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# Towards A Data Driven Culture

For many years, manufacturers have been looking for new ways to manage their assets. In many cases, traditional financial models no longer support the needs of today's manufacturers and this is so as we move forward to the era of digitalisation. By **Badrinath Setlur**, assistant vice president — consulting, manufacturing, logistics, energy and utilities, Cognizant.

Ageing assets and workforce, an influx of networked micro-grids, and the proliferation of intelligent devices that form the smart-grid on the traditional power grid are challenging utilities to identify more effective and efficient processes to manage and monitor their critical assets – and to do so with high safety, reliability and compliance. Traditional and smart asset management have a common objective – aid in the reduction, minimisation and optimisation of asset lifecycle costs across all phases, from asset investment planning, all the way to operation and maintenance. Optimising the costs associated with each phase will remain among the key objectives of an asset-intensive utility organisation.

At present, preventive maintenance schedules prescribed by manufacturers are not enough to help utilities avoid asset failures. In order to improve customer satisfaction, utility organisations need to work towards avoiding unexpected outages, managing asset risks and maintaining assets before failure strikes. According to a survey, reducing outages and shortening restoration times are the most significant challenges in the area of power distribution, with 58 percent of respondents recognising the need for a mechanism to predict equipment failure.

More than ever before, utilities are looking towards predictive analytics to extend the life of assets, as well as to bring greater predictability to performance and health. By applying predictive analytics to smart asset management, utilities can realise asset lifecycle cost reduction while improving the accuracy of their decision-making, allowing them to plan and prioritise maintenance activities.

## Making A Business Case For Analytics

By working proactively to collect and distil historic and current information to create predictive models for future events, utilities can enhance customer satisfaction, reduce total cost of ownership, optimise the field force as well as improve compliance.

- **Improve customer satisfaction and reliability of power:** Customer satisfaction and power reliability are two important measures of a utility's performance. Unexpected equipment failures can impact both. Customers expect planned outages to be communicated in advance for the purposes of planning for electricity consumption. As a result, utilities also require proactive maintenance of assets prior to failure, so as to avoid penalties governed by strict outage regulations.

- **Prioritise maintenance activities and reduce TCO (total cost of ownership):** Each asset has multiple associated costs, mainly in terms of procurement, installation, operations and maintenance, as well as failure and decommissioning. Unexpected failure cost is the leading expense component of any asset. These costs include the expense of the asset in service, collateral damage cost, regulatory penalty, disposal of damaged asset, lost revenues and intangible costs. By preventing key equipment failure, utilities can save a sizeable amount of money through predictive maintenance practices. Accurate modelling techniques utilise historical data from multiple sources, enabling the generation of predictions and risk scores. They also produce interpretable information to allow the understanding of implications of events, thereby enabling the right response to be implemented.

- **Optimise field crews with better route planning:** A comprehensive understanding of asset health can serve utilities well in terms of work planning, prioritisation and scheduling. Unexpected equipment failure often requires reallocation of crews from other work locations to restore the outage, hiring of extra labour and often, an entire rescheduling of other planned maintenance activities. The percentage of work done in reactive activities can be effectively applied for predictive maintenance – improving crew response time and utilisation, while also reducing total maintenance duration and asset downtime.

- **Improve overall safety and compliance:** Predictive asset analytics proactively addresses potential safety risks by integrating data from multiple sources—SCADA (supervisory control and data acquisition), EAM-GIS (Enterprise Asset Management — Geographic Information System), online monitoring systems, weather channels along with non-operational data, and so on. They enable utilities to identify safety risks and deploy suitable operational actions to mitigate these risks in a shorter span of time.

## Constructing The Predictive Analytics Asset Management Anatomy

In order to achieve these objectives, key solution components of the predictive asset analytics platform are:

- **An operations dashboard:** Business users will appreciate a GIS-enabled, intuitive summary dashboard displaying a quick summary of alerts and work orders.

- **An asset model:** A statistical module is required to analyse the historic event information to create an asset model. Real-time information can then be contrasted against the reference asset model in predicting the failure event.

- **Rules setup:** Organisations must provide an intuitive interface to help users pull information from multiple systems and configure known alerts and actions rules for meaningful asset management. The same functionality can be applied to configure alerts and actions rules based on statistical analysis derived from the asset model.

- **Prediction notification:** A summary view of recent notifications in the main screen can easily draw the attention of the utility operator, thus enabling quick response time to avoid downtime. A detailed view of predictive alerts will support the utility operator to explore the nature of alerts in greater detail and facilitate informed decision-making. Integrating the EAM system with a predictive system allows the user to view asset-specific work-order status, triggering new work orders directly from the predictive solution based on these predictive alerts.

With this in mind, the core part of the solution architecture is the analytics engine, which can either be a part of the platform or be integrated via a third-party component. An ideal solution should support desktop and mobile interfaces, with the aforesaid key solution components.

## Adoption Of A Data Driven Culture

As organisations venture forward on their predictive analytics journeys, the need to ensure that a predictive asset analytics solution fits into the overall strategy and future business requirements is vital. Clearly define the immediate objectives of the solution; understand future business requirements; and assess the scalability prerequisites to support additional applications. Once these aspects are established, the analytics platform and statistical method for the solution will naturally flow.

Additionally, most utilities might not have the right processes and data needed to support analytics solutions. Therefore, it is imperative to improve business processes and upgrade IT infrastructure to support any analytics solution before it is deployed. For instance, utilities can take a step-wise approach – implement the analytics capability, then address existing process and infrastructure needs, and gradually roll out advanced analytics functionalities to fit with ongoing process improvement and IT system upgrades.

In deploying predictive analytics, implementation quality determines how well utilities achieve projected results from predictive analytics programs. In order to mitigate the implementation risk for comprehensive end-to-end predictive solutions, an effective way is to harvest the best-in-class solution from multiple providers – data management, systems integration, analytics engines and operational technology integration. The time has come for organisations to adopt a data-driven culture.

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