Market view

Intelligence against outages

To improve grid reliability and customer confidence, utilities must use the power of data to predict and assess challenges and take action in the right areas at the right time, says Maikel van Verseveld.

Whatever your view about global warming, you would be forgiven for presuming extreme weather events are on the rise globally. The Intergovernmental Panel on Climate Change (IPCC) won't commit as strongly, but it does say it is likely there has been an increase since 1950. What the body definitely states, is that economic losses from weather and climate-related disasters have certainly increased in that time.

In a special report on *Managing the Risks of Extreme Events*, published in 2012, the IPCC found "data on disasters and disaster risk reduction [to be] lacking at the local level, which can constrain improvements in vulnerability". According to the expert panel, there are too few examples of national disaster risk management systems and associated measures, explicitly integrating knowledge of projected changes in exposure, vulnerability, and climate extremes.

Historically, the same can be said of the utilities industry, which acknowledges an increasing requirement to prioritise capability when it comes to outage prediction and management. This is something I see in my role. Focused on the development and delivery of integrated information technology and operational technology solutions, we are helping utility companies achieve greater grid reliability and efficiency.

Last month, I attended DistribuTECH, a transmission and distribution event in San Diego. It came at a time when the industry was still raw from winter storm Jonas, which is estimated to have caused multi-billion dollar damage and disruption across the US, leaving millions of people and businesses without power. This sort of event is sadly becoming commonplace for North America, where dramatic weather threatens the stability of ageing infrastructure.

Unfortunately, it would seem Europe is experiencing equally dramatic weather events, and with increasing regularity. Britain recently suffered some of the worst flooding ever experienced, which experts at the Met Office are attributing to the negative effects of climate change, further accentuated by the natural phenomenon El Nino.

The reality is our sector can no longer rely on broad-brush outage management practices. Utilities are being forced to place renewed emphasis on outage management solutions, and for good reason. Consumer and regulator expectations are higher than ever: regarding time to restore, information communicated on preparation for events and managing the progress during, and concerning the related cost of outage.

To improve grid reliability and increase customer confidence, utilities know they have to make better use of outage-related data. This will enable them to better anticipate and limit outages, prioritise preventative resources and react faster. But – to dispel an existing myth – the challenge lies not in the generation of more data, but in how we use it. That is, in the management, analysis and interpretation of what we already have.

As an industry, we can tap into a whole host of data sources, which can lead to the highest levels of precision intelligence. The key is in taking proprietary information from within a utility business and combining it with factual external data – be it weather forecasting, for example, or local anecdotal information drawn from social media – as well as well-honed algorithms.

It is important to note that, while real-time information direct from affected assets in the field is highly insightful, this provides value during an outage, rather than in preventing one. The opportunity for making a step change in outage management can be found in using the power of data to forecast, predict and assess challenges – days or even weeks in advance. Only then can true efficiencies be realised and effective preventative measures be applied.

The art of combining and interpreting those data sets can lead to understanding precisely where the highest level of vulnerability exists on the grid. For example, where forecasted severe weather events are due to hit an area with a high customer population. Once the highest probability of occurrence is isolated and its potential impact assessed, we find much better decisions are made.

In turn, that leads to real preventative action, in the right areas and at the right time. This can be as specific as considering how close the trees are to your overhead line in highly populated areas – something that is valuable to understand before you brief your maintenance crew. The risk matrix encapsulating rising water levels, landslides and heavy snowfall can all be furnished with pinpoint predictions informing the relative protection and, if necessary, relocation of key assets in the field.

Highly skilled practitioners from analytics and data science domains can collaborate with field experts in order to generate, understand and interpret the data, as well as define the resulting action.

Grid stability is fundamentally important – not just on a good day, but also when the world meets the force of nature. The need is real and it is here now and there are millions to be saved in the process. In a test scenario based on a utility service territory of 1.5 million rural and urban customers, we calculated the ability of utilities to anticipate, prevent and react faster to outages could lead to an annual saving of about £2 million.

The good news is we have all the data we need to meet the challenge. That data just needs a little attention. Put simply, it is the combination and interpretation of classic analytics and real-time operational data that creates the perfect storm for outage management... if you'll excuse the pun.

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