

# atmosphere'22

## BELGIUM

**LET'S DESIGN A  
HYPER-AWARE  
INFRASTRUCTURE**

Dobias van Ingen  
Aruba EMEA CTO & Sr. SE Director

September 2022

**aruba**  
a Hewlett Packard  
Enterprise company

amazon go

amazon go

2131

# EDGE DISRUPTION

aruba  
a Hewlett Packard  
Enterprise company

Get the app  
amazon.com/goapp  
www.amazon.com/goapp

GOOD FOOD  
FAST  
amazon

NO LINE  
NO CHECKOUT



DYNAMIC YIELD

"With this acquisition, we're expanding both our ability to increase the role technology and data will play in our future and the speed with which we'll be able to implement our vision of creating more **personalized experiences for our customers.**"

Steve Easterbrook, McDonald's CEO

aruba  
a Hewlett Packard  
Enterprise company



# EXPERIENCES EVERYWHERE

WORKPLACES | SCHOOLS | STADIUMS | HOTELS | HOSPITALS



aruba  
a Hewlett Packard  
Enterprise company

# IOT CONNECTIVITY CHALLENGES



# ARUBA AP AS IoT GATEWAY



BLE



ZIGBEE



3<sup>RD</sup> PARTY



## ARUBA ECOSYSTEM PARTNERS



ses imagotag

SOLUM  
Solution provider.

HermanMiller



EnOcean

ASSA ABLOY SIEMENS Space IQ

ABB wiliot HID



GE Healthcare

STANLEY  
Healthcare

HYPROS

dormakaba

...and many more

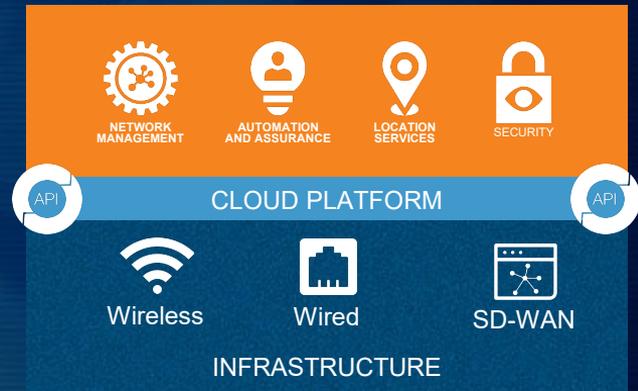


# IT OPERATOR IMPERATIVES



# ONE ARCHITECTURE

CAMPUS | BRANCH | DATA CENTER





**HYPERAWARE-BUILDINGS**  
NO TOUCH IS THE NEW HIGH-TOUCH EXPERIENCE

**2022-2023**

# RETAIL INDUSTRY CHALLENGES





Restaurant  
★★★★☆  
30m

Home Decor  
★★★★☆  
60m

Cinema  
★★★★☆  
80m

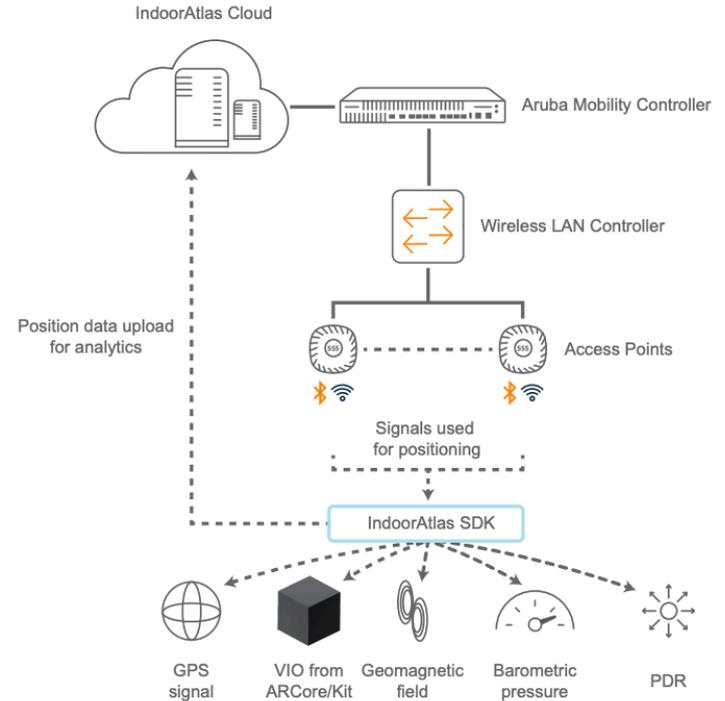
Clothing  
★★★★☆  
25m

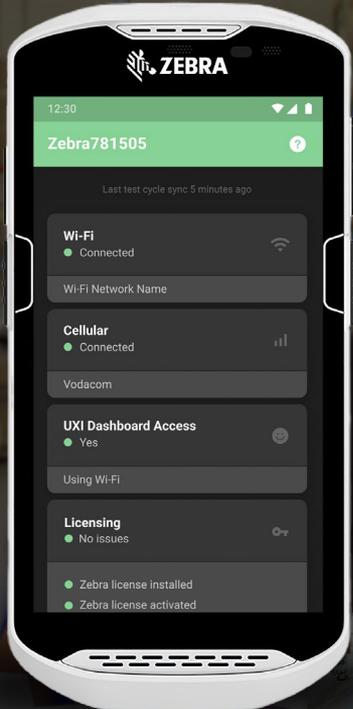
Cafe  
★★★★☆  
50m



# Indoor Atlas - AR Navigation & Ads

# Sensor fusion technology enhanced by Aruba ESP





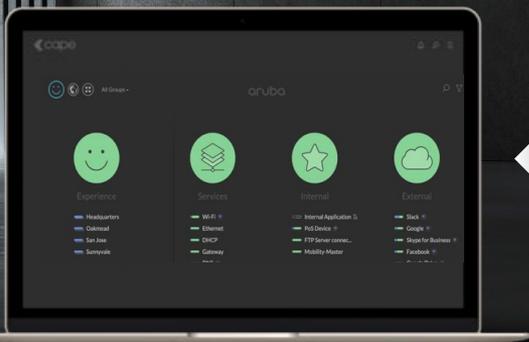
**UXI AGENT FOR ZEBRA**

# HELPING LoB WITH DIGITAL ACCELERATION **PROBLEM RESOLUTION**

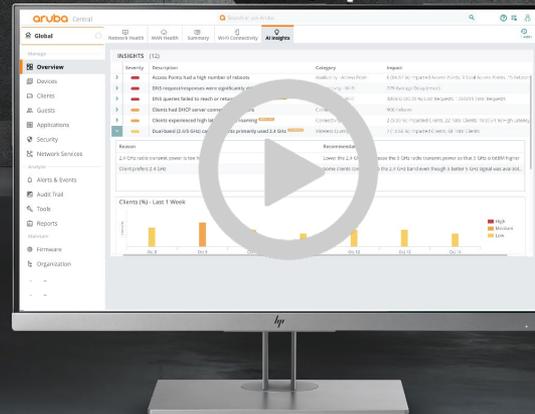
UXI Agent



User Experience Insight



Aruba Central (Open Locate)



Open Locate data from Aruba Central enhances UXI analytics and assurance



# Zebra Device Tracking & AR (Asda example)

- Uses Wifi6 Aruba APs to triangulate and track Zebra devices.
- Find lost customer Scan & Shop devices, back end operational TC52 or logistic devices.
- See Wi-Fi, BLE, GPS and user input tracing.
- Playback the entire weeks device routing on a map.



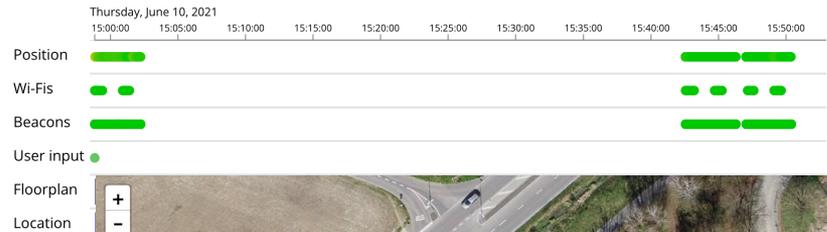
## Summary

Start time	10/06/2021, 14:58:52 BST	Bundle ID	com.indooratlas.androidagent 1.0
Session duration	1 h 22 min 54 sec 839 ms	Operating system	ANDROID 10
IndoorAtlas SDK version	3.4.6		

## Identified issues

No issues detected!

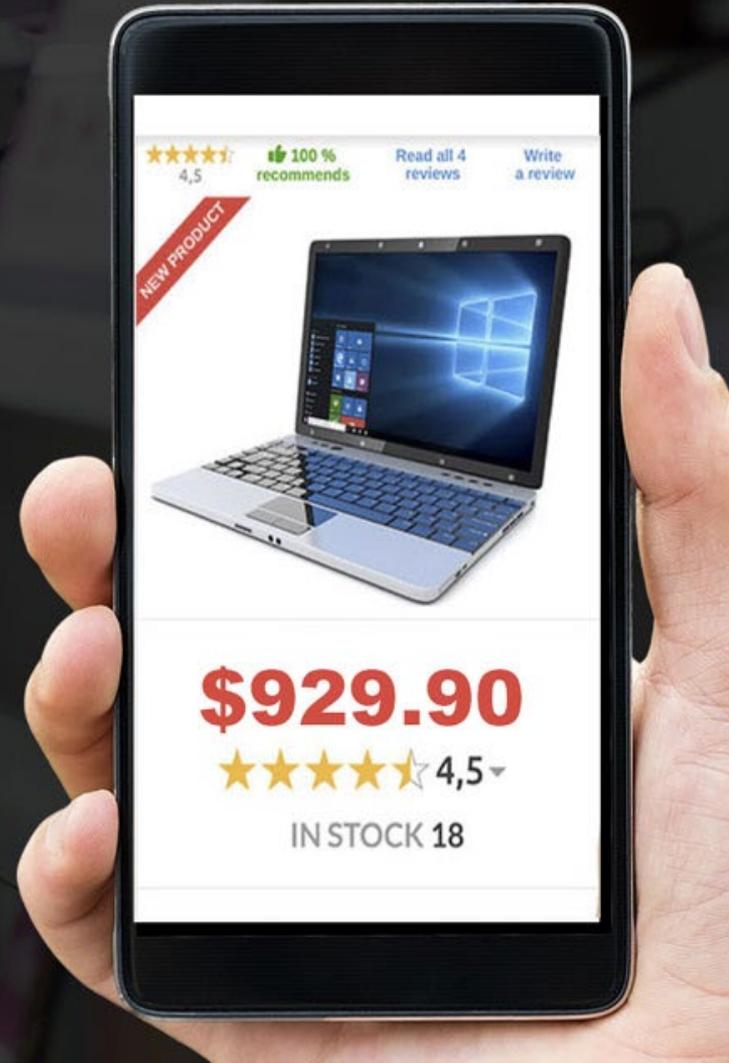
## Timeline



# IMPROVING EXPERIENCE IN THE REAL WORLD



**Electronic Shelf Labels**  
Enhanced Shopping Experience

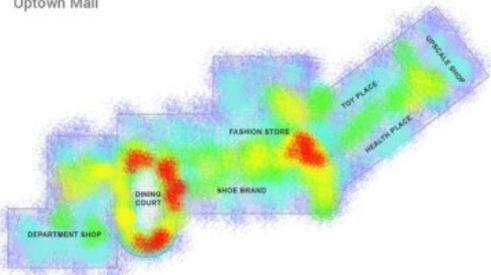


A close-up photograph of two hands, one from the left and one from the right, with fingers extended to form a square frame. The background is a blurred, warm-toned indoor setting. The text 'WLAN ANALYTICS' is centered within the square frame.

# WLAN ANALYTICS

# Detailed Heatmaps & Location Analytics

Uptown Mall



Average Dwell  
59m

Total Visits  
12,024

## Upper Level Centre

28% OF TOTAL TIME  
3,358.6h TIME SPENT

9,428 VISITS  
22% DID NOT VISIT

## Lower Level Centre

25% OF TOTAL TIME  
3,007.7h TIME SPENT

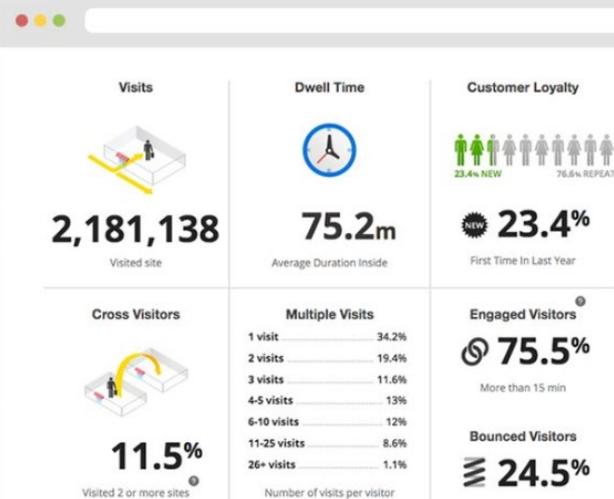
8,584 VISITS  
29% DID NOT VISIT

## Upper Level

17% OF TOTAL TIME  
2,000.4h TIME SPENT

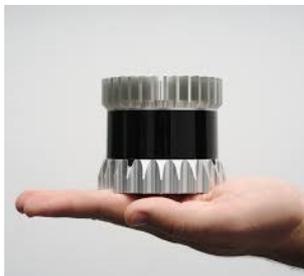
7,968 VISITS  
34% DID NOT VISIT

aruba



# Aruba WLAN with LiDAR

- Skyfii's LiDAR system can follow the path of individuals over a long period of time and space.
- Multiple sensors work together to follow passengers over multiple touchpoints, like check in & security or in retail Malls.
- Live maps enable retailers and mall operators Live View insights into how people are using their space.
- Blending this with the Aruba Central Location Engine Api can enhance the data by including historic information: dwell time, loyalty & site to site comparison



# IoT PEOPLE COUNTING (Warner)

# EnOcean

Self-powered IoT

## 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)



EnOcean

Self-powered IoT

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Enterprise company

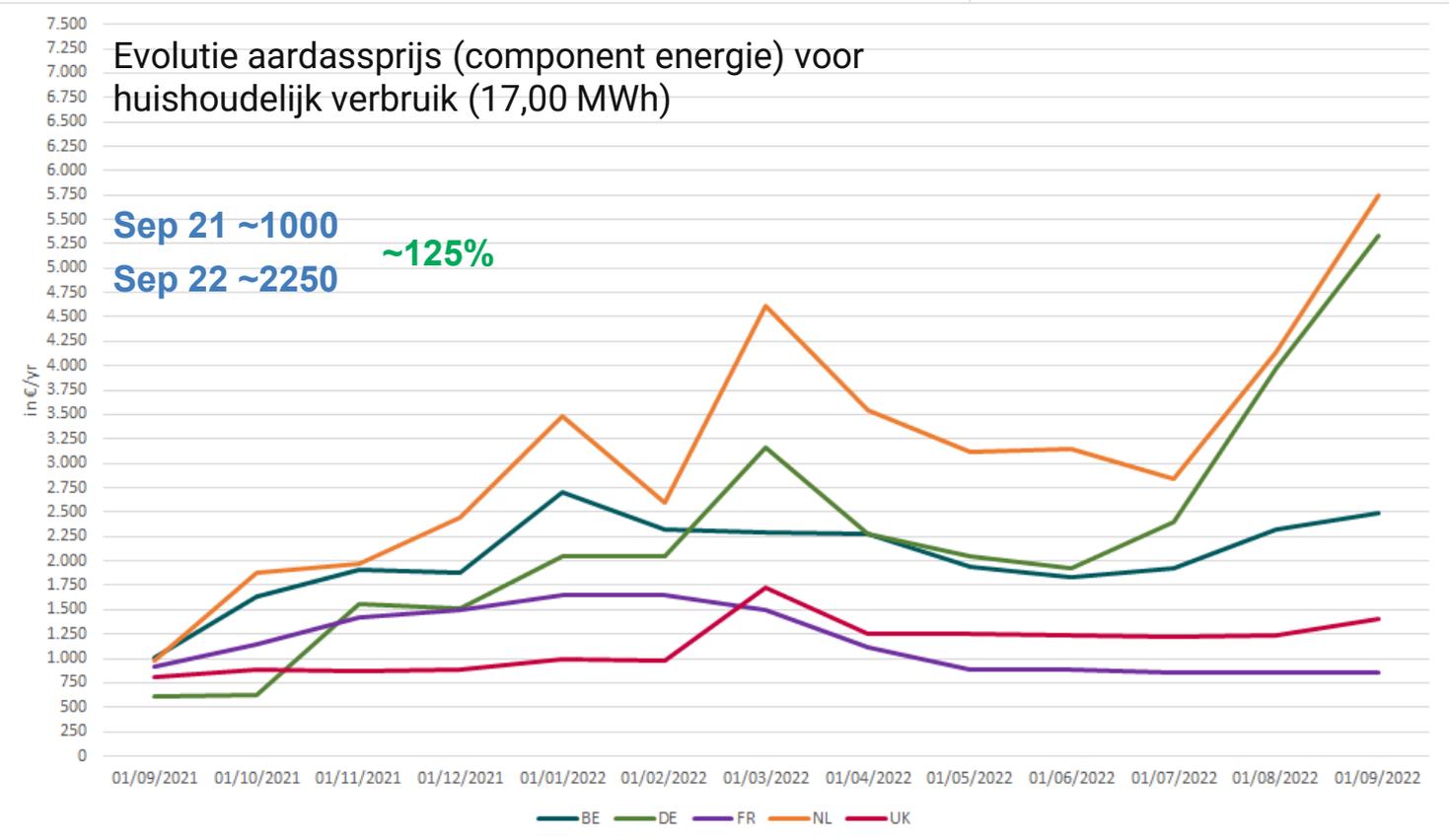
# Sustainability of Self-powered IoT

## Evolutie elektriciteitsprijs (component energie) voor huishoudelijk verbruik (3,5 MWh)



first step towards ca  
Pushing retailers to  
consumption and re

## Evolutie aardassprijs (component energie) voor huishoudelijk verbruik (17,00 MWh)

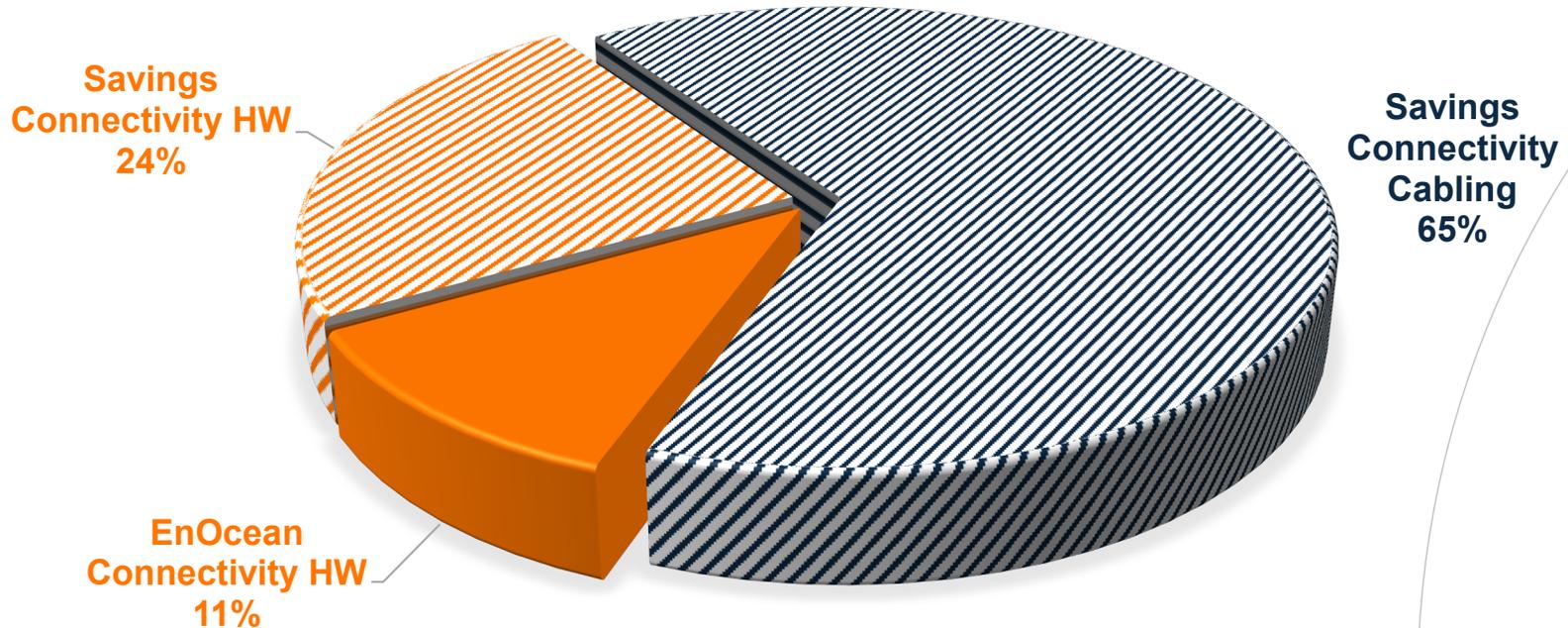


# Cost of infrastructure

Integrated solution with access points



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



Source: E-Shelter



# ENOCEAN ENERGY-HARVESTING IOT



- 800/900 MHz USB adapter plugs into Aruba access point for “lick-and-stick” IoT
- Supports >400 vendors and >5000 IoT devices
- ISO standard protocol
- Maintenance-free energy harvesting eliminates batteries, saves >\$750 per device on truck-rolls and labor over life of IoT device





### Smart Office

- Lighting Control
- BMS
- Office Occupancy
- Air Quality
- Energy Monitoring

### Assisted Living

- Occupancy Monitoring
- Behaviour Analysis
- Carer Synchronisation



### Environmental Monitoring

- Outdoor Air Quality
- Vibration Monitoring
- Noise Monitoring
- Agriculture Soil Quality

### Smart Manufacturing monitoring

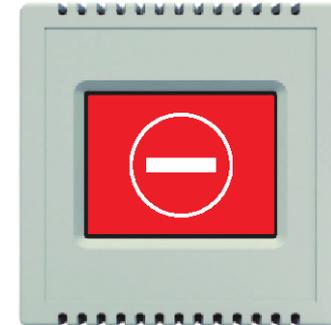
- Condition Monitoring
- Data Collecting
- Anomaly Detection
- Predictive Maintenance



# Use Case – Gatwick Airport

**Real time continuous monitoring of high value assets.**

- Cloud connected
- Wireless water leak sensing
- Direct water valve shut off
- Alert via SMS or email via cloud app
- **New automation of facilities management for cleaning**
- **Adapting existing systems for Covid-19 regulations and controls**



# SMART SPACES



## Smart Workplace (Room Booking, Desk Sharing, Space Utilization)

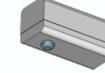
*25% space savings usually by shared desks*



Room Occupancy, People Activity



Desk Utilization



People Counting



Desk / Room Status



## Energy Saving

*Up to 30% energy savings by single room control*



Heating Valve (thermal powered)



Presence & Window Status



Room Thermostat



Switching, Dimming & Power Measurement

## Health & Cleaning

*15% higher employee productivity by healthy environment*



Air Quality: CO2, VOC, Noise



Utilization of Room/Table/Device



Dispenser Level



Service Call



For a concrete project, EnOcean supports the choice out of 5000+ units, see [www.enocean-alliance.org/products](http://www.enocean-alliance.org/products)

# ENERGY SAVING

## Benefit & Devices



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



Heating valve controller  
(thermal powered)



Smart Metering &  
Switching Plug



Thermostat



Presence  
detection



Window  
status



Switch

# EnOcean

Self-powered IoT

A close-up photograph of two hands, one from the left and one from the right, with fingers extended to form a square frame. The hands are positioned as if they are about to hold something or are in the process of releasing it. The background is a blurred, warm-toned environment, possibly an indoor setting with soft lighting. The overall mood is one of anticipation or a question.

**SOME MORE?**

# ABB ABILITY® ROTATING EQUIPMENT MONITORING



How Switzerland's biggest hydropower producer is going digital

<https://www.youtube.com/watch?v=eBTPWBU9Hew>

# IMPROVING EXPERIENCE IN THE REAL WORLD

Digital Door Locks  
Enhanced Hospitality  
Experience

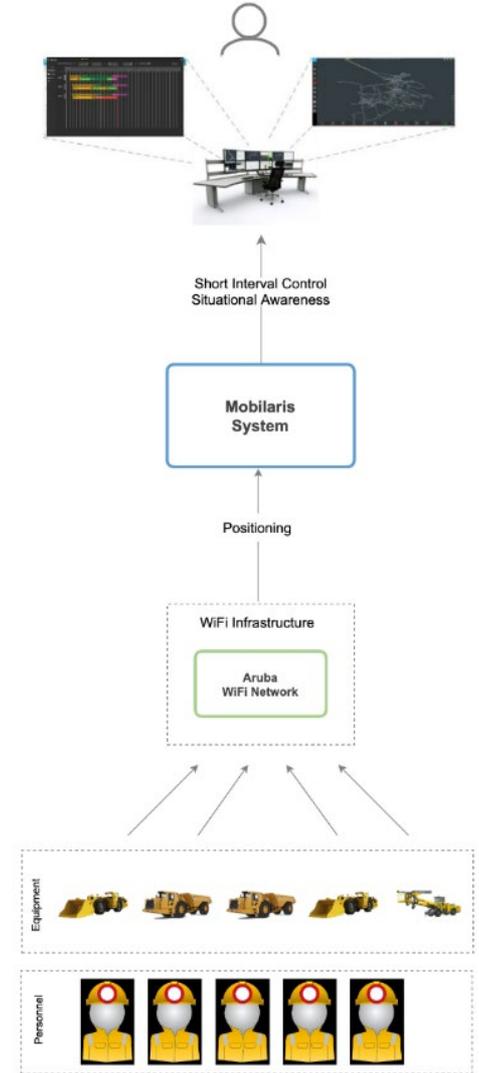


# AMBERBOX GUNSHOT DETECTOR



- Three sensors in one:
  - Percussion sensor
  - Muzzle flash detector
  - Gunshot audio sensor
- Spacing density is the same as Aruba APs
- Power and data via Aruba AP USB port
- Compatible with existing Aruba 802.11ac/ax APs with a USB port

# MOBILARIS WORKER & MACHINE COLLISION AVOIDANCE



# How It Fits Into Aruba ESP Analogy!



## BUSINESS OUTCOME





**ARE YOU READY FOR IOT?**

**aruba**  
a Hewlett Packard  
Enterprise company

# MAYBE WE CAN HELP?



Ready for  
Wi-Fi 6E



Embrace  
and secure  
IoT



Innovative  
Wi-Fi location  
(OpenLocate)



Cloud  
Management IoT  
Operations



Full insights  
into device &  
user  
experience

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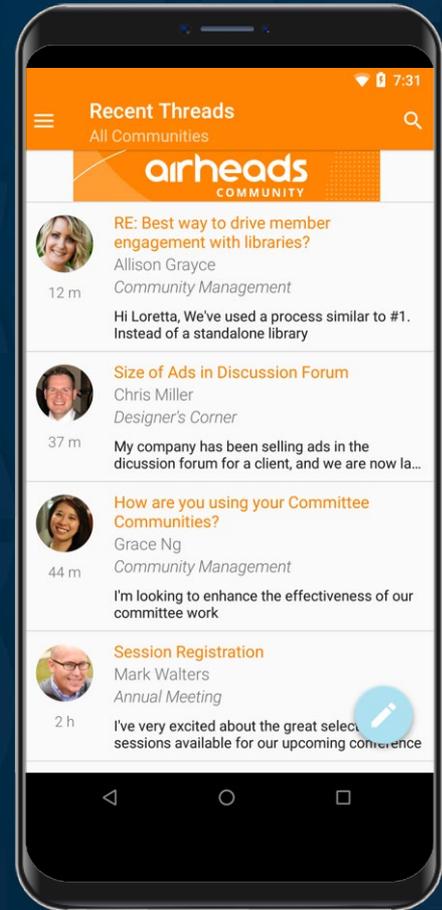


# airheads

## COMMUNITY

Still not part of the Airheads Community?

Sign up today:  
[www.community.arubanetworks.com](http://www.community.arubanetworks.com)



# atmosphere'22 BELGIUM

## Thank you



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