SMART SPACES & SUSTAINABILITY

Jon Howell
Smart Spaces & IoT Lead EMEA

Wentzo
Connect '23
Smart Networking & Sustainability

THE ROLE OF THE EDGE

- The edge is where telemetry data are generated by IoT & OT devices
- The edge is where contextual data are created by intelligent networks
- The edge is where the majority of cyber breaches start
- The edge is where process failures can disrupt facility operations
- The edge is the launch point for uniform visibility and uniform security

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ECONOMIC DRIVERS OF SMART BUILDINGS

- Total economic impact in 2025 is $70-140B
- Top areas include:
  - Human productivity monitoring $48-115B
  - Energy monitoring $12-21B
  - Building security $3-6B

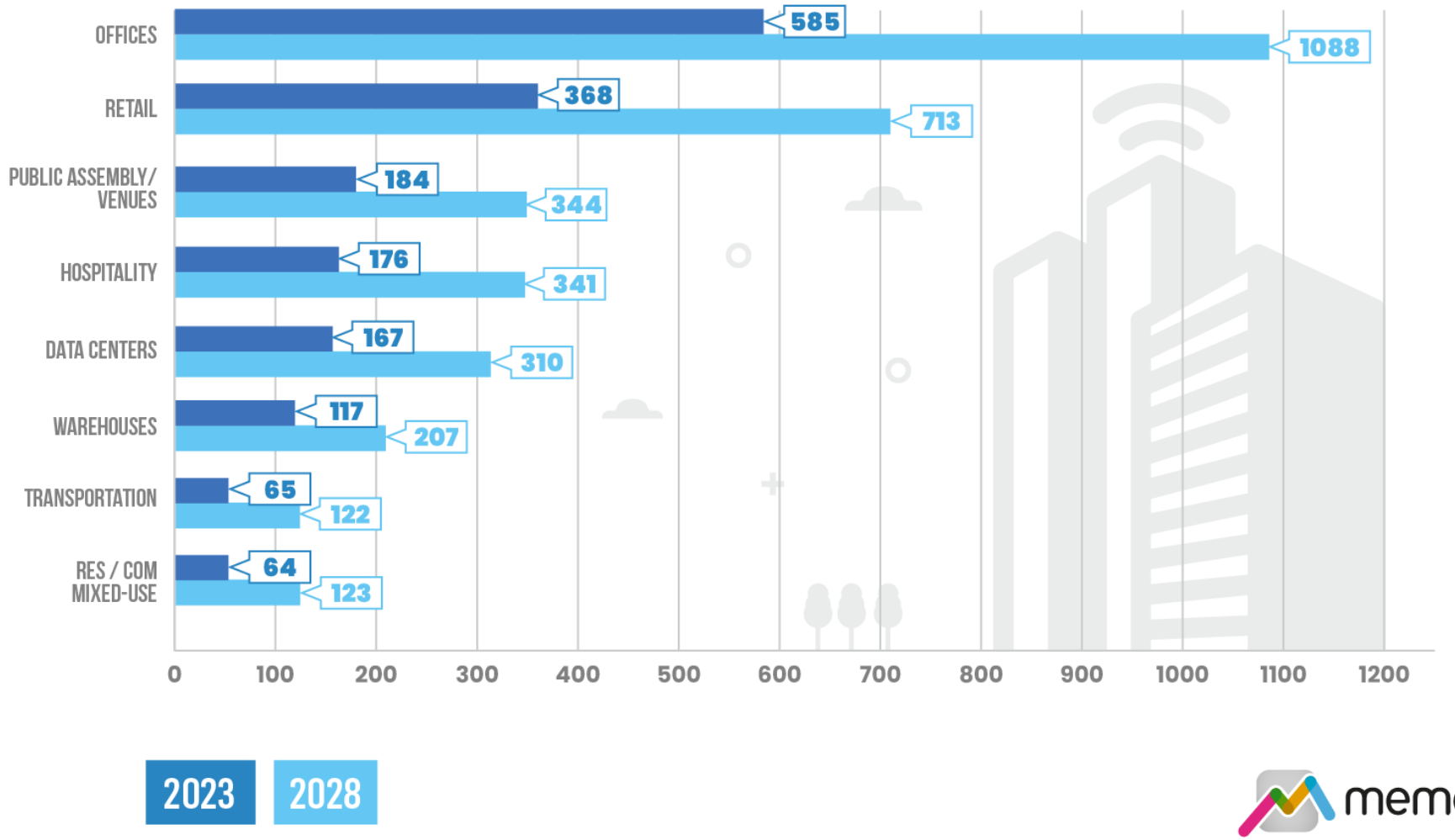
McKinsey Global Institute, *Unlocking The Potential Of The Internet of Things*, June 2015

SMART BUILDINGS

Commercial Smart Building IoT Device Projections by Market Vertical

2023 - 2028 (Millions)

- Offices projected to over 1bn devices
- .Number of users inside the building
- Utilization rate of particular spaces
- Time spent/ dwell time in these spaces
- High traffic areas
- Air quality
- Resource utilization



memoori

Application Performance Monitoring
Digital Twin
Infrastructure As A Service
Secure Remote Access
Unified Communications
Space Analytics
Asset Tracking
Predictive Analytics
Guest Access
Wayfinding
Building Automation
Incident Response
Location Services
Infection Control
Workspace Management
Air Quality Monitoring
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VERTICAL BUSINESS OUTCOMES DRIVE NETWORK

ARUBA EDGE SERVICES PLATFORM

- CERTIFIED Wi-Fi 6E SOLUTION
- AI DRIVEN AUTONOMOUS WIRED
- EDGECONNECT SD-WAN
- SECURED REMOTE ACCESS
- COMPLETE USER & DEVICE SECURITY
- SUSTAINABILITY
- IDPS ECURITY
- ARTIFICIAL INTELLIGENCE
- ALWAYS ON NETWORK

BIG BOX RETAIL	SOCIAL WIFI CONNECTION	ROI CAMPAIGNS	ACCURATE FOOT FALL	STAFF / CUSTOMER ENGAGEMENT	REAL TIME INTELLIGENCE & ACTION	DIGITAL SHELF LABEL	DIGITAL MENU	CUSTOMERS DIGITAL CHANNEL
HOSPITALS & CLINICS	INFANT TRACKING	ASSET TAGS	NURSE CALLING	IOT SECURITY	SPACE MANAGEMENT	ASSET THEFT ALERT	DOOR LOCK MANAGEMENT	ROOM MANAGEMENT
BSFI & ENTERPRISE	DIGITAL RECEPTION	MEETING ROOM BOOKING	SECURED CUSTOMER ACCESS	FACILITY MANAGEMENT	DESK & SPACE MANAGEMENT	SURVEILLANCE INTEGRATION	ATM SECURITY INTEGRATION	DIGITAL CONCERGE FACE RECOGNITION
MANUFACTURING	IOT USE CASES	IT & OT INTEGRATION	SENSOR DETECTION	HAZARDOUS LOCATIONS	ROBOT CONNECT ROAMING	WIRELESS MESH	PRIVATE 5G	EMPLOYEE SAFETY

ARUBA NETWORKS
IoT APPROACH

BLE

ZIGBEE

USB

3RD PARTY

ARUBA ECOSYSTEM PARTNERS

ZEBRA
ses imagotag
SOLUM
HermanMiller
Patrocinium
EnOcean
ASSA ABLOY
SIEMENS
SpaceIQ
ZEBRA
ABB
wiliot
HID
GE Healthcare
STANLEY Healthcare
HYPROS
dormakaba

...and many more

REPRESENTATIVE TECHNOLOGY PARTNERS

PHYSICAL DISTANCE MONITORING AND CONTACT TRACING

Kiana, Aislelabs, skyfii, CX APP, MINEW, POLESTAR, safectory, tracesafe

SPACE UTILIZATION ANALYTICS

Lambent, BASKING, ORELOGIX, HubStar

COMMUNITY AND STAFF SAFETY

HID, ASSA ABLOY, criticalarc, AMBERBOX, EPIC BLUE, 911 SECURE, TraknProtect

ASSET TRACKING

EXTRONICS, ZEBRA, safectory, MOBILARIS, MINEW

WORKSPACE MANAGEMENT

AVSYSTEM, Capgemini, Envoy, JOOXTER, SyncSign

MOBILE STAFF COMMUNICATIONS

ascom, ZEBRA, zoom, Theatro, Microsoft, spectralink

IT, IoT, AND OT SECURITY

CLAROTY, Microsoft, ARMIS, Indegy, paloalto, zscaler, NOZOMI NETWORKS, CHECK POINT

FACILITY AUTOMATION

Eltako, Microsoft, TITANIUM, DEUTA Controls, enocean, enocean alliance, thermokon

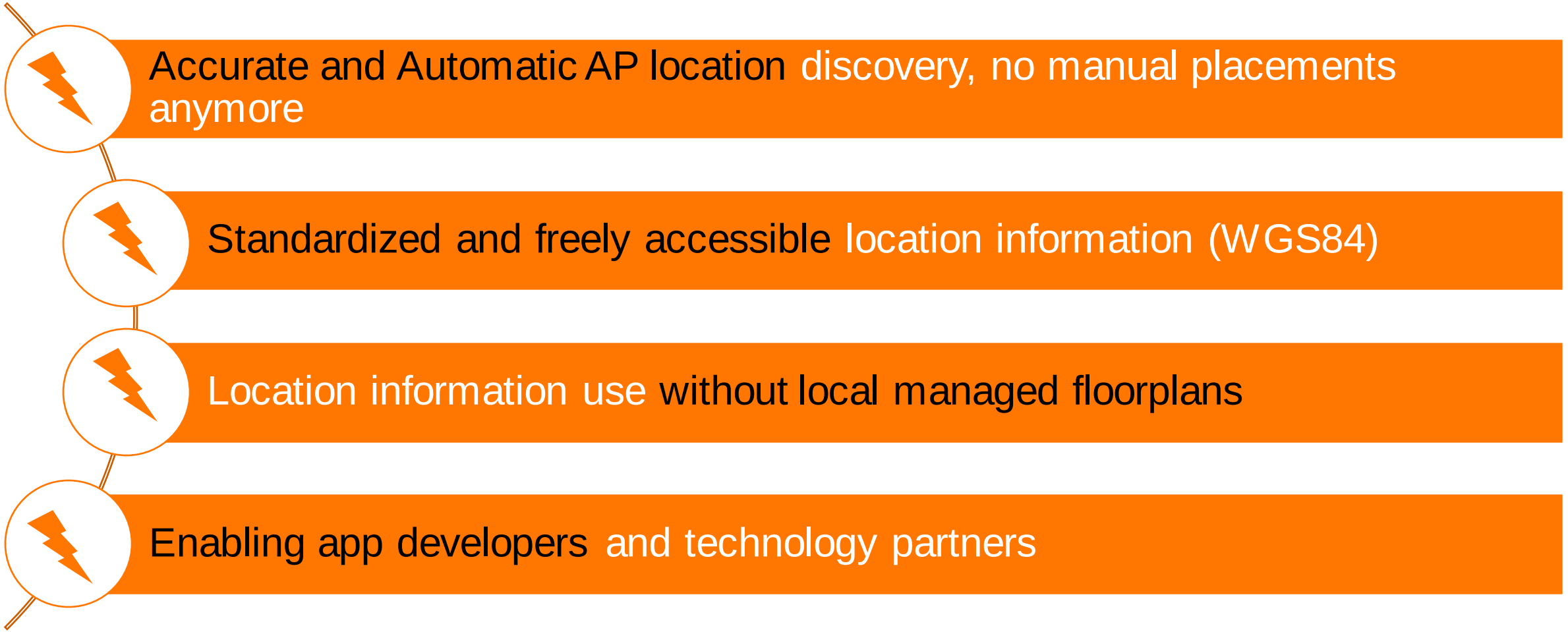
AIR QUALITY & HYGIENE

GWA Hygiene, Piera Systems, WinShine

Experience

HPE Aruba Networking's OPEN LOCATE initiative

Things are changing!



OPEN LOCATE: Unique Analytics Enhancing

AUTOMATED INFRASTRUCTURE MAPPING

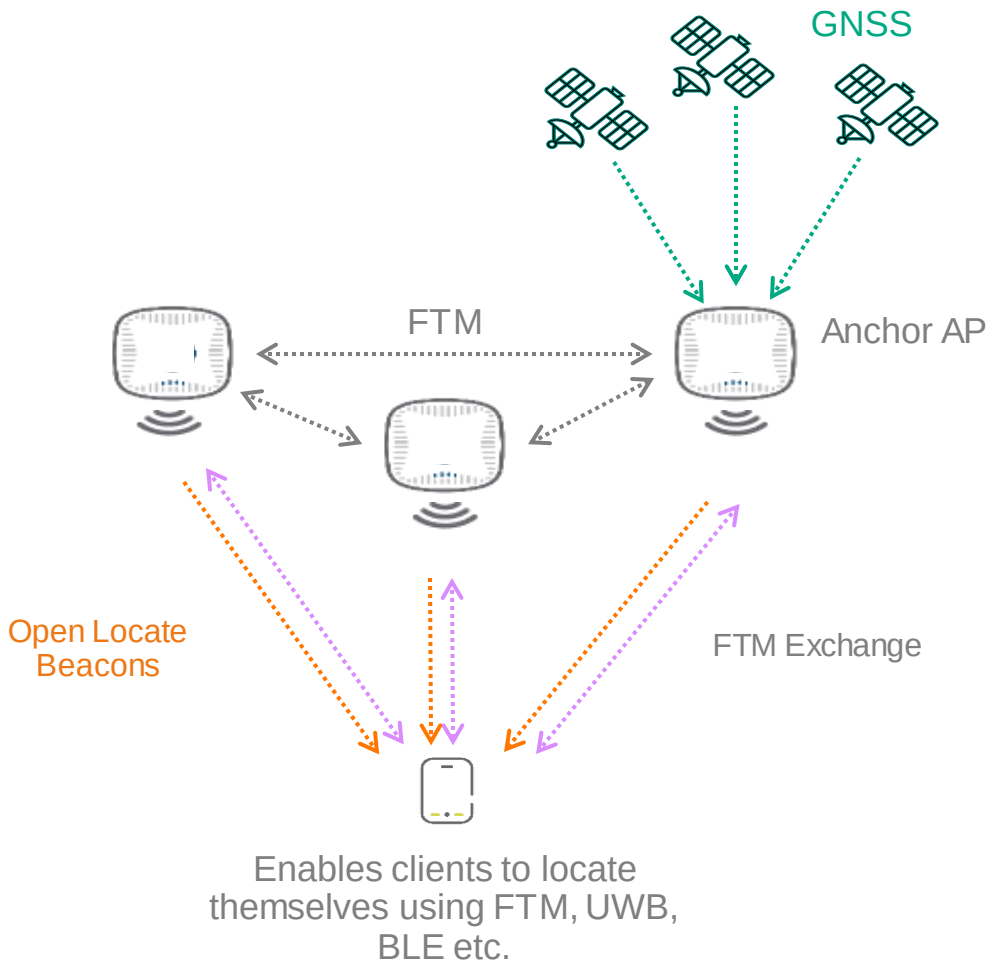
- Know where your Access Points are at all times

INFRASTRUCTURE LOCATION SHARING

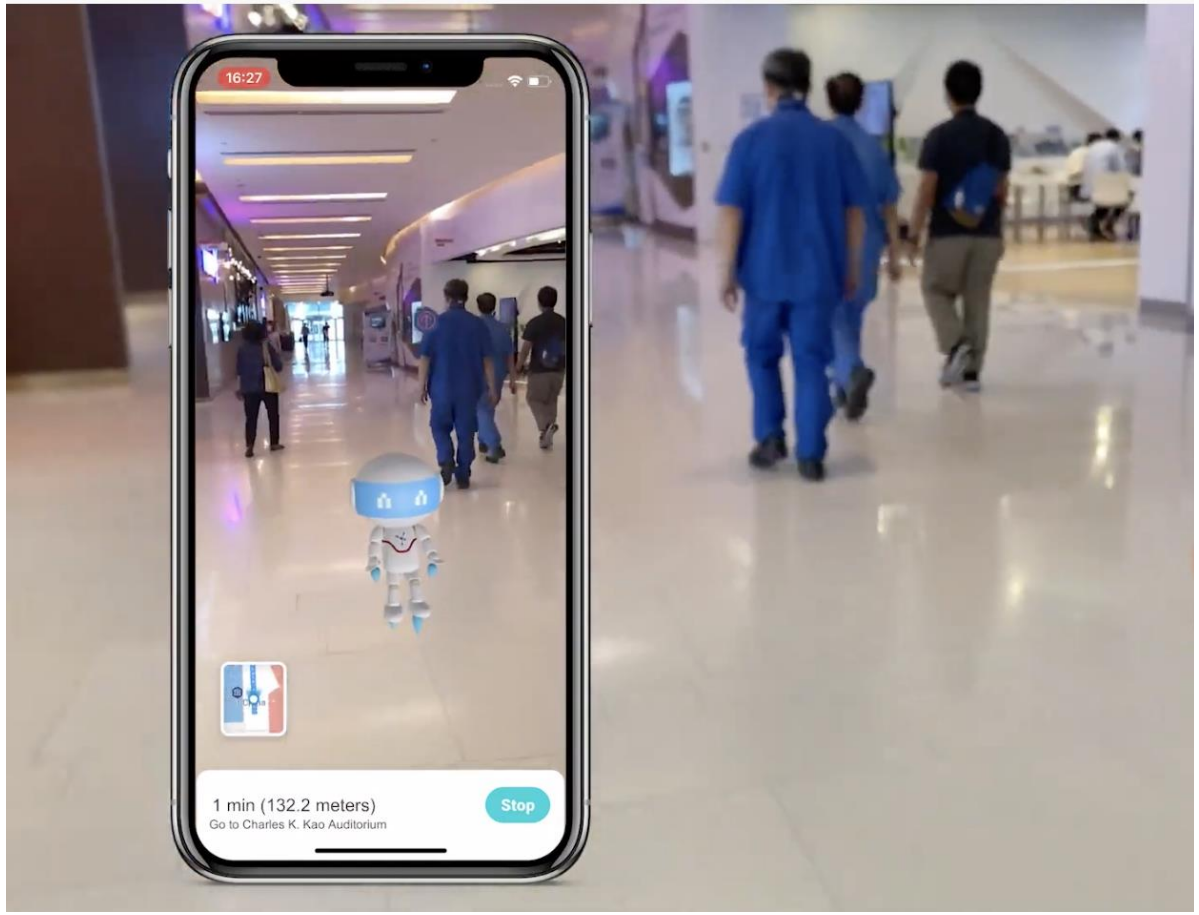
- Open Locate API shares infrastructure location with site maps and apps
- Tracks moves, adds, changes

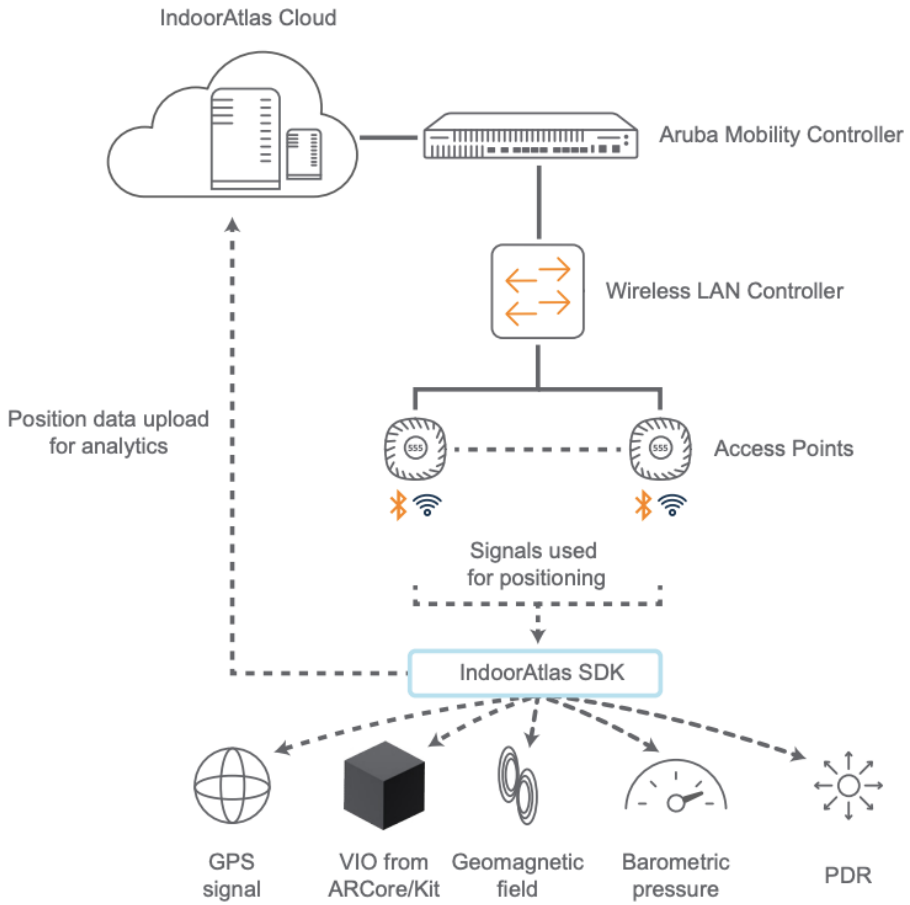
PRECISE CLIENT POSITIONING

- Works like GPS with client devices
- Highly-precise location on a lat/long coordinate system

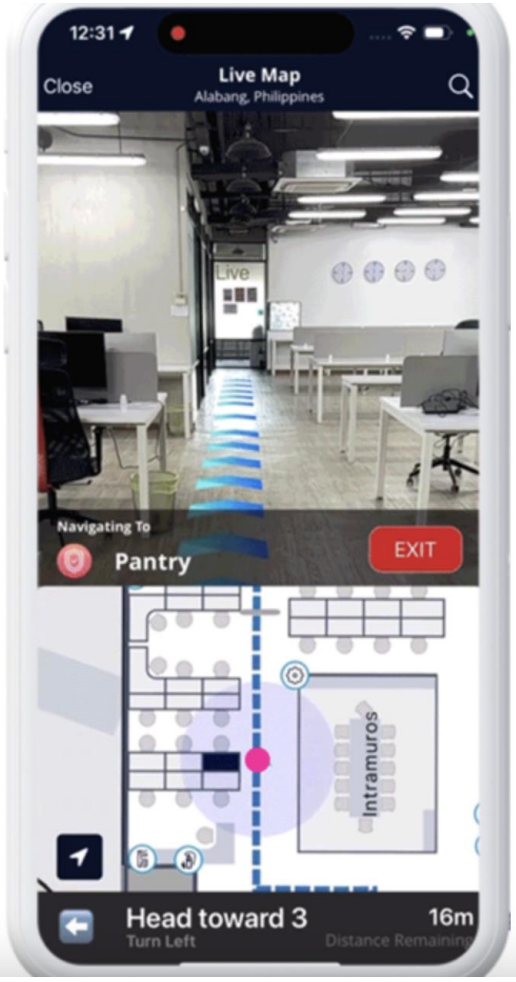


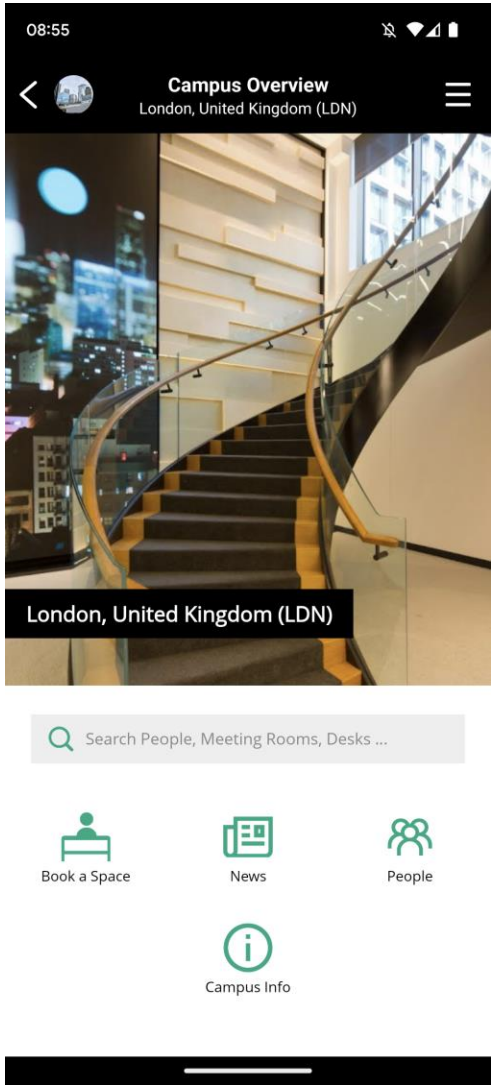
Indoor Atlas Aruba Integrated AR SDK – 802.11mc / Open Locate/ Service Now





Employee Experience – Hybrid Working Simplified (Meridian & Enocean IoT)



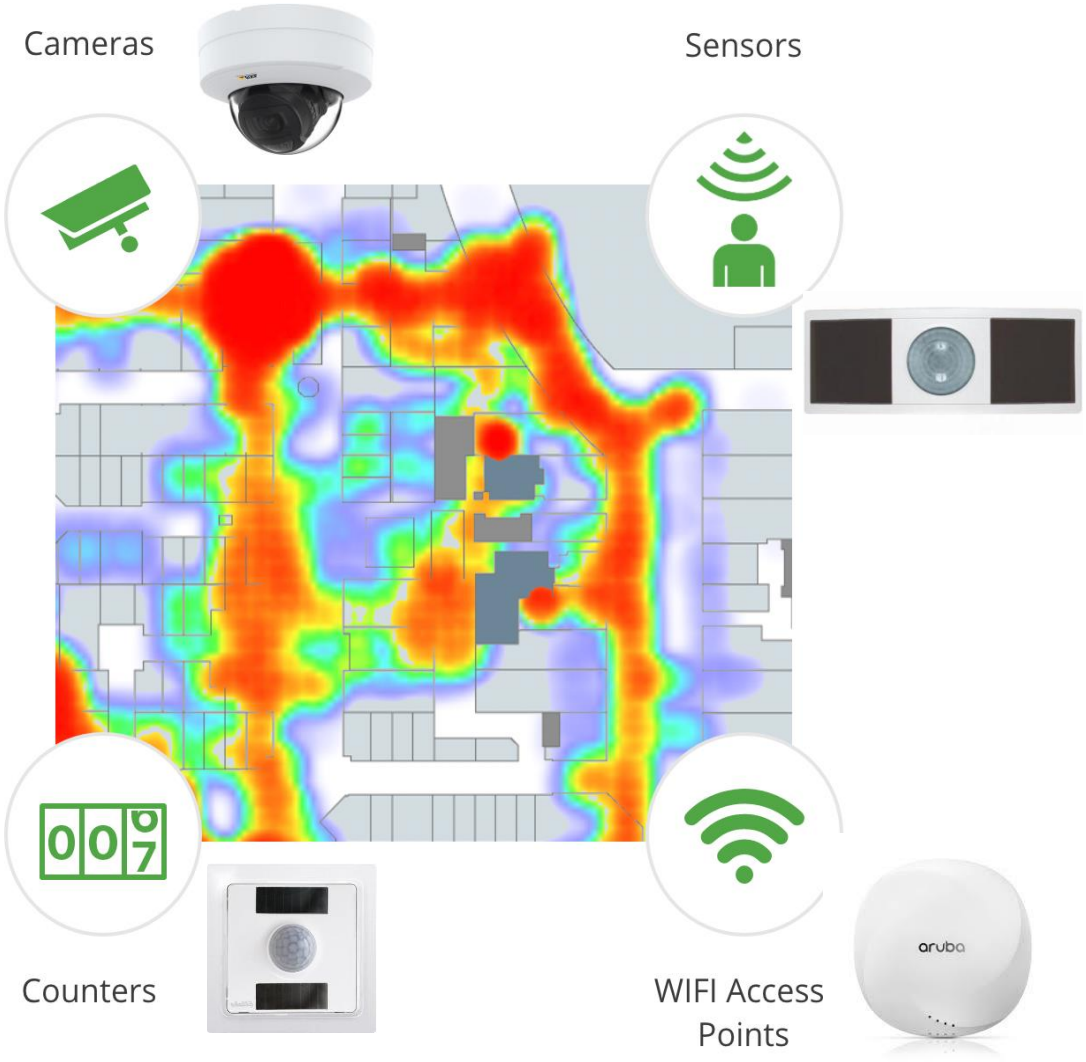


- Integrated with Enocean IoT
- Integrated with MS 365 and Teams
- Integrated with Aruba Meridian

- Award winning global applications
- Many global enterprise customers with HPE.

Analytics & Occupancy

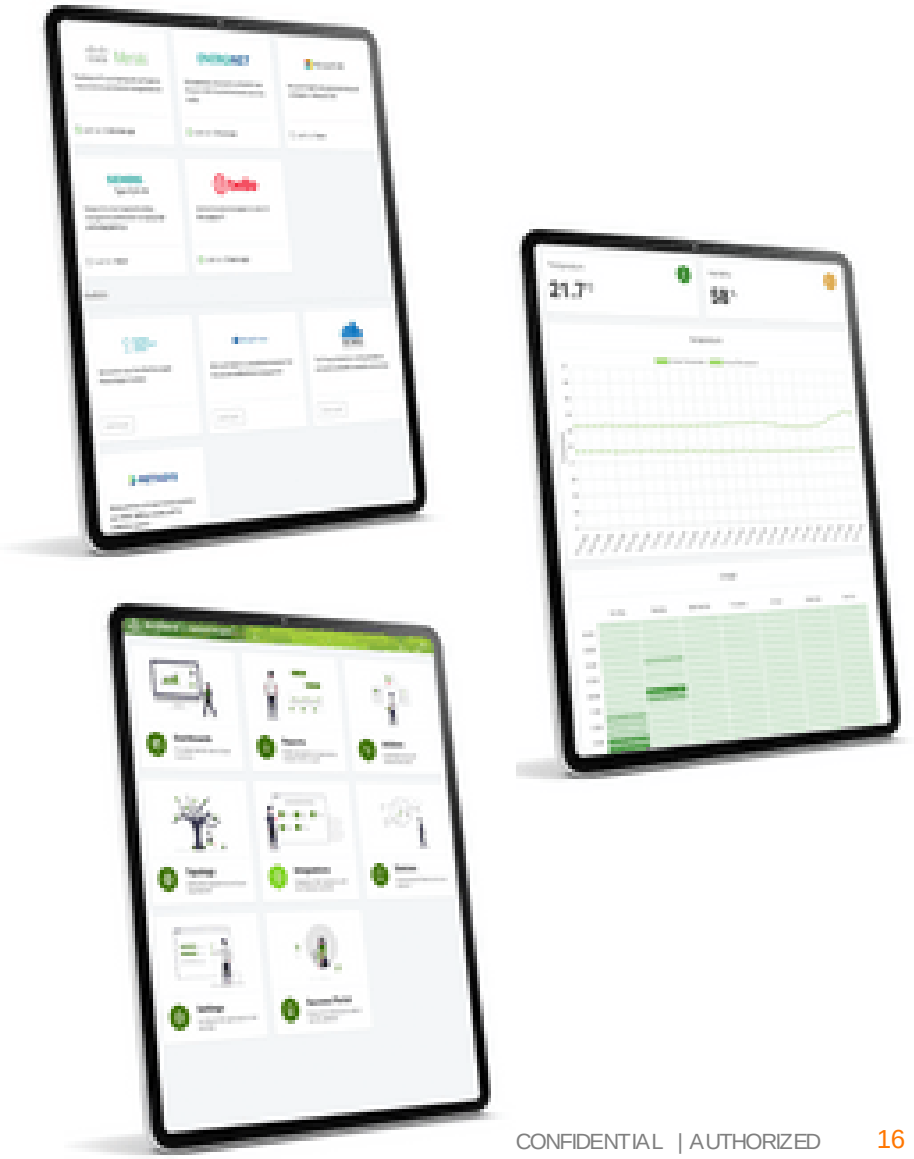
Use Cases:
Supplemented by IoT sensors



- Optimize facility flow, site upgrades, and visitor experiences based on footfall data and dwell times.
- Real-time analysis of parking dissects the flow of on-site visitor traffic and identify infrastructure improvements.
- Measures footfall across the site to inform staffing, security, and infrastructure decisions.

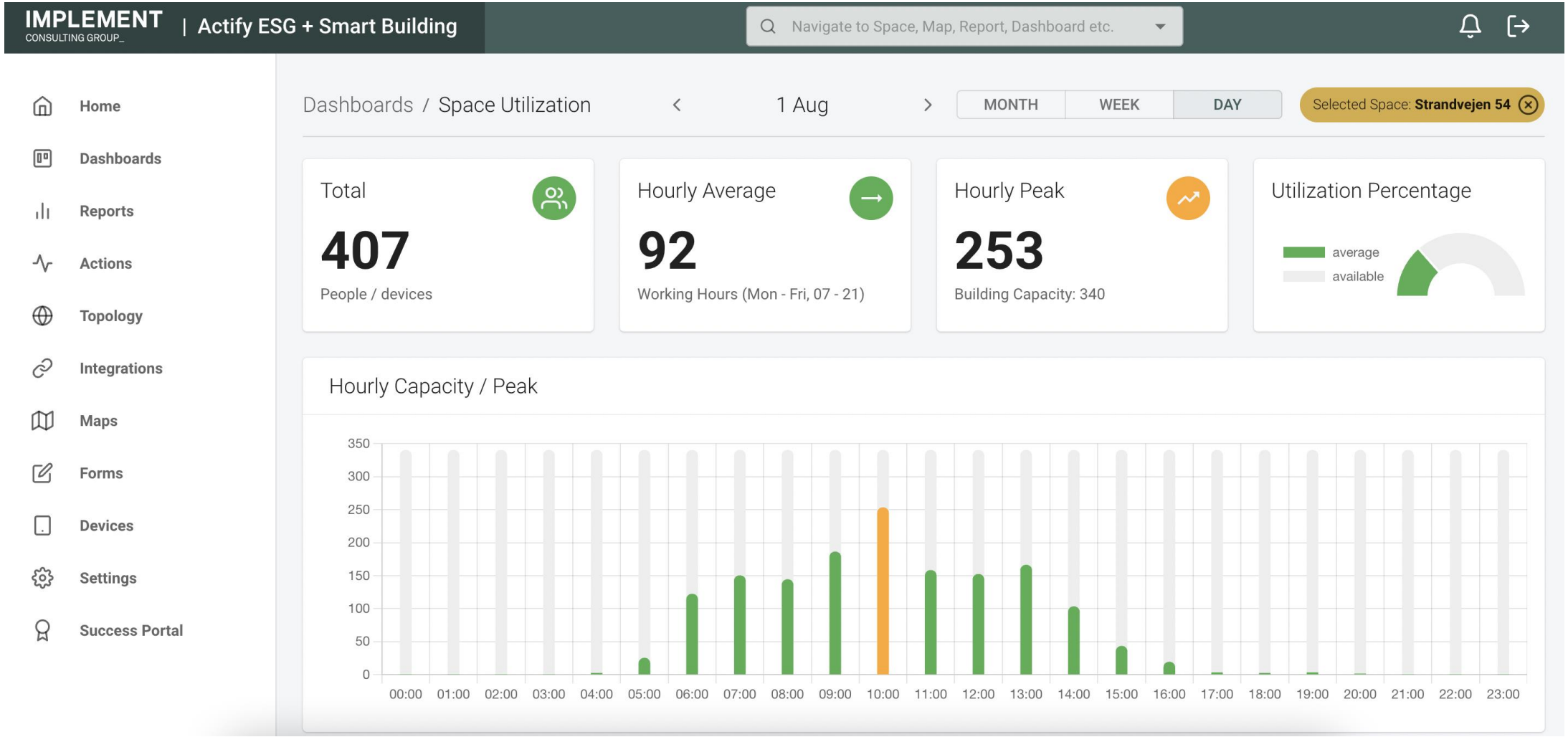
Example: Inspari Occupancy Analytics

Inspari analyses everything from the individual rooms to floors, buildings and the entire property's portfolio. Several BMS systems, additional IoT sensors and additional data sources are gathered in a homogeneous easy-to-use overview



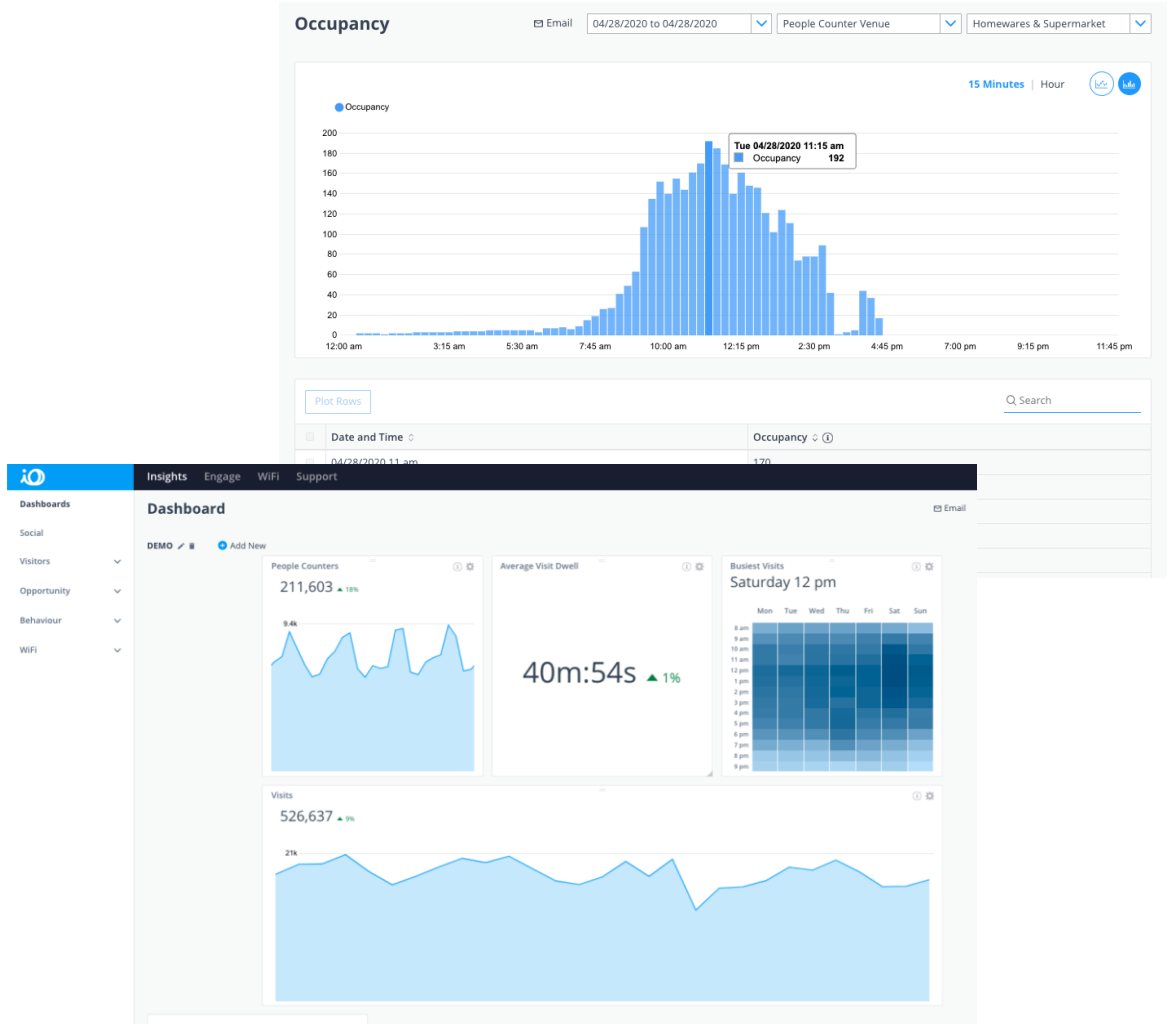
https://www.danfoss.com/en/service-and-support/case-stories/dhs/ambiant-group-installing-200-ally-radiator-thermostats/

Inspari – Occupancy Analytics

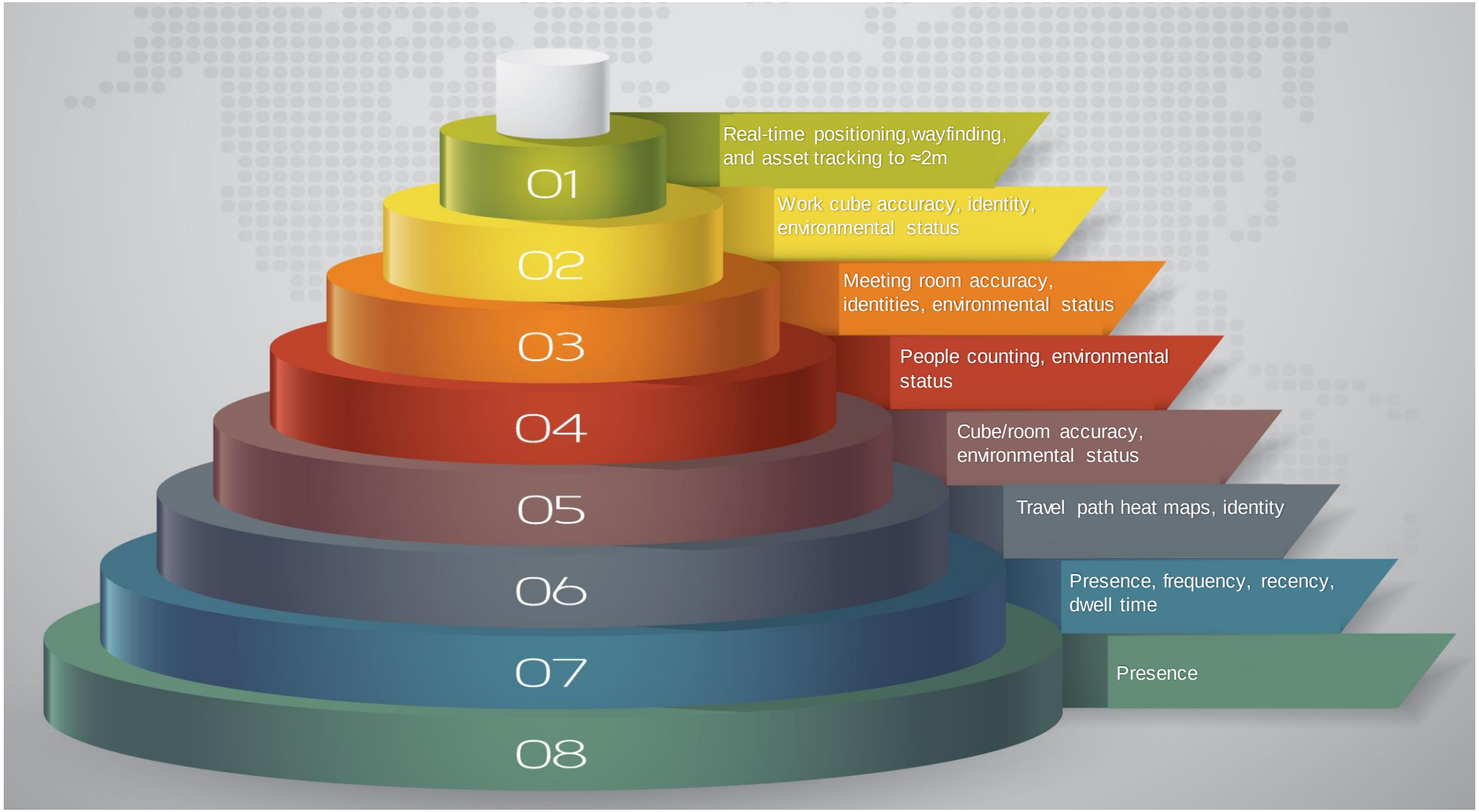


Example: Skyfii Occupancy Now, Enocean & Aruba CLE

- Enocean Alliance Partners.
- EMEA wide RTM
- First customer: Durham University UK
- Mix WLAN analytics with Enocean desk sensor and multi.
- Extend accuracy with IP Camera integration / LiDAR



INTELLIGENT LOCATION SERVICES FOR EVERY APPLICATION AND BUDGET



Asset Tracking & Localisation

Enterprise Asset Tracking

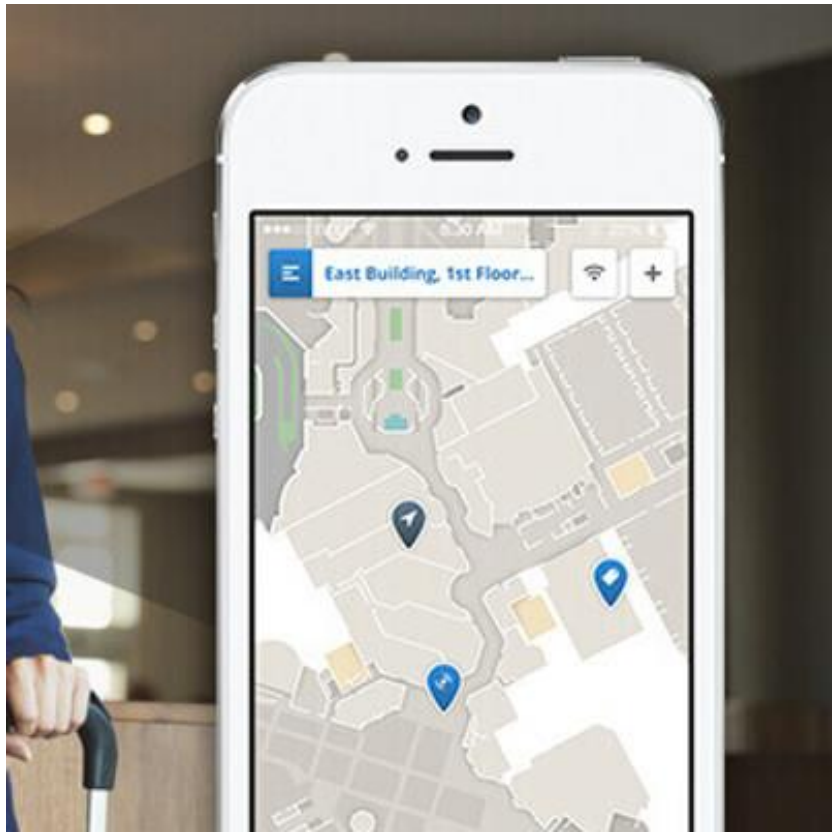
- Enterprise asset management (EAM) combines software, Aruba infrastructure and services to help maintain, control and optimize the quality of operational assets throughout their lifecycles.

- Data gathered from asset tags is analyzed using AI techniques. The resulting insights help maintenance teams make better decisions, enhance efficiency, perform preventive maintenance and maximize investments in their physical assets.

Resolve issues before they happen

Maximize asset utilization

Monitor assets smarter



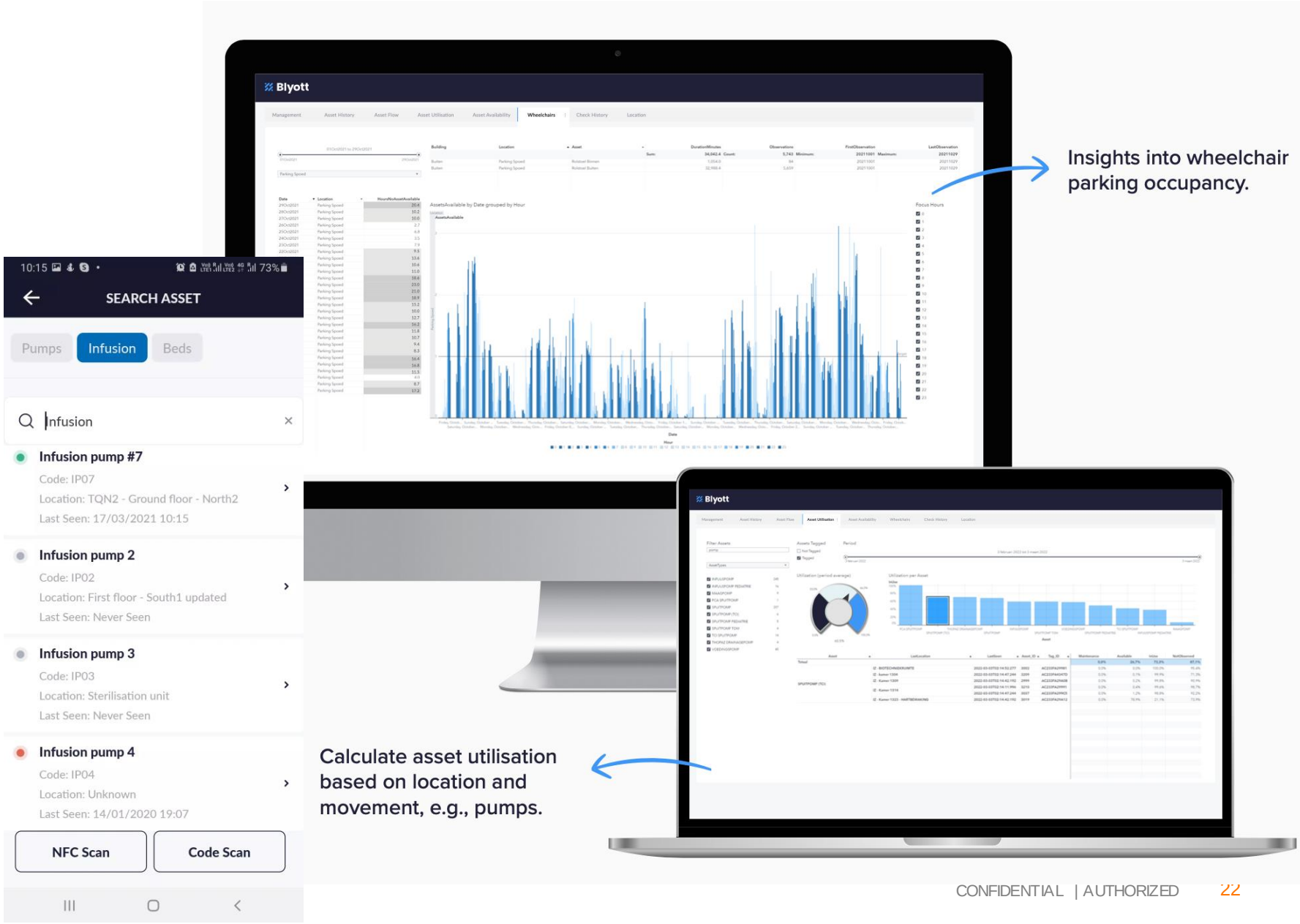
Asset Tracking - Blyott

Simple Aruba Based Data Visualization

HQ & Warehouse/ Logisitics tracking solutions.

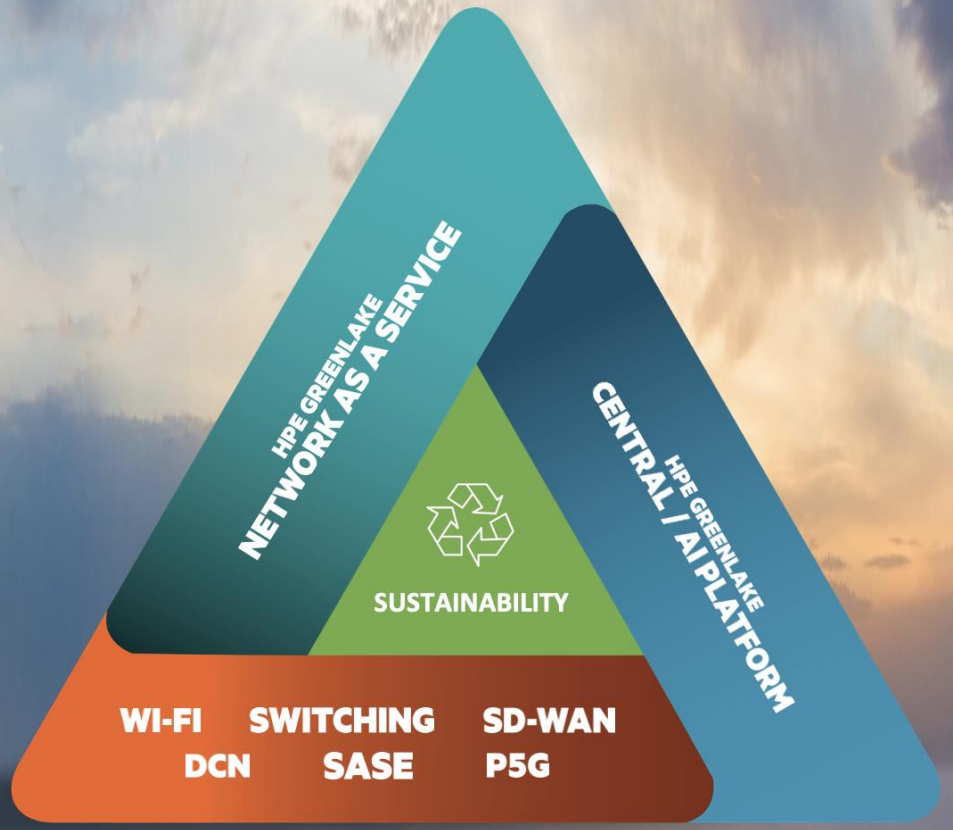
Retail monitoring

Healthcare Assets



Sustainable IoT

WITH SUSTAINABILITY AS AN INTEGRATED PART OF OUR STRATEGY



3
MILLION
ASSETS

27
MILLION
POUNDS

85%
REFURBISHED

IoT Building Blocks

EnOcean
Sustainable IoT

HPE aruba networking

Microsoft Azure
IoT Hub

Things

Connectivity

Data & Applications

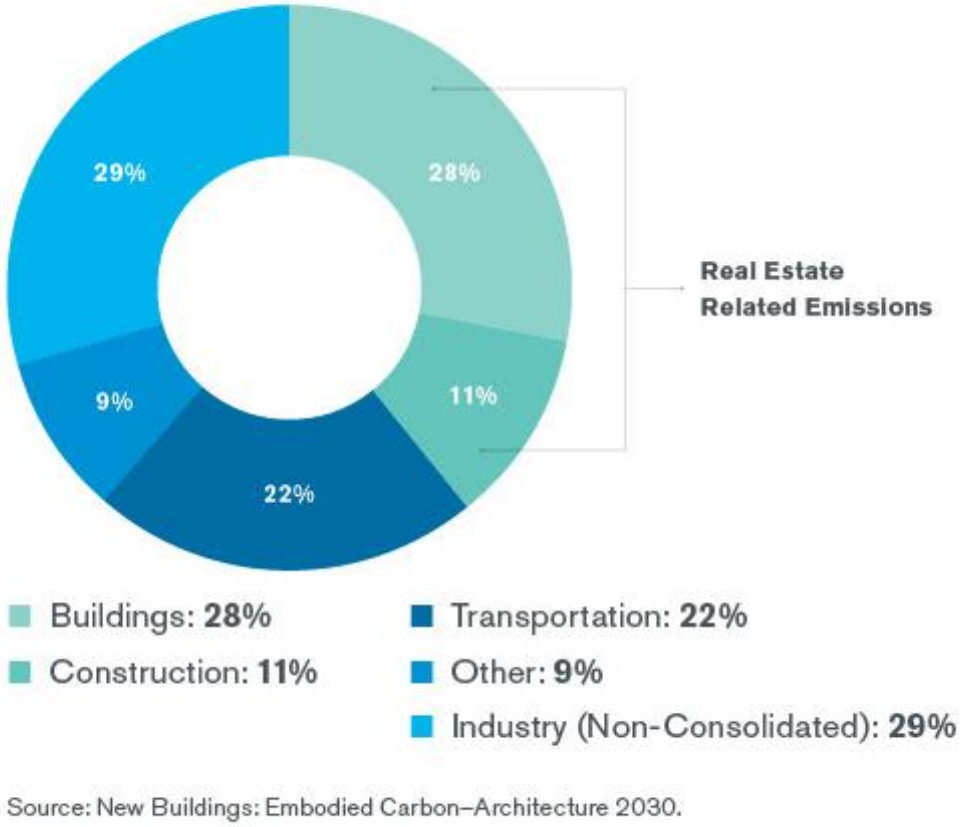
Why Now?

Climate Emergency:
Nearly 40% of global carbon dioxide emissions come from the real estate sector. Of these emissions, approximately 70% are produced by building operations

Energy Crisis (EU)
During the first two weeks of the war, Brent prices – the European oil benchmark – increased by more than 25%. By the end of March, European gas prices were around 580% higher than a year earlier

Government Taxation (EU)
Green Deal (Green Tax) Reduce EU-based GHG emissions by 55% by 2030. It is the first step towards carbon neutrality in 2050. Pushing customers to reduce energy consumption and real estate emissions. DACH Energy 19.

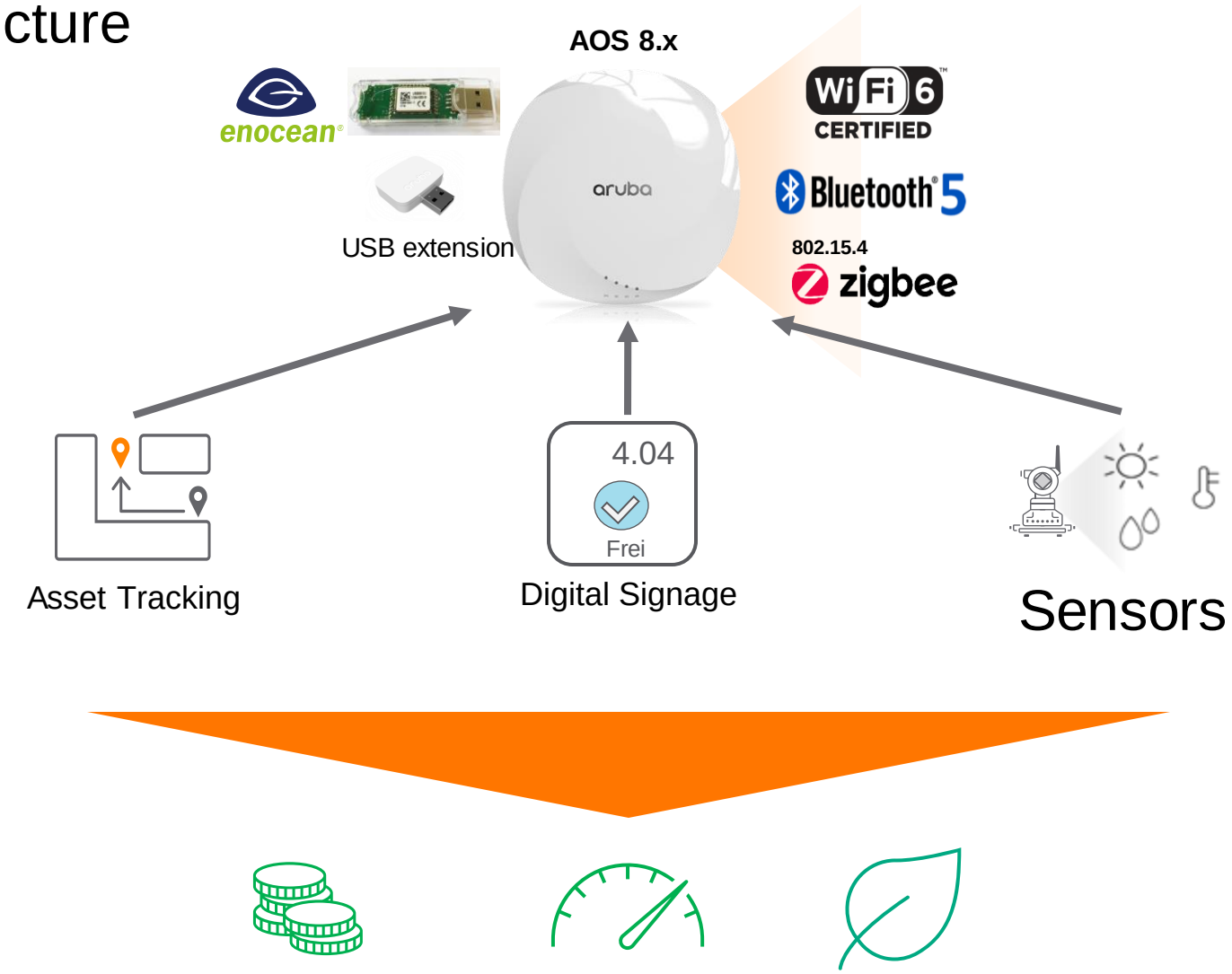
FIGURE 2: SHARE OF GLOBAL EMISSIONS BY SECTOR



Source: New Buildings: Embodied Carbon–Architecture 2030.

Aruba Access Point as the connectivity platform

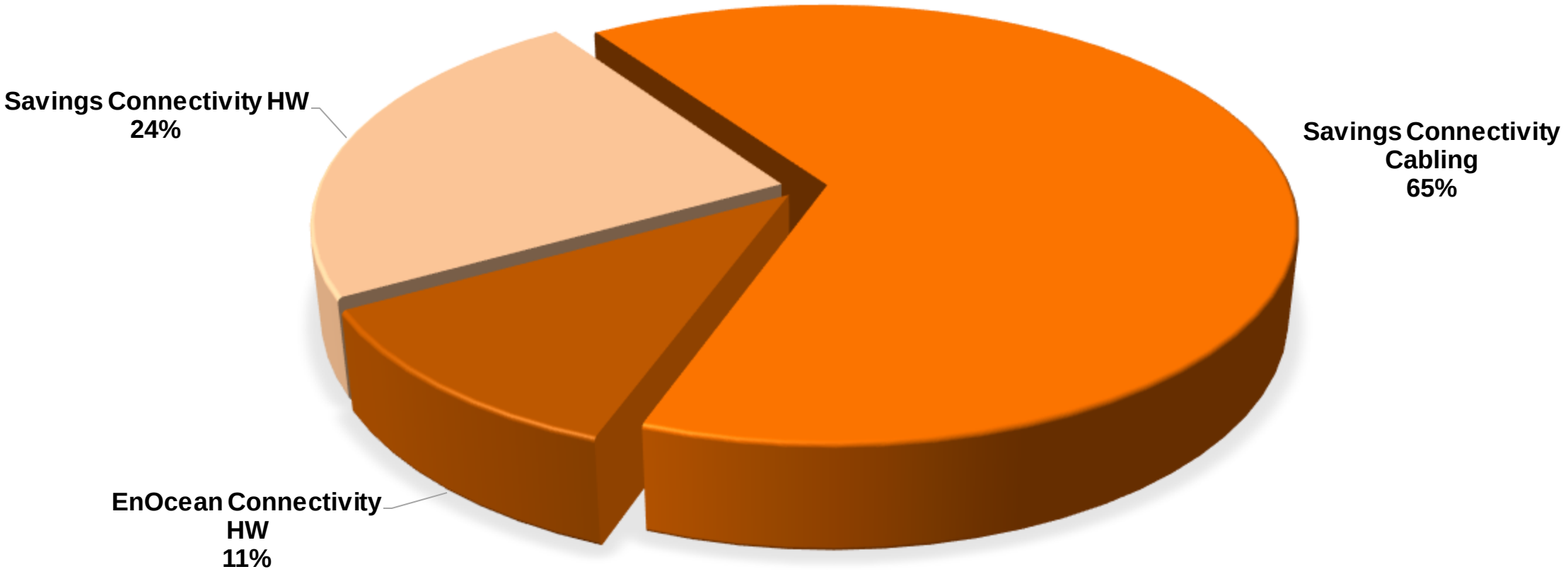
Unified Infrastructure



Cost savings of leveraging infrastructure

Integrated solution with access points

About 89% of connectivity cost (29% of total hardware cost) can be saved



Source: E-Shelter

Aruba, Microsoft & EnOcean – A strategic partnership

Combining core technologies for easy to deploy IoT projects

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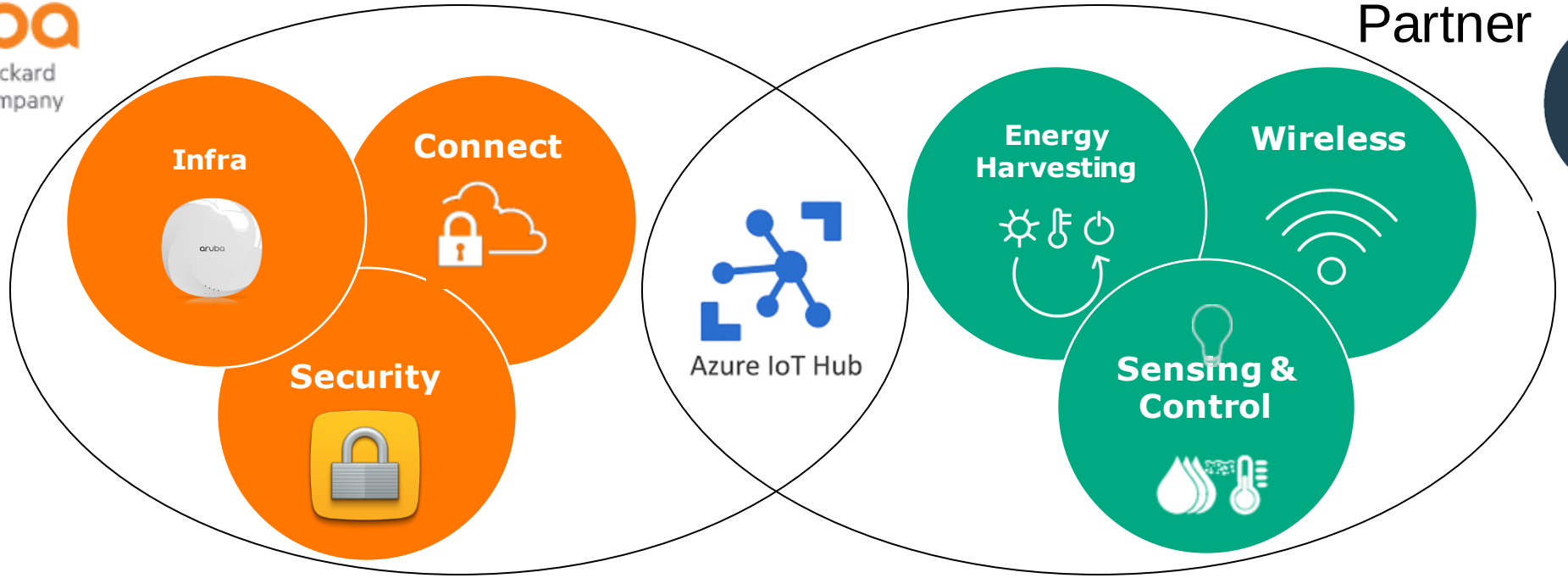
Ecosystem Partner

EnOcean



Microsoft Azure
IoT Platform

- Energy harvesting sensors do the work without batteries
- EnOcean Sensors provide data that cloud services demand
- Aruba access points eliminate the challenge of installing separate gateways
- MSFT Azure Cloud services analyze and react to the data creating a Hyper-Aware building

More Than

70%

of the survey recipients indicated that the top benefit they try to achieve from IoT deployment is improve productivity and drive costs reduction.

IDC, Worldwide Internet of Things Infrastructure Forecast, 2022–2026, doc#US48853922, July 2022

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USE CASES

MULTIPLE USE CASES & STAKEHOLDERS

COO

- Uninterrupted uptime
- Quality and productivity
- Real-time analytics and metrics
- Optimal client service

CISO

- Data Integrity / protection
- Attack prevention and resilience
- Vulnerability remediation
- Controls and monitoring
- Compliance

CRE

- Real estate footprint
- Lower opex, optimized capex
- Manage facility risks
- Workplace experience
- Adhere to requirements

CFO

- Profitability and ROI
- Overall portfolio
- Avoid vendor lock-in
- Minimize and manage financial risks

CHRO

- Worker satisfaction
- Hiring and retention
- Personal safety / security
- Culture
- Rules and regulations

CIO

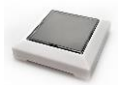
- Technology roadmap
- Operational excellence
- Scalability and architecture
- ROI and cost management

Where is the Common Ground? How is it Evolving?
What Role does Technology Play in Transformation?

PEOPLE COUNTING

Benefit & Devices

No cables needed (ideal for retrofit, no cabling cost),
No issues regarding the European GDPR (no camera used)



Desk Utilization
(desk or chair mounted)

Multisensor
(Vibration / T / rH / Lux)

Activity Sensor
(ceiling mounted)

# of movements per time
(passive infrared)

People Counting
(door mounted)

# of door activations
(contact switch)

People Counting
(entrance)

# of people passing
(in and out)

SMART CLEANING

Benefit & Devices

Service transparency, **20%** cost savings (demand oriented cleaning)

Source: Thing-It

Office Rooms / Lounges

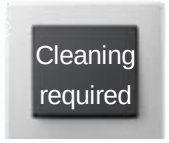
Restrooms / Washrooms

People activity

Table / device utilization

Door status / people count

People count



Service button

Status sign (cleaning needed)

ENERGY SAVING

Benefit & Devices

Up to **30%** energy saving via single room control *)

Heating valve controler (thermal powered)

Smart Metering & Switching Plug

Thermostat

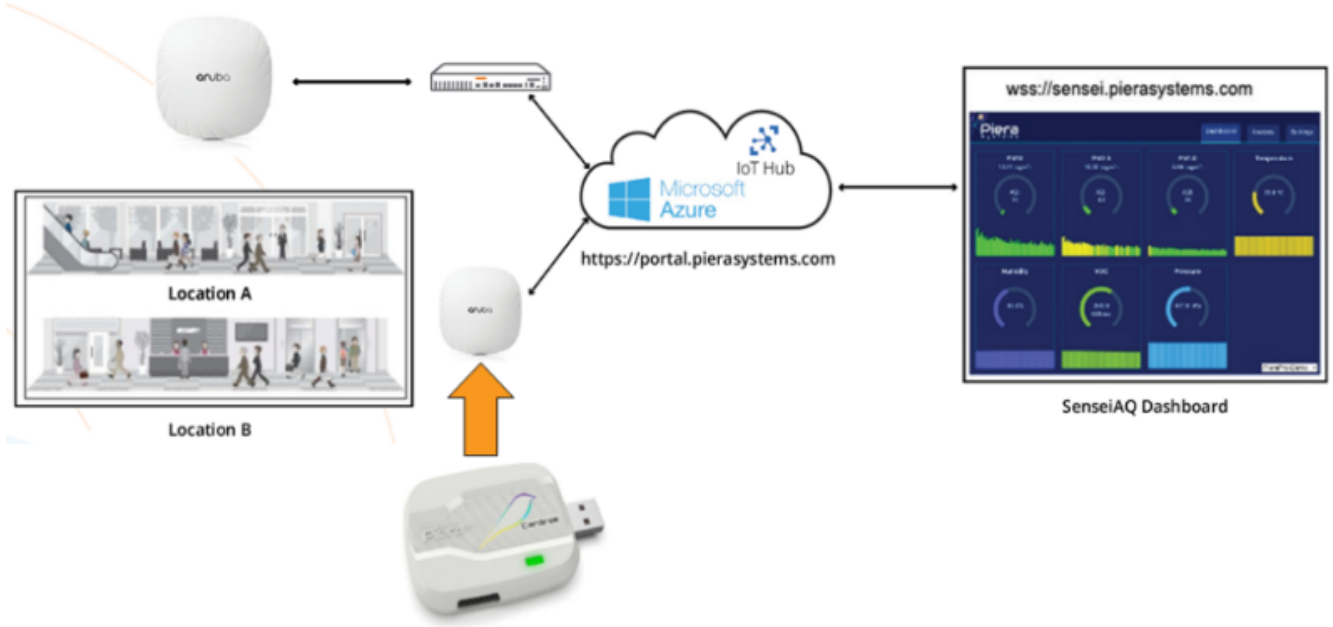
Presence detection

Window status

Switch

*) Source: https://iolite.de/en/projects/lp16_en.html

VAPING DETECTION & AIR QUALITY MONITORING

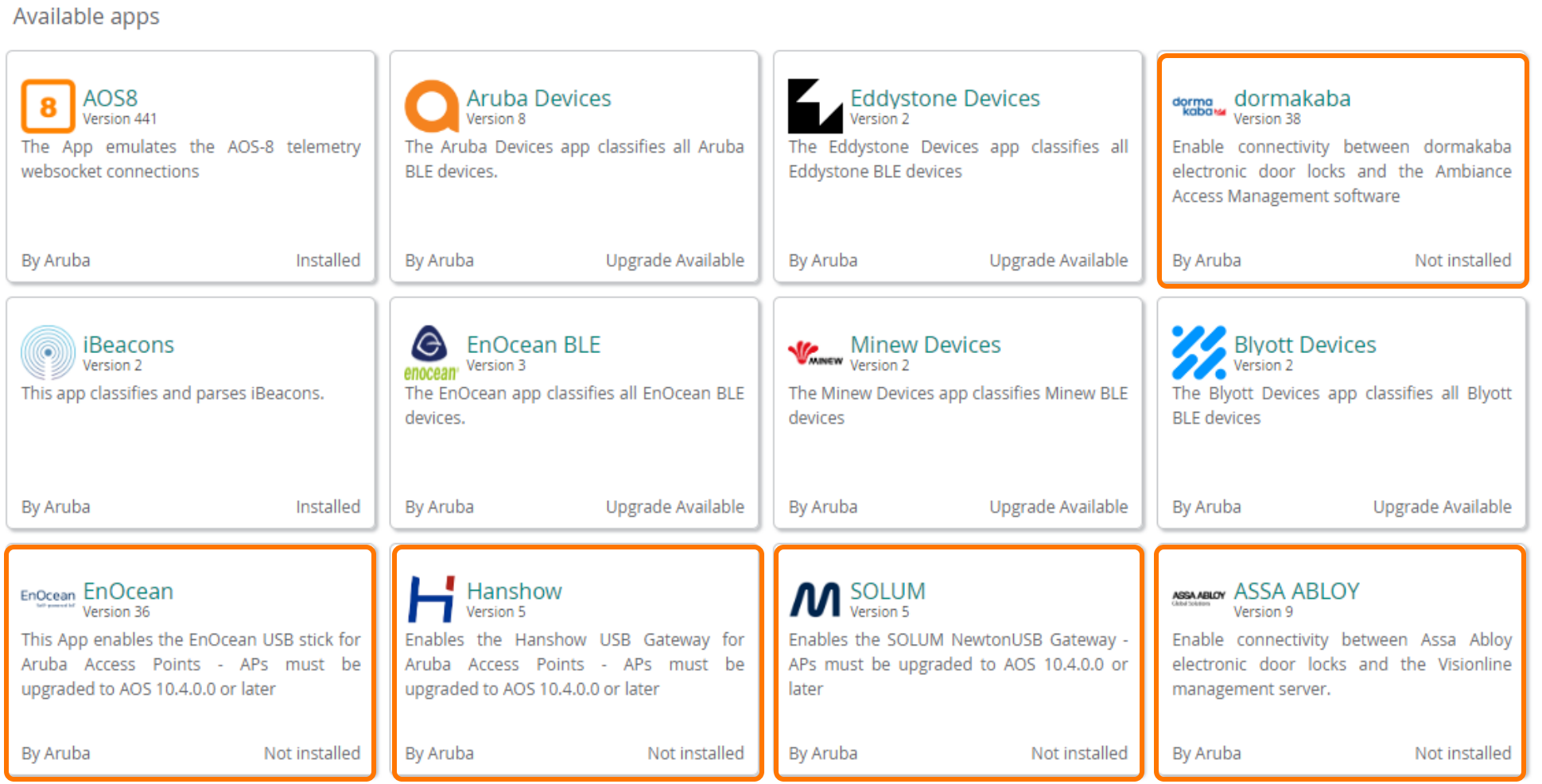


- USB Intelligent Particle Sensors can be added to any Aruba Wi-Fi 5 and Wi-Fi 6 access point
- Detects particles as small as PM0.1 and counts them in real-time
- A single sensor can be used for vaping detection, CO2 monitoring, and particulate matter mass concentration
- Ideal for enforcing no-vaping rules, and monitoring for other signs of danger

Management – Aruba IoT Ops

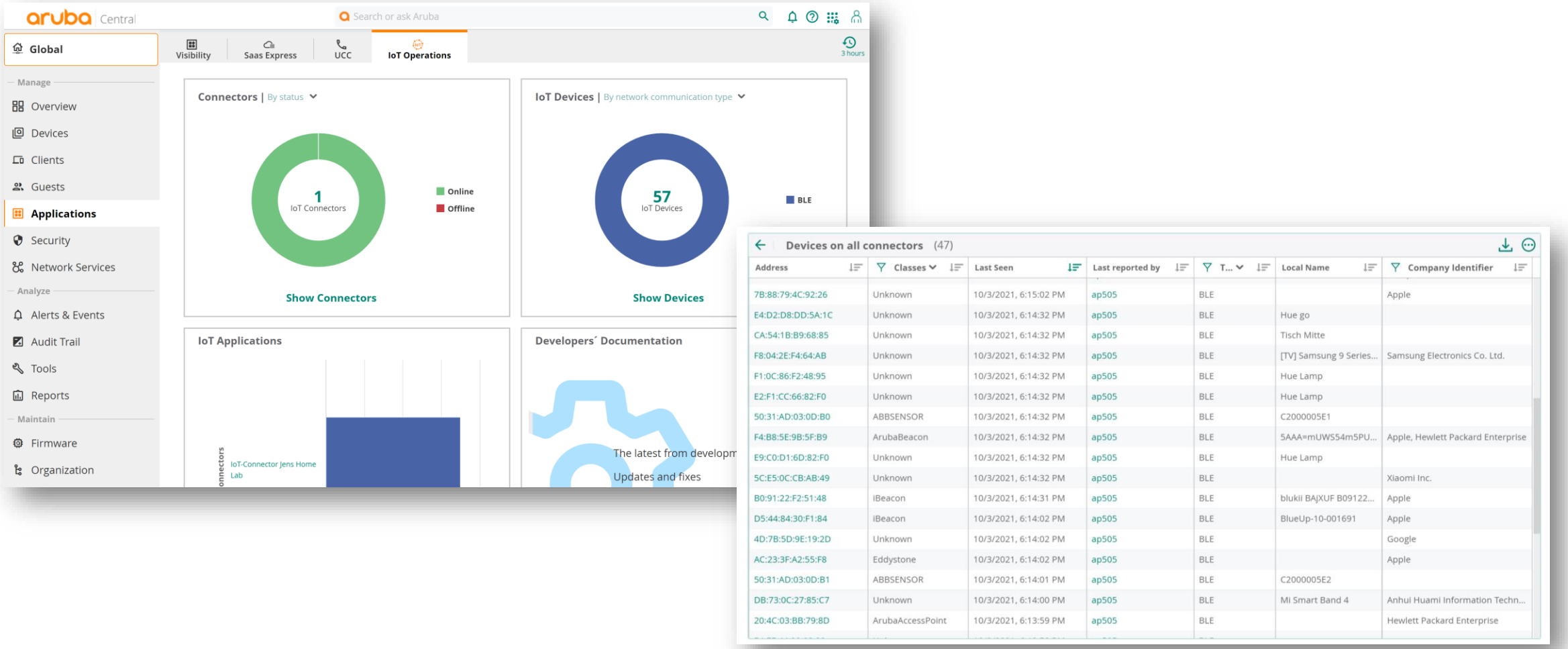
Aruba IoT Operations – Reducing Complexity

AOS/Central 10.4/2.5.6



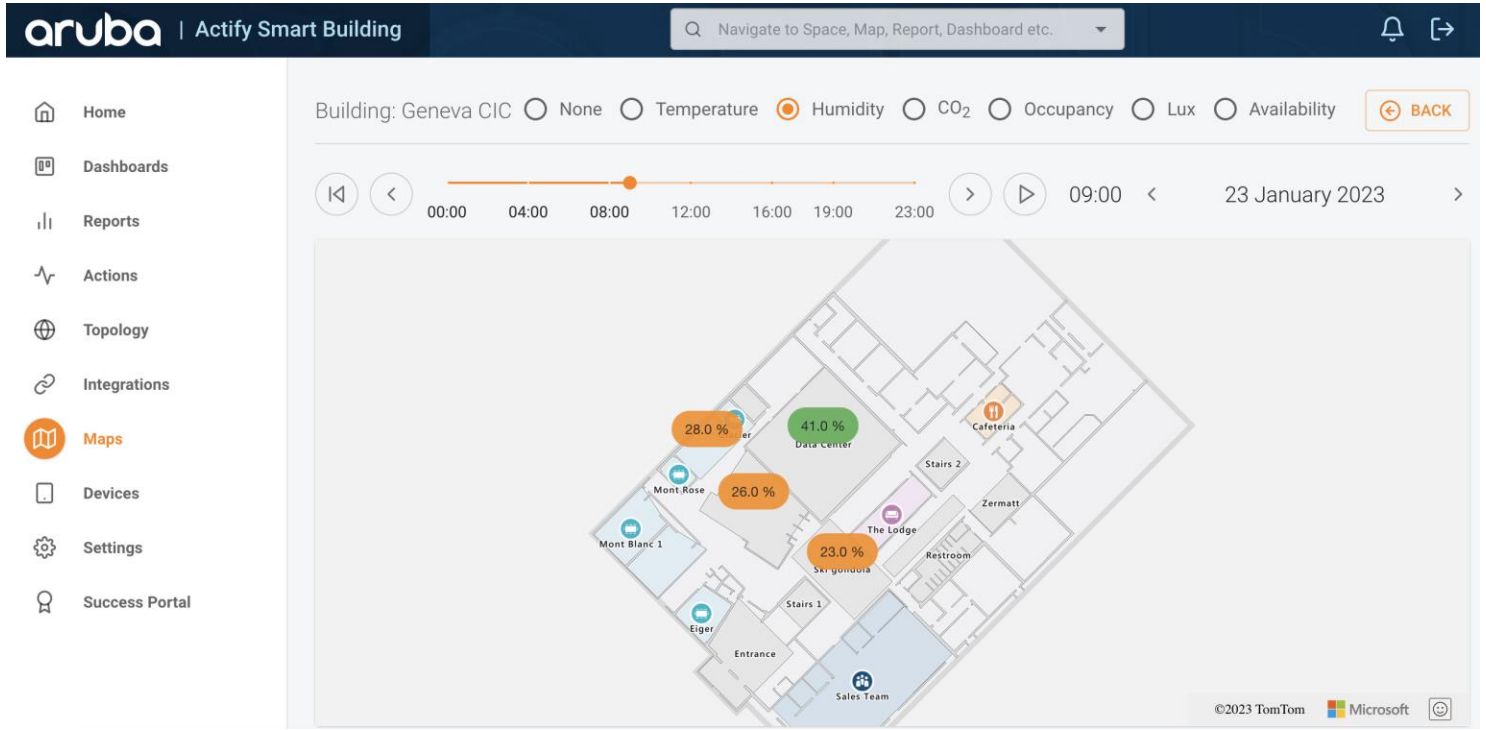
IoT Operations

Extending visibility



IoT Applications/ Visualisation

Sustainability As A Service: Environmental Dashboard



- Leverages Energy Haversting Sensors with Aruba AP as an IoT gateway.
- Solves multiple challenges, energy, occupancy, climate, air quality.
- Integrates with most know BMS platforms
- Whitelabel Wentzo/ Customer Branded dashboard
- All Azure hosted
- Removes 89% of infrastructure costs.

ACHIEVEMENT IN SUSTAINABILITY
Microsoft
Sustainability in Action

enocean®

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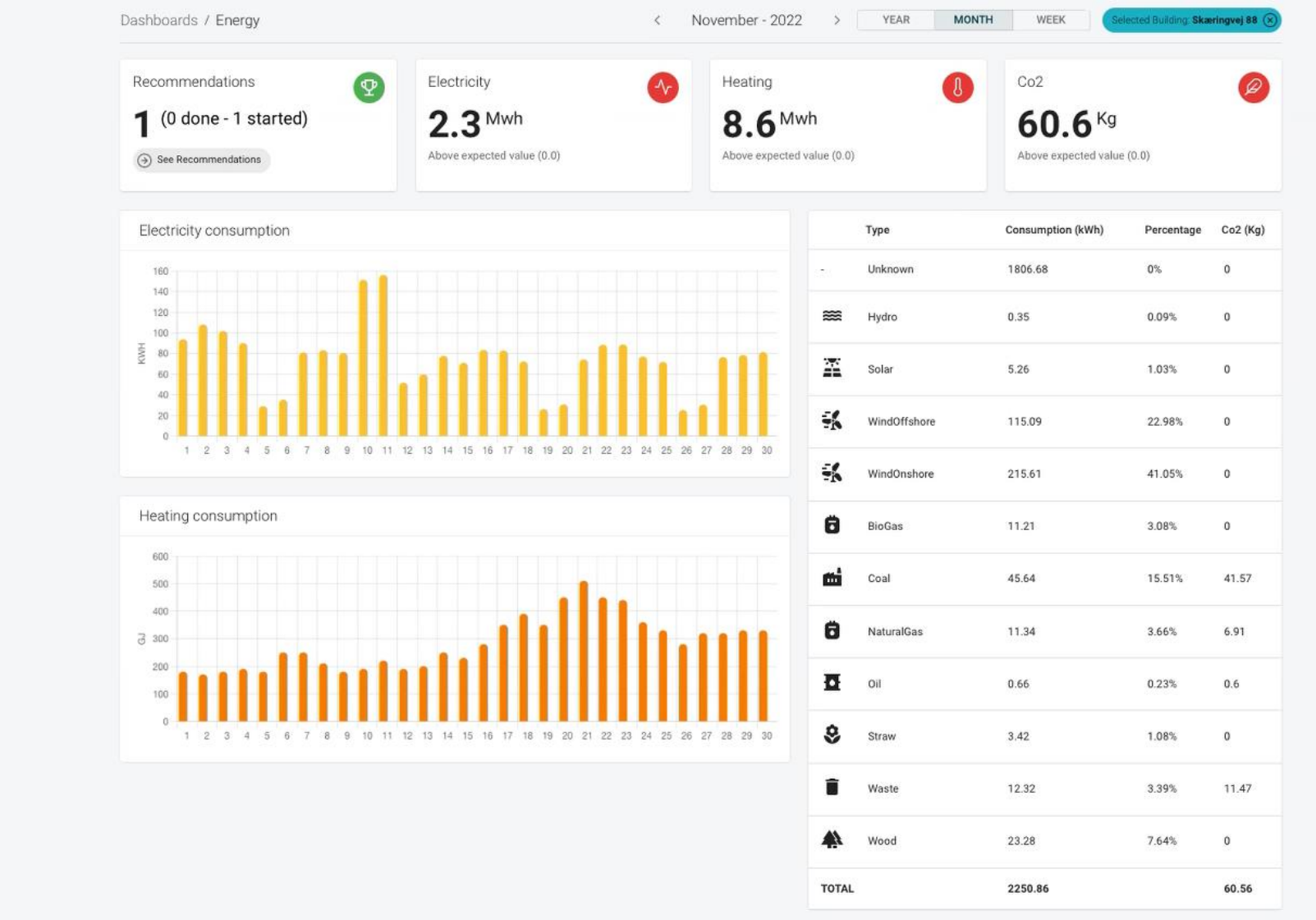
INSPARI

Energy Consumption Example: Inspari



	Type	Consumption (kWh)	Percentage	Co2 (Kg)
-	Unknown	1806.68	0%	0
	Hydro	0.35	0.09%	0
	Solar	5.26	1.03%	0
	WindOffshore	115.09	22.98%	0
	WindOnshore	215.61	41.05%	0
	BioGas	11.21	3.08%	0
	Coal	45.64	15.51%	41.57
	NaturalGas	11.34	3.66%	6.91
	Oil	0.66	0.23%	0.6
	Straw	3.42	1.08%	0
	Waste	12.32	3.39%	11.47
	Wood	23.28	7.64%	0
TOTAL		2250.86		60.56

- Measure energy consumption per site/ location.
- Report on CO2 p/kg or per employee for BACS regulation, Green Tax and Energy 19.

Real Business Outcomes

Stakeholders

More touchpoints and more budgets for IT.

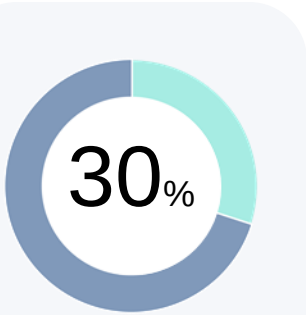
* “What is your strategy around sustainability?”

Job Title	Challenges	Aruba Solution
GRE Director **Sustainability Advisor**	Reduce real estate by 20% Power management Utilisation / Occupancy ISS integration BACS Regulations (2025) Energy 19	Digital Twin Leverage existing investments **Energy harvesting** **MSFT partnership**
IT Director / CIO	Reduce complexity Reduce costs Team efficiency Sustainable IT BACS Regulations (2025)	AP as an IoT Gateway AI Ops / IoT Ops Azure integration Green AP POE Schedule
HR Director	Improve environment for staff Improve desk and room occ. Improve overall employee experience LEED and BREEAM certificates	Room sensors & Co2 Employee applications (AR) Pdi desk and room panels CPPM

Useful - Office Space / Campus Efficiency ROI examples

30% of the office space is superfluous

https://officeforfuture.de



A workplace in the office costs € 8,140 (European Average)

Bürokostenreport by www.facility-management.de

Management
(IT costs, cleaning, furniture depreciation, consumables, heating, electricity)

cold rent
+ additional rental costs
≈50%

1000 employees, 30% shared desks:
€2.4 million cost savings / year

Save the superfluous office space, with positive consequences for the environment and employees

Up to 48% less heating energy

30% space savings through desk sharing + 26% energy savings for the remaining 70% space

Smart heating: 19°C during the day (14h/day) and 16°C at night (10h/day) - 6% heating energy savings with 1° temperature reduction from the current average interior temperature of 22°C

Up to 33% less electric energy

Standby-power shutdown during the night and weekends

Source: T-Systems, www.youtube.com/watch?v=DAXfrSxU5Fc

Up to 50% productivity increase

Better health & well-being through low CO2 levels

Source: www.businessinsider.com/office-air-co2-levels-making-workers-tired-2017-11

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Example Smart Building ROI:

Typical business case

Office Space:
1000m2

Population:
250 people

Avg Salary:
50000€/y
253 Working days/y

Seats:
300 (desks and meeting rooms)

Average cost of office space in Paris/ Madrid:
600€/m2/y

Average cost of energy:
105€/y/m2 (Jan 2022 460kW/m2/y)

Application Subscription:
3,5€/month/user

Hybrid work - Real Estate

Space savings	Savings	Application ROI (Days)
10%	60000€	44
20%	120000€	22
30%	180000€	15

Management - Productivity

Payroll	Improvement	Productivity gain	Application ROI (Days)
12 500 000 €	1% = 23 minutes / week	125 000 €	21
12 500 000 €	2%	250 000 €	11
12 500 000 €	3%	375 000 €	7

Impact - Energy

Energy costs savings	Savings	Applcation ROI (Days)
10%	10500€	253
20%	21000€	127
30%	31500€	84

10% Scenario	Year 1	Year 2	Year 3	Total
Space savings		60 000 €	60 000 €	120 000 €
Productivity gain	125 000 €	125 000 €	125 000 €	375 000 €
Energy costs savings	10 500 €	10 500 €	10 500 €	31 500 €
Total	135 500 €	195 500 €	195 500 €	526 500 €
ROI (Days)	20	14	14	

REAL EXAMPLES

Employee Experience Example – Credit Agricole - Jooxter

enocean alliance
Building Smarter Connectivity

JOOXTER

"Our need was a bit specific: we know that we have a lot of workspaces that can be shared on our territory, while mobility needs are developing (decompartmentalization of headquarters/network, remote work, etc.), recognizes Guillaume Lambour - Organization and Technologies Manager at Crédit Agricole

Whitepaper: https://www.arubanetworks.com/en-gb/resources/case-studies/credit-agricole-normandie/

ARUBA WLAN 5 SERIES INTEGRATIONS:

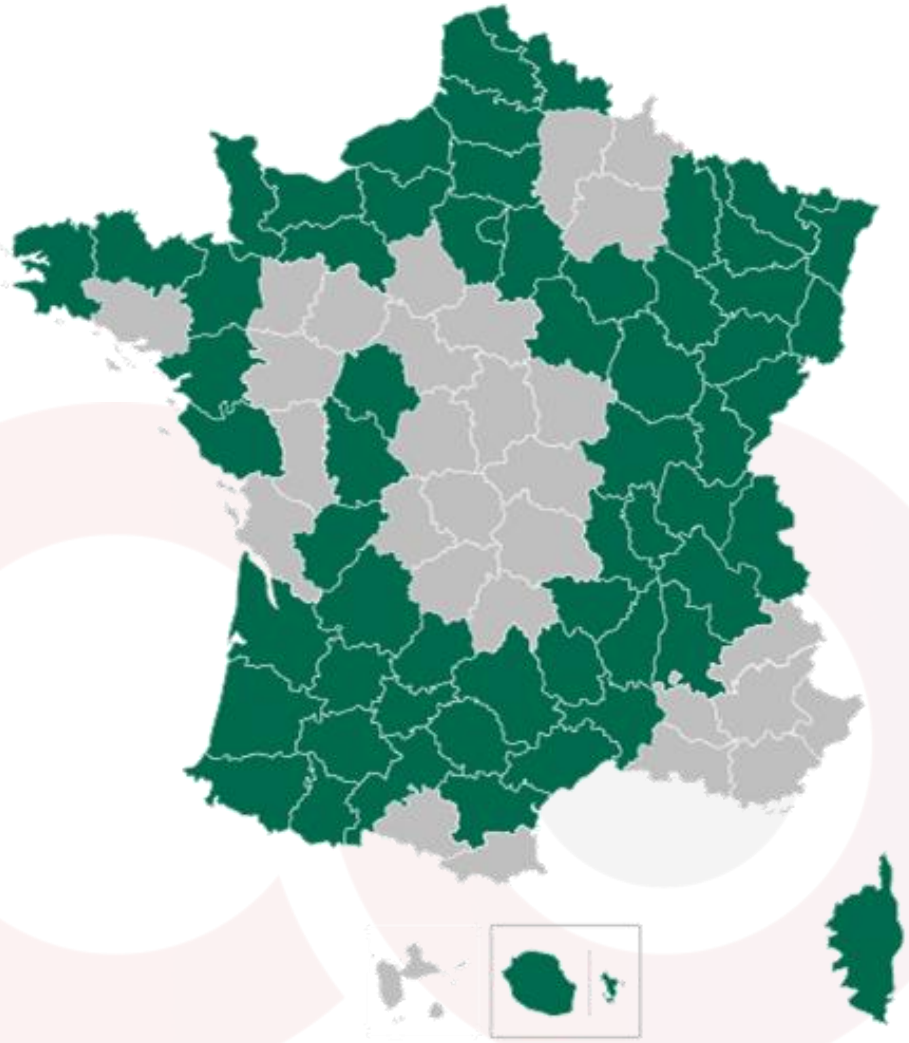
- Wi-Fi 6 Aruba 515 access points
- Wi-Fi 6 Aruba 555 access point
- Mobility Controllers
- AirWave
- ClearPass
- Integration with EnOcean occupancy sensors
- Integration with Jooxter workplace management platform

VALUE ADD:

- Streamlines meeting room bookings via a smartphone or laptop
- Offers a long-life solution (potentially 20 years)
- Delivers an integrated Aruba, EnOcean, and Jooxter platform, enabling the reduction in carbon footprint and energy consumption
- Significantly reduces cabling costs and IoT infrastructure (sensors)
- Simplifies IoT and IP Network integration eliminating gateways.

Use Case examples: Credit Agricole

- Inventory of employment positions and capacity monitoring
- Occupancy measurement across the entire property complex (Smart Building data integration)
- Leave reports imported into Jooxter
- Outlook room schedule synchronized with Jooxter
- The solution is aligned with CSR standards and procedures.
- **This is a first step towards compliance with the BACS (Building Automation & Control Systems) regulation, which requires commercial buildings to control their energy consumption by 2025. In other words, to limit their energy usage**



CUSTOMER INNOVATION CENTER GENEVE

Come And Visit!

- 1.5 day Wentzo & Aruba Customer Session
- Visiting the sustainable datacenter.
- IoT lab tour
- Technical breakouts with SMEs.
- Great lunch and dinner in Geneva

Summary

Wentzo & HPE Aruba – Better Together

- Aruba IoT = max security IoT platform for endless possibilities.
- Aligned Ecosystem integrations i.e Blyott/ Skyfii/ Enocean
- Platinum Aruba Partner
- Managed Services

Digital Transformation

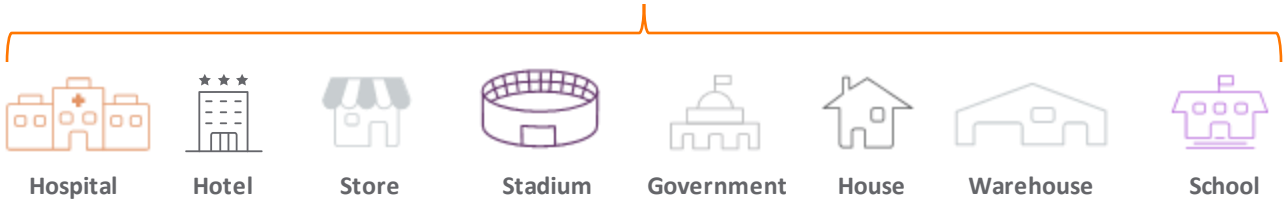
SUSTAINABLE DEVELOPMENT GOALS

Sustainability

IoT Gateways

Return On Investment

THE USE OF IOT FOR IMPROVED OUTCOMES AND OPERATIONS IS CRITICAL



HPE aruba networking

Questions?

Thank you

Jon.Howell@hpe.com

Let's be location hero's #HPETechPro

Resources:

- Aruba Hyper Aware Smart Buildings: https://blogs.arubanetworks.com/industries/hyper-aware-smart-building-use-cases/
- Aruba & Microsoft: https://www.arubanetworks.com/partners/technology-partners/microsoft-solutions/
- Microsoft E book on Sustainability: https://go.microsoft.com/fwlink/p/?LinkID=2176304&clcid=0x409&culture=en-us&country=US
- Enocean Sustainability Videos and Docs: https://www.enocean-alliance.org/solutions-and-benefits/solutions/sustainability/

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