

Powersystems World

Power Analytics

The Business of Power Analytics - Power Qualities
New Frontier

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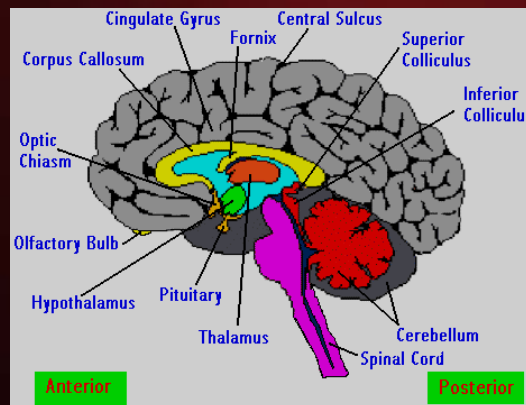
October 25-27, 2005

EDSA Micro

EDSA Micro
The Visual Language of Electrical Engineering

Modeling, Simulation & Visualization

- Models & Modeling is universally accepted as the optimal method for dynamic and complex system simulation
 - Cost effective
 - iterative
 - Predicts real-world behavior
- Visualization presents complex systems facilitating pattern recognition
 - Pattern recognition is arguably the center of human learning.
 - Virtually limitless permutations



Analytics

- Business Analytics

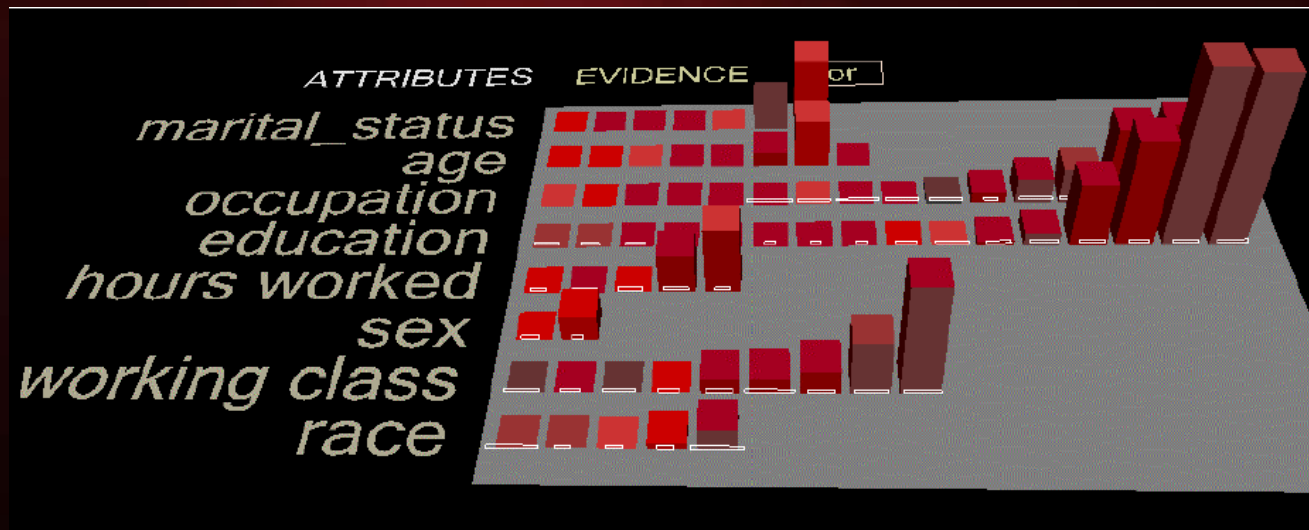
- Can be model based
- Can be free form (discovery process)
- Combines real-time data with structured data (data warehouses)
- Primary application is discovery and forecasting.

- Power Analytics

- Can be model based
- Can be free form (discovery process)
- Combines real-time data with structured data (modeling & simulation)
- Primary application is discovery and prediction

Business Analytics User

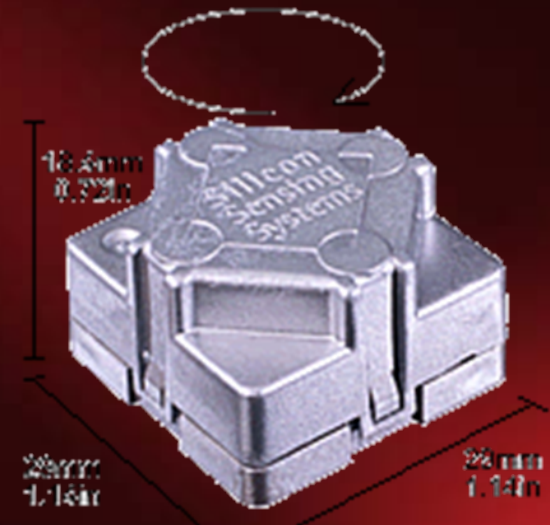
- Target User is not an Analyst
 - Analytical tools for non-analysts drive the structure, user interface and application.
- Pattern recognition (visualization) and alternatives
 - Tools provide alternate designs, order, methods and projections.



Depicts a Naïve-Bayes model for predicting which people earn more than \$50,000 in yearly salary. Stanford University, Emerging Trends in Business Analytics, 2002

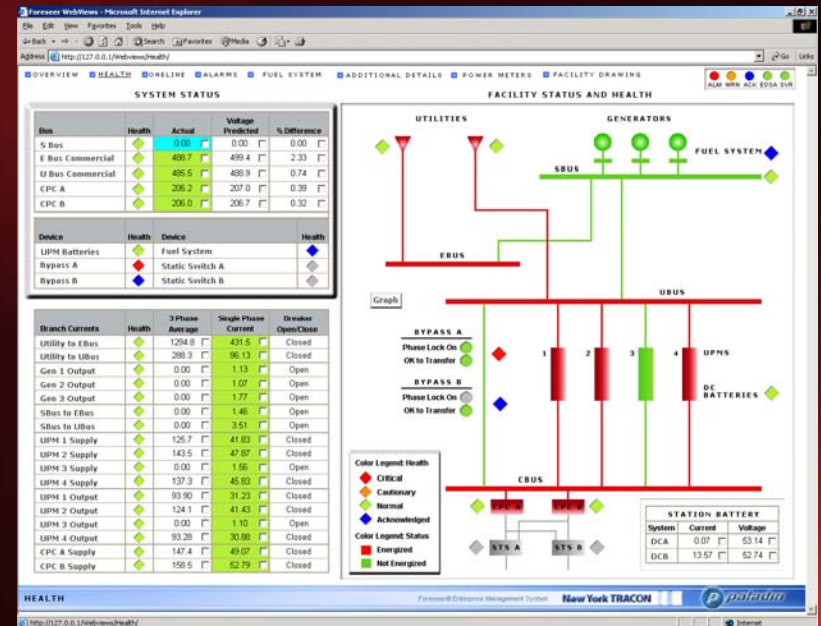
Business Analytics

- Examples
 - USAF F-16 gyroscopes
 - Terabytes of data and real-time data.
 - Visualization techniques used to “observe trends”,
 - Analytics reveal seasonal failure increases (Nov-Feb)
 - Result – increase reserves of gyroscopes



Power Analytics User

- Target user is not an analyst
 - Power systems are highly complex systems
- Higher tendency for real-time decision making than business analytics
 - Decision process can involve significant financial and safety concerns.
- Pattern recognition and visualization (“dash board”)
 - Model predicts behavior based on system design
- Operational capabilities define performance requirements.



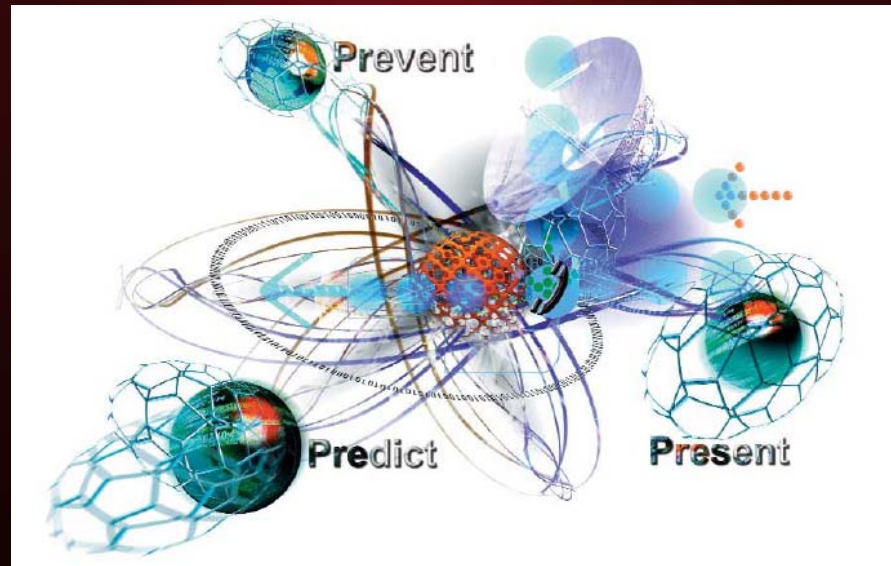
EDSA Technical 2004

- Power systems modeling and simulation
 - EDSA Technical 2005 system design is the source for EDSA Paladin Power Analytics.
- Fault Analysis
- Arc Flash Exposure
- Power Flow Robust
- Power Quality
 - 3-phase & 1-phase
- Protection Coordination
- DC System simulation
- Transient Stability



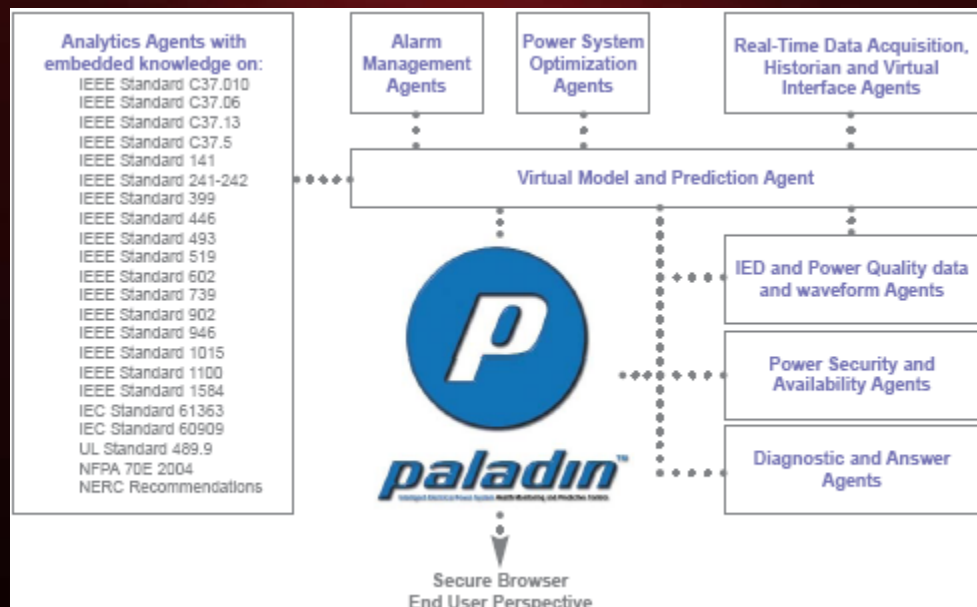
Paladin Power Analytics

- EDSA uses Technical 2004 designs and the associated simulation and modeling tools in combination with a real-time, enterprise system.



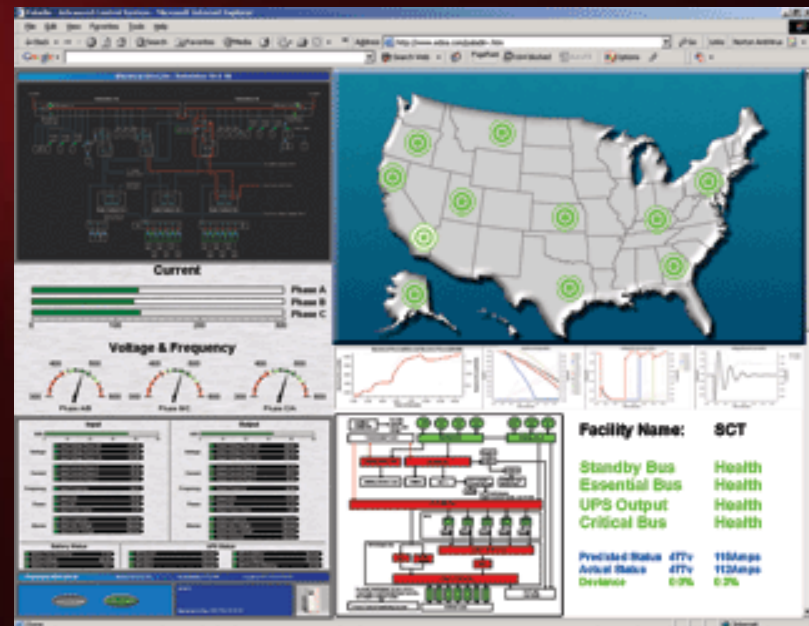
EDSA Paladin

- Massively, secure scalable architecture with a true thin client (browser based).
 - Agent technology interfacing to all major power and support equipment for real-time data acquisition.
 - Full device support (including waveform display and analysis) for the industry leading in-line power quality meters.



US Critical National Airspace Infrastructure

- Considered the most mission critical airspace in the world.
- Developed from Department of Defense “dual use” development.



EDSA MICRO

Real-Time Power Analytics and Power System Analysis Software

<http://www.edsa.com>

10CFR50 Appendix B and 10CFR21 Compliant
NATO AQAP-13 and ANSI



DNV

CLASSIFIED FROM



IEC 61850-5

CLASSIFIED FROM

System Demonstration

- Part of a mission critical infrastructure
- Devices include:
 - Power quality meters
 - Real time sensory input
 - Multi-module UPS
 - Engine generators
 - Model predictions

Summary

- **Paladin Power Analytics**
 - Promises to advance the science and technology of applied power analysis for non-power professionals
 - Combines sophisticated modeling and real-time data acquisition through a non-technical and secure browser
 - Non-vendor specific and massively scalable