Smart Town Journey

Started in November 2021, with a presentation to businesses from Cllr Clive Davies form Cardigan and Ceredigion to explain about their pilot project around smart town technology, their town app, and how it can be used in different ways depending on the needs of the location.

Presentation to Town Council on smart technology from Owen Davies Consultants in collaboration with Regeneration Team at Monmouthshire County Council (MCC) led to considerations for what we would like to utilise the tech for – they decided an environmental project would fit well with the In Bloom initiative across the town.

Visit to Cardigan showed the capability of gateways across a wider geographical location and information that could be gathered, depending on the number of gateways and sensors installed. Immediate data available on the dashboard enabled reactive action to be taken.

Improvements to watering schedules for the town centre planters after a very dry summer were already being looked at, so we invested in hiring a standpipe in 2022 in order to combat the contractor travelling a 24 mile round trip to refill a 2000ltr bowser. We saw an immediate effect on carbon footprint in reducing mileage, fuel consumption, and time. (See data below)

Two distinctive styles of planters and planting: one style had built in reservoirs so didn’t need as much watering – these were all replaced in 2023, old stock was 24 years old, still in good condition and were all rehomed. Second style introduced by MCC in new public realm schemes didn’t have reservoirs, were filled with poor quality spoil and although they had more natural pollinator friendly plantings, they required more care due to soil type used in the initial planting process. Planters had also sustained damage from vehicles hitting them when carrying out deliveries through the town centre, all of which affected their ability to retain water.

Assessment of town centre layout was carried out to look at best location if only one LoRaWan gateway was fitted. Thanks to funding from Welsh Government, Monmouthshire County Council were able to purchase units and have installed one in a central location in the town. With assistance from Owen Davies Consultants, we were able to map out the reach, the water sensors would have, with just one gateway unit functioning. SenseAbility visited Abergavenny to understand what we wanted to capture, then built a dashboard to host the data the sensors produced, showing the key data needed – water moisture levels, soil temperature, and when a watering event had occurred. This also tracked local weather conditions. The dashboard not only shows individual planter data, but it can also show this in different ways – table format, depicted on a map, and then graphics to show changes in the data captured across different time spans.

ATC invested in 7 Sensors: 6 soil moisture sensors, 1 water level/distance

 with 12 months data support - paid annually

Dragino LoRaWAN Distance Detection Sensor £90 + vat

Dragino LoRaWAN Soil Moisture & EC sensor £140 + vat

£930 + vat outlay for sensors

£90 per year per sensor for data collection, £630 + vat per year at present level.

Standpipe hire: 25-30mins to fill 2000ltr bowser with standpipe.

2023/24:15,000ltrs water used, plus hire charge: £620+vat over 6 months (£25pw)

2022/23: 16,000ltrs used in same period £785 +vat over 6 months (£33pw)

Contractor: At site, takes 6 mins to fill a 2,000ltr bowser, then travel time of 25 mins to Abergavenny.

April – Sept 2023: 144,000ltrs over 24 weeks (2,000ltrs x 3 times a week) £98 per watering visit/£292pw (£7000 over summer period)

Oct23-Mar24: 1 water per week if needed = 2,000ltrs = 48,000ltrs over 24 weeks (£3500) £145pw

This covers April – September: 68 ‘traditional’ planters, 16 barrier, 11 lamppost and 70 hanging baskets.

Oct 23 – March 24: 50 traditional planters only. All others taken away during winter months.

2023/24 TOTAL: £11750pa = £979pm= £226pw

Our current focus is more around what needs watering when, rather than watering everything regardless.

Key points:

• 10,000 litres less water used (a useful stat is that a litre of water weighs a kilogram and 1,000 kilograms is a metric tonne - so that's 10 tonnes of water LESS!!)

• That saves at least 5 accumulative journeys to fill the bowser.

• At least two hours in travelling time saved - which is also a saving in fuel, time and labour costs.

The water tank is key to enhance the savings which is obviously still to be installed. This would save more on travelling time, save on water costs and reduce the ecological footprint - you would just be using rainwater.

 Using the planters with reservoirs, using plants that are more drought resistant and using the data to prove that all is good - we should be able to reduce the watering even more and importantly, if there is a difference in opinion between watering requirements we have data to back up the queries.