e-terra assetcare 3.0
A strategic move for your electrical Assets
Develop smarter maintenance and Asset replacement strategies

Under the conflicting pressures of reducing costs while maintaining or even increasing quality of service, your strategy for managing your grid assets is facing new challenges. How to move from today’s approaches of “run to failure” or “periodic maintenance”? How to develop smarter strategies that are less costly, less disruptive for grid operations, and actually support your business objectives?

Get Data for decisions

Collecting the right data is the first step to effectively improve your asset-related decisions. As an example, your regulators will require concrete facts and data to justify your investment plan, in relation with your performance objectives or regulation compliance criteria.

Before creating more, you should also make an optimum use of your existing data. How to take advantage of all operation history data from your Energy Management System (EMS), or Distribution Management System (DMS)? How to turn data from your condition monitoring IEDs into actionable information and sound business dashboards?

Bridge the silos

In the context of ageing infrastructure, securely operating assets and maintaining adequate contingency planning is equally critical. For this, you need to bridge effectively the maintenance & asset domain with the grid operation domain in charge of delivering the quality of service to your customers. Often operated in silos, these two domains must find ways to collaborate, benefit from each other expertise, and align their business processes for an increased efficiency, as promoted in the Smart Grid Maturity Model.
The Solution

Moving up the strategic intent
With **e-terra assetcare 3.0**, Alstom Grid provides the tool to effectively support advanced strategies in the field of asset maintenance, asset replacement, and risk-aware grid operation. These strategies can move from time-based, to usage-based, to condition-based and to reliability-based by considering the criticality index of each piece of equipment.

Adding expert knowledge and predictive models into business analytics
Smart condition monitoring devices can be integrated via standard protocols such as IEC 104, DNP3, or OPC to bring real-time condition data in the picture. Alstom Grid products such as MS3000 for Transformers, CBwatch and GISwatch for Gas Insulated Substations, PDwatch for Partial Discharge analysis, can bring their equipment expertise and diagnostics capabilities.

**e-terra assetcare 3.0** provides interfaces to consolidate all asset-related data, coming from manual records, inspection reports, and also usage data from systems such as the EMS.

All these data are combined to produce advanced, synthetic indexes such as the Asset Health Index AHI representing the effective age of each piece of equipment.

By comparing actual equipment records against performance datasheets of the equipment manufacturer, you can detect unexpected degradation of the equipment over time.

Presented in comprehensive dashboards, this information can be used to issue alerts for maintenance actions and even trigger work orders in the Enterprise Asset Management System (EAM).

In addition to the diagnostics and detection of anomalies, you can build an asset evolution forecast based on past trends, history of operations, actual service requirements and equipment conditions, combined with typical ageing curves from the manufacturers.

This can be used to define an optimum maintenance schedule, no longer based on time only, but also taking into account the actual equipment conditions and probable evolution, thus optimizing maintenance expenses.

Creating overall situation awareness
The fleet analysis view also brings a global approach to analyzing and correcting systematic equipment misbehaviors. Those performance summaries can be used as Key Performance Indicators and published via ad-hoc reports to all interested parties within the utility organization.

In a subsequent step, the criticality index of each piece of equipment can be added to combine the health information with the business impact of a potential failure of this piece of equipment, and therefore provide a risk-aware view of the situation.

This approach can provide early warning signals and avoid potential harmful situations, such as sudden failure of a piece of equipment with immediate impact on the grid operation and emergency outages. This leaves more time to the grid operator to find alternate operation schemes, such as equipment de-rating, generation re-dispatch or load transfer for instance.

The Asset Health Index information can also be made available to your EMS, and used as a measurement of the risk attached to each piece of equipment. This can be applied to the Contingency Analysis application, so that contingency planning can now take into account the actual state of the devices, and build a global risk assessment at grid level.

Integrating domains
User Interface navigation is provided between the asset electrical view of **e-terra assetcare 3.0**, the grid operation view of the EMS (such as Alstom Grid’s **e-terra platform**), and the maintenance process view from the Enterprise Asset Management EAM. Any given asset can be viewed seamlessly in its history and asset health context, in its operational role in the EMS, or in the progress of its on-going maintenance actions in the EAM.

All interfaces are built with modern interoperability techniques, using web services and IEC standards wherever possible. MRIDs from IEC 61970 CIM standards are used to uniquely identify devices, compliance to IEC 61868 is built as the standard matures, as evidenced by the interoperability test passed in March 2011. This provides **e-terra assetcare 3.0** with vendor neutral solutions, allowing integration with any EMS or EAM.

What’s more, data can be made available at your fingertips using Alstom Grid Viewer on iPad.
Benefits

With **e-terra® assetcare 3.0**, you benefit from decades of experience of a leading electric manufacturer and Operations IT specialist, which bring you a holistic vision to support your maintenance and asset replacement decisions, integrated with the grid operation domain.

**Extended Assets Life & reduced probability of failures**

Assessing the effective age and performance of your critical Assets, their life duration is optimized. By computing short-term & long-term failure probability, you act on time, and failures are reduced.

**Proactive Operations for Increased efficiency**

With the better control of asset behavior, a better anticipation of Network incidents, unplanned outages are reduced. Overall, impact of all outages is minimized.

Network reliability analysis is improved, together with accuracy of your ageing models.

You operate in a more consistent manner, closer to the true limits of assets.

**Reduced costs: OPEX, cost of Inventories, CAPEX**

Thanks to **e-terra® assetcare 3.0**, you can establish Condition-based or Reliability-centered Maintenance planning where needed, beyond the basic strategies based on time or postulated age.

You get facts & data to present and justify your Asset Replacement program to your regulator, you can make auditable decisions.

**Improved Business processes**

Getting the most of your already existing data sources, **e-terra® assetcare 3.0** builds a holistic asset view that can be shared through the entire organization, to provide accurate status information to all users. This will increase consistency and integration between business processes, such as further enforcing safety rules.

Based on standards, it is fully consistent with an enlarged IT Enterprise integration model, as promoted by the Smart Grid Maturity Model.