

5th August 2018

2018 Regional Telecommunications Review Secretariat  
Department of Communications and the Arts  
GPO Box 2154  
CANBERRA ACT 2601

To the Secretary,

Please accept this document from NNNCo Pty Ltd in response to the Committees release of issues paper 2018 Regional Telecommunications Review, providing an outline of key interest areas and invites submissions. NNNCo has responded to

**NNNCo Submission:**

National Narrowband Network Co (NNNCo) is in the process of building the first collaborative Internet of Things (IoT) telecommunications-grade, end-to-end network across rural and regional Australia. The network will support a variety of sectors including Agriculture, Manufacturing, Energy and Water Utilities, Smart Cities, Security and Transportation.

NNNCo is a leading authority on LoRaWAN global standard technology, which it has implemented together with world-leading solutions and local innovations to make a scalable national, open, cost-effective network a reality for a wide range of IoT applications.

The National Narrowband Network is a shared network that can be accessed by any customer sensor data, providing the ability to measure, monitor, collect, understand and analyse data for a multitude of agricultural requirements. This enables better understanding and more informed decision making for on-farm, business and agricultural management.

As NNNCo builds the Low Power Wide Area Network (LPWAN) through Regional Australia via Council, agricultural and other infrastructure partners it will provide many opportunities for farming and other businesses to access the services and benefit from the use of LPWAN infrastructure. Multiple LPWAN-enabled use cases can be transmitted across the NNNCo network enabling industry-wide adoption of IoT use cases to take place more rapidly in rural Australia.

In the Agriculture sector, NNNCo's first infrastructure partner is Discovery Ag who is actively building rural networks across Australian cotton fields as part of the NNNCo coverage model.

In addition, the roll out of the National Narrowband Network provides access to an open carrier-grade IoT network that can support a multitude of services to the government that will:

- Drive efficiencies and enable development of new services
- Drive efficiencies in current services provisions
- Reduce the operating costs of current services eg: replacement of vandalised equipment, alarms when there are unsolicited accesses to site etc.

## LoRaWAN Network Capabilities

### Low Impact Infrastructure



Compact gateways easily integrated into small spaces. GPS integration on gateway means devices can save power by only focusing on relevant sensors

### Low Cost



Pico cell base station is very low cost, as are sensors.

### Two-way



Supports bilateral communications, enabling transmission acknowledgements, configuration changes in devices, and supporting download of updated device firmware

### Long Battery Life



Devices can be configured to send reports sparingly. Reducing transmission from hourly to twice per day can drastically increase battery life (6-7 years to 10 years), if required

### High Capacity



Supports millions of messages per base station. High sensor density makes large data sets and monitoring at a relatively granular level possible

### Standardised



Open standards from device to network to network operation ensures interoperability between applications, IoT solution providers and communications carriers

### Multicast



Secure central control of multiple devices ensures solutions are scalable, communicating from a few devices up to thousands. Supports remote configuration and firmware upgrades

### Secure



Embedded end-to-end AES-128 encryption of data ensures optimal privacy and protection; Messages sit well below the noise floor adding extra security.

RESPONSE TO QUESTIONS:

### 3. What data-intensive activities are occurring in regional, rural and remote Australia?

Data intensive activities in agriculture include the following:

- Soil Moisture Monitoring
- Weather Station Data Collection
- Rain Gauge data collection
- Water tank Level Monitoring
- Flood Monitoring
- Cattle Tracking Devices
- Animal Health monitoring
- Silo Level measurements
- Fence Down alarming
- Power Metering and monitoring
- Solar Power metering
- Soil Nutrient Monitoring
- Irrigation Management
- Water Metering
- Gate Open Alarms
- Temperature Humidity, CO2, O2 data collection

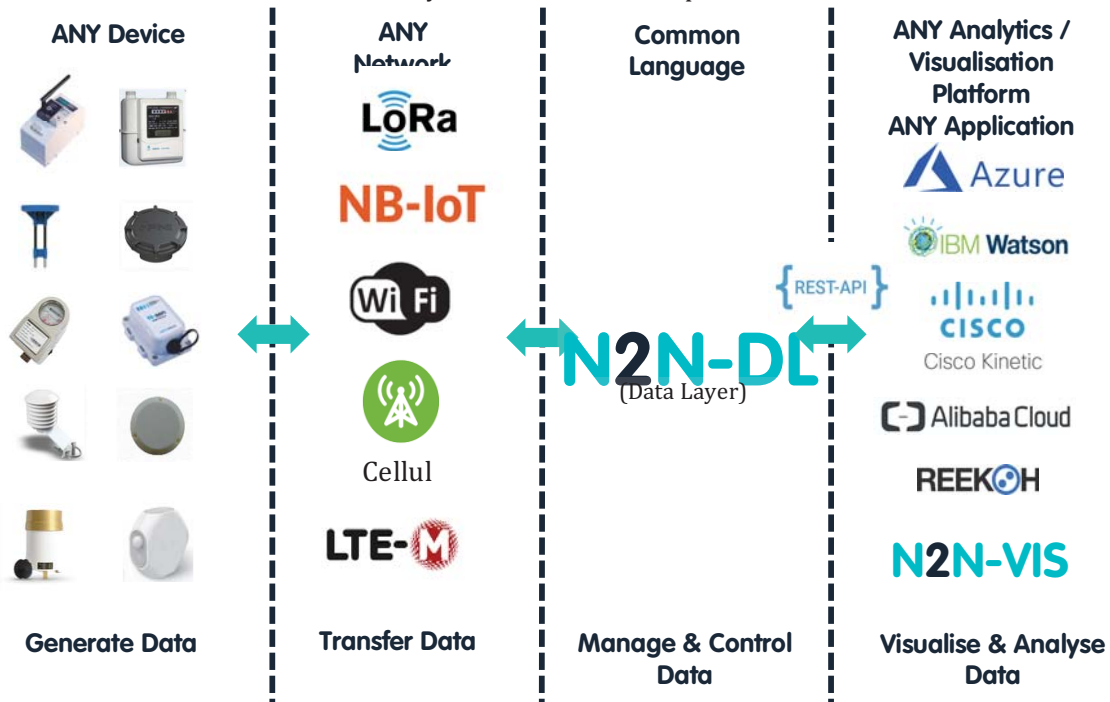
#### What digital technologies are needed for these?

The above solutions can all be provided via the NNNCO LoRaWAN Network technology. As an option, there is also the capability in the NNNCO Network to ingest data from Devices that may be using other connectivity technology.

See diagram to show the end to end data journey.

## N2N enables the end-to-end data journey

The N2N Data Layer (N2N-DL) solves a major market problem - how to translate data from infinite devices and sources to a common language that integrates with any customer system or 3<sup>rd</sup> party analytics and visualisation platform



#### 4. How can regional businesses better utilise digital technologies to maximise economic benefits?

Regional businesses can use Low Power Wide Area Network (LPWAN) technologies to drive a wide range of use cases in their business or on farm that will:

- Increase efficiencies
- Improve water use efficiency
- Deliver deeper insights to improve decision making
- Increase productivity
- Reduce costs
- Drive new business models

A number of IoT use cases have the potential to provide significant economic benefits for farmers and the NSW Government more broadly in particular low-cost automatic weather stations, rain gauges, soil moisture and nutrient sensors. These benefits can include:

- Reduced costs on chemical sprays, better management of drift and rain wash-off. The latter provides significant environmental advantages and reduces unnecessary run-off into rivers and local waterways
- Improved techniques for short-term forecasting of rainfall
- Reduced risk and impact of major floods via improved river observations and forecasts
- Multiple additional farm applications eg: cattle tracking, monitoring feedlot and water trough, monitoring and management of water assets, farm safety alerts, water purity testing, and environmentally significant leakages
- Improved risk management instruments such as multi-peril crop insurance and alternative finance products
- Better planning and management of on-farm risk
- Protection of vital infrastructure
- Protection of farmers' equity and farmers' balance sheet for future years
- Stabilisation of land prices
- Removal of upward pressure on interest rates
- Dramatic reduction and potential elimination of the need for Exceptional Circumstances Funding
- Provision of the physical infrastructure to underpin food traceability systems and support brand development into international marketplaces

Broader Community and Industry benefits include:


- Increased jobs in local communities/country towns to manufacture, install and monitor sensors and network infrastructure
- Country towns have ability to become “smart” in delivery of services such as energy management
- Lifting Australia’s competitiveness and technical reputation globally across multiple verticals
- Improved collaboration and interaction between research institutions and industry

In answering the relevant questions from the Review, should you require further information from NNNCo please do not hesitate to contact us directly.

Kind regards



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