

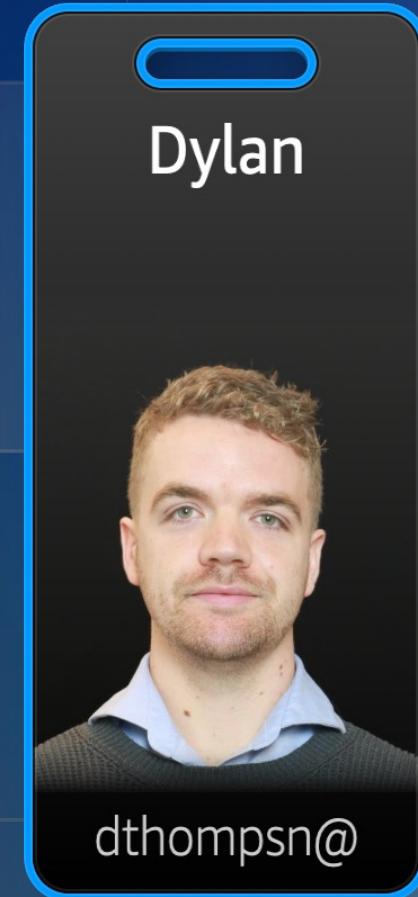


Sustainability IoT Hackathon

Solving sustainability challenges

Justin Brien & Dylan Thompson

Solutions Architect's
Amazon Web Services



Agenda

- What is IoT? (Internet of Things)
- IoT @ Amazon & AWS
- United Nations Sustainability Goals
- Fun and interesting use cases

What is IoT?

Internet of Things (IoT)

Network of connected devices that can use technology to communicate with each other and the cloud, and then unlock rich insights and outcomes



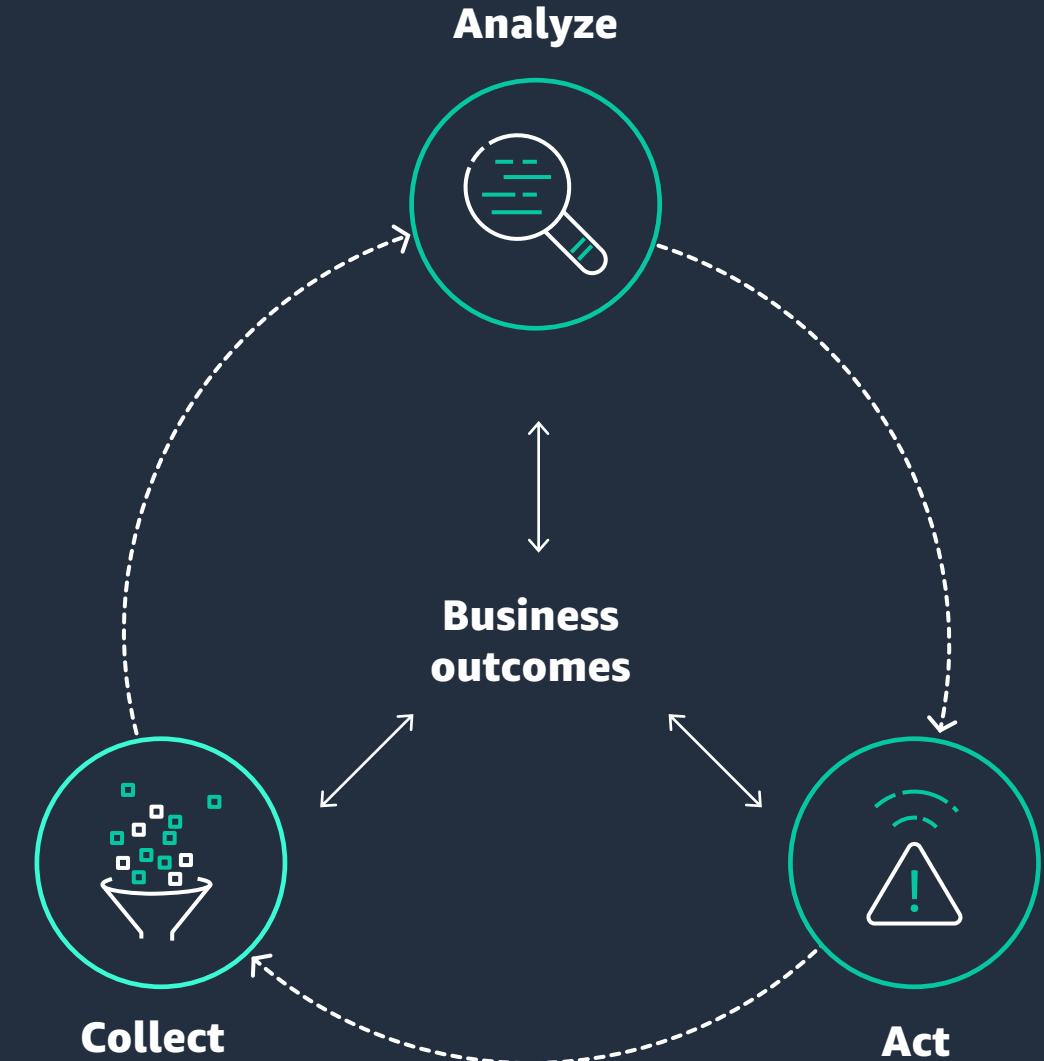
'Things'

Devices connected to the cloud in a single system, which can sense and collect data from places (buildings, spaces), people (trackers, presence), and hardware (production machines, equipment)



IoT applications

Offerings that connect and manage data from various devices, analyze the data (such as with machine learning), and then communicate actions back to the device to achieve intelligent business outcomes



Why is IoT important?



40 billion connected devices forecasted by the end of 2023



51% of manufacturers use IoT in manufacturing



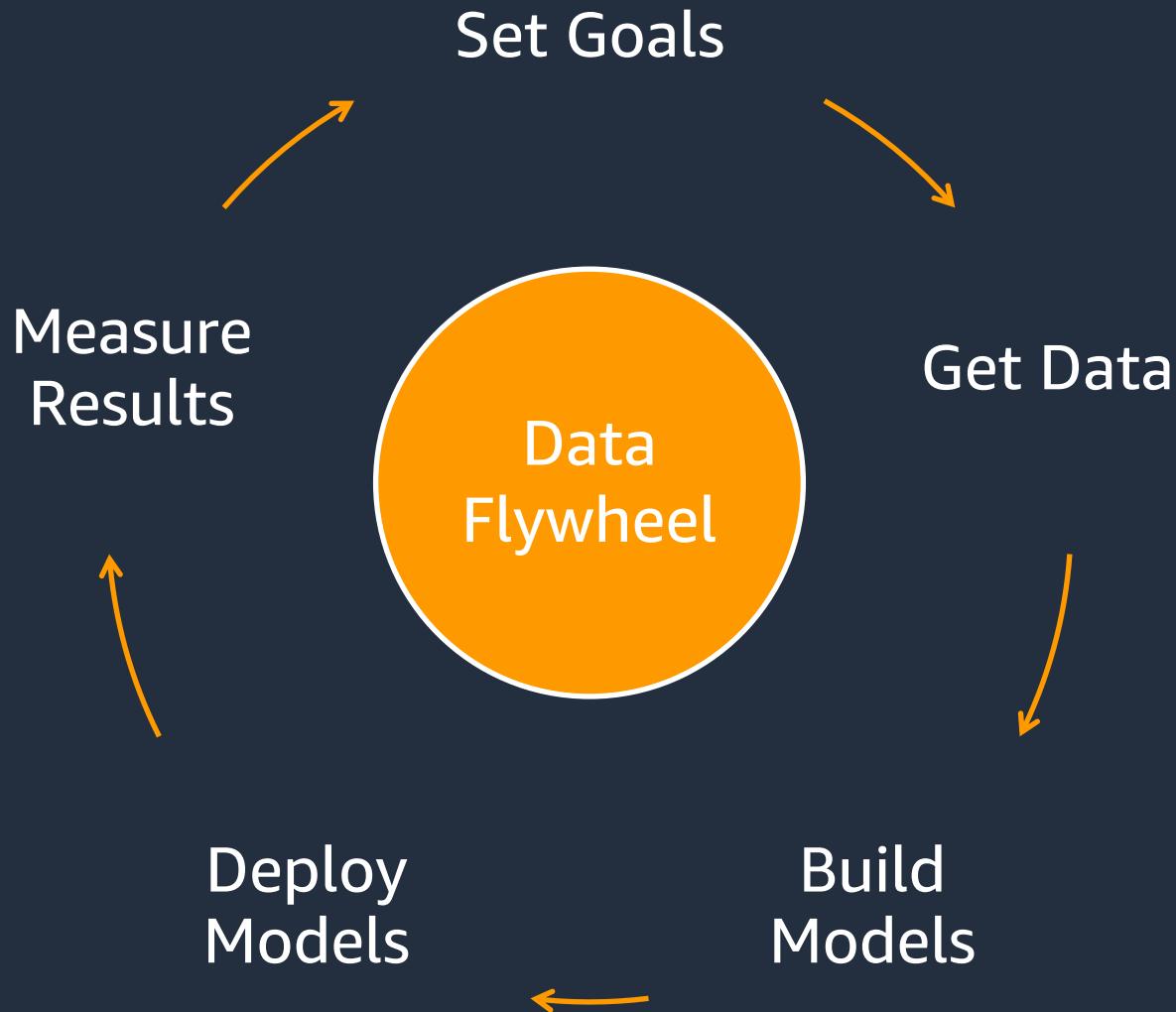
95% of new vehicles sold globally will be connected by 2030

IDC, Worldwide IDC Global DataSphere IoT Device Installed Base and Data Generated Forecast, 2022-2026, September 2022, <https://www.idc.com/getdoc.jsp?containerId=US49631322&pageType=PRINTFRIENDLY>

IDC, IDC TechBrief: IoT in Engineering, March 23, 2022, <https://www.idc.com/getdoc.jsp?containerId=US48629422&pageType=PRINTFRIENDLY>

McKinsey, Unlocking the full life-cycle value from connected-car data, Feb 2021, <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/unlocking-the-full-life-cycle-value-from-connected-car-data>

via Data Flywheel



IoT innovations driving growth at scale for Amazon



520K+ robotic drive units support 300 facilities



775K hours saved for drivers and carriers during check in & out

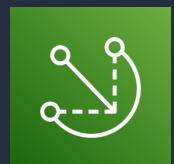


World's 1st store with Just Walk Out technology for fast, frictionless shopping

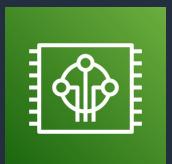
IoT: Key to sustainability projects



**AT THE EDGE
& PHYSICAL
SYSTEMS**



AWS IoT
Greengrass



FreeRTOS



**DATA &
INSIGHTS**



AWS IoT
Core



AWS IoT
SiteWise



**BUSINESS
OUTCOMES**



Amazon
SageMaker



SUSTAINABLE DEVELOPMENT GOALS

Aligning with the Sustainable Development Goals (SDGs)

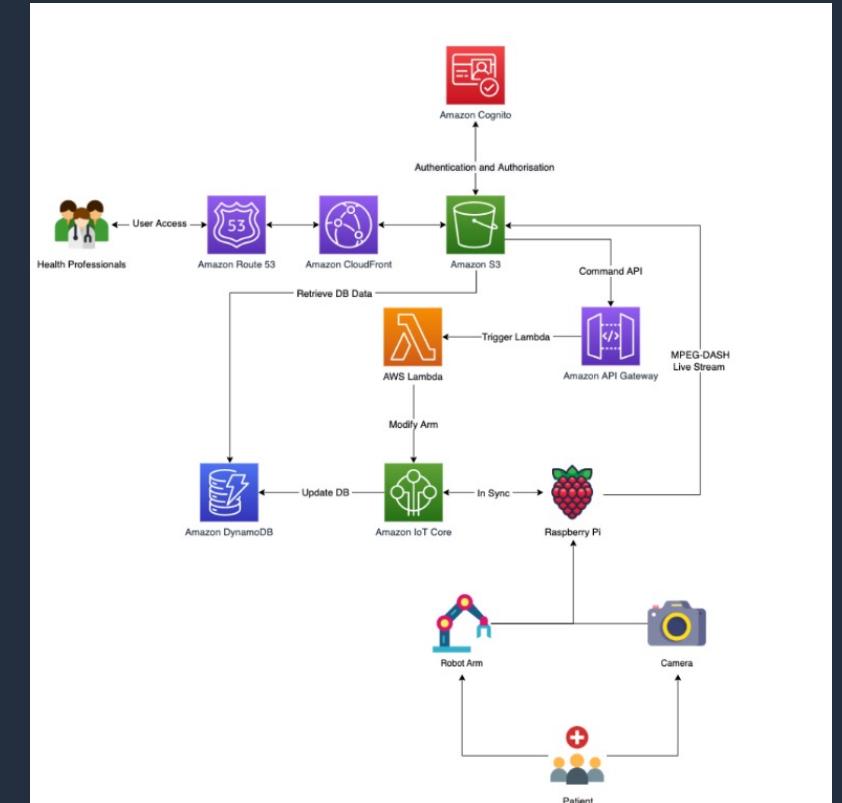
Sustainability is
broad and complex



**SUSTAINABLE
DEVELOPMENT GOALS**

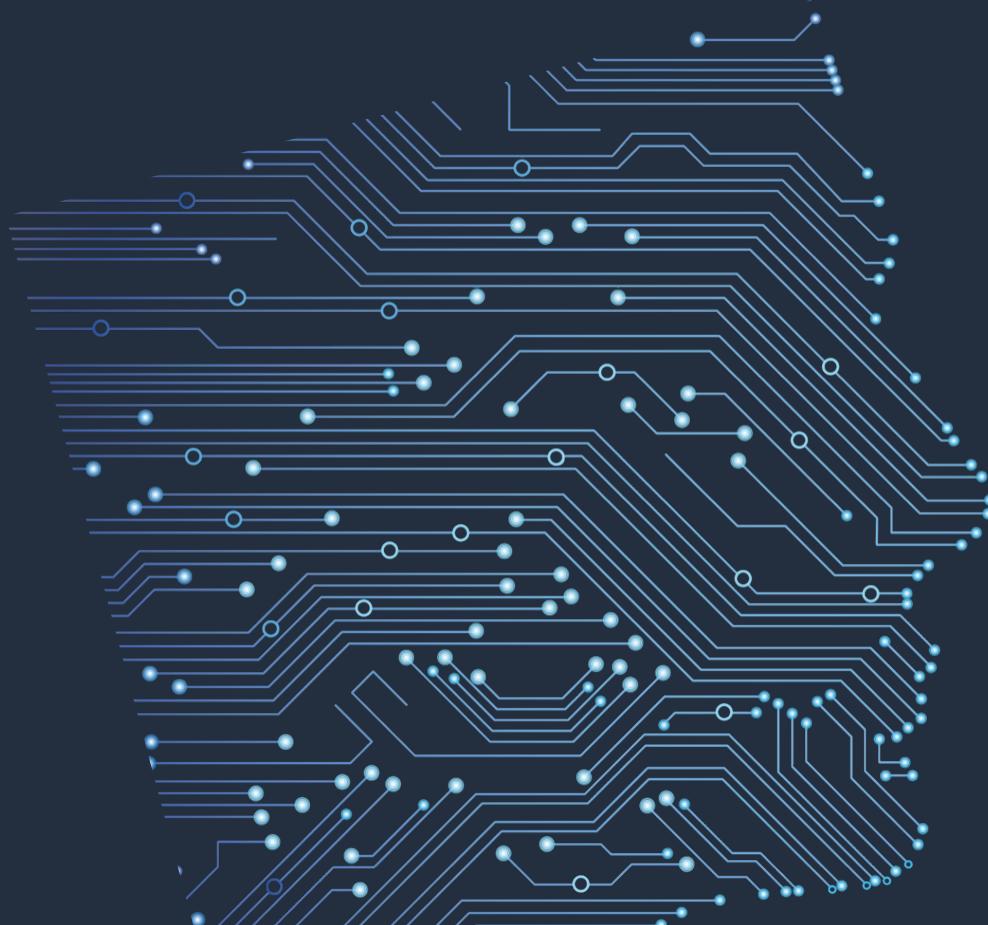


University of Technology Sydney - Stroke rehabilitation with biomedical robots and AWS IoT





Smart campus



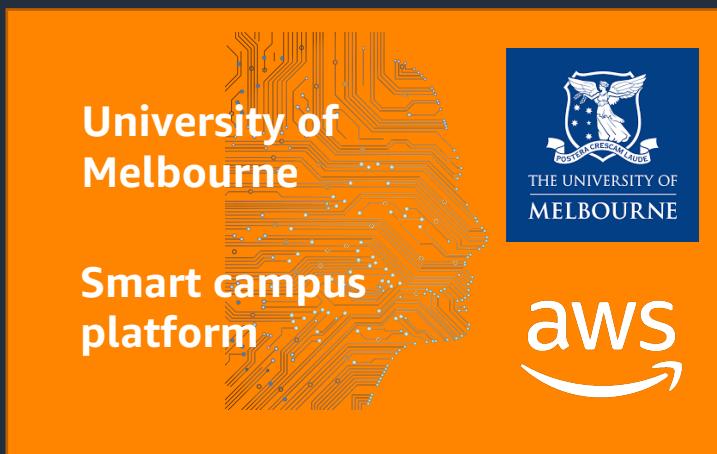
30% of energy
consumed by the average
building goes to waste



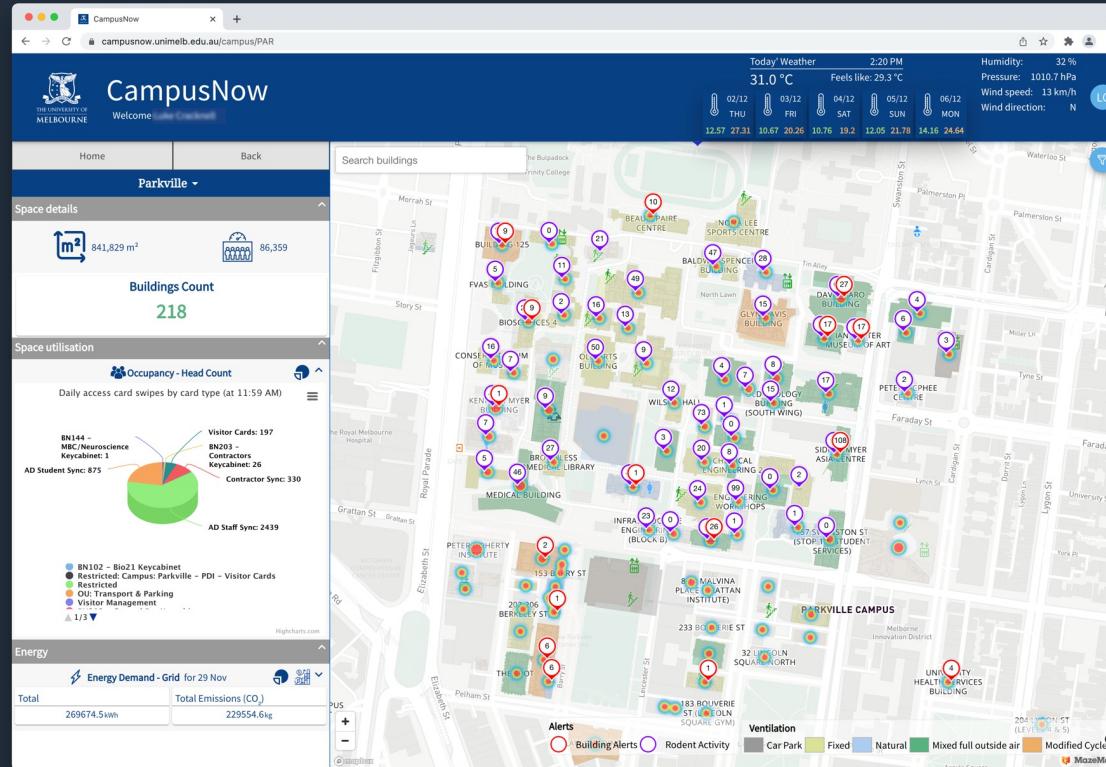
How we use our buildings is changing

- Space utilization
- Energy and sustainability management
- Air quality monitoring

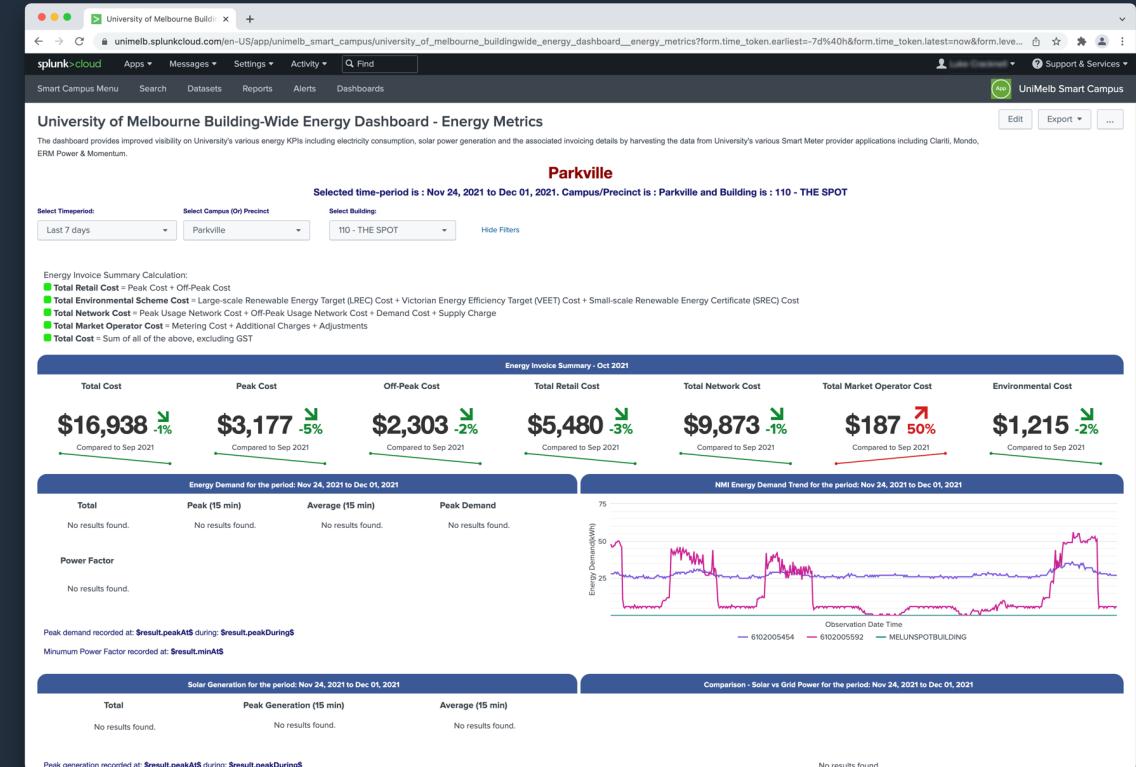




Smart campus visualisation and reporting



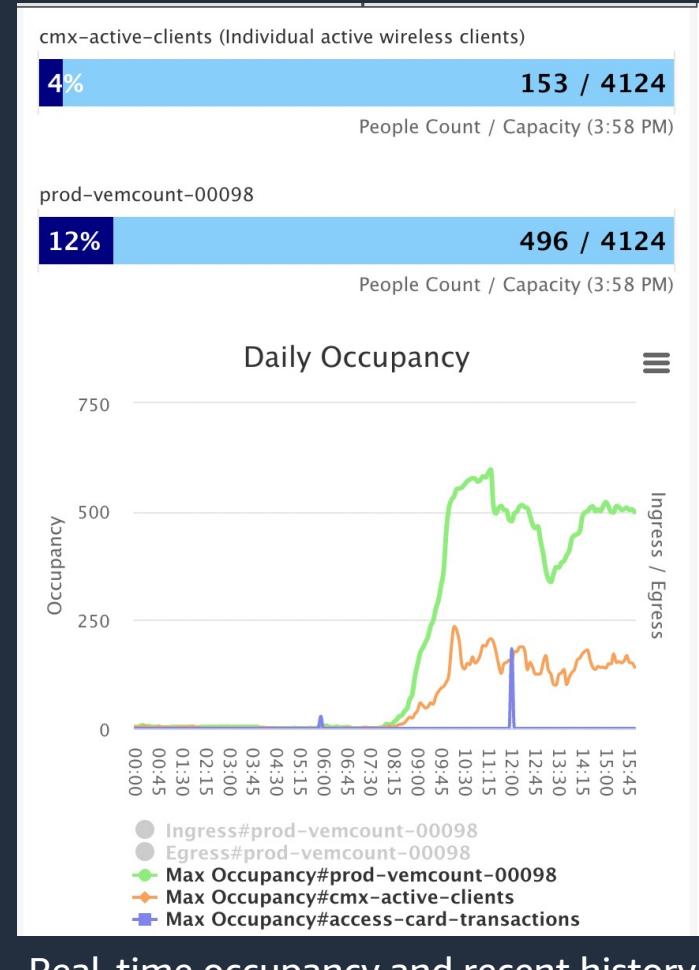
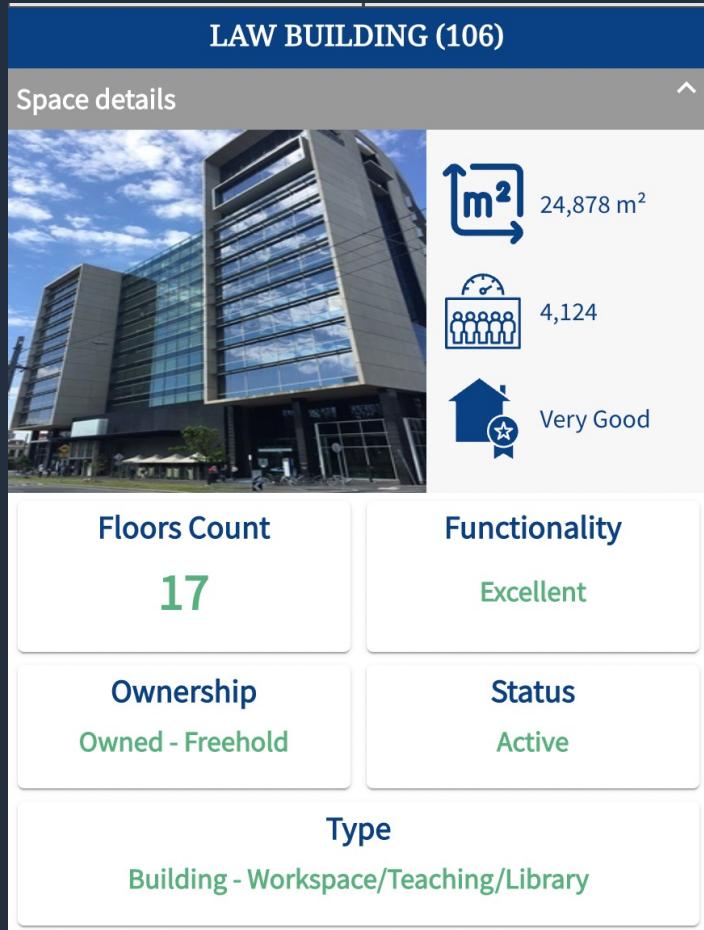
CampusNow
Real-time view



Smart Campus Splunk Dashboards
Historical reporting



Estate planning: Space utilisation



Benefits

Optimised class timetabling



Improved space use efficiencies



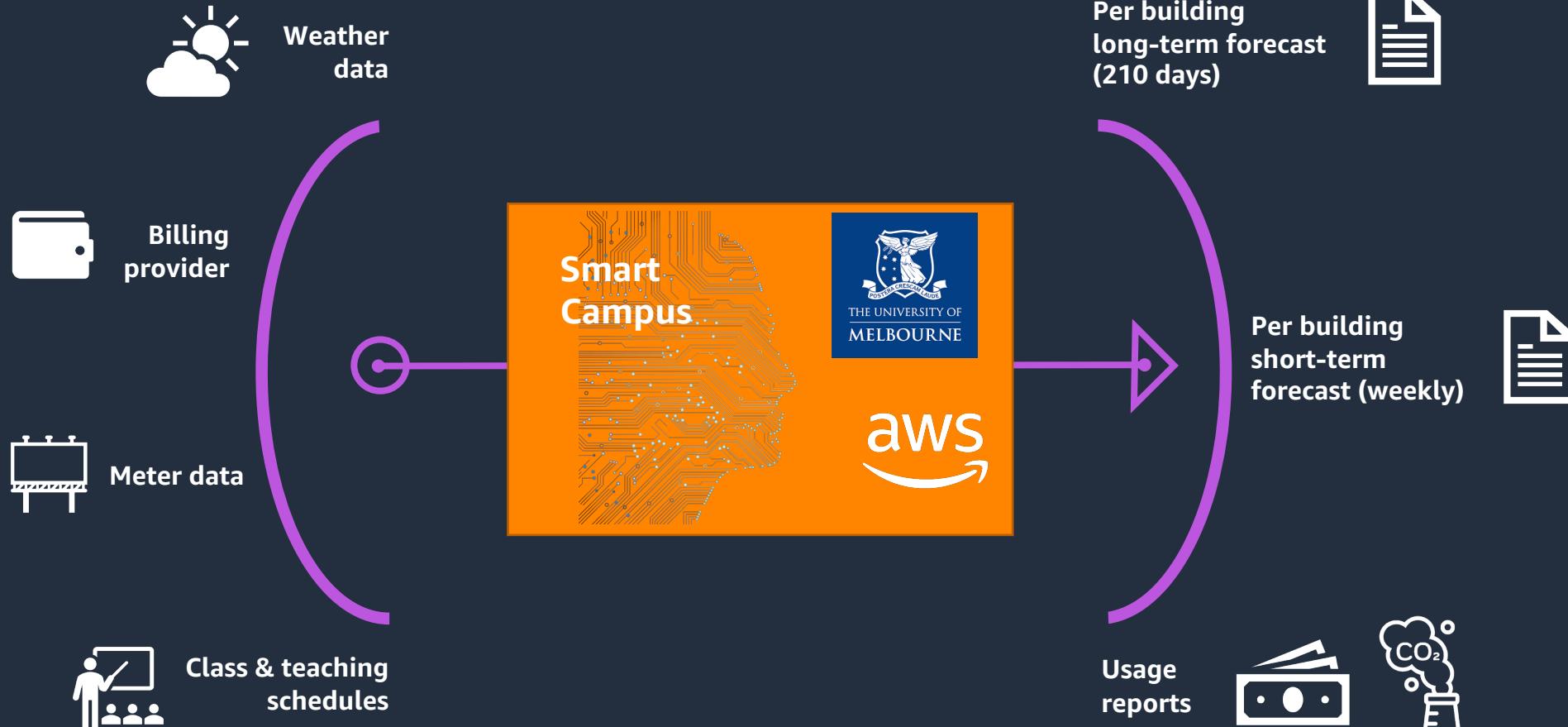
Data-driven maintenance scheduling



Evidence-based capital investments

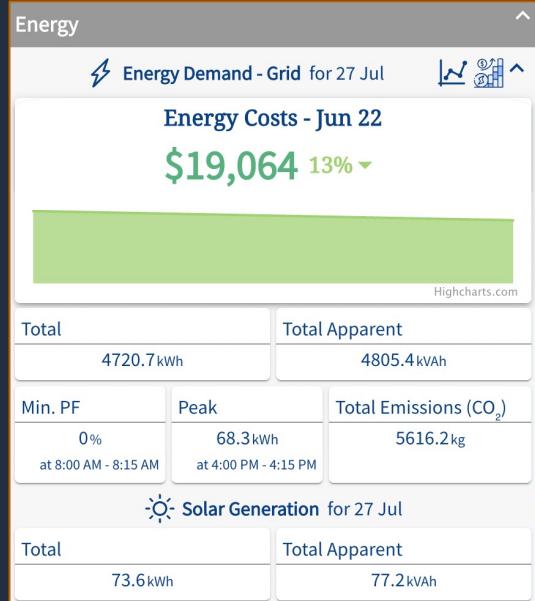


Energy: Usage and forecasting

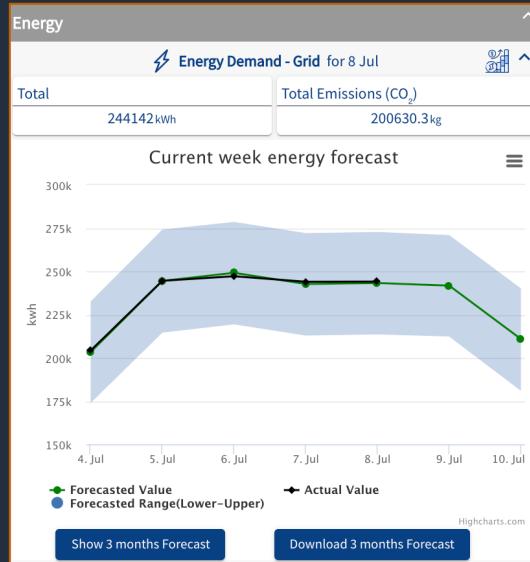
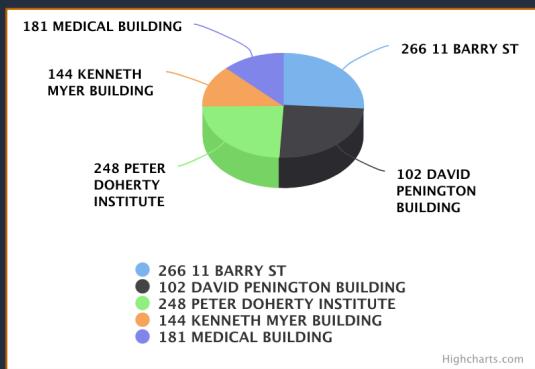




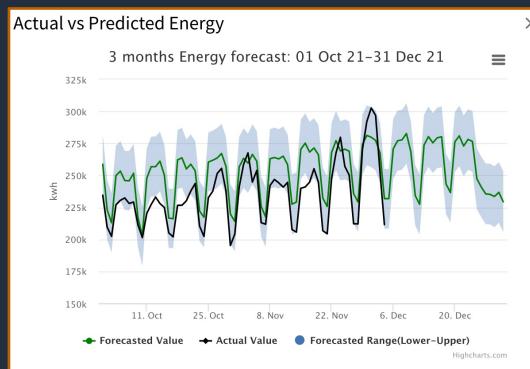
Energy: Usage and forecasting



Usage snapshot



Campus-wide – weekly forecasting



Building – quarterly trend, forecast vs. actual

Benefits

Contextualisation of data not previously possible

Expedited visibility of consumption and costs

Improved budgeting of a multimillion dollar spend

Data-driven targeting of sustainability initiatives



A safe return to campus



- CO2 sensor
- Temperature sensor
- Humidity sensor
- Light sensor
- Motion detection sensor (PIR)



Buildings

415

Teaching spaces

850+

Total sensors

~2.5k

Benefits

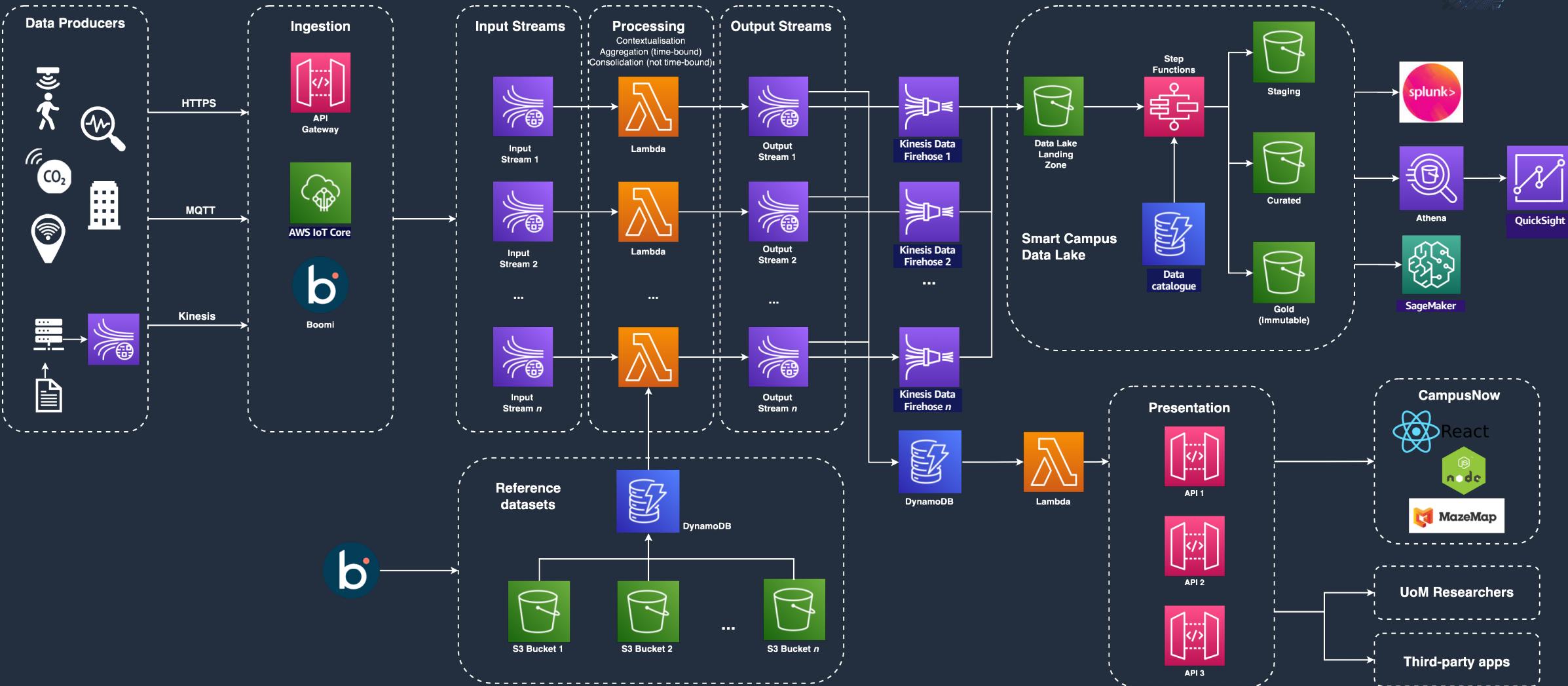
Compliance with Vic Gov COVIDSafe regulations

QR-based functional contact tracing prior to Vic Gov app

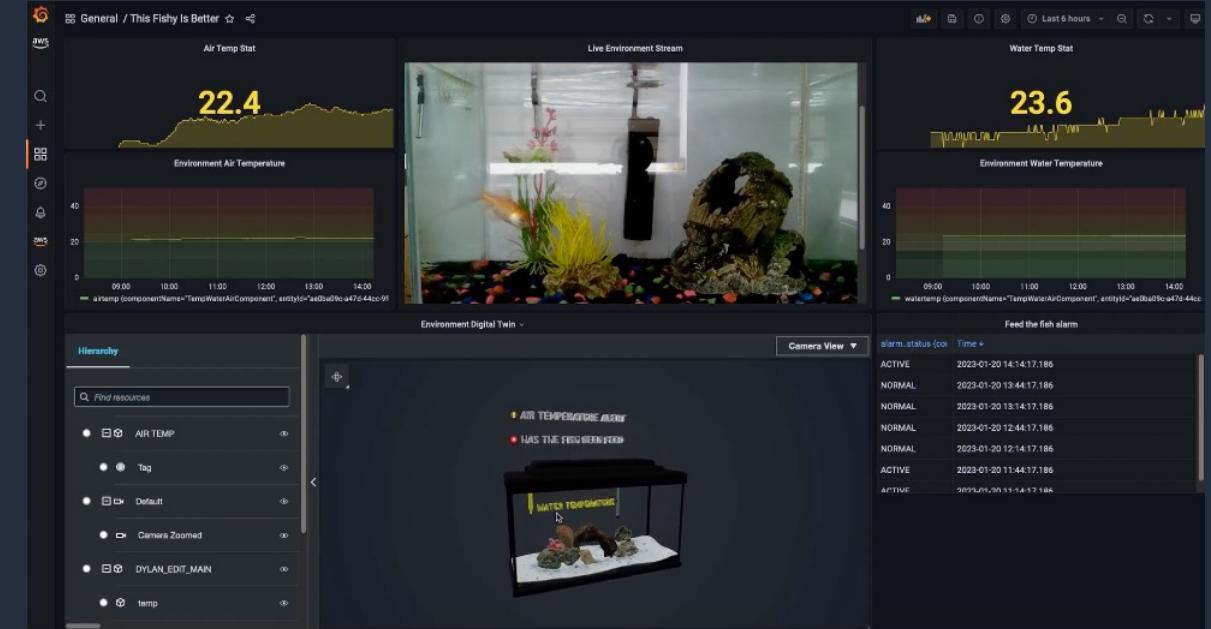
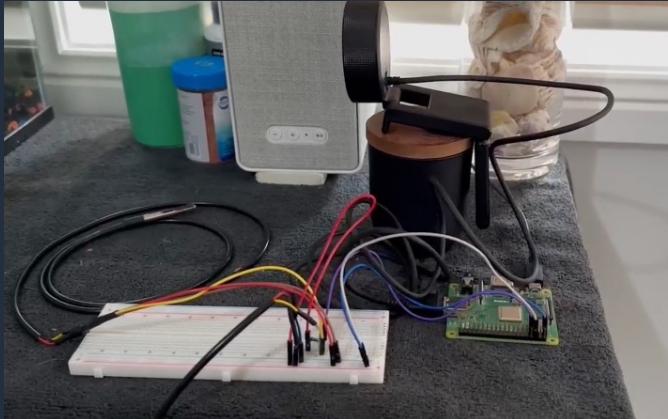
Demonstrable confidence in safe learning spaces

Proactive intervention in terms of air quality

Stitching it together



Fishy





END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

CONFLICT, COVID-19, CLIMATE CHANGE
AND GROWING INEQUALITIES
ARE CONVERGING TO UNDERMINE
FOOD SECURITY WORLDWIDE



SOARING FOOD PRICES

Affected

47%

OF COUNTRIES IN 2020
(UP FROM 16% IN 2019)



 149.2 MILLION CHILDREN UNDER AGE 5 SUFFER FROM STUNTING (2020)

TO REDUCE STUNTING IN CHILDREN BY 50% BY 2030, ANNUAL RATE OF DECLINE

MUST DOUBLE

(FROM 2.1 TO 3.9% PER YEAR)

UKRAINE CRISIS TRIGGERED FOOD SHORTAGES FOR THE WORLD'S POOREST PEOPLE

UKRAINE AND THE RUSSIAN FEDERATION SUPPLY GLOBAL EXPORTS:





**MEET
FARMBOT**



<https://catalog.workshops.aws/sustainability-hackathon/en-US>



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<https://flow.m5stack.com/>





Thank you!

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