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Enabling Data Rich Distribution Networks

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Introduction

The distribution network must evolve into an intelligent, flexible and information enabled electricity grid to maintain quality of supply, increase reliability, and meet customer requirements. To achieve this, the number of Intelligent Electronic Devices (IEDs) on the distribution network will grow. The large scale deployment of IEDs and other smart technologies on the distribution network shall result in technological challenges both on the distribution and customer side of the supply endpoint. Distribution entities use operational control centres and SCADA systems to manage the operation of the electricity network, but how will we actively manage the operation of the growing number of devices and their associated data supporting the distribution network?

Discussion

Electricity networks were designed to transport electricity from generation sites to customers. Although this function has not changed, the proliferation of customer embedded generation has significantly changed how the stability and quality of electricity is maintained. Customers want more choice, and the electricity network needs to be prepared for what comes next.

Ergon Energy recognised there would be an increased need for smart devices on the network resulting in an increased need for data from technology in various formats from multiple sources; we needed a way to acquire and process data from many devices in varying formats. A policy and architecture detailing the connection, data collection and control of these network devices was developed, and then our new environment 'Totem' was formed.

The Totem environment was built using the OSIsoft Pi software suite as the base, however Totem is more than a system, it's a philosophy for acquiring information from non-critical but operationally essential devices. It incorporates what is acquired, how data is acquired and processed for meaningful information, and then where it's stored for meaningful use across the business.

Conclusion

Where data previously could only be acquired through the operationally critical SCADA system or device specific proprietary software, we can now collect, manipulate, analyse, and present data in a consistent and secure manner within our operational technology environment. Totem is our first step towards a truly intelligent distribution network, enabling data rich distribution networks for the future needs of the grid and customers.