

Applications

Engineering Analysis

2DFLOW©

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2DFlow© is a teaching tool of Fluid Mechanics. It quickly produces graphic representations of classic and complex fluid dynamic problems, making it a valuable tool for the fluids professional. 2DFlow features point and click singularity insertion and can plot velocity vectors and flow contours (equipotential lines, streamlines, streaking, and iso-bars). Any contoured quantity can also be graphed along a user defined line. The circulation can also be computed along a contour. These features allow detailed flow field analyses and understanding of fundamental fluid mechanics concepts.

IRIX version compatibility:

2DFLOW™

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IRIX version compatibility: 5.3

2DYNAFS™

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2DYNAFS© is an axisymmetric free surface hydrodynamic modeling code using the Boundary Element Method. This method effectively reduces any user-defined problem to a one-dimensional boundary calculation, resulting in a drastic reduction in computation time compared to other hydrodynamic codes. Using the graphical interface, the user inputs all necessary information to define the problem geometry, the fluid constants and, the imposed pressures. 2DYNAFS then solves for the free boundary position versus time. Problems such as cavitation and bubble dynamics and other transient free surface flow can be quickly solved.

IRIX version compatibility: 5.3

Engineering Analysis

3DYNAFS™

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3DYNAFS©, a 3-dimensional surface-solid boundary modeling code, utilizes the Boundary Element Method to solve user-defined hydrodynamic interactions. This method effectively reduces the problem to a two-dimensional boundary calculation, resulting in a drastic reduction in computation time compared to other hydrodynamics codes. 3DYNAFS produces output to show time history of phenomena such as bubble growth and collapse in the presence of complicated solid boundaries, bodies, and free surfaces as well as other transient free surface phenomena. Results can be ported to graphical post-processing codes for visualization.

IRIX version compatibility: 5.3

ABAQUS/Explicit™

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ABAQUS/Explicit™ is a transient dynamics program designed specifically to serve advanced nonlinear structural analysis needs. ABAQUS/Explicit™ has the standard interface familiar to ABAQUS users and is highly optimized for computational performance. The program is aimed at production analysis, so user aspects such as ease of use, reliability, flexibility, and efficiency have received great attention.

ABAQUS/Explicit™ includes element formulations for beams, shells, and continuum elements. Material models include metal plasticity, hyperelasticity, equations of state, and a user subroutine interface for user material definition. Very general contact conditions between deformable or between rigid and deformable bodies can be specified.

IRIX version compatibility: 5.3, 6.2

ABAQUS/Standard™

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ABAQUS/Standard™ is a general-purpose finite element analysis program with special emphasis on advanced linear and nonlinear structural engineering and heat transfer applications. ABAQUS has extensive material, element, and procedure libraries. Material models include plasticity for metals, soils, plastics, foam, composites, and concrete as well as rubber elasticity. Element formulations include beams, shells, and continuum elements allowing finite rotation and finite strain calculations. Analysis procedures include capabilities for statics, dynamics, eigenvalue extraction, soil consolidation, acoustics, coupled temperature-displacement, and heat transfer. A superelement/substructuring capability is also available.

IRIX version compatibility: 5.3, 6.2

Engineering Analysis

ADAMS®

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ADAMS® (Automatic Dynamic Analysis of Mechanical Systems) is a suite of design software for mechanical system simulation. Employing a graphical user interface and libraries of components, joints, and forces, ADAMS enables designers and engineers to model 3-D mechanical systems as "virtual prototypes." ADAMS automatically outputs displacements, velocities, accelerations, and reaction forces. Simulation results can be displayed as realistic animation or x-y plots. ADAMS simulations are used to evaluate mechanical system performance, range of motion, collision detection, space claims, peak loads, and to calculate FEA load inputs. Two-way interfaces are supported between ADAMS and most CAD, FEA, and controls design packages.

IRIX version compatibility: 5.3, 6.1, 6.2, 6.4

ADAMS/Android™

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ADAMS/Android™ is a graphical human body modeler for ADAMS®. The software enables the user to easily create dynamically realistic human models and then use ADAMS to study kinematic, static, and dynamic behavior involved in complex human/machine systems. Using a database of population characteristics, ADAMS/Android enables users to automatically build humanoids either by simply selecting a percentile man, woman, or child, or by specifying explicit height and weight values. Joints can be driven by time-dependent motion (kinematics or inverse dynamics) or by time-dependent or displacement-dependent forces (dynamics).

IRIX version compatibility: 5.3, 6.1, 6.2

ADAMS/FEA™

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ADAMS/FEA™ is a software product that simplifies and automates the two-way exchange of data between ADAMS® mechanical system simulation (MSS) software and finite element analysis (FEA) software. With ADAMS/FEA, users can (1) incorporate complete geometric, flexibility, damping, and mass information from a linear FEA model into a nonlinear ADAMS model to incorporate flexible components in a large-displacement dynamic simulation; and (2) pass internal, external, and inertial loading results from an ADAMS analysis into an FEA model, to provide accurate component loads early in the design process. ANSYS, MSC/NASTRAN, and neutral file formats are supported.

IRIX version compatibility: 5.3, 6.1, 6.2

ADAMS/Linear™

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ADAMS/Linear™ is an optional module of the ADAMS/Solver™. ADAMS/Linear starts with the nonlinear equations that ADAMS® generates to describe a mechanical system and then linearizes the equations about a selected simulation state and computes eigenvalues, eigenvectors, and state space matrices. The resulting linearized set of equations for a mechanical system model can benefit engineers by: 1) providing a bridge between the large-displacement time domain and the small-displacement frequency domain; 2) aiding in checking and validating ADAMS models; 3) facilitating control system design; 4) assisting ADAMS users in modeling systems with flexible bodies.

IRIX version compatibility: 5.3, 6.1, 6.2

Engineering Analysis

ADAMS/Real-Time Kinematics™

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ADAMS/Real-Time Kinematics™ (ADAMS/RTK) provides simultaneous, interactive kinematic analysis and animation of mechanical systems. Users achieve true man-in-the-loop interaction with preliminary product designs to easily determine interferences and collisions, space claims, motion paths, and motion limits. ADAMS/RTK reads in a standard ADAMS® model created in the ADAMS/View™ graphical preprocessor and allows the user to perform real-time kinematic manipulations on one or more of the model's degrees of freedom. Visualization is enhanced by interactively controlling the color and transparency, light sources, and multiple cameras.

IRIX version compatibility: 5.3, 6.1, 6.2

ADAMS/Solver™

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ADAMS/Solver™ automatically formulates and solves the equations for a mechanical system model to provide kinematic, static, and dynamic solutions. ADAMS/Solver offers a variety of modeling and solution options to efficiently and accurately solve a wide range of problems. The core ADAMS configuration is the "Full Simulation Package," which includes ADAMS/View™, the interactive graphical environment, and ADAMS/Solver™, the underlying simulation "engine."

IRIX version compatibility: 5.3, 6.1, 6.2

ADAMS/Tire™

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ADAMS/Tire™, a tire/roadway interaction module, extends the standard tire model in ADAMS/Solver™ with more sophisticated calculations for lateral force, self-aligning torque, and forces due to obstacles such as potholes. ADAMS/Tire can be used with ADAMS® for: vehicle stability studies; calculation of yaw, pitch, and roll; generation of force and acceleration data for stress and fatigue studies; computation of road load histories; and calculation of reactive forces due to braking and drive torques. The product provides simple input format, the ability to create customized libraries of tire properties and road profiles, and architecture for altering calculation parameters.

IRIX version compatibility: 5.3, 6.1, 6.2

ADAMS/Vehicle™

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ADAMS/Vehicle™ is used to design and analyze suspensions and to define full-vehicle dynamics. The program consists of a menu-driven preprocessor employing common automotive terminology; a library of standard suspensions; a static analysis solver; special vehicle/suspension calculations; and a graphical post-processor that presents plots and tables of 29 industry-standard suspension characteristics. Additional suspensions and calculations can be added by the user. For suspension analysis, ADAMS/Vehicle is a self-contained simulation package that requires no prior ADAMS® experience. The product saves time for vehicle dynamicists, automating the creation of complete vehicle models for ADAMS dynamic simulations.

IRIX version compatibility: 5.3, 6.1, 6.2

Engineering Analysis

ADAMS/View™

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ADAMS/View™ is an integrated graphical user environment for the full ADAMS® product line of mechanical system simulation (MSS) tools. The software combines simple point-and-click operation with sophisticated features for interactive graphical model building, viewing, graphic output, and customization. The result is an intuitive yet powerful approach to constructing, analyzing, and simulating mechanical system models. CAD geometry can be input through IGES. Output options include customizable plots, shaded or wireframe animation, and output to video or Wavefront's Advanced Visualizer.

IRIX version compatibility: 5.3, 6.1, 6.2

AFEMS™

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AFEMS™ is a finite element package capable of handling linear and nonlinear analyses. Used by designers and engineers, it covers the full scope of engineering analysis. AFEMS™ handles nonlinearity of materials, geometry, load, and boundary conditions. Major capabilities include rubber, viscoplasticity, composites, membrane, cable, moving contact surfaces, impact friction, residual stresses, radiative surfaces, sinusoidal load, 3-D transient, turbulent flow, and free surface. The AFEMS™ Solid Modeler and Postprocessor include features such as mouse-driven menus, automatic mesh generation, complex curves, splines, multiwindows, shading, and dynamic animation.

IRIX version compatibility:

AMESH

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AMESH is a series of mesh generation tools designed specifically for the casting industry. This software is used to create large, complex 3-D finite element models for analysis. These models can range in complexity from simple brackets to large complicated cylinder heads and engine blocks. AMESH uses a unique meshing method to construct multi-component (casting, mold, core, chill, etc.) geometry simultaneously. This ensures an accurate finite element model which is representative of the problem at hand. CAD geometry can be imported into AMESH using IGES file format, or casting geometry can be constructed using AMESH.

IRIX version compatibility: pre-5.x, 5.x, 6.x

ASET3D-3D Viscous Turbomachinery Flow Server

S. Mani Subramanian
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ASET3D is a computational fluid dynamic (CFD) code for gas turbine engine applications. The program solves 3-D Navier-Stokes equations in cylindrical coordinator with film cooling boundary condition capability for applications to compressor and turbine stator/rotor blade rows. The code runs very efficiently on SGI/R10000 Indigo2 platforms.

IRIX version compatibility: 6.2

Engineering Analysis

AUTODYN-3D

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AUTODYN-3D is the only fully integrated engineering analysis program specifically designed for non-linear dynamic problems. State-of-the-art analysis coupled with modern graphics provide a highly productive environment for solving difficult engineering problems. AUTODYN-3D solves complex problems in:

- Dynamics, including non-linearities
- Solid, fluid, and deformations
- Large strains and deformations
- Fluid-structure interaction
- Explosion, shock and blast waves
- Impact, penetration, contact problems

AUTODYN-3D is fully integrated, with pre- and post-processing and solver included in a single menu-driven package. Multiple analysis techniques are available: Euler, Lagrange, Shells, and ALE (Arbitrary Lagrange Euler).

IRIX version compatibility: 5.3, 6.x

Advanced Aircraft Analysis (AAA) Software

William Anemaat
Chief Engineer
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The Advanced Aircraft Analysis (AAA) software provides a powerful framework to support the iterative and nonunique process of aircraft preliminary design. The AAA program allows design engineers to rapidly evolve a preliminary aircraft configuration from early weight sizing through open-loop and closed-loop dynamic stability and sensitivity analysis, while working within civil and military regulations and cost constraints. AAA operates in either British or metric units.

The design methodology used in the development of the AAA program is based on Airplane Design, Parts I through VIII, and Airplane Flight Dynamics, Parts I and II, by Dr. Jan Roskam.

IRIX version compatibility:

Algor Design and Finite Element Analysis Software

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Algor's Design and Finite Element Analysis (FEA) Software is based on the classical analytical method for analyzing structures. Analysis capabilities include linear and nonlinear stress, vibration, natural frequency (modal), heat transfer, electrostatic and fluid flow analysis.

IRIX version compatibility:

Engineering Analysis

All-Digital™

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All-Digital™ is a desktop for concurrent analysis video, conventional data sets and user-defined event data. Video is digitized (JPEG) and associated with the numeric data streams. The analyst can concurrently review the video and data streams and create a log of event data for later or automatic extraction of associated video clips. Features of numeric or event data can be used to instantly locate corresponding video of interest and vice-versa. VIEWS includes video editing features for fading between records, creating video titles and annotations and the output of video and data to distribution media.

IRIX version compatibility: 6.2

Altair Space Mission Control

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Altair Space Mission Control Systems are in use by several major launch vehicle manufacturers and satellite operators. They combine an open, distributed architecture with extensive use of generic, reusable software modules and object-oriented databases containing the state space representations of the vehicle(s) under control. Advantages include easy expandability, rapid reconfiguration, real time multi-tasking and the potential for up to total automation (the "lights out control center"). Software prerequisites include UNIX or open VMS operating systems. Hardware prerequisites are one or more UNIX or VMS based workstations with preferably at least 64MB internal memory, a 1GB hard disk, 4mm DAT drive, and a 19" high resolution color monitor.

IRIX version compatibility:

AutoSEA

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AutoSEA uses Statistical Energy Analysis (SEA) to solve problems of noise and vibration reduction in mechanical design. AutoSEA allows engineers to quickly assemble complete noise and vibration system models. AutoSEA is compatible with existing noise and vibration testing processes, and integrates with mechanical CAD systems such as SDRC I-DEAS. AutoSEA adds noise and vibration analysis to the computer-aided design process.

IRIX version compatibility: 6.x, 5.2, 5.3

AutoSurf™

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AutoSurf™ is an AutoCAD ADS application that provides NURBS curve and surface modeling capabilities. Users of this product include mechanical designers, engineers, and manufacturing engineers who need tools to design parts and tooling containing free-form, sculpted shapes. It is also ideal for users who model parts containing complex surface shapes, such as those commonly found in industries like plastics, consumer products, automotive, consumer products and aerospace. Also, designers of tooling like molds, dies, fixtures, models, and patterns -- people who work in tool and die shops or job shops.

IRIX version compatibility:

Engineering Analysis

Automated STRuctural Optimization System (ASTROS)

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The Automated STRuctural Optimization System (ASTROS) is used in the preliminary structural design or modification of aircraft and spacecraft. It combines optimization algorithms with finite element analysis methods to create a practical structural design tool to meet future performance requirements with the payoff in least weight and/or cost. ASTROS has an executive system and a scientific database structure supported by six technical (engineering) modules. With the increasing use of composite materials, the potential to tailor these materials to provide requisite strength and stiffness at minimal weight can best be realized through the assistance of an automated computer procedure. ASTROS has the ability to simultaneously consider a range of flight conditions and disciplines which represents a major improvement over previous systems that either consider these conditions sequentially or are incomplete in the disciplines they provide. It significantly reduces the time required to develop a design, leads to improved designs, and through a single, unified procedure, enables improved communication among design team members.

IRIX version compatibility: "5.3, Pre 5.x", pre-5.x, 5.x, 6.x

BANFF

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BANFF is a CFD based tool designed to perform comprehensive computational simulations of turbulent Reacting Flows for complex 3-D configurations. Current software simulates reacting and non-reacting flow of gases and includes full coupling between turbulent fluid mechanics, radiative, and convective heat transfer, furnace-side reaction chemistry and process-side chemical kinetics. NOx computations that include prompt, fuel and thermal mechanisms can also be included in the analysis. Our tools have been applied to a variety of industrial combustion and chemical process systems, including gas fired utility boilers, gasifiers, gas turbine combustors, rotary kilns, waste incinerators, and chemical process heaters.

IRIX version compatibility: 5.x, 6.x

BUCKY

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BUCKY, A p-finite element program for plate analysis, analyzes structures with a high degree of accuracy. BUCY can analyze plates for their buckling behavior, as well as their behavior in plane stress and plate bending. In addition, BUCKY provides elastic-plastic solutions of isotropic plates in a state of plane stress. Written in FORTRAN 77 for UNIX-based computers. PROGRAM NUMBER: MSC-22470

IRIX version compatibility:

Engineering Analysis

C-MOLD® software

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C-MOLD® is a CAE mold analysis software for the plastics molding industry. C-MOLD is used to create computer models of plastic components during design stage. A wide range of analyses can be run on the model to simulate the actual production of the component using injection molding, gas assist molding, co-injection molding, blow molding, reactive molding, thermoforming, and other plastic molding processes. C-MOLD is currently in use within every major segment of the plastics industry. Using C-MOLD in the design stage insures the part is manufacturable while allowing for changes to optimize product costs, process time, and material usage. Costly trial-and-error molding techniques are alleviated using C-MOLD. C-MOLD supports all major platforms for workstations and PCs.

IRIX version compatibility:

C3D

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C3D is a visualization pre- and postprocessor for AeroHydro's Doublet/Source Aerodynamics (DSA) potential flow code. As a preprocessor, it is used to debug and validate DSA panel models with regard to geometry and panel type, orientation, and neighbors.

IRIX version compatibility: 5.x, 6.x

CAMRAD II®

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CAMRAD II® (Version 1.1) is an aeromechanical analysis of helicopters and rotorcraft that includes multibody dynamics, nonlinear finite elements, structural dynamics, and rotorcraft aerodynamics. For the design, testing, and evaluation of rotors and rotorcraft at all stages -- including research, conceptual design, and developments -- CAMRAD II calculates performance loads and stability, and is applicable to a wide range of developments. CAMRAD II is written to FORTRAN and executes on all IRIS™ workstations with 24 ML or more RMAM.

IRIX version compatibility:

CARES/LIFE

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CARES/LIFE - Ceramics analysis and reliability evaluation of structures life prediction program, calculates the fast-fracture reliability or failure probability of monolithic ceramic components as a function of their service lives. CARES/LIFE can analyze a wide range of materials, allowing the finite element model reliability to be a function of many different ceramic material statistical characterizations. Written in ANSI FORTRAN 77 to be machine independent. A winner of NASA's 1994 Software of the Year Award. PROGRAM NUMBER: LEW-16018

IRIX version compatibility:

Engineering Analysis

CATDADS™

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CATDADS™ extends design analysis capabilities by adding DADS simulation directly to CATIA solid designs. Unique seamless integration with the CATIA data base is accomplished through GII. CADSI is an active CATIA Applications Architecture Strategic development partner with Dassault Systemes. Integrating DADS simulation into CATIA improves productivity, efficiency, and accuracy in the concurrent engineering environment. Design alternatives are quickly modeled and evaluated for component contact and interference. The ability to visualize and verify the performance of mechanical designs during the CATIA session demonstrates the concept and performance of designs to the designer at his workstation, and to managers and customers.

IRIX version compatibility:

CFA

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CFA, The Cavitating Fluid Analyzer, is a three-dimensional code for treating the complex wave propagation phenomena that occur during fluid cavitation. CFA fully accounts for the separation and subsequent closure of fluid volume regions during underwater shock events. In essence, CFA functions as a volume element processor utilizing an acoustic fluid formulation based upon the displacement potential. It avoids unnecessary degrees of freedom and uses an explicit integration scheme for transient response analysis. CFA treats wave propagation for small irrotational compressible motions with either linear or bilinear constitutive behavior for cavitating or non-cavitating fluids. Working in tandem with the Underwater Shock Analysis (USA) code, CFA conducts the analysis of the fluid volume while the finite element code STAGS treats the structural system. CFA is written in FORTRAN 77 for both interactive and batch execution and operates in a variety of UNIX-based environments. Two versions are available from COSMIC: a single precision version for use on CRA series computers and double precision version.

IRIX version compatibility:

CFD-ACE™

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CFD-ACE™ is an advanced general purpose Computational Fluid Dynamics (CFD) code, for the solution of fluid flow/heat transfer problems in complex geometries. CFD-ACE incorporates advanced physical models for turbulence, reacting flows, sprays and multi-media Conjugate Heat Transfer. Applications cover a wide range of areas like aerospace, automotive, chemical, materials processing, combustion, turbo-machinery and environmental sciences. Interfaces to CAD packages and a user-friendly environment make CFD-ACE the ideal engineer's tool for design, analysis and optimization.

IRIX version compatibility: 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

CFD-ACE(U)

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CFD-ACE(U) is an unstructured, solution adaptive, flow solver using mixed-element, "arbitrary" mesh types, for the solution of problems involving flow, heat transfer, chemistry and two-phase flows. CFD-ACE(U) enables rapid virtual prototyping for fastest time to market - from concept to final prototype. CFD-ACE(U) is available as a complete package integrating CFD-GEOM for geometry/mesh generation and CAD interfaces along with CFD-VIEW for interactive graphics post processing.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Engineering Analysis

CFD-ACE+

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CFDRC provides software and services for COmputational Fluid Dynamics, Heat Transfer, reacting flows, turbulence and associated physics; in multi-disciplinary engineering applications. Rapid virtual prototyping of engineering design concepts is enabled by CFD-ACE+, a fully integrated solution environment including: CFD-ACE(U) unstructured solution adaptive, mixed-element mesh flow solver, CFD-ACE multi-block structured mesh flow solver, CFD-GEOM geometry/grid generation and CFD-VIEW interactive graphics processor.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

CFD-FASTRAN™

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CFD-FASTRAN™ is a Computational Fluid Dynamics (CFD) tool ideally suited for high accuracy solution of compressible flow problems. A unique feature of CFD-FASTRAN is its capability to model problems with complex geometries on unstructured/structured grids or a hybrid combination of both. State-of-the-art high-order accurate differencing and shock capturing schemes make CFD-FASTRAN the ideal tool for modeling high speed flows with shocks and transient disturbances. Applications include gas dynamics, aerodynamics, acoustics and mixing layers. A user-friendly graphical user interface and interfaces to industry standard CAD packages make problem set-up fast and simple.

IRIX version compatibility: 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

CFD-GEOM™

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CFD-GEOM™ is an interactive geometric modeling software package with fully integrated multi-block structured and unstructured grid generation capabilities. CFD-GEOM is targeted towards the CFD end-user; the main goal is to enable a non-expert user (in geometry modeling and grid generation) to interactively create a moderately complex model with relative ease. The geometry can be defined internally with CFD-GEOM or can be read from any CAD package through the IGES interface. A variety of major grid data formats are supported. CFD boundary conditions can be specified on the geometry in a grid independent fashion.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

CFD-TWOPHASE™

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CFD-TWOPHASE™ is an advanced Computational Fluid Dynamics (CFD) program for the analysis of industrial problems involving twophase flows. Capable of modeling flows in an Eulerian-Eulerian or Lagrangian frame, CFD-TWOPHASE incorporates advanced models for interphase friction, virtual mass effects, and full slip in all coordinate directions. With the capacity to model flows in many-flow regimes, CFD-TWOPHASE finds applications in almost every industry. Some typical examples are steam generators, nuclear reactors, cooling towers, bubble columns, filtration devices and scrubbers, particle separators, dust collection, etc. Robustness, flexibility and a user-friendly interface make CFD-TWOPHASE the ideal engineer's tool to analyze complex twophase problems.

IRIX version compatibility: 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Engineering Analysis

CFD-VIEW™

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CFD-VIEW™ is a truly interactive object-oriented 3-D graphics, animation and flow visualization software application for large structured/unstructured/hybrid grid data sets. Designed as a post processor for Computational Fluid Dynamics (CFD) codes and other analysis software, CFD-VIEW enables quick and easy interpretation of results. It has a unique capability to generate optical images such as interferograms, Schlieren and shadowgraphs which enable swift comparison between numerical and experimental data. Shaded iso-value surfaces, particle traces and ribbons, vectors, contours, surfaces, transparent surfaces, grids and display of 3-D solids are powerful features of CFD-VIEW. Interactive sweeping through planes, animation, spray visualization, interactive point and line probes, and cutting planes enable the user to get a true feel for the physics of the problem.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

CFDesign®

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CFDesign® is a finite element based Computational Fluid Dynamics (CFD) program for solving complex laminar and turbulent fluid flow and heat transfer problems. This advanced solver technology has been integrated with several major CAD/CAE software packages including I-DEAS, Pro/Engineer, MSC/Nastran and COSMOS/M. The combination of these packages offers the engineer a seamless interface between the geometry building and CFD analysis software. This seamless interface allows the CFDesign solution variables to be used directly as a boundary condition for a structural or dynamic analysis of the part or assembly.

IRIX version compatibility: 5.x

COMET/Acoustics

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COMET/Acoustics is general acoustic analysis software which numerically combines the noise radiated from a vibrating structure or the noise generated in the interior of an enclosure. The COMET product family consists of COMET/Acoustics (software for general acoustic analysis), COMET/Vision (graphical user interface) and COMET/Foam (elastic-porous materials analysis).

IRIX version compatibility: 5.2, 6.1, 6.4

COMIG®

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Manager, CAE Group
Northern Research &
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617-935-9052 (fax)

COMIG® is a specialized software system for the detailed design of blading in centrifugal compressors, radial-inflow turbines, and pumps. It allows the engineer to achieve high-performance fluid dynamics in a highly cost-effective manner, while promoting requirements for mechanical integrity, system integration, and ease of manufacture.

The menu-driven interactive system includes data preprocessing for geometric construction and quasi-3D flow analysis, and interfaces to external systems for drafting, finite-element mechanical analysis, and five-axis machining. Featured is ASSIST for preparation and preview of variable input. Postprocessing provides a specially tailored menu of 2D and 3D graphics.

IRIX version compatibility: 5.2, 5.3

Engineering Analysis

COSMOS/M®

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Analysis Corp.
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310-452-2158
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<http://www.cosmosm.com>

COSMOS/M® finite element analysis (FEA) software, marketed to the computer-aided engineering market, is modular software for product design, analysis, and optimization. COSMOS/M® provides linear statics, dynamics, nonlinear, fatigue, thermal, steady state and turbulent fluid, electromagnetic and design optimization analyses. COSMOS/M FFE® thermal and statics solution technology is also available. FFE Dynamics will be released early in 1995.

Engineers in all areas of product and component design and engineering for such industries as automotive, aerospace, transportation, medical equipment, power generation, general industry, and consumer products can use COSMOS/M® to examine the functionality of their designs. Versions are available for workstations, PCs and Macintosh computers.

IRIX version compatibility:

COSMOS/M® ENGINEER

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COSMOS/M® ENGINEER provides a seamless interface to Pro/ENGINEER® from Parametric Technology Corp., allowing users to perform sophisticated finite element analyses and design optimization within the Pro/ENGINEER environment. Its capabilities include stress, displacement, frequency, buckling, thermal, nonlinear, and advanced dynamics analyses. COSMOS/M® ENGINEER supports PTC's ProMESH® and Pro/FEMPOST® (Pro/ENGINEER Release 13), as well as offering a second mesher for large and very complex models. It also provides COSMOS/M FFE® (Fast Finite Element) statics and thermal solution technology, which is up to 100 times faster than traditional FEA, to facilitate design optimization.

IRIX version compatibility:

CSAR/OPTIM2™

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CSAR/OPTIM2™ has been developed to provide NASTRAN users with the capability of automated design via structural optimization using mathematical programming techniques. The procedure used in CSAR/OPTIM2 consists of minimizing an objective function, namely, the weight of the structure, subjected to a set of behavioral constraints (limits on stress, displacement, vibration frequency, or buckling eigenvalue) and side constraints (limits on member sizes) using mathematical programming techniques. Both the Sequence of Unconstrained Minimization Techniques (SUMT and NEWSUMT-type algorithms) and constrained Function Minimization Techniques (Methods of Feasible Direction and CONMIN-type algorithms) are available in the program.

IRIX version compatibility: 5.x, 6.x

CSAR/SIZING2™

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CSAR/SIZING2™ has been developed to provide NASTRAN users with the capability to perform automated strength sizing of one- and two-dimensional finite elements of the structural model by the Fully Stressed Design (FSD) procedure. The premise used in the FSD algorithm is that the stress in each element is either at its prescribed maximum limit for at least one loading condition or is at the minimum gage (area of thickness as the case may be). Engineers have long felt that designs based on such a premise are close to the minimum weight of the structure. This procedure has been used extensively in both the preliminary and final design phases.

IRIX version compatibility: 5.x, 6.x

Engineering Analysis

CardinalVision-FEA™

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CardinalVision-FEA™ is a powerful finite-element-analysis (FEA) post-processor and visualizer which allows analysts and engineers to extract, derive and interpret FEA results data. Major markets include mechanical, thermal, fluid dynamics and electromagnetic design. The system performs real-time mathematical computations on scalar, vector and tensor fields that result from computer simulations. To view these results, a rich set of interactive graphical tools is provided including cutting planes, iso surfaces, color contour lines, streamlines and data probes. Numeric values at any given point on the surface or inside the model can be displayed instantaneously. CardinalVision-FEA™ is entirely object-oriented, written in C++, and it interfaces to the leading FEA systems.

IRIX version compatibility:

Clix

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Clix - A user interface for a heterogeneous UNIX world. Clix is a heterogeneous user interface that provides the user with a common interface across different hardware platforms. Clix 2.0 is just released and helps the user become more productive by managing up to twenty different projects in their own virtual environments as defined by the user. Clix also provides a programming interface so that users can add their own creations to Clix.

IRIX version compatibility:

Continusys

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This product is a computational fluid dynamic solution. Key technical features: multi-species (with temperature dependent and high pressure co-volume term), multi-phase (fully coupled), 2D, axisymmetric & 3D applications in all speed regimes. Also treated are varying porosity volumes and surfaces. The product consists of a full suite of programs to define, calculate, display and print complex multi-region problems for internal and external flows.

IRIX version compatibility: 6.x

Engineering Analysis

DADS®

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Development
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DADS® (Dynamic Analysis and Design System) performs design verification through the comprehensive simulation and animation of mechanisms and mechanical systems. Virtual prototyping is achieved through extensive modeling capabilities, including intermittent component contract controls and hydraulic systems. DADS performs dynamic kinematic, static, inverse dynamic and quasi-static analyses to provide position, velocity, load and acceleration results. System behavior is presented through plots, tables, and photo-realistic animation. DADS modular structure allows implementation to fit specific simulation needs. Optional modules extend modeling and analysis capabilities, and promote concurrent engineering through integration with other MCAE tools, including FEA/FEM, CAD/solid modeling, and controls simulation systems.

IRIX version compatibility:

DADS/Advanced Tire™

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DADS/Advanced Tire™ extends the standard DADS tire modeling and analysis capabilities to examine performance under rigorous criteria. The simulation is based upon the well known "Magic Tire" analysis formulation originated by Hans Pacejka. The user can also customize the analysis equations to their own specific requirements. Accurate representation of the tire response is achieved through parameters derived from physical test data. The results provided include lateral and longitudinal forces and aligning torque.

IRIX version compatibility:

DADS/Advanced™

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DADS/Advanced™ provides the most sophisticated DADS modeling and analysis capabilities for comprehensive simulation and animation to evaluate mechanisms and mechanical systems performance. Virtual prototyping with DADS/Advanced provides accurate position, velocity, acceleration and load/force/torque results. DADS/Advanced includes DADS/FEA, which uses component modal synthesis to superimpose flexibility characteristics on rigid body motion, which is critical for accurate representation of modern lightweight, high-speed mechanical systems. With this increased functionality, flexibility data is automatically extracted from the results of popular FEA programs for DADS analysis and animation. The resulting DADS simulation provides realistic system force and loading conditions for advanced FEA.

IRIX version compatibility:

DADS/Basic™

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DADS/Basic™ is an economic entry to mechanical system simulation technology that is upwardly compatible with all DADS modules for advanced modeling and analysis. DADS/Basic performs mechanical simulation that allows users to inspect for part interference, investigate range of motion, and evaluate design concepts through interactive visualization. The ability to verify the performance of mechanisms and mechanical systems during the design process shortens overall design time and reduces costly re-work and physical prototyping. DADS/Basic performs dynamic, kinematic, static, inverse dynamic and quasi-static analyses to provide position, velocity, load and acceleration results which are presented through plots, tables, and photo-realistic animation.

IRIX version compatibility:

Engineering Analysis

DADS/FEA™

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DADS/FEA™ automatically extracts and formats model data for use in DADS analysis and animation from popular FEA programs including ABAQUS, ANSYS, NASTRAN, and I-DEAS. DADS/FEA uses component modal synthesis to superimpose flexibility characteristics on rigid body motion, which is critical for accurate representation of modern lightweight, high-speed mechanical systems. The resulting DADS simulation provides realistic system force and loading conditions for advanced FEA. Reviewing simulation results is enhanced by DADS/FEA flexible animation, in which deformation of system components is displayed, and can also be superimposed simultaneously on the rigid structure, during animation.

IRIX version compatibility:

DADS/Linear™

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DADS/Linear™ automatically extracts linear information from non-linear DADS models. Results include coefficient (A and B) matrices, and an eigenvalue calculation to evaluate linear model modes and frequencies for stability. DADS/Linearization allows selection of independent generalized coordinates for use as linear model states with automatic determination of the independence of the selected coordinates, and results may also be reported at each analysis time step. The motion associated with linear system frequencies is reviewed through eigenvector animation. The results are exported for use with external controls and mathematical analysis programs. Results from these programs can be returned to the non-linear DADS model.

IRIX version compatibility:

DADS/Model

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DADS/Model provides important visual feedback on mechanical system performance. The mechanical system model geometry is created with the DADS/Model primitives library or imported from popular CAD programs. Versatile animation and presentation techniques allow the engineer and other audiences to quickly interpret and effectively communicate simulation results.

One-touch selections quickly tailor model data and graphics displays. Interactive animation controls manipulate component rendering and view presentation, such as model position, translucency, and light sources. Simulation results are incorporated with animations through options such as color contours, meters, vectors, collision detection, and time and variable labels.

IRIX version compatibility:

DADS/Plant™

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DADS/Plant™ combines the strengths of DADS mechanism modeling and animation with the strengths of systems and controls simulation in programs such as MATLAB, MATRIXx, and EASY5x. DADS/Plant provides interactive, graphical model construction of the plant mechanism and automatically generates the equations of motion. This eliminates time-consuming, error-prone manual derivation and manipulation of equations of motion in the controls simulation program. The controls simulation program calls DADS/Plant as a subroutine at each integration time step and updates the mathematical model. The data transfer is completely automatic and transparent to the user. The system simulation is performed within the controls program.

IRIX version compatibility:

Engineering Analysis

DADS/Pro™

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DADS/Pro™ extends design analysis capabilities by adding DADS simulation directly to Pro/ENGINEER solid designs. Unique seamless integration with the Pro/ENGINEER data base is accomplished through Pro/DEVELOP. CADSI is an active Cooperative Software Program partner with Parametric Technology Corporation.

Integrating DADS simulation into Pro/ENGINEER improves productivity, efficiency, and accuracy in the concurrent engineering environment. Design alternatives are quickly modeled and evaluated for component contact and interference. The ability to visualize and verify the performance of mechanical designs during the Pro/ENGINEER session demonstrates the concept and performance of designs to the designer at his workstation, and to managers and customers.

IRIX version compatibility:

DE/CAASE™

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DE/CAASE™, Desktop Engineering's computerized handbook, represents the world's largest known compilation of Computer Aided Analytical Solutions for Engineers. DE/CAASE Version 4.1 provides over 5,000 numerical and graphical solutions required in structural/mechanical engineering applications. These solutions, based on the theory of elasticity and strength of materials, have been rigorously researched from over 1000 references and represent the results of theoretical efforts by recognized experts of the engineering profession. DE/CAASE makes extensive use to interactive menus and high resolution graphics to simplify the input of geometric and material properties and to display the output of deflection, force, stress and section property results.

IRIX version compatibility:

DEFORM™

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DEFORM™ finite-element simulation software enables engineers to design and analyze metal forming processes on the computer rather than trial and error on the shop floor. By simulating different die, process and reform designs before prototyping, the product to-market-times can be shortened, processes optimized, and costs reduced. Using DEFORM™, engineers can visualize metal flow, predict defects, estimate forging loads, evaluate thermal profiles, and calculate die stresses. DEFORM™ is the premier metal forming simulation system, with installations on four continents. For three dimensional forming problems, DEFORM™-3D is now available with optimized fully automatic remeshing.

IRIX version compatibility: 5.3

Engineering Analysis

DIANA®

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DIANA® is a multi-purpose finite element package with special emphasis on advanced linear and nonlinear structural engineering and flow applications.

DIANA has extensive material, element, and procedure libraries. Typical DIANA applications include concrete cracking (smeared and discrete cracks), rubber, engineering plastics, plasticity, creep, cooling of concrete, groundwater flow, fluid-structure interactions, temperature-dependent material behavior, stability analysis, buckling, pipeline analysis, combined potential flow-stress analysis, etc.

IRIX version compatibility:

DIGITAL PHYSICS

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Exa Corporation has developed a breakthrough, DIGITAL PHYSICS, for modeling fluid flow that is significantly faster, fundamentally more accurate, and easier to use than existing CFD methods. It will revolutionize product design in many industries such as Automotive, Aerospace, Chemical, and Energy where understanding the fluids environment is critical.

Exa's DIGITAL PHYSICS based software interfaces seamlessly with Parametric Technology Corporation's mechanical CAD program, Pro/ENGINEER and NAG's visualization software IRIS EXPLORER. Exa's client software runs on Silicon Graphics workstations allowing users to setup simulation runs using ExaCASE and easily visualize complete simulation using ExaVIZ.

IRIX version compatibility: "5.3, 6.x"5.36.2

DISPLAY III

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DISPLAY III is an extremely user-friendly, menu or command driven, 3D interactive graphics package for generation of geometry, creation of finite element data, and for results interpretation. 3D geometry can be imported from commercially available CAD/CAM programs through either a direct integrated interface or IGES. Alternatively, geometry can be created in DISPLAY III using powerful tools provided by the program. The program has robust AUTOMESH capabilities to generate finite element models using shell or solid elements on the created/imported geometry with various controls for size and quality of mesh. It also provides tools for mapped meshing. Extensive capabilities are available for model checking, force and boundary conditions specification (directly on geometry or on FEM), macro programming language for parametric modeling, etc. The post-processing options include: color contours of calculated variables, deformation and vector arrow plots, history plots, graphs, solid sectioning, etc. DISPLAY III integrates the entire NISA Family of programs for pre- and post-processing, and results interpretation.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Engineering Analysis

DOC/DOT General Purpose Optimization Software

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DOC/DOT is a general purpose program for nonlinear unconstrained or constrained optimization. It will minimize or maximize a user defined function of one or more variables, subject to limits (bounds) on other functions. The user provides the necessary subroutines to evaluate the functions of the variables. DOC is the main control program which reads the user data defining the optimization task, organizes the overall optimization process and prints the results. DOC also controls discrete variable optimization, parametric studies, optimization based on approximations and various other convenience features. DOC greatly simplifies problem formulation and solution. DOT is the set of acural optimization routines, and is available separately.

IRIX version compatibility:

DYMES

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DYMES is a general purpose program for kinematic and dynamic analyses of constrained, multibody mechanical systems that undergo large nonlinear, three-dimensional displacements.

A library of mechanical joints such as spherical, revolute, and translation joints and force elements such as nonlinear springs, dampers, and actuators permits convenient modeling of various mechanical systems. A library of control system modeling elements such as summer, amplifier, actuator and feedback enables controlled system simulations based on modern multiple-input and multiplt-output (MIMO) control system modeling capabilities.

Machine mechanisms, robotics, ground vehicles, spacecraft, and controlled systems are analyzed and simulated for time histories of their motion and joint reaction forces. The analysis capabilities include: Assembly analysis, redundancy analysis, static equilibrium analysis, quasi-static equilibrium analysis, dynamic analysis, kinematics analysis, inverse dynamic analysis. The advanced tire module in DYMES along with environmental modules makes automobile rides and handling simulation reliable and realistic.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Dycom™ with Symbolic Treetop™

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Dycom™ V1.0 is used to model, design and analyze complex dynamic systems with active control elements. With Dycom, both constrained and unconstrained systems are represented under an interactive GUI.

Order(N) dynamics algorithms are employed to solve unconstrained systems, while both constrained and unconstrained systems are solved with the robust algorithms utilized in the popular dynamics package Treetops™. Problem specific equation-of-motion are automatically generated to create the most efficient method of simulating your mechanical system.

Dycom can model just about any mechanical system, including mechanisms, robotics, automobiles and spacecraft. Dycom includes orbital environment models that make high-fidelity spacecraft simulations a breeze.

IRIX version compatibility: 5.2, 5.3, 6.0

Engineering Analysis

EC-STARS

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EC-STARS is an integrated multidisciplinary finite element engineering analysis code that includes such disciplines as Structures, CFD, Heat Transfer, Aeroelasticity and Aeroservo-elasticity.

IRIX version compatibility:

EDCRASH™

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EDCRASH™ (Engineering Dynamics Corporation Reconstruction of Accident Speeds on the Highway) is a reconstruction analysis of single- or two-vehicle accidents. The program determines the conditions of impact, including impact speed and delta-V, using information obtained from vehicle and accident site inspections.

For oblique collisions, the impact phase is analyzed using the conservation of linear momentum; for collinear collisions, vehicle damage is used in conjunction with stiffness coefficients derived from crash tests. The impact-to-rest phase is analyzed using energy methods, with extension allowing for the effects of vehicle rotation and curved trajectory.

IRIX version compatibility: 5.3, 6.x

EDGEN™

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EDGEN™ (Engineering Dynamics General Analysis Tool) is a kinetics spreadsheet. It uses entered positions and velocities to determine the time required to travel between position instances (e.g., from Separation to Final/Rest).

EDGEN may be used to illustrate the arbitrary 3D motion of a vehicle, including rollover. The output from EDGEN is a kinetics table of position/velocity/acceleration vs. time displayed at a user-selectable output interval. The motion is also visualized in a 3D viewer.

IRIX version compatibility: 5.3, 6.x

Engineering Analysis

EDHIS™

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day@edccorp.com
<http://www.edccorp.com/>

EDHIS™ (Engineering Dynamics Human Impact Simulator) is a 3D simulation of the response of a human (occupant or pedestrian) during a motor vehicle collision. The program computes human kinetics (position/velocity/acceleration vs. time) joint angle and torques, and contact forces between the human and vehicle. Useful for predicting and visualizing occupant/pedestrian motion during impact, EDHIS also provides injury predictions, including HIC, Chest SI and Maximum Fenur Load.

EDHIS employs airbag plus torso and lap belt models for studying issues related to restraint system design and usage.

IRIX version compatibility: 5.3, 6.x

EDSMAC™

Terry Day
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EDSMAC™ (Engineering Dynamics Simulation Model of Automobile Collisions) is a simulation of single- and two-vehicle accidents, including collision. EDSMAC incorporates a powerful, new tire-terrain interaction model that allows vehicle motion to be simulated on 3D surfaces. EDSMAC computes collision and tire forces at user-specified timesteps. The program then display the results visually in a 3D viewer and numerically in the form of vehicle kinetics (position/velocity/acceleration vs. time), tire forces and driver inputs (throttle, braking and steering).

EDSMAC may be used to predict and visualize how vehicles respond during impact. EDSMAC has been validated using the RICSAC collision experiments, a set of 12 well-instrumented staged collisions. Several validation studies have been published in the technical literature.

IRIX version compatibility: 5.3, 6.x

EDSVS™

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EDSVS™ (Engineering Dynamics Single Vehicle Simulator) is a simulation of the response of a vehicle to driver braking and steering inputs. The user provides a set of initial conditions (position and velocity) and driver inputs. EDSVS determines how the vehicle responds to those inputs by generating the path, velocity acceleration, tire forces and other data as a function of time.

EDSVS is a 3 degree-of-freedom (yaw plane) analysis; suspension effects are ignored, but quasistatic load transfers are calculated using current forward and lateral accelerations. EDSVS incorporates a powerful, new tire-terrain interaction model that allows vehicle motion to be simulated on 3D surfaces.

IRIX version compatibility: 5.3, 6.x

Engineering Analysis

EDVDS™

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EDVDS™ (Engineering Dynamics Vehicle Dynamics Simulator) is a 3D simulation of the response of a commercial vehicle (tractor towing up to three trailers) to driver inputs (steering, braking and throttle). EDVDS incorporates a powerful, new tire-terrain interaction model, allowing a vehicle to be simulated on virtually any surface. The program computes vehicle kinetics (position./velocity/acceleration vs. time), tire-forces and moments, suspension forces and deflections, drive and brake systems.

EDVDS is useful for predicting and visualizing how a vehicle-trailer system responds to driver inputs, especially for limit maneuvers resulting in loss of control followed by jack-knife or rollover. EDVDS has been validated against several well-instrumented vehicle handling studies, including steering and braking, severe irregular terrain traversal, and roll-over tests involving curbs and soft soil.

IRIX version compatibility: 5.3, 6.x

EDVSM™

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EDVSM (tm) (Engineering Dynamics Vehicle Simulation Model) is a 3-D simulation of a motor vehicle to driver inputs (steering, braking, throttle and gear selection). Based on the HVOSM-VD2 model developed at Calspan, EDVSM also includes several enhancements developed by EDC. Using EDVSM, a vehicle may be simulated on virtually any surface. The program computes 3-D vehicle kinematics, tire forces and moments, suspension forces and deflections, drive and brake system torques and driver inputs.

EDVSM is used to predict and visualize vehicle response to driver inputs, especially for limit maneuvers resulting in loss of control and rollover. Version 1.10 of EDVSM also includes a "blown tire" model useful in accurately simulating the effect of either a sudden or gradual loss of tire pressure on vehicle handling.

IRIX version compatibility: 5.3, 6.x

EDVTS™

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EDVTS™ (Engineering Dynamics Vehicle Trailer Simulator) is a simulation of the response of a vehicle-trailer system to driver braking and steering inputs. The user provides a set of initial conditions (position and velocity) and driver inputs. EDVTS determines how the vehicle and trailer respond to those inputs by generating the path, velocity acceleration, tire forces and other data as a function of time.

EDVTS is a 4 degree-of-freedom (yaw plane) analysis; suspension effects are ignored, but quasistatic load transfers are calculated using current forward and lateral acceleration. EDVTS incorporates a powerful, new tire-terrain interaction model that allows vehicle motion to be simulated on 3D surfaces.

IRIX version compatibility: 5.3, 6.x

Engineering Analysis

EISI-EAL™ Engineering Analysis Language

W.D. Whetstone
President
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Systems Inc
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EAL™ (Engineering Analysis Language) is a comprehensive software system that is used by mechanical, aeronautical, and civil engineers to perform structural and thermal finite element analysis and design. The advanced language form, parametric modeling capabilities, and integrated database management capabilities of EAL give the user great flexibility and simplicity of use in solving complicated or unusual problems. For routine usage, an extensive library of easy-to-use canned procedures is provided, addressing a wide range of specific application areas, such as nonlinear transient dynamic analysis, dynamic response of cyclically symmetric structures, and acoustic/structure interaction.

IRIX version compatibility: 5.3, 6.1

ENDURE

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ENDURE is a general purpose program for analyzing the fatigue life and fracture characteristics of engineering structures or components. The program employs various theories to determine crack initiation and propagation lives for fatigue problems and to evaluate stress intensity factor (K), J-integral, and energy release rate (G) for fracture problems. Dynamic and random load effects can also be included in the damage calculations. The program provides various analysis models and allows different types of load and material data descriptions such as those encountered in aerospace, offshore, and automotive industries. Stresses can be obtained directly from the finite element analysis (NISA II, NAS-TRAN, and I-DEAS) or entered directly by the user. The crack initiation offers: multi-channel and multi-loadcase capabilities, complex multiaxial stress and out-of-phase fatigue simulations, Stress-Life (S-N) and Strain-Life (e-N) correlation, memory effects and nonlinear material response capabilities. Crack propagation has various crack growth models such as Paris, Forman, Walker, Collipriest, Elber, etc. A library of built-in crack configuration are also provided. It can be independently used to conduct damage tolerant structural design. The fracture analysis offers different methods, such as CTOD, VCET, MCCI and Rice J-path for fracture parameters evaluation.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

ENVISION®

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Auburn Hills, MI 48321-
4687
USA
810-377-6900
810-377-8125 (fax)
marketing@deneb.com
http://www.deneb.com/

ENVISION® utilizes real-time 3-D animation technology to simulate, analyze, and optimize automated or human workcells. It incorporates the actual geometry, motion characteristics, dynamics, and communication logic of the real-world device/human models contained in the workcell. As a result, ENVISION simulations are highly accurate. Also, because ENVISION devices can incorporate inverse kinematics and are programmable, even novice computer users can create lengthy and intricate simulations with ease. ENVISION applications include research and development, human factors engineering, articulated assembly design, telerobotics, space task engineering, flexible manufacturing system simulation, nuclear/hazardous duty animation, and general-purpose simulation.

IRIX version compatibility:

Engineering Analysis

FAM® (Field Analysis Modeler)

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The FAM® suite includes programs for interfacing to CAD systems, model building, interfacing to and from analysis systems, and assessing results. FAM is principally based on the finite element and finite difference methods, but is designed for general use wherever a continuum problem can be discretized for computer solution. Particular application areas include analysis of stress, electromagnetics, vulnerability, fluid flow, plastic flow, soil mechanics, and thermal analyses. FAM interfaces to a wide range of industry standard analysis programs. Other interfaces can be developed using direct database access routines.

IRIX version compatibility: 5.3

FEFS FINITE ELEMENT MESHING COMPONENT

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A software module that can be embedded into applications to provide finite element meshes. The current module provides tetrahedral meshing of volumes and triangular meshing of surfaces.

IRIX version compatibility: 5.3

FEMAP®

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610-458-3665 (fax)
jrankin@femap.com
<http://www.femap.com>

FEMAP® provides a CAE environment to enable technical professionals to efficiently develop simulations of mechanical product performance.

Geometry or finite element models can be created using bottom-up construction popular for conceptual modeling. Complex CAD geometry may be accessed directly in Parasolid or ACIS format.

Once the model is prepared in FEMAP, mechanical performance can be solved by a wide range of FEA solvers. Results are then reviewed directly in FEMAP, with high performance graphical and report based postprocessing.

A natural file and customization capability supports the integration of company- or industry-specific CAE technologies into the consistent FEMAP.

IRIX version compatibility: 5.3, 6.0, 6.1, 6.2

FEMGEN/FEMVIEW®

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FEMGEN/FEMVIEW® is a general-purpose pre- and postprocessing program for FEM programs. The program works interactively. After building a model, load constraints, physical and material properties, local coordinate systems, element types, and mesh densities can be assigned to the various geometric parts of the model. A very strong interface with DIANA® is available. The postprocessor can calculate stand-alone principal stresses and shears, von mises stresses, plastic yield, and so on.

IRIX version compatibility:

Engineering Analysis

FEMTools

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FEMTools is a modular software toolbox for dynamic analysis, correlation analysis, sensitivity analysis and automated updating of finite element models. Methods are based on the combined use of analytical and experimental results. Physical finite element properties are adjusted to bring analytical closer to experimental reference results. The resulting finite element model can be used for further structural dynamic analysis with much more confidence. FEMTools features a intuitive GUI and interfaces to all major FEA and test programs.

IRIX version compatibility: 5.3, 6.x

FIDAP™

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FIDAP™ is a complete, integrated, finite-element based Computational Fluid Dynamics (CFD) package for simulating fluid flow, heat and mass transfer. Flow classes analyzed by FIDAP include: compressible, incompressible, turbulent, laminar, steady-state, transient, Newtonian, non-Newtonian, viscoelastic, two-phase, chemically reacting, and free surface. FIDAP includes an intuitive graphical pre-processor with interactive model building, advanced automatic mesh generator, and full post-processing capabilities.

IRIX version compatibility:

FIELDVIEW™

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Fieldview Product Manager
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201-460-4700
201-460-0221 (fax)
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http://www.ilight.com

FIELDVIEW™ is an interactive data visualization package designed to assist an engineer in investigating features of complex three dimensional fluid dynamic datasets. FIELDVIEW can accept input from PLOT3D, FLUENT, RAMPANT, FIDAP, STAR-CD, PHOENICS, FLOW-3D, VISIUN, CFD2000 and other commercial flow solvers. FIELDVIEW enhances the interpretation of the data with visualization tools such as cutting planes, contouring, streamlines, 2-D line plots, data probes and animation. Additional features such as an intuitive Motif based user interface and support for a wide selection of workstations, including low cost X-terminals, makes FIELDVIEW a powerful interpretation and validation tool that can increase engineering productivity.

IRIX version compatibility: 5.x, 6.x

Engineering Analysis

FINESSE

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computing.uni-tuebingen.
de/

Finesse - OSF/Motif™ interface for shellscrips. As a new software tool kit for Unix workstations, Finesse provides a quick and simple possibility to create graphical I/O for shellscrips. With Finesse, shell dialogs are fast and easily implemented and existing shellscrips simply converted. The generation of windows is accomplished with intuitive shell commands. Knowledge on X programming is not required. Finesse is already used for the generation of graphical interfaces for finite element methods (FEM) and for simplifying the usage of complex Unix commands or expanding administration scrips.

IRIX version compatibility:

FLOTHERM®

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Flomerics, Inc.
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Marlborough, MA 01752
USA
508-366-9522
508-898-2582 (fax)

Since 1989, FLOTHERM® has been developed specifically for solving thermal problems in electronic equipment. FLOTHERM enables you to check and optimize the cooling system for your particular product in the shortest possible time, including aspects such as the locations and sizing of heat sinks, fans, vents, and baffles. FLOTHERM allows you to assess the often competing requirements for EMI shielding, good airflow, and good aesthetic design, and rapidly select the best compromise. FLOTHERM software is available on various platforms including IBM Compatible PC's, Silicon Graphics Workstations, Hewlett Packard Workstations, Sun Workstations, etc.

IRIX version compatibility: 5.3, 6.2

FOCUS

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FOCUS is a finite element postprocessing system that features full, real-time, 3-D transformation and animation capabilities. The program provides advanced finite element model and results plotting, graphing, and listing facilities including contour, iso-surface, color filled fringe, streamline, streamsurface, vector, and tensor plots. Analysis results are read directly from the databases of major finite element analysis codes no translators are required. FOCUS supports menu-driven, command language, and procedure call interfaces. This feature provides for user-customization and integration with external software systems. FOCUS is used by finite element analysts and system integrators requiring 3-D finite element visualization tools.

IRIX version compatibility:

Engineering Analysis

Fast 3D

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Fast 3D is a sheet metal analysis tool that simulates a part within the press environment. The method of tooling can include crash forming, stretch forming or deep drawing. The results are displayed by a colour coded grid overlaid onto the geometry of the formed piece along an interactive Forming Limit Diagram.

IRIX version compatibility:

FastCurves™

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FastCurves™ is a plotting program for the rapid display of results from ADAMS® multi-body simulations. It is a companion to ScenicDrive™ and is capable of synchronizing the plotting of results with animations. It can also plot values from ASCII spreadsheet files. Hard copy can be obtained from postscript printers.

IRIX version compatibility:

Finite Element Analysis in Action!

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An instructional video for engineers that combines theory and real-world engineering examples. The video uses a brittle fracture as a case study to demonstrate the close link between finite element analysis and laboratory testing.

IRIX version compatibility:

Finite Element Modeling in Engineering Practice

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A comprehensive finite element reference/textbook that offers a unique combination of theory and real world engineering examples. Authored by Dr. Constantine Sprakos, a well-known finite element and vibration analysis expert.

IRIX version compatibility:

Engineering Analysis

GASP V3

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GASPTM Version 3.0 is a computational fluid dynamics tool that solves the Navier-Stokes (NS), Thin-layer NS, Parabolized NS and Euler equations on structured grids with a wide range of thermo-chemical modeling options. Some of the features found in Version 3 include support for parallel processing, preconditioning, multi-grid, general zonal boundary interpolation, extended mesh sequencing, fully or loosely coupled chemistry and turbulence models, and several physical modeling extensions (particularly for very high temperature flows). One of the many benefits of this product is its generality, allowing the user to replace several CFD codes with a single product.

IRIX version compatibility: 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

GENESIS Structural Optimization Software

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GENESIS is a fully integrated finite element analysis and optimization program. Static, normal modes, dynamic response and heat transfer analysis are available using NAS-TRAN compatible data. Optimization is performed using the most modern methods available. Both sizing (member dimensions) and shape (grid locations) optimization are available. Almost all responses calculated in the analysis are available for optimization. GENESIS was written from the beginning by optimization experts to be a design optimization program, not just a finite element analysis program with optimization added later.

IRIX version compatibility:

GLACIER

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GLACIER is a CFD based tool designed to perform comprehensive computational simulations of turbulent Reacting Flows for complex 3-D configurations. Current software simulates reacting and non-reacting flow of gases and particles, including gaseous diffusion flames, pulverized-coal flames, liquid sprays, coal slurries, isothermal and reacting two-phase flows, injected sorbents and NOx chemistry including SNCR injection and re-burning. Full coupling between turbulent fluid mechanics and radiative and convective heat transfer is used in the models. Our tools have been applied to a variety of industrial combustion and chemical process systems, including gas and fossil fuel fired utility boilers, gasifiers, gas turbine combustors, rotary kilns, waste incinerators, chemical process heaters and smelters.

IRIX version compatibility: 5.x, 6.x

Engineering Analysis

GPE™ - A Graphical Programming Environment

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GPE™ is a software development tool that provides a completely visual approach to programming. Standard programming language constructs can be used as building blocks to code complete program modules or subroutines. The building blocks are placed and manipulated on a "canvas" much like a drawing. GPE greatly improves programmer productivity by providing a host of convenience functions and performing extensive error checking. GPE also enforces programming discipline and generates ANSI C or FORTRAN code complete with headers and detailed documentation and flow diagrams. GPE can be used both as a software productivity tool as well as a training tool for new programmers.

IRIX version compatibility: 5.2, 5.3, 6.0

Gridgen

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Gridgen is a software system for generating 3D grids for computational fluid dynamics, computational electromagnetics, and computational structural mechanics. Gridgen is a visually-oriented, graphics-based interactive code for decomposing 3D domains into blocks and generating grids. It writes grid and boundary condition files for many popular analysis packages.

IRIX version compatibility: 5.x, 6.x

Gridgen Now

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Gridgen is used to generate quad and hex grids for computational fluid dynamics (CFD). Gridgen is a highly graphical and interactive tool with an easy to learn user interface. Geometry models upon and around which the grids are generated may be imported via IGES files. Geometry models may be modified and added to using Gridgen's geometry modeler. Transfinite interpolation and a wide variety of elliptic partial differential equation methods may be applied to generate high quality grids that exhibit smoothness, clustering, and orthogonality. Gridgen exports boundary condition and grid data in formats compatible with several CFD codes.

IRIX version compatibility: 6.x5.25.3

Engineering Analysis

HVE™

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HVE™ (Human-Vehicle-Environment) is a 3D application environment for executing human and vehicle dynamics models. HVE is useful for engineers and other technical persons who study safety issues related to the design and use of motor vehicles.

HVE allows the user to create detailed, 3D models of humans, vehicles and environments. The interactions of these objects are then studied using the HVE-compatible physics models. The results from several events may be combined into a single, coherent sequence involving multiple humans and vehicles. The results may be viewed visually using 3D viewers, numerically using the various report options, or routed to videotape using HVE's built-in video interface.

IRIX version compatibility: 5.3, 6.x

Houdini™

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Houdini™ is the first software that converts CAD solid models from CATIA, Pro/Engineer, EDS/Unigraphics, AutoCAD, SDRC, etc., to create 8-node "brick" finite element meshes for use in virtually all FEA programs.

IRIX version compatibility:

Houdini™ Multimedia Training Kit

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The Houdini™ Multimedia Training Kit includes The World of Houdini video or multimedia CD-ROM; the complete training notes from Algor's 2-day Houdini seminar; a CD-ROM with the models used in the video; and Viewpak™ software to examine the models in detail on your computer.

IRIX version compatibility:

Engineering Analysis

I-DEAS Drafting™

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As a tool for solids based drafting, I-DEAS Drafting™ software is seamlessly integrated with other I-DEAS modules and provides exceptional speed and responsiveness for detailing solid models and creating production drawings. I-DEAS Drafting software utilizes the Dynamic Navigator™ style of user interaction which delivers a truly innovative CAD operation. Drawings are bi-directionally associative to the master to the models from which they were created.

As a standalone system, I-DEAS Drafting not only provides complete detailing capability but functions effectively for concept design. Variational sketching provides broad capability for geometry creation and captures design intent to ease design change. A dynamic icon palette and the Dynamic Navigator make I-DEAS Drafting exceptionally easy to learn. It is an excellent starting point for organizations transitioning to solids-based design from traditional systems.

IRIX version compatibility:

I-DEAS Master Series™

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I-DEAS Master Series™ software, from SDRCAE, is the leading software solution for Mechanical Design Automation. This suite of fully integrated design, engineering, analysis and manufacturing products provides manufactures with unequaled functionality for users without compromising the integration required to implement a concurrent approach to product development. Users of I-DEAS can depend on unmatched reliability and performance resulting in faster time to market, improve quality and reduced costs. The I-DEAS Master Series™ software provides unparalleled ease-of-use, a variational technology foundation, intelligence and a foundation for team-oriented design. I-DEAS Master Series™ software products provide a comprehensive solution that addresses design engineers' complete requirements for mechanical product design in a concurrent engineering environment.

IRIX version compatibility:

I-DEAS Plastics Processing™, I-DEAS Plastics Designer™

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I-DEAS Plastics simulation software products allow manufacturers to significantly improve the quality of their plastic parts and components. A single coupled simulation for filling, cooling and warpage helps users achieve increased accuracy by evaluating the interrelated effects of all three simulations. Since mold temperatures and heat transfer strongly influence flow behavior, the coupling of thermal and flow into a simultaneous interactive solution provides unparalleled accuracy. Not only are users assured of complete fill, but they are also able to focus attention on improved part quality by optimally locating welds. This minimizes material degradation and controls undesirable stresses that may cause unacceptable discoloration, structural degradation, part deformation and warp.

IRIX version compatibility:

Engineering Analysis

I-DEAS for Test

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I-DEAS for Test software products provide an integrated set of tools and features enabling testing to play a more strategic and cost-effective role in the mechanical product development process. Their integration and data management capabilities, combined with significantly enhanced ease-of-use, facilitate more effective communication of test results. Test products employ integrated data management capabilities, which help users manage the enormous amount of data collected in a typical test lab and permits them to easily set up test data bases to control, search and receive data according to their needs. By making data more accessible, team members are able to take test results into consideration when they modify product designs and perform analysis, ultimately resulting in better products.

IRIX version compatibility:

I-DEAS™ Open Architecture

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Telesales Rep
Structural Dynamics
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Milford, OH 45150
USA
513-576-2002
513-576-2135 (fax)
tom.arnold@sdrc.com
http://www.sdrc.com/

I-DEAS™ Open Architecture allows I-DEAS to exchange data with commercial packages and user applications in electronics, mechanical design, analysis, testing, machining, rapid prototyping and other functions. Wireframe, surface, and solid geometry can be directly imported and exported to and from I-DEAS. This geometry can be used "as-is," or modified and used with all I-DEAS applications. By providing direct access to information in the master model through an application programming interface, I-DEAS serves as the core technology underlying the entire concurrent engineering process.

IRIX version compatibility:

I-DEAS™ Open Architecture Applications

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http://www.sdrc.com/

I-DEAS™ Open Architecture Applications: I-DEAS Open Link™, I-DEAS Open Data™, I-DEAS Solid Link™, I-DEAS 3D IGES Data Translator™, I-DEAS 2D Drafting IGES Data Translator™, I-DEAS PCB Data Translator™, I-DEAS VDA-FS Data Translator™, I-DEAS SET Data Translator™, I-DEAS Rapid Prototyping Data Translator™, I-DEAS DXF Data Translator™, I-DEAS Data Translator CATIA to/from I-DEAS™, I-DEAS Data Translator CADAM to/from I-DEAS™ Drafting, I-DEAS Data Translator ABAQUS to/from I-DEAS™, I-DEAS Data Translator ANSYS to/from I-DEAS™, I-DEAS Data Translator Cosmic NASTRAN to/from I-DEAS™, I-DEAS Data Translator MSC NASTRAN to/from I-DEAS™, I-DEAS Data Reader MSC NASTRAN™, I-DEAS Data Translator CATIA SOLIDS to I-DEAS™, I-DEAS Data Translator MEDUSA to/from I-DEAS Drafting™, I-DEAS Data Translator CADD4X to/from I-DEAS Drafting™, I-DEAS Open Interface™.

IRIX version compatibility:

Engineering Analysis

I-DEAS™ Plastics Applications

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I-DEAS™ Plastics Applications: I-DEAS Mold Filling™, I-DEAS Mold Cooling™, I-DEAS Warp and Shrink™, I-DEAS Weld Locator™, I-DEAS Thermoset Molding™, I-DEAS Material Data System™, I-DEAS Material Data Catalog Plastics™.

IRIX version compatibility:

I-DEAS™ Test Applications

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I-DEAS™ Test Applications: I-DEAS Signal Processing Base™, I-DEAS Standard Post Processing™, I-DEAS Transient Post Processing™, I-DEAS Standard Measurements™, I-DEAS Order Tracking™, I-DEAS Modal™, I-DEAS Modal Analysis Automation™, I-DEAS Correlation™, I-DEAS Test Data Display™, I-DEAS Structural Modification™, I-DEAS Fatigue™, I-DEAS Transient Measurements™, I-DEAS Acoustic Intensity Measurements™, I-DEAS Vibro-Acoustics™, SDRC Sound Quality Engineering™.

IRIX version compatibility:

I-DEAS™ for Project Management

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I-DEAS™ Team Data Manager™ software, the control center of the team-oriented approach, provides facilities for project configuration, active E-mail notification of design changes, definition and query of design states, definition and control of data access privileges and files attachment for tracking engineering change order information.

IRIX version compatibility:

I/ABAQUS (Intergraph/ABAQUS Interface)

Kim Corbridge
Product Mktg Manager
Intergraph Corporation
MS GD 3000
Huntsville, AL 35894-0001
USA
205-730-3701
205-730-3453 (fax)

http://www.intergraph.com

I/ABAQUS (Intergraph/ABAQUS Interface) provides a direct link between Intergraph's Finite Element Modeling System (I/FEM) and the ABAQUS program from HKS. Designed for use within the I/FEM environment, includes tools for automatically formatting model data between the programs. Used by designers and engineers for concept and detailed analysis.

IRIX version compatibility:

Engineering Analysis

I/ANSYS (Intergraph/Ansys Interface)

Kim Corbridge
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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

I/ANSYS (Intergraph/Ansys Interface) provides a direct link between Intergraph's Finite Element Modeling System (I/FEM) and the ANSYS program from ANSYS, Inc. Designed for use within the I/FEM environment, I/ANSYS includes tools for automatically formatting model and result data for seamless exchange between the programs.

IRIX version compatibility:

I/CMOLD (Intergraph/CMOLD Interface)

Kim Corbridge
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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

I/CMOLD (Intergraph/CMOLD Interface) provides a direct link between Intergraph's Injection Flow Analysis product (I/FLOW) and the C-MOLD product from A.C. Technology. Designed for use within the I/FLOW environment, I/CMOLD includes tools for automatically formatting model data between the programs. Used by designers and engineers for concept and detail analysis.

IRIX version compatibility:

I/CSA (Intergraph/CSA NASTRAN Interface)

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205-730-3701
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<http://www.intergraph.com>

I/CSA (Intergraph/CSA NASTRAN Interface) provides a direct link between Intergraph's Finite Element Modeling System (I/FEM) and the CSA NASTRAN program from CSAR. Designed for use within the I/FEM environment, includes tools for automatically formatting model data between the programs. Used by designers and engineers for concept and detail analysis.

IRIX version compatibility:

I/FEM (Intergraph/Finite Element Modeling System)

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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

I/FEM is a software package for general-purpose finite element analysis (FEA). I/FEM simulates and evaluates performance characteristics of designs using models created with the Engineering Modeling System (EMS). I/FEM integrates FEA modeling and solution tools with associative variational geometry.

IRIX version compatibility:

Engineering Analysis

I/FEM-MODELER (Intergraph/Finite Element Modeler)

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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

I/FEM-MODELER (Intergraph/Finite Element Modeler) is equivalent to I/FEM without the internal solver for structural analysis. It is intended for use by users who plan to use it as a pre- and post-processor to third party solvers (such as ANSYS, NASTRAN or others). I/FEM-MODELER performs general purpose finite element modeling/postprocessing. It includes a finite element modeling system for generating meshes for framed, surface, and solid structures. Any existing object or structure defined in EMS may be meshed with the system. The system allows the user to define nodes, elements, loads, properties and boundary conditions.

IRIX version compatibility:

I/FEM-Thermal (Intergraph/FEM Thermal Solver)

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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

I/FEM-Thermal (Intergraph/FEM Thermal Solver) presents mechanical engineers with a new set of tools to measure thermal effects in mechanical environments. I/FEM-Thermal runs directly with I/FEM, integrating the thermal solution with associative variational geometric and FEA modeling tools, as well as animation, graphing, and visualization of analysis results data.

IRIX version compatibility:

I/MARC (Intergraph/MARC Interface)

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Intergraph Corporation
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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

I/MARC (Intergraph/MARC Interface) provides a direct link between Intergraph's Finite Element Modeling System (I/FEM) and the MARC program from MARC Research and Analysis Corp. Designed for use within the I/FEM environment, includes tools for automatically formatting model data between the programs. Used by designers and engineers for concept and detail analysis.

IRIX version compatibility:

I/MSM (Intergraph/Mechanical Systems Modeler)

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Intergraph Corporation
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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

A software package for analyzing the operation and performance of mechanical systems, I/MSM helps reduce costs and lead times by using computer models to simulate design performance. With interactive graphics and numerical analysis tools, designers and engineers can rapidly evaluate multiple variations of mechanical systems - creating optimized designs in less time and at lower cost than would be possible with actual prototypes.

IRIX version compatibility:

Engineering Analysis

ICAN (Integrated Composite Analyzer)

Karen Newcomb
Information Analyst
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382 East Broad Street
Athens, GA 30602
USA
706-542-3265
706-542-4807 (fax)
service@cosmic.uga.edu
<http://www.cosmic.uga.edu/pub/SGI.html>

ICAN, Integrated Composite Analyzer, version 3.0, was designed to provide a comprehensive linear analysis of multilayered fiber composites. The analysis contains the essential features required to effectively design structural components made from fiber composites. ICAN has many features, including a dedicated data bank of constituent material properties. Written in FORTRAN 77 for IBM PC series and compatibles and UNIX-based computers. PROGRAM NUMBERS: LEW-15592, LEW-15832

IRIX version compatibility:

ICEPAK™

Madeline Burkhart
Worldwide Marketing
Fluent Inc.
500 Davis Street
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708-869-6495 (fax)
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a CAD-like thermal management software tool for electronic packaging engineers, ICEPAK uses Computational Fluid Dynamics (CFD) to analyze the combined effects of air flow and thermal distribution. ICEPAK helps engineers create new designs, test and refine untested designs, and update, revise, or improve old designs. Features include: library of standard objects (PCBs, fans, resistances, etc.), automatic optimized mesh generation, and extensive results viewing capability.

IRIX version compatibility:

ICM GMS®

Lawrence L. Barinka
President
Interactive Computer
Modeling, Inc.
PO Box 2280
Reston, VA 22090
USA
703-476-1600
703-476-1606 (fax)

ICM GMS® is a three-dimensional solid modeling and visualization system that fully utilizes the advanced features of Silicon Graphics workstations. It provides highly interactive tools for conceptualizing, modeling and analyzing complex parts and assemblies. The intuitive human interface employs mouse-driven, on screen menus that are easy-to-learn and easy-to-use. You can use ICM GMS alone, or with your choice of our tightly coupled MCAE/CAD/CAM applications involving:

- Kinematics/Dynamics -- ICM LYNX2™ and ICM IMP™ or MDI ADAMS® software
- FEM/FEA -- ICM LYNX3™ and ICM NASTRAN or ETA FEMB® software
- Animation/Simulation -- ICM LYNX4™ or Custom Interfaces
- CAD/CAM -- ICM IGES/PDES or Custom Translators

IRIX version compatibility: 6.2

ICM IMP™

Lawrence L. Barinka
President
Interactive Computer
Modeling, Inc.
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Reston, VA 22090
USA
703-476-1600
703-476-1606 (fax)

ICM IMP™ is a general purpose software program for the kinematic, static, dynamic, inverse dynamic and assembly analysis of mechanical systems. For each of these types of analyses, the positions, velocities, accelerations, static and dynamic forces, natural frequencies, damping ratios and small oscillation transfer functions of the mechanical system are appropriately determined. ICM IMP™ provides the unique ability to modify the mechanical system as the analyses progress. An MCAE application interface is provided through ICM LYNX2™, which tightly couples 3-D solid modeling and visualization from ICM GMS® with 3-D kinematic and dynamic analysis of mechanical systems from ICM IMP™.

IRIX version compatibility: 6.2

Engineering Analysis

ICM LYNX2™

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703-476-1600
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ICM LYNX2™ is a preprocessing and postprocessing MCAE application interface that tightly couples 3D solid modeling and visualization from ICM GMS® with 3D kinematic and dynamic analysis of mechanical systems from ICM. Complete preparation of the mechanics system model, transfer of the solid model mass property calculations, and visual verification of the mechanical system model and attributes are readily accomplished during preprocessing. Comprehensive graphical output for the mechanical system simulation is supplied during postprocessing, including 2D plotting capabilities and 3D shaded solid model animation with superimposed velocity, acceleration and force vectors. The kinematics/dynamics preprocessing and postprocessing are accomplished via an easy-to-use human interface that employs mouse-driven, on-screen menus.

IRIX version compatibility: 6.2

ICM LYNX3™

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President
Interactive Computer
Modeling, Inc.
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USA
703-476-1600
703-476-1606 (fax)

ICM LYNX3™ is a preprocessing and postprocessing MCAE application interface that couples 3D solid modeling and visualization from ICM GMS® with 3D finite element analysis from ICM NASTRAN. The FEM mesh discretization may be derived interactively from the solid model. Comprehensive graphical presentation of the FEA results is supplied during postprocessing, including deformed and/or undeformed node and element plots with or without superimposed node and element numbers, translational and rotational restraints, color coded stress contour plots of over a dozen types of stresses or yield criteria, mode shape plots, or transient analysis plots -- all with full 3D viewing control options to enhance visualization of FEA results. The FEM/FEA preprocessing and postprocessing are accomplished via an easy-to-use human interface.

IRIX version compatibility: 6.2

IPG-DRIVER™

Alexander Schmidt
Dr.-Ing
IPG GmbH
Kaiserallee 111
Karlsruhe, D-76185
Germany
49-721-98520-0
49-721-98520-99 (fax)

IPG-DRIVER™ models real drivers for use in vehicle dynamics simulation environments. A driver's actions on any given course are: • The choice of speed according to the characteristics of the course and vehicle behavior • The path within the limits of the course • Steering over the steering wheel angle and steering wheel moment • Accelerating and braking over accelerator position and brake force

IPG-DRIVER adapts automatically to the dynamic behavior of the vehicle and is capable of learning. It allows true closed-loop-maneuvers with vehicle simulation models. It is also an approved tool that is immediately applicable and easy to use.

IRIX version compatibility: pre-5.x, 5.x, 6.x

IPG-FRICTION

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49-721-98520-99 (fax)

IPG-FRICTION is a tool for the imitation of dry friction in dynamic simulation models. IPG-FRICTION works as a torque element. Any friction factor could be given and vary during the simulation. Knowledge of the whole system is not necessary. It could be used at any point in the system.

IPG-FRICTION is a complete tool which is easy to use: the tool with one interface brings you optimal calculation time. IPG-FRICTION could be used in your daily simulation work.

IRIX version compatibility: pre-5.x, 5.x, 6.x

Engineering Analysis

IPG-GRAPH

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49-721-98520-99 (fax)

IPG-GRAPH is a program for easy and flexible visualization of results of measurements and simulations in research and technology. IPG-GRAPH is developed for modern workstations, the quality of your output for the quick-daily checking of results up to high-quality folio-print for presentations.

IPG-GRAPH is easy to install in any user program as an output model for visualization in 2D or 3D.

IRIX version compatibility: pre-5.x, 5.2, 6.x

IPG-KINEMATICS

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Germany
49-721-98520-0
49-721-98520-99 (fax)

IPG-KINEMATICS is an interactive tool for the calculation of the kinematic, steering kinematic and elastic kinematic of any wheel suspension. You could use IPG-KINEMATICS at the construction for the configuration of the undercarriage and also for the calculation.

IPG-KINEMATICS is easy to use. It has a graphical user-surface from which you could choose the description of the wheel suspension and the evaluation of the simulation results. An interface to vehicle simulation models is present. You could imitate calculated or measured characteristic line of axle-kinematic in the simulation of vehicle dynamics.

IRIX version compatibility: pre-5.x, 5.x, 6.x

IPG-MOVIE®

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IPG GmbH
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Germany
49-721-98520-0
49-721-98520-99 (fax)

IPG MOVIE® is an all-in-one 3-D animation package for visualization of simulation results in scientific and engineering applications, high-quality presentations, and video production in broadcast quality.

Its unique user-friendly surface provides immediate access to the trackball control of all camera attributes in real time. It also gives users a VCR-like panel for play-forward or play-backward in any frame frequency, and cut board for assembling complete movies.

Objects are modeled with the powerful description language or included from CAD programs. Key-frames, lists, or algebraic equations define motion. Any number of views and magnifiers can be displayed. Perfect rendering creates lifelike images.

IRIX version compatibility: pre-5.x, 5.x, 6.x

IPG-TEST™

Alexander Schmidt
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Germany
49-721-98520-0
49-721-98520-99 (fax)

IPG-TEST™ controls and evaluates real and simulated driving maneuvers according to the standards of the automotive industry. IPG-TEST can simulate the following test procedures: • Steering angle step input • Single and permanent sinus steering • Triangle impulse • Steady-state cornering • Braking in a curve • Random input steering • Double lane change • Passing a crosswind machine and driving in natural crosswind

IPG-TEST conducts these simulations automatically with any vehicle model. Simulated or measured data are evaluated in terms of steering angle demand curve, response time and TB-value, magnitude and phase angle curves, and Teq.

IRIX version compatibility: pre-5.x, 5.x, 6.x

Engineering Analysis

IPG-TIRE™

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49-721-98520-99 (fax)

IPG-TIRE™ links tire and road for force and moment transmission in simulations of passenger cars and trucks. It determines the static side, lateral force, and the aligning torque in response to side slip angle, slip, wheel-load, and camber. Although based on a few easily measurable characteristic curves, IPG-TIRE approximations are highly reliable for any stress combination.

Some modules account for the transient characteristics of the horizontal and the vertical forces; others provide graphical evaluation capacities. IPG-TIRE is a precise and efficient tire model. It is easy to integrate into any simulation environment and requires a minimum of the user's attention.

IRIX version compatibility: pre-5.x, 5.x, 6.x

ISC Design Optimizer

Bruce Campbell
Development Manager
Integral Solutions
Corporation
7287 Coronado Drive
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San Jose, CA 95129
USA
408-446-0422
408-446-4214 (fax)
BARUCH@iscusa.com

The ISC Design Optimizer fully automates the iterative process of design modification through seamless integration of Integraph's parametric design system and the user's choice of analysis engines. The engineer provides:

An initial design.

- A list of changable parametric variables
- A list of design constraints such as maximum stress and deflection
- A design objective such as minimizing mass

The ISC Design Optimizer invokes the analysis program, modifies the parametric variables based on the results and repeats the process until an optimum design is found.

IRIX version compatibility:

Interactive Aerospace Modeling System (IAMS)

Donna Milewski
Dir., Sales & Marketing
Analytical Graphics, Inc.
660 American Avenue
King of Prussia, PA 19406
USA
610-337-3055
610-337-3058 (fax)
donna@stk.com
http://www.stk.com

The Interactive Aerospace Modeling System (IAMS) is a commercially available tool ideal for aerospace analysis, marketing, presentations, and videotape animation production. IAMS is a 4-D (three spatial dimensions plus time) modeler capable of displaying a complete satellite constellation, including earth model, star fields, orbiting and nonorbiting vehicle models, and terrestrial objects. The analyst can perform simulations of selected scenarios or real-time animation. IAMS provides aerospace engineers the capability to quickly and easily analyze and communicate complex aerospace ideas in a technically accurate and visually exciting fashion.

IRIX version compatibility:

Intergraph™ - MSC NASTRAN Interface (I/MSC)

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Intergraph Corporation
MS GD 3000
Huntsville, AL 35894-0001
USA
205-730-3701
205-730-3453 (fax)

http://www.intergraph.com

The Intergraph™ - MSC NASTRAN Interface (I/MSC) provides a direct link between Intergraph's Finite Element Modeling System (I/FEM) and the MSC NASTRAN program from MSC. Designed for use within the I/FEM environment, includes tools for automatically formatting model data between the programs. Used by designers and engineers for concept and detail analysis.

IRIX version compatibility:

Engineering Analysis

Intergraph™ - Moldflow Interface (I/MOLDFLOW)

Kim Corbridge
Product Mktg Manager
Intergraph Corporation
MS GD 3000
Huntsville, AL 35894-0001
USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

The Intergraph - Moldflow Interface (I/MOLDFLOW) provides a direct link between Intergraph's Injection Flow Analysis product (I/FLOW) and the MF/FLOW product from the Moldflow Pty. Ltd. Designed for use within the I/FLOW environment, includes tools for automatically formatting model data between the programs. Used by designers and engineers for concept and detail analysis.

Software Requirements: Though designed for the use with FEA software, does not require FEA program for operation.

IRIX version compatibility:

Intergraph™ - Plastics Flow Analysis (I/FLOW)

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205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

The Intergraph™ Plastics Flow Analysis Systems (I/FLOW) is a software package for simulating and predicting injection flow behavior under test conditions. Used by designers and engineers. Software requirements: Although designed for use with I/FLOW, does not require other programs for execution.

IRIX version compatibility:

Intergraph™ - Rapid Prototyping Interface (I/PROTOTYPE)

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Intergraph Corporation
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USA
205-730-3701
205-730-3453 (fax)

<http://www.intergraph.com>

The Intergraph™ Rapid Prototyping Interface (I/PROTOTYPE) is a software package that links the Engineering Modeling System (I/EMA) with rapid prototyping technology. I/PROTOTYPE automatically generates triangular facets for I/EMS solid models and formats the data for input to lesser prototyping devices.

IRIX version compatibility:

JASPER

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JASPER is a CFD based tool designed to perform comprehensive computational simulations of turbulent Reacting Flows in an axi-symmetric configuration. Current software simulates reaction and non-reacting flow of gases and particles, including gaseous diffusion flames, pulverized-coal flames, liquid sprays, coal slurries, isothermal and reacting two-phase flows, injected sorbents and NOx chemistry including SNCR injection and re-burning. All modes of heat transfer are included in the analysis. Our tools have been applied to a variety of industrial combustion and chemical process systems, including gas and fossil fuel fired utility boilers, gasifiers, gas turbine combustors, rotary kilns, waste incinerators, chemical process heaters and smelters.

IRIX version compatibility: 5.x, 6.x

Engineering Analysis

LARSTRAN™

Ulrich Hindenlang
LASSO
Ingenieurgesellschaft
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70771 Leinfelden-
Echterdingen,
Germany
011-49-711-9499150
011-49-711-9499157 (fax)

LARSTRAN™ is a general-purpose, finite element program for applications in linear and nonlinear mechanics. LARSTRAN elements treat large displacements and large strains as well as general nonlinear (anisotropic) material laws. LARSTRAN procedures include capabilities in statics, dynamics, heat transfer, thermomechanical coupling, slow viscous motion, and metal forming. The size of the problem (number of degrees of freedom) is not limited. LARSTRAN can be integrated with user applications or existing CAD software and adapted to special user requirements.

IRIX version compatibility:

LS-DYNA3D

Bence Gerber
VP, Sales & Marketing
Livermore Software
Technology Corporation
2876 Waverley Way
Livermore, CA 94550
USA
510-449-2500
510-449-2507 (fax)
big@lstc.com

LS-DYNA3D is a general-purpose, explicit 3-D finite element analysis application. It was developed specially for non-linear analysis, to solve impact related problems. It is used by engineers and scientists to analyze large deformation response of inelastic solids and structures in a number of industries including automotive, aerospace, metal manufacturing, plastics, and defense.

The program is available together with a pre and post processor and provides the most technically advanced while easy to use software application in the area of dynamic analysis. Interface to other pre and post processors and mesh generators have enabled users to quickly and efficiently solve problems based on data generated by other programs.

IRIX version compatibility:

MAGMASOFT™

Chris Rosbrook
.Vice President
Magma Foundry
Technologie
2340 S. Arlington Heights
Rd.
Suite 415
Arlington Heights, IL 60005
USA
847-427-1001
847-427-0601 (fax)

MAGMASOFT™ is a comprehensive tool for simulation of foundry practices. 3-D fluid flow and solidification simulations are combined to provide a complete model for all casting processes. A control volume formulation is used for solutions to Navier-Stokes and Fourier equations. Non-uniform control volume meshes are generated automatically from solid models created in the built-in-solid modeler or from models transferred from outside CAD packages. IGES, stereolithography, and finite element mesh geometry transfers are supported. Included within the software is a database where all material properties necessary for the simulation (density, thermal conductivity, heat capacity, latent heat, viscosity) are stored. The database is open allowing the user to modify existing material properties and add new sets of properties for new alloys and molding media.

IRIX version compatibility:

MANTA™

Itai Bass
Engineering Support
B.A. Intelligence Networks
21555 Melrose Avenue
Suite 16
Southfield, MI 48075
USA
810-799-8900
810-356-7421 (fax)

MANTA™ is a Product Data Management (PDM) system designed to support product development and engineering throughout the entire product life cycle - beginning with early design phases, through detailed design, production and maintenance. MANTA explicitly supports the entire product life cycle, providing the organization with a sound methodological approach to product/engineering data management.

MANTA's friendly Graphical User Interface (GUI) uses pull-down menus and icons to control the dialogue between user and system. Most interactions are based on mouse point-and-click actions. Options that are not available for the specific user type or in the specific context are greyed out.

IRIX version compatibility: 5.2, 5.3, 6.x

Engineering Analysis

MARC

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U.S. Ops Administrator
MARC Analysis Research
Corporation
260 Sheridan Avenue
Suite 309
Palo Alto, CA 94306
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415-329-6831
415-323-5892 (fax)
joe@marc.com
<http://www.marc.com>

MARC is a general-purpose finite element code for advanced engineering analysis. The code has special emphasis on nonlinear structural and thermal problems. It represents the state-of-the-art in computational mechanics including automated contact analysis, adaptive meshing solvers which are especially efficient for large-size problems; reduced integration elements using hourglass control which are both accurate and fast. It also has an extensive material library for modeling modern materials with nonlinear properties including elastomers. User subroutines are available which open the code to the user for customization.

IRIX version compatibility: pre-5.x, 5.x, 6.x

MARC K6.3

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MARC K6.3 is a full function, parallel processing version of MARC utilizing Domain Decomposition for dramatic performance scalability for MPP computer systems.

IRIX version compatibility:

MARC/Designer 1.1

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MARC/Designer 1.1 is a powerful, fast, efficient, fully integrated and extremely easy to use modeling and analysis system for designers.

IRIX version compatibility:

Engineering Analysis

MARC/Designer™

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MARC/Designer™: A powerful, integrated, and extremely easy to use modeling and analysis system. It provides fast and accurate results to initial design questions involving linear analysis. Since nonlinear analysis may be a consideration for the complete design of modern products, MARC Designer is full compatible with MARC's nonlinear FEA software. Designer supports four types of analysis types:

- 1) Linear Static Stress Analysis
- 2) Steady State Heat Transfer
- 3) Modal Extraction
- 4) Linear Buckling

Other features include ACIS solid modeling and Advanced Rendering capabilities.

IRIX version compatibility: pre-5.x, 5.x, 6.x

MARC/Link-s

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MARC/Link-s extends the functionality of I-DEAS Master Series to support the full capabilities for nonlinear analysis all using the I-DEAS interface environment.

IRIX version compatibility:

MECHANISM/Pro™

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MECHANISM/Pro™ enables Pro/ENGINEER™ users to create mechanical systems to:
1) Test the feasibility of various configurations, 2) calculate driving forces or torques needed to move the system at a desired rate, 3) detect interferences between components, 4) locate lock-up positions, 5) establish work space envelopes, 6) verify and evaluate motion paths, and 7) calculate component loads at joint positions. MECHANISM/Pro includes an interface to Pro/ENGINEER (developed by MDI with the Pro/DEVELOP™ toolkit), combined with ADAMS/Kinematics™, the embedded motion solver. For kinematics studies, MECHANISM/Pro functions as a self-contained simulation package.

IRIX version compatibility: 5.3, 6.1, 6.2

Engineering Analysis

MEMaterial™

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NO_EMAIL

MEMaterial™ is an analysis software for modeling the behavior of microelectronic material. By providing insight into the behavior of materials, MEMaterial helps design and process engineers develop better devices faster.

IRIX version compatibility: 5.3, Pre 5.x

MENTAT II

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MENTAT II is a powerful GUI pre- and post-processing system for the MARC non-linear finite element system. The user can generate solid models using parametric or constructive solid geometry entities, or import solids from ACIS® and other leading CAD systems.

A surface or solid model may be automatically meshed. Material properties, loads, and boundary conditions as well as contact surfaces can be easily applied. Post-processing capabilities consisting of all standard deformed geometry, stress/strain contour, X-Y plotting, arbitrary cutting planes, light-source shading, and animation. Advanced rendering uses ray tracing techniques to produce photorealistic images.

IRIX version compatibility: pre-5.x, 5.x, 6.x

MESA VERDE®

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Germany
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49-721-98520-99 (fax)

MESA VERDE® is a rigid body simulation package. It contains a building kit for structures; control of logic and syntax; a generator of nonlinear, symbolic equations of motion; a solution procedure; and a graphic evaluation. With MESA VERDE any given 3-D bodies can be modeled. Any kind of system structure, even kinematic loops are permitted. Joints can be defined by the user or taken from a comprehensive library of joints. Users are free to choose bodies, force elements, entering points for inner and outer forces and moments, the definition of motion of the target system, and the setting of markers.

IRIX version compatibility: pre-5.x, 5.x, 6.x

MF/COOL

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Version 4. MF/COOL, used by the plastics industry to optimize the effects of mold cooling on product quality, is part of the Moldflow Dynamic Series, enabling all companies in the injection molding industry to produce plastic parts faster, better, cheaper.

Using MF/COOL, the plastics engineer can design in product quality and optimize production parameters before mold building. Cooling line layout, coolant parameters and cycle time can be evaluated to give cost effective product quality. Shorter cycle times save precious production seconds and improve molding machine capacity, ultimately saving the expense of a new machine.

IRIX version compatibility: 5.3, Pre 5.x

Engineering Analysis

MF/FLOW

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Version 9. MF/FLOW is a key tool in the Moldflow Dynamic Series and analyses plastics flow within the mold, to optimize the effects of part geometry, material, gating layout and processing on part quality. MF/FLOW is used to successfully design thousands of molds each year.

Using MF/FLOW wall sections can be thinned to reduce material content and cycle time without jeopardizing mold filing. Weld lines, jotting and airtraps can be anticipated and avoided, or repositioned to less critical regions. A wide processing window can be defined that will give acceptable moldings despite inevitable variations in molding machines, material properties and machine settings.

IRIX version compatibility: 5.3, Pre 5.x

MF/GAS

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MF/GAS enables the plastics engineer to optimize the effects of the gas injection molding process on the shape, strength, appearance, and production costs of the final molded product. Because the GIM process is inherently more complex than conventional injection molding, predictive analysis software is the only cost effective method to optimize design and production.

Using MF/GAS, component geometry, material selection and plastic/gas, processing conditions are optimized at the design stage, when cost of change is negligible. Gas penetration alters polymer wall thickness and localized product strength. MF/GAS predicts and graphically displays polymer wall thickness and gas blowthrough.

IRIX version compatibility: 5.3, Pre 5.x

MF/OPTIM

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Version 1. MF/OPTIM plastics flow optimization analysis is one of the ten integrated tools in the new Moldflow Dynamic Series designed to help the plastics industry produce parts faster, better, cheaper. MF/OPTIM is the first commercially available product to automatically generate optimum filling and packing profiles.

MF/OPTIM accelerates Moldflow analyses by using embedded design principles and optimization algorithms to automatically refine a number of flow analyses. Mold processing parameters are optimized without any user interaction, leaving plastics engineers free for other tasks. No specialist skills are required to interpret analysis results, and no manual inputs are needed to run further analyses.

IRIX version compatibility:

MF/SHRINK

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Version 1. MF/SHRINK enables tool designers and toolmakers to size mold cavities to produce a product of known and acceptable dimensions.

Cavities sized using traditional generic material shrinkage values are often inaccurate and require final cavity dimensions to be determined through expensive and time consuming prototyping, mold commissioning and mold reworks.

MF/SHRINK is the first commercially available finite element analysis tool to predict plastics shrinkage based on the full effects of processing and grade specific material data. MF/SHRINK calculates varying shrinkage allowances in different directions and a single shrinkage value that will best meet critical molding dimensions as specified by the user.

IRIX version compatibility: 5.3, Pre 5.x

Engineering Analysis

MF/STRESS

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Version 3. MF/STRESS structural analysis for plastics is part of the Moldflow Dynamic Series, an analysis suite that together optimize the total plastics process. Using MF/STRESS, the plastics engineer can optimize the effects of mold processing on the stiffness of the final molded product, including fiber-filled materials.

MF/STRESS is the first stand-alone structural analysis package specifically tailored for the plastics industry, and is based on a full history of the injection molding cycle. The effects of product geometry, polymer, and processing on the product stiffness can be optimized on computer prior to mold building, avoiding expensive and time consuming prototypes, mold trials, and reworks.

IRIX version compatibility: 5.3, Pre 5.x

MF/TSETS

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Version 9. Using MF/TSETS the thermosets engineer can study flow behavior inside the mold, and optimize the effects of design and processing on product appearance and performance. MF/TSETS is tailored for Reaction Injection Molding (RIM), Transfer Molding, I. C. Chip Encapsulation, Bulk Molding Compound (BMC) injection molding, and Resin Transfer Molding (RTM).

When used to optimize the competitive IC Chip encapsulation process, MF/TSETS enables the user to predict and avoid wire sweep, voids, and weld line placement during the design phase, when cost of change is minimal. Automatic runner balancing maintains uniform polymer flow to each cavity, minimizing wire sweep and material wastage.

IRIX version compatibility: 5.3, Pre 5.x

MF/VIEW

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Version 3. Each plastics optimization tool in the Moldflow Dynamic Series shares a common modeling and results display program called MF/VIEW. MF/VIEW includes rapid surface modeling for quick molding feasibility analysis and full 3-D modeling for optimization analysis. Extensive CAD model translation capabilities enable the user to focus on a single modeling system, errors are reduced, modeling time is accelerated.

MF/VIEW displays Moldflow analyses results such as plastics flow and molding warpage graphically over the part model. Results are easily accessed and understood by all involved in the decision making process, whether within one company or scattered over a number of companies worldwide.

IRIX version compatibility: 5.3, Pre 5.x

MF/WARP

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Version 3. MF/WARP predicts the effects of the injection molding process on the shape of the final molded product. MF/WARP also isolates the cause of warpage in both fiber filled and unfilled plastic moldings so that the correct remedy can be applied.

Using MF/WARP, design and production parameters can be optimized to maintain molding warpage within product specifications despite inevitable molding shop variations.

For ease-of-use, MF/WARP is mouse-driven, and also features a graphical project manager to monitor completed analyses, and instant hypertext on-line help.

IRIX version compatibility: 5.3, Pre 5.x

Engineering Analysis

MINT/DS

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MINT/DS (Multidimensional Implicit Navier-Stokes Time Dependent Design System) is a Navier-Stokes solver using a finite difference representation of the transient form of the Navier-Stokes equations to predict both steady and unsteady fluid flow. MINT/DS utilizes time scaling for rapid convergence in steady-state applications and is designed to efficiently predict the flow in geometrically complex domains for both nonreacting and reacting flow. This version of the product is designed for ease of use by designers by using an interactive menu-driven user interface. Extensive consistency checks are incorporated to guide the user in problem setup and code execution.

IRIX version compatibility: 5.3, 6.2

MOSES™

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MOSES™ is a multi-operational structural engineering simulator, providing modeling, simulation and analysis of ocean structures and vessel systems, and ocean interaction and stress analysis. Includes frequency domain, time-domain, tow, jacket launch and upending computations, structural analysis, and code checks. SI, English or Metric units supported. Function modules available separately.

IRIX version compatibility: 5.3, Pre 5.x

MSC/ARIES™

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MSC/ARIES Version 6 provides interactive graphics modeling, results processing, and close interfacing to MSC/NASTRAN, MSC/DYTRAN and MSC/EMAS. It offers both easy-to-use menus and a powerful command language for maximum flexibility of usage. The user can display a finite element model as a wireframe, hidden line, or shaded solid image. MSC/ARIES's modeling features include solid modeling geometry creation, automatic element meshing, finite element editing, element and material property specification, and application of boundary conditions on the model geometry--all in a graphics environment, thereby saving the user time and effort in creating and verifying models.

IRIX version compatibility:

Engineering Analysis

MSC/DYTRAN™

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MSC/DYTRAN™ Version 2.2 is an explicit transient dynamic code designed to solve large problems that involve the high-speed interaction of fluids and structures, or the extreme deformation of materials. It combines structural and fluid dynamics technology for ease of modeling and uses explicit time integration to provide an efficient solution.

IRIX version compatibility:

MSC/NASTRAN

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MSC/NASTRAN is the world's most comprehensive and most used FEA program. It is employed by engineers and designers to analyze the stress, vibration, and heat transfer characteristics of structural and mechanical components. It is capable of performing structural analysis of virtually any type of product, ranging in size from a contact lens to a giant space vehicle, before prototype development.

With its advanced numerical methods and effective utilization of the latest hardware technologies, MSC/NASTRAN is known around the world for its ability to solve large problems efficiently. In addition, it is equally capable of quick and timely solutions to a wide range of smaller problems.

IRIX version compatibility:

MSC/PATRAN

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MSC/PATRAN is an open-ended 3-D Mechanical Computer-Aided Engineering (MCAE) system that offers next-generation technology in linking engineering design, analysis, and results evaluation. MSC/PATRAN uses a Motif™-based interface that is exceptionally easy to use and easy to learn. MSC/PATRAN also offers unparalleled integration. Using a concept called the Single Geometric Model (SGM), MSC/PATRAN allows a finite element analysis model to be created directly from a CAD system without translating or re-creating the design geometry. MSC/PATRAN's analysis integration allows an engineer to create run-ready decks for solvers such as MSC/NASTRAN using syntax specific to each code. In addition, MSC/PATRAN provides unrivaled engineering functionality and customizability.

IRIX version compatibility:

Engineering Analysis

MSC/PATRAN ADVANCED FEA™

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To bring comprehensive analysis tools to a larger set of engineering problems, MSC has developed MSC/PATRAN ADVANCED FEA™ with Hibbitt, Karlsson & Sorensen, Inc., the leader in "best of class" comprehensive analysis. MSC/PATRAN ADVANCED FEA is completely integrated with MSC/PATRAN finite element pre- and postprocessing software. The technical advantage made available to the engineer with the power and performance of engineering workstations make possible the introduction of this easy-to-use, comprehensive, finite element analysis software program.

IRIX version compatibility:

MSC/PATRAN ANALYSIS MANAGER™

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MSC/PATRAN ANALYSIS MANAGER™ is an application module which provides productive analysis management from within MSC/PATRAN. Both engineers and network managers benefit from MSC/PATRAN ANALYSIS MANAGER by enabling efficient use of local and corporate computing resources. Engineers can more easily manage their jobs, while network managers can reduce the number of fatal runs, balance and control resource use, and assist engineers in meeting their goals using existing resources, thus saving both time and money.

IRIX version compatibility:

MSC/PATRAN FATIGUE™

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MSC/PATRAN FATIGUE™ is an advanced fatigue life estimation software package for use with finite element analysis results. It provides state-of-the-art fatigue design tools that can be used to optimize the life of a product early in the design process. Total life, crack initiation, and crack propagation can be considered. Loading and material database management tools are included with MSC/PATRAN FATIGUE. The MSC/PATRAN FATIGUE software system consists of two elements: GLOBAL multi-node/element analysis and detailed single node or element DESIGN OPTIMIZATION. GLOBAL analysis is tightly coupled to MSC/PATRAN, enabling users to interactively select areas of the structure of interest.

IRIX version compatibility:

MSC/PATRAN FEA™

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To provide a general-purpose finite element analysis tool for engineers working within the design-to-manufacturing process, MSC has developed MSC/PATRAN FEA™. MSC/PATRAN FEA has all of the analysis capabilities that an engineer needs to do basic engineering analysis, coupled with all of the model building and results visualization capabilities of MSC's new MSC/PATRAN pre- and postprocessing software. MSC/PATRAN FEA builds on the extensive features of MSC/PATRAN FEA release 2.5 and on that product's use by major manufacturers worldwide. Key features of MSC/PATRAN FEA are shell and solid models of laminated composites, enhanced dynamics capability, design sensitivity analysis, and an easy-to-use, easy-to-learn interface.

IRIX version compatibility:

Engineering Analysis

MSC/PATRAN LAMINATE MODELER™

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MSC has developed a MSC/PATRAN module for aiding the design, analysis and manufacturing of laminated composite structures. It provides a method of creating accurate laminate material data in the MSC/PATRAN database, from where it may be exported via the analysis preferences. It allows either a designer or an analyst to define the lay-up in a physically intuitive manner, involving no more than identifying the region of application on some geometric shapes and defining the layer properties. Underlying layer application models determine actual fiber orientation after application. For a manufacturer MSC/PATRAN LAMINATE MODELER™ provides manufacturing data, including the cut out shapes for each layer.

IRIX version compatibility:

MSC/PATRAN THERMAL™

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MSC/PATRAN THERMAL™ is a general purpose thermal analysis program which solves steady-state and transient response for one-, two- and three-dimensional problems and axisymmetric problems. MSC/PATRAN THERMAL employs a hybrid finite element/finite difference approach which is accurate for complex geometry models that have highly skewed meshes and for models with directionally-dependent material properties such as composites. MSC/PATRAN THERMAL features a built-in radiation viewfactor code, coupled thermal hydraulic networks, a state-of-the-art nonlinear solver, a built-in convection correlation library, and the capability to output a ready-to-run SINDA deck complete with radiation viewfactors. MSC/PATRAN THERMAL uses the new Analysis Preferences in MSC/PATRAN with intuitive forms to set up the thermal model, submit the job, and post-process results.

IRIX version compatibility:

McDonnell Douglas Human Modeling System (MDHMS)

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D1LC/mdhms](http://www.mdc.com/D1LC/mdhms)**

The McDonnell Douglas Human Modeling System (MDHMS) enables electronic simulation/demonstration of assembly, operations and maintenance early in the design process using 3-D animated human manikin with articulated limbs and inverse kinematics. MDHMS is a menu-driven, interactive computer program used to define design requirements and aid in design evaluation. Major benefits of using MDHMS include: 1) reducing the need for physical development fixtures by performing evaluations electronically, 2) reducing design costs enabling the design team to more rapidly prototype and test a design, 3) avoiding costly design "fixes" later in the program by considering human factors requirements early in the design, and 4) improving customer communications at every step of product development by using compelling animated graphics.

IRIX version compatibility:

Engineering Analysis

Mechanica Motion™

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Mechanica Motion™, release 7.0, provides complete capability for parametric mechanism modeling, 3D static, kinetostatic, dynamic and inverse dynamic analysis and design sensitivity studies and optimization of mechanisms. Mechanica Cams™, release 7.0, provides a unique software for the design and optimization of cams and general slots. Performance requirements of the mechanism are used as input for Mechanica Cams to automatically synthesize a cam profile. Mechanica Cams is an extension of Mechanica Motion. Mechanica Loads™, release 7.0, expands the capabilities of Mechanica Motion by enabling users to write their own external C or FORTRAN program and use it for the generation of forces in Mechanica Motion.

IRIX version compatibility: 5.3, Pre 5.x

Mechanica Structure™

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Mechanica Structure™, release 7.0, provides complete capability for structural modeling, geometric element analysis and design optimization. Linear static and model analysis can be performed with this application. Mechanica Structure also provides design sensitivity studies, automatic accuracy convergence and true geometric shape optimization. Mechanica Thermal™ release 7.0, provides heat transfers analysis and optimization on isotropic and orthotropic materials. It includes similar capabilities for integrated sensitivity studies and shape optimization for thermal and/or structural requirements. Mechanica Thermal is an extension of Mechanica Structure. Mechanica Vibration™, release 7.0, provides dynamic analysis of structures including time, frequency, random and shock response.

IRIX version compatibility: 5.3, Pre 5.x

Mentat II 2.3

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Mentat II 2.3 is the powerful common GUI that drives all MARC products. Version 2.3 provides expanded support of the nonlinear capabilities of MARC as well as automated Domain Decomposition, including the submission, monitoring and post processing of nonlinear parallel executions.

IRIX version compatibility:

Merlin/Apprentice

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Merlin/Apprentice is the first easy-to-use integrated reservoir simulation and geostatistics mapping/package for the petroleum industry. This software provides tools never before available to the petroleum specialists, allowing him to break the "Expert only" and "too expensive" paradigm. The products are easy to learn and intuitive so they are not forgotten once learned. Casual users have found that they can perform simulation studies that actually speed up their day to day work. The software has more than 280 installations world wide, including major universities. It can run on a PC or under soft windows on the SGI platform.

IRIX version compatibility:

Engineering Analysis

MetalCore™/FORESIGHT™

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MetalCore™ is a powerful 3D Virtual Manufacturing Environment designed to provide a better understanding of a sequence of metallurgical processes. This is accomplished by predicting defects, residual stresses and microstructural evolution, all of which leads to reliable finished product mechanical properties. MetalCore™/FORESIGHT™ can perform a broad range of heat treating simulations from quick to state-of-the-art microstructure predictions. MetalCore™/FORESIGHT™'s GUI represents an original concept in intuitiveness and functionality adapted to the needs of both the shop floor and the leading-edge design environment.

IRIX version compatibility: 5.3, 6.2

Metaphase Series 2

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The Metaphase Series 2 product data management (PDM) software system enables manufacturers to manage and control engineering information, specifically, data surrounding new product designs and engineering processes. From the product perspective, it can help to organize design revisions, track versions of an evolving design concept, retrieve archived data, and other product-specific information. From the process perspective, Metaphase Series 2 can orchestrate procedural events such as design reviews, approvals and product releases.

Metaphase Series 2 is an enterprise product data management system. By organizing, tracking and controlling access to product information as it is created, Metaphase Series 2 facilitates a team-oriented approach to product development, because it manages data as it is reviewed, modified, approved and achieved.

IRIX version compatibility:

NISA Family of Programs

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NISA Family of Programs is a suite of general purpose finite element analysis programs for solving structural, composites, fatigue, heat transfer, acoustics, fluid flow, electromagnetic, structural optimization, and mechanical systems problems. The analysis capabilities include diverse and exhaustive features in linear and nonlinear static, normal modes and eigenvalue calculations, transient dynamics, shock spectrum, frequency response, random vibration, steady and transient heat transfer analysis (convection, conduction and radiation boundary condition with temperature dependent material properties), 3D compressible and incompressible fluid flow, fatigue and fracture analysis (crack initiation life, propagation life, stress intensity factors, J-integral, energy release rate), structural optimization, etc. These programs are totally integrated with each other and use a single pre- and post-processing program, DISPLAY III. The distinguishing features of the NISA Family of programs are: highest price/performance ratio, availability on widest variety of computer systems, outstanding performance, depth of analysis capabilities, user friendly documentation, excellent user support and flexible purchase/lease options.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Engineering Analysis

NISA II

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NISA II is a general purpose finite element analysis program. The analysis capabilities include diverse and exhaustive features in linear and nonlinear static (material and geometric), normal modes (eigenvalue) calculation, linear and nonlinear transient dynamics, frequency response analysis, random vibration analysis, shock spectrum analysis, buckling load calculations, steady state and transient heat transfer analysis. The program has a large library of linear, parabolic and cubic isoparametric elements suitable for solving problems in a wide range of industries. The material properties can be isotropic, orthotropic, anisotropic, and hyperelastic (for visco elastic materials) and temperature dependent. Nonlinear material models for creep and plasticity can be defined by users. The boundary conditions (conduction, convection and radiation) in heat transfer can be both time and temperature dependent. View factor calculations are also performed for radiation problems. NISA II is integrated with other EMRC products for structural optimization (NISAOPT), fatigue and fracture calculation (ENDURE), printed circuit board analysis (FEAP), and fluid flow analysis (3DFLUID).

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

NISA-COMPOSITE

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NISA II/COMPOSITE is a powerful capability in the NISA II program for solving static, dynamic, and buckling problems for structures made of composite materials. The specification of fiber orientations for modeling curved surfaces is one of the outstanding features of the program. Three elements for modeling layered composite structures are: 3D layered composite shell, 3D layered sandwich shell, and 3D layered solid (overlay). There is no restriction on the number of layers or the lamination sequence. The thickness and the fiber angles can vary from node to node. The material properties can be temperature dependent and interlaminar stress calculation is supported. Failure theories included are: Maximum stress, Modified Hill-Mises, Tsai-Wu, and R-factor.

The layered composite shell accounts for extensional-bending & bending-twisting coupling and transverse shear deformation. The sandwich shell allows multiple cores with more than two face sheets. The sandwich construction need not be symmetrical. The 3D solid element is assumed to be composed of several laminae: having variable thickness, different material properties or lamination angles.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

NISA/3D-FLUID

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NISA/3D-FLUID is a finite element analysis program capable of solving a wide range of 2D and 3D compressible and incompressible fluid flow and convective heat transfer problems. The compressible module supports: 3D inviscid fluid, 3D viscous fluid, chemically reacting multi-species fluids, advanced turbulent modeling. The incompressible flow capabilities include: steady state and transient flow, laminar and turbulent flow, Newtonian and Non-Newtonian fluids, flow through porous media, rotating frame of reference, temperature dependent material properties, conjugate heat transfer analysis, forced and mixed convective heat transfer, surface radiation with view factor calculation, free surface flow, fluid-solid interaction, particle tracking. The boundary conditions can be periodic, in local coordinate system, temperature or time dependent. NISA/3D-FLUID provides output for a comprehensive review of results, including plots of velocity vector for both 2D and 3D flows, contour plots of pressure, velocity, density, Mach number, temperature.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Engineering Analysis

NISA/ACOUSTICS

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NISA/ACOUSTICS is a boundary element based program to solve real life acoustics/vibration problems encountered in every day engineered products. It can be used to reduce the noise levels radiating from engines, predict the resonant frequency in an automobile or airplane cabin, calculate the sound pressure in the fuselage of an airplane due to the sound transmission from propellers or jet engines. Currently program supports only quadratic elements. It is also linked with the frequency response analysis capability of the general purpose finite element analysis program, NISA II. Following capabilities are available in the current version:

- * Sound radiation in infinite and semi-infinite space
- * Sound scattering in infinite space
- * Sound transmission analysis
- * Natural frequency (eigenvalue) analysis of the cavities

The capabilities planned for the next release are:

- * Sound structure interaction analysis (coupled analysis)
- * Sound absorbing materials
- * Multi acoustic problems

The results can be post-processing using EMRC's graphics program, DISPLAY III. The output quantities include: acoustic, pressure, velocity, sound pressure level (SPL), directivity plots, surface radiation efficiency, sound power, sound intensity and frequency response plots.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

NISA/EMAG

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NISA/EMAG, an integral part of the NISA Family of programs, is a general purpose finite element analysis program capable of handling 2D and 3D electric and magnetic field computations in electromagnetic devices. The program performs analysis by solving appropriate Maxwell's formulations. The material properties can be linear, nonlinear, and anisotropic. The program supports steady and time varying excitations. NISA/EMAG currently supports the following analysis types: Electrostatic, Steady current flow, Magneto-static, Transient magnetic field analysis, Magnetodynamic, and couple magnetic-thermal analysis. The program provides exhaustive output including electric and magnetic potentials, flux densities, electric and magnetic fields, current distribution, electric energy, magnetic energy and co-energy, power losses, forces and torque, and temperature distribution.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

Engineering Analysis

NISA/P-ADAPT

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NISA/P-ADAPT is a MCAE software tool for 2D and 3D structural analysis using adaptive p-version of the finite element method. The program currently supports planar, axisymmetric, 3D solid, 3D general shell, axisymmetric shell, and 3D curved beam elements.

NISA/P-ADAPT uses a special mapping method for exact geometric representation of curved surfaces. It also uses hierarchic shape function for computational efficiency of high p-order. It uses automatic adaptive p-refinement strategy with a posteriori error estimation for each cycle. Local p-order escalation is automatically controlled by local solution behavior. The program provides error indicators to facilitate the selective inclusion of higher modes, user defined convergence tolerance based on energy or error, for adaptive refinement. A powerful artificial mesh option for high quality post-processing is provided which can also be used to generate models for other analyses types. It is integrated with DISPLAY III for pre- and post-processing.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

NISAOPT

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NISAOPT is the most sophisticated family of computer programs available in the world for optimum structural design. Three programs in the NISAOPT family: STROPT, SHAPE, and SECOPT, are fully integrated with NISA II and DISPLAY III. All three programs employ the latest advances in structural optimization theories. STROPT, a program for optimum design of structures of prescribed shape, minimizes the material volume (or weight) of structures by changing the design variables associated with element volumes, such as, thickness, cross-sectional area, fiber angles, layer thickness, etc. SHAPE, a program for shape optimization of solid, shell, or planar continuum structures, removes elements from the design envelope to minimize volume (weight, cost). The program may form and expand new holes and cut-outs within the system. The constraints include: stress and displacement under multiple load cases and stiffness at nodes. SECOPT, minimizes cross-sectional areas of beams and determines optimal dimensions of the sections. The design variables can be thickness and side length of the section.

IRIX version compatibility: 5.1, 5.2, 5.3, 5.x, 6.0, 6.1, 6.2

NSU2D

Dimitri Mavriplis
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NSU2D is a general purpose Navier-Stokes solver specialized for aerodynamic flows. The method uses unstructured grids and achieves rapid convergence through an automated multigrid procedure. Geometry preprocessing, grid generation and adaptation, flow solution and graphical post processing facilities are all provided. Additional capabilities may be incorporated on a customer driven basis.

IRIX version compatibility: pre-5.x, 5.x, 6.x

Engineering Analysis

OptiBORE

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OptiBORE is a software used in engine design. It allows the user to calculate the final distribution and shape, including any rotational and/or translation that might occur, of for example a cylinder bore that has been influenced by a thermal loading conditions.

IRIX version compatibility: 5.x

OptiMESH

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OptiMESH optimizes the existing FE mesh to increase the accuracy of the results by adaptively relocate the grids.

IRIX version compatibility: 5.x

PAM-CRASH™

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PAM-CRASH™ provides a proven solution for crash-test simulation of all types of vehicles (cars, buses, trucks, rolling stock, aeronautic or naval structures). This software is the world's number one in car crash-test simulation.

IRIX version compatibility:

Engineering Analysis

PAM-GENERIS™ and PAM-VIEW™

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ESI Group
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PAM-GENERIS™ and PAM-VIEW™ are the pre- and post-processors for each of the PAM-SYSTEM™ software, giving the PAM-TRADE™ user a dedicated G.U.I. in his own professional language.

For each PAM-SYSTEM product, a particular industry specific version of PAM-GENERIS and PAM-VIEW is available, featuring interfaces with the most popular FEA software, e.g. (MSC/NASTRAN™, ANSYS™,...etc.) or CAD-SYSTEM, as well as comprehensive graphics output like mesh plots, animations and curves with filtering capabilities.

IRIX version compatibility:

PAM-SAFE™

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PAM-SAFE™ is dedicated to the simulation of vehicle passenger safety testing in transportation industries removing the limitations of simplified but idealized numerical models. PAM-SAFE realistically simulates all restraint systems like airbags, seat belts (with slip-rings, retractors, pretensioners...) and offers a library of validated regulation compliant dummies.

IRIX version compatibility:

PAM-SHOCK™

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PAM-SHOCK™ specializes in the simulation of high frequency vibrations response in the aeronautical and space industries (e.g. shock tests) and the protection of fragile product structures for the consumer goods industry (e.g. drop tests).

IRIX version compatibility:

PAM-SYSTEM™

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The PAM-SYSTEM™ is a family of industry proven software products. Each PAM-TRADE™ is dedicated to a particular industry specific application and aims at answering the particular prototype testing needs of its specific category of users. Each product has been developed after a close co-operation with Industrials Leaders of the related PAM-TRADE through "joint studies", resulting in extensively validated products for each particular targeted trade.

IRIX version compatibility:

Engineering Analysis

PERMAS®

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PERMAS® is a general software package for solving engineering problems using the finite element method. PERMAS performs various analyses including static analysis, dynamic analysis, heat transfer and field problems, fluid-structure coupling and acoustics, electrodynamics, contact analysis, laminate analysis, sensitivity analysis, nonlinear material behavior, prebuckling behavior, design optimization, and reliability analysis. A highly developed facility for substructuring and a sophisticated data management system give PERMAS the ability to solve problems of almost any size with limitations imposed only by the hardware. Coupling processors between PERMAS and the pre- and postprocessors MEDINA I-DEAS and PATRAN® are included.

IRIX version compatibility: "5.3, Pre 5.x", 5.2, 6.2

PHLEX®

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PHLEX® is a Finite Element commercial computational kernel. Analytical results are not particularly useful if you cannot estimate their reliability. PHLEX provides the ultimate control of the error in the finite element method by automatically adapting the element size and its order of approximation using residual error estimates on three-dimensional unstructured meshes.

PHLEX has a generic framework to solve arbitrary systems of second order partial differential equations. PHLEX is already at the heart of P3CFD from PDA Engineering, a general-purpose fluid dynamics program, and UNISIM from Texaco, EPTD, a reservoir simulator. PHLEX has a MOTIF-based user interface, contains a complete engineering visualization package, and runs on vector/parallel UNIX platforms.

IRIX version compatibility: 5.3, Pre 5.x

PISDYN

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PISDYN is a simulation code for the analysis of piston secondary motion. The methodology used in PISDYN involves the modeling of the dynamics of the piston, wrist-pin bearing, connecting rod and connecting rod lower end bearing. The force balances on the piston system involve the hydrodynamic/boundary lubrication, Elasto-Hydrodynamic Lubrication (EHL) in the case of flexible piston skirts and bearing mobility/impedance maps. Some of the important output quantities from PISDYN include pressure field on the piston and kinetic energy imparted by the piston on to the liner walls.

IRIX version compatibility: 5.x, 6.x

PREDIG™

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PREDIG™ is a specialized software system for preliminary design and performance prediction of single- and multistage centrifugal and mixed-flow compressors. It calculates design and off-design performance, and can be used to either optimize a new design or analyze an existing design. The geometry allows impellers, vaneless spaces, vaned diffusers, and collectors, scrolls, or return channels.

A menu-type user interface requires input that includes ideal or real gas properties, mass flow, rotor speed, and component geometry. Graphic and tabular output are available for pressure ratio, efficiency, power required, and loss breakdown. Also predicted are surge and choke lines.

IRIX version compatibility:

Engineering Analysis

PZFlex: the finite element solver for piezoelectric modeling

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PZFlex is an explicit-implicit time-domain finite element program for solving problems involving piezoelectric media and/or bioengineering problems of wave propagation in biological media. PZFlex's current installed base includes major transducer manufacturers/designers (medical, industrial and naval), as well as academic and research institutions investigating imaging and therapeutic ultrasound, or novel transduction concepts and materials.

The PZFlex package includes REVIEW, an X11 graphics post-processor for color plots of fields and on-screen movies of solution evolution.

IRIX version compatibility:

PipePak™

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Algor PipePak is the first piping analysis system to combine interactive, CAD-based graphic modeling with a traditional spreadsheet interface. PipePak calculates deflections, reactions and stresses using the finite element method, offering precise and reliable performance on both Pentium processor-and UNIX-based workstations.

IRIX version compatibility:

PolyFEM™ for CATIA

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PolyFEM™ performs direct structural analysis on CATIA solid geometry using the unique PolyFEM-CATIA Integration Module. Seamless PolyFEM menu selections assign model definitions, and fast, accurate results are delivered during the CATIA session.

PolyFEM model definitions, such as boundary conditions, are assigned directly to the solid geometry in CATIA. PolyFEM definitions affected by changes in the model geometry are quickly updated during the CATIA session.

PolyFEM integration extends existing design and analysis capabilities in CATIA, promoting integrated concurrent product engineering. Direct, complete data exchange through CATIA integration ensures data integrity, eliminates redundant activities, and reduces potential for error.

IRIX version compatibility:

Engineering Analysis

PolyFEM™ for Pro/ENGINEER

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PolyFEM™ performs direct structural analysis on Pro/ENGINEER solid geometry using the unique PolyFEM - Pro/ENGINEER Integration Module. Seamless PolyFEM menu selections assign model definitions, and fast, accurate results are delivered during the Pro/ENGINEER session.

PolyFEM model definitions, such as boundary conditions, are assigned directly to the solid geometry in Pro/ENGINEER. PolyFEM definitions affected by changes in the model geometry are quickly updated during the Pro/ENGINEER session.

PolyFEM integration extends existing design and analysis capabilities in Pro/ENGINEER, promoting integrated concurrent product engineering. Direct, complete data exchange through Pro/ENGINEER integration ensures data integrity, eliminates redundant activities, and reduces potential for error.

IRIX version compatibility:

RAPID/CAST®

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RAPID/CAST® is available to foundrymen to simulate casting processes. Part geometry may be imported from CAD or created with the included QuickBuilder module. Rigging design may quickly be optimized interactively using Modulus-based QuickAnalysis. A finite difference method computational fluid dynamic program calculates mold filling, heat transfer, and solidification kinetics. Defects such as microporosity due to gas evolution and macroporosity, and characteristics such as dendrite arm spacing, are predicted with both criteria and first-principle techniques. Pre- and post-processors are mouse driven, and feature advanced 3-D visualization of the part, and animation of the process.

IRIX version compatibility: 5.3, Pre 5.x

RINGPAK

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RINGPAK is a computationally-based and design-oriented code for the analysis of piston ring pack performance. RINGPAK combines several coupled submodels, each representing a distinct physical phenomenon related to the operation of a ring pack. A fully integrated treatment of ring dynamics, inter-ring gas dynamics, hydrodynamic/boundary lubrication, oil transport and ring-bore conformance is provided with the objective of predicting ring friction, ring/cylinder wear loads, lubricating oil consumption and gas blowby.

IRIX version compatibility: 5.x, 6.x

Rapid Prototyping Module® (RPM)

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Imageware's Rapid Prototyping Module® (RPM) supports advanced capabilities for reading, writing, and manipulating rapid prototyping (RP) format data files. Unlike other RP editors, RPM provides an intuitive graphical environment, which allows you to visualize data and perform operations with immediate visual feedback. You can read, visualize, verify, and edit files from any source. You can add and integrate support structures in the RP file. RPM is being used by leading RP service bureaus and end users to make the most of their rapid prototyping investment.

IRIX version compatibility: 5.3, Pre 5.x

Engineering Analysis

SCHEME 10

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SCHEME 10 is an integrated schematic design package.

SCHEME 10 is supplied with a library of symbols normalized and in the sphere you require (pneumatic, pipe, electric, hydraulic).

Features include:

- Dynamic insertion of graphical symbols from user-defined project-libraries.
- Powerful features such as multiple move and copy, delete, rename inform and on-line error checking ensure quick accurate designs.
- Multi-window environment allows the 'consultation' of other projects for viewing or copy elements.
- Automatic extraction of various reports and flexible BOM module.

IRIX version compatibility: 5.3

SDS

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com

SDS is a software package for simulation of 3-D dynamics and kinematics of multibody mechanical systems. SDS is interactive: it computes and simultaneously gives digital values, graphs, 3-D animations; during the simulation you can modify the parameters of your choice.

IRIX version compatibility: 5.3, Pre 5.x

SESAM®

For More Information Call
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A. S.
Veritasveien 1
, N-1322 Hov
Norway
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011-47-67-57-72-72 (fax)
m

SESAM® can perform general-purpose finite element structural analysis. Both static and dynamic analyses can be executed and non-linear effects may be accounted for. Dynamic analysis includes both frequency and time domain analysis. Non-linear analysis covers material plasticity, large deflections, finite strains and non-conservative loading. Hydrodynamic load calculation with automatic load transfer to the structural analysis is available as well.

SESAM is widely utilized by large corporations world-wide and it is a market leader within offshore and marine engineering.

IRIX version compatibility: 5.3, Pre 5.x

Engineering Analysis

SIMAIL

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SIMAIL creates and displays 2-D, 2 1/2-D, and 3-D meshes interactively. It allows interactive generation of meshes (bar, beams, surface, plates, shells, cones, solids) based on characteristic point, line, and surface data; interactive mesh generation from CAD files; interactive mesh positioning and modification, geometric transformations, topological transformations, displacement of vertices, and renumbering of nodes; introduction of different load cases into the system (surface and volume loading-blocking conditions at the limits); display of mesh characteristics (points, lines, physical properties, boundary blocking conditions); and display of the mesh under arbitrary angles with the capability to suppress hidden surfaces, set windows, zoom, and select subregions. SIMAIL provides a powerful reliable voronoi algorithm which computes a tetrahedral mesh from a highly complex geometry defined by its skin mesh.

IRIX version compatibility:

SIMEX©

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SIMEX© is a finite element software package for the analysis of sheet metal forming. Its original one-step formulation makes it useful for part designers and die engineers alike. Almost no knowledge of numerical methods is required. SIMEX is interfaced with most major CAD systems. SIMEX features include prediction of cutting pattern, of residual thickness and deformation and of stamping force. Metal plasticity and anisotropy as well as punch friction and blankholding systems can be taken into account.

IRIX version compatibility: 5.3, Pre 5.x

SPECTRUM™

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Spectrum™ is a unique multiphysics engineering analysis tool that enables the simulation of the multiple and interacting fluid, solid, and thermal physics inherent in real-world engineering designs. Spectrum also provides multiple numerical solution techniques, operation on scalable processing platforms from workstation to massively parallel computers, and Graphical User Interface and Command Language user interaction.

IRIX version compatibility: 5.x, 6.x

SPLASH - Free-Surface Flow Simulation for Yachts and Ships

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SPLASH is a fully 3-D nonlinear free-surface potential flow panel code for aero/hydrodynamic design and analysis of marine vehicles. Applications range from steady and unsteady (seakeeping) performance predictions for America's Cup and other grand prix race sailing yachts, to prediction of unsteady hydrodynamic loadings for structural analysis of oil tankers.

IRIX version compatibility: 5.x, 6.x

Engineering Analysis

STAGS 2.0

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STAGS 2.0 is a finite element code for general-purpose nonlinear analysis of stiffened, thin-shell structures of arbitrary shape and complexity. Its capabilities include stress, stability, vibration, and transient analyses, with both material and geometric nonlinearities permissible for all analysis types. It is used extensively throughout the aerospace, ship-building, and other industries for analysis of panels, pressure vessels, and general shell structures. STAG 2.0's forte is the analysis of complex, nonlinear systems that depend on post-buckling strength and require analysis well into the post-buckled regime. It is routinely used for pre- and post-test verification of complex systems, especially those sensitive to initial geometric imperfections, which can be defined in STAG 2.0 with great ease and flexibility. Source code is included. Implemented under IRIX 4.0.5 and 5.2. Available by license.

IRIX version compatibility:

STAR-CD

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STAR-CD is a multi-purpose thermofluids analysis code. It is designed for engineers requiring a robust and efficient software tool, capable of modeling fluid flow, heat transfer, mass transfer, and chemical reaction. STAR-CD is a self-contained package with flexible, easy-to-use pre-/post-processing facilities. This, in combination with an array of reliable and tested physical models, makes it ideal for both expert and novice users. STAR-CD comes with a fully interactive graphical user interface. It can be used as a self-contained, stand-alone system, or can be integrated into an existing CAD/CAE environment through internal interfaces.

IRIX version compatibility: 5.3, 6.2 Certified

SYSTRAN

Eddy Dascotte
Managing Director
Dynamic Design Solutions
(DDS)
Interleuvenlaan 64
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Belgium
32-16-40-2300
32-16-40-2400 (fax)
info@dds.be

Translation of Finite Element data including mesh, properties, static analysis results, and normal modes analysis. Translator modules available for NASTRAN, ANSYS, ARAQUS, MARC, I-DEAS, SYSTUS.

IRIX version compatibility: 5.36.x

Satellite Tool Kit Programmer's Library

Donna Milewski
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USA
610-337-3055
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donna@stk.com
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Satellite Tool Kit Programmer's Library (STKPL) is a complete set of astrodynamic, graphic, and user interface subroutines. STKPL provides a seamless interface for integrating Satellite Tool Kit functionality into an existing environment consisting of databases, networks, and a standardized user interface. Every routine users need to code astrodynamic programs is available, for example, low-level routines such as vector manipulation and coordinate transformations; mid-level routines such as sensor projection and swath routines; and high-level functions such as an object management system and graphical user interface.

IRIX version compatibility:

Engineering Analysis

ScenicDrive™

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Engineering
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USA
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313-741-8545 (fax)
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ScenicDrive™ is a fast (near real time) Motif/GL based animation program for the display of simulations from the ADAMS® multibody dynamics program. ScenicDrive allows you to easily adjust camera positions, allows multiple cameras, has advanced material import and editing (colors and textures), and the ability to follow moving objects. It allows multiple synchronized animations and the plotting of variable values synchronized with the animation. Automatic output to laser disk is supported or output as a series of rgb files. There is no faster or more flexible way to view animations and create video tapes from ADAMS simulations than ScenicDrive.

IRIX version compatibility:

Slender Ship Resistance (SSR)

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mshook@aerohydro.com
<http://www.aerohydro.com>

Slender Ship Resistance (SSR) is an implementation of the "zero-order" slender ship approximation of ship waves and resistance. Results are similar to those derived from tank testing models without the scale effects of viscosity and surface tension. Even for hulls that are insufficiently slender to yield accurate quantitative results, qualitative trends allow for optimizing of hull forms.

IRIX version compatibility: 5.x, 6.x

Surfacer®

Peter Chowdhry
Vice President
Imageware Corporation
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USA
313-994-7300
313-994-7303 (fax)
sales@iware.com
<http://www.msen.com/~imagewar>

Surfacer v4.1 is complete software environment for point processing, Surfacer generation, and analysis. Surfacer is an excellent tool for reverse engineering 3-D curves and surfaces from point data. An icon based interface and pull down menu make Surfacer easy to use. Surfacer is complementary to CAD/CAM applications and bridges the gap from physical part to CAD/CAM model. Surfacer easily passes this geometry to design, manufacturing, analysis, inspection, rapid prototyping, and visualization systems. Surfacer is perfect for use in the product design, die, and mold industries. Customers include automotive, aerospace, medical, consumer products, and entertainment companies. Surfacer needs at least 32 MB RAM and 50 MB free disk space.

IRIX version compatibility: 5.3, Pre 5.x

System 500 Real-Time Data Acquisition & Visualization System

Paul Friedman
System 500 Product Mgr.
Lockheed Martin Telemetry
& Instrumentation
15378 Avenue of Science
San Diego, CA 92128
USA
619-674-5100
619-674-5145 (fax)
pjf@ti.lmco.com
<http://www.ti.lmco.com>

The System 500 Real-Time Data Acquisition & Visualization System for Telemetry and Avionics is a real-time data acquisition, mass storage, and distribution system using SGI workstations for control, analysis, and real-time visualization. The system is found in such high-performance applications as: aviation flight test ground stations, satellite launch and operations command and control (telemetry and CCSDS), avionics equipment test and integration, packet communications multiplexing and demultiplexing, and other very high-speed multi-stream applications. Workstations display selected real-time data in a variety of user-defined graph formats (e.g., strip and bar charts), process diagrams, and analysis packages.

IRIX version compatibility: 6.2

Engineering Analysis

TASCflow™

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President
Advanced Scientific
Computing Corporation
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El Dorado Hills, CA 95762
USA
916-939-0246
916-939-0342 (fax)
georgeb@asc-corp.com
http://www.asc-corp.com

TASCflow™ is a complete and widely applicable Computational Fluid Dynamics (CFD) software package. Engineers and designers use it to predict laminar and turbulent viscous flows in complex three dimensional geometrics. Application fields include pump design, turbomachines, fans, hydraulic turbines, building ventilation, pollutant transport, combustors, nuclear reactors, heat exchangers, automotive, aerodynamics, pneumatics, ballistics, projectiles, rocket motors and many others.

TASCflow is a complete package which includes a grid generator, pre- and post-processors and interactive flow visualization. Features to facilitate meshing include multi-block grids, grid embedding and arbitrary surface connectivity. Comprehensive training and technical support are provided with each installation.

IRIX version compatibility: 5.2, 5.3, 6.0, 6.1, 6.2

TAXIG™

Melvin Platt
Manager, CAE Group
Northern Research &
Engineering Corporation
39 Olympia Avenue
Woburn, MA 01801-2073
USA
617-937-4646
617-935-9052 (fax)

TAXIG™ is a specialized software system that greatly reduces the development time and engineering design expense of high-efficiency axial steam and gas turbines. It proceeds through a structured development process based on a strong analytical framework. Analyses include meanline design-point and off-design flow, hub-to-tip aerodynamic stage performance based on row inlet and exit conditions, blade design and stacking, and blade-to-blade flow. TAXIG™ can accommodate transonic designs, as well as condensing steam turbines.

IRIX version compatibility:

TRUEGRID®

Trent Eggleston
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XYZ Scientific
Applications, Inc.
1324 Concannon Boulevard
Livermore, CA 94550
USA
510-373-0628
510-373-6326 (fax)
xyz@netcom.com

TrueGrid® 1.2 by XYZ Scientific Applications, Inc. is an interactive 3D mesh generator for Computer Aided Engineering (CAE) and Computational Fluid Dynamics (CFD). TrueGrid creates highly structured arbitrary meshes from complex geometry, and exports the mesh to most of the popular fluids, thermal, and structural simulation programs.

TrueGrid employs a revolutionary projection method which semi-automatically generates a high-quality hexahedral mesh for the most complex problems. Conventional methods usually require many times the effort to generate a lesser - quality mesh. CAD/CAM geometry and solids models are flawlessly imported via IGES--no geometry "fix up" or "dissection" is required.

IRIX version compatibility: 5.3, Pre 5.x

The Matrix System™ - Matrix™

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203-944-2020
203-944-2022 (fax)
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http://www.adra.com

Matrix(M) is a comprehensive, object-oriented facility for managing any type of information in any business process environment. Matrix manages documents, the applications that created them, and the processes that govern their lifecycles, employing highly visual and intuitive user interface techniques that make navigation, identification, and retrieval of information quick and easy. Its powerful control structures simplify management of the most complex relationships. Its fully distributed architecture allows Matrix to be implemented in virtually any configuration to support a company's unique operating, organizational, and performance requirements. Expansion from small to large user populations is cost-effective -- while keeping performance constant at the desktop.

IRIX version compatibility:

Engineering Analysis

Turbo Mesh™

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33-1-64-61-66-11
33-1-64-61-16-48 (fax)
gmech@worldnet.fr
http://www.turbomesh.com

Turbo Mesh™ is a general-purpose Finite Element pre-processor, interfaced with MSC/NASTRAN, ANSYS and I-DEAS. Turbo Mesh allows direct creation of 3-D wireframe geometry or import of CAD geometry via IGES. Turbo Mesh's features include creation, manipulation and editing of points, lines, arcs, Beizer and NURBS curves, nodes, elements, boundary conditions and material/geometric tables. Turbo Mesh allows for extrusion of elements along a straight, circular or curved path. Automatic mesh generation is implemented to create 2 1/2D and 3-D mapped meshes, and 2-D free meshes. Turbo Mesh uses the GL library extensively for real-time panning, zooming and rotation of wireframe and shaded models.

IRIX version compatibility:

UAI/NASTRAN© and eBASE

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310-214-2922
310-214-3420 (fax)
joe@uai.com
http://www.uai.com

UAI/NASTRAN Version 11.8 is the latest release of this modern, full featured, finite element analysis program. Engineers and designers worldwide use UAI/NASTRAN to evaluate the stress, vibration, and heat transfer characteristics of mechanical components, where strength, durability, and performance are critical design parameters. UAI/NASTRAN delivers a broad set of basic structural analysis capabilities including: statics, normal modes, transient and random forced response, and buckling. Thermal analysis capabilities include steady state, nonlinear, and transient heat transfer. In addition, UAI/NASTRAN includes advanced analysis capabilities for nonlinear materials, acoustics, fluid/structure interaction, design sensitivity & optimization. The program supports unlimited-size problems, and includes the latest advances in sparse matrix solvers and dynamic reduction techniques, thereby providing high computational performance and efficient use of memory resources.

IRIX version compatibility: "5.3, Pre 5.x", pre-5.x, 5.x, 6.x

UNIC

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The UNIC (Unified CFD) code is a general purpose computational fluid dynamics engineering design tool with user friendly features such as Automated Preprocessor and Mesh Generator which provides fast geometry definition from CAD data files. Many advanced physical models for turbulent, reacting and/or multiphase flow applications are available in the code. An interactive postprocessor for graphical presentation of the solutions and data comparisons is also included. The accuracy and efficiency of UNIC has been intensively benchmarked. Many example test cases are included in the user's manual of the UNIC code.

IRIX version compatibility: 5.2, 6.2

Engineering Analysis

USA

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http://www.cosmic.uga.edu/pub/SGL.html

USA, The Underwater Shock Analysis code calculates the transient response of a submerged structure to a spherical shock wave of arbitrary pressure profile and source location. The structure can be totally or partially submerged, and may be linearly elastic, or contain both geometric and material nonlinearities, depending upon the structural code in use. The fluid surrounding the structure is modeled as an infinite or semi-infinite acoustic medium, and the effect of free surface cutoff due to bulk cavitation can be taken into account in USA. The external fluid system is medium described by the Doubly Asymptotic Approximation (DAA) boundary element family of equations of either first or second order. Excitation may be that of a propagating shock wave through the fluid medium or of the explosion gas bubble pulsation. USA is written in FORTRAN 77 and is available by license for SGI IRIX 4.0.5 and 5.x as well as eight other UNIX platforms.

IRIX version compatibility:

VALISYS/Assembly™

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408-944-4799 (fax)
info@valisys.com
http://www.tqei.com

VALISYS/Assembly™ uses statistical simulation techniques to perform multi-part 3-D assembly stack-up analysis (often referred to as digit mock-up) to predict the amount of variation that will occur due to part and assembly method variation. VALISYS/Assembly identifies critical component and assembly tolerances which contribute to the variation of the assembly. This information is used by engineers to optimize the assembly processes and tolerances to insure correct assembly.

IRIX version compatibility:

VEHSAP

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Lugus Vehicle Technologies
5433 Brookbank Road
Downers Grove, IL 60515
USA
708-663-9925
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rfmjj320@rice.itt.edu

VEHSAP is a comprehensive simulation package that can model the steady state and dynamic performance of virtually any type of wheeled vehicle. It has a highly modular structure, feature a vehicle component model library. The user can select models from the library to represent different vehicle types with varying levels of complexity. The library includes a robust driver model that controls all of the driver functions. The model can follow a prescribed path and speed schedule, or it can be used to execute any arbitrary transient maneuver of interest to the user.

IRIX version compatibility: 5.x, 6.x

VIPACK™

Melvin Platt
Manager, CAE Group
Northern Research &
Engineering Corporation
39 Olympia Avenue
Woburn, MA 01801-2073
USA
617-937-4646
617-935-9052 (fax)

VIPACK™ is specialized interactive graphics software for the stress and vibration analysis of axial turbomachinery blades, blade packets, and blade rows. It is applicable to compressors, fans, and steam and gas turbines. Besides calculating natural frequencies and their related mode shapes, including vibratory stress distributions, VIPACK™ can solve for the forced response of blading for any combination of excitation and damping.

IRIX version compatibility: 5.2, 5.3

Engineering Analysis

VISIONAEL®

Thomas Dring
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918-663-1456 (fax)
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VISIONAEL® is used by manufacturers of highly variable product lines that must also meet high volume output demands. These manufacturers are typically engaged in the production of non-consumer products such as conveyors, store fixtures, industrial transformers, progressive stamping dies, process equipment for water treatment, and other such similar industries. The VISIONAEL concept is based on intelligent parametric drawings that are information-based. These parametrically defined drawings, complete with part information, design criteria, and shop routings are intelligent configuration templates that can be updated to reflect an almost infinite number of unique, documented designs by simply changing the parametric definitions.

IRIX version compatibility: 5.3, Pre 5.x

VSA®-3D

Tom Doerr
Marketing Manager
Variation Systems Analysis
(VSA)
300 Maple Park Boulevard
St. Clair Shores, MI 48009
USA
810-774-2640
810-778-6470 (fax)
<http://www.vsa.com>

VSA®-3D is a three dimensional tolerance analysis program. Using VSA-3D, an engineer can predict assembly variation and determine the source and rank of contributors to assembly variation.

IRIX version compatibility: 5.3, Pre 5.x

VSA®-GDT

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USA
810-774-2640
810-778-6470 (fax)
<http://www.vsa.com>

VSA®-GDT is an engineering tool that, integrated with major CAD systems, analyzes the Geometric Dimensioning and Tolerancing information in a CAD product model. Using VSA-GDT, the engineer can ensure that dimensioning and tolerancing are correct, complete and that meets ANSI/ISO standards.

IRIX version compatibility: 5.3, Pre 5.x

Varimetrix Modeling

David Schultz
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Varimetrix North America
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Santa Ana, CA 92707
USA
714-434-1080
714-434-1688 (fax)
<http://www.vx.com>

Varimetrix Modeling is a parametric/variational 3-D solids and surface modeling package. The unique Varimetrix Unified Parametric Geometry (UPG) engine obsoletes traditional V-REP, CSG, or hybrid modelers by seamlessly integrating solid, surface, and wireframe geometry with a single user interface, database and parametric/variational strategy. The design process is dynamic while Varimetrix Modeling works with you as your ideas evolve. Varimetrix Modeling supports a wealth of solid modeling methods and techniques.

IRIX version compatibility: 5.x, 6.2 Certified, 6.3 Certified

Engineering Analysis

WASCAT: frequency-domain structural acoustics analysis

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http://www.wai.com/

WASCAT is a frequency-domain structural acoustics (fluid-structure interaction) software, for analysis of realistic axisymmetric submerged structures containing arbitrary (2-D/3-D) internal structures. This is done within an efficient and robust numerical formulation based on:

- boundary elements (Burton-Miller formulation),
- finite elements / finite differences,
- and analytical elements (sprung masses, dampers, beams)

IRIX version compatibility:

WAVE

Amy DiSanto
Mgr, Sales Administration
Ricardo Software
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Burr Ridge, IL 60521-5852
USA
630-789-0003
708-789-0127 (fax)
adisanto@ricardo-us.com

WAVE is a computer-aided engineering code designed to analyze the dynamics of pressure waves, mass flows, and energy losses in ducts, plenums, and the intake and exhaust manifolds of various systems and machines. WAVE provides a fully integrated treatment of time-dependent fluid dynamics and thermodynamics by means of a one-dimensional finite-difference formulation incorporating a general thermodynamic treatment of working fluids including air, air-hydrocarbon mixtures, products of combustion, freons and liquid fuels.

IRIX version compatibility: 5.x, 6.x

WRAFTS

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WRAFTS is a computer simulation program developed to model transient fluid flow. Using WRAFTS, foundry process engineers can evaluate a wide variety of process parameters such as gating design, inlet flow rates, sand permeability, and vent locations. These parameters can be systematically varied to optimize productivity, while improving product quality and reducing scrap. The finite element method is used for optimum compatibility with the discrete representations usually employed in structural design analysis. WRAFTS has acquired a reputation for accurate and efficient simulations of mold filling transients. Such simulations can provide valuable insight into the majority of foundry metal casting operations.

IRIX version compatibility: pre-5.x, 5.x, 6.x

Working Model 3D

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Three dimensional motion simulation program.

IRIX version compatibility: