ADEPT President's Awards 2020/21

Entry form

Award category:	Category 2: Digital innovation/technology
Title:	Using LoRaWAN IoT sensors to support highway service delivery
Entrant:	Norfolk County Council
Main contact name and email address:	Grahame Bygrave Director of Highways, Transport and Waste grahame.bygrave@norfolk.gov.uk
Partner/s (if applicable):	
Headline summary (150 characters, c. 30 words) Norfolk County Council is using innovative technology to deliver a more data-driven efficient service by using UK's largest LoRaWAN (IoT) network.	

Please attach supporting photos separately as jpg or png files. Please note we need at least one supporting image per award submission.

Please paste links to any supporting video evidence here

Link 1	https://www.youtube.com/watch?v=L2rSrbgmuk4
Link 2	

500-word project outline (please ensure you address all the judges' criteria – for more info see here)

Norfolk County Council has demonstrated that it is a national leader in becoming a smart county by consistently delivering on our strategy to become the best connected rural county in the UK. This and our work deploying the largest free to use public Internet of Things (IoT) network in the UK has been recognised by receiving the Connected Britain Digital Council of the Year award.

We recognise the value that the Internet of Things (IoT) can bring to the regional economy, local business, public services and the large rural farming community. Our Long Range Wide Area Network (LoRaWAN) has presented opportunities for Norfolk County Council's own highways team to deliver a more cost-effective service by being able to make more informed, data-driven decisions.

Winter Gritting
Norfolk County Council's winter gritting service treats the third largest highway network in England. During the last winter season, gritters covered a total of 334,000km in Norfolk - the equivalent of circling Earth 8 times. This comes at a significant cost, not just in terms of money, but also through environmental impacts including from carbon emissions emitted by the gritting fleet. The IoT network has provided new opportunities to deploy low-cost sensors across the network, which was impossible with previous technology due to prohibitive costs. These sensors have proven that there are areas of Norfolk where, due to geographical characteristics, road surfaces are warmer than other areas. This has allowed us to optimise the gritting network, so that the same service can continue to be delivered while reducing costs and environmental impacts.

Fault Monitoring
Sensors have been deployed to monitor traffic signal faults, which has completely removed ongoing monthly costs for communication links to traffic signals, as well as providing more accurate reporting, reducing the need for engineer visits.

Air Quality
IoT air quality sensors are also being trialled in a bid to educate local communities about the benefits of local active travel schemes in reducing pollution from road vehicle traffic.

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Water Management

DEFRA has ranked Norfolk as the 10th authority most at risk of flooding, with over 100,000 properties affected. Climate change is set to see the frequency and severity of flooding as well as drought events increase in the future.

Sensors are being deployed to monitor ground saturation levels and drainage capacity which, combined with data feeds from a weather forecaster, will allow an early warning system to be developed identifying communities most at risk. This will help the Norfolk Strategic Flood Alliance to more effectively target their resilience response. While flooding can devastate communities, water is a valuable resource, especially with a large farming community in Norfolk. Water availability is already under pressure in the region with frequent water shortages likely in future. Norfolk County Council is exploring how LoRaWAN sensors can help with smarter water management, including the use of smart 'leaky' water butts that can be remotely emptied ahead of extreme rainfall events to provide additional storm surge capacity, while also providing additional water storage capacity during drought events.