NATIONAL NARROWBAND NETWORK Co.

Digital metering solution for water utilities

"NNNCo is working closely with major Australian water utilities to trial LoRaWAN technology in digital metering. The program is measuring the positive benefits of reducing water wastage and running the water networks more efficiently."

Eric Hamilton,
CTO, NNNCo

The Business Need

The number of water utilities pursuing intelligent water networks has increased rapidly in recent years. With access to more frequent meter reading data, utilities can build a better picture of what's happening in their water network. They can also identify leaks, enabling them to repair any pipe failures before customers are affected, reducing costs and helping to reduce pressure on water supplies. Extending asset life and deferring investment are the key business case drivers identified by utilities.

The Solution

NNNCo's water solution includes a low power wide area network (LPWAN) using the global open standard LoRaWAN technology and highly cost-effective sensors that can be installed on or integrated within water meters. Water Utilities have identified their need for a progressive scalable solution for metering and data infrastructure so that existing networks are able to be monitored at a granular level.

NNNCo's Network enables next generation wireless meters to send payloads and usage data at planned intervals, scaling back the need for manual meter reading. Payload data can also be analysed to isolate faults as well as give indications of use fluctuations. Water Utilities are also able to couple existing pulse meters with a LoRa collar device enabling newly deployed current generation meters to communicate with the NNNCo Network. The LoRaWAN network ensures that devices / sensors communicate with low power and therefore are expected to have a battery life of 15+ years in best practice installations.

The Tech Story

- Major Water vendors seeking a low cost, low power solution to service thousands of devices / sensors throughout distinctive key environments.
- Long-range LoRaWAN technology sought out as a scalable infrastructure to support metering for water vendors.
- Open standards are used so that 3rd party metering companies are able to apply their solutions upon the network.
- Low cost base stations are installed on existing water vendor controlled assets.
- Low power devices / sensors are capable of operating on small batteries for 15+ years.
- NNNCo constructed networks across real-world scenarios including City/ CBD Suburban sprawls and regional areas.
- Extensive testing carried out to highlight the versatility of a LoRa solution in real world scenarios.

The End-to-End Solution

The NNNCo network solution consists of three main components:

Australia's Narrowband Network

01.

Devices / Sensors

NNNCo Next Generation Water Meters
The new LoRa-enabled water meters can last for 15+ years on battery power and transmit meter readings to utilities substantially faster and more reliably than conventional manual meter reading. A low-cost solution, they provide critical data that water utilities can analyse to establish use habits and infrastructure health.

LoRa Upgrade – Collar devices
The collar device is an in situ add-on enabling existing meters to connect to NNNCo's network. Collar devices listen for pulse outputs and send this data to the network server. By receiving and analysing the data payload, utilities can provide customers with accurate usage statistics and better understand infrastructure health.

Water meters:

- Use LoRaWAN technology for connectivity
- Operate on the Australian ISM (915-928 MHz) frequency band
- Collar devices fit over existing meters and act as pulse counter
- Send pulse counts as a payload to the network server
- LoRaWAN modules can also be integrated 'under the glass' within the water meter as part of a float replacement

02.

Gateways

Many types of gateways can be supported by NNNCo, such as the Cisco IXM LoRa Gateway and NNNCo's specially developed Ruggedised LoRaWAN Gateway. The Ruggedised Gateway is an IoT solution developed to deal with the extremes of the harsh Australian environment. The enclosure has flexible mounting to suit most pole and mast diameters, including those on water tower installations.

The gateway consists of an IP67 enclosure, with an integrated LoRaWAN gateway, power supplies and batteries, the choice of backhaul (3G and/or Ethernet), space to add cavity filters in case of GSM interference and an independent monitoring system.

03.

Network Infrastructure

At the heart of NNNCo's network infrastructure is a network server that provides the intelligence needed to support our bi-directional traffic- "Every Bit Counts".

NNNCo is working with some of the world's leading water and energy utilities, technology providers and innovators to roll out large-scale, carrier-grade network solutions.

Our network has the following features:

- Can operate effectively from both dense city environments (from basements to penthouses) to across long distances, for example in rural areas;
- Uses the LoRaWAN open standard, providing greater flexibility and longevity;
- Provides for sufficient redundancy within the network to ensure reliable coverage;
- Delivers a solution at a relatively low annual cost per device / sensor;
- Collects and shares information that can make people's lives safer, healthier and easier; and
- Includes a powerful IoT platform including end-to-end device management with open API's to support any 3rd party remote application server.