



Optimised Outage Planning

Case Study: ElectraNet

As the owner and operator of South Australia's high-voltage electricity transmission network, ElectraNet plays a vital role in powering the homes, businesses and communities of South Australia.

The Challenge: Planning a large and complex set of work orders

Once a month, ElectraNet must create a rolling 13-month outage plan for the thousands of work orders that require a network outage. Like all service providers, ElectraNet need the plan to include efficient outage groupings that minimise service interruptions to customers.

Planning this volume and complexity of work orders is an extremely challenging task that requires:

- matching service provider resources with work demand;
- making sure work was planned when the probability of getting the outage was high;
- ensuring that work orders are completed as close to the set point as possible, and never outside the float dates;
- managing the concurrent outages of critical network transformers and lines;
- linking individual work orders that are all associated with a common piece of equipment, for example linking a transformer's major service with its associated OLTC service.

Prior to Daitum, creating just one high level plan could take weeks of effort, which also impacted last minute changes. Urgent corrective maintenance or unforeseen network events were not always optimally planned.

The Solution: Use AI to generate a multitude of potential solutions

ElectraNet's outage planning rules and KPIs were documented and captured by Daitum's application. The weightings of the KPIs are fully adjustable, allowing them to change as ElectraNet's network changes.

Relevant network information, such as work teams' availability, network risk ratings, and outage groupings was compiled and uploaded alongside the work order data.

Daitum's best-in-class AI then chooses which month each work order should be planned, and what other work orders should be done at the same time. From there, an optimised plan is created with all constraints respected and KPIs optimised. What-if analysis is carried out by running multiple scenarios with different KPIs.



Benefits



Reduced network risk



5x faster planning time



Freed up 1FTE within the planning team



35% increase in number of months planned



Allows for strategic what-if analysis for work team availability, likelihood of obtaining an outage and more

“Daitum has helped us to make a complex problem easier to understand. Our maintenance plans now take less time to develop – yet are even more robust.”

Simon Cole
Senior Maintenance
Planner

The Results

While many companies collect lots of data, ElectraNet has successfully turned data into action. Having access to leading edge AI translates into a reduction in network risk within ElectraNet's transmission network, while saving valuable planning time.

1. Reduced network risk

When it comes to their network, ElectraNet are always looking to reduce the risks associated with having a planned network outage.

By creating more efficient outage groupings, Daitum is helping ElectraNet reduce the number of planned outages required for the same volume of work.

ElectraNet's planners are highly confident that all required work orders have been considered and optimised efficiently.

2. Saving planning time

Not only is network risk reduced, the use of AI technology also benefits ElectraNet's planners. Creating a plan is now 5x faster, freeing up time to add value in other key areas.

Using a manual process, what-if analysis was not possible given how long a single plan took to construct. Now multiple scenarios can be assessed to discover if there are more strategic ways to plan outages.

With Daitum, ElectraNet can quickly and easily compare how the availability of their work team resources impacts the efficiency of the plan.

As an example, ElectraNet could run multiple scenarios and discover that if they slightly increase the availability of their work team resources, the resulting plan requires significantly less outages. ElectraNet would then be able to negotiate any changes in availability knowing precisely how valuable it is.

3. Increased planning horizon

Energy regulators are always looking for utilities to drive efficiencies and innovation in their operations.

With Daitum, ElectraNet planners are now able to develop 18-month outage plans in a unified manner. This provides for more integrated planning and less chance of missed opportunities compared to the 13-month plan relied on previously.

4. Improved business process

The energy industry is going through a period of unprecedented change. Daitum's cloud-based optimisation solution provides ElectraNet with full control over how the planning problem and objectives are defined, enabling business rules to be enhanced or tweaked with little or no input from Daitum.

“Daitum has helped us create more resilient outage plans, where future schedule changes can be more easily accommodated.”

Frank Maio
Asset Information Manage

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