

An aerial view of a city at night, overlaid with a network of glowing blue lines and nodes representing the Internet of Things (IoT). The lines connect various points across the city, symbolizing interconnected devices and data flow.

PINACL[®]

Internet of Things (IoT)



WALES AUDIT OFFICE
SWYDDFA ARCHWILIO CYMRU

Who are PinacL?

- Enablers of Digital Transformation
- Over 35 years of industry experience turnover £15.5m FY17
- Specialists in Wireless and Network Infrastructure
- Deployed Smart City solutions across York, Newport & Aberdeen
- IoT technologies was a natural evolution
- Established a network of complementary IoT partners
- Selected Newport as our IoT 'prototype'



- Pinacl 'Smart City' IoT prototype
- Dark Fibre (New/Existing) – Open access
- Public WiFi – Public buildings & city centre
- Open Access LoRaWAN Network Service
 - Council are just a customer
- Proof of concepts: Air Quality, Waste Management, Flood monitoring & Road Temperatures
- Social Housing – Newport City Homes, 10 Property Pilot
- Future schemes:
 - Smart Lighting
 - Smart buildings
 - Smart Meters
 - ABP – Port solutions

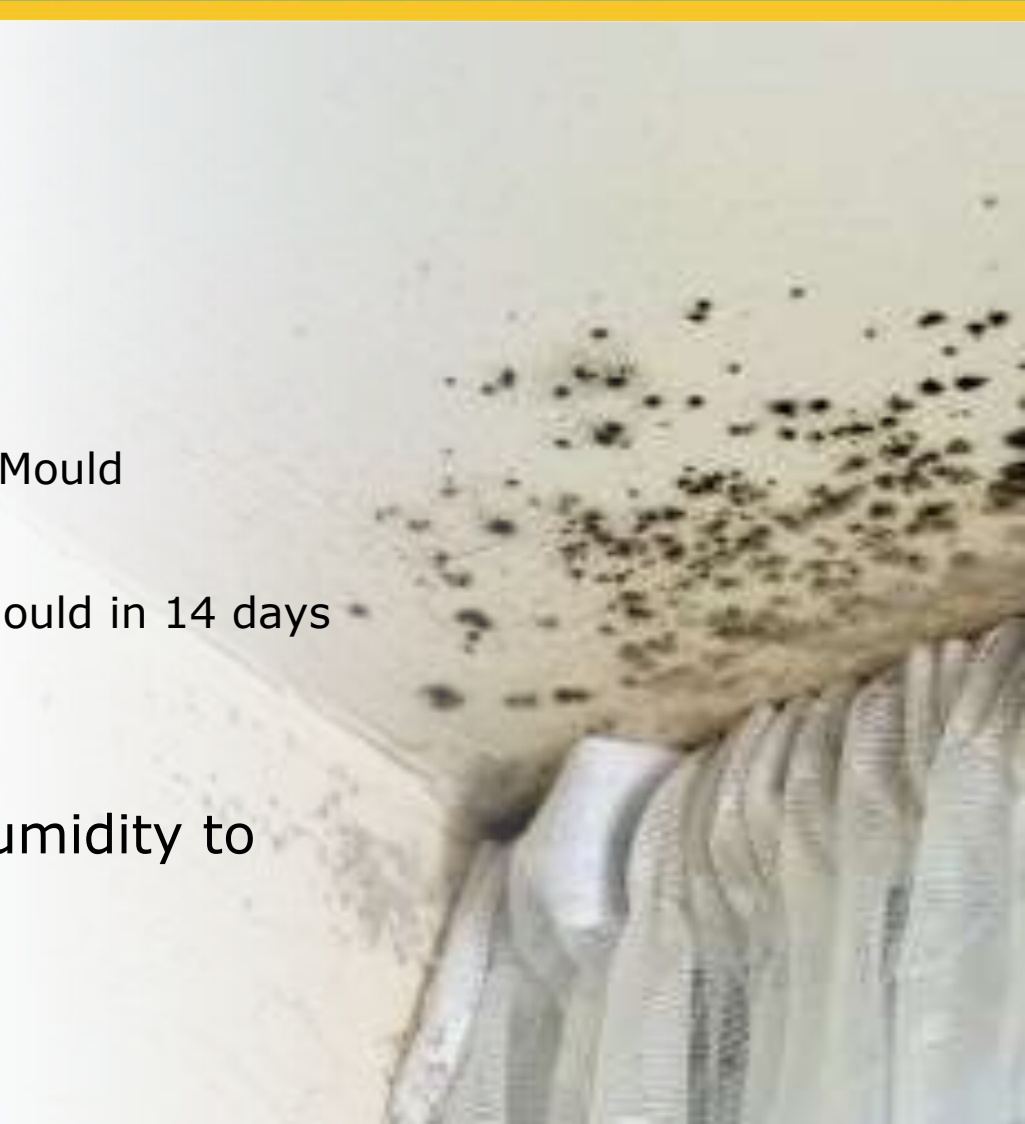


Driving Welsh Collaboration



Damp/Mould Prediction

- Temperature/Humidity Sensors
- Warnings:
 - >50% humidity warning about risk of Dust Mites
 - >60% warning about risk of Mould
 - Days to Mould (DTM) calculation <30, warning about risk of Mould
- Alarm:
 - Days to Mould (DTM) calculation <14, Critical Alarm about Mould in 14 days
- Calculated on each room independently
- Currently using 3 Hour averages for Temperature/Humidity to calculate DTM. Value can be modified.



Fuel Poverty

- Temperature Sensor & input from CRM system identifying tenant as at risk
- Calculated on the whole Property over 7 day period

Abandoned Property

- CO₂ Sensor & input from CRM system identifying property as occupied

Unauthorised Occupancy

- CO₂ Sensor & input from CRM system identifying property as empty





Dashboard

Housing

Air Quality

Flood Management

Road Temperature

Bin Management

Smart Property - 161921 - 24 LLANWERN ROAD

2018-05-10 13:31:17

Status: **Enabled**

NCH ID: 161921 - Type: Terraced - Address: 24 LLANWERN ROAD, NEWPORT, NP19 9GF

Overall property status is currently: **Normal**

Smart Property Analysis

Heartbeat	Normal
Empty Property Detection	Normal
Fuel Poverty Detection	Normal
Damp/Mould Prediction	Normal
Unauthorised Occupancy	Inactive

Show Alarm History

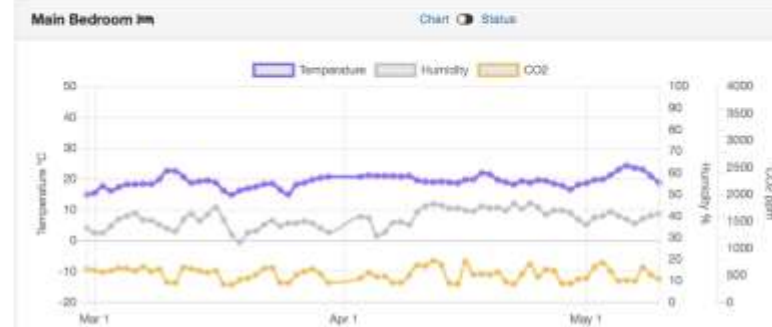
Smart Property Status

Current Readings

	CO2	Humidity	Temperature
Main Living Room	695 ppm	41 %	20 °C
Main Bedroom	552 ppm	40 %	19 °C
Kitchen		39 %	20 °C
Main Bathroom		40 %	20 °C

Showing last 3 hours.

Select Time Period: 6 hours 24 hours 3 days 7 days 30 days **90 days**



<https://youtu.be/X-WjwRTdm0>

An aerial view of a city at dusk or dawn, with a blue color cast. Overlaid on the city are several glowing blue arcs and dots, suggesting a network or data flow. The PINAACL logo is centered in the upper half of the image.

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Diolch am wrando

Thank you for listening