

Western Power: Improving Safety, Reliability and Affordability through Mobile Switching

“The best thing the organization has ever done for switching”

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The Situation

Western Power has an ongoing commitment to improving key operational processes and work practices, ultimately driving efficiencies and alignment across the organization. The business has moved to a strong customer-focused orientation and measures success by assessing delivery on three key areas: safe, reliable, and affordable delivery of electricity.

Western Power began shifting to a mobile-centric operating model in order to better support their overall strategy. Introducing mobile switching—the process for communicating work instructions digitally from the control room to field personnel—touched on all areas of its strategic plan, reducing communication errors, improving response time for outages and reducing switching delays.

Western Power implemented a range of strategic initiatives designed to significantly improve their operating efficiency while enhancing delivery of network investment. The result was a \$54.5M reduction in operating expenditure. The rollout of mobile switching was one of the initiatives that contributed to these savings.

The management of electrical networks is highly process-driven to ensure the safety of crews. The methodology for switching at most utilities has multiple steps, and typically requires a significant amount of time on the phone by control room personnel to clearly and accurately relay instructions to field personnel.

Prior to launching mobile switching at Western Power, each time a crew member called the control room, they identified who they were and what program they were working on. A controller would then confirm that the caller was performing the correct actions in the field. With this method, the control room would, for example, instruct five steps on an assigned job. The field crew member would complete those five steps, and then call back to confirm that work was complete. Once confirmed, they would receive their next set of steps. The process was labor-intensive and resulted in delays during busy times of the day. Crew members were frustrated that they could not get on with their work.

Company Background

Western Power is an Australian state government owned corporation that transmits and distributes electricity to more than one million customers across a network area of 255,064 km², with peak demand at about 4300MW.

The Solution

GE, along with technology partner Yambay, had successfully developed and deployed a mobile switching application at a UK-based utility in 2005. Western Power had been working collaboratively with GE on a similar mobile switching solution which was successfully deployed to a section of their field crews. There was confidence in the tool, but the technology was lacking sponsorship within the business. There was a small user base, but it was not consistently used by all Western Power field crews.

Western Power's Continuous Improvement Program team took ownership of the project. Having been tasked to do more within the current systems and infrastructure, the Continuous Improvement Program recognized that mobile switching was an ideal opportunity for company-wide productivity gains. They quickly embraced the concept of mobile switching, seeking to unlock some of the untapped capabilities. The program started gaining significant traction and an education program was developed, ensuring leadership understood the value of the solution and supported the new technology.

Focused on the process of control room to field personnel interactions, mobile switching is a solution that provides operational improvements in the management of switching work between the control room and operators in the field. With a mobile-based solution, field personnel can receive and confirm completion of instructed steps via a mobile device. The fast, accurate exchange of data eradicates the need for re-entry of data and boosts productivity by eliminating phone waiting times. The mobile switching application was ground-breaking in its application of technology and offered full integration with the Distribution Management System (DMS) used by Western Power control room staff.

For Western Power, GE's mobile switching capabilities allowed them to move to an electronic version of a standard switching program on a mobile device that communicates with the control room. Toughbooks® were used to confirm switching steps in the field, helping to remove that block of voice-directed steps and giving the control room accurate and complete situational awareness.

The Results

At the beginning of the project approximately 20% of Western Power's switching was managed via mobile, a number that was remaining fairly flat given the adoption rate at that time. With a successful working model in place, Western Power was ready to expand usage across the enterprise.

Following an extensive training program at Western Power four months into the project the number of fully trained personnel had grown from 40 to approximately 300. Incorporating best practices and lessons learned, the team ensured that trainees could log into the mobile switching production environment before leaving the training session – guaranteeing that all employees were capable of executing mobile switching the next day. Western Power had increased the percentage of their switching managed via mobile to just under 80%.

A year later and the numbers are impressive. A year and four months into the project 97% of all switching programs are managed electronically using mobile switching, with Western Power staff and subcontractors alike using the same technology. Additionally, mobile switching has helped reduce calls to the control center by half.

With mobile switching, Western Power is able to record every step of the work process, documenting exactly which steps occurred and when. All events

(such as when an operator shuts off the power) are recorded by the system, providing a complete, accurate record of all actions taken.

After the program launched, Western Power initially experienced an increase in reported safety hazards. Further examination revealed that this stemmed from an increase in documentation of incidents. For example, if a crew member executed a step out of sequence using mobile switching, a warning is given, the incident is recorded as part of an audit trail, and a time stamp is affixed to the event. This means that there is now no way to overlook a missed step or similar incident. If a field operator attempts a step that is electrically unsafe, an alarm is raised in the control room DMS system. After a short period, safety hazard notifications quickly began trending back down.

To track the financial implications of the move to mobile switching Western Power measured the amount of time field personnel spent waiting for a switching operator. Prior to implementing mobile switching 4% of all field operations time was recorded as time spent waiting for a switching operator. After mobile switching was implemented that number decreased by 50%.

This time savings translates into increased productivity across the 1,200 person field workforce, allowing teams to focus on higher-value activities versus spending time waiting on the phone or completing mundane day-to-day process steps.



Conclusion

When you walk into the Western Power control room, you enter an environment that is calm and controlled. When the phone rings, there's generally someone available to pick up the call. It's a very different experience when compared to many control rooms around the world where control engineers move from call to call, delivering instructions to field crews.

Western Power control engineers are still talking to their field crews, but are instead focusing on "value add" conversations where they are helping the field crew overcome an issue or resolve a problem, rather than checking and issuing instructions for tasks.

We can see that GE's mobile switching functionality has helped to achieve Western Power's plan of change, designed to improve operations and achieve significant cost savings in line with their business strategy.

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