



## ADEPT Buckinghamshire Live Labs Programme Mesh Network

### Key statistics

The trial involves the installation of a mesh network providing connectivity for various sensor technologies. It includes:

- 6 no. enTalk Mesh Controller;
- 1863 no. enTalk Nemanode;
- 170 no. enTalk DolFinial;
- 55 no. DolFin Pro;
- 1 no. Enlight bespoke mesh communications network.



### Overview of trial

#### *Timeline and progress*

All sensors were shipped in May 2021 and installed in late November 2021. The trial, which was originally due to end in November 2021, was extended to end of May 2022 and therefore provides up to six months of data.

#### *Successes*

The Mesh Network has the potential to improve quality of life in Buckinghamshire by increasing connectivity and allowing other Buckinghamshire based projects, such as adult social care, environmental sensors and the renewable energy project to thrive:

- Runs at 100Kbit and utilising edge computing topology thus achieving high speed and low latency.
- Highly secure network utilising AES (Advanced Encryption Standard) and SSL (Secure Socket Layer) to protect data transfer.
- Highly resilient network that can maintain low latency and good signal strength in various weather conditions as it was designed to use Sub-GHz radio which works best in these environments.
- Support roll-out of sensors and collection of data to support local economy, place making and the Council's service delivery.



## Lessons

The installation of the trial was originally delayed. Covid and Brexit had the greatest impact on the deployment of the trial particularly on sourcing parts from China during lock-down and the increased cost of parts sourced from Europe due to Brexit. Below are the identified number of lessons to be taken forward for future implementation.

- The mesh network provides connectivity for the energy, environmental sensor and adult social care sensor trials. Therefore, the delay had a knock- on effect, delaying implementation of these trials too. In future, the risk of relying on trial technology to facilitate other trials should be recognised and suitable mitigation put in place, such as a back-up communications network.
- Alternative options for the mesh network such as an off-the-shelf option may have less financial and operating risk than the bespoke mesh network.
- The trial would have benefited from more frequent interactions with suppliers to actively manage the programme, tackle issues early on and ensure that all parties take ownership of issues. Remote working due to Covid meant that face to face relationships were not established and problems were picked up later than they might potentially have been had site visits taken place.

## Business case

### Benefits

The environmental sensors help Buckinghamshire Borough Council in achieving prominent objectives. These include:

- **Connected Buckinghamshire** – Promoting connectivity, new technology and innovation. The mesh network provides connectivity for sensor technology, which may increase efficiency and deliver benefits.
- **Healthy, Safe and Sustainable Buckinghamshire** – The mesh network provides connectivity for trials of environmental sensors, adult social care sensors and renewal energy which may help to improve air quality, reduce congestion, support independence, and hence improve residents' health and quality of life.



### Costs

Trial costs:

- £257k (complete end-end solution for both environmental sensors and mesh network).

Annual ongoing fees (subject to supplier confirmation):

- £90-150k for 6-month extension (incl. Enlight support and extended product warranties for the complete end to end solution only – excl. Yotta costs).

## Next Steps

- Subject to business case being proven, assess wider appetite for installation.