e-terra distribution 3.0
A Completely Integrated and the Most Advanced Distribution Management System in the World
**Integrated System for a Smart Grid Future**


The distribution system of the 21st century is shaping up to look very different than what we were used to. The transformation of the grid into a smart grid gives distribution utilities access to data and information they've never had before. These systems can increase the operators' efficiency drastically. Or, do they?

Most existing systems are comprised of a series of disparate systems, each with its own dedicated function, each speaking a different language, yet each producing valuable information. The distribution utilities have to manage these separate systems and make sure they extract the right information from them. This task can be overwhelming and time consuming for both the operators and the support staff.

Alstom Grid anticipated these issues and created a fully Integrated Distribution Management System (IDMS). **e-terra** distribution 3.0 is the industry’s first completely integrated and most advanced suite of SCADA, DMS, and OMS (Outage Management System) applications.

**e-terra** distribution 3.0 is built on a single system model and is operated in a single viewing environment from a single user login. Alstom utilizes CIM (IEC 61968) and MultiSpeak© web services technology for interfacing to 3rd-party back-office programs, such as GIS and CIS.

Critical operator applications require high performance for quick system response time, especially during high levels of system activity, such as storms and multiple operators online at the same time handling the aftermath of a storm.

Our applications are built together from the ground up to ensure maximum situational awareness, fast response times, and high productivity.

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**e-terra** distribution 3.0 - **A Completely Integrated and the Most Advanced Distribution Management System in the World**

The new **e-terra** 3.0 is the most advanced, fully integrated, smart grid-ready suite of products for the 21st Century Grid. **e-terra** 3.0 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.
Increased End Users’ Satisfaction: Reduced Outage Time and Duration

Today’s end users expect shorter response time and quicker resolution of the problems. To help utilities address these issues, Alstom Grid developed new innovative solutions within the e-terra distribution 3.0 platform. The first one is automatic response to an outage and a more efficient dispatch of repair crews to the correct location of the fault. These two functions alone considerably improve the utilities’ SAIDA (System Average Interruption Duration time) and CAIDI (Customer Average Interruption Duration time) performance indicators.

Another innovation is the self-healing networks application. FLISR (Fault Location, Detection, Isolation, and Service Restoration) is one of the most important features of e-terra distribution 3.0. In the event of an unexpected power system incident, the software automatically utilizes all the available information from fault current data, smart meter power off messages, customer call centers and telemetered fault indicators. All the data is used to pinpoint the location of the fault. Once this is determined, the software will automatically issue controls using SCADA commands to open automatic breakers and switches to isolate the faulted area. Then, it will create a plan to operate manually-controlled breakers and switches to reenergize as many customers as possible.

Traditionally, the utility would have to dispatch a crew to patrol the line and located the faulted equipment. This typically takes 30 minutes or more. The FLISR application performs the same function in typically less than one minute.

The FLISR application can also generate plans for review of manually-switched devices, thus reducing even more the time to analyze the situation and take restorative action.

Improved Peak Demand Reduction, Optimum Asset Utilization, and Volt-Var Control

e-terra distribution 3.0 includes Volt-Var optimization functionality (known as VVO, CVR, VVR, or VVC). This function is accomplished using real-time analysis of the “as-operated” system conditions to reduce demand, minimize system losses, or provide reactive support to the surrounding system. This function can be used continuously or at peak conditions. Since it is fully integrated with SCADA and real-time power flow and optimization it is known as Integrated VVC (IVVC).

The IVVC automatically controls capacitors and voltage regulating devices, including regulators and Load Tap Changers (LTC’s), to improve the operation of the network and meet specified operating targets.

To have a truly effective result from automated Volt-Var management, the control commands (or plans) must be based on the analysis of a significant area of the distribution 3.0 system and the changes must be coordinated across all the active regulating devices. This capability is referred to as global optimization. To achieve this, the e-terra distribution 3.0 uses both SCADA data and the real-time dynamic model of the entire network and controls all devices simultaneously.

The IVVC performs the analysis on the “as-operated” system, thus maximum load reduction or other objective functions can be realized regardless of the switching state of the system. Traditional methods rely on a nominal state of the system and can’t deliver optimal results under different conditions.

e-terra distribution 3.0’s IVVC can save millions of dollars annually in reduced demand charges, deferral of new generation construction for peak load-only and reduction in peak-priced energy purchases.