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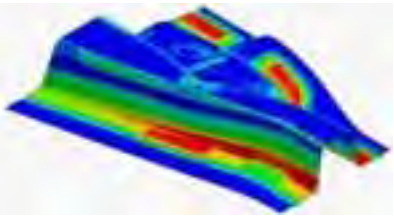
Engineering Journal and Website Resource

FEBRUARY 2011



NURBS-based Finite Elements in LS-DYNA

ESI's VisualDSS, And SAMSUNG Electronics

Cyclone™ and LS-DYNA®

Formula SAE team Stuba Green Team

The 12th International LS-DYNA® Users Conference

United States F-22 Raptor

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Announcements

Among this month's articles and features we have the following:

Torben Faurholdt of FaurCon Aps, Denmark, has sent in his first AVI to share with FEA Information Inc. readers.

We have posted our first Challenge to LS-DYNA® Users to Challenge their Knowledge – answer is also posted.

Srdjan Simunovic of Oak Ridge National Laboratory, has brought another website to our attention on High Strain Rate Testing.

Vladimir Labaš, a member of the Formula SAE team Stuba Green Team, Bratislava, Slovakia, introduces their racing team projects website.

LSTC announces the dates of their 2012 LS-DYNA International Users Conference.

ESI and SAMSUNG Electronics – ESI's VisualDDS benefits

Dr. David Benson – NURBS-based Finite Elements in LS-DYNA

Sincerely, Marsha J. Victory, President, FEA Information Inc

From engineering to horses / bunnies - http://www.livermorehorses.com

Brown / white Sleeping 9 year old Bunny is Barcode
and
Black / white 5 year old Bunny is Heidi, patiently waiting for him to wake up.

FEA Information

Platinum Participants

OASYS Ltd: http://www.oasys-software.com/dyna/en/	**JSOL Corporation**: http://www.jsol.co.jp/english/cae	**SGI:** http://www.sgi.com
ETA: http://www.eta.com	**DYNAmore GmbH** http://www.dynamore.de	**ESI Group**: http://www.esi-group.com
BETA CAE Systems S.A.: http://www.beta-cae.gr	**LSTC:** http://www.lstc.com	**Dalian Fukun Technology Co. Ltd.:**
MICROSOFT http://www.microsoft.com	**Panasas, Inc.** http://www.panasas.com	**Shanghai Hengstar Technology Co. Ltd** http://www.hengstar.com/

Conference Paper Showcase
Paper available for download at:
DYNALOOK
http://www.dynalook.com/

Modeling Wire Rope Used in Cable Barrier Systems

Cody S. Stolle and John D. Reid, Dept. of Mech. Eng., Univ. of Nebraska
http://www.dynalook.com/international-conf-2010/Simulation-4-1.pdf

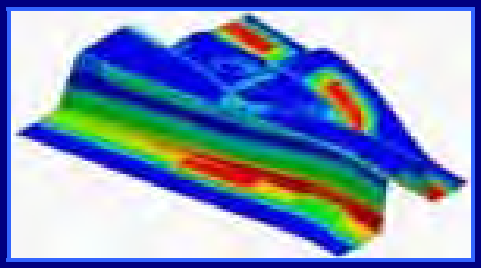
Abstract: An improved LS-DYNA® model of 19-mm diameter 3x7 wire rope commonly used in roadside cable guardrail installations has been developed. A Belytschko-Schwer beam element was selected along with material *MAT_MOMENT_CURVATURE_BEAM. Based on physical testing, total axial load vs. true strain and bending moment vs. curvature were generated for use in the model. Since wire rope displays internal damping due to friction of strands and wires, damping was incorporated into the model using the LS-DYNA command *DAMPING_FREQUENCY_RANGE to damp low-frequency bending oscillations. The proposed model was implemented to simulate a dynamic bending test; results compared favorably.

High Fidelity In-Bore Pressure Modeling

Michael M. Chen, U.S. ARL, RDRL-WML-G, Aberdeen Proving Ground,
http://www.dynalook.com/international-conf-2010/BlastImpact-2-1.pdf

Abstract: Significant research efforts have been conducted to gain an in-depth understanding of projectile-weapon interactions at the U.S. Army Research Laboratory. The objective of this paper is to increase the fidelity of in-bore modeling and simulations that will facilitate the development of component and system models for U.S. Army weapon systems. Specifically, the in-bore pressure as a projectile travels through a gun tube, which has been known to be spatially and temporally varying distribution, will be programmatically taken into account in finite element analysis of launch dynamics.

A computer program that embeds IBHVG2 Interior Ballistics code was implemented to automate the process. This tool can apply a substantial number of pressure curves to the corresponding barrel locations and generate LS-DYNA® compatible keyword files for analysis. The approach yields better accuracy and eliminates tedious manual efforts. In short, the development greatly streamlines the modeling efforts and significantly increases the fidelity of in-bore pressure modeling.



NURBS-based Finite Elements in LS-DYNA

Stefan Hartmann, DYNAmore GmbH, Stuttgart, Germany

David Benson, University of California, San Diego

Abstract

LSTC is extending the isogeometric analysis research performed using the generalized element capability in LS-DYNA by Benson et al. by adding shear deformable and thin shell theory elements using NURBS basis functions to LS-DYNA. Preliminary metal stamping results using the new capability are reported here.

Isogeometric Analysis

Traditional finite shell element formulations use Lagrange interpolation polynomials for the basis functions. These functions are continuous, but their first derivatives are not, and, therefore, the shear deformable shell theory developed by Reissner is used in most finite element implementations.

In computer-aided graphics and design (CAD), most surfaces are represented by non-uniform rational B-splines (NURBS). Unlike Lagrange interpolation functions, NURBS can exactly represent common shapes such as spheres and cylinders. In addition, they naturally have a high degree of continuity. For a NURBS of degree p, the derivatives up to p-1 are continuous across the element boundaries. A quadratic NURBS, for example, has continuous first derivatives, making them suitable for implementing a thin shell formulation.

Isogeometric analysis (IGA) uses the same variational methods as finite element analysis, but uses basis functions from CAD instead of the Lagrange interpolation polynomials. This approach is attractive for several reasons. Among them is it simplifies, or even eliminates, the mesh generation step by directly working with CAD surfaces. The high degree of continuity makes them very accurate for eigenvalue problems. Unlike the higher-order Lagrangian elements, NURBS elements do not suffer from the severe time step size penalty with explicit time integration.

NURBS Shell Elements in LS-DYNA

NURBS-based shell elements are currently being beta-tested in LS-DYNA. They are defined using the new keyword *ELEMENT_NURBS_PATCH_2D. Unlike

traditional elements, these are defined in terms of “patches” that are conceptually a logically regular assembly of elements [see Figure 1].

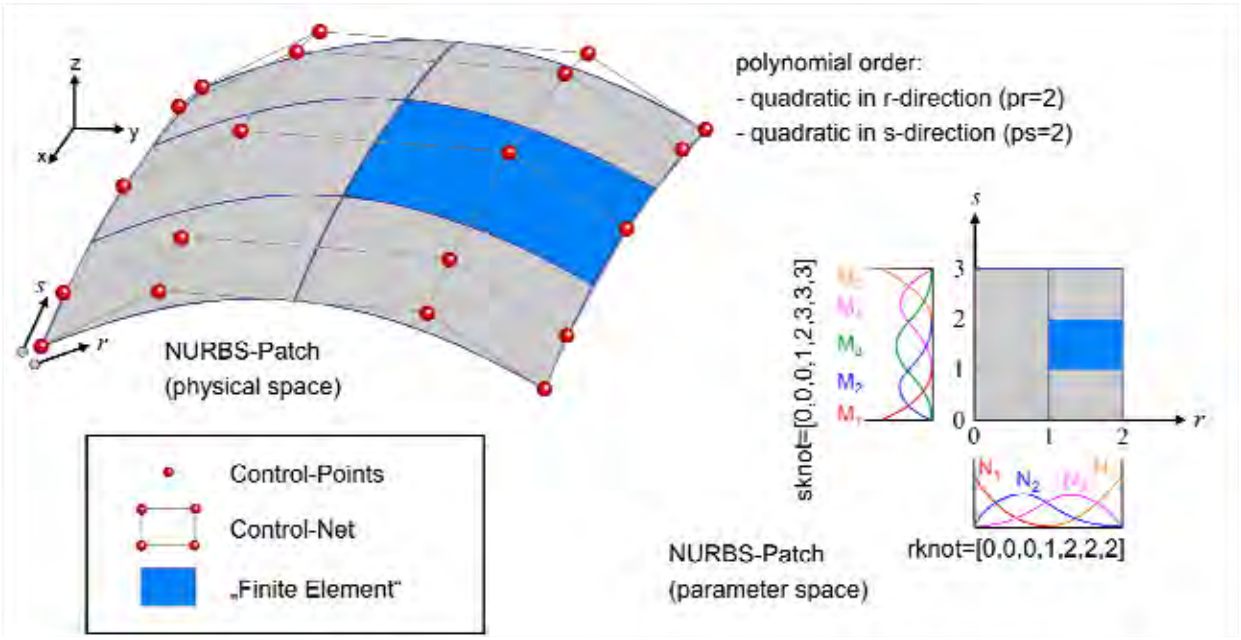


Figure 1: A typical NURBS-Patch and its subdivision into “Finite Elements”.

Pre- and post-processing is a work in progress in LS-PREPOST. The version lspp3.1beta currently permits the import of IGES format NURBS patches and the construction of *ELEMENT_NURBS_PATCH_2D from them on a limited basis. Neither LS-DYNA nor LS-PREPOST currently handle trimmed NURBS surfaces, a limitation that will be addressed in the future.

The post-processing currently does not render the NURBS surfaces directly. The NURBS surfaces are approximated with interpolation elements that are displayed as traditional quadrilateral elements in LS-PREPOST. These interpolation elements are also used by the contact algorithms and pressure loads.

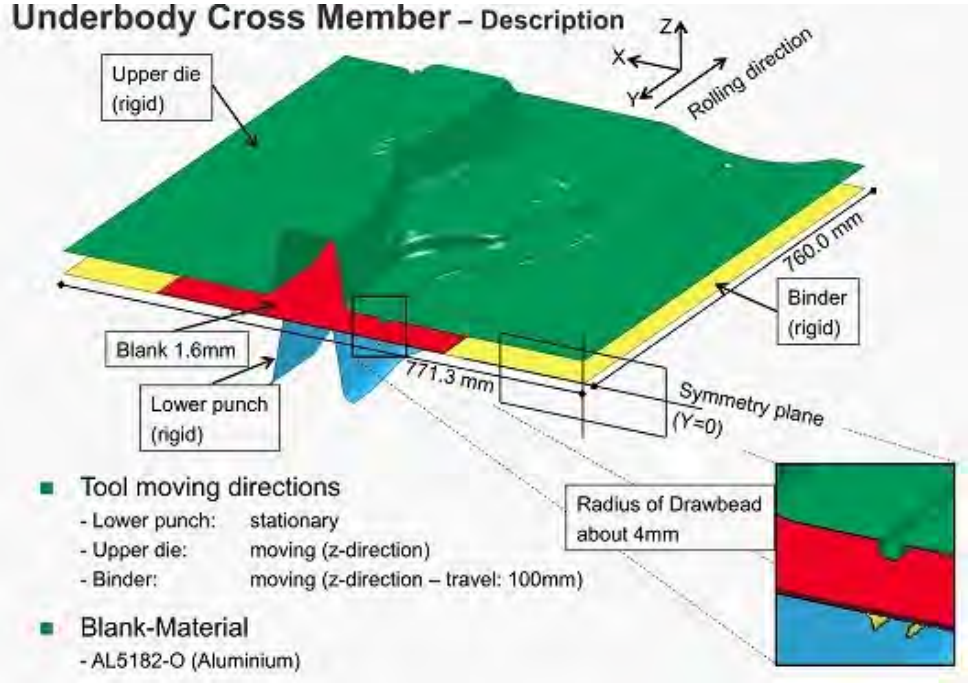
The NURBS elements can be used with both explicit and implicit time integration, nonlinear static analysis, and eigenvalue analysis.

METAL STAMPING TEST PROBLEM

The test problem is an underbody cross member from the Numisheet 2005 Conference [see Figure 2]. *MAT_TRANSVERSELY_ANISOTROPIC_ELASTIC_PLASTIC was used for the blank with five integration points through the thickness. Selective mass scaling is not yet available, so the analysis was run without it. The reference solution was obtained by starting with a blank that was initially meshed with 4mm type-16 elements. An adaptive analysis permitting the elements to be refined down to 1mm was run. Analyses that were uniformly meshed with 8, 4, and 2 mm elements were also run for comparison.

The NURBS elements used the rotation-free formulation with only three degrees of freedom per node. The range of the

basis functions was from quadratic to quintic, and the element integration was uniformly reduced, e.g., the quadratic elements used 2x2 integration in the plane.



Using the adaptive solution as the reference solution, a uniform mesh of 2 mm of standard elements was required to obtain equal accuracy. The NURBS elements were able to obtain equal accuracy with uniform meshes of 4mm. Increasing the order of the NURBS elements from quadratic to quintic did not improve the accuracy of the solution for this particular problem, as the detailed geometrical description of the drawbead with a radius of 4 mm dictated the spacing of the control points.

The CPU time for the reference solution was 43.5 hours. Using a uniform 2mm mesh of standard elements required 21 hours, and using a uniform 4mm mesh of quadratic NURBS elements required 14.5 hours. Increasing the degree of the NURBS, but keeping the 4mm spatial resolution, increased the cost to 42.2 hours for the cubic elements, and to 111 hours for the quartic elements.

SUMMARY

A new NURBS shell element capability is being implemented in LS-DYNA, and new capabilities to generate meshes for it are being added to LS-PREPOST. As with any major new capability, it will take time to fully integrate NURBS elements. The results obtained with our initial implementation are very promising – quadratic 4mm NURBS elements gave equal accuracy to the 2mm standard elements with only 2/3 the CPU time.

ESI's VisualDSS

SAMSUNG Electronics benefits from a virtual prototyping platform, saving up to 90% in engineering time

THE CHALLENGE

SAMSUNG Electronics was looking to manage CAE data and to use guided CAE automation early in the design process in order to identify the right concepts and verify design changes. The entire system would need to allow SEC engineers to automate repetitive and cumbersome tasks, thereby allowing valuable time gains.

Using ESI's VisualDSS, SAMSUNG engineers were able to automate their processes and workflows, thereby gaining in efficiency.

THE BENEFITS

- Easy content management including design and engineering specifications, compute models and data from third-party tools,
- 90 to 95% time savings for SEC's most common analyses,
- Processes acceleration and reduced time to market,
- CAE projects managed in a single user interface,
- Best practices implementation for mold pressure and wobble analyses, and for further projects.

"Using guided CAE automation early in the design process enables us to identify the right concepts and verify design changes in order to save time and cost. As we are very satisfied with ESI's support and assistance throughout the project, we are looking into implementing the simulation data management system in other divisions."
Mr. Jeong-Rho Lee, Senior Engineer, SAMSUNG Electronics Corporation

SAMSUNG Electronics Co. (SEC) is a global leader in semiconductor, telecommunication, digital media and digital convergence technologies. With more than a quarter of SAMSUNG employees engaged in research and development, each SAMSUNG business is focused on discovering new technologies, products and services that will open a new world of possibilities for the people who use them.

Project Workflow Management

The main objective was to automate and simplify repetitive Computer-Aided Engineering (CAE) tasks for engineers and CAD designers in the Visual Display division of SAMSUNG Electronics Corporation (SEC). This was achieved by

developing and implementing an integrated virtual prototyping environment encompassing different CAE solutions in use at SEC.

SEC implemented VisualDSS, ESI's End-to-End Decision Support System, to manage their database for project data and CAE content, such as simulation models, results and reports.

VisualDSS manages results from CAE programs for crash/safe applications (for example from MADYMO, LS-DYNA, PAM-CRASH or RADIOSS) and other simulation domains (such as MSC NASTRAN and SYSTUS). It allows flexible enterprise deployment, by integrating easily within the company's IT and data architecture. As it is an open system, VisualDSS can be linked easily to databases and PLM systems

The main system was fully web-enabled, thereby allowing engineers to easily access standard, automated processes and workflows. Several third-party tools were incorporated to the main system along with several process templates for CAE task automation to facilitate SEC's most common analyses: mold pressure and wobble analyses.

ESI engineers and experts teamed up with CAE and IT experts from SEC to ensure the timely delivery of the complete system according to production usage specifications.

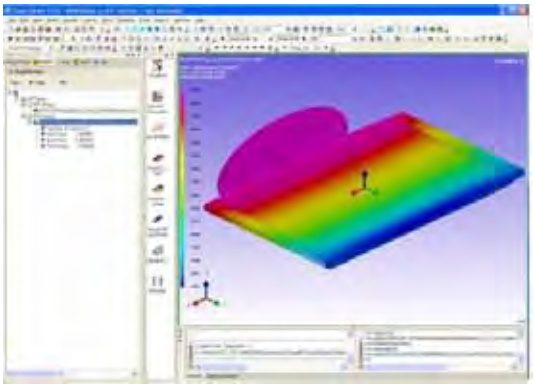
Results and benefits

To measure the success of the project implementation, SEC tested the simulation data management system with the design of a new SAMSUNG visual display model: an LCD television screen. SEC observed a significant time reduction in the design process: a 90% gain for the Mold Pressure analysis and almost 95% for the Wobble analysis.

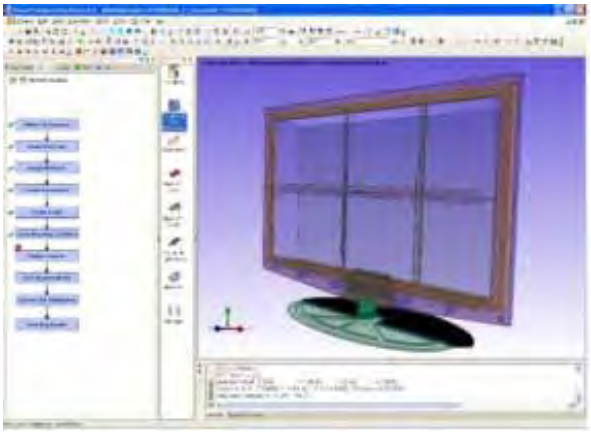
Along with these measurable benefits, SEC also experienced an increase in work efficiency for the visual display team that was able to verify the effect of component design changes of the entire LCD model much faster than prior to the implementation, all within a common interface

> *"With VisualDSS, ESI provides customers with the most advanced End-to-End Decision Support System leveraging enterprise best practices*" said Mr. Donghyeob Cho, Manager at Hankook ESI (Korea). "

This modular, open solution allows SEC to shorten their product development cycle and save time and unnecessary costs".



Displacement contour for wobble analysis - courtesy: SAMSUNG Electronics Corporation



Workflow for wobble analysis - courtesy: SAMSUNG Electronics Corporation

To find out more about ESI's process automation and decision support solutions, please visit:

www.esi-group.com/VisualDSS

About:

SAMSUNG Electronics Corporation is SAMSUNG's flagship company, leading the global market in high- tech electronics manufacturing and digital media. SAMSUNG's Digital Media and Communications Business encompasses home appliances, mobile phones as well as MP3 players and personal computers.

For more information:
www.samsung.com

ESI is a pioneer and world-leading provider in virtual prototyping that takes into account the physics of materials. ESI has developed an extensive suite of coherent, industry-oriented applications to realistically simulate a product's behavior during testing, to fine-tune manufacturing processes in accordance with desired product performance, and to evaluate the environment's impact on performance. ESI's solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping, thus eliminating the need for physical prototypes during product development. The company employs over 750 high-level specialists worldwide covering more than 30 countries. ESI Group is listed in compartment C of NYSE Euronext Paris. For Further information, visit www.esi-group.com

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Users' Meeting Review

Oasys LS-DYNA UK Users' Meeting 2011
Held January 19th, 2011

Continuing their successful LS-DYNA® update meetings, Oasys held the 8th in the series, last month, on January 19th, in their Solihull office.

The meeting encompassed presentations on the latest features, and the most recent applications of Oasys products and LSTC's LS-DYNA software.

Attended by nearly 100 users the series continues to grow annually, with attendance and popularity, for its technical expertise.

Attendees had the opportunity to hear presentations by

- Brian Walker, Arup
- Richard Sturt, Arup
- Paul Du Bois
- Roger Hollamby, Arup
- Mike Bloomfield, Jaguar Land Rover
- Len Schwer, Schwer Engineering
- Roger Assaker, e-Xstream Engineering
- Matt Cooper, HaloIPT / Arup.

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

The following presentation titles are available for download from their corporate website:

- LS-DYNA Update & Arup FE Models Update
- FAT and PDB Model Update
- Humanetics Model Update
- Oasys PRIMER Update
- Simulation of impact on porous forms
- Oasys Post-Processing:
- D3PLOT, T/HIS & REPORTER
- Improving LS-DYNA Precision with Stochastic Methods - Applied to RR Evoque program
- Observations on a 28 Participant Round Robin Study: Implications for Validation?
- Accurate Modelling of Crash & Failure of Fibre Reinforced Plastics with DIGIMAT coupled to LS-DYNA
- Halo IPT - Wireless Inductive Charging of Electric Vehicles

To Download the presentations:
http://www.oasys-software.com/dyna/en/events/users_jan-11/users_jan-11.shtml

HPC Cloud Cyclone™

Cyclone™ and LS-DYNA® Success

FEA Information Inc. Author's View: A. Giaccana

Cyclone™ - LS-DYNA® - D3View® a winning 2011 Combination

2010 was a year of learning, interest and growth, for LS-DYNA users on SGI's Cyclone™.

Starting with customers in the US, it was only a few months before LS-DYNA users in Canada and the EU began asking questions how to be part of the expanding services provided for extra cores of LS-DYNA on demand use. With success in Canada and the EU on Cyclone™ it is anticipated throughout 2011 growth will continue in the US, Candad, EU, as well as Asia Pacific.

D3View, developed by Suri Bala, will be an integral part of the offering package in 2011 adding to the success of LSTC – SGI alliance partnership.

Complete Information can be found on the SGI Website including:

- Cyclone™ and LS-DYNA® Success Story
- IDC White Paper
- Cyclone Supported Applications
- Cyclone Usage Diagram

http://www.sgi.com/products/hpc_cloud/cyclone/index.html

Introducing the HPC Cloud © SGI Website

Cyclone™ is the world's first large scale on-demand cloud computing service specifically dedicated to technical applications. Cyclone capitalizes on over twenty years of SGI HPC expertise to address the growing science and engineering technical markets that rely on extremely high-end computational hardware, software and networking equipment to achieve rapid results. Cyclone supports a number of leading applications partners and five technical domains, including computational fluid dynamics, finite element analysis, computational chemistry and materials, computational biology and ontologies.

Two Service Models: Cyclone is available in two service models: Software as a Service (SaaS) and Infrastructure as a

Service (IaaS). With SaaS, Cyclone customers can significantly reduce time to results by accessing leading-edge open source applications and best-of-breed commercial software platforms from top Independent Software Vendors (ISVs). The IaaS model enables customers to install and run their own applications.

SGI SMP & MPP Hardware & OS For LS-DYNA

SGI Mips	IRIX 6.5 X
SGI IA64	SUSE 9 w/Propack 4 RedHat w/Propack 3

SGI MPP and Interconnect and MPI For LS-DYNA®

SGI	O/S	HPC Interconnect	MPI Software
SGI Mips	IRIX 6.5 X	NUMAlink	MPT
SGI IA64	SUSE 9 w/Propack4 RedHat w/Propack 3	NUMAlink, InfiniBand (Voltaire)	MPT, Intel MPI, MPICH

LS-DYNA® Implicit Hybrid Technology on Advanced SGI® Architectures*

White Paper pdf format is at URL: http://www.sgi.com/pdfs/4231.pdf

Olivier Schreiber, Scott Shaw, Brian Thatch - SGI Application Engineering
Bill Tang, - SGI System Engineering

The National Academy of Engineering (NAE)

Newly elected members and foreign associates.

Elected members are those individuals who have made outstanding contributions. For the complete areas that are taken into consideration for membership, please visit their website for complete information.

Listed below are only a few of the many newly elected members, with their primary affiliations at the time of election and a brief statement of their principal engineering accomplishments

- **James F. Albaugh,** executive vice president, Boeing Co., and president and chief executive officer, Commercial Airplanes, Renton, Wash. For technical leadership in defense and commercial aerospace industry
- **John E. Allison**, senior technical leader, Ford Research and Advanced Engineering, Ford Motor Co., Dearborn, Mich. For contributions to automotive casting technology and computational materials engineering.
- **James Edwin Barger**, chief scientist, BBN Technologies, Cambridge, Mass. For applications of acoustic technology and engineering solutions for the benefit of national security and society.
- **Lawrence D. Burns,** retired vice president of research and development and strategic planning, General Motors Corp.; and professor of engineering practice, University of Michigan, Ann Arbor. For leadership and technical contributions to automotive technologies.
- **Michael J. Cima**, Sumitomo Electric Industries Professor of Engineering, department of materials science and engineering, Massachusetts Institute of Technology, Cambridge. For innovations in rapid prototyping, high-temperature superconductors, and biomedical device technology.
- **Susan T. Dumais**, principal researcher, adaptive systems and interaction group, Microsoft Research, Redmond, Wash. For innovation and leadership in organizing, accessing, and interacting with information.
- **Jacqueline Gail (Berg) Gish,** director of special projects,

Northrop Grumman Aerospace Systems, Redondo Beach, Calif. For technical and programmatic contributions to high-power diode-pumped solid state lasers for defense applications

- **Daniel M. Hancock**, vice president, Global Strategic Product Alliances, General Motors Corp., Pontiac, Mich. For contributions to automotive engines and transmissions and leadership in advanced powertrain technology and engineering education
- **Mark S. Humayun,** professor of ophthalmology, biomedical engineering, and cell and neurobiology, University of Southern California, Los Angeles. For contributions to development and clinical implementation of the visual prosthesis for restoration of sight.

  Donald Liu, retired executive vice president and chief technology officer, American Bureau of Shipping, Houston. For finite-element techniques for ship structural designs and contributions to the principles for safer ships.
- **Joanne M. Maguir**e, executive vice president, Lockheed Martin Space Systems Co., Littleton, Colo. For individual and team leadership of successful space programs.
- **Parker H. "Pete" Petit**, president, The Petit Group, Roswell, Ga. For developing and manufacturing the first home Sudden Infant Death Syndrome monitor and for pioneering pediatric home health care.
- **Wallace R. Wade**, consultant; and retired chief engineer and technical fellow, Powertrain Systems Technology and Processes, Ford Motor Co., Novi, Mich. For implementation of low-emission technologies in the automotive industry.

Among The Previous Members Elected

1991 Dr. Robert L. Taylor
1992 Dr. Ted B. Belytschko
1995 Dr. Thomas J. R. Hughes
2002 Dr. Rakesh Agrawal
2007 Dr. John O. Hallquist

February AVI

A dynamic simulation of a chain.

A dynamic simulation of a chain.

http://www.feainformation.com/avilib/615.avi 4.9MB

The AVI for February

Sent in by:

Torben Faurholdt
faurholdt@faurcon.com
Ph.D. M.Sc. Mechanical Engineering

FaurCon Aps
Advanced Finite Element Analysis
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For complete information please contact Torben.

FaurCon is a consulting company working in the broad field of mechanical engineering.

FaurCon is devoted to provide the best in mechanical engineering consulting within their main fields of expertise:

- Strength and Fatigue Calculation
- Construction
- Optimization
- Process Simulation
- Vibrations Analysis

TOPCRUNCH.ORG

LS-DYNA Benchmarks

Vendor:
HP

Submitter Organization:
Microsoft

Computer Interconnect
HP Proliant® BL2X220c
G6 / HP BLc 4X QDR
Switch 1 Mellanox

Processor
Intel® Xeon® Six Core X5650 2.66 GHz

Submitted:
February 2011

#Nodes x #Processors per Node x #Cores Per Processor = Total #CPU	Time (Sec)	Benchmark Problem
32 x 2 x 6 = 384	5247	car2car
16 x 2 x 6 = 192	8516	car2car
8 x 2 x 6 = 96	16165	car2car
4 x 2 x 6 = 48	27543	car2car
2 x 2 x 6 = 24	50140	car2car
1 x 2 x 6 = 12	99591	car2car

LS-DYNA Users

Challenge
Your Knowledge

Please feel free to send a Challenge Question to agiac99@aol.com

The following question was sent by Uli Franz of DYNAmore – DYNAmore is headquartered in Germany. http://www.dynamore.de

You may answer the questions and write the answers in the boxes below. The LS-DNYA Keyword User's Manual will help you to succeed.

C	O	N	T	R	O	L	_																
C	O	N	T	R	O	L	_																
M	A	T	_																				
M	A	T	_																				
C	O	N	T	R	O	L	_																
C	O	N	T	R	O	L	_																

QUESTIONS – (Answer is on last page of the news.)

Line 1: In which card can you specify that a highly distorted shell element will be deleted if its Jacobian is negative?

Line 2: Where can you set a flag for additional NaN checks in the force and moment arrays?

Line 3: Which material in LS-DYNA has a hyphen in the name?

Line 4: What is the name of material 181?

Line 5: In which card can you switch bulk viscosity for shells on?

Line 6: What is the variable (flag) name to force the contact algorithms to take the initial penetrations during the simulation into account, instead of moving the nodes to a non-penetration position at the beginning of a simulation?

Line 7: In which card can you switch the time-stepping scheme?
E.g. from explicit to implicit?

Website Introduction

High Strain Rate Testing

Srdjan Simunovic, simunovics@ornl.gov - Oak Ridge National Laboratory

Additional sites of interest:

High rate tests of materials with open access are:

High Strain Rate Testing of Advanced High Strength Steels

http://thyme.ornl.gov/ASP_Main/crashtests/crashtests_main.cgi

- Circular Tube Crush Tests, TMAC
- Octagonal Tube Crush Tests, TMAC
- Spotweld Tests, Drop Tower
- Base Material Tests, High Speed Hydraulics

High Strain Rate Characterization of Mg Alloys

http://thyme.ornl.gov/Mg_new

It is important to note the following:

1. Websites contain only test data.

However, for coupon tests, there are tools on the website that allow one to extract optimal piecewise linear fits to the experiments (for a prescribed tolerance). The piecewise linear fit can then be used in models like 24.

2. Tests show both successful and unsuccessful tests

We are working on test development and need all data out for the collaborators to discuss.

Previously Introduced Sites:

(FEM) models of semitrailer trucks for simulation of crash events

http://thyme.ornl.gov/FHWA/TractorTrailer

Single Unit Truck crash model documentation is at:

http://thyme.ornl.gov/FHWA/F800WebPage

Stuba GreenTeam

Slovak University of Technology in Bratislava

www.sgteam.eu -

SGT is registered on FS 2011 in Silverstone

From The Website Stuba GreenTeam:

Stuba GreenTeam is a racing team representing Slovak University of Technology in Bratislava. Our goal is to develop, design and manufacture a racing, participate on Formula Student electric and take the challenge to compete other racing teams from all over the world.

Our team has 25 member, students from automotive department, applied mechanics, manufacturing systems and electrical engineering. We all work hard while our leuisure time in order to build an electric race car, with limited time and resources.

This project is a great oppurtunity for students who want to gain technical and practical experience and professional grow. Working in a team is not only about hard labour, but happens to be a lot of fun.

NEWS:

Stuba Green Team from SjF STU in Bratislava was accepted for the Formula Student 2011 competition after successful registration to Class 1A.

The Formula Student 2011 event will provisionally be held on Wednesday 13 to Sunday 17 July 2011 at Silverstone Circuit, Northamptonshire, UK. Formula Student is Europe's biggest educational motorsport event. University students are challenged to design and build a single seat racing car and compete with it in a series of static and dynamic events. By encouraging teams to be innovative and to work on both the technical and business aspects of the project, Formula Student gives students from around the world the ideal opportunity to learn new skills and showcase their talent.

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Aerospace Information

http://www.aerospaceinformation.com

The picture of the month does not depict use of any software. It is chosen, by FEA Information Inc. staff, solely based on aerospace dynamics and/or aviation history/ or interest.

Lockheed Martin/Boeing F-22 Raptor representing our United States next generation of military aviation. Our F-22 represents the most advanced systems of technology. Utilizing technology, design and experience to field a system that is designed to be the top of the line United States Air Force fighter.

Among the aerospace publications presented at the LS-DYNA Conferences:

Investigation of *MAT_58 for Modeling Braided Composites
http://www.dynalook.com/international-conf-2010/Aerospace-1-1.pdf

Development of Hail Material Model for High Speed Impacts on Aircraft Engine
http://www.dynalook.com/international-conf-2010/Aerospace-1-2.pdf

Engine Impeller Sub-Fragmentation Simulation Using EFG Method
http://www.dynalook.com/international-conf-2010/Aerospace-1-3.pdf

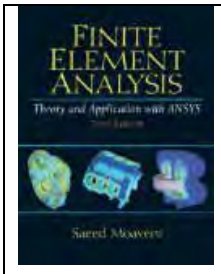
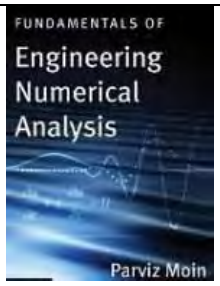
Modeling Bird Impact on a Rotating Fan: The Influence of Bird Parameters
http://www.dynalook.com/international-conf-2010/Aerospace-1-4.pdf

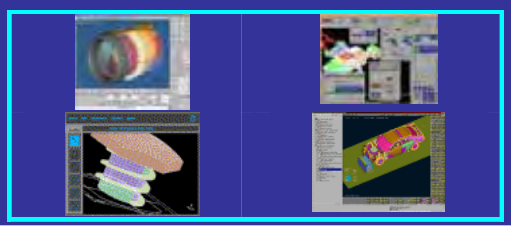
LS-DYNA Implemented Multi-Layer Fabric Material Model Development for Engine Fragment Mitigation
http://www.dynalook.com/international-conf-2010/Aerospace-1-5.pdf

Predicting the Dynamic Crushing Response of a Composite Honeycomb Energy Absorber Using Solid-Element-Based Models in LS-DYNA
http://www.dynalook.com/international-conf-2010/Aerospace-2-5.pdf

Reading Reference Library

Available From Amazon

	Finite Element Analysis Theory and Application with ANSYS (3rd Edition)		Arbitrary Langrangian-Eulerian and Fluid Structure Interaction.
	Isogeometric Analysis: Toward Integration of CAD and FEA		NURBS for Curve & Surface Design: From Projective Geometry to Practical Use
	A First Course in Finite Elements		Engineering Numerical Analysis



Pre-Processing

Post Processing

Model Editing

A preprocessor is a program that processes its input data to produce output. This data is then used as input to another program.

BETA CAE Systems S.A.

http://www.beta-cae.gr/

Provides complete CAE pre- and post-processing solutions. ANSA, the world wide standard pre-processor and full product modeler for LS-DYNA, with integrated Data Management and Task Automation. µETA, with special features for the high performance an effortless 3D & 2D post-processing of LS-DYNA results.

Engineering Technology Associates, Inc.

http://www.inventiumsuite.com

PreSys is an advanced Pre/Post Processor. PreSys is a full-featured, core solution that can be used on its own or with a variety of available add-on applications. The system offers advanced automeshing tools to provide the highest quality mesh with little CAD data preparation. It also features a scripting interface and model explorer feature for in-depth data navigation.

Oasys, Ltd

http://www.oasys-software.com/dyna/en/

Oasys Primer is a model editor for preparation of LS-DYNA input decks. - Oasys D3Plot is a 3D visualization package for post-processing LS-DYNA analyses using OpenGL® (SGI) graphics.

JSOL Corporation

http://www.jsol.co.jp/english/cae/

JVISION is a general purpose pre-post processor for FEM software. Designed to prepare data for, as well as support, various types of analyses, and to facilitate the display of the subsequent results.

Livermore Software Technology Corporation

http://www.lstc.com

LS-PrePostis an advanced interactive program for preparing input data for LS-DYNA and processing the results from LS-DYNA analyses.

LS-DYNA Distributors

LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

Alpha Order by Country

Australia	Leading Eng. Analysis Providers - LEAP http://www.leapaust.com.au/ info@leapaust.com.au
Canada	Metal Forming Analysis Corp - MFAC http://www.mfac.com/ galb@mfac.com
China	ETA China http://www.eta.com.cn/ lma@eta.com.cn
China	OASYS Ltd. (software house of Arup) http://www.oasys-software.com/dyna/en stephen.zhao@arup.com
France	ALYOTECH TECH. http://www.alyotech.fr nima.edjtemai@alyotech.fr
France	ALLIANCE SVCE. PLUS - AS+ http://www.asplus.fr/ls-dyna v.lapoujade@asplus.fr
Germany	CADFEM http://www.cadfem.de/en lsdyna@cadfem.de
Germany	DYNAmore http://www.dynamore.de/ uli.franz@dynamore.de
Greece	PhilonNet Engineering Solutions http://www.philonnet.gr stavroula.stefanatou@philonnet.gr

LS-DYNA Distributors

LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

India	OASYS Ltd. (software house of Arup) http://www.oasys-software.com/dyna/en lavendra.singh@arup.com
India	EASi Engineering http://www.easi.com/ rvenkate@easi.com
India	CADFEM Eng. Svce India http://www.cadfem.in/ info@cadfem.in
Italy	EnginSoft SpA http://www.enginsoft.it/ info@enginsoft.it
Japan	JSOL Corporation http://www.jsol.co.jp/english/cae cae-info@sci.jsol.co.jp
Japan	ITOCHU Techno-Solutions Corp. http://www.engineering-eye.com/ ls-dyna@ctc-g.co.jp
Japan	FUJITSU http://jp.fujitsu.com\solutions\hpc\app\lsdyna\

LS-DYNA Distributors

LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

Korea	Theme Engineering http://www.lsdyna.co.kr/ wschung@kornet.net
Korea	Korea Simulation Technologies http://www.kostech.co.kr young@kostech.co.kr
Netherlands	Infinite Simulation Systems, BV http://www.infinite.nl/ j.mathijssen@infinite.nl
Sweden	Engineering Research AB http://www.erab.se/ sales@erab.se
Taiwan	Flotrend Corporation http://www.flotrend.com.tw/ gary@flotrend.tw
Russia	State Unitary Enterprise –STRELA info@ls-dynarussia.com

LS-DYNA Distributors

LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

United Kingdom	OVE ARUP & PARTNERS http://www.oasys-software.com/dyna/en/ dyna.sales@arup.com
USA	Livermore Software Tech. Corp. - LSTC http://www.lstc.com/ sales@lstc.com
USA	Engineering Tech. Assc. Inc. – ETA http://www.eta.com/ sales@eta.com
USA	DYNAMAX http://www.dynamax-inc.com/ sales@dynamax-inc.com

Finite Element Analysis

North America Consultants & Engineering Services

FEA Consultants use a wide range of software simulation programs. Their expertise using specific programs for their customers offers the ability for controlling the modeling and analysis of structures, systems, products and many other applications. Consultants and Engineering Services are used by government, homeland security, court trials, and a number of industries needing to have outside sources for expertise in FEA

http://www.fea-consulting.com

North America

Located: Texas **KBEC** **Khan Bui** (512) 363-2739	**Located: Connecticut** **CAE Associates** **http://www.caeai.com** (203) 758-2914
Located: Oregon **Predictive Engineering** **http://predictiveengineering.com** George Laird, Ph.D., P.E (503) 206-5571	**Located: California** **Schwer Engineering** **http://schwer.net** Len Schwer (707) 837-0559
Located: Illinois **APACS Services, Inc.** **https://sites.google.com/site/apacsservicesinc/** Alex Pinsker, Ph.D., P.E. Phone: 847-317-1910	**Located: Ohio** **AEG Product Engineering Svce.** **http://engineering-group.com** **support@enginering-group.com**

EUROPE

DENMARK	FaurConAps Contact: faurholdt@faurcon.com
FRANCE	ALYOTECH TECHNOLOGIES Contact: nima.edjtemai@alyotech.fr
FRANCE	ALLIANCE SERVICES PLUS Contact: v.lapoujade@asplus.fr
Germany	CADFEM GmbH Contact: ls-dyna@cadfem.de
Germany	DYNAmore Contact: uli.franz@dynamore.de
ITALY	DYNAmore Contact uli.franz@dynamore.de
ITALY	EnginSoft SpA Contact: info@enginsoft.it
Netherlands	Infinite Simulation Systems, B.V Contact: j.mathijssen@infinite.nl
Sweden	Engineering Research AB Contact: sales@erab.com
UK	OVE ARUP & PARTNERS Contact: brian.walker@arup.com

Software & Hardware Alliances

Software Solutions
SMP/MPP Hardware & OS
MPP & Interconnect MPI

ETA – DYNAFORM & VPG

http://www.eta.com

Includes a complete CAD interface capable of importing, modeling and analyzing, any die design. Available for PC, LINUX and UNIX, DYNAFORM couples affordable software with today's high-end, low-cost hardware for a complete and affordable metal forming solution.

ETA – VPG

http://www.eta.com

Streamlined CAE software package provides an event-based simulation solution of nonlinear, dynamic problems. eta/VPG's single software package overcomes the limitations of existing CAE analysis methods. It is designed to analyze the behavior of mechanical and structural systems as simple as linkages, and as complex as full vehicles.

OASYS software for LS-DYNA

http://www.oasys-software.com/dyna/en/

Oasys software is custom-written for 100% compatibility with LS-DYNA. Oasys PRIMER offers model creation, editing and error removal, together with many specialist functions for rapid generation of error-free models. Oasys also offers post-processing software for in-depth analysis of results and automatic report generation.

Software & Hardware Alliances

Software Solutions
SMP / MPP Hardware & OS
MPP & Interconnect MPI

ESI Group Visual-CRASH For DYNA

http://www.esi-group.com

Visual-Crash for LS-DYNA helps engineers perform crash and safety simulations in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support. Being integrated in ESI Group's Open VTOS, an open collaborative multi-disciplinary engineering framework, Visual-Crash for DYNA allows users to focus and rely on high quality digital models from start to finish. Leveraging this state of the art environment, Visual Viewer, visualization and plotting solution, helps analyze LS-DYNA results within a single user interface.

BETA CAE Systems S.A.– ANSA

http://www.beta-cae.gr

Is 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

http://www.beta-cae.gr

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

Crash Test Dummy Models

Anthropomorphic Test Devices
Crash Test Devices
Websites / Information

FEA Information

http://www.ls-dynadummymodels.com

LSTC's Models

http://www.lstc.com/models/

Arup Cellbond Barrier Models

http://www.oasys-software.com/dyna/en/fe-models/barrier.shtml

Arup Pedestrian Impactor Models

http://www.oasys-software.com/dyna/en/fe-models/pedestrian.shtml

Arup RCAR Barrier Model

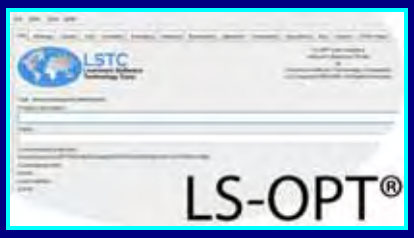
http://www.oasys-software.com/dyna/en/fe-models/rcar.shtml

DYNAMore Models for

http://www.dummymodels.com

LS-DYNA Dummy Mailing List

sarba@lstc.com



The Official LS-OPT Support site

http://www.lsoptsupport.com

SUPPORT SITES FOR LS-DYNA

LS-OPT User's Group on Google

The intention of this group is to support LS-OPT users and to provide useful information according to LS-OPT. In addition, the user group provides the possibility to get in contact with other users and to share experience on the application of LS-OPT.

In order to subscribe to the group, please use the following (external) link:
https://www.google.com/accounts/ServiceLogin?service=groups2&passive=1209600&continue=http://groups.google.com/group/lsopt_user_group&followup=http://groups.google.com/group/lsopt_user_group

The Official LS-OPT Support site
[http://www.lsoptsupport.com] is jointly monitored by DYNAmore GmbH (Germany) and LSTC (US)

The LS-OPT support site was jointly developed to keep you updated with current information. During January 2010 the site will be updated with

"Getting Started"
A first place to stop for new users to view the LS-OPTui and the basic procedures of optimization with LS-OPT.

How To's
A collection of information and examples for several tasks with LS-OPT

Documents
A collection of documents related to LS-OPT, Optimization and Stochastics

Examples
This Section demonstrates LS-OPT capabilities by means of a series of examples

Glossary
Alpha order to view definitions such as Anova, Bias error, Iteration and other technical terms.

Downloads
Downloads specific to LS-OPT

FAQ's
Questions related to Optimization, Robustness and Reliability Analysis
Answers are posted on the LS-OPT Support Site
http://www.lsoptsupport.com/faqs

News
Latest news relation to, or about LS-OPT

June 1-3 2011
BETA CAE Systems SA
4th ANSA & µETA Int'l Conference
Makedonia Palace
Thessaloniki, Greece

For Complete Information and full conference announcement:
http://www.beta-cae.gr/conference04_announcement.htm

Being consistent to our biannual appointment, it is our pleasure to invite you to attend the 4th ANSA & µETA International Conference that will be held from June 1st to June 3rd 2011, in Classical Makedonia Palace Hotel, Thessaloniki, Greece.

The principal aims of this event are to bring the CAE Community together with BETA CAE Systems S.A. and to promote an international exchange of the latest concepts, knowledge and development requirements on our flagship software products, ANSA & µETA. Technical papers will be presented outlining the latest advances in CAE strategy, methodology, techniques and applications related to our products. Participants will have the opportunity to be informed about the latest software trends, demonstrate their concepts and achievements and present new development requirements.

Following the success of our previous events and after the request of the majority of the participants, the duration of our 4th conference will be of three days. The closer technical communication with the software developers' team of our products, within the framework of a technical forum, features this three-day conference.

Further discussions, sessions, meetings and events will allow the interaction between participants and organizers. Senior executives of our company, the engineers from the development and services teams and our business agents from around the world will be glad to meet with customers and users, to discuss the applications, the existing functionality, latest enhancements and future development plans of our software products. We expect that this will be a unique opportunity for you to share your success and for us to share our vision.

The attire of the event is business casual. The language of the event is English.

Important Dates:

Abstracts: February 25th 2011
Acceptance: March 11th 2011
Registration: April 15th 2011
Final manuscripts: April 29th 2011
Presentations files: April 29th 2011
Event: June 1st to June 3rd 2011

May 23rd & 24th, 2011
The 8th European
LS-DYNA Users Conference
hosted by ALYOTECH
Strasbourg (France)

8th European LS-DYNA© Users Conference Strasbourg – France

The 8th European LS-DYNA Users Conference hosted by ALYOTECH with the support of ARUP, DYNAMORE, ERAB and LSTC. The conference will be an excellent occasion to meet LS-DYNA© users from all over the world and to share LS-DYNA© applications in different areas.

Presentations will cover various LS-DYNA© related topics, new developments and new applications from academic and industrial engineers. An exhibition area will allow to obtain information about the latest software and hardware developments related to LS-DYNA©.

Several training classes will be held immediately before or after the Conference:

- Crash & Impact Modeling
- FSI & ALE in LS-DYNA
- Material Modeling and User-Defined Materials in LS-DYNA
- Modeling & Simulation with LS-DYNA
- SPH & EFG Methods in LS-DYNA
- Optimization with LS-OPT
- Sheet Metal Forming with LS-DYNA & DYNAFORM
- LS-PrePost
- Using LS-DYNA for Heat Transfer with Hot Stamping Applications
- LS-DYNA Applications to Protective structures, blasts, vehicle mines, ...

Known as the European Capital, Strasbourg is home to the Council of Europe, the Human Rights Building and the European Parliament. It is a major hub, making for an easy access to the European LS-DYNA© meeting!

We hope to count you among our participants very soon!

Additional information/ registration:
www.lsdynaeuc.alyotech.fr

Mark your 2012 calendar:
The 12th International LS-DYNA® Users Conference.

Hosted by LSTC, the venue will again be The Hyatt Regency, Dearborn, MI

The First Call for Papers will officially be sent approximately April, 2011.
(I have already received two abstracts; therefore, I am pre-posting this now)
Abstracts will be due November 2011
Notification of acceptance will be January 01, 2012.
Paper Deadline will be mid March 01, 2012

Among the application areas being accepted for paper submission are the following:
Additional ones may be added next month

Aerospace	Heat Transfer	Seismic Engineering
Automotive Crashworthiness	Impact & Drop Testing	Ship Building
Ballistic & Penetration	Manufacturing Processes	Transportation
Biomechanics	Metal Forming	Virtual Proving Ground
Civil Engineering	Modeling Techniques	Nuclear Applications
Electro Magnetics	Occupant Safety	

We will be reviewing other application areas for acceptance, since this is early notice, by request.

At this time if you have any you would like added, or have any questions on paper submissions write to Marsha Victory – LSTC – vic@lstc.com

We will be posting all requirements for abstracts, paper submission including an FAQ in the April news and automating many features.

2011
carhs
***Automotive* CAE Grand Challenge**
April 19, 2011

http://www.carhs.de/de/training/seminar_functions.php?sem_code=1669

For Complete Information please visit their website.

Excerpt:…

The Expert Dialog

In the last 20 years computer simulation has become an indispensable tool in automotive development. Tremendous progress in software and computer technology make it possible today to access product and process performance before physical prototypes have been built. Applications of computer simulation cover nearly all aspects of product and process design form crashworthiness to manufacturability.

Challenges in virtual vehicle development

Despite of significant progress in simulation technology and impressive results in industrial application there remains a number of problems (challenges) which prevent the move to a "100% digital prototyping".

Grand Challenge as a platform for dialog

The automotive CAE Grand Challenge stimulates the dialog between users, scientists and software developers in order to promote the solution of these challenges.

Annually the most important (grand) challenges – whose resolution would further increase the possibilities of computer simulation in automotive development – are being identified through a survey among simulation experts of the automotive industry. The challenges identified in 2011 are:

- Crash: Models of Connections (spot welds etc.)
- Durability: Influence of Manufacturing Effects
- NVH: Models for Damping Materials
- Stamping: Material Models (including Failure)
- Optimization: Topology and Shape Optimization
- Analysis Process: Model Building, Process Automation, Quality Assurance

In the conference one session will be dedicated to each "Grand Challenge". In each session a simulation expert from the automotive industry will first explain the importance of the individual challenge. Next a researcher will explain the state of research on the subject. This will be followed by presentations from the software companies involved in the discipline on their efforts to solve the individual challenge.

Challenge 1 –

Crash:
Models of Connections (e.g. spot welds) in Crash Analysis

Challenge 2 –

Durability:
Influence of Manufacturing Effects in Durability Analysis

Challenge 3 –

NVH:
Models for Acoustic Damping Materials in Acoustic Analysis

Challenge 4 –

Stamping:
Material Laws including Failure in Stamping Simulation

Challenge 5 –

Optimization:
Topology and Shape Optimization

Challenge 6 –

Process:
Model Building, Process Automation + Quality Assurance

Among the exhibitors and/or presenters are:

- BETA CAE Systems
- Datapoint Labs
- Dynamore
- ESI
- MSC.Software
- Scapos / Fraunhofer SCAI

2011
6th International Conference on Multiphase Flow

Organised By:

University of New Mexico, USA
& Wessex Institute of Tech., UK

Sponsored By:

WIT Transactions on Engineering Sciences

View the conference website, which has full details about the conference objectives, topics and submission requirements at:

http://www.wessex.ac.uk/multiphase2011rem4.html

Conference Topics:

- Bubble and drop dynamics
- Flow in porous media
- Turbulent flow
- Multiphase flow simulation
- Image processing
- Heat transfer
- Interaction of gases, liquids and solids
- Interface behaviour
- Small scale phenomena
- Atomization processes
- Liquid film behaviour

Conference Secretariat:

Irene Moreno Millan,
Conference Coordinator,
Multiphase Flow
Wessex Institute of Technology,
Ashurst Lodge, Ashurst
Southampton, SO40 7AA

Telephone: 44 (0) 238 029 3223
Fax: 44 (0) 238 029 2853
Email: imoreno@wessex.ac.uk

Please circulate this announcement to colleagues who may be interested in this conference.

They can subscribe by e-mailing enquiries@wessex.ac.uk with 'Subscribe - Multiphase Flow' as the subject line.

April 7-8th, 2011
3rd Annual
China Commercial Aircraft
Summit & Expo

April 7-8th InterContinental Pudong Shanghai China

http://www.opplandcorp.com/aero/

China is the world's most dynamic market for commercial airplanes, forcasted to require for 3,770 new commercial airplanes valued at $490 billion over the next 20 years.

China has also become the largest aircraft manufacturer in Asia. According to a report released by Frost & Sullivan, the center of aircraft manufacturing in the Asia-Pacific area is rapidly shifting to China and the country earned $13.1 billion from the industry in 2009, surpassing Japan, to become the No.1 manufacturer in Asia.

Aircraft manufacturers are rushing into China to cut costs in a short term, and secure future growth in a long term. China Commercial Aircraft Summit has become an unparalied platform for Chinese and international aerospace manufacturers to gain first-hand informations of aerospace development plans & strategies of China and schedule meetings with each other.

WHY YOU CAN'T AFFORD MISSING 2011 EVENT

- Updates on the suppliers selection work of China's C919 program
- The changing global aerospace landscape: Technology innovation for green aviation
- AVIC's strategy of fully engaging into the global aerospace industry chain
- Aircraft mfg. subcontracting in China: opportunities and challenges ahead
- Cost optimization and supply chain management strategy for aircraft manufacturing in China
- Next generation aero engine technology
- Material technology innovation in pursuit of energy efficient airplanes

Feb. 8, 2011
Panasas Plans Major Hiring Ramp as Revenue Grows by More than 40 Percent in 2010

FREMONT, Calif., Feb. 8, 2011 – Panasas®, Inc., the leader in high performance parallel storage for business-critical applications, today announced that the company achieved record revenue in 2010, increasing by more than 40 percent for the year. Building on five consecutive years of uninterrupted revenue growth, Panasas plans to significantly ramp employee headcount by more than 50 percent across several key functions including engineering, sales and marketing in 2011.

The company attributes its strong growth to the introduction of Panasas ActiveStor™ 12 (PAS 12), the world's fastest parallel storage system and success in key vertical markets including energy, government, bioscience, and other core research and development sectors. The company's global reach extends to 50 countries, with individual HPC installations supporting more than four petabytes of data storage in a single global namespace.

"Panasas is one of the best known and most respected vendors in the HPC storage market, which IDC projects will continue to exhibit healthy growth over the next five years," said Steve Conway, IDC research vice president, High Performance Computing. "With its experienced leadership and strong portfolio of HPC products, Panasas is well positioned to capitalize on the increasing needs for HPC storage and data management in the government, academic and commercial sectors."

Technology Leadership

Panasas recently launched PAS 12 featuring the Panasas PanFS™ parallel file system. PAS 12 delivers massive improvement in both parallel HPC performance as well as traditional NFS for scale-out NAS. Panasas continues to play a leadership role in the storage industry-wide roll-out of pNFS, a networked storage standard that aims to bring HPC performance to broader markets.

Expanded Executive Leadership

Panasas is now positioned to benefit from the strong executive leadership team it put in place over the course of 2010, starting with the hire of Faye Pairman, president and chief executive officer, and continuing with the hires of Barbara Murphy, chief marketing officer; Bill Ribera, vice president of sales; and Celeste Baranski, senior vice president of engineering and operations.

"As we acknowledge the many successes Panasas achieved last year, the company is laser focused on growing the team to deliver compelling products, win new verticals, and continue to increase

market share in 2011 and beyond," said Faye Pairman, president and CEO of Panasas.

Industry Awards

- HPCwire Readers' Choice Award for the Best HPC Storage Product or Technology (Panasas ActiveStor parallel storage products)
- HPCwire's "People to Watch in 2011" (Faye Pairman)
- InfoWorld "The Best CTOs of 2010" Award (Garth Gibson)
- About Panasas

Panasas, Inc., the leader in high-performance parallel storage for business-critical applications, enables customers to rapidly solve complex computing problems, speed innovation and accelerate new product introduction. All Panasas storage products leverage the patented PanFS™ storage operating system to deliver superior performance, data protection, scalability and manageability. Panasas systems are optimized for demanding storage environments in the energy, government, finance, manufacturing, bioscience and higher education industries. For more information, visit www.panasas.com.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements include, among others, statements concerning our future financial performance, our ability to maintain and control costs, the effectiveness of our business strategies, market share opportunities, and reception of our value proposition, as well as demand for and adoption of our technologies in our customer markets. These statements involve known and unknown risks, uncertainties, and other factors that may cause actual results to be materially different from any future results expressed or implied by the forward-looking statements. Forward-looking statements are based on management's current, preliminary expectations and are subject to various risks and uncertainties, including: the potential for slower than expected growth of the storage market or in customer adoption of our storage solutions, particularly in light of substantial uncertainty about macroeconomic trends in the United States and globally, and their potential impact on information technology spending; the impact of competitive conditions.

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Media Contact: Angela Griffo
Trainer Communications
panasas@trainercomm.com
(949) 842-7695

Feb 18, 2011

CRAY - Press Release

Swiss National Supercomputing Centre Orders First Next-Generation Cray XMT Supercomputer

http://www.cray.com/About/Newsroom.aspx

SEATTLE, WA and MANNO, SWITZERLAND, Feb 18, 2011 -- Global supercomputer leader Cray Inc. (NASDAQ: CRAY) today announced that the Swiss National Supercomputing Centre (CSCS) in Manno, Switzerland has awarded a contract to Cray to acquire a next-generation Cray XMT supercomputer. The announcement, which is being made in conjunction with a CSCS-hosted workshop focused on large-scale data analysis, marks Cray's first order for the Company's next-generation Cray XMT system.

CSCS, which is currently home to a Cray XT5 supercomputer nicknamed "Rosa" and was also the recipient of the first-ever Cray XE6 system, will use its next-generation Cray XMT supercomputer for solving problems that require large-scale data analysis. The massively multithreaded system will be part of a new project at CSCS called EUREKA, which will provide Swiss scientists with dedicated resources for large-scale data analysis services. The proposed facility will be used for large-scale analysis of unstructured data and data mining, and is designed for parallel applications that are dynamically changing, require random access to shared memory and typically do not run well on conventional systems.

"The next generation of the Cray XMT supercomputer is purpose-built for performing real-time analysis of web-scale data," said Shoaib Mufti, director of knowledge management in Cray's Custom Engineering group. "The system is ideal for analyzing dynamically changing data with complex relationships between time, space, events and communities, and excels at analytics tasks including pattern matching, scenario development, behavioral prediction, anomaly identification and graph analysis. The match between the needs of CSCS users and the strengths of the next-generation Cray XMT is an excellent fit, and we are very pleased that CSCS has signed the first contract for our new system."

Dominik Ulmer, General Manager at CSCS, said, "Many researchers are faced with massive volumes of data through experiments, observations and simulations on a vast array of scientific applications such as material sciences, medicine genomics, high-energy physics, climate research and astrophysics. The next-generation Cray XMT will enable our scientists to perform data analysis applications that differ significantly from the current high performance computing workloads in that the data structures are often irregular (based on strings, trees, graphs and networks) without the high degree of spatial and temporal locality seen in physics-based simulations using regular matrices."

Introduced in 2006, the Cray XMT supercomputer features a massive, multithreaded processing architecture designed for large data-driven problems

that exist in unrelated and diverse data sets. Each processor in the Cray XMT system can handle up to 128 concurrent threads. The system is architected to scale from 16 processors up to multiple thousands of processors that can operate on multiple terabytes of shared physical memory.

In 2011, Cray plans to launch the next-generation of the Cray XMT supercomputer, and CSCS is expected to receive its system later this year.

About Cray Inc.: As a global leader in supercomputing, Cray provides highly advanced supercomputers and world-class services and support to government, industry and academia. Cray technology is designed to enable scientists and engineers to achieve remarkable breakthroughs by accelerating performance, improving efficiency and extending the capabilities of their most demanding applications. Cray's Adaptive Supercomputing vision is focused on delivering innovative next-generation products that integrate diverse processing technologies into a unified architecture, allowing customers to surpass today's limitations and meeting the market's continued demand for realized performance. Go to www.cray.com for more information.

About CSCS: Founded in 1991, CSCS, the Swiss National Supercomputing Centre, develops and promotes technical and scientific services for the Swiss research community in the fields of high-performance computing. CSCS enables world-class scientific research by pioneering, operating and supporting leading-edge supercomputing technologies. The centre collaborates with domestic and foreign researchers, and carries out its own research in scientific computing. Located at Manno near Lugano, in the southern, Italian-speaking part of Switzerland, CSCS is an autonomous unit of the Swiss Federal Institute of Technology in Zurich (ETH Zurich).

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 Cray's ability to begin commercial deliveries of the next-generation of the Cray XMT when expected and Cray's ability to deliver the system required for the CSCS procurement later this year and that meets CSCS's needs. 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. Factors that could affect actual future events or results include, but are not limited to, the risk that Cray is not able to successfully complete its planned product research and development efforts in a timely fashion or at all, the risk that the system delivered to CSCS does not perform as expected and such other risks as identified in the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2010, and from time to time in other reports filed by Cray with the U.S. Securities and Exchange Commission. 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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February 14, 2011
SGI - Press Release
University of São Paulo Selects SGI® Altix® ICE 8400 to Accelerate Astronomy Research

SGI HPC System with AMD Opteron™ 6100 Processors Dramatically Increases Scale and Scope of Computing Research

FREMONT, CA. — February 14, 2011 — SGI (NASDAQ: SGI), a trusted leader in technical computing, today announced that the Astronomy Department of the University of São Paulo has selected SGI® Altix® ICE 8400 for its high performance computing (HPC) system to enable advanced scientific astronomical research in Brazil.

As theoreticians at the University of São Paulo are creating new and more advanced physical models to study the universe, they require immense processing power from larger, faster and more massively parallel computer clusters. The Astronomy Department selected Altix ICE 8400 with AMD (NYSE:AMD - News) processors to uniquely meet its intensive computing needs, enabling them to solve problems that were previously not possible.

"Much of the research done in our department critically depends on the computer resources available," said Dr. Alex C. Carciofi, professor in the Astronomy Department of the University of São Paulo. "The computing power of our new SGI Altix ICE 8400 system will allow us to dramatically increase the scale and scope of the problems we are studying, helping us to understand more about this vast universe in which we all live."

The University of São Paulo's Altix ICE 8400 consists of 2,304 cores of AMD Opteron™ 6172 processors and contains over 4.6 TB of main memory. With AMD Opteron 6100 Series processor support, the Altix ICE 8400 is now capable of delivering up to 1,536 processor cores in a single rack, and can seamlessly scale from 32 to 65,536 compute nodes. Additionally, the Altix ICE 8400 now provides up to 14.13 teraflops of compute capability and up to 8.192 TB of memory per rack.

"The AMD Opteron 6100 Series processor provides the performance-per-dollar-per-watt customers like the University of São Paulo demand for the increasingly complex research and data needs," said Pat Patla, vice president and general manager, Server Business, AMD. "By combining the power of AMD Opteron 6100 Series processors with SGI's high-performance technical computing solutions, we can deliver HPC solutions that continue to push the envelope beyond anything we've seen before."

"The momentum continues with SGI Altix ICE with AMD processors, as we now offer full and immediate support of the newly released AMD Opteron 6100 Series

processor models across our entire scale-out server lineup," said Bill Mannel, vice president of product marketing at SGI. "This includes Altix® ICE high performance computing (HPC) clusters, CloudRack™ and Rackable™ scale-out servers, and SGI® InfiniteStorage servers."

Availability

A wide selection of SGI scale-out server platforms supporting AMD Opteron 6100 Series processors is immediately available. For information about specific configurations and pricing, please visit SGI at www.sgi.com/amd.

About the Astronomy Department of the University of São Paulo

The Astronomy Department of the University of São Paulo is the largest and most important center for astronomical research in Brazil, with 38 professors, about 30 post-doctoral research associates and almost 100 graduate students. With its 50-year long research tradition, the department is involved in most areas of modern astronomy, both from the theoretical and observational points of view - from the stars to the cosmos itself, from galaxies to the intergalactic medium, and from the Solar System to exoplanet research.

About SGI

SGI, a trusted leader in technical computing, is focused on helping customers solve their most demanding business and technology challenges. Visit www.sgi.com for more information.

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Gina Titus
415-512-0770
SGIPR@schwartz-pr.com

Training Courses

CADFEM GmbH

The Complete Training Courses Offered Can Be Found At: http://www.cadfem.de
Please check the site for accuracy and changes.
Among the many course offering are the following:

Explicit structural mechanics with ANSYS Workbench and LS-DYNA

Beside the trainings on all aspects of short time dynamics we offer also various seminars on new methods available in LS-DYNA.

- Seminar: Introduction to explicit structural mechanics with ANSYS LS-DYNA and LSTC LS-DYNA
- Seminar: Material modeling with LS-DYNA
- Seminar: Simulation of composites with ANSYS Composites PrepPost and LS-DYNA
- Online-Seminar: Contact modeling with LS-DYNA
- Online-Seminar: Modeling joints with LS-DYNA
- Seminar: Crash simulation with LS-DYNA

optiSLang

Parametric simulation and optimization with optiSLang
optiSLang is one of the most popular solver for optimization and robust design analyses

Online-Seminar: Advanced parametric simulation with ANSYS Workbench and optiSLang

AnyBody

With AnyBody it is possible to simulate the kinematics of a human body like computing muscle forces for example.

- Seminar: Introduction to simulation of joint- and muscle- forces with AnyBody
- Seminar: Efficient coupling of AnyBody with ANSYS Workbench

Training Courses

Livermore Software Technology Corporation

Start Date	Location	
3/21/2011	MI	LS-PrePost (no charge with Intro to LS-DYNA)
3/22/2011	MI	Intro to LS-DYNA (3-1/2 days; half day on Friday)
4/11/2011	MI	Advanced Options in LS-DYNA
4/13/2011	MI	Implicit
5/02/2011	CA	LS-PrePost (no charge with Intro to LS-DYNA)
5/3/2011	CA	Intro to LS-DYNA (3-1/2 days; half day on Friday)

Classes Offered by Paul Du Bois and Len Schwer:

Concrete & Geomaterials
10/4/2011 10/5/2011 Tue-Wed
Modeling & Simulation
10/6/2011 10/7/2011 Thurs-Fri
Blast Modeling
10/11/2011 10/12/2011 Tue-Wed
Penetration Modeling
10/13/2011 10/14/2011 Thurs-Fri

Training Courses

Engineering Research AB
ERAB

The Complete Training Courses Offered Can Be Found At http://www.erab.se/courses/
Please check the site for accuracy and changes.
Among the many course offering are the following:

LS-PrePost 3, introduction
March 7, 2011

LS-DYNA, Introductory
March 8, 2011

ANSA & Metapost, Introductory
March 15, 2011

ANSA CFD Meshing
March 17, 2011

LS-DYNA, implicit analysis
March 22, 2011

LS-DYNA, Simulation of sheet metal forming processes
May 3, 2011

LS-DYNA, Material modeling
May 10, 2011

LS-PrePost 3, introduction
September 12, 2011

LS-DYNA, introductory
September 13, 2011

LS-DYNA, Adv. training in impact analysis
September 20, 2011

LS-DYNA, implicit analysis
October 11, 2011

ANSA & Metapost, Introductory
October 25, 2011

LS-OPT, Optimization and robust design
November 14, 2011

Training Courses

Alliance Services Plus (AS+)

The complete Training Courses offered can be found at
http://www.asplus.fr/ls-dyna

Please check the site for accuracy and changes.

Among the many course offerings are the following:

Coming soon …

LS-DYNA Explicit/Implicit solver – Special University Training session
15-18/03 – Special University Price

Other regular courses (in Paris) …

LS-DYNA Introduction Explicit Solver
12-14/09

LS-DYNA Introduction Implicit Solver
26/09

LS-DYNA Unified Introduction Implcit & Explicit Solver
20-23/06 & 21-24/11

LS-OPT & LS-TaSC Introduction
23-24/03 & 19-20/10

Switch to LS-DYNA
4-5/04 & 5-6/10

Switch from Ls-PrePost 2.X to 3.X
6/04 & 28/09 & 14/12

LS-DYNA Advanced Implicit Solver
27/09

LS-DYNA ALE / FSI
21-22/03 & 17-18/10

LS-DYNA SPH
6-7/06 & 8-9/11

LS-PrePost 3.0 – Advanced meshing capabilities
7/04 & 29/09 & 15/12

LS-DYNA User Options
8-9/06

LS-DYNA – Plasticity, Damage & Failure – By Paul DU BOIS
3-4/10

LS-DYNA – Polymeric materials – By Paul DU BOIS
12-13/12

Training Courses

PhilonNet
Engineering Solutions

http://www.philonnet.gr/training/index.html

In the framework of the 5th PhilonNet CAE Conference Drive Innovation with Simulation in ATHENS, in May 2011 Simulation, experts from all over the world will gather in Athens to transfer their knowledge in advanced professional trainings in LS DYNA, Design for Six Sigma (DFSS) and more

Training Location is Athens, Greece – See website for up to date information

Advanced Crashworthiness and Impact with LS-DYNA

Paul A. Du Bois

Date: 10-13 May 2011,

Automotive Safety Basic Concepts and Current Developments

Rainer Hoffmann

Date: 6-7 May 2011,

Synthesis and Design of Mechanisms

Dr. Andreas Vlahinos

Date: 6 May 2011,

Training Courses

Shanghai Hengstar Technology Co. Ltd.

Email: info@hengstar.com
Phone: +86-021-61630122

2011	1	2	3	4	5	6	7	8	9	10	11	12
An Introduction to LS-DYNA(High Level)												
Crashworthiness Simulation with LS-DYNA												
Passive Safety and Restraint Systems Design												
LS-Prepost, LS-DYNA MPP, Airbag Simulation with LS-DYNA												
Pedestrian Safety and Passive Safety Simulation with LS-DYNA												
Crashworthiness Theory and Technology, Introduction of LS-OPT which is based on LS-DYNA												
Concrete & Geomaterial Modeling, Blast Modeling with LS-DYNA												
Frontal Restraint Systems according to FMVSS 208 and Euro NCAP												
Crashworthy Car Body disinterested, Simulation, Optimization												
Hot stamping with LS-DYNA												

LS-DYNA Users

Challenge

Your Knowledge

Question is in the front section of the news.

QUESTION BOX

C	O	N	T	R	O	L	_																	
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Answers:

C	O	N	T	R	O	L	_	S	H	E	L	L												
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I	G	N	O	R	E																			
C	O	N	T	R	O	L	_	I	M	P	L	I	C	I	T	_	G	E	N	E	R	A	L	