IBM **Watson IoT**

IBM

“The Internet of Things is going to be a lot like the internet except bigger….”

Gartner top strategic technology trends for 2017

1. AI and advanced machine learning
2. Intelligent Applications
3. IOT
4. Virtual and Augmented Reality
5. Digital Twin
6. Blockchain and distributed ledgers
7. Conversational systems
8. Mesh app and service architecture
9. Digital technology platforms
10. Adaptive Security architecture

IoT is driving disruption of the physical world

Accelerating advances in technology

- Cognitive Analytics
- Cloud Computing
- Pervasive Connectivity
- Product Lifecycle Management
- Embedded sensors

Are transforming every part of business

- Boosting operational performance and lowering costs
- Driving engagement and customer experience
- Creating new products and business models

A major grocer is multiplying the effectiveness of their customers' precious time

A mesh of shopping assistant utilities helps shoppers plan and execute their busy life…

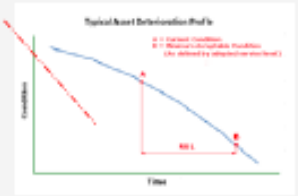
And creates a non-intrusive way for the grocer to interact….

A major international airport….

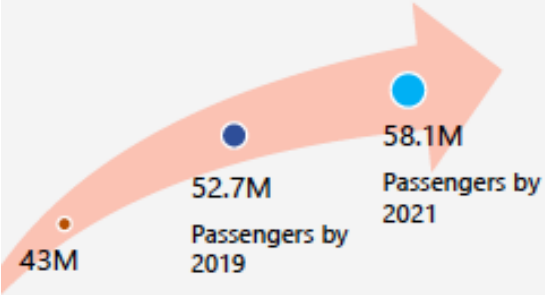
Passenger Growth

Impact on Airport

Impact on Asset Health



Maintenance Impact



118,000 PAX / Day in 2016
159,000 PAX / Day in 2021

Shorter Maintenance Windows

Pit Stop Precision & Efficient Maintenance

Intelligent Assets

Understanding

"I am not feeling well today. My sensors are telling me I am overheating and have unusual vibration. My last service was four days ago and the service completed was a motor replacement. My next scheduled maintenance is in three weeks"

Reasoning

"Based on past failure conditions, I know I am going to fail within the next (3) Days!"

Learning

"I suggest you replace my drive bearing"

WHY?

Value Proposition

Extend Asset Life

- Improve return on investment

Improve Reliability

- Minimize downtime/failure
- Increase service availability

Optimize Maintenance

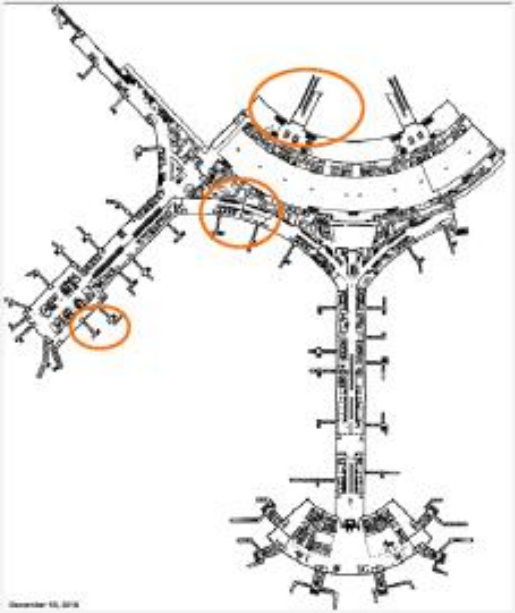
- Optimize asset performance
- Reduce operating cost

Customer Experience

- Reduce Customer Impact
- Best Airport in the World

Project scope

The airport teamed with EDI, Arrow Electronics and IBM to implement an IoT pilot project which will deliver real time data for asset health monitoring and predictive failure analytics. The pilot will be focused on three key customer facing systems:



1

People Moving Devices
- Moving Walk
- Escalator

2

Passenger Boarding Bridge
- Potable Water Cabinet

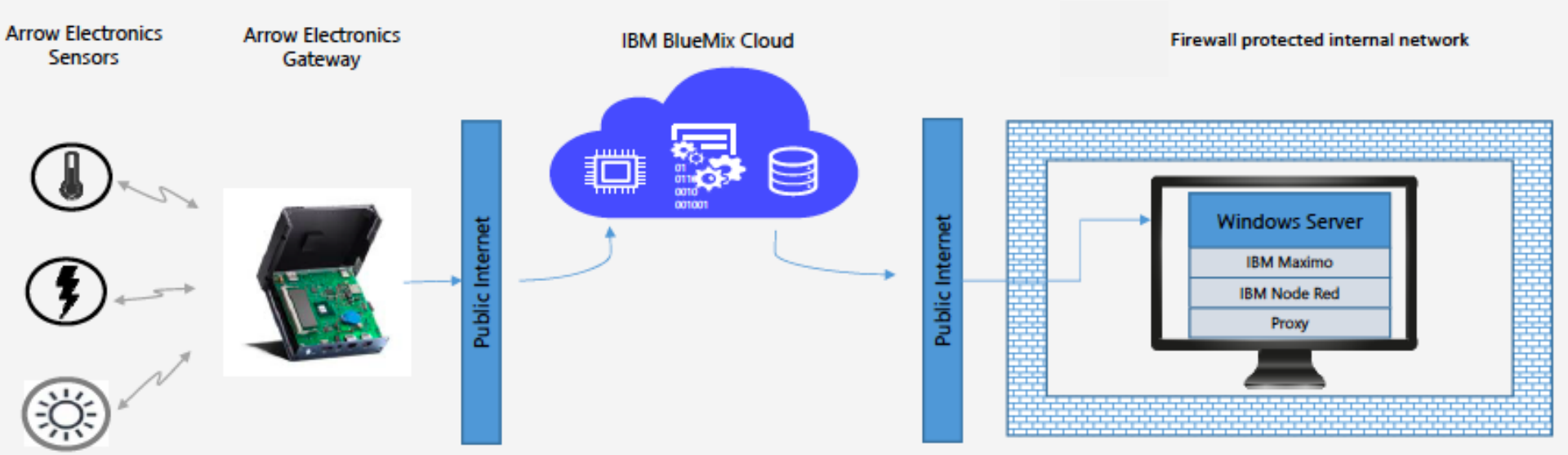
3

Baggage Handling System
- Power Turn Conveyor

Project architecture

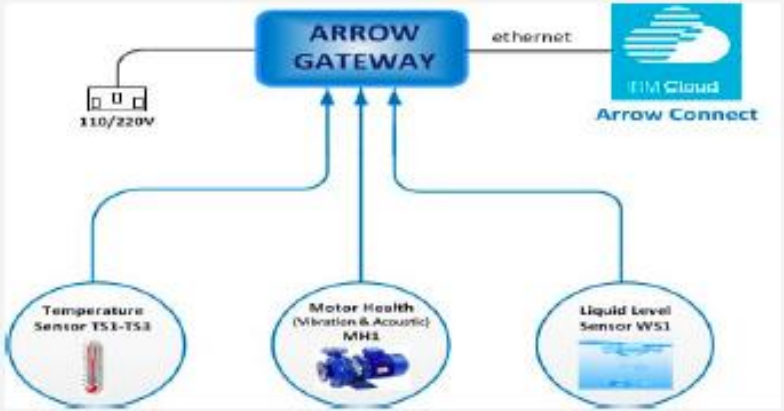
Publish and Subscribe based flow

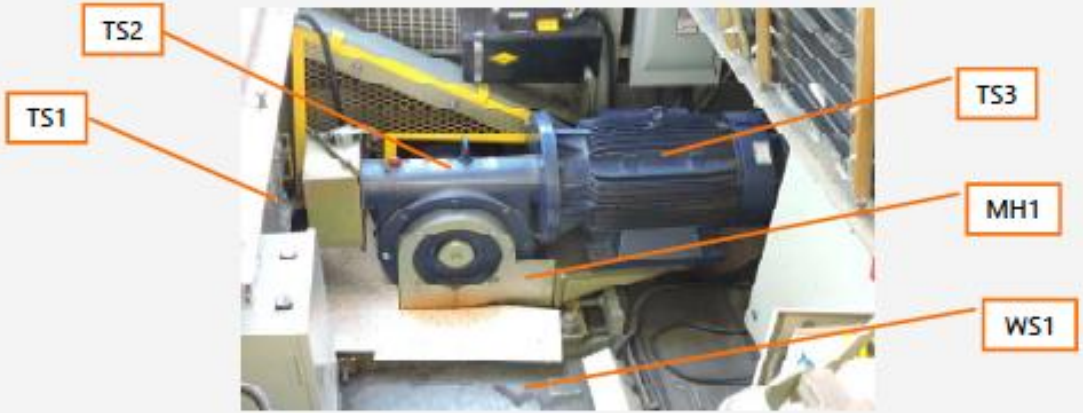
- Sensors connect to Arrow Connect Gateway – Arrow Connect Gateway **publishes** sensor messages to IBM Cloud
- Sensor data is rendered into dashboards using IoT Platform and Node Red
- Node Red used to apply logic and rules to the data so that automatic work orders are produced in Maximo
- Asset meter objects collect data from the IoT Platform by subscribing to meter events
- Data is stored in a cloud based database for longer term historic analysis (Required for predictive analytics)



Implementation – moving walk sensors and communication

Device	Description	Qty
GW1	Gateway	1
TS1	Ambient Temperature	1
TS2	Gearbox Temperature	1
TS3	Motor Temperature	1
MH1	Motor Vibration/Acoustic	1
WS1	Fluid Leakage	1
ENC1	IP-66 Enclosure	1
PS1	DIN Rail Power Supply	1





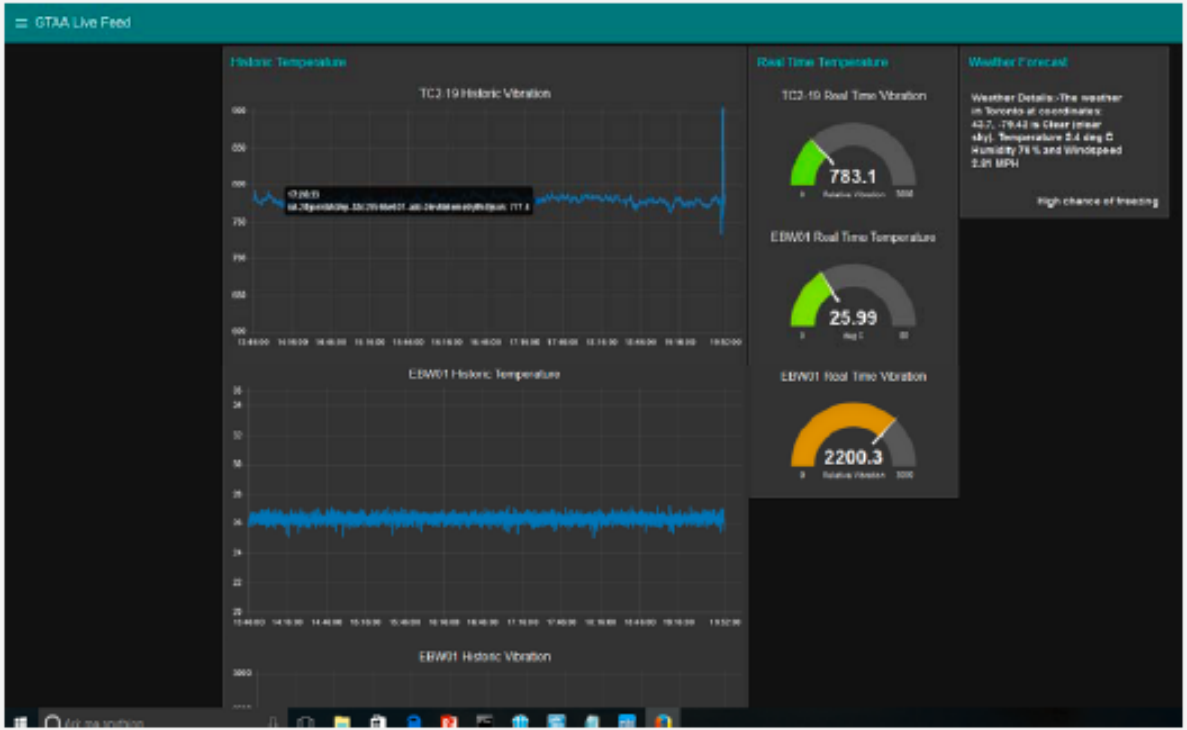
Implementation – escalator sensors and communication

Device	Description	Qty
GW1	Gateway	1
TS1	Ambient Temperature	1
TS2	Gearbox Temperature	1
TS3	Motor Temperature	1
MH1	Motor Vibration/Acoustic	1
WS1	Fluid Leakage	1
ENC1	IP-66 Enclosure	1
PS1	DIN Rail Power Supply	1

Implementation – PWC sensors and communication

Device	Description	Qty
TS1, TS2	Heating Pad Temperature	2
TS3	Pipe Temperature	1
TS4	Backflow Cabinet Ambient	1
TS5	Cabinet Ambient	1
WS1	Drain Leak Detection	1
FS1	Water Flow Detection	1
DS1..DS2	Door Open Sensors x2 (Left, Right)	
GW1	SBC/Sensor Gateway	1
ENC1	IP-66 Enclosure	1
PS1	DIN Rail Power Supply	1

Current status of the project



- Sensors have been installed and tested on the BHS, PWC, two PMD's
- Sensor data is being published to the IBM IoT Platform (Bluemix)
- Dashboards present real-time and historic views of the data
- Rules defined to automate the generation of work orders in Maximo and alerts via email

Aerialtronics and Watson IoT Platform power the first commercial drones featuring cognitive computing capabilities

By putting Watson IoT capabilities into flight, Aerialtronics can help companies open up expansive number of possibilities to gain insight in places not easily accessible to humans. Possible scenarios include helping organizations across multiple industries, from monitoring city traffic patterns to inspecting wind turbines, oil rigs and cell tower optimization.

Ricoh is embedding cognitive capabilities into its whiteboards with the help of IBM Watson.

Ricoh's Cognitive Whiteboard orchestrates, captures and analyzes print, audio and visual data, leveraging Watson Natural Language Classifier APIs. This leads to better collaboration and knowledge retention thanks to Watson IoT's ability to link voice conversation and whiteboard interactions, and then share the transcripts with meeting participants -- translated if needed !

Local Motors Debuts "Olli", the first self-driving vehicle to tap the power of IBM Watson

Olli is the first vehicle to utilize the cloud-based cognitive computing capability to analyze and learn from high volumes of transportation data, produced by more than 30 sensors embedded throughout the vehicle. The platform leverages four Watson developer APIs -- Speech to Text, Natural Language Classifier, Entity Extraction and Text to Speech -- to enable seamless interactions between the vehicle and passengers.

Whirlpool connected appliances provide new link from customers to warranty services, product design and automated retail replenishment

70% decrease expected in customer service call Time – improving service levels and customer sat.

50% reduction projected in service and parts provision costs

Reduces IT costs with cloud-based hosting and solution as a service delivery

Nairobi’s Living Roads project illustrates how one IoT app, on one device, can change business models and public services

IBM Research Africa created cognitive transportation data hub that uses smartphone sensor data to monitor road infrastructure and traffic conditions and provide fleet analytics.

IBM Watson IoT Platform provides the interface between the smartphones and IBM InfoSphere® Streams, which enables real-time assessment of vehicle location and activity, along with other KPIs

A major Canadian water utility

By consuming streaming quality data, asset performance information and SCADA systems information this utility is identifying anomalous trends in water quality in order to respond before they have a problem….

Getting started with IOT

Market Drivers And Barriers

Four Market Drivers

- Expanded internet connectivity
- High mobile adoption
- Low-cost sensors
- Large IoT investments

Four Barriers

- Security concerns
- Privacy concerns
- Implementation problems
- Technological fragmentation

Thank You