING

https://www.youtube.com/watch?v=P7hmUyrSSR8 **YouTube Video Simulation**

Wiper Simulation using FEM-MBD-DEM-LS DYNA

Datapoint Newsletter:
Winter '18, Vol. 24.1
February 05, 2018

The February 05th newsletter is located at Datapoint Labs Newsletter

Among the articles (excerpt)

Focus on Validation of Simulation

DatapointLabs' new CAETestBench™ validation service is designed to probe the accuracy and robustness of simulations against a controlled physical test utilizing carefully designed, standardized geometries. Quantitative comparisons of simulation to real life are achieved. Simulation model files, software iteration results, and the experimental test cases are delivered using Matereality's PICSCI ELN software at https://caetestbench.picsci.com/. Clients can log in and access their data electronically, use on-line comparison modules, and also take advantage of a private workspace for continued validation iterations where they can evaluate the impact of any changes they make to their simulation parameters. Validations are now available as an optional add-on to certain TestPaks® for the following cases:

Crash/Drop Test Simulation

In modeling materials for use in crash applications, it is useful to determine the validity of the material model as well as its applicability over the multi-axial stress states that usually accompany these events. Conventional material models are based on rate-dependent tensile (uniaxial) stress-strain data. The validation is performed using a falling dart experiment, a high speed event with multi-axial behavior. Validation provides a measure of confidence in the ability of the simulation to model the more complex phenomena. It also provides a meaningful basis for model extrapolation and failure modeling. A technical paper related to this topic can be found at http://www.knowmats.com/Post/View/156 .

This validation is available for:

- Abaqus
- LS-DYNA

Note: Validation for the MAT_187 SAMP model is available on a case-by-case basis. Support for other crash codes may be available on request.

Remembering Dr. Richard H. MacNeal

Dr. MacNeal (on the right)
Robert Schwendler (on the left)

Picture was taken in the early 1960's working on the space program

Excerpt from MSC.Software

NEWPORT BEACH, CA--(January 29th , 2018) – It is with heavy hearts today that MSC Software Corporation announces the passing of Dr. Richard H. MacNeal at the age of 94.

Dr. Richard H. MacNeal founded MSC Software Corporation along with Robert Schwendler in 1963 under the name of MacNeal-Schwendler Corporation (MSC). Under his leadership, MSC developed its first structural analysis software called SADSAM (Structural Analysis by Digital Simulation of Analog Methods)

Dr. MacNeal contributed greatly to the early efforts of the aerospace industry by successfully simulating on-the-ground physical testing through computing to deliver the right answers and right physics to take humans to the moon. In 1971, MSC Software released a commercial version of Nastran, named MSC Nastran.

His numerous technical innovations in mathematics dramatically improved the quality of engineering analysis. His entrepreneurial drive to commercialize analysis technology has enabled thousands of companies in virtually every manufacturing segment throughout the world to significantly improve their products and shorten the development cycles. Dr. MacNeal leaves behind 54 years of technical contributions to the global CAE community and a loving family.

China FEA News Participants

www.eta.com

www.flotrend.com.tw

恒士达科技
Hengstar Tech.
www.hengstar.com

Dynawe
www.dynawe.com

ARUP
www.oasys-software.com/dyna

AgileSim
www.agilesim.com.tw

PAN-i
www.pan-i.com

DLFK
http://dalianfukun.com

FEA Information China - For Sign Up or to offer Articles Contact:
Editors: Yanhua Zhao - Yanhua@feainformation.com

BETA
SIMULATION SOLUTIONS

BETA CAE Systems. **www.beta-cae.com**

BETA CAE Systems - ANSA

An advanced multidisciplinary CAE pre-processing tool that provides all the necessary functionality for full-model build up, from CAD data to ready-to-run solver input file, in a single integrated environment. ANSA is a full product modeler for LS-DYNA, with integrated Data Management and Process Automation. ANSA can also be directly coupled with LS-OPT of LSTC to provide an integrated solution in the field of optimization.

BETA CAE Systems μETA

Is a multi-purpose post-processor meeting diverging needs from various CAE disciplines. It owes its success to its impressive performance, innovative features and capabilities of interaction between animations, plots, videos, reports and other objects. It offers extensive support and handling of LS-DYNA 2D and 3D results, including those compressed with SCAI's FEMZIP software

Solutions for:

Process Automation - Data Management – Meshing – Durability - Crash & Safety NVH - CFD - Thermal analysis - Optimization - Powertrain
Products made of composite materials - Analysis Tools -
Maritime and Offshore Design - Aerospace engineering - Biomechanics

DatapointLabs **www.datapointlabs.com**

Testing over 1000 materials per year for a wide range of physical properties, DatapointLabs is a center of excellence providing global support to industries engaged in new product development and R&D.

The compary meets the material property needs of CAE/FEA analysts, with a specialized product line, TestPaks®, which allow CAE analysts to easily order material testing for the calibration of over 100 different material models.

DatapointLabs maintains a world-class testing facility with expertise in physical properties of plastics, rubber, food, ceramics, and metals.

Core competencies include mechanical, thermal and flow properties of materials with a focus on precision properties for use in product development and R&D.

Engineering Design Data including material model calibrations for CAE Research Support Services, your personal expert testing laboratory Lab Facilities gives you a glimpse of our extensive test facilities Test Catalog gets you instant quotes for over 200 physical properties.

ETA – Engineering Technology Associates **www.eta.com**

etainfo@eta.com

Inventium Suite™

Inventium Suite™ is an enterprise-level CAE software solution, enabling concept to product. Inventium's first set of tools will be released soon, in the form of an advanced Pre & Post processor, called PreSys.

Inventium's unified and streamlined product architecture will provide users access to all of the suite's software tools. By design, its products will offer a high performance modeling and post-processing system, while providing a robust path for the integration of new tools and third party applications.

PreSys

Inventium's core FE modeling toolset. It is the successor to ETA's VPG/PrePost and FEMB products. PreSys offers an easy to use interface, with drop-down menus and toolbars, increased graphics speed and detailed graphics capabilities. These types of capabilities are combined with powerful, robust and accurate modeling functions.

VPG

Advanced systems analysis package. VPG delivers a unique set of tools which allow engineers to create and visualize, through its modules--structure, safety, drop test, and blast analyses.

DYNAFORM

Complete Die System Simulation Solution. The most accurate die analysis solution available today. Its formability simulation creates a "virtual tryout", predicting forming problems such as cracking, wrinkling, thinning and spring-back before any physical tooling is produced

get it right®

Latest Release is ESI Visual-Environment 12.0

ESI Group **www.esi-group.com**

Visual-Environment is an integrative simulation platform for simulation tools operating either concurrently or standalone for various solver. Comprehensive and integrated solutions for meshing, pre/post processing, process automation and simulation data management are available within same environment enabling seamless execution and automation of tedious workflows. This very open and versatile environment simplifies the work of CAE engineers across the enterprise by facilitating collaboration and data sharing leading to increase of productivity.

Visual-Crash DYNA provides advanced preprocessing functionality for LS-DYNA users, e.g. fast iteration and rapid model revision processes, from data input to visualization for crashworthiness simulation and design. It ensures quick model browsing, advanced mesh editing capabilities and rapid graphical assembly of system models. Visual-Crash DYNA allows graphical creation, modification and deletion of LS-DYNA entities. It comprises tools for checking model quality and simulation parameters prior to launching calculations with the solver. These tools help in correcting errors and fine-tuning the model and simulation before submitting it to the solver, thus saving time and resources.
Several high productivity tools such as advanced dummy positioning, seat morphing, belt fitting and airbag folder are provided in **Visual-Safe,** a dedicated application to safety utilities.

Visual-Mesh is a complete meshing tool supporting CAD import, 1D/2D/3D meshing and editing for linear and quadratic meshes. It supports all meshing capabilities, like shell and solid automesh, batch meshing, topo mesh, layer mesh, etc. A convenient Meshing Process guides you to mesh the given CAD component or full vehicle automatically.

Visual-Viewer built on a multi-page/multi-plot environment, enables data grouping into pages and plots. The application allows creation of any number of pages with up to 16 windows on a single page. These windows can be plot, animation, video, model or drawing block windows. Visual-Viewer performs automated tasks and generates customized reports and thereby increasing engineers' productivity.

ESI Group **www.esi-group.com**

Visual-Process provides a whole suite of generic templates based on LS-DYNA solver (et altera). It enables seamless and interactive process automation through customizable LS-DYNA based templates for automated CAE workflows.

All generic process templates are easily accessible within the unique framework of Visual-Environment and can be customized upon request and based on customer's needs.

Visual*DSS* is a framework for Simulation Data and Process Management which connects with Visual-Environment and supports product engineering teams, irrespective of their geographic location, to make correct and realistic decisions throughout the virtual prototyping phase. Visual*DSS* supports seamless connection with various CAD/PLM systems to extract the data required for building virtual tests as well as building and chaining several virtual tests upstream and downstream to achieve an integrated process. It enables the capture, storage and reuse of enterprise knowledge and best practices, as well as the automation of repetitive and cumbersome tasks in a virtual prototyping process, the propagation of engineering changes or design changes from one domain to another.

JSOL Corporation **www.jsol.co.jp/english/cae/**

HYCRASH

Easy-to-use one step solver, for Stamping-Crash Coupled Analysis. HYCRASH only requires the panels' geometry to calculate manufacturing process effect, geometry of die are not necessary. Additionally, as this is target to usage of crash/strength analysis, even forming analysis data is not needed. If only crash/strength analysis data exists and panel ids is defined. HYCRASH extract panels to calculate it's strain, thickness, and map them to the original data.

JSTAMP/NV

As an integrated press forming simulation system for virtual tool shop the JSTAMP/NV meets the various industrial needs from the areas of automobile, electronics, iron and steel, etc. The JSTAMP/NV gives satisfaction to engineers, reliability to products, and robustness to tool shop via the advanced technology of the JSOL Corporation.

JMAG

JMAG uses the latest techniques to accurately model complex geometries, material properties, and thermal and structural phenomena associated with electromagnetic fields. With its excellent analysis capabilities, JMAG assists your manufacturing process

Livermore Software Technology Corp. **www.lstc.com**

LS-DYNA

A general-purpose finite element program capable of simulating complex real world problems. It is used by the automobile, aerospace, construction, military, manufacturing, and bioengineering industries. LS-DYNA is optimized for shared and distributed memory Unix, Linux, and Windows based, platforms, and it is fully QA'd by LSTC. The code's origins lie in highly nonlinear, transient dynamic finite element analysis using explicit time integration.

LS-PrePost: An advanced pre and post-processor that is delivered free with LS-DYNA. The user interface is designed to be both efficient and intuitive. LS-PrePost runs on Windows, Linux, and Macs utilizing OpenGL graphics to achieve fast rendering and XY plotting.

LS-OPT: LS-OPT is a standalone Design Optimization and Probabilistic Analysis package with an interface to LS-DYNA. The graphical preprocessor LS-OPTui facilitates definition of the design input and the creation of a command file while the postprocessor provides output such as approximation accuracy, optimization convergence, tradeoff curves, anthill plots and the relative importance of design variables.

LS-TaSC: A Topology and Shape Computation tool. Developed for engineering analysts who need to optimize structures, LS-TaSC works with both the implicit and explicit solvers of LS-DYNA. LS-TaSC handles topology optimization of large non-linear problems, involving dynamic loads and contact conditions.

LSTC Dummy Models:

Anthropomorphic Test Devices (ATDs), as known as "crash test dummies", are life-size mannequins equipped with sensors that measure forces, moments, displacements, and accelerations.

LSTC Barrier Models: LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) model.

Material Sciences Corporation www.materials-sciences.com

Materials Sciences Corporation has provided engineering services to the composites industry since 1970. During this time, we have participated in numerous programs that demonstrate our ability to: perform advanced composite design, analysis and testing; provide overall program management; work in a team environment; and transition new product development to the military and commercial sectors. MSC's corporate mission has expanded beyond basic research and development now to include transitioning its proprietary technologies from the research lab into innovative new products. This commitment is demonstrated through increased staffing and a more than 3-fold expansion of facilities to allow in-house manufacturing and testing of advanced composite materials and structures

Materials Sciences Corporation (MSC) MAT161/162 - enhanced features have been added to the Dynamic Composite Simulator module of LS-DYNA.

This enhancement to LS-DYNA, known as MAT161/162, enables the most effective and accurate dynamic progressive failure modeling of composite structures to enable the most effective and accurate dynamic progressive failure modeling of composite structures currently available.

MSC/LS-DYNA Composite Software and Database -

Fact Sheet: http://www.materials-sciences.com/dyna-factsheet.pdf

- MSC and LSTC have joined forces in developing this powerful composite dynamic analysis code.
- For the first time, users will have the enhanced ability to simulate explicit dynamic engineering problems for composite structures.
- The integration of this module, known as 'MAT 161', into LS-DYNA allows users to account for progressive damage of various fiber, matrix and interply delamination failure modes.
- Implementing this code will result in the ability to optimize the design of composite structures, with significantly improved survivability under various blast and ballistic threats.

MSC's LS-DYNA module can be used to characterize a variety of composite structures in numerous applications—such as this composite hull under blast

Oasys Ltd. LS-DYNA Environment www.oasys-software.com/dyna

The Oasys Suite of software is exclusively written for LS-DYNA® and is used worldwide by many of the largest LS-DYNA® customers. The suite comprises of:

Oasys PRIMER

Key benefits:

- Pre-Processor created specifically for LS-DYNA®
- Compatible with the latest version of LS-DYNA®
- Maintains the integrity of data
- Over 6000 checks and warnings – many auto-fixable
- Specialist tools for occupant positioning, seatbelt fitting and seat squashing (including setting up pre-simulations)
- Many features for model modification, such as part replace
- Ability to position and depenetrate impactors at multiple locations and produce many input decks automatically (e.g. pedestrian impact, interior head impact)
- Contact penetration checking and fixing
- Connection feature for creation and management of connection entities.
- Support for Volume III keywords and large format/long labels
- Powerful scripting capabilities allowing the user to create custom features and processes

www.oasys-software.com/dyna

Oasys D3PLOT

Key benefits:

- Powerful 3D visualization post-processor created specifically for LS-DYNA®
- Fast, high quality graphics
- Easy, in-depth access to LS-DYNA® results
- Scripting capabilities allowing the user to speed up post-processing, as well as creating user defined data components

www.predictiveengineering.com

Predictive Engineering provides finite element analysis consulting services, software, training and support to a broad range of engineering companies across North America. We strive to exceed client expectations for accuracy, timeliness and knowledge transfer. Our process is both cost-effective and collaborative, ensuring all clients are reference clients.

Our mission is to be honest brokers of information in our consulting services and the software we represent.

Our History

Since 1995, Predictive Engineering has continually expanded its client base. Our clients include many large organizations and industry leaders such as SpaceX, Nike, General Electric, Navistar, FLIR Systems, Sierra Nevada Corp, Georgia-Pacific, Intel, Messier-Dowty and more. Over the years, Predictive Engineering has successfully completed more than 800 projects, and has set itself apart on its strong FEA, CFD and LS-DYNA consulting services.

恒士达科技
Hengstar Tech.

Shanghai Hengstar **www.hengstar.com**

Center of Excellence: Hengstar Technology is the first LS-DYNA training center of excellence in China. As part of its expanding commitment to helping CAE engineers in China, Hengstar Technology will continue to organize high level training courses, seminars, workshops, forums etc., and will also continue to support CAE events such as: China CAE Annual Conference; China Conference of Automotive Safety Technology; International Forum of Automotive Traffic Safety in China; LS-DYNA China users conference etc.

On Site Training: Hengstar Technology also provides customer customized training programs on-site at the company facility. Training is tailored for customer needs using LS-DYNA such as material test and input keyword preparing; CAE process automation with customized script program; Simulation result correlation with the test result; Special topics with new LS-DYNA features etc..

Distribution & Support: Hengstar distributes and supports LS-DYNA, LS-OPT, LS-Prepost, LS-TaSC, LSTC FEA Models; Hongsheng Lu, previously was directly employed by LSTC before opening his distributorship in China for LSTC software. Hongsheng visits LSTC often to keep update on the latest software features.

Hengstar also distributes and supports d3View; Genesis, Visual DOC, ELSDYNA; Visual-Crash Dyna, Visual-Process, Visual-Environment; EnkiBonnet; and DynaX & MadyX etc.

Consulting

As a consulting company, Hengstar focuses on LS-DYNA applications such as crash and safety, durability, bird strike, stamping, forging, concrete structures, drop analysis, blast response, penetration etc with using LS-DYNA's advanced methods: FEA, ALE, SPH, EFG, DEM, ICFD, EM, CSEC..

Lenovo **www.lenovo.com**

Lenovo is a USD39 billion personal and enterprise technology company, serving customers in more than 160 countries.

Dedicated to building exceptionally engineered PCs, mobile Internet devices and servers spanning entry through supercomputers, Lenovo has built its business on product innovation, a highly efficient global supply chain and strong strategic execution. The company develops, manufactures and markets reliable, high-quality, secure and easy-to-use technology products and services.

Lenovo acquired IBM's x86 server business in 2014. With this acquisition, Lenovo added award-winning System x enterprise server portfolio along with HPC and CAE expertise.

Cloud - HPC Services - Subscription

Contact: JSOL Corporation Engineering Technology Division cae-info@sci.jsol.co.jp

Cloud computing services
for
JSOL Corporation LS-DYNA users in Japan

JSOL Corporation is cooperating with chosen cloud computing services

JSOL Corporation, a Japanese LS-DYNA distributor for Japanese LS-DYNA customers.

LS-DYNA customers in industries / academia / consultancies are facing increased needs for additional LS-DYNA cores

In calculations of optimization, robustness, statistical analysis, we find that an increase in cores of LS-DYNA are needed, for short term extra projects or cores.

JSOL Corporation is cooperating with some cloud computing services for JSOL's LS-DYNA users and willing to provide short term license.

This service is offered to customers using Cloud License fee schedule, the additional fee is less epensive than purchasing yearly license.

The following services are available (only in Japanese). HPC OnLine:

NEC Solution Innovators, Ltd.
http://jpn.nec.com/manufacture/machinery/hpc_online/

Focus
Foundation for Computational Science
http://www.j-focus.or.jp

Platform Computation Cloud
CreDist.Inc.

PLEXUS CAE
Information Services International-Dentsu, Ltd. (ISID) https://portal.plexusplm.com/plexus-cae/

SCSK Corporation
http://www.scsk.jp/product/keyword/keyword07.html

Cloud - HPC Services - Subscription

www.rescale.com

Rescale: Cloud Simulation Platform

The Power of Simulation Innovation
We believe in the power of innovation. Engineering and science designs and ideas are limitless. So why should your hardware and software be limited? You shouldn't have to choose between expanding your simulations or saving time and budget.

Using the power of cloud technology combined with LS-DYNA allows you to:
· Accelerate complex simulations and fully explore the design space
· Optimize the analysis process with hourly software and hardware resources
· Leverage agile IT resources to provide flexibility and scalability

True On-Demand, Global Infrastructure
Teams are no longer in one location, country, or even continent. However, company data centers are often in one place, and everyone must connect in, regardless of office. For engineers across different regions, this can cause connection issues, wasted time, and product delays.

Rescale has strategic/technology partnerships with infrastructure and software providers to offer the following:
· Largest global hardware footprint – GPUs, Xeon Phi, InfiniBand
· Customizable configurations to meet every simulation demand
· Worldwide resource access provides industry-leading tools to every team
· Pay-per-use business model means you only pay for the resources you use
· True on-demand resources – no more queues

ScaleX Enterprise: Transform IT, Empower Engineers, Unleash Innovation
The ScaleX Enterprise simulation platform provides scalability and flexibility to companies while offering enterprise IT and management teams the opportunity to expand and empower their organizations.

Rescale Cloud Simulation Platform www.rescale.com

ScaleX Enterprise allows enterprise companies to stay at the leading edge of computing technology while maximizing product design and accelerating the time to market by providing:

- Collaboration tools
- Administrative control
- API/Scheduler integration
- On-premise HPC integration

Industry-Leading Security

Rescale has built proprietary, industry-leading security solutions into the platform, meeting the needs of customers in the most demanding and competitive industries and markets.

- Manage engineering teams with user authentication and administrative controls
- Data is secure every step of the way with end-to-end data encryption
- Jobs run on isolated, kernel-encrypted, private clusters
- Data centers include biometric entry authentication
- Platforms routinely submit to independent external security audits

Rescale maintains key relationships to provide LS-DYNA on demand on a global scale. If you have a need to accelerate the simulation process and be an innovative leader, contact Rescale or the following partners to begin running LS-DYNA on Rescale's industry-leading cloud simulation platform.

LSTC - DYNAmore GmbH JSOL Corporation

Rescale, Inc. - 1-855-737-2253 (1-855-RESCALE) - info@rescale.com

944 Market St. #300, San Francisco, CA 94102 USA

Cloud - HPC Services - Subscription

ESI Cloud Based Virtual Engineering Solutions

www.esi-group.com

ESI Cloud offers designers and engineers cloud-based computer aided engineering (CAE) solutions across physics and engineering disciplines.

ESI Cloud combines ESI's industry tested virtual engineering solutions integrated onto ESI's Cloud Platform with browser based modeling, geometry, meshing and simulation set up. ESI Cloud is then used for high performance computing with an integrated visualization and real time collaboration offering through a web browser.

With ESI Cloud users can choose from two basic usage models:

- An end-to-end SaaS model: Where modeling, multi-physics solving, results visualization and collaboration are conducted in the cloud through a web browser.
- A Hybrid model: Where modeling is done on desktop with solve, visualization and collaboration done in the cloud through a web browser.

Virtual Performance Solution:

ESI Cloud offers ESI's flagship Virtual Performance Solution (VPS) for multi-domain performance simulation as a hybrid offering on its cloud platform. With this offering, users can harness the power of Virtual Performance Solution, leading multi-domain CAE solution for virtual engineering of crash, safety, comfort, NVH (noise, vibration and harshness), acoustics, stiffness and durability.

In this hybrid model, users utilize VPS on their desktop for modeling including

The benefits of VPS hybrid on ESI Cloud include:

- Running large concurrent simulations on demand
- On demand access to scalable and secured cloud HPC resources
- Three tiered security strategy for your data
- Visualization of large simulation data sets
- Real-time browser based visualization and collaboration
- Time and cost reduction for data transfer between cloud and desktop environments
- Support, consulting and training services with ESI's engineering teams

VPS On Demand

ESI Cloud features the Virtual Performance Solution (VPS) enabling engineers to analyze and test products, components, parts or material used in different engineering domains including crash and high velocity impact, occupant safety, NVH and interior acoustics, static and dynamic load cases. The solution enables VPS users to overcome hardware limitations and to drastically reduce their simulation time by running on demand very large concurrent simulations that take advantage of the flexible nature of cloud computing.

Key solution capabilities:

- Access to various physics for multi-domain optimization
- Flexible hybrid model from desktop to cloud computing
- On demand provisioning of hardware resources
- Distributed parallel processing using MPI (Message Passing Interface) protocol
- Distributed parallel computing with 10 Gb/s high speed interconnects

Result visualization

ESI Cloud deploys both client-side and server-side rendering technologies. This enables the full interactivity needed during the simulation workflow along with the ability to handle large data generated for 3D result visualization in the browser, removing the need for time consuming data transfers. Additionally ESI Cloud visualization engine enables the comparisons of different results through a multiple window user interface design.

Key result visualization capabilities:

- CPU or GPU based client and server side rendering
- Mobility with desktop like performance through the browser
- 2D/3D VPS contour plots and animations
- Custom multi-window system for 2D plots and 3D contours
- Zooming, panning, rotating, and sectioning of multiple windows

Collaboration

To enable real time multi-user and multi company collaboration, ESI Cloud offers extensive synchronous and asynchronous collaboration capabilities. Several users can view the same project, interact with the same model results, pass control from one to another. Any markups, discussions or annotations can be archived for future reference or be assigned as tasks to other members of the team.

Key collaboration capabilities:

- Data, workflow or project asynchronous collaboration
- Multi-user, browser based collaboration for CAD, geometry, mesh and results models
- Real-time design review with notes, annotations and images archiving and retrieval
- Email invite to non ESI Cloud users for real time collaboration

New LEGO Speed Champions 1968 Mustang Fastback Is a Personalized Vintage Ford Race Car for Your Desk

Ford and LEGO® introduce a vintage 1968 Ford Mustang fastback race car set as part of the LEGO Speed Champions range celebrating Ford's heritage

New 183-piece LEGO set features a 1968 Mustang fastback, timing board, mini-figure driver in a classic racing suit, plus racing decals and stripes to personalize it

LEGO Speed Champions 1968 Ford Mustang fastback set goes on sale March 1, priced at $14.99

DEARBORN, Mich., Feb. 9, 2018 – Ford and LEGO® are celebrating Ford's heritage by adding a 1968 Mustang fastback race car to the LEGO Speed Champions lineup.

As a tribute to America's favorite sports car, the 183-piece Ford Mustang kit features green bodywork with gold dual stripes and wheels, race graphic stickers, removable windscreen and a mini-figure driver wearing a classic racing suit. For added fun, the race car set includes a Ford-branded timing board.

"The new Ford Mustang LEGO Speed Champions set gives parents and children the chance to share their passions – generations of fans have grown up building LEGO sets and spending time together behind the wheel," said Myra Lind, LEGO Speed Champions marketing manager. "This partnership of iconic brands allows kids of all ages to enjoy the latest products from two great companies."

As a natural fit for the new 2018 Mustang launch – the most personalized Mustang ever – Ford's Design and Licensing teams worked closely with LEGO to create a 1968 Mustang fastback race car set that speaks to the passion, creativity and personalization pony car fans will appreciate.

"We worked closely with LEGO to design a vintage Mustang, personalizing the fastback with stripes and decals that harken back to Ford's racing heritage," said Matt Monroe, Ford licensing manager. "This 1968 Mustang fastback race car is a special product that adds even more excitement to Ford's LEGO Speed Champions lineup."

On sale March 1, the 1968 Ford Mustang joins the historic Ford GT40 and new Ford GT race cars, Ford F-150 Raptor high-performance off-road truck, a Ford Fiesta WRC rally car, a classic Ford hot rod and a 2015 Ford Mustang as part of the LEGO Speed Champions Ford collection

NASA is keeping tabs on Elon Musk's Tesla roadster

Article on line by Jackie Wattles

Astronomers aim to keep tabs on everything up in the night sky. A NASAdatabase includes our solar system's eight planets and their moons, more than 755,000 asteroids, 3,500 comets -- and, as of this week, one cherry red sports car that belonged to a Silicon Valley billionaire.

Elon Musk, the entrepreneur behind Tesla and SpaceX, put on a stunning show Tuesday with the inaugural launch of SpaceX's Falcon Heavy, which became the most powerful operational rocket in the world.

It was a demo mission, so the goal was just to show that the rocket could fire up its engines and fly into space.

Test flights typically have a dummy payload, such as a big hunk of metal, so that nothing important or expensive is damaged if the rocket blows up.

But Musk decided to offer up his personal Tesla roadster. The Falcon Heavy launch was nearly perfect, and the roadster is headed for orbit around the sun. Its path will take it as far away as Mars, and, later, as close to the sun as the Earth.

Behind the wheel is Starman, a mannequin dressed in a spacesuit. SpaceX also hid a few "Easter eggs" in the car.

"You might also catch a glimpse of a smaller passenger, which is a tiny little Hot Wheels roadster, carrying a tiny little Starman," Lauren Lyons, a SpaceX engineer, said during the mission's webcast.
Also on board the Tesla is a durable storage device, called an Arch, loaded with the text of Isaac Asimov's "Foundation" sci-fi trilogy. The names of over 6,000 SpaceX employees are also etched onto some hardware below the car.

In the words of Musk, the Tesla was meant to be a silly stunt for SpaceX -- but for NASA, the car is an object in our solar system that must be cataloged and tracked.
"We need to have it in our artificial object catalog so that we don't confuse it with an asteroid discovery in the future," NASA spokesperson Dwayne Brown said in an email.

The roadster is now officially labeled a Near-Earth Object, which is a designation NASA gives to objects that can travel relatively close to our home planet. (Don't worry, the odds of the car colliding with Earth anytime soon are very, very small.)

The Tesla is listed as object -143205, "SpaceX Roadster (spacecraft) (Tesla)."
Astronomers use the Horizons database to find out where they should point their telescopes to observe an object.

Over the past few days, a few astronomers did just that to get shots of the Tesla before it drifts too far away to be seen from Earth.

NASA's Solar System Dynamics group uses the Horizons database to research how objects in our solar system move and interact. They also use it to help plan future missions to study asteroids or comets and investigate scientific theories.

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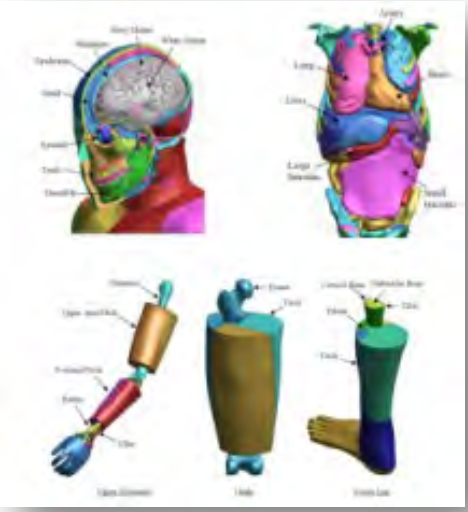
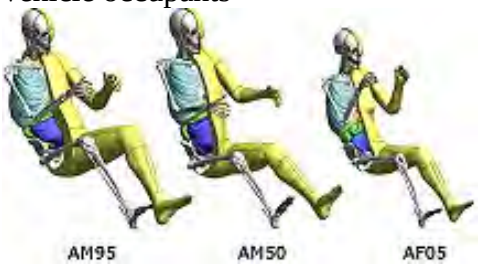
TOYOTA - Total Human Model for Safety – THUMS

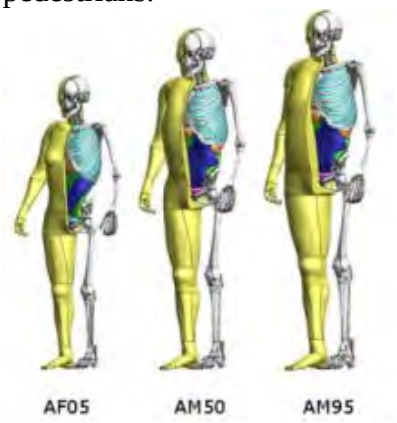


The Total Human Model for Safety, or THUMS®, is a joint development of Toyota Motor Corporation and Toyota Central R&D Labs. Unlike dummy models, which are simplified representation of humans, THUMS represents actual humans in detail, including the outer shape, but also bones, muscles, ligaments, tendons, and internal organs. Therefore, THUMS can be used in automotive crash simulations to identify safety problems and find their solutions.

Each of the different sized models is available as sitting model to represent vehicle occupants



and as standing model to represent pedestrians.



The internal organs were modeled based on high resolution CT-scans.

THUMS is limited to civilian use and may under no circumstances be used in military applications.

LSTC is the US distributor for THUMS. Commercial and academic licenses are available.

For information please contact: THUMS@lstc.com

THUMS®, is a registered trademark of Toyota Central R&D Labs.

LSTC – Dummy Models

LSTC Crash Test Dummies (ATD)

Meeting the need of their LS-DYNA users for an affordable crash test dummy (ATD), LSTC offers the LSTC developed dummies at no cost to LS-DYNA users.

LSTC continues development on the LSTC Dummy models with the help and support of their customers. Some of the models are joint developments with their partners.

e-mail to: atds@lstc.com

Models completed and available (in at least an alpha version)

- Hybrid III Rigid-FE Adults
- Hybrid III 50th percentile FAST
- Hybrid III 5th percentile detailed
- Hybrid III 50th percentile detailed
- Hybrid III 50th percentile standing
- EuroSID 2
- EuroSID 2re
- SID-IIs Revision D
- USSID
- Free Motion Headform
- Pedestrian Legform Impactors

Models In Development

- Hybrid III 95th percentile detailed
- Hybrid III 3-year-old
- Hybrid II
- WorldSID 50th percentile
- THOR NT FAST
- Ejection Mitigation Headform

Planned Models

- FAA Hybrid III
- FAST version of THOR NT
- FAST version of EuroSID 2
- FAST version of EuroSID 2re
- Pedestrian Headforms
- Q-Series Child Dummies
- FLEX-PLI

LSTC – Barrier Models

Meeting the need of their LS-DYNA users for affordable barrier models, LSTC offers the LSTC developed barrier models at no cost to LS-DYNA users.

LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) models:

- ODB modeled with shell elements
- ODB modeled with solid elements
- ODB modeled with a combination of shell and solid elements

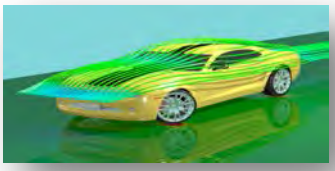
- MDB according to FMVSS 214 modeled with shell elements
- MDB according to FMVSS 214 modeled with solid elements
- MDB according to ECE R-95 modeled with shell elements
- AE-MDB modeled with shell elements

- IIHS MDB modeled with shell elements
- IIHS MDB modeled with solid elements
- RCAR bumper barrier

- RMDB modeled with shell and solid elements

e-mail to: atds@lstc.com.

15th International LS-DYNA® Users Conference & Users Meeting



June 10-12, 2018

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For Booth & Sponsorship information contact Dilip@lstc.com

The conference will host a forum for engineers, professors, students, consultants, industry leaders, and interested parties to exchange their ideas, and listen to the latest in industry and academic presentations..

The presenter (1) One Presenter of the accepted paper will receive a complimentary (no fee) conference registration, when they register using the "LSTC Conference" group registration code at the Edward Hotel.

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Author: Christian Frech christian.frech@dynamore.de

New seminar brochure 2018

Visit the website for complete overview and registration www.dynamore.de/seminars

Download full seminar brochure (pdf): www.dynamore.de/seminarbroschure2018

Selection of trainings from January to March

Introduction	
Introduction to LS-DYNA	13-15March (Z) 20-22 March
Introduction to LS-PrePost	19 Feb/12 March (Z) 19 March
Nonlinear implicit Analyses	16 March
Crash/Short-Term-Dynamics	
Crash Analysis	5-8 March (G)
Joining Techniques in LS-DYNA	5 March
Passive Safety	
Introduction to Passive Safety	8 March
Material	
Material Failure	20 March (T)
Particle Methods	
Smoothed Particle Hydrodynamics	13 March

Information days (free of charge)

Composite Analysis/ENVYO®	12 March
New Features in LS-DYNA and LS-OPT	27 March (V)

If not otherwise stated, the event location is Stuttgart, Germany. Other event locations are:
G = Gothenburg, Sweden; L = Linköping, Sweden V = Versailles, France; T = Turin, Italy,
Tr = Traboch, Austria, Z = Zurich, Switzerland

We hope that our offer will meet your needs and are looking forward to welcoming you at one of the events.

15th Weimar Optimization and Stochastic Days 2018

June 21-22, 2018

Conference for CAE-based parametric Optimization, stochastic analysis and Robust Design Optimization (RDO).

Motto 2018:
Parameter identification in virtual product development - from model calibration to the real-time analysis of machine conditions using digital twins

The conference offers focused information and training in practical seminars and interdisciplinary lectures. Users can talk about their experiences in parametric optimization, service providers present their new developments and scientific research institutions inform about state-of-the-art RDO methodology.

Information and registration at:
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March

1-2	Thurs-Fri	CA	SPH	2	M. Souli
5-6	Mon-Wed	MI	LS-DYNA Advanced	2	S. Bala
19	Mon	CA	Intro to LS-PrePost	1	P. Ho / Q. Yan
20-23	Tues-Fri	CA	Intro to LS-DYNA	3.5	A. Tabiei

April

25-27	Wed-Fri	CA	Advanced ALE & S-ALE Applications	3	I. Do
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Editor: Yanhua Zhao - yanhua@feainformation.com

LS-DYNA Metal Forming New Features - Table 1: www.lstc.com/new_features

Recent improvements in LS-DYNA® hot stamping simulations

Jinglin Zheng, Xinhai Zhu and Houfu Fan

Abstract

In this study an improved numerical method is applied in the return mapping scheme of hot stamping simulations to fix the convergence issues with the original Newton-type scheme. Full convergence is achieved in cases where the original solver fails to converge, with a slight increase in computational time. On the other hand, the thermal solution efficiency is improved by adopting parallel computation in two heavily used procedures in the thermal-mechanical coupling analysis when using SMP: (1) temperature interpolation at each mechanical step between two consecutive thermal steps; (2) matrix-vector multiplication in the conjugate gradient solver. This implementation demonstrates computational time savings in thermal steps where it takes many (a few hundred or even more) iterations for the implicit step to converge.

A Customized Job Manager for Metal Forming Simulations Y. Xiao, X. Zhu, L. Zhang, H. Fan	
Best Fit GUI for Metal Forming in LS-PrePost® 4.5 Q. Yan, X. Zhu, P. Ho, L. Zhang, Y. Xiao	**Conversion between FLD and Stress Triaxial Limit Curve** X. Zhu, L. Zhang, Y. Xiao
Defining Hardening Curve in LS-DYNA® X. Zhu, L. Zhang, Y. Xiao	**Improvement of Sandwich Structure Part Adaptivity in LS-DYNA** X. Zhu, H. Fan, L. Zhang and Y. Xiao
Improvements to One-Step Simulation in LS-DYNA, X. Zhu, H. Fan, L. Zhang, Y. Xiao	**Lancing features in LS-DYNA** Q. Yan, L. Zhang, Y. Xiao, X. Zhu, P. Ho

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Fluid Structure interaction of a spoiler on the DrivAer car model

James Dilworth, Ben Ashby, Peter Young

A New Method of Transient Acoustic Simulation

Zhen Wu1,2, Milan Koch2, Christopher Morgan3, Enno Witfeld2, Qiang Liu1, Eryong Liu1

1 Autoliv (Shanghai) Vehicle Safety System Technical Center, 201807 Shanghai, China

2 Autoliv B.V. & Co. KG, Otto-Hahn-Strasse 4, 25333 Elmshorn, Germany

3 Autoliv Auburn Hills Technical Center, 1320 Pacific Drive Auburn Hills, 48326 Michigan, USA

Editor: Yanhua Zhao - yanhua@feainformation.com

Table 2 - New Features on the website www.lstc.com/new_features

Recent updates in fatigue analysis with LS-DYNA

Yun Huang, Zhe Cui, Livermore Software Technology Corporation

Abstract

This paper reviews the recent development in fatigue solvers in LS-DYNA. Fatigue analysis is critical to the design and safety evaluation of metal structures and components. Both frequency domain and time domain fatigue solvers have been implemented to LS-DYNA, to meet the requirements of users from different industry areas. Examples are provided in this paper, to illustrate how to use these fatigue solvers for real problems and do post-processing on the results. The plan on future development of the fatigue solvers in LS-DYNA, is also discussed.
Keywords: LS-DYNA, fatigue analysis

Among the Previous Months Postings on New Features Table 2

- Discussion on acoustic databases in LS-DYNA
- Modeling of Ductile Failure in Destructive Manufacturing Process Using the Smoothed Particle Galerkin Method
- A non-orthogonal material model of woven composites in the preforming process
- LSTC WinSuite – a complete solution for the Windows platform
- Modeling and Numerical Simulation of Afterburning of Thermobaric Explosives In a Closed Chamber
- Thick Shell Element Form 5 in LS-DYNA
- New Inflator Models in LS-DYNA®
- New features of 3D adaptivity in LS-DYNA
- Thermal Coupling Method Between SPH Particles and Solid Elements in LS-DYNA
- LS-DYNA Smooth Particle Galerkin (SPG) Method

15th LS-DYNA Int'l Conf. & Users Mtg

Christian Frech - DYNAmore GmbH www.ls-dynaconferences.com

Among the papers to be presented and/or published

15th LS-DYNA® International Conference & Users Mtg.
June 10th, 11th & 12th 2018
Edward Hotel & Convention Center - Dearborn, MI

We are pleased to share that we have over 210 papers accepted for the conference. Below in alpha order is a few of the title, all titles are copyright to the respective authors.

Join us at the conference - Register Now -

- A Customized Job Manager for Metal Forming Simulations with LS-DYNA
- A non-orthogonal material model of woven composites in the preforming process
- A peridynamic model for damage prediction of fiber reinforced composite laminate
- A study on delamination behavior between aluminum and CFRTP
- A study on scatter during production process using statistical approach
- A unified environment for collaborative CAE and immersive simulation results' processing
- ACP-OpDesign: Optimal Design Gateway : Reveal the path to optimized products
- Advanced results databases compression techniques to allow their efficient use in results data management systems
- Advances in fatigue analysis with LS-DYNA
- Advances in LS-DYNA for Metal Forming (I)
- Advances in LS-DYNA for Metal Forming (II)
- Airbag Folding with JFOLD - Latest Developments and Case Studies
- Airdrop sequence simulation using LS-DYNA ICFD solver and FSI coupling
- AN ENGINEERING APPROACH TO ESTIMATING PARTIALLY SATURATED SOIL CONSTITUTIVE PROPERTIES
- An Enhanced Assumed Strain (EAS) Solid Element for Nonlinear Implicit Analyses
- An Enhancement of LS-DYNA XFEM Shell for Dynamic Ductile Failure Analysis
- Application of a Full-Field-Calibration Concept for Parameter Identification of HS-Steel with LS-OPT®

- Bake-Hardening Effect in Dual-Phase Steels: Experimental and Numerical Investigation
- CFD Validations with FDA Benchmarks of Medical Devices Flows
- Classification-based Optimization Probabilistic Analysis Using LS-OPT
- Cloud-based Pedestrian Safety App
- Comments on Compressible Flows, Gaseous Explosions, and compressible FSI Capabilities for the CESE and Chemistry Solvers in LS-DYNA®
- Connection modeling using LS-DYNA implicit
- Constitutive modeling of soft biological tissues
- Corrugated Fiber Board as a Packaging Material: Experimental and Numerical Analysis of the Mechanical Behavior
- Development of New Simulation Technology for Compression Molding of Long Fiber Reinforced Plastics using LS-DYNA
- DIC-based Full-Field Calibration using LS-OPT: An Update
- Discussion on NVH analysis with various eigensolvers in LS-DYNA®.
- Door System Multimaterial Lightweighting Using ACP OpDesign Optimization-Led Design Software and the LSTC Software Suite (LS-TaSc, LS-OPT and LS-DYNA)
- Dynamic Constitutive Model for Polymers with Considering Strength-Differential Effect and Strain Rate Dependency
- Electro-Physiology using LS-DYNA
- Facing Future Challenges in Crash Simulation Engineering -- Model Organization, Quality and Management at Porsche
- Fluid Flow Modeling with SPH in LS-DYNA
- Fluid structure interaction simulation of bonnet flutter
- FSI simulation of a double-deck bus cornering under crosswind effects
- Full-Field Calibration of Biological Tissue using LS-OPT
- Gaudi's Sagrada Familia Basilica, Barcelona
- Getting your model ‘right’ – Checking before, during and after your LS-DYNA Analysis
- Higher Order Solid Elements in LS-DYNA®
- ICFD: summary of recent and future developments

- Implementation of MCEER TR 14-0006 Blast Load Curves in LS-DYNA and Benchmark to Commonly Practiced Blast Loading Application Methods
- Improvement of Mesh Fusion in LS-DYNA
- In Core Adaptivity
- Increasing the Scale of LS-DYNA Implicit Analysis
- Investigating the post processing of LS-DYNA in an fully immersive workflow environment
- J-Composites - Introducing new software tools for process and process chain simulations of composite materials
- Li-Ion battery modeling strategies for electric vehicle crash applications
- Linear Analysis of a full vehicle models for NVH and Durability Load Cases
- LS-DYNA®'s Linear Solver Development — Phase1: Element Validation Part II.
- LS-DYNA®'s Linear Solver Development — Phase2: Linear Solution Sequence.
- MLS-based SPH in LS-DYNA for increased accuracy and tensile stability
- Model Set up, Analysis and Results of the Inverse Forming tool in ANSA
- Modelling of crazing in rubber-toughened materials
- Multiscale Simulations of Material with Heterogeneous Structures Based on Representative Volume Element Techniques
- Numerical Investigation of Homogeneous Equilibrium Model and Fluid-Structure Interaction for Multiphase Flows
- Numerical Simulation of Aircraft Seat Compliance test using LS-DYNA Implicit solver
- Occupant Injury Criteria, a complete solution for the evaluation of occupant and structural, simulation and physical test results in META
- One the significance of the spatial discretization for crashworthiness,studies: Shell vs. Solid elements
- Optimisation of Fixturing Clamps to Improve Panel Measurement Robustness
- Parametric and Convergence Studies of the Smoothed Particle Galerkin (SPG) Method in Semi-brittle and Ductile Material Failure Analyses
- Performance of the projected subgradient method in LS-TaSC™
- process2product simulation: Closing incompatibilities in constitutive modelling and spatial discretization with ENVYO
- Randles circuit parameters set up for battery simulations in LS-DYNA
- Rapid simulations of Welding and AM using LS-DYNA and LS-PREPOST
- Recent developments in *DEFINE_PRESSURE_TUBE for simulating pressure tube sensors in pedestrian crash
- Recent Developments in Isogeometric Analysis for LS-DYNA

- Recent Developments in Isogeometric Analysis with Solid Elements in LS-DYNA
- Recent improvements in LS-DYNA hot metal forming for convergence and efficiency
- Recent Updates to the Structural Conjugate Heat Transfer Solver
- Re-using crash models for static load cases with minimal effort
- Scalability study of particle method with dynamic load balancing
- Shape optimization for MDO with LS-DYNA suite
- Sheet metal forming simulation with IGA in LS-DYNA
- Simulation for crush behavior of glass mat reinforced thermoplastic composite material
- Simulation of the Performance of Passenger Rail Vehicles under Blast Conditions in LS-DYNA
- Smoothed Particle Galerkin Method with a Second-order Accurate Momentum-Consistent Algorithm for Free Surface Flow Simulation
- Sound absorbing Porous Material In Statistical Energy Analysis
- The Immersed Smoothed Particle Galerkin Method for Modeling and Failure Analysis of Fiber-Reinforced Solid Structures
- The Role of LS-DYNA in the Design of the new London Electric Taxi
- Topology optimization of Stamping Die Structure using LS-TaSC
- Tube adaptivity for mesh fission/fusion in LS-DYNA
- Update on Resistive Spot Welding (RSW) capabilities in LS-DYNA
- Zero thickness cohesive element approach for dynamic crack propagation

If you would like an exhibitor booth contact dilip@lstc.com

Announcement and Call for Papers

15th German LS-DYNA Forum 2018

October 15 - 17 2018, Bamberg, Germany

www.dynamore.de/forum2018-e