Grid Solutions
a GE and Alstom joint venture

TRANSMISSION SOLUTIONS

e-terra 3.0 EMS

Energy Management Solutions
New Grid. Intelligent Systems

The new e-terra3.0 is the most advanced, fully integrated, smart grid-ready suite of products for the 21st Century Grid. **e-terra3.0** is developed by the world's leader of energy management and electricity market systems and THE only player in the industry who offers a full solution from market-to-meter for the new grid. Your Grid. Reinvented.

Market-based electricity prices. Aging transmission and generation infrastructure. Proliferation of renewables. Regulatory compliance. Market rules. Interconnected systems crossing geographical borders. Workforce coming close to retirement. Smart grid. Intelligent devices coexisting with analog ones. Rapidly changing technology. Consumers becoming producers and participants in the process. Ever-increasing demand.

By any measure, the changes that occurred in the electric utility industry in the last 20 years are anything but simple. They introduced incredibly complex problems to solve, a lot more players and technology than ever before. Yet, in this world of drastic changes, one constant remains: the utilities' mandate of providing a secure and reliable system operated efficiently.

Power System Modeled for the Enterprise

GE has been a pioneering innovator in the industry for more than 30 years. While technology and the industry have changed, our mandate remained the same: develop the most reliable, secure, and efficient energy management systems and implement them cost-effectively and without disrupting the daily operations of the grid. We were able to accomplish this successfully by creating long-term partnerships with our customers and by committing to designed scalable systems that can quickly adapt to the industry and technology changes.

By leading the effort for creating industry standards in modeling, communication, and system architecture and integration, we were able to develop real-time, mission critical systems that can be easily integrated with back-office and other third party applications. Using these modeling standards, **e-terra***source* makes possible the creation of an adaptable and scalable model of the grid, which can reach very large sizes and cross geographical borders.

Cyber Security for the 21st Century

Large and small systems alike are target to potential cyber-attacks. **e-terra***trust* provides the highest level of cyber security in the industry. Our cyber security experts are members of various task forces working with governments and industry organizations across the globe, such as USA's Department of Homeland Security and Department of Energy and NERC and are at the forefront of designing and implementing the latest advancements in this field.

Reliable Grid Operation in Global Electricity Markets

Scalable and secured systems that can adapt to market changes and market rules are required by electricity markets worldwide. These systems have to quickly incorporate not only new market rules but meet all the regulatory compliance, while maintaining the security and reliability of the grid. As the leader in electricity markets and the developer and implementer of the first market in the world (New Zealand), GE has mastered the integration of market and compliance rules into its **e-terra***platform* solution for grid operation.

Integrated Renewable Energy Sources and Demand Response Programs

The integration of renewable energy sources and demand response programs within the context of free markets creates a more dynamic and comprehensive grid that allows diverse players to participate in the marketplace. It also means that asset owners and operators have now to take into consideration the unpredictable nature of renewable energy sources. **e-terra***renewableplan* provides the tools to monitor and manage the forecast for these assets.

Demand response programs at wholesale level are becoming more and more common in electricity markets around the world. To help manage these programs and settle the transactions, we have integrated our **e-terra***markets* platform with our demand response management platform, **e-terra***DRBizNet*, and with **e-terra***settlements*, our settlements engine.

Dynamic View of Grid Security

Smart Grid and its related technology and devices are generating new information about the electric grid at detailed levels not available before. These new systems provide vital information, which give the utilities increased visibility into their system. Phasor Measurement Units (PMU's) now give the operator a glimpse to what might happen by collecting various measurements 50 or 60 samples per second. Our scientists and engineers have developed a set of applications and a platform, **e-terra***phasorpoint*, that monitors and presents real-time data from PMU's, representing the dynamic situation of the grid. When combined with our model-based online stability application, the operator has a complete view of the system dynamic security through an early detection of a system disturbance and presentation of a set of remedial actions to consider.

Increased Situational Awareness

A key design requirement for our developers is to create a presentation that take all valuable data and information from field devices and application results, and present them in an actionable knowledge form. This increased situational awareness allows the operators to quickly assess the level of risk, drill down to details as needed, and make more informed operational decisions. The data analytics and business intelligence these applications provide can quickly adapt to the business requirements of each utility, thus offering very specific set of solutions for each customer.

Advanced Asset Management Strategies

Anticipating the system's behavior was central to designing an application that helps utilities better plan and schedule replacement and maintenance of their aging infrastructure. **e-terra***assetcare* monitors the current condition of the assets, analyzes their capacity and offers solutions for maximum asset utilization without stressing the assets. Thus, allowing the planners to create a strategic plan for the replacement and repair of assets that is cost effective and limits the impact on the grid operations.

For more information please contact GE Grid Solutions

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