Is LoRaWAN®a viable option for Critical Messaging?

Presented By

Brad Welch - General Manager

TPL Systems Asia Pacific

LoRaWAN® Content provided by

Rob Zagarella - Co-Founder & CEO

NNNCo – National NarrowBand Network Co.

What is LoRaWAN®?

A Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect battery operated ‘things’ to the internet in regional, national or global networks, and targets key Internet of Things (IoT) requirements, such as bi-directional communication, end-to-end security, mobility and localisation services and Ultra Low Power Use cases.

Source: https://lora-alliance.org/

LoRaWAN® Technology Benefits

ARCIA
Australian Radio Communications Industry Association

Ultra Low Power

Long battery life with the lowest power of any LPWAN

Open standards

Globally interoperable technology supported by the largest global ecosystem

Carrier service

Guaranteed end-to-end service levels of data, from device to end user applications

Flexible Model

Flexible network models to deploy carrier-grade LoRaWAN networks where and when needed

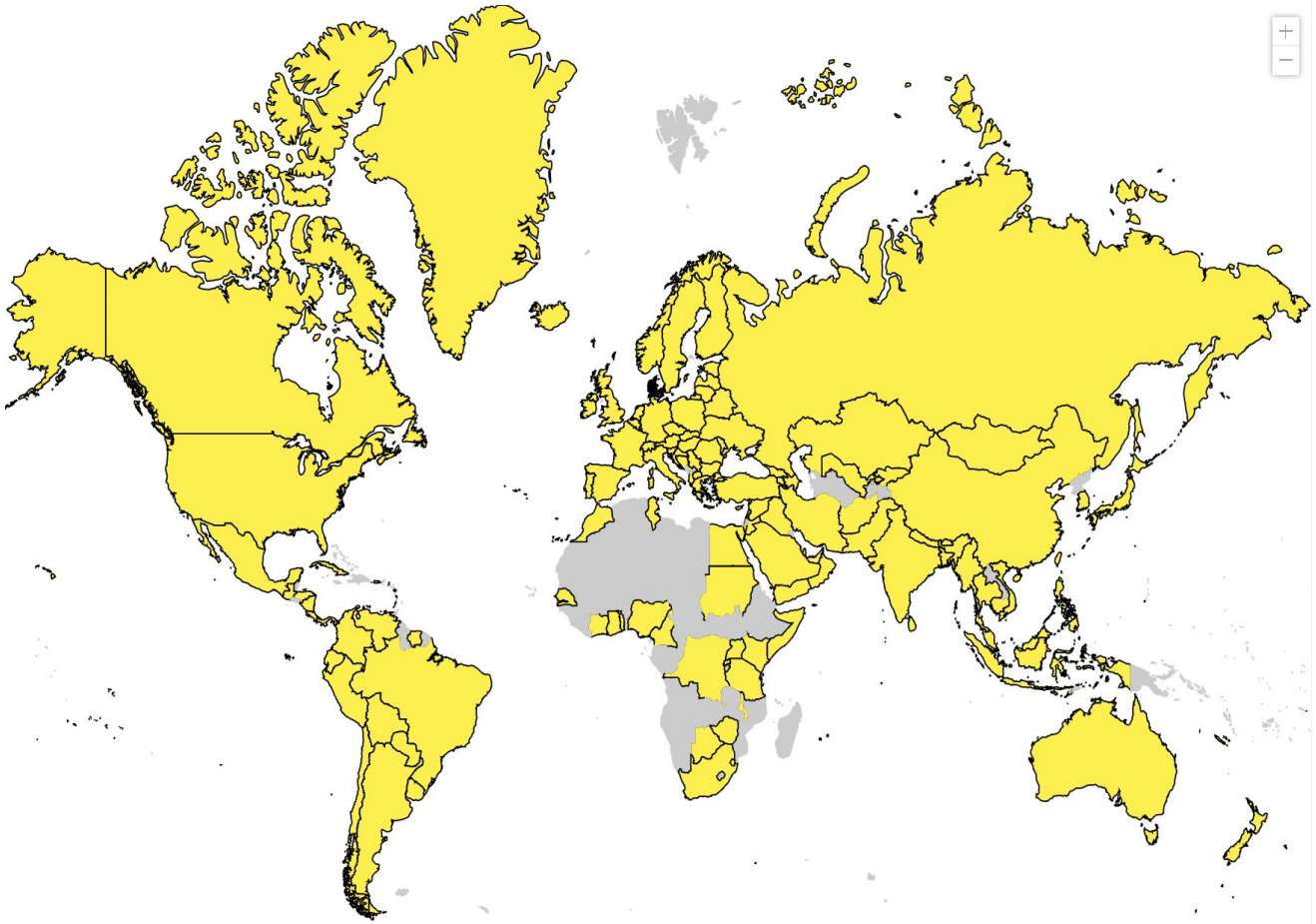
Scalable

High capacity, scalable network with secure central control of multiple devices

Secure

End-to-end security at every level based on global standards

LoRaWAN®: Fastest-Growing Tech Ecosystem



- LoRaWAN®: now ITU-T Y.4480 Standard
- **170** LoRaWAN Network Operators in **171** countries
- **400+** members in the LoRa Alliance®
- **225 million+** LoRaWAN connections
- **+33% YoY** growth rate of certified devices
- **~10 to 15 years*** battery life

**Battery life dependent upon application parameters including frequency of transmission, quantity of data sent, distance data is sent, and whether there are acknowledgement transmissions.*

Critical Use Cases - Ready for Scale

Smart Water: predictive maintenance, stormwater, sewage, water metering and leak detection.

Smart Buildings: Just in Time maintenance for public facilities, asset and people tracking.

Carbon Savings: public lighting 70,000 smart streetlights in Uruguay.

Smart Cities: operational use cases, people counting, environment, power management, parking and lighting.

Smart Industries: concrete sensors, efficiency and productivity.

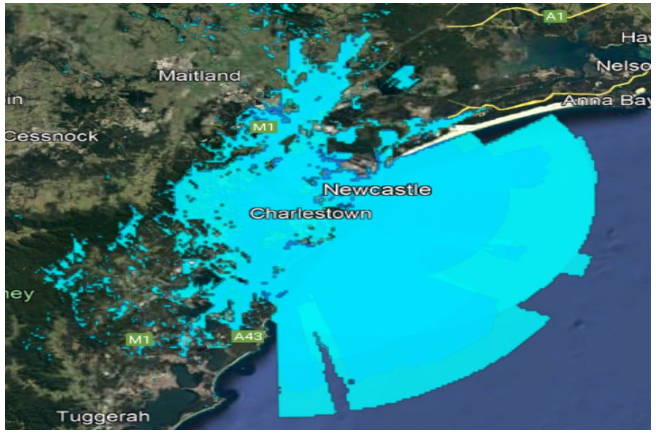
Smart Agriculture: productivity, sustainability, water usage, environment, temperature, humidity, power, and gates.

LoRaWAN®: Australia

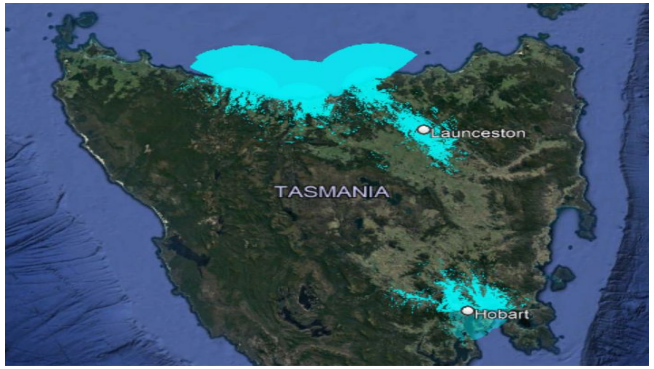
NATIONAL NARROWBAND NETWORK Co.

- **Ubiquitous** network coverage.
- **Anywhere, anytime, any network.**
  - Indoor, including deep underground.
  - Outdoor, including underwater, or hilly terrains.
- Flexibility to **future-proof your IoT project.**
- Access to a global ecosystem of IoT solutions,

Gold Coast City Council - QLD



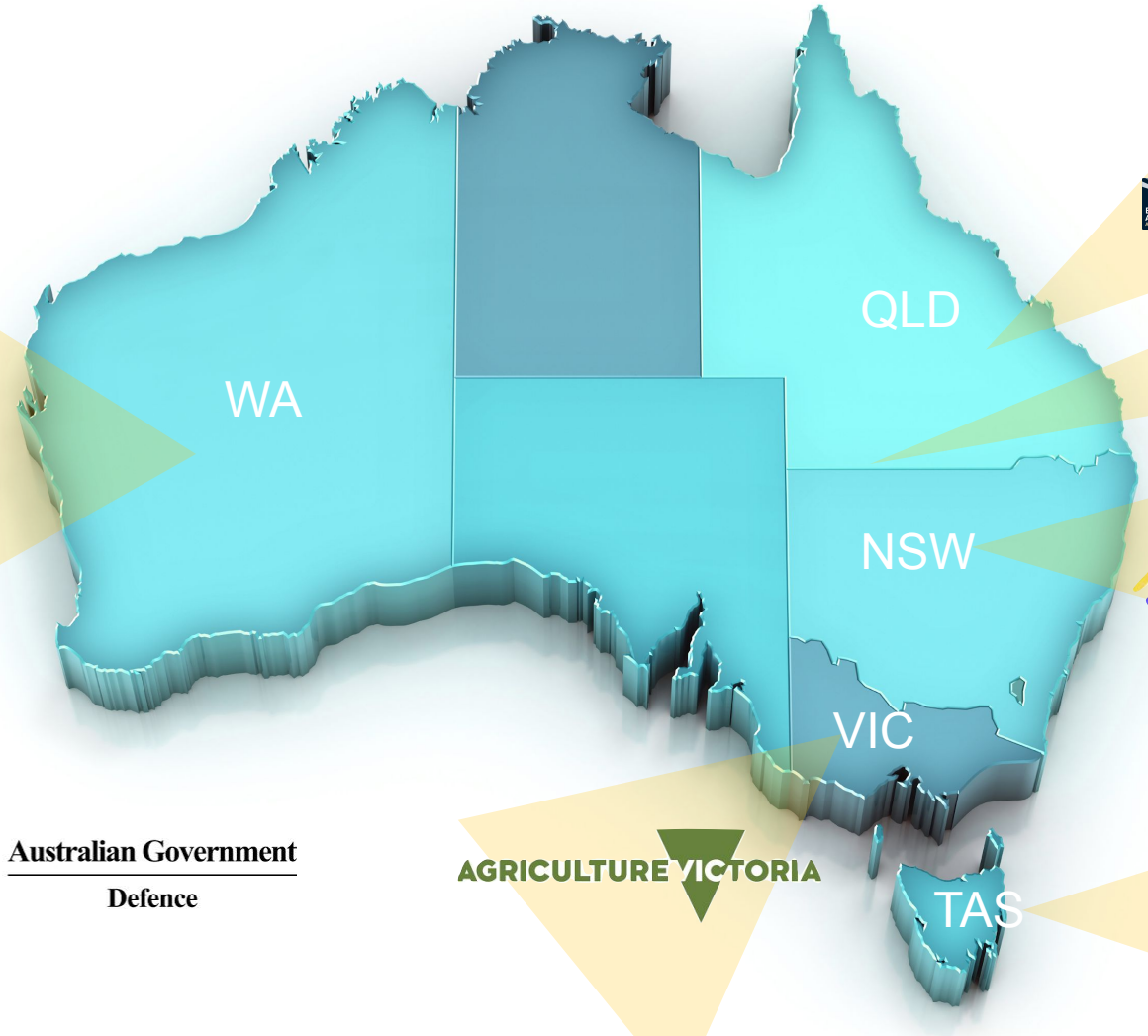
Newcastle City Council - NSW



Tasmania - TAS

enabling ALL use cases across vertical markets

LoRaWAN®: Existing Customers in Australia



Department of Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

coateshire

mla
MEAT & LIVESTOCK AUSTRALIA

WATER CORPORATION

HORIZON POWER

Australian Government
Defence

AGRICULTURE VICTORIA

Livingstone SHIRE COUNCIL

Sunshine Coast COUNCIL

CITY OF GOLDCOAST.

BRISBANE AIRPORT BNE

Goanna Ag

City of Newcastle

SafetyCulture

HUNTER WATER

TasNetworks
Delivering your power

Critical Messaging Today in New Zealand and Australia

- No public commercial paging networks remain.
- Government-run wide area and private onsite paging networks still exist.
- Customers forced to move to SMS or messaging Apps- Reliability?? Cost??

=> Can LoRaWAN® fill the gap left by Commercial Paging Network closures to add resilience?

How can LoRaWAN® be used for Critical Messaging?

- Critical Messages need to be delivered to Emergency Responders quickly (less than 10 seconds)
- LoRaWAN® has 3 class operating modes: Class A, B and C

Class A

- con… …tion initi… end…
- uplink tra… …llowed by 2 Do…
- Hig… …y for a re… mess…ge

Class B

- s… …ized to… …k via p…
- open … …g sl… …s
- la… …is program… up to 128 seconds

Class C

- receiver of the end-de… open at all time
- …work serve… …initiate a d…link …smission at any ti…
- No Latency

Birdy slim IoT - Smart Pager

LoRaWAN® Pros and Cons

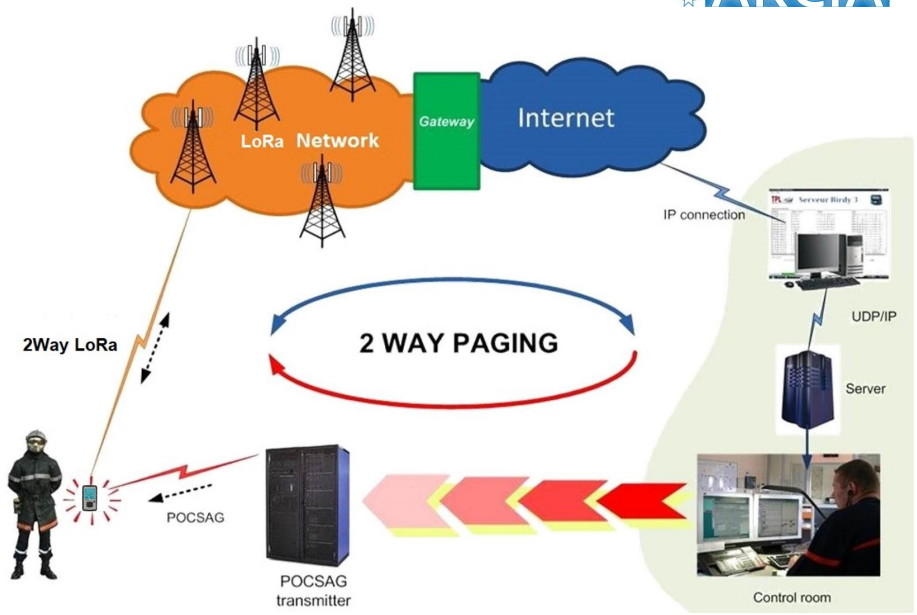
Cons

- x Uses class license spectrum- possible interference.
- x May not have the same coverage infrastructure as other technologies
- x Smaller message length 80-120 characters depending on network.

Pros

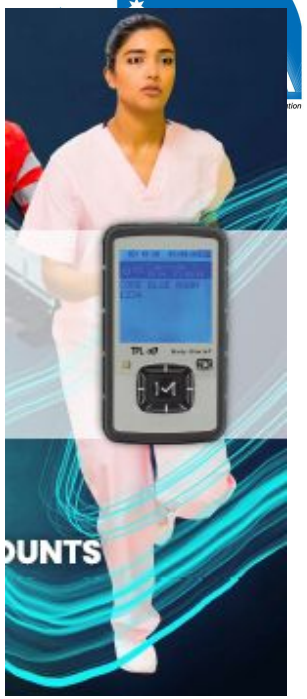
- ✔ 2-way messaging capabilities
- ✔ Uses class Licence Frequency, easy to deploy and expand
- ✔ Multicast capability if enabled on the network
- ✔ Good battery life- 3+ days
- ✔ Automatic receipt verification
- ✔ Real time Critical Message delivery
- ✔ Better coverage than standard 4G/ Cat-M1 due to low data speeds and LoRaWAN® to protocol
- ✔ Very low data costs
- ✔ Enhanced features such as GPS tracking
- ✔ Can be wide area or on-site only system.

Case Studies- (France) *SDIS 04*



- Alpes de Haute-Provence (Southern French Alpes)
- Volunteer firefighters: **1548**
- 6 925 km² - 154,500 Residents
- First Responders carry a **Birdy Slim IoT.**
- Dedicated button for SOS/ Man Down via LoRaWAN®.
- **BT beacons** inside Fire Station confirms their presence.
- GPS location from pager sending position via LoRaWAN®.
- First Alert sent in Pocsag, automatically sends a technical ack by LoRaWAN® to the control room.
- If no response after Pocsag alert, control room sends out a LoRaWAN® alert in case of out of Pocsag coverage.
- User sends status and availability to the system via LoRaWAN®

Case Studies- (France) CRMS



- Leading supplier of Healthcare Critical Messaging Solutions in France
- Specialist medical staff from hospitals in Paris and nursing homes in Reims that work in multiple locations.
- Pagers work in dual mode:
  - POCSAG for onsite messaging
  - LoRaWAN® to receive messages via the Orange network
  - SOS and GPS location also enabled for staff safety.

Case Studies - (France) Bluelinea

- Leading Nurse call System provider in France
- Patients press call buttons to alert nursing staff over LoRaWAN®
- Pagers work in 2-way mode via onsite LoRaWAN® network
  - Receive messages via onsite LoRaWAN® network
  - Transmit message received, read and response
  - indoor BLE location also enabled for staff location, SOS- Man- Down.

Bluelinea

Case Studies- (France) *Logistic Company*

- 15,000 Square meters of premises
- Safety of workers & Security Guards
- 60 Birdy Slim IoT
- 70 IPS BT Beacons- Indoor location, SOS/ Mandown
- GPS for outdoor location, SOS/ Mandown
- Dedicated LoRaWAN® to send messages and receive message received, message read and response acknowledgements.

Case Studies- (*Switzerland*) *Security Guards in industrial complex*

- 45,000 Square meters of premises
- Safety of workers & Security Guards
- 40 x Birdy Slim IoT
- Onsite LoRaWAN® to send messages and receive message received, message read and response acknowledgements
- Dedicated button for SOS and benefit of Man Down functions.

Conclusion

- Still early stages however an exciting prospect
- Excellent addition to current Critical Messaging platforms- adds resilience
- Duplicates most features of tradition POCSAG or Flex Paging
- Adds new features such as response, location and SOS/ Man down
- Easy to deploy at lower cost to other technologies
- Can be used for more than just messaging e.g. monitoring alarms and control.

NATIONAL NARROWBAND NETWORK Co.

TPL SYSTEMS ASIA-PACIFIC

THANK YOU,
ANY QUESTIONS?
Please contact:

Rob Zagarella
Co-Founder & CEO
National Narrowband Network Co
Tel : 1300 666 468
Mobile : +61 418 409 944
Mail : rob.zagarella@nnnco.com.au
Skype :

http://www.nnnco.com.au

Brad Welch
General Manager
TPL Systems Asia Pacific
Tel : +617 35050 0774
Mobile : +61414727311
Mail : brad@tplsystems.com.au
Skype : bradjwelch

http://www.tplsystems.com.au