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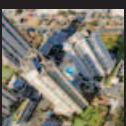
The Australasian magazine of surveying, mapping & geo-information

TAKE CONTROL

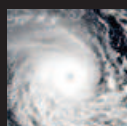
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GIS powers up utilities sector

Utilities across the Asia Pacific region are adopting formidable location-centric technology to fuel efficiencies, ensure workforce safety and deliver a more reliable electricity service.

Utilities provide essential services and play a vital role in our lives. They light up our homes, power our electronic devices, and help support daily business transactions and operations. A simple glitch in service delivery can result in not only discomfort and inconvenience in the lives of consumers, but it can also cause severe economic consequences.

With an increasing pressure to supply reliable utility services at an affordable cost, the Asia Pacific energy sector is now – more than ever – maximising the use of GIS to support and enhance their workflows and services.

“GIS technology has been entrenched in the utilities industry for over two decades,” Mark Billing, National Utilities Manager, at leading geospatial solutions provider Esri Australia said.

“Growing from the old days of manual data crunching and paper-based maps, we now have fully integrated systems with advanced analytical capabilities that reveal relationships between factors that impact services, revenues, and workflows,” he said.

“GIS technology has moved well beyond its traditional use in areas such as asset management and engineering, to more business orientated aspects, such as customer retention, emergency preparedness, and public engagement.”

“Spatial analytics is becoming more pervasive as decision-makers use it to break down silos in their organisations, making it easier for a broad cross-section of departments to share data and collaborate.”

Ensuring reliability

Reliable utility services are backed by powerful decision-support systems that enable staff – from the field worker to the Chief Executive – to make well-informed decisions in a timely manner.

Western Power, which powers the majority of Western Australia’s population, uses a sophisticated enterprise-wide GIS to improve their asset and network management across the board.

The business uses the technology to create a comprehensive view of their entire electric network, translating complex scenarios into relevant clear visual presentations that can highlight things such as overloaded grid sectors, areas that require maintenance, or future development opportunities for the network.

“GIS has moved beyond a system of record, to provide systems of engagement and analysis,” Mr Billing explained.

Ultimately, the approach has enabled Western Power to achieve vast efficiencies across the board. For example, previously running network queries would have to be done manually and would take many hours to complete. Now with GIS, the process is automated and is finalised in just minutes.

Staff can now view multiple layers of data simultaneously, including information about native vegetation, heritage areas and protected indigenous sites, as well as bushfire probability and water tables. Once layered onto a map, this information is used to plan where new assets, such as power lines or transformers should be positioned.



“Western Power’s proactive approach to understanding and managing the state of their network has not only further enhanced their customer service, it has also helped ensure their compliance with industry regulations by maintaining good System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) ratings,” Mr Billing said.

The SAIDI and SAIFI ratings are standard indices that are used to track and benchmark reliability performance.

In the broader Asia Pacific region, Singapore Power’s (SP) electric grid is rated as one of the world’s best performing networks – outranking counterparts servicing major global cities.

In fact, according to the 2014 global benchmark study by independent consultant DNV GL, as measured by SAIDI, a customer in Singapore would have experienced 0.34 minutes of supply interruption for the full year on average for SAIDI. Also SP’s SAIFI score of 0.00073 interruption per customer per year shows that households and businesses in Singapore experience the world’s least amount of outages, for the shortest periods. They also enjoy competitive grid charges for electricity that are below the global average.

GIS technology has played a significant role in ensuring these standards are maintained. SP has used a GIS solution, most notably in the development of its





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Outage Management System (OMS) – a system designed to enhance their capability to respond to unplanned power outages and network disruptions.

Esri Singapore CEO Thomas Pramotedham said; “Even after setting set such a high global benchmark for service reliability, SPPG has demonstrated a commitment to improve and deliver the highest standards of energy efficiency through the deployment of this robust GIS-centric system,”

“The OMS presents real-time power outage information on a dynamic map, providing the workforce with essential location awareness,” Mr Pramotedham said.

“It integrates this operational information with customer data, allowing staff to identify exactly how many customers are affected by a power outage and quickly mobilise the appropriate workforce to respond and rectify an incident.”

Enhancing safety and situational awareness

Apart from helping utilities deliver their promise to provide reliable services to consumers, GIS technology is also used to ensure the wellbeing of their mobile workforce and contractors.

Looking to other industries with large mobile crews such as the mining and gas sector, regional power utilities are taking advantage of the lessons learned through

GIS implementation and applying them to their own businesses.

When severe floods hit Queensland in 2009, Australian gas producer QGC investigated how they could use GIS technology to support their ground-breaking Duty of Care Integration Programme project.

With more than 20 existing gas processing facilities and in excess of 2,350 wells on tenements in the Surat, Bowen and Cooper basins, QGC had an immediate need to ensure the safety of their staff – who collectively drove more than 1.5 million kilometres every month over isolated and sparsely populated areas.

The project aimed to implement a system that could rapidly locate staff working in remote locations during an emergency and quickly communicate with them. To achieve this, QGC implemented Esri's ArcGIS platform to help consolidate real-time data feeds about the location of its personnel, which were previously held in several isolated systems.

The new system brought together information – including staff and vehicle locations and alarm and threat information – into a custom-built operational dashboard, providing QGC's safety and security teams with a live overview of the organisation's operations. This allowed QGC to quickly form a clear understanding of a situation, account for its people and make timely, targeted, and informed decisions.

The system also enabled QGC to have a better insight into the driving behaviour of its staff and contractor workforce.

By analysing historical data around staff and vehicle usage, QGC can better manage its Zero Tolerance Driving Behaviour policy and support additional levels of safety for the company.

Transforming an industry

Moving forward, experts believe the use of GIS in the energy sector will only grow, as utilities are faced with an increasingly demanding competitive landscape.

“The global utility industry is facing unprecedented change brought about by a variety of factors such as government regulations, changing consumer expectations, an ageing workforce and natural disasters among others,” Mr Pramotedham said.

“However, despite such risks, using dynamic tools such as GIS technology allows organisations to respond to unique challenges, manage the risks and also strategically plan for the future ahead.

“GIS is literally transforming utilities and we'll keep seeing more exciting innovations within this sector as players in the industry continue to empower decision-making with location technology,” he concluded.

For further information on the use of GIS in the energy sector, including access to additional case studies, visit esriaustralia.com.au/utilities. ■