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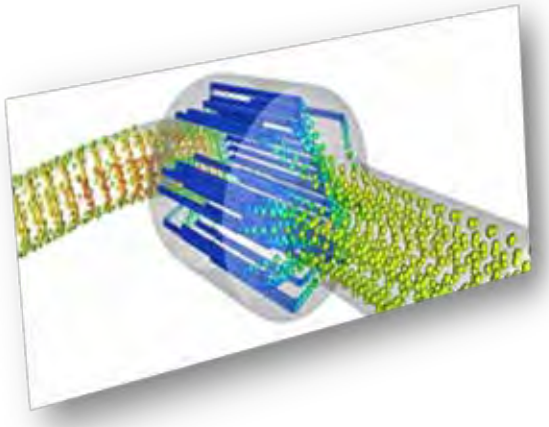
FEA Information Engineering Solutions

Volume 3, Issue 11, November 2014

ANSA & µETA v15.2.0



JSOL Japan - Cloud computing

LS-DYNA Limited License

LS-DYNA On Line Courses

Finite Element Analysis * Hardware * Software * Cloud * Consulting * CAD * CAE Distribution* * Implicit * Explicit *Applications * Press Releases * Events * Training

FEA Information Inc. is a publishing company founded April 2000, incorporated in the State of California July 2000, and first published October 2000. The initial publication, FEA Information News continues today as FEA Information Engineering Solutions. The publication's aim and scope is to continue publishing technical solutions and information, for the engineering community.

FEA Information Inc. Publishes:

FEA Information Engineering Solutions
FEA Information Engineering Journal
FEA Information China Engineering Solutions

FEA Information Engineering Solutions:

A monthly publication in pdf format sent via e-mail, additionally archived on the website FEA Publications. www.feapublications.com

FEA Information China Engineering Solutions

The first edition was published February 2012. It is published in Simplified and Traditional Chinese in pdf format.

To sign up for the Traditional, or Simplified edition write to
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JSOL


Oasys
The Software House of Arup


GOMPUTE
A GRIDCORE COMPANY

logo courtesy - Lancemore

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Announcements

For participation, contact Anthony Giaccana agiac99@aol.com

New participant: LSDYNA-OnLine

For your on-line LS-DYNA intro to advanced courses visit www.lsdyna-online.com

Introduction to LS-DYNA - Composites - Contact - Implicit

Fluid Structure Interaction - Blast and Penetration – and more are offered

Showcased Articles & Announcements

Guest Articles

12th Annual UK Oasys LS-DYNA Users' Meeting

Arup Campus, Solihull, UK

Thursday 22nd January 2015

The event will be followed by a complimentary meal at The Boot Inn in Lapworth.

Sincerely, Marsha Victory - Trent Eggleston - Suri Bala

FEA Information Inc. USA edition

Graphics with full resolution/information please visit: http://www.oasys-software.com/dyna/en/

Oasys 12.0 - the latest version Oasys Software Suite for pre/post- processing LS-DYNA models.

Following the success of Oasys Suite version 11.1 this new version provides the user with a variety of new tools to help reduce the amount of time spent pre- and post- processing a model.

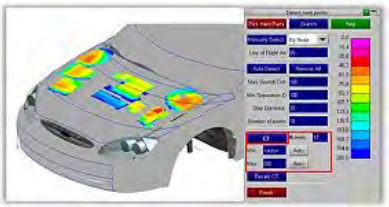
For more information please visit the website: http://www.oasys-software.com/dyna/en/

Oasys PRIMER

With this new release of Oasys PRIMER a number of new tools have been added to reduce the time taken to turn a mesh into a fully running LS-DYNA model. These include:

- Support for LS-DYNA Volume III keywords
- Easier access to recent files
- Drag and drop files into PRIMER
- Support for long labels and large format (up to 15 digits)
- Support for part character labels
- Visualise label/ID usage graphically
- Direct link to open LS-DYNA keyword manual at relevant section
- Occupant soft stop angles to prevent internal penetrations during positioning
- New ejection mitigation (FMVSS 226) setup tool
- Improved pedestrian protection tools:
- hard point detection
- additional robustness points
- default-green points on windscreen
- updates to EuroNCAP protocols
- New connection features
- Composite modelling tool
- Ability to clean up individual include files
- Interactive contour bar
- Tool for comparing geometry and mesh
- Visualisation of true shell thickness and beam/shell offsets
- Output 3D PDF and WebGL files

For more information please see the detailed PDF.



Graphics with full resolution: http://www.oasys-software.com/dyna/en/

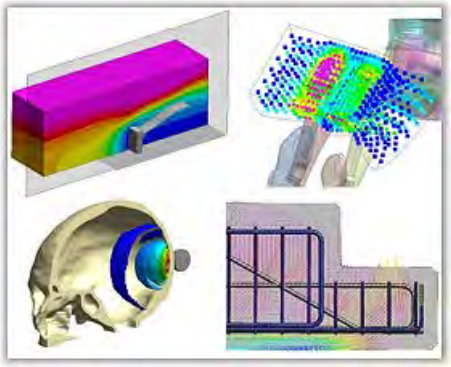
Graphics with full resolution/information please visit: http://www.oasys-software.com/dyna/en/

Oasys D3PLOT

New features in Oasys D3PLOT include:

- Support for new LS-DYNA output file formats, including Volume III multi-physics results files
- Drag and drop files into D3PLOT
- Support for long labels and large format
- Support for part character labels
- New data selection menu – easier to find the different plotting types and options
- Visualisation of beam offsets
- New scripting capabilities

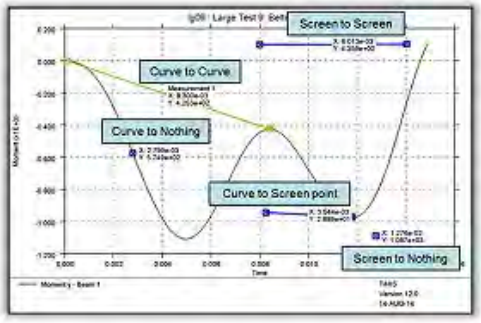
For more information please see the detailed PDF.



Oasys T/HIS

- New features in Oasys T/HIS include:
- Support for new LS-DYNA output file formats, including Volume III multi-physics results files
- Drag and drop files into T/HIS
- Full support for in-plane integration point outputs, and when data is extrapolated to nodal points
- Read space-separated text files - alternative to comma-separated CSV and T/HIS native formats
- Interactive enhancements to "clip" operation
- Interactive option to copy curves

For more information please see the detailed PDF



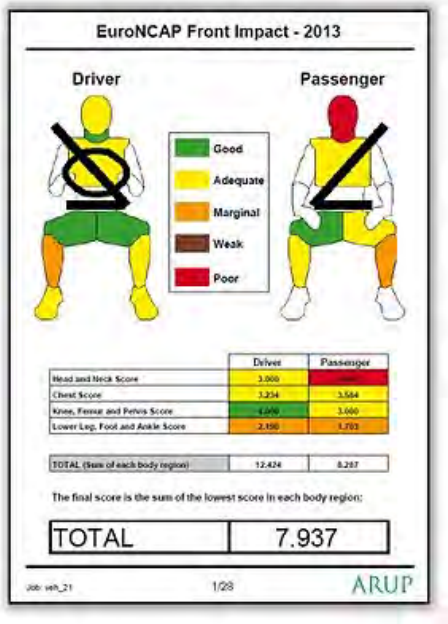
Graphics with full resolution/information please visit: http://www.oasys-software.com/dyna/en/

Oasys REPORTER

New features in Oasys REPORTER includes:

- Report templates included in the v12 release to post-process standard impact tests:
  - EuroNCAP Front (ODB, FFB)
  - EuroNCAP Side (MDB, Pole)
  - EuroNCAP/GTR9 Pedestrian
  - IIHS Front (ODB, small overlap)
  - CNCAP Front (ODB)

For more information please see the detailed PDF.



12th Annual UK Oasys LS-DYNA Users' Meeting

Arup Campus, Solihull, UK

Thursday 22nd January 2015

The event will be followed by a complimentary meal at The Boot Inn in Lapworth.

Supporting Graduate level Engineering Education and Research in Thailand

LSTC has a collaborative support agreement with The Sirindhorn International Thai-German Graduate School (TGGS) at King Mongkut's University of Technology North Bangkok (KMUTNB) Thailand, now held within the Mechanical and Process Engineering (MEPE) Department.

The Head of Department is Assoc. Prof. Dr. Saiprasit Koetniyom, and the LSDYNA software licensing agreement with LSTC is managed by Assist. Prof. Dr. Paul Bland. Activity has grown by the inclusion of colleagues, who have recently joined the Department as new staff or started to use LSDYNA in their work. In addition, Thailand is steadily building up its research activity, and an excellent example of this is the collaborative work of Dr. Saiprasit and Assoc. Prof. Dr. Julaluk Carmai, who are active in vehicle safety and specifically part of the development of ASEAN NCAP.

MEPE offers modern international relevant Masters Degrees in the fields of Automotive Safety and Assessment Engineering (ASAE), Chemical Process Engineering (CPE), Materials and Metallurgical Engineering (MME), Mechanical Engineering Simulation and Design (MES&D), and Production Engineering (PE). MEPE also offers a Doctorate level programme. Scholarships are available for all programmes. Currently, AE and MES&D are active within this agreement, and their example relevant work is highlighted below.

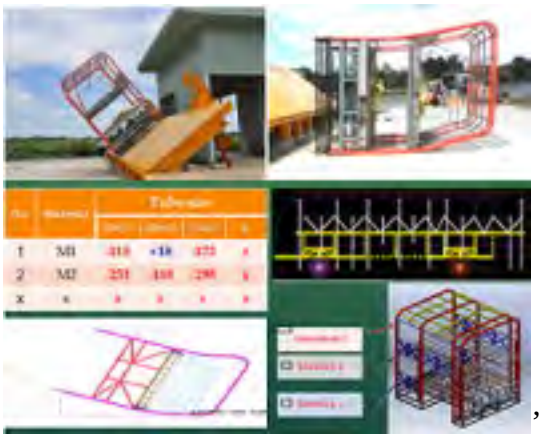
MEPE welcomes contact from international industry, university staff and students, especially relating to engineering education and research in an international collaborative context. This could include, for example, staff and/or student exchange, such as hosting overseas students for their Masters Thesis work.

Further information about MEPE, degree programs and research groups can be found at http://tggs.kmutnb.ac.th /

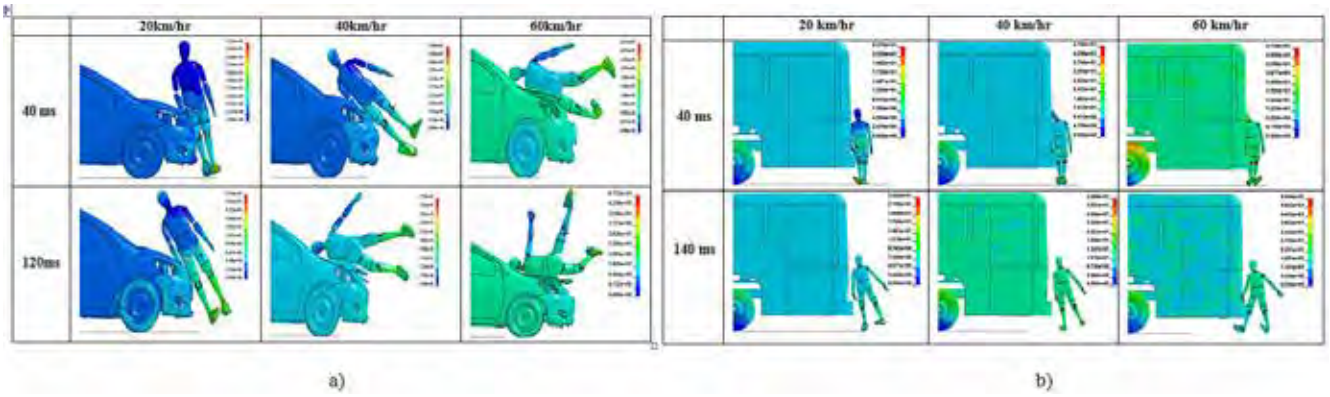
Automotive Safety and Assessment Engineering Research

Dr. Saiprasit and Dr. Julaluk collaborate closely on ASAE research, which is a growing topic within Thailand and ASEAN. They have links to ASEAN NCAP which was formally established in December 2011, and acts as a downstream pull factor to promoting local research activity. Upstream push factors include Thailand being committed to adopt the ECE R66 standard in 2015, which relates to the testing and finite element simulation for rollover of buses.

They have already conducted both a physical test of a bus structure rollover and simulation work using LSDYNA as part of their research. Other projects within ASAE include a study of pedestrian post-crash kinematic and injury mechanisms using the Total Human Model for Safety (THUMS), modeling of motorcycle collision with child pillion passenger and the design of pedestrian-friendly front structure using aluminum foam.

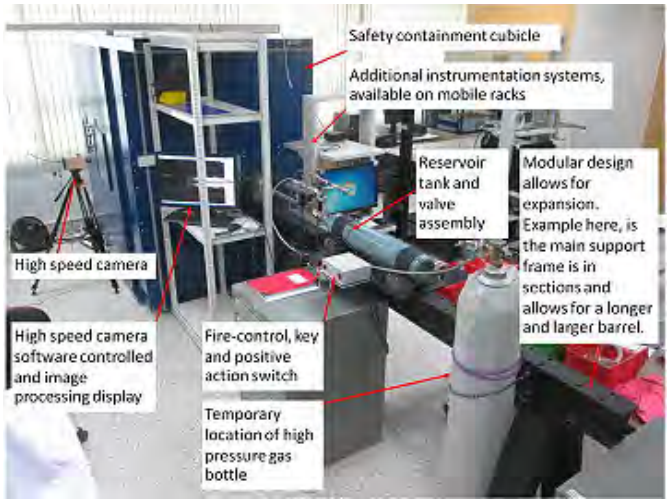


Rollover test facility at KMUTNB Prachinburi campus and LSDYNA simulations



The post-crash kinematics of pedestrian dummy crashed by a) car, and b) bus at various speeds.

THUMS model



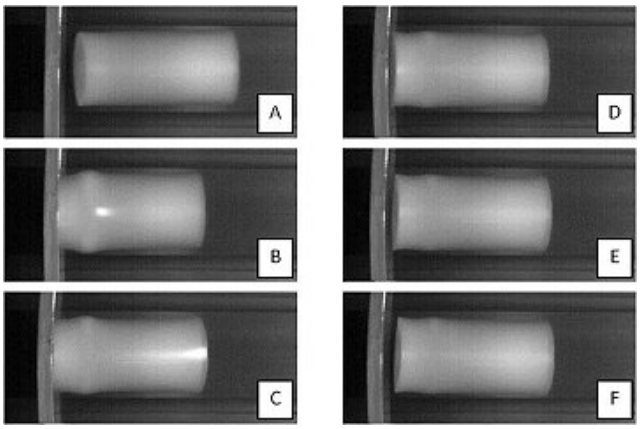
Light Gas Gun, shown during commissioning stage of the project

Mechanical Engineering Simulation & Design – Structural Dynamics Laboratory

The Structural Dynamics Laboratory (SDL), Managed by Dr Paul, conducts research into impact and vibration, from theory to application, experiment and simulation.

Most recent experimental work, using a Light Gas Gun, has captured some interesting impact response phenomena, relating to the time evolution of the response frequency content. A planned future project would be to match and predict the same phenomena using LSDYNA.

It would be interesting to host overseas students, at either Master Thesis or PhD level, within SDL for possible future project topics where LSDYNA might be used.



High speed camera images showing a plastic sabot impacting an aluminum plate at 114m/s, pin-jointed at it top. Sequence A-F, 0.1 ms between frames, highlighting sabot shock compression and residual plastic deformation.

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 has made the following announcement for Japanese LS-DYNA customers.

LS-DYNA customers in industries / academia / consultancies are facing to the increase use of LS-DYNA more and more in recent years.

In calculations of optimization, robustness, statistical analysis, larger amount of LS-DYNA license in short term are required.

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

This service is offered to the customers by the additional price to existence on-premises license, which is relatively inexpensive 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

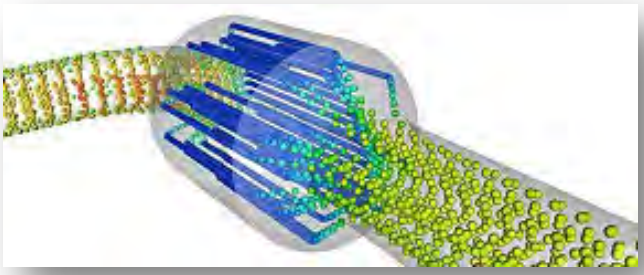
Platform Computation Cloud
CreDist.Inc.
http://www.credist.co.jp /

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

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

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

Excerpt – read full article at www.beta-cae.gr/news/20141111_announcement_ansa_meta_v15.2.0.htm



BETA CAE Systems S.A. announces the release of ANSA & µETA v15.2.0

BETA CAE Systems S.A. announces the release of v15.2.0. Developed in close cooperation with our customers, v15.2.0 offers a complete package of new solutions for pre- and post- processing and further facilitates the CAE working ways

About this release

Amongst these new tools and solutions the most notable are presented below.

The plan

We are committed in delivering improved and enhanced software releases, the soonest possible, in order to meet the requirement of our customers for the continuous improvement of their experience and work. Therefore, we are working in releasing new software versions with code corrections, new software features and enhancements, in regular, frequent intervals.

- A major software version is released every year.
- First point releases, such as v15.1.0, v15.2.0 and so on, with code corrections but also with additional software features and enhancements are released every three months.
- Second point releases, such as v15.2.1, v15.2.2, v15.2.3 mainly with code corrections only upon their parent first point release, are scheduled on a monthly basis.

Each software release is accompanied by a detailed description of the introduced corrections and/or additions so that our customers can decide whether it is critical to implement this release in their environment.

This release

This release of v15.2.0 implements enhancements and code corrections to the v15.1.x branch.

Enhancements in ANSA

Data Management

As data continue to grow in CAE and the demand for an increased capacity to process CAE data expands, new features and tools to further facilitate Data Management capabilities and reduce time consumption are required. In this version important enhancements have been made in this direction.

"Open In ANSA": The Product tree Editor which acts as a bridge between the CAD/PDM and the CAE world has been significantly improved offering additional handling tools for reading a model's definition.

The "Open in ANSA" function can handle all supported CAD formats. It assigns automatically the tree structure attributes to the parts and merges them with the hierarchy in order to build the first ANSA assembly.

This process is further enhanced with the usage of ANSA DM. Additionally; the model assembly of big models is significantly speeded-up as the new tool orchestrates the parallel execution of CAD translations in different processes.

Change Representation: A new tool for handling Trim parts has been introduced. Trim parts can be automatically substituted by mass which is distributed to the proper regions of attached parts.

Compare tool: In addition to the PPTX report offered in past versions, it is now possible to export results in XLSX and PDF format which embeds the 3D representation and manipulation (rotate zoom, hide/show parts) of the model.

CAD Data Import

The new CT lib service pack in v15.2.0 allows the translation of Inventor 2014 and SolidWorks 2014 files.

Geometry handling & Meshing

A new tool has been introduced for the creation of ribs consisting of shell elements to save time and enable engineers to further experiment with potential solutions to improve the designs of the products.

In Maritime and Heavy vehicles applications, metal sheets are designed unconnected and are represented by shell meshes. v15.2.0 automatically identifies, extends, and connects the parts, based on the element thickness. This functionality simplifies the modeling stages of complex geometric parts.

Structured solid meshes can now be created by extruding shell meshes or solid facets offering options such as snapping on side walls, or using multiple guiding lines

.

Eliminating holes or openings is a fundamental step in exterior Acoustics analyses. A new approach can now be followed through a new tool to fill the gaps on detailed (skin), shell mesh or envelopes. This new capability will save considerable time in Acoustics analyses pre- processing processes.

Enhancing the solutions portfolio for geometry handling, in this version the option to extract faces from curve chains (3d-curves, CONs, edges, 1d elements) has been introduced. It is also now possible to extract a mesh from a cloud of 3D points.

Connections & Assembly

New FE representations and handling tools for Connections add up to the already rich functionality of ANSA for Connections and Assemblies, while the Connections Manager's performance has been significantly improved.

NEW FE-Representations: FE Representations are now available for ROBSCAN connections. The HEXA CONTACT, the RBE3-HEXA-RBE3, and the RBE3-DIAMOND-RBE3. These new FE Representations offer the possibility to create welds of fully customizable shape and to combine several existing functionalities of spotwelds and connection lines.

The PENTA-CONTACT-ON-SOLID FE representation is also now available for SEAMLINE connections. It creates PENTA elements attached to the connected components using a TIED contact. The PENTA-CONTACT-ON-SOLID FE Representation is suitable for modeling T and Y weld joints between solid components.

Additional representations include the CONSTRAINED-INTERPOLATION-SP representation, available for SPOTWELD, GUMDROP and SPOTWELD LINE. This new representation generates single or series of LS-DYNA CONSTRAINED INTERPOLATION SPOTWELD elements.

New options: The new option to "Shrink Width" for ADHESIVE LINE connections allows the local reduction of the width of an ADHESIVE LINE in order to better fit the existing space limitations. Another new option named "Beam Subdivision", provides several discretization schemes for the bolt shank (Per Row, Uniform, Per Shank Region).

The Check Connections function now runs in parallel. This feature improves significantly the performance of the function in assemblies with a large numbers of connections

For connection lines that are partially realized, the success percentage of connection lines is now reported at the Realization Stas/Succeeded field. This field is automatically filled by the Connection Manager upon realization and it provides a direct way to identify partially realized connection lines

KINETICS Tool

ANSA provides in a single CAE pre-processing environment an integrated Multi-Body analysis tool, the KINETICS. In this version this tool is further augmented.

The Contact based results (normal forces, friction forces, etc.) can now be also calculated and examined within the Results Viewer.

A new tool, named Animated Camera, lets the user play and view animations from an observation view point that changes while the animation progresses

Solutions for CFD analyses

In line with our commitment to continue to enrich our solutions portfolio for all CAE disciplines, additions have also been made in this version. Amongst these, layers are now generated and automatically connected to Link geometry side (link faces), ensuring the exact node matching for periodic boundaries. The export of TAU cdf file format is now also supported.

Solutions for Safety Analysis

Seatbelt: The components creation algorithm has been improved, and now provides options to create constant width, conduct basic quality check of the elements, unfold, and smooth the elements that wrap the part.

Solver interface solutions

Satisfying the need for an even more user friendly and effective modeling, a new wizard has been introduced to assist and simplify the creation of Contacts for Abaqus and ANSYS solver decks.

read full article at www.beta-cae.gr/news/20141111_announcement_ansa_meta_v15.2.0.htm

Call for Papers -

10th European LS-DYNA Conference

June 15 - 17 2015, Würzburg, Germany

We kindly invite all users of LS-DYNA, LS-OPT, LS-PrePost and LS-TaSC to take advantage of this fantastic opportunity to showcase their work. The Conference is your chance to talk with industry experts, catch up with colleagues and enjoy time exploring new ideas. In addition, attendees can meet with exhibitors to learn about the latest hardware and software trends, as well as additional services relating to the finite element solver LS-DYNA, the optimization codes LS-OPT and LS-TaSC, and the pre- and postprocessor LS-PrePost. Make sure that you will be part of the conference by submitting your abstract soon!

Conference website:
www.dynamore.de/ls-dyna2015-e

Abstract online submission:
www.dynamore.de/eu-ls-dyna-abstract-e

Flyer (pdf):
www.dynamore.de/c4p-ls-dyna2015-e

Abstract submission

Please submit an abstract (300 words) by E-Mail to forum@dynamore.de or online at http://www.dynamore.de/ls-dyna2015

Important dates

Abstract submission:	13 February 2015
Author notification:	6 March 2015
Final paper deadline:	20 Apri 2015

Contact and registration

DYNAmore GmbH
Industriestr. 2, D-70565 Stuttgart, Germany
Tel. +49 (0) 7 11 - 45 96 00 – 0
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E-Mail: forum@dynamore.de
http://www.dynamore.de/ls-dyna2015

Venue:

Würzburg is a beautiful historical city and a UNESCO World Cultural Heritage site, which is easily accessible from Frankfurt International Airport by train or by car. The Congress Centrum at the Maritim Hotel Würzburg is centrally located directly on the banks of the river Main, offering a splendid view of the Marienberg fortress. Visitors can comfortably explore the baroque inner city with its numerous sights by foot.

We are looking forward to welcoming you in Würzburg in 2015!

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10,000 Elements

LS-DYNA

US Only Available Through LSTC sales@lstc.com

(for other countries contact the local LSTC or the LSTC Direct Authorized Distributor)

Fax 3 pages (20, 21, 22 to 925 961 0806
or scan 3 pages and pdf to sales@lstc.com subject: Limited

Requirements For Purchase:

- Subject to eligibility and export control verification
- Subject to IP address being in the US
- US $100 paid via credit card – Visa, master Card, American Express
- License agreement signed and approved by LSTC
  - Provided on next page

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- LS-DYNA,
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- LS-OPT,
- LS-TASC
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- All other capabilities are available.
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- LS-DYNA is provided electronically.
- Manuals electronically with permission to copy.

Sign and return all enclosed forms by fax to 925

Corporation (LSTC") and ("User"),

User: Company Name:

Company Address:

COUNTRY

Contact Name:

Contact Phone Number:

E-Mail

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GOVERNING LAW: This agreement shall be subject to and interrupted in accordance with the laws of the State of California.

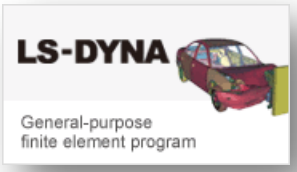
ENTIRE AGREEMENT: This Agreement sets forth the entire agreement and understanding of the parties and supersedes all prior oral and written agreements and understandings relating thereto. This Agreement shall only become effective when executed by both parties.

USER Name: (signature) Print Name: Date	Valid when Co-singed by LSTC Noi Sims, LSTC Dated:

Marsha Victory, FEA Information Inc.

JSOL hosted the LS-DYNA & JSTAMP Forum 2014

Nagoya Japan



What made the JSOL conference internationally recognized?

The JSOL conference offered simultaneous translations, for many of the technical presentations. This enhanced the understanding for attendees who did not understand Japanese. Additionally, it made it easier for those Japanese attendees who were more comfortable with foreign language presentations translated into Japanese.

The conference hosted over 400 attendees from industry, educational institutions, consulting, hardware, and software companies. Many of the attendees were from the leading edge companies in Japan. Additionally representatives from other international companies attended, among them being: Arup - UK, THEME – Korea, KOSTECH – Korea, Simpleware – UK, LSTC – US.

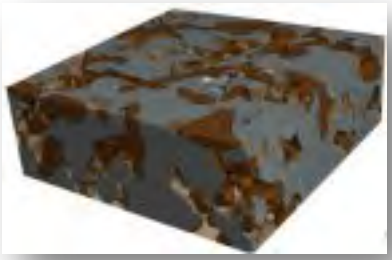
Among the many papers presented were the following:

- **TOYOTA MOTOR CORPORATION** (Keynote Speech) Achieving Design Targets by Stochastic Car Crash Simulations - Mr. Yukio Oka,
- **Tohoku University** (Keynote Speech) Numerical modelling of damage progression in fibre-reinforced plastic composites - Dr. Tomonaga Okabe,
- **ASICS Corporation** (Special Speech) The application example of Simpleware to structural analysis of foamed plastic. - Dr. Tsuyoshi Nishiwaki,
- **Autoliv Japan Ltd**. Airbag Design Evaluation using Optimization and Morphing - Mr. Hiroyuki Saito,
- **Arup** Automatic processing of LS-DYNA models according to EuroNCAP and other protocols - Mr. Richard Taylor,
- **FUJI HEAVY INDUSTRIES LTD**. Study of the energy absorbing member using a composite material - Mr. Satoshi Ikeda,
- **KOBE STEEL,LTD**. The simulation of fracture prediction by the damage model GISSMO in sheet metal - Dr. Junya Naito,
- **Nippon Steel & Sumitomo Metal Corporation** Fracture prediction in Ultra High Strength Steel Sheet - Mr. Takahiro Aito.

- **TOYOTA MOTOR CORPORATION** Research of Injury Mechanism in Traffic Accidents using Human Body FE Model THUMS - Dr. Yuichi Kitagawa,
- **Toyota Central R&D Labs., Inc**. Development and validation of a human body finite element model THUMS: shoulder kinematics and injury analyses during side impacts - Dr. Masami Iwamoto,
- **Nagoya University** Simulations on vehicle-to-cyclist collision with a human finite element model - Dr. Daisuke Ito,
- **JSOL CAE Solution Roadmap** Mr. Takahiko Miyachi, - JSOL Corporation
- **Livermore Software Technology** - LS-DYNA Status & Development Plan - Dr. John Hallquist,

(Courtesy showcase from the LS-DYNA & JSTAMP Forum 2014, in Nagoya Japan.)

For a copy of the presentation contact s.richards@simpleware.com.



Converting 3D images into models

3D image data visualization, analysis and model generation software was presented at the LS-DYNA & JSTAMP Forum 2014, in Nagoya Japan

Dr. Simon Richards, of Simpleware Ltd, presented Development plans and key features of future versions, during the LS-DYNA & JSTAMP Forum 2014, in Nagoya Japan.

Conference attendees were able to ask technical questions and obtain information at the Simpleware Booth.

The Nagoya location gave attendees, a chance for local history and sightseeing, as shown by photograph by Simon of Mt. Fuji

About Simpleware: Simpleware offers world-leading image processing and mesh generation software and services for the conversion of 3D image data into high quality computational models for CAD, Finite Element Analysis (FEA), Computational Fluid Dynamics (CFD) and 3D printing

Founded in 2000, Simpleware is dedicated to providing innovative software to bridge the gap between 3D imaging and CAD and simulation technologies. Provides world-leading software solutions for the conversion of 3D images (as obtained from MRI, CT, Micro-CT for example) into high quality models for Finite Element Analysis, Computational Fluid Dynamics, CAD and 3D Printing. Simpleware software is being used by engineers in a wide range of industries and research fields, including: Medical and Dental; Oil and Gas; Automotive Research; Consumer Goods; Non Destructive Testing; Biomechanics; Materials & Geosciences; Food Sciences, and Palaeontology.

Learning the skills you need, or advancing the skills you already have, web based learning is now available for LS-DYNA.

LSDYNA-OnLine owned and operated by Al Tabiei, offers a wide range of online courses from the fundamental courses of LS-DYNA through the advanced courses. The classes are comprised of similar content by that is taught in the traditional learning courses taught at LSTC CA or MI.

Advantages of this setting to individuals and companies are:

- Cost savings by eliminating travel time
- Convenient learning experience, from your home or place of business
- Time convenience and savings from travel days not being needed

Intro LS-DYNA (February 26-27, 2015)

This course will allow first time LS-DYNA users to get started with minimal effort. The most important elements to start using LS-DYNA will be presented in the 2 days. There is workshop associated with this class.

- Chapter-0 Introduction – LS-DYNA Manager
- Chapter-1 Introduction to LS-PrePost
- Chapter-2 Minimum Requirement to Run LS-DYNA
- Chapter-3 Choosing Elements
- Chapter-4 Choosing a Material Model
- Chapter-5 Applying Loads
- Chapter-6 Initial Conditions
- Chapter-7 Boundary Conditions
- Chapter-8 Defining Contact
- Chapter-9 Output Control and Databases
- Chapter-10 Critical Time Step
- Chapter-11 Hourglassing
- Chapter-12 Connecting Parts
- Chapter-13 Damping
- Chapter-14 How To Tell If Your FE Model Is Correct
- Chapter-15 Summary
- Chapter-16 Other Courses & References

Kaizenat Concludes Successful LS-DYNA Conference & Training in Bangalore & Pune India

Kaizenat Technologies Pvt. Ltd is pleased to announce the successful conclusion of its LS-DYNA Conference & Training. It attracted close to 300 engineers, managers and simulation experts to Bangalore on 3rd & 4th November and Pune on 6th & 7th November.

The proceedings and training were conduted by Mr. Suri Bala and Dr. Inaki Caldichoury, of Livermore Software Technolgoy Corporation. Attendees had the opportunity to speak directly with them about their applications and publications.

First Time Conference Highlights:

- Customers chose conference location, agenda & duration
- Dedicated session on new solver capabilities such as CFD & Electro magnetics
- Two experts from LSTC shared their expertise on different applications
- 2 days dedicated for LS-DYNA with one full day dedicated to Training
- 97% of conference duration was LS-DYNA technical sessions
- Close to 300 participants attended
- More than 100 companies were represented
- 10 different customers presented technical papers on LS-DYNA
- Many requests from participants on new LS-DYNA applications like durability & CFD
- Training licenses were awarded enabling the winning participants to try new capabilities of LS-DYNA

http://investors.cray.com/phoenix.zhtml?c=98390&p=irol-newsArticle_print&ID=1990096

CRAY Inc. to provide King King Abdullah University of Science and Technology (KAUST) in Saudi Arabia with multiple Cray systems, Including the Cray® XC40™ supercomputer with DataWarp™ technology,

News Release

Cray Awarded $80 Million Contract From King Abdullah University of Science and Technology (KAUST)

SEATTLE, WA -- (Marketwired) -- 11/17/14 -- Global supercomputer leader Cray Inc. (NASDAQ: CRAY) today announced it has been awarded a contract to provide King Abdullah University of Science and Technology (KAUST) in Saudi Arabia with multiple Cray systems that span the Company's line of compute, storage and analytics products. The contract with KAUST marks Cray's return to the Middle East for the first time in nearly 20 years.

Cray will provide KAUST with a Cray® XC40™ supercomputer with DataWarp™ technology, a Cray® Sonexion® 2000 storage system, a Cray Tiered Adaptive Storage (TAS) system and a Cray® Urika-GD™ graph analytics appliance. The Cray XC40 system at KAUST, named "Shaheen II," will be 25 times more powerful than its current system.

Based in Thuwal, Saudi Arabia, KAUST is a global graduate-level university that is rapidly establishing its reputation as a top performing research university. Founded in 2009, it provides some of the world's best equipped laboratories and an unmatched range of instrumentation under one roof. From its start, KAUST has offered high performance computing, recognizing it as a key enabler of discovery across all fields of science.

"Our goal is to empower faculty and students with the freedom to think big, aim high and explore some of the world's most difficult challenges," said KAUST President, Jean-Lou Chameau. "Shaheen II will accelerate our supercomputing capabilities in both the laboratory and in learning environments, so that our people can collaborate on discoveries that will benefit Saudi Arabia and the world."

"We are honored that KAUST has selected a trifecta of Cray's storage, analytics and supercomputing systems to advance the University's renowned efforts toward scientific discovery," said Peter Ungaro, president and CEO at Cray. "Our new partnership with KAUST signifies Cray's return to the Middle East region, a growing geographic center for high performance computing and computational research, and another step in our Company's continuing growth and expansion plans."

The Cray high performance storage solution at KAUST will include more than 18 petabytes of next-generation DataWarp and Sonexion 2000 storage capacity, running at more than one terabyte per-second to DataWarp and 500 gigabytes per-second to Lustre, with TAS to manage the data through an integrated data archive. Management and operations are simplified through an appliance design with all storage components including software, storage and infrastructure.

The Urika-GD system is a purpose-built, big data appliance for real-time data discovery using graph analytics. The appliance helps automate the surfacing of unknown relationships and non-obvious patterns in diverse data sets without the need for pre-modeling, partitioning or knowing all the queries in advance. The Urika-GD appliance at KAUST will include graph-optimized hardware that provides two terabytes of global shared memory, 64 massively-multithreaded graph processors supporting 128 threads/processor, and an RDF/SPARQL database optimized for the underlying hardware.

Cray XC40 supercomputers are engineered to meet the performance challenges of today's most demanding high performance computing (HPC) users. Special features of the Cray XC40 supercomputer include: the industry-leading Aries system interconnect; a Dragonfly network topology that frees applications from locality constraints; DataWarp applications I/O accelerator technology; innovative cooling systems to lower customers' total cost of ownership; the next-generation of the scalable, high performance Cray Linux Environment supporting a wide range of applications; Cray's HPC optimized programming environment for improved performance and programmability, and the ability to handle a wide variety of processor types in a tightly-integrated system infrastructure.

Consisting of products and multiple years of service and support, the contract is valued at more than $80 million and the systems are expected to be installed in 2015.

For more information on the Cray XC series of supercomputers, Cray's complete line of storage solutions and the Cray Urika-GD appliance, please visit the Cray website at www.cray.com.

About KAUST - King Abdullah University of Science and Technology (KAUST) is an international, graduate-level research university located on the shores of the Red Sea in Saudi Arabia. KAUST is dedicated to advancing science and technology through interdisciplinary research, education and innovation. Goal-oriented and curiosity-driven research is conducted by students, faculty, scientists and engineers to address the world's pressing scientific and technological challenges related to water, food, energy and the environment. www.kaust.edu.sa

EXCERPT – Full About Cray can be read at http://investors.cray.com/phoenix.zhtml?c=98390&p=irol-newsArticle_print&ID=1990096

About Cray Inc. - Global supercomputing leader Cray Inc. (NASDAQ: CRAY) provides innovative systems and solutions enabling scientists and engineers in industry, academia and government to meet existing and future simulation and analytics challenges. Leveraging more than 40 years of experience in developing and servicing the world's most advanced supercomputers, Cray offers a comprehensive portfolio of supercomputers and big data storage and analytics solutions…

Excerpt – Full Safe Harbor should be read at : http://investors.cray.com/phoenix.zhtml?c=98390&p=irol-newsArticle_print&ID=1990096

Safe Harbor Statement - This press release contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934 and Section 27A of the Securities Act of 1933, including, but not limited to, statements related to the timing of delivery of the systems purchased by KAUST and Cray's ability to deliver systems that meet KAUST's requirements. These statements involve current expectations, forecasts of future events and other statements that are not historical facts. Inaccurate assumptions and known and unknown risks and uncertainties can affect the accuracy of forward-looking statements and cause actual results to differ materially from those anticipated by these forward-looking statements. …. You should not rely unduly on these forward-looking statements, which apply only as of the date of this release. Cray undertakes no duty to publicly announce or report revisions to these statements as new information becomes available that may change the Company's expectations.

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Cray Investors: Paul Hiemstra
206/701-2044 ir@cray.com
Source: Cray Inc.

LS-DYNA Support Site

Welcome to the LS-DYNA support site

At this site you will find answers to basic and advanced questions that might occur while using LS-DYNA. Furthermore it will provide information about new releases and ongoing developments. The content will be regularly updated with answers to frequent questions related to LS-DYNA. LS-DYNAsupport will not provide information on activities of your local LS-DYNA distributor as seminars, promotions, etc. We may ask to check the local sites for any kind of non-technical information.

BETA CAE Systems Website Showcase

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

Cray Adds New Advanced Analytics Solution

The Urika-XA platform is open, high performing and cost effective, serving a wide range of analytics tools with varying computing demands in a single environment

ESI collaborates with SL Rasch – Mecca and Med

SL RASCH and ESI combined their knowledge and best simulation technologies to achieve the desired results. SL RASCH virtually built and tested different types of minimal energy lightweight structures for this architectural project by relying on Virtual Performance Solution (VPS), ESI's software to assess all domains of product performance

LSTC - LS-DYNA Examples Joint Screw

Example showing the use of a screw joint definition between rigid bodies. This option can be used to transfer a rotational into a translational motion. Download is available

BETA CAE Systems S.A. **www.beta-cae.gr**

BETA CAE Systems S.A.– 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 S.A.– 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

CRAY **www.cray.com**

Cray CS300-AC Cluster Supercomputer

The Cray CS300-AC cluster supercomputer features an air-cooled architecture based on blade server or rackmount server building block platforms. The system is built for capacity and data-intensive workloads. It delivers turnkey high performance computing with a broad range of flexible system configuration options.

The CS300-AC system features two new preconfigured ready-to-go solutions, the CS300 shared memory parallel and the CS300 large memory systems.

Cray CS300-LC Cluster Supercomputer

The Cray CS300-LC cluster solution features a direct liquid-cooled architecture using warm water heat exchangers instead of chillers. It delivers a turnkey, energy-efficient solution that reduces datacenter power and cooling operation costs for faster ROI while addressing capacity and data-intensive workloads.

Cray XC30 Supercomputer Series

The Cray XC30 family delivers on Cray's commitment to an adaptive supercomputing architecture that provides both extreme scalability and sustained performance. The flexibility of the Cray XC30 platform ensures that users can configure the exact machine to meet their specific requirements today, and also remain confident they can upgrade and enhance their system to address the demands of the future.

Cray Sonexion Scale-out Lustre Storage System

Brought to you by Cray, the world's leading experts in parallel storage solutions for HPC and the technical enterprise, the Cray Sonexion is a fully integrated, modular and compact scale-out storage system for Lustre.

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

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

Visual-Environment: An integrated suite of solutions which operate either concurrently or standalone within a common environment. It aims at delivering an open collaborative engineering framework. As such, it is constantly evolving to address various disciplines and available solvers.

Visual-Crash is a dedicated environment for crash simulation: It helps engineers get their job done in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support.

For LS-DYNA users, Visual-Crash DYNA allows to focus and rely on high quality digital models, from start to finish as it addresses the coupling with competitive finite element or rigid body based software. This very open and versatile environment simplifies the work of CAE engineers across the enterprise by facilitating collaboration and data sharing.

Further tools are integrated in Visual-Environment enhancing CAE engineers work tasks most efficiently.

Visual-Mesh generates 1D, 2D and 3D elements for any kind of simulation. Visual-Mesh provides automatic and guided surfaces clean up, application specific mesh generation and intuitive post mesh editing features..

Visual-Viewer is a complete, productive and innovative post-processing environment for CAE applications.

Visual-Viewer delivers a dedicated plotting and animation control solution. It offers a multi page, multi plot environment, allowing to group data into pages and plots. It is designed with a Windows GUI based on an intuitive and sleek user interface.

Visual-Process Executive is an advanced CAE environment for process customization and automation.

VisualDSS is an End-to-End Decision Support System for CAE. Manufacturers widely resort to Simulation-Based Design to gain a competitive edge in product development.

Gompute on demand®/ Gridcore AB Sweden

www.gompute.com **www.gridcore.se**

Gompute is owned, developed and operated by Gridcore AB in Sweden. Founded in 2002, Gridcore is active in three areas: Systems Integration, Research & Development and HPC as a service.

Gridcore has wide experience of different industries and applications, developed a stable product portfolio to simplify an engineer/scientist's use of computers, and has established a large network of partners and collaborations, where we together solve the most demanding computing tasks for our customers. Gridcore has offices in Gothenburg (Sweden), Stuttgart (Germany), Durham NC (USA) and sales operations in The Netherlands and Norway.

The Gridcore developed E-Gompute software for internal HPC resources gives end users (the engineers) an easy-to-use and complete environment when using HPC resources in their daily work, and enables collaboration, advanced application integrations, remote pre/post, accounting/billing of multiple teams, license tracking, and more, accelerating our customers usage of virtual prototyping

.

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.

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

Oasys T/HIS

Key benefits:

- Graphical post-processor created specifically for LS-DYNA®
- Automatically reads all LS-DYNA® results
- Wide range of functions and injury criteria
- Easy handling of data from multiple models
- Scripting capabilities for fast post-processing

Oasys REPORTER

Key benefits:

- Automatic report generation tool created specifically for LS-DYNA®
- Automatically post-process and summarize multiple analyses
- Built-in report templates for easy automatic post-processing of many standard impact tests

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 focus 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..

Canada	**Metal Forming Analysis Corp MFAC** galb@mfac.com www.mfac.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	
	eta/DYNAFORM	INVENTIUM/PreSys		
United States	**CAE Associates Inc.** info@caeai.com www.caeai.com			
	ANSYS Products	CivilFem	Consulting ANSYS Consulting LS-DYNA	
United States	**DYNAMAX** sales@dynamax-inc.com www.dynamax-inc.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models		LSTC Barrier Models	

Distribution/Consulting	US/Canada	Distribution/Consulting

United States	**ESI-Group N.A** www.esi-group.com			
	QuikCAST	SYSWELD	PAM-RTM	PAM-CEM
	VA One	CFD-ACE+	ProCAST	Visual-Process
	VisualDSS	Weld Planner	Visual-Environment	IC.IDO
United States	**Engineering Technology Associates – ETA** www.eta.com		etainfo@eta.com	
	INVENTIUM/PreSy	NISA	VPG	LS-DYNA
	LS-OPT	DYNAform		
United States	**Gompute** www.gompute.com		info@gompute.com	
	LS-DYNA Cloud Service		Additional software	
	Additional Services			
United States	**Comet Solutions** Comet Software		steve.brown@cometsolutions.com	

United States	**Livermore Software Technology Corp**		sales@lstc.com	
	LSTC www.lstc.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS	

United States	**Predictive Engineering** www.predictiveengineering.com		george.laird@predictiveengineering.com	
	FEMAP	NX Nastran	LS-DYNA	LS-OPT
	LS-PrePost	LS-TaSC	LSTC Dummy Models	
			LSTC Barrier Models	

Distribution/Consulting	Europe	Distribution/Consulting

France	**DynaS+**		v.lapoujade@dynasplus.com	
	www.dynasplus.com		Oasys Suite	
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	DYNAFORM	VPG	MEDINA	
	LSTC Dummy Models		LSTC Barrier Models	

Germany	**CADFEM GmbH**		lsdyna@cadfem.de
	www.cadfem.de		
	ANSYS	LS-DYNA	optiSLang
	ESAComp	AnyBody	
	FTI FormingSuite		

Germany	**DYNAmore GmbH**		uli.franz@dynamore.de	
	www.dynamore.de			
	PRIMER	LS-DYNA	FTSS	VisualDoc
	LS-OPT	LS-PrePost	LS-TaSC	DYNAFORM
	Primer	FEMZIP	GENESIS	Oasys Suite
	TOYOTA THUMS		LSTC Dummy & Barrier Models	

The Netherlands	**Infinite Simulation Systems B.V**		j.mathijssen@infinite.nl	
	www.infinite.nl			
	ANSYS Products	CivilFem	CFX	Fluent
	LS-DYNA	LS-PrePost	LS-OPT	LS-TaSC

Italy	**EnginSoft SpA**		info@enginsoft.it	
	www.enginsoft.it			
	ANSYS	MAGMA	Flowmaster	FORGE
	CADfix	LS-DYNA	Dynaform	Sculptor
	ESAComp	AnyBody	FTI Software	
	AdvantEdge	Straus7	LMS Virtual.Lab	ModeFRONTIER
Russia	**STRELA**		info@dynarussia.com	
	LS-DYNA	LS-TaSC	LS-OPT	LS-PrePost
	LSTC Dummy Models		LSTC Barrier Models	
Sweden	**DYNAmore Nordic**		marcus.redhe@dynamore.se	
	www.dynamore.se		Oasys Suite	
	ANSA	µETA	LS-DYNA	LS-OPT
	LS-PrePost	LS-TaSC	FastFORM	DYNAform
	FormingSuite		LSTC Dummy Models	
			LSTC Barrier Models	
Sweden	**GOMPUTE**		info@gridcore.com	
	www.gridcore.se		www.gompute.com	
	LS-DYNA Cloud Service		Additional software	

Switzerland	**DYNAmoreSwiss GmbH**		info@dynamore.ch	
	www.dynamore.ch			
	LS-DYNA		LS-OPT	LS-PrePost
	LS-TaSC		LSTC Dummy Models	
			LSTC Barrier Models	

UK	**Ove Arup & Partners**		dyna.sales@arup.com	
	www.oasys-software.com/dyna		TOYOTA THUMS	
	LS-DYNA		LS-OPT	LS-PrePost
	LS-TaSC	PRIMER	D3PLOT	T/HIS
	REPORTER	SHELL	FEMZIP	HYCRASH
	DIGIMAT	Simpleware	LSTC Dummy Models	
			LSTC Barrier Models	

Australia	**LEAP**			
	www.leapaust.com.au			
	ANSYS Mechanical	ANSYS CFD	ANSYS EKM	Recurdyn
	ANSYS DesignXplorer	ANSYS HPC	FlowMaster	Ensigh
	LS DYNA	DYNAform	Moldex 3D	FE-Safe
China	**ETA – China**		lma@eta.com.cn	
	www.eta.com/cn			
	Inventium	VPG	DYNAFORM	NISA
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
			LSTC Barrier Models	LS-TaSC
China	**Oasys Ltd. China**		Stephen.zhao@arup.com	
	www.oasys-software.com/dyna			
	PRIMER D3PLOT	HYCRASH	T/HIS REPORTER	SHELL
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
	DIGIMAT	FEMZIP	LSTC Barrier Models	LS-TaSC
China	**Shanghai Hengstar Technology**		info@hengstar.com	
	www.hengstar.com			
	LS-DYNA	LS-TaSC	LSTC Barrier Models	D3VIEW
	LS-PrePOST	LS-OPT	LSTC Dummy Models	
	Genesis	VisualDoc		EDDYNA
	Visual-Crahs DYNA	Visual-Proeces		DynaX & MadyX
	Enki Bonnet	Visual Environement		

India	**Oasys Ltd. India**		lavendra.singh@arup.com	
	www.oasys-software.com/dyna			
	PRIMER	D3PLOT	T/HIS	
			LS-OPT	LSTC Dummy Models	LS-PrePost
			LS-DYNA	LSTC Barrier Models	LS-TaSC

India	**CADFEM Eng. Svce**		info@cadfem.in	
	www.cadfem.in			
	ANSYS	VPS	ESAComp	optiSLang
	LS-DYNA	LS-OPT	LS-PrePost	

India	**Kaizenat Technologies Pvt. Ltd**		support@kaizenat.com	
	http://kaizenat.com /			
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
	Complete LS-DYNA suite of products		LSTC Barrier Models	LS-TaSC

Distribution/Consulting	Asia Pacific	Distribution/Consulting

Japan	**CTC**	LS-dyna@ctc-g.co.jp		
	www.engineering-eye.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	CmWAVE	
Japan	**JSOL**			
	www.jsol.co.jp/english/cae		Oasys Suite	
	JSTAMP	HYCRASH	JMAG	
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS	
	FUJITSU			
	http://jp.fujitsu.com/solutions/hpc/app/lsdyna			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	CLOUD Services	
Japan	**LANCEMORE**	info@lancemore.jp		
	www.lancemore.jp/index_en.html			
	Consulting			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models		
Japan	**Terrabyte**	**English:**		
	www.terrabyte.co.jp	www.terrabyte.co.jp/english/index.htm		
	Consulting			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	AnyBody	

Korea	**THEME**	wschung@kornet.com		
	www.lsdyna.co.kr		Oasys Suite	
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	Planets
	eta/DYNAFORM	FormingSuite	Simblow	TrueGRID
	JSTAMP/NV	Scan IP	Scan FE	Scan CAD
	FEMZIP			

Korea	**KOSTECH**	young@kostech.co.kr		
	www.kostech.co.kr			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM
	eta/DYNAFORM	DIGIMAT	Simuform	Simpack
	AxStream	TrueGrid	FEMZIP	

Taiwan **Flotrend** gary@flotrend.tw

www.flotrend.com.tw

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

Taiwan **APIC**

www.apic.com.tw

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

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Price for computing-core/hour (CCH). Licenses and account set up are not included. Pricing valid only for universities, academic centers and research institutes. The following are trademarks or registered trademarks of Livermore Software Technology Corporation in the United States and/or other countries: LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC. Gompute is owned and operated by Gridcore AB, 2012 All rights reserved.

POD (Penguin Computing on Demand) offers software including LSTC's LS-DYNA
www.penguincomputing.com/services/hpc-cloud

Penguin HPC clusters are optimized for engineering workloads and offer:

- Instant access to an HPC Cloud Cluster
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- Free support from HPC experts
- No charges for network transfers
- Cost-effective, pay-per-use billing model
- Secure environment for private data
- Detailed billing reports for user groups and projects

Self Registration Portal – featuring rich--documentation, wiki, FAQ, pricing and more.
https://pod.penguincomputing.com/

POD Software Applications and Libraries (visit site for complete listing)
FEA, CFD and FDTD Modeling

- **LS-DYNA** / LS-PrePost LS-DYNA is an advanced general-purpose multiphysics simulation software package. Its core-competency lie in highly nonlinear transient dynamic finite element analysis (FEA) using explicit time integration. LS-PrePost is an advanced pre and post-processor that is delivered free with LS-DYNA.
- **OpenFoam:** OpenFOAM (Open source Field Operation And Manipulation) is a C++ toolbox for the development of customized numerical solvers, and pre-/post-processing utilities for the solution of continuum mechanics problems, including computational fluid dynamics (CFD).

- **ANSYS HFSS:** ANSYS HFSS software is the industry standard for simulating 3-D full-wave electromagnetic fields. Its gold-standard accuracy, advanced solver and compute technology have made it an essential tool for engineers designing high-frequency and high-speed electronic components.
- **ANSYS Fluent** ANSYS Fluent software contains the broad physical modeling capabilities needed to model flow, turbulence, heat transfer, and reactions for industrial applications.
- **Star-CD** and **Star-CCM+:** STAR-CCM+ is CD-adapco´s newest CFD software product. It uses the well established CFD solver technologies available in STAR-CD, and it employs a new client-server architecture and object oriented user interface to provide a highly integrated and powerful CFD analysis environment to users.
- **Convergent:** CONVERGE is a Computational Fluid Dynamics (CFD) code that completely eliminates the user time needed to generate a mesh through an innovative run-time mesh generation technique.
- **Lumerical:** Simulation tools that implement FDTD algorithms.

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 to the increase use of LS-DYNA more and more in recent years.

In calculations of optimization, robustness, statistical analysis, larger amount of LS-DYNA license in short term are required.

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

This service is offered to the customers by the additional price to existence on-premises license, which is relatively inexpensive 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

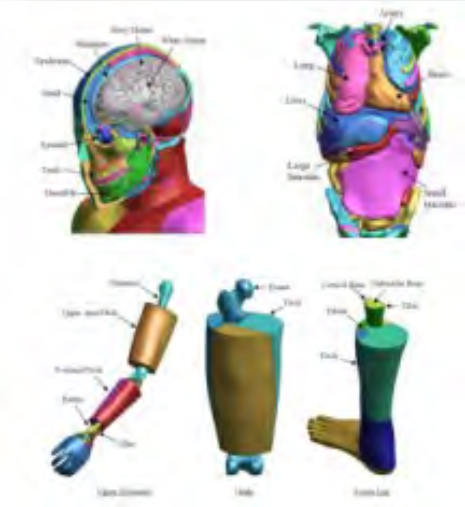
Platform Computation Cloud
CreDist.Inc.
http://www.credist.co.jp /

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

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

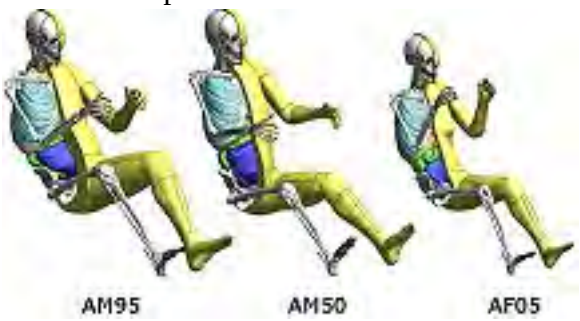
Contact; JSOL Corporation Engineering Technology Division cae-info@sci.jsol.co.jp

TOYOTA - Total Human Model for Safety – THUMS

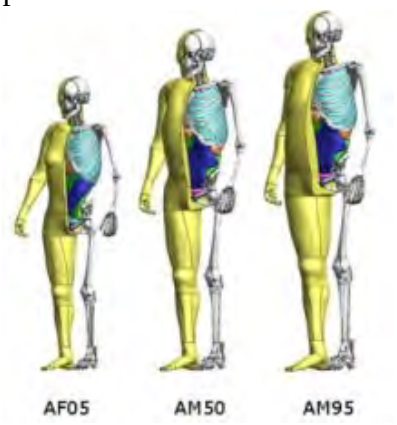


The Total Human Model for Safety, or THUMS®, is a joint development of Toyota Motor Corporation and Toyota Central R&D Labs. Unlike dummy models, which are simplified representation of humans, THUMS represents actual humans in detail, including the outer shape, but also bones, muscles, ligaments, tendons, 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.

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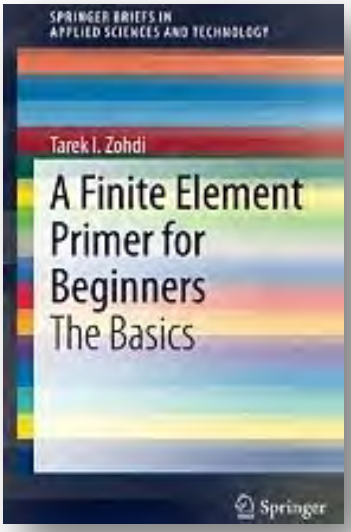
YOUTUBE Channel	WebSite URL
BETA CAE SYSTEMS SA	www.beta-cae.gr
CADFEM	www.cadfem.de
Cray Inc.	www.cray.com
ESI Group	www.esi-group.com
ETA	www.eta.com
Lancemore	www.lancemore.jp/index_en.html



A Finite Element Primer for Beginners:

The Basics (SpringerBriefs in Applied Sciences and Technology) Paperback – October 14, 2014

by Tarek I. Zohdi (Author)

The purpose of this primer is to provide the basics of the Finite Element Method, primarily illustrated through a classical model problem, linearized elasticity.

The topics covered are:

- Weighted residual methods and Galerkin approximations,
- A model problem for one-dimensional linear elastostatics,
- Weak formulations in one dimension,
- Minimum principles in one dimension,
- Error estimation in one dimension,
- Construction of Finite Element basis functions in one dimension,
- Gaussian Quadrature,
- Iterative solvers and element by element data structures,
- A model problem for three-dimensional linear elastostatics,
- Weak formulations in three dimensions,
- Basic rules for element construction in three-dimensions,
- Assembly of the system and solution schemes,
- Assembly of the system and solution schemes,
- An introduction to time-dependent problems and
- A brief introduction to rapid computation based on domain decomposition and basic parallel processing.

Product Details

Series: SpringerBriefs in Applied Sciences and Technology

Paperback: 108 pages
Publisher: Springer; 2015 edition (October 14, 2014)
Language: English
ISBN-10: 3319090356
ISBN-13: 978-33190903

www.lsdyna-online.com/

Fluid Structure Interaction In LS-DYNA
February 12-13

Material Models In LS-DYNA
February 19-20

Introduction to LS-DYNA
February 26-27

Composites In LS-DYNA
March 3-4

Contact In LS-DYNA
March 5-6

Advance Impact Using LS-DYNA
March 12-13

Fracture, Damage, & Failure In LS-DYNA
March 19-20

Training Classes

Space Available

classes@lstc.com

http://www.lstc.com/training/chrono

For information contact classes@lstc.com

Training Class	Location	Dates
California		
ALE/Eulerian & Fluid/Structure Interaction in LS-DYNA	CA	Feb 2-4
SPH: Smoothed Particle Hydrodynamics in LS-DYNA	CA	Feb 5-6
Michigan		
Blast in LS-DYNA	MI	Jan 20-21
Penetration in LS-DYNA	MI	Jan 22-23
ICFD_Day 1 : Introduction to CFD and CFD Applications	MI	March 3
ICFD_Day 2 : Focus on FSI and Heat Transfer	MI	March 4
Electromagnetism	MI	March 5

Germany	**CADFEM GmbH**	www.cadfem.de
Germany	**DYNAmore**	www.dynamore.de/en
US	**LSTC**	www.lstc.com
US	**ETA**	www.eta.com
US	**Cae Associates**	www.caeai.com
Sweden	**DYNAMORE Nordic**	www.dynamore.se
France	**DynAS+**	www.dynasplus.com
Thailand	**DFE-Tech**	www.dfe-tech.com/training.html
UK	**ARUP**	www.oasys-software.com/dyna/en/training

The twelfth in a series of update meetings for Oasys LS-DYNA Users will be held at the Arup office in Solihull, UK, on **Thursday 22nd January 2015**.

As in previous years this event will bring together around 100 UK users of the Oasys and LS-DYNA software to provide information on upcoming features of Oasys and LS-DYNA, and to learn more about current and new applications, as well as other related software products.

We are looking forward to talks from the Oasys team at Arup as well as special guest speakers, details to be confirmed.

The event will be followed by a complimentary meal at The Boot Inn in Lapworth. Please note that The Boot Inn has a limited capacity so please ensure you register in advance to ensure your place at the evening meal.

Registration: This event is free of charge. To register for the event and the evening meal simply send an email with your company/affiliation and contact details to Alison Harper. Please also let us know if you have any particular dietary requirements when you register.

12th Annual UK Oasys LS-DYNA Users' Meeting

Location:
Arup Campus, Solihull, UK

Please note: in line with our company sustainability policy we do not plan to provide printed copies of the presentations for each attendee at the event; the presentations will be made available to download after the event. If you particularly require a printed copy on the day please let us know when you register.