HISTORY OF COMPUTERIZATION 3-D MODELING OF POWER SYSTEM SIMULATION

Dassault

EDSA Micro Corporation and Dassault Systèmes Announced a Partnership to Provide a 3D Plant/Facility Integrated Power Distribution Management Solution

Power outages are the primary cause of production and operation stoppages. The goal of the partnership between EDSA Micro Corporation and Dassault Systèmes was to provide customers in the automotive, aerospace, general manufacturing, process-power and shipbuilding industries with the most advanced tools commercially available to minimize operational downtime. The merger of two leading-edge technologies resulted in a powerful combined solution offering optimal electrical designs for designers and engineers. The combination of intelligent, object-oriented 3D design and complete electrical power system simulation under a single environment represented a breakthrough for the architects, engineers and contractors (AEC) market.

The partnership between Dassault Systèmes and EDSA resulted in the U.S. Navy receiving a digital 3D software system that would give it following benefits:

Reduced product "time-to-market"
Maximized efficiency
Reduced design time and cost
Reduced construction time and cost
Reduced cost of operation
Reduced troubleshooting

In early 1998, the U.S. Navy was looking for software that would provide 3D representations of its ships' systems to aid ship designers and use as a simulator to train mechanics, maintenance staff and ship operators.

3D visualization helped with faster identification of equipment size, location and space available to access. The 3D system provided a database containing repair history, vendor information, installer names, and other specific and useful information. This 3D system allowed users to see the actual space around a piece of equipment and available routes, if needed, to move parts or the whole unit/equipment in proximity to obstacles.

EDSA had already established its product as the software of choice and it was well received within the U.S. Navy; its features and functions were needed by a majority of the world's navies and shipbuilders. EDSA was one of the largest electrical software solution providers in the world. Its 1,000+ customers were expert designers, engineers, scientists and educators. They conceptualized, designed and simulated power systems for space stations, offshore oil platforms, refineries, nuclear power systems, submarines, factories, assembly plants, air route traffic control centers (ARTCCs), towers and TRACONs, hospitals, and commercial and industrial

buildings. For close to two decades, the engineering community used EDSA technology to reduce costly power failures, improve engineering processes, and optimize critical power systems and their facilities' reliability.

EDSA had a very mature quality assurance and quality control system that complied with all national and international standards, including those of shipbuilders. EDSA products were audited, certified and approved for use in safety-related mission-critical facilities worldwide. Furthermore, EDSA had a complete line of AC and DC electrical design and analysis solutions approved for use in safety-related applications related to the design and maintenance of nuclear power generation and air traffic control mission-critical facilities.

Dassault Systèmes' CCPlant solutions provided the means to create a smart digital representation of all plant/facility structures, equipment, and systems to integrate multidisciplinary design, construction, and operations activities. CCPlant, an integral part of Dassault's CATIA system, was at that time the only system capable of integrating in a single digital environment the mechanical product, production process and plant models to support the entire enterprise business process. Using CCPlant, customers created smart 3D models of power distribution systems from the substation to cable trays and down to all powered equipment. The resulting model understood all power transmission connectivity and logic, to fully support interactions with the EDSA sizing, simulation, and monitoring functions. The electrical engineers then used CCPlant's unsurpassed 3D visualization capabilities of electrical power distribution to dramatically speed up troubleshooting and reduce downtime caused by power outages.

Through this partnership, Dassault Systèmes and EDSA provided electrical design and analysis seamlessly integrated with Dassault Systèmes CCPlant solution for supporting design, construction, and operations. CCPlant was the only solution capable of integrating all the production tooling robotics in the plant digital space, while supporting structures and systems to better assist production personnel address planned and forced outages.

DR. NECULAI TUTOS VICE PRESIDENT OF DASSAULT

AND ADIB NASLE PRESIDENT OF EDSA

PRESS RELEASE

DASSAULT SYSTEMES

PRESS RELEASE

EDSA Micro Corporation and Dassault Systèmes announce Partnership to provide Plant/Facility integrated power distribution management solution

Paris (France), May 29th, 1998. Dassault Systèmes S.A. (NASDAQ: DASTY) and EDSA Micro Corporation announce the formation of a partnership that combines EDSA Micro Corporation's electrical power system design, analysis and simulation tools with Dassault Systèmes' CCPlant solutions. This partnership is in line with Dassault Systèmes' Digital Enterprise strategy of providing Design, Mockup, Manufacturing, and Plant Solutions in a single digital environment.

Dassault Systemes' CCPlant solutions provide the means of creating a smart digital representation of all plant/facility structures, equipment and systems to integrate the multidisciplinary design, construction and operations activities. CCPlant is an integral part of the Dassault's CATIA system, the only system now capable of integrating in a single digital environment the mechanical PRODUCT, production PROCESS and PLANT models to support the entire enterprise business process. Using CCPlant, the customer creates smart 3D models of power distribution systems from the substation to cable trays and down to all powered equipment. The resulting model understands all power transmission connectivities and logic, to fully support interactions with the EDSA sizing, simulation, and monitoring functions. The electrical engineers can then use the CCPlant unsurpassed 3D visualization capabilities of electrical power distribution to dramatically speed up troubleshooting and reduce downtime caused by power outages.

Through this partnership, Dassault Systèmes and EDSA provide electrical design and analysis seamlessly integrated with Dassault Systèmes CCPlant Solution for supporting design, construction and operations. CCPlant is the only solution today capable of integrating all the production tooling robotics in the plant digital space, while supporting structures and systems, to better assist production personnel address planned and forced outages.

"Power outages are the primary cause of production and operations stoppages" states Dr. Neculai Tutos, Vice President, Plant and Shipbuilding domain, Dassault Systèmes. *"Our partnership with EDSA will provide our customers in the Automotive, Aerospace, General Manufacturing, Process & Power and Shipbuilding industries with the most advanced tools commercially available to minimize downtime in operations."*

"From day one, our goal has been to provide a total power distribution solution," says Ali Nasle, P.E. Chairman of EDSA Micro Corporation. *"The combination of intelligent, object-oriented 3D design and complete electrical power system simulation of the total facility under a single environment represents a breakthrough for the AEC market. This relationship between EDSA and Dassault Systèmes merges two leading edge technologies into a powerful combined solution for designers and engineers, for optimal electrical design."*

9, quai Marcel Dassault, BP 310, 92156 Suresnes Cedex, FRANCE. Tel : +33 1 40 99 40 99 - Fax : +33 1 42 04 45 81 - http://www.dsweb.com

CATIA addresses the CAD/CAM/CAE process-centric market, enabling customers to create and simulate the entire life cycle of a product from concept to operation. Customers and their requirements drive the development and direction of CATIA. As leaders in their industries, CATIA customers demand the most exacting capabilities, leading solutions and premier support and service. In fulfillment of the vision, CATIA provides solutions which are unique in the market for the integrated development of products and industrial processes, and for the optimization of team work. The evolving architecture of CATIA enables customer growth and the integration of advanced applications for optimization of tasks. Developed by Dassault Systèmes and marketed by IBM, CATIA Solutions now boast over 106,000 seats at 10,000 customers. Most of the largest industrialists, including IBM, as well as the smallest companies with only one or two stations, benefit from excellent design quality and thus gain in competitiveness with these systems.

CATIA-CADAM AEC Plant Design Solutions increase productivity with fully integrated applications for design as well as modifications of piping, equipment, structures, duct and other plant components. Automated production of multi discipline drawing arrangement and piping isometrics, reduces errors and ensures consistency of documentation. **Full integration with CATIA-CADAM Solutions Version 4 architecture**, facilitates benefiting from other leading capabilities such as interference detection, fitting simulation, design layout verification, visualization, design conferencing and raster. The Knowledge-Based Engineering capabilities of CATIA provide the means of capturing the corporate and project experience and know-how. Together, these tools provide the best world class comprehensive and industry leading solutions set available on today's market, yet within a fully flexible framework for demands upon business and process changes of the future.

The system architecture or platform supporting the **CCPlant** includes subsets of existing CATIA mechanical products. CCPlant's integration with Mechanical CAD makes it unique in the market. This common architecture between AEC and mechanical ensures that applications from each domain provide the most effective and wide ranging capabilities to support our customer's business. The end user will achieve productivity gains through the superior levels of integration, reduced training due to the common user interface, and quality not attainable with systems based on older architectures.

EDSA is one of the largest electrical software solutions providers in the world. EDSA's more than one thousand plus customers are designers, engineers, scientists, and educators. They conceptualize, design, and simulate power systems for space stations, off-shore oil platforms, refineries, nuclear power systems, submarines, factories, assembly plants, boats, air traffic control centers, hospitals, commercial and industrial buildings. For over fourteen years the engineering community has used EDSA technology to reduce costly power failures, improve engineering processes, and optimize critical power systems and their reliability.

EDSA Micro Corporation is an ISO-9001 certified firm. Furthermore, EDSA is currently the only AC and DC electrical design and analysis solution approved for use in Safety Related (10CFR50 Appdx B, 10CFR21) applications related to the design and maintenance of nuclear power generation, and critical air traffic control facilities.

Information on CATIA-CADAM solutions is available on the CATIA home page at the following address: http://www.catia.ibm.com
Information on EDSA Micro Corporation is available at the EDSA home page at the following address: http://www.edsa.com

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Department of Electrical
And Computer Engineering
Detroit, Michigan 48202

Wayne State University

July 2, 1998

Mr. Ali M. Nasle, P.E.
Chairman, EDSA Micro Corporation
11440 West Bernardo Court, Suite 370
San Diego, CA 92127

Dear Mr. Nasle;

I am very pleased that you thought to share your good news with me. The acceptance by ONR of the proposal for Advanced Control of Electric Power Distribution is very good news indeed. Congratulations to you and your team! I found the package of materials very interesting as well.

I was also interested in the partnership mentioned with Dassault Systems. I have been very interested in the Dassault CATIA system as a platform for our students to become proficient in the CAD/CAS ICAE area. I would appreciate your views very much on this possible choice for use by our students in their engineering program of study.

In my opinion, CATIA could well be the "standard" used by the automotive industry here.

The merger of Daimler-Chrysler should create a very important industry presence for CATIA, and that event may, in time, cause some migration toward a common system. If that were to happen, it certainly would be a good step in the right direction for all concerned.

Your partnership with Dassault could result in a substantial increase in the electrical/electronic design capabilities of CATIA. It is in this area that CATIA lacks the level of capability needed to make it the system of choice for electrical engineering. And EDSA would make an excellent partner to provide the strength and capabilities needed by CATIA and Dassault, in my opinion.

Thank you for sharing the good news with us! I hope that we can continue to communicate with each other to help me achieve the goal of providing the best academic experiences for students at your Alma Mater, Wayne State University.

Sincerely,

Frank H. Westervelt, Ph.D., P.E.
Professor & Chair
Electrical & Computer Engineering
Wayne State University
5050 Anthony Wayne Drive
Detroit, MI 48202

The following pages show the unique and powerful 3-dimensional capabilities of the integrated EDSA CATIA version and its great benefits to ship building as well as airplane, auto and other manufacturing industries.

DASSAULT SYSTEMES

CCPlant™

CATIA® Digital Plant Solutions

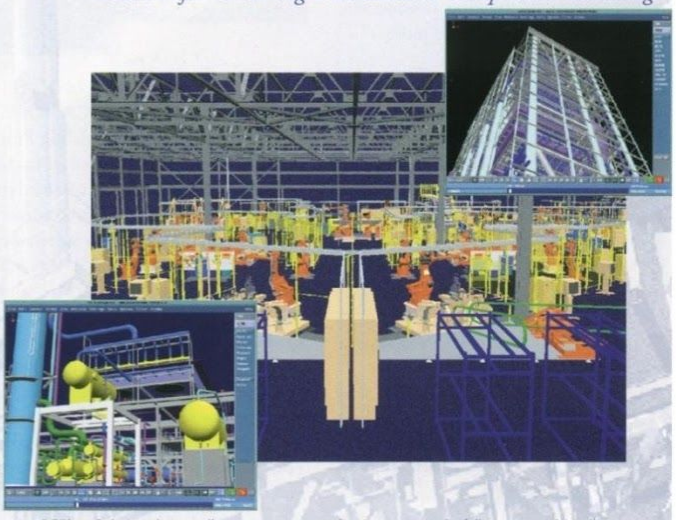
Solutions for Achieving a Sustainable Competitive Advantage

KEY BENEFITS

- REDUCE PRODUCT "TIME-TO-MARKET"
- MAXIMIZE PLANT EFFICIENCY
- REDUCE DESIGN TIME & COST
- REDUCE CONSTRUCTION TIME & COST
- REDUCE COST OF PLANT OPERATIONS

CCPlant™ SOLUTIONS

- *Plant Designer*
- *Digital Manufacturing Plant*
- *P & ID Designer*
- *Piping Designer*
- *Piping Isometrics Generator*
- *Structural Designer*
- *Structural Analyst*
- *Ductwork Designer*
- *Raceway Designer*
- *Drawing Generator*
- *Virtual Product Management*



*CCPlant Solutions brings all components together into one single, fully integrated, intelligent 3D model, thereby increasing productivity dramatically and maintaining control over the entire process - **from start to finish.***

KEY FEATURES

State-of-the-Art Technology

- *Complete, Intelligent 3D Plant Model*
- *Superior Visualization Tools*
- *Component Based System*
- *Logical/Physical Integration*
- *Concurrent Engineering*
- *Open Architecture*

Superior Design Applications

- *Integrated Multi-discipline Design*
- *Spec-driven Design and Quantity Extraction*
- *Knowledge Based Engineering*
- *3rd Party Systems Integration*
- *Integration of Mechanical Design and Plant Design*

World Class Enterprise Solutions

- *Links to Corporate Data*
- *Collaborative Engineering*
- *Built-in Internet Technology*
- *STEP Compliance*

Dassault Systemes, the makers of the leading Mechanical CAD/CAM/CAE systems, CATIA®, now brings you **CCPlant**: The new, innovative solution to design and manage your plant with complete *accuracy, consistency, and control.*

CCPlant is a new unique product presenting a comprehensive set of tools, based on CATIA, for designing and maintaining Process and Power Plants and Manufacturing Facilities.

CCPlant solutions provide the means to create an intelligent, 3D digital representation of all plant/facility structures, equipment, and systems to integrate the multi-disciplinary design, construction and operations activities.

Dassault Systemes' integrated solutions bring you a ***process-centric*** and streamlined approach to optimizing the manufacturing process: Design the **Product**; define, analyze and simulate the manufacturing **Process**; then, optimize the **Plant** layout for production.

CATIA with CCPlant provides you with the tools to address today's business drivers for plant design and operations. CCPlant customers are using these solutions to meet clients needs in shorter time frames, with better quality at a lower price - and ***without compromise!***
It's the "Smart 3D Plant"

CCPlant is an object-oriented system, allowing the design to be described as intelligent plant components, rather than as graphics linked to external data. During the design phase, components are continuously being addressed by different design disciplines as well as management and clients, who may all view the same object differently. This common, object-oriented model provides seamless integration between the various disciplines and between the logical and physical designs. This means that it is indeed the same piping information which is viewed in the P & ID schematic as in the 3D piping model. Checking the 2D logical representation against the 3D plant model is fully automatic.

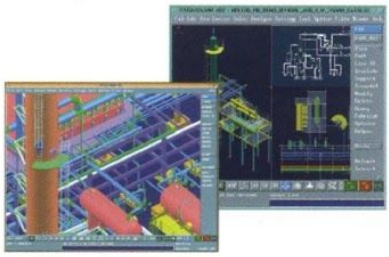
CCPlant supports and conforms to the latest international technology standards - **STEP** for product data exchange and product modeling.

The Collaborative Design capability brings today's highly advanced communications technology to the design process. CCPlant takes full advantage of the built-in Internet technology to enable all users to manage, review and extract valuable project information from anywhere in the world using a standard Internet Browser. CCPlant integrates this technology to ensure that the resources are properly managed within the project.

INTEGRATED MULTI-DISCIPLINE DESIGN & ANALYSIS TOOLS

CCPlant delivers a complete set of fully integrated applications for plant design including, schematics, 3D design and visualization, design analysis and verification, automated drawing production, extractions of isometrics, and more.

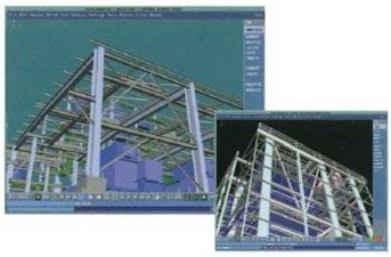
PIPING AND INSTRUMENTATION DIAGRAMS ... provides tools for the creation, modification, and management of P & ID, with associated quantity extractions based on intelligent customizable libraries. Included are superior features for intelligent placement of parts and object-level integration with 3D equipment and piping components.



PIPING DESIGN ... delivers "State-of-the-Art", spec-driven, piping design capability and rapid setup of piping specifications and catalogs. It includes comprehensive and automatic pipe routing and part placement capabilities. Powerful editing features allow easy modification and respec'ing. Piping isometric production is also included.

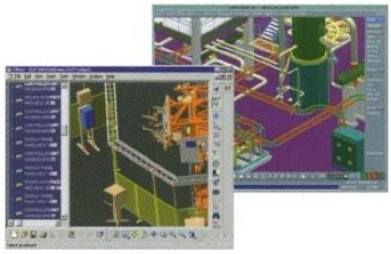
EQUIPMENT DESIGN...provides parametric equipment creation capability. Users can build, modify, and manage intelligent equipment and nozzle components. Complex equipment and assemblies can be defined and placed in a project library.

DUCTWORK DESIGN ... furnishes advanced parametric duct modeling, routing and parts placement capabilities. You can design, analyze, and modify fully defined duct systems rapidly. To speed up the process, you can also employ standard customizable ductwork catalogs.



STRUCTURAL FRAME MODELING AND ANALYSIS APPLICATIONS ... The Structural Frame Modeling Product supplies a comprehensive tool set to create, modify and manage complex framed structures. It handles complex connectivity between structural members automatically. The Structural Frame Analysis Product enables the user to conduct a quick analysis of framed structures. It automatically creates an idealized analysis model. Using the integrated Finite Element Analysis module, ELFINI™ solver, a graphical display demonstrates the structure's behavior such as shear movement deflections and analysis. You can also seamlessly link to third party, industry standard structural analysis tools such as the GT STRUDL®.

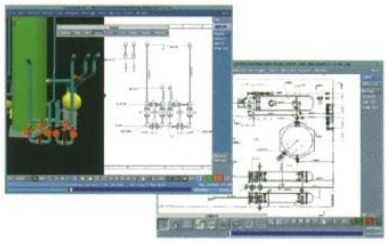
RACEWAY DESIGN ...provides intelligent raceway design and modeling capabilities. You can design and modify fully defined raceway systems rapidly by employing standard customizable catalogs.



ELECTRICAL SYSTEM DESIGN AND ANALYSIS ... enables users to create smart 3D models of power distribution systems from the substation to cable trays and down to all powered equipment. Electrical engineers can then use CCPlant's 3rd party interface capability for 3D visualization of power distribution analysis to dramatically speed up troubleshooting and reduce downtime caused by power outages.

3RD PARTY SYSTEMS INTEGRATION Interface capabilities provide seamless links to a variety of third party applications for instrumentation, pipe stress analysis, structural analysis and structural detailing.

DRAWING PRODUCTION... automatically generates intelligent 2D multi-discipline engineering drawings from 3D plant models. Powerful rule-based extraction capabilities include 2D graphic replacements and automatic annotation. The standard Drafting module supplies comprehensive tools for editing intelligent 2D associative drawings.



DESIGN VALIDATION TOOLS

FITTING SIMULATION ... enables users to analyze conveyance of material and motion of major equipment that requires either plant installation or removal. Using dynamic simulation, the user is able to visualize and identify collisions and clearance violations.

CATIA KNOWLEDGE ENGINEERING... allows designers to apply engineering rules to the actual design process or for post design checking. For example, it can automatically check the piping systems for insulation requirements based on their process conditions and plant environment. It can also automatically set insulation requirements as a post-processing option.

VIRTUAL PRODUCT MANAGEMENT

provides a component database representation of the entire plant based on commercially available relational databases. It enables unparalleled Concurrent Engineering and logical/physical integration. Users have maximum change control capabilities within an interdisciplinary environment.

FOR MORE INFORMATION CONTACT:
1 888 372 2646

DASSAULT SYSTEMES Dassault Systèmes • 6320 Canoga Avenue, Woodland Hills, CA 91367-2526 • USA
Tel:+1 818 999 2500 • Fax: +1 818 999 3535 • www.dsweb.com

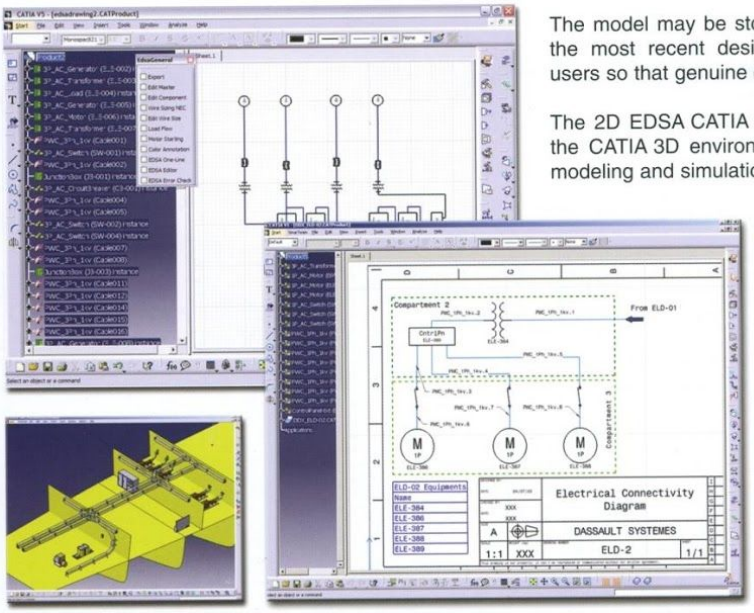
CATIA SOLUTIONS

AEC-01.0501 [071898]

Elegance of CATIA® V5 with the Power of EDSA®

EDSA CAA for CATIA V5 is a complete, highly sophisticated CAD/CAE system specifically designed for power system design and simulation within the CATIA V5 environment. EDSA CAA for CATIA V5 can be applied to the design and analysis of any type of power system and adapted to meet exactly the specific requirements of every electrical distribution and transmission system, both in engineering and operation and maintenance.

A full electrical model serves as the main information vehicle for power system design and simulation information. The model contains associative and parametric relationships, material definition, static and dynamic attributes, and manufacturing and installation data. This model is created once and increases in fidelity as the design matures and progresses from concept through detail.



The model may be stored in a full ODBC format with the most recent design information available to all users so that genuine cooperative working is possible.

The 2D EDSA CATIA Document can directly link with the CATIA 3D environment - delivering a truly visual modeling and simulation platform.

APPLICATIONS:

- POWER SYSTEM DESIGN
- POWER FLOW ANALYSIS
- FAULT ANALYSIS
- PROTECTION COORDINATION
- WIRE SIZING
- ARC FLASH SIMULATION
- TRANSIENT STABILITY
- VOLTAGE STABILITY ANALYSIS
- GRID STABILITY SIMULATION
- POWER QUALITY ANALYSIS
- RELIABILITY ANALYSIS
- OSHA COMPLIANCE

Full connectivity and interactivity between 3D and 2D layouts

REPORTING:

- BUILT-IN PROFESSIONAL REPORT WRITER
- ADOBE ACROBAT PDF ENGINE BUILT-IN
- INPUT DATA REPORT GENERATION
- BILL OF MATERIALS REPORT GENERATION
- MAN HOUR COST ESTIMATION
- TOTAL PROJECT COST ESTIMATION

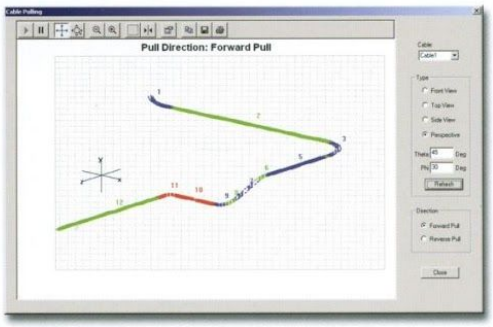
An important reduction in the design cycle can be expected mainly due to powerful tools to perform and control design modifications and the impact of such changes from an engineering viewpoint.

EDSA CAA for CATIA V5 has been conceived as an integrated solution to solve, in a practical way, all design demands in modern power systems. EDSA's Modular package approach offers the possibility of a progressive implementation which allows our clients to spread their investment.

Robust Suite of Tools for CATIA®

EDSA includes a highly integrated harmonics analysis and filter design solution specifically designed for power quality and harmonic mitigation engineers. Harmonic analysis is required when devices that generate harmonics, such as rectifiers, arc furnaces, AC/DC drives etc, are present or anticipated to be added to the power system.

Digital computer simulation is the most convenient, and perhaps more economical, way of tackling the problem of harmonic analysis. EDSA's digital simulations are centered on system-wide approaches utilizing the notions of system impedance and/or admittance matrices, backed by elegant and powerful numerical calculation techniques.



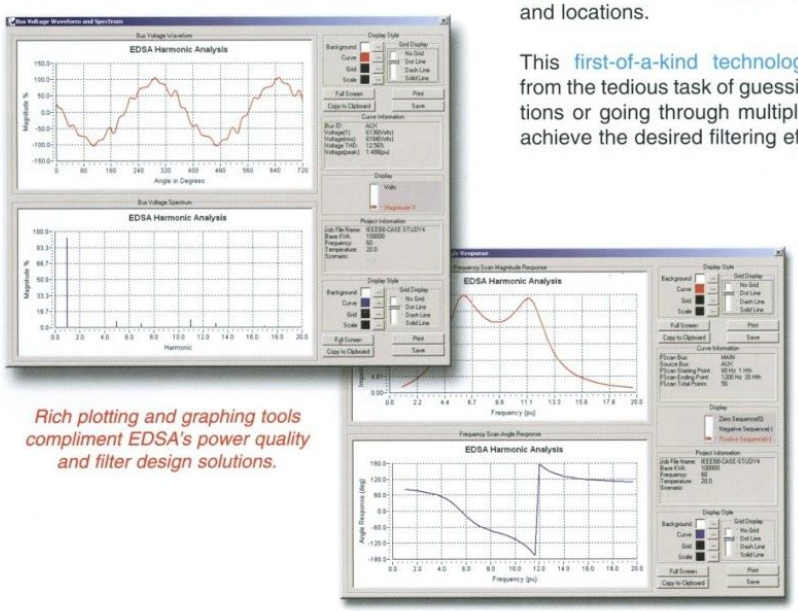
Advanced Cable Pulling Simulation tools are available to CATIA V5 users.

EDSA can calculate bus voltage THD for all buses, & branch current THD for all branches of a power system when a harmonics source, or several harmonics sources are presented. Also branch current RMS values & transformer K-factors can be obtained.

The simulation results are presented in time-domain waveform and in frequency-domain spectrum. They can be displayed in text or graphic formats.

EDSA offers the only Harmonics solution in the world capable of automatically recommending filter sizes and locations.

This first-of-a-kind technology relieves engineers from the tedious task of guessing filter sizes and locations or going through multiple iterations in order to achieve the desired filtering effect.



Rich plotting and graphing tools compliment EDSA's power quality and filter design solutions.

- IEEE 519
- MIL Spec 1399
- Current Source
- Voltage Source
- Built-in Library
- PQ Meter Import
- Interharmonics
- THD Analysis
- Auto Filter Design
- FFT Simulation
- Thyristor Simulation
- Skin Effects
- Frequency Scans

The solid EDSA architecture provides a strong, reliable platform for continued growth and innovation. It benefits from the many years that EDSA and Dassault have been developing technology to satisfy customer and developer needs in the design automation market.

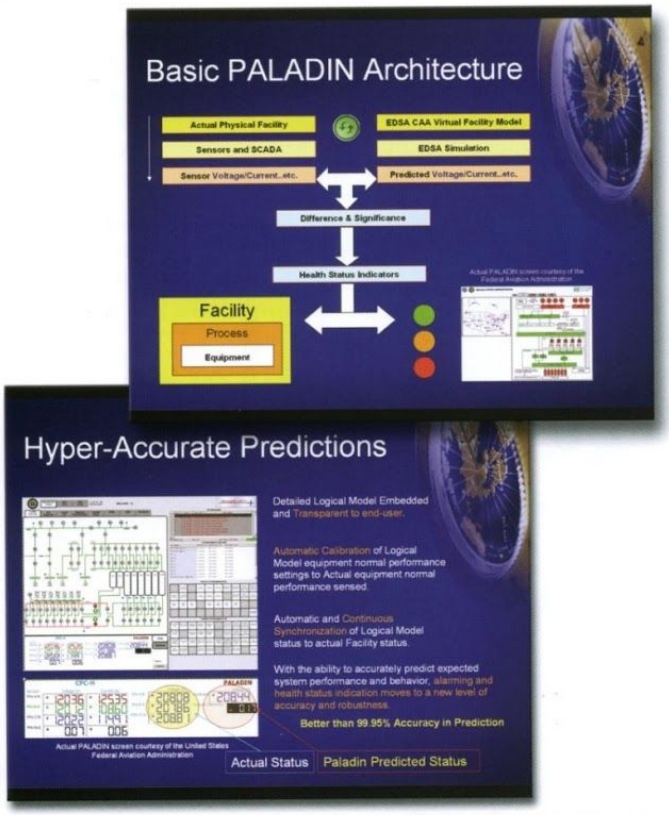
System Pre-Requisites:
CATIA V5 R12 service pack 3 or better
CATIA V5 DI2
CATIA V5 ELD

From 2D to 3D to Real-Time

PALADIN® Real-Time Health Monitoring & Control

Paladin® was initially developed under contract for the US Department of Defense. and delivers an intelligent umbrella of safety over any electrical distribution and transmission system responsible for powering mission critical facilities and operations. Paladin is a joint EDSA and General Atomics solution. Paladin technology is deployed and operational throughout the FAA's Air Route Traffic Control Centers, protecting the National Air Space, and is being deployed at many major mission critical facilities worldwide.

Within Paladin resides a hyper-accurate logical model of the physical power distribution system(based on EDSA CAA CATIA V5 one-line diagram). This model is always synchronized and calibrated to the actual power system. As the configuration and topology of the power system changes (switches open or close, loads come on or are turned off), so does that of the logical model.



In the background, Paladin is continuously conducting a detailed analysis of the power system based on its actual, current topology. Paladin compares its predicted values (from the logical model) against the real-time sensor readings, and then "looks" for unexpected deviations which are clear indicators of real health problems.

Current SCADA technology deluges users with thousands of lines of information per second on sensed data. It is nearly impossible for facility operators, managers and technicians to digest all of the sensory data and have an accurate understanding of its relevance to the overall status and health of their mission critical power system operations. Exasperating the situation is the fact that no means for the intelligent prediction of failures is available with existing solutions. Many facilities relying only on SCADA technology operate in a reactionary mode - responding to failures and catastrophic power losses, rather than predicting and preventing them from occurring in the first place.

Paladin solves these current limitations by providing intelligent, best-of-breed analytical filters which provide a means for large sets of electrical power system sensory information to be summarized into an easy to comprehend, visual "heatmap" display for the end user. Paladin acts as an on-board electrical power system expert - insulating the end user from the complexity of a power system database - and intelligently filtering power system sensory data; in real-time, into an easy visual presentation designed to help managers, owners and operators understand at a glance the current health of their power system(s).

Paladin greatly streamlines system self status via a green/orange/red color scheme for easy visualization of the system health and performance, allowing for instantaneous understanding of the power system status to both technical and non-technical data consumers.

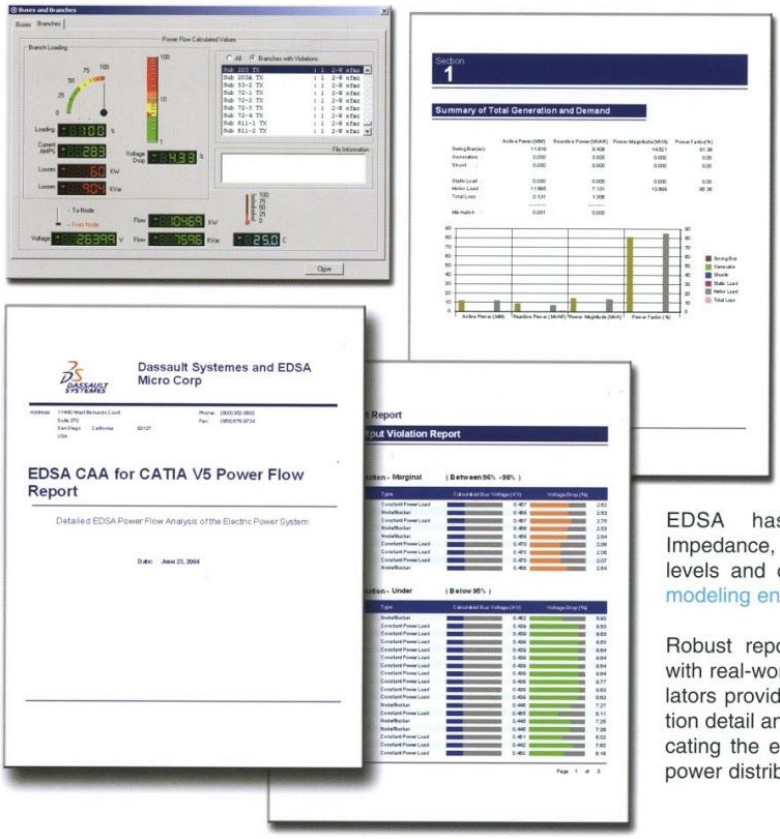
Complete Electrical Design and Simulation for CATIA® V5

EDSA accurately simulates how a power system will function in its intended environment - design engineers can explore the electrical performance of design alternatives. With the insight gained from EDSA CAA software, users can improve designs early in the development cycle, when changes are easier and less expensive to make.

Precise representations of CAD Electrical One-Line geometry, and unique CATIA V5 technology provide fast, accurate solutions automatically - solutions that help to improve power system quality and reliability, while decreasing costs associated with power failures, harmonic disturbances and power system instability.

The benefits derived from the application of EDSA CAA can be seen in both the engineering and production areas of a power system. With EDSA, engineers have at their disposal, the most advanced and comprehensive analysis tools ever created. EDSA' s complete solution system allows engineers design power systems that operate safely under all service conditions and are selective in order to consider the continuity of service in emergency situations.

Evaluate, understand, and optimize the static and dynamic electrical performance of your designs in a real-world environment.



- Voltage Control
- ANSI/IEEE
- IEC
- NEC
- Metric & English
- Built-In Libraries
- 50,000+ Devices
- Auto-One-Line
- Error Checking
- No Voltage Limits
- No Impedance Limits
- No Frequency Limits
- Unlimited Buses
- Violation Reporting
- Real-Time Simulator

EDSA has no limitations in Impedance, Frequency, or Voltage levels and offers a truly ubiquitous modeling environment.

Robust reporting features, coupled with real-world instrumentation simulators provide engineers with exception detail and efficiency in communicating the expected behavior of the power distribution system.

Sophisticated, Presentation Quality reports can be generated in seconds.

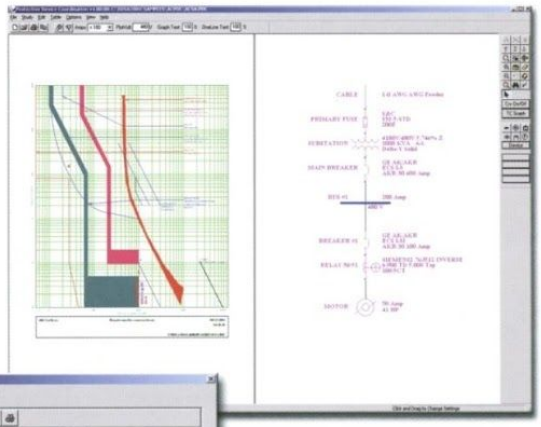
Built-In Professional Report Writer Wizard walks users step by step through the process of generating sophisticated reports with a few mouse clicks.

EDSA® CAA for CATIA® V5

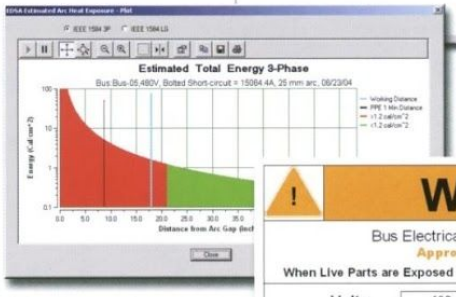
Fully Integrated Electrical Power System Analysis

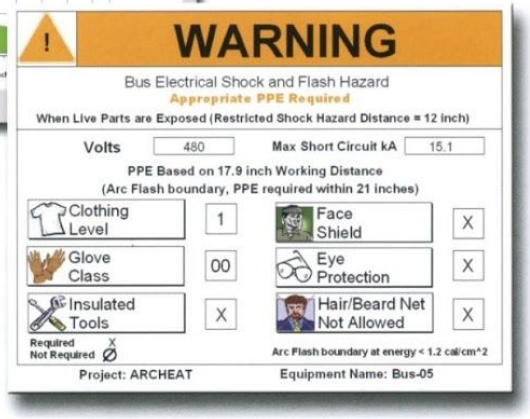
EDSA is designed to provide engineers with a very strong, efficient, and fast tool for selecting, comparing, and coordinating protective devices. With EDSA, engineers can design a selective protection system which ensures isolation of the faulted area and the least amount of destruction to equipment with a minimum disturbance to the network.

Coordination specialist can work in stand-alone mode with no need for a power system model, or the full electrical EDSA CATIA can serve as the main information vehicle for power system coordination information - in this mode, results of load flow and short circuit simulations are automatically transferred to the EDSA model.



EDSA' s state-of-the-art Auto Selection Technology is capable of automatically selecting equipment and settings for you that achieve selective coordination. However, EDSA can be set to only partially participate in the selection and setting process, or you can do all necessary selections and settings with no assistance from the program. No other coordination program provides this level of intelligence, ease-of-use, and precision.





The automatic selection process observes the established practices and standards. When equipment selection is completed, EDSA's PDC program calculates the necessary parameters, and then selects appropriate settings. The user is notified if selective coordination cannot be achieved using the selected equipment with-in the calculated parameters.

ARC Heat Exposure Simulation Built-In
Integrated NFPA-70E 2004/IEEE 1584

EDSA CAA for CATIA V5 includes a highly sophisticated simulator for determining required protective clothing when working on live electrical equipment.

OSHA and the National Fire Protection Association have mandated that all facilities perform Arc Heat Exposure simulations in order to safeguard their technicians from Arc Blasts that may cause severe injury or death.

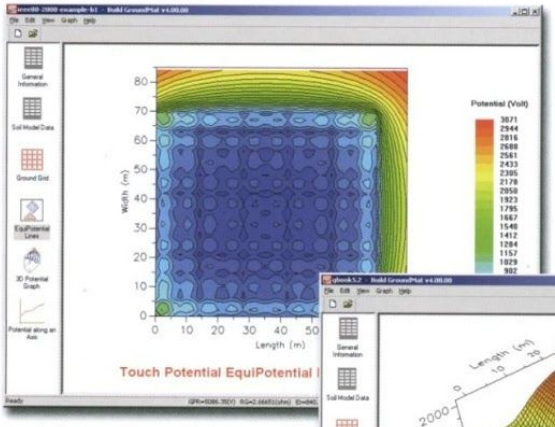
EDSA users can easily meet NFPA and OSHA requirements through the application of EDSA's Arc Heat Exposure simulation program. A wizard guides the user through each step of the process. Results can be viewed in native Excel format, and plotted. Moreover, complete custom label generation is only a mouse click away.

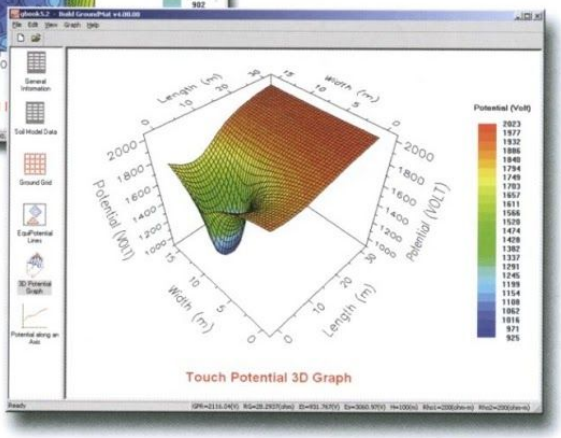
An easy to follow Wizard guides the user through the steps of conducting an Arc Flash study and print labels.

Advanced Real-Time Simulations

Using the most advanced finite-different algorithms, EDSA delivers an extremely powerful tool to CATIA users for the design of substation grounding in order to provide safe conditions for personnel operating in and around a substation. Accidents to personnel result from Grounding Potential Rise (GPR) of the ground system during fault conditions on the connected power system. With EDSA, V5 users can easily and rapidly design grounding systems that limit the potential rise of the substation ground mat to an acceptable value for any possible fault condition; and limit the resulting step, touch, and transfer potentials in and around the substation to an acceptable value.

The software uses the conductance matrix approach and IEEE80-2000 is used for computation of maximum allowable touch and step potentials





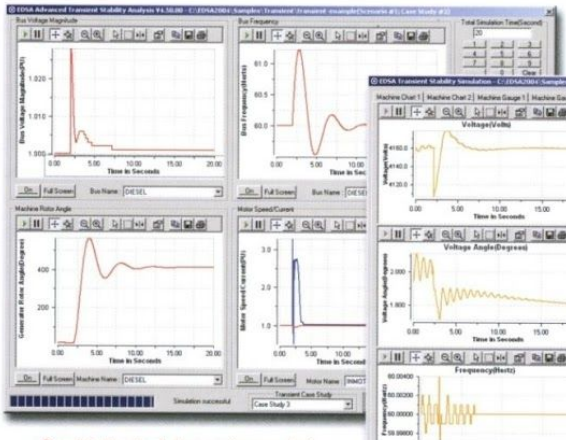
Users are treated to advanced plotting, reporting and 3D charting tools in EDSA CAA for CATIA V5.

Multi layers of earth types; Rectangular, square or arbitrary shaped grids are all supported.

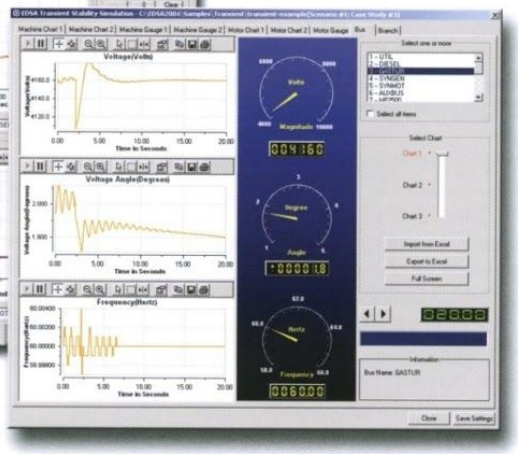
EDSA delivers the rich toolsets needed by power system specialists to meet all areas of design, analysis and simulation needs.

- Static simulations
- Dynamic studies
- Protection studies
- NFPA-70E
- Harmonics Analysis
- Cable pulling
- Wire Sizing

EDSA delivers a powerful, and hyper-accurate transient stability simulation solution specifically designed for detailed dynamic simulations of power systems. This robust tool allows power system specialists to simulate all known phenomena and disturbances. This best-of-breed solution is based on an advanced trapezoidal simulation engine. The trapezoidal algorithm is considered to be the most powerful and accurate means of simulating transient events.



Sophisticated dynamic model library including detailed windpower models are included.



Detailed graphic reporting with real-time plotting.

- **ULTC Simulation**
- **Extensive Library**
- **(LOOP) Simulation**
- **(LOCA) Simulation**
- **AVR Failure**
- **Fast Bus Transfer**
- **Slow Bus Transfer**
- **Machine Tripping**
- **Branch Tripping**
- **Machine Tripping**
- **Branch Addition**
- **Load Shedding**
- **Fault Simulation**
- **Relay Simulation**
- **Windmill Simulation**
- **MG Set Simulation**
- **Motor Starting**
- **Generator Startup**

Dr. Tutos PhD, Vice President at Dassault Systèmes, in charge of Corporate Business Development. Dr. Tutos by Funding EDSA-CATIA 3-D helped to expedite the integration process.

Dr. Tutos' experience includes management of large engineering and construction projects, and over 20 years in the management of advanced 3D technologies for facility design, constructions, operations, and management. Previously, Dr. Tutos spent ten years at Stone & Webster Engineering Corporation, as Vice President for the Advanced Solutions Development division. In this position he was responsible for the development of 3D based solutions for the design, construction, and operations of industrial facilities.

As Manager of Projects at CSA, Inc. (Atlanta, GA), Dr. Tutos had the opportunity to be involved in the first large scale deployment of 3D graphics and database solutions for the design and construction of nuclear power plants and for industrial facilities.

Dr. Tutos has a master's degree in Civil Engineering and a PhD in Computer Science. He has published numerous articles covering the use of computer technologies in design, construction, and facility lifecycle management.

Adib Nasle MBA from Pepperdine, President of EDSA & Co-Founder of EDSA. Adib an entrepreneur with 10s of patents has successfully ran EDSA as a very profitable enterprise for decades as an efficient and visionary president.

Executive Director at Pepperdine University MBA Program and as Presidential Advisory Council at Pepperdine University

Socrates Society Steering Committee at the Aspen Institute & worked as Aide to Carl Levin (D) Michigan, U.S. Senator

Adib has BA from MSU, PKE MBA from Pepperdine, specialized certificates from Stanford and the University of California and is a Member of IEEE and ACM. He is a recognized expert in smart grid and electrical power distribution systems

A certified C# programmer knowledgeable in HTML5 and RIA frameworks, with nearly 20

Years of experience in the development and successful commercialization of enterprise-class

Power monitoring and power system engineering design and simulation software solutions

Published and had interviews on "New Green Building Initiative," "How to Make Smarter

Software," Pre-empting Electrical Power Outages," "Datacenters Power Systems,"

An inventor with patents issued in the areas of real-time predictive energy management, power system design, optimization, reliability, safety and capacity assessment, including the following issued patents