

A photograph of an industrial construction site at night. The scene is illuminated by warm yellow lights, highlighting a complex network of metal scaffolding, pipes, and structural elements. A prominent feature is a large, curved pipe that runs across the middle ground. In the background, a tall, illuminated structure with a platform and lights reaches towards a dark blue sky. The overall atmosphere is one of active industrial development.

NW TECS

Connected Construction – Customer in the Middle East

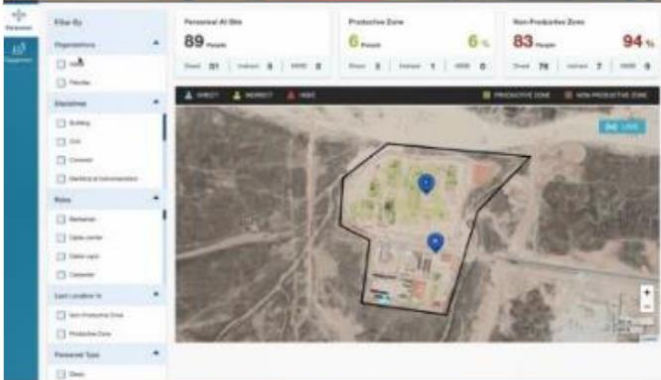
Enabling monitoring and management construction sites



NW TECS
Activity
Connecting with intelligence

Abeaway Tracking Solutions

Connected Construction Solution

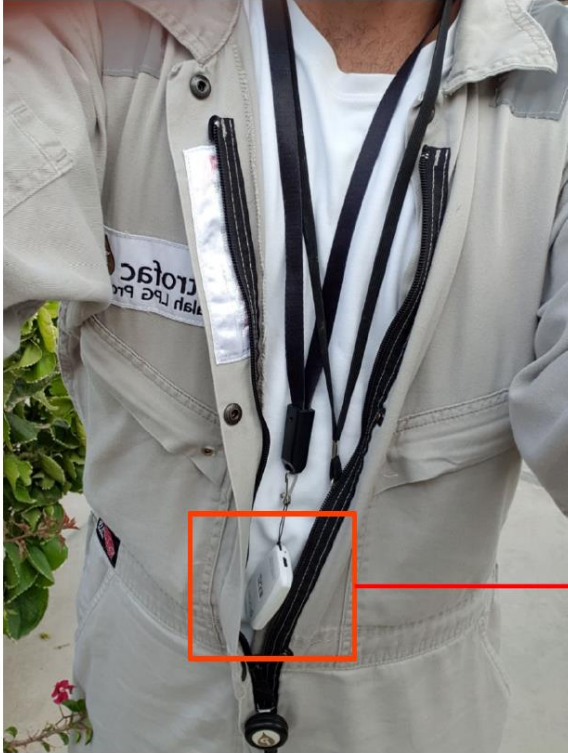


- A major Service Provider for the oil & gas production and processing industry has selected Actility to deploy an employee tracking solution to ensure both worker optimization and safety, also to use trackers to monitor and secure their heavy machinery.
- The Connected Construction solution is based on Accenture's application, Actility's ThingPark Enterprise platform, gateways and Abeeway trackers/tags.
- More than 1000 Abeeway ATEX 2 trackers/tags, 30 industrial trackers and 7 gateways were deployed at a construction site in Oman.



Benefit: enhanced worker safety and increased operational efficiencies

On-site implementation - Devices



Master trackers are hooked to machines mirrors



Workers wear trackers hanged on their neck and inside an overall



On-site implementation - Gateways

- LoRaWAN coverage extremely good given the site dimension
- 5 Gateways installed for capacity and redundancy purpose



Cisco router in a cabinet



Cisco LoRa gateway

Cabinet with router



Cisco LoRa gateway

Actility

On-site implementation - Beacons



Bluetooth beacons hooked near turnstiles to detect walking site entry / exit

Bluetooth beacons hooked near to a speed hump to detect entry / exit by car



Bluetooth beacons hooked to an entrance gate to detect site entry / exit by car



Activity

A versatile catalogue of trackers to match a wide variety of vertical applications



Industrial tracker

Large battery, hardened casing, high precision tracking : designed to last
*IP66, 19Ah type D battery,
Up to 3 years battery life in motion tracking mode at 120 position per day.*



Micro tracker

Light, handy, yet powerful. Enables you to track and protect things (or people and pets) of value.
IP 64 – ATEX, 450mAh rechargeable battery
Buzzer, multimode button (SOS,...)
90 days battery life at 40 fix per day with indoor/outdoor positioning.*



Compact tracker

Solid and lightweight, built for heavy-duty tracking.
*Asset tracking and management, even in the harshest environments.
3xAA 2.7Ah replaceable batteries, IP 67,
ATEX*, temperature & motion sensors
Up to 6 years battery life in LP GPS at 24 fix per day*



SmartBadge

*Sleek, smart, and multi-functional.
ideal for worker protection and zone alerts
IP64, ATEX*, Buzzer with 70dB high volume,
1050mAh rechargeable battery, multimode button
90 days battery life at 60 fix per day with indoor/outdoor positioning.*

All our trackers are LoRa Alliance certified and ready to be deployed worldwide - EU868, US915, AS923

Actility

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* ATEX Zone 2 Certified
ATEX Zone 1 Certification pending

Connected Construction Application

CONNECTED CONSTRUCTION

Last Update Time: July 2, 2019 6:30 PM | Industry X 0 Connected Construction Superintendent

Dashboard | **SITE PLAN** | MASS MOVEMENT & ZONE MANAGEMENT | PRODUCTIVITY | PERSONNEL LIST

Personnel | **Equipment** | **Material** | **Schedule** | **Issues Log** | **Permit** | **QA & QC**

Filter By

- Organisations
 - Organisation 1
 - Organisation 2
- Disciplines
 - Engineering
 - Management
 - Mass Power
- Roles
 - Foreman (Admin Building)
 - Foreman (Control Building)

Category	Direct	Indirect
Total Manpower At Site	42 People	
	Direct 40	Indirect 2
Productive Zone	19 People	45 %
	Direct 18	Indirect 1
Non-Productive Zone	23 People	55 %
	Direct 22	Indirect 1

Legend: DIRECT (Blue), INDIRECT (Yellow), HSSE (Red), PRODUCTIVE ZONE (Green), NON-PRODUCTIVE ZONE (Red)

Map: Aerial view of the construction site with a black boundary. A blue location pin shows 15 people. A "LIVE" status indicator is present.

Application SOS management



Workers can click 3 times to launch an SOS.

It triggers a process to intervene (SMS to security manager, etc.)

The screenshot displays a list of SOS events. The top event is expanded to show details:

- SOS / Help** | 15 October 2018 17:20
- Progress: New (filled) - Acknowledged (filled) - Closed (empty)
- Help alert received for **Bulut Güldogan (ID: 104826)**
- Last location: (16.964083,53.981784999999995) at 15 October 2018 17:23
- Comment added on Closure: Message received.
- Timeline:
 - New** | 17:20 15-Oct-2018 | Bulut Güldogan
 - Acknowledged** | 23:42 11-Jan-2019 | Bassett Jeff
 - Closed** | 18:40 15-Feb-2019 | Accenture Digital

Activity



Connected Construction Application

- Zoom on site – Green zone represents productive areas – Red zone represents non-productive areas (toilets, rest rooms, cantina, etc.)

The screenshot displays the Connected Construction Application interface. On the left is a vertical navigation menu with icons for Schedule, Issues Log, Permit, QA & QC, Documents, Job Handover, and Knowledge Management. The main panel is divided into two sections: a filter sidebar and a map view.

Filter Sidebar:

- Disciplines:** Engineering, Management, Mass Power (all unchecked).
- Roles:** Foreman (Admin Building), Foreman (Control Building), Foreman (Carpentry), Foreman (CMEI Rebar) (all unchecked).
- Zone:** Non-Productive Zone, Productive Zone (both unchecked).
- APPLY** button at the bottom.

Map View:

- Legend:** DIRECT (blue person icon), INDIRECT (yellow person icon), HSSE (red person icon), PRODUCTIVE ZONE (green square), NON-PRODUCTIVE ZONE (red square).
- Map:** Aerial view of a construction site with green and red overlays. A blue pin labeled '8' is highlighted with a callout box: "8 workers in this area Zoom-in will display exact workers position". Other blue pins are visible, including one labeled '9'. A box labeled 'workers' points to several blue person icons on the map.
- UI Elements:** A 'LIVE' status indicator, zoom controls (+, -), and a scale bar (20 m / 50 ft) are present.

Application Equipment management

The screenshot displays the 'EQUIPMENT LIST' section of the application. On the left is a navigation sidebar with icons for Dashboard, Personnel, Equipment, Material, Schedule, Issues Log, Permit, QA & QC, and Documents. The main content area features a 'Filter By' sidebar with expandable sections for Organisations (Organisation 1, Organisation 2), Equipment Type (Construction Vehicles), Equipment (Crawler Dozer, Excavator, Excavator, Loadall), and Inspection. To the right of the filters are three summary cards: 'Total Equipment At Site' with a value of 7, 'Ready to Use' with a value of 7, and 'Inoperable' with a value of 0. Below the 'Inoperable' card, it indicates '7 Inspection Expiring'. The bottom half of the interface shows an aerial site plan map with a legend for 'READY TO USE' (green dot), 'INOPERABLE' (red dot), 'PRODUCTIVE ZONE' (green area), and 'NON-PRODUCTIVE ZONE' (red area). A 'LIVE' status indicator is present in the top right corner of the map area.

Activity

A large industrial machine, possibly a generator or motor, with a prominent red horizontal band across its middle. The machine has a cylindrical body on the left and a complex assembly of pipes and components on the right. The red band contains white text.

Predictive Intelligence Platform Solution

Monitoring and management of industrial sites



Examples of Monitored Equipment



Air compressor



Motor Pump



Cold group



Refusion oven



**Turbine
Industrial fan**



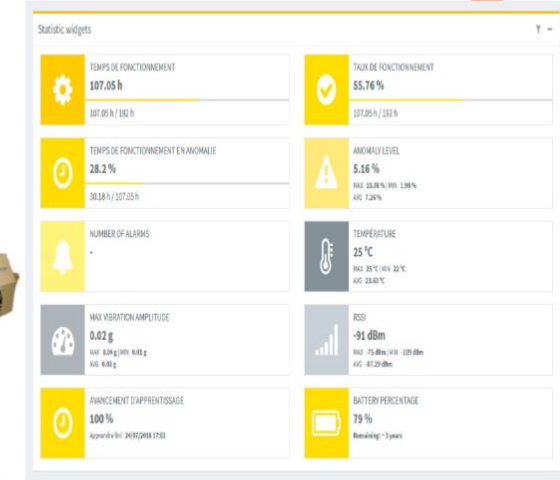
Air-handling units



Transformer



Tempering ovens



Actility

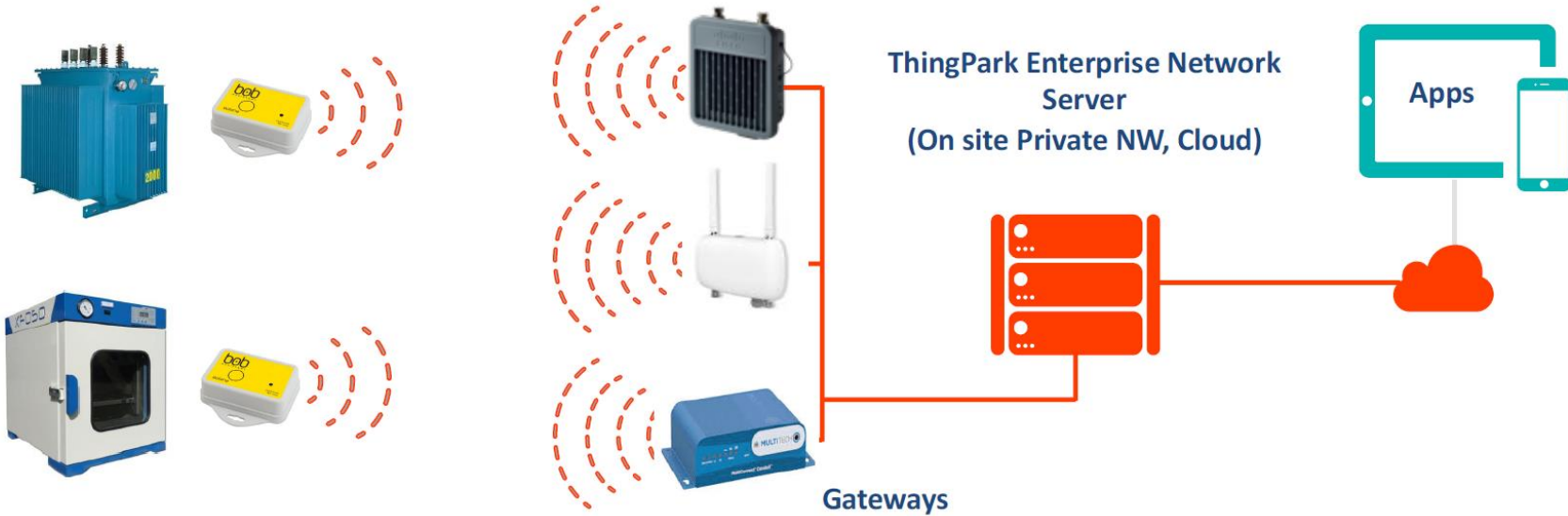


Examples of Monitored Equipment - Industry

Equipment	Water Treatment	Cement	Assembly line	Plastic Components	Mechanical Manufacturing	Waste treatment	Food manufacturing	Electronics	Power generation
Water Pump	X	X	X	X	X	X	X	X	
Air Pump	X	X	X	X	X	X	X	X	
Air compressor	X	X	X	X	X	X	X	X	X
Cold group			X	X	X		X	X	X
Refusion Oven								X	
Turbine		X	X	X	X	X	X	X	X
Air Filter	X	X	X	X	X	X	X	X	
Cold room							X		
Transformer	X	X			X				X
Air Conditioner	X	X	X	X	X	X	X	X	X
Mixer		X		X			X		



Actility's ThingPark LoRaWAN is the relevant solution for industrial applications



- Outdoor/indoor/deep indoor coverage
- 1 Low Power communication enabling 10 years battery life
 - 2 Native End-to-End encryption and authentication of communications
 - 3 Robust Radio technology Immune to interferences from Cellular, Wifi...
 - 4 Operation & Management of a highly scalable Network via a simple User interface
 - 5 Data Mediation Layer for seamless integration of the LoRaWAN Network to a 3rd party platform

Predictive Intelligence Solution - Embedded artificial intelligence

Turnkey solution to monitor machines 24/7

The device is equipped with a motion sensor to measure the vibrations along the X, Y and Z axes. It can identify faults via the vibration Fourier transform, which shows the vibratory signature.

When in operation, after learning: The device measures the equipment vibration periodically without sending a message. If all goes well, he sends a report every 6 hours with the summary of the measurements of this period.

In the event of a vibration anomaly, it sends an alert immediately. Some machines have several operating modes. It can learn these different modes of operation through artificial intelligence and identify them later, or even adapt to their changes.

Enables Industrial end customers to increase performance, safety and decrease machines shutdowns and work accidents.

Actility

Just drop me on your machine and I'll start immediately to monitor his condition. It's as simple as that..

Technical data
Dimension: 76 x 79 x 23 mm (fixing ears included)
Weight: 75g
Operating temperature: -30 ° to +70 °C



OBSERVER
Bob is intimately tied to the equipment to watch, it captures only vital data that reveal his health



SMART
It will then apply its analysis algorithms to turn data into accurate information to keep your equipment running well.



MAKING SENSE
In case of drift or unexpected problem, it will alert you directly to your smartphone, which will allow you to act and reduce downtime



SIMPLE
Bob is really simple to install, just put it on your machine, no wiring or configuration needed.



AUTONOMOUS
Bob will operate for several years without recharging (battery included)



CONNECTED
BOB communicates using the standard LoRa® protocol: perfectly adapted to IoT, to long-distance communication with very low power consumption.




SECURED
Your production data are safe with BOB ! It retains them and sends only encrypted reports, resulting of its analysis, to the cloud



INDUSTRIAL
Bob is very robust (IP68) and designed for industrial use cases

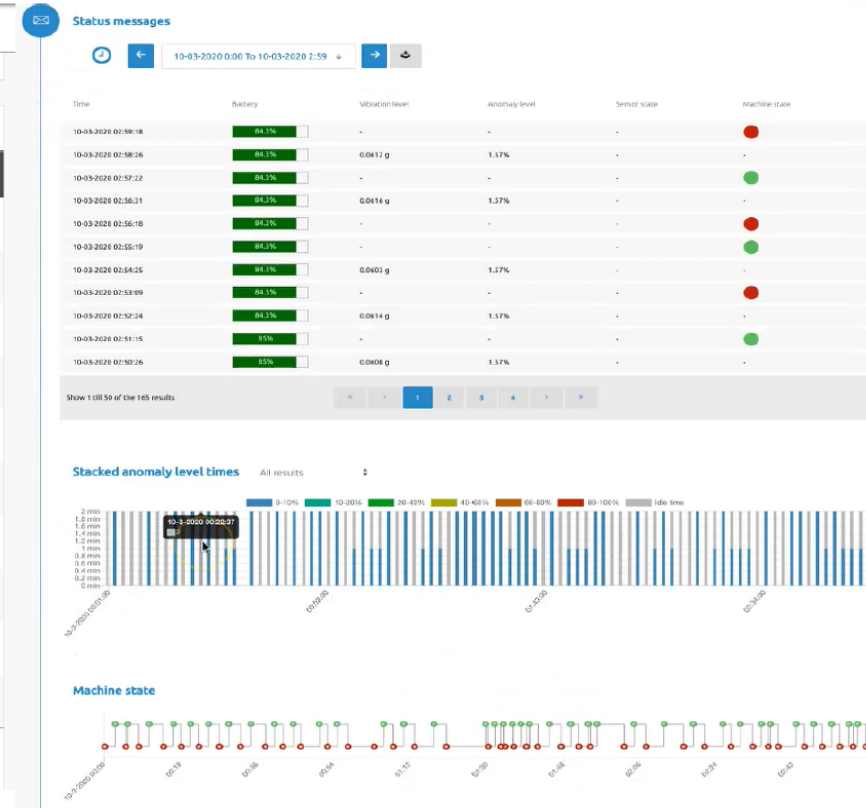
ThingPark Enterprise - Predictive Intelligence Solution Dashboard

Information Status Applications Location Radio Traffic History Radio Statistics **Last 10 Packets** No uplink activity alarm settings



UL/DL	FCNT	Timestamp	Content	LoRaWAN™ Port	RSSI	SNR	ESP	SF	BEST LRR ID
↑	5.588	10/03/20 - 23:12:11	DATA	1	-58 dBm	7 dB	-58.79 dBm	SF12	10-00-02-19
↑	5.587	10/03/20 - 23:10:29	DATA	1	-58 dBm	9.25 dB	-68.49 dBm	SF12	10-00-02-19
↑	5.586	10/03/20 - 23:09:34	DATA	1	-56 dBm	7.25 dB	-66.75 dBm	SF12	10-00-02-19
↑	5.585	10/03/20 - 23:08:28	DATA	1	-74 dBm	10.5 dB	-74.37 dBm	SF12	10-00-02-19
↑	5.584	10/03/20 - 23:08:09	DATA	1	-54 dBm	6.75 dB	-64.83 dBm	SF12	10-00-02-19
↑	5.583	10/03/20 - 23:07:40	DATA	1	-88 dBm	8.75 dB	-88.54 dBm	SF12	10-00-02-19
↑	5.582	10/03/20 - 23:06:27	DATA	1	-52 dBm	11 dB	-62.33 dBm	SF12	10-00-02-19
↑	5.581	10/03/20 - 23:05:22	DATA	1	-82 dBm	9 dB	-82.51 dBm	SF12	10-00-02-19
↑	5.580	10/03/20 - 23:04:28	DATA	1	-50 dBm	9.5 dB	-60.46 dBm	SF12	10-00-02-19
↑	5.579	10/03/20 - 23:03:30	DATA	1	-82 dBm	7.75 dB	-82.67 dBm	SF12	10-00-02-19

SHOW ALL



Activity ThingPark Enterprise Backend

Activity Predictive Maintenance Frontend Application

Use case BASF industrial metering



Challenge

How to manage the **operating conditions** in medium/low voltage street cabinets

Solution

LoRaWAN based network with :

- 25 x Pulse sensors by ATIM (ACW-DI)
- 2 x Kerlink Wirnet gateways
- Private LoRaWAN network powered by ThingPark Enterprise OCP
- Factory Systems Gallium IoT industrial PC
- Actemium as System integrator
- Wonderware application software for data monitoring

Benefits

- In case of **unauthorised opening** of the street cabinet, authorities can be notified
- Internal sensors can **detect heating** of components and **prevent fires**



Actility

Thank you

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