



What Is The 'Internet of Things'?

And How Can It Help Your Operations?

Technology
Monday, February 27, 2017
3:00 PM - 3:45 PM

Robert Burgh – Nexcor Technologies, Inc.
Paul Hilton – Zebra Technologies, Inc.

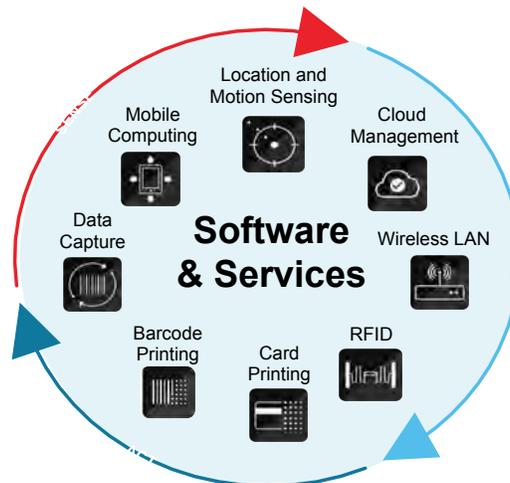


What is 'Internet of Things'?

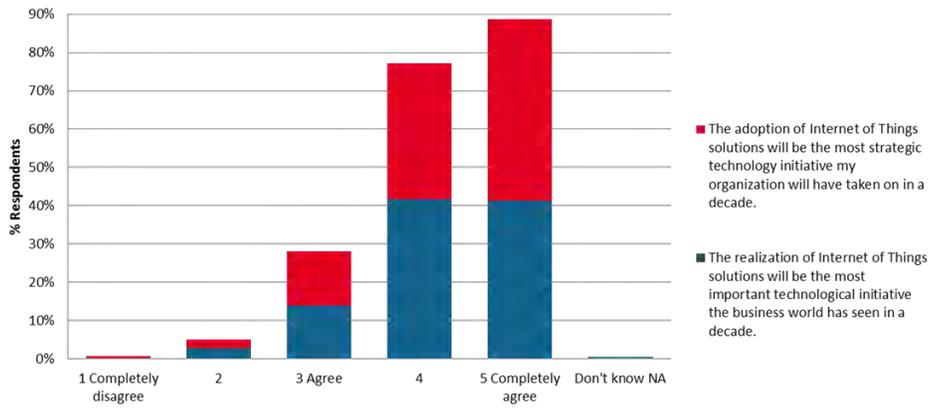
'Internet of Things' = IoT



Enterprise IoT = Enterprise Asset Intelligence



Impact of IoT on Enterprise & Industry



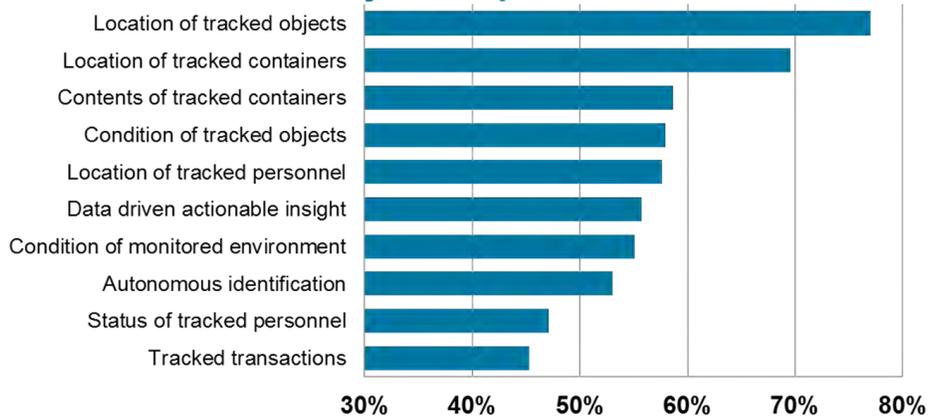
Nearly 97% of respondents agree that IoT is the technology initiative of the decade



Forrester Consulting Survey 11/14, Internet of Things Solution Deployment



Functionality IoT Expected to Deliver



Forrester Consulting Survey 11/14, Internet of Things Solution Deployment



Specifically - What is IoT?

The “Internet of Things”

- IoT and IIoT – “Industrial Internet of Things”
 - Part new technologies
 - Part new ideas
 - Part hype
- Key Point?
 - Solutions and Information in New Ways



What do we mean?

For our discussion:

“Gaining using information from network connected sensors”

- Any type of network:
 - Wireless, Wired, Cell, etc.
- Any type of sensor:
 - Anything that can be measured, including images.



New Technologies

Speed and reliability

Information gathering has become much less expensive and way more reliable than at any time in the past:

- **Storage costs:**
 - 1/10,000,000 the cost of 30 years ago
 - 1/10,000 the cost of 10 years ago
- **Data Transmission costs:**
 - 1/1,000 the cost of 10 years ago
- **Processing Power and Sensors:**
 - Can't really compare to the past



170mb Tape vs 10TB HDD



Seagate 10TB
IronWolf 7200
\$399.99

62,500 Tapes/HDD



New Tech = New Ideas

or New Ideas Gave Us New Tech?

IOT's opportunities:

What is available now to anyone with a commitment to take advantage of turning available data into meaningful information?

“Recording and transmitting data in ways that were only previously available to the military or the imaginations of Sci-Fi writers.”



Is this really all new?

Maybe or Maybe Not

Controls Automation has been around since the 1960s.

Is it the same thing?

“Sort of” or “Not really”?



What Really Makes the IoT, “The IoT”?

- Flexibility – Measuring and Controlling in New Ways and Disparate Systems
- Low Entry Cost – Wasn't Possible or Feasible that Long Ago
- Connectivity to Multiple Systems
- Typically Low Risk / High Reward



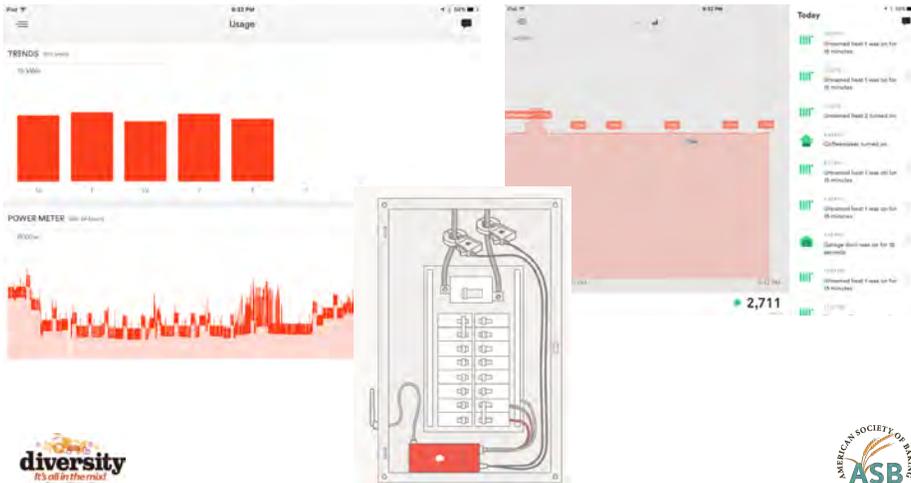
Examples – Silly to Sublime Door – UGA Engineering Students



diversity
It's all in the mix!

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASB

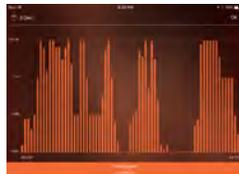
Examples – Silly to Sublime Home Power – Electrical Harmonics



diversity
It's all in the mix!

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASB

Examples – Silly to Sublime Equine – Measuring Show Jumping



Back to the Definition of IoT

To paraphrase Supreme Court Justice Potter Stewart:
“I can’t clearly define the Internet of Things but I know it when I see it”.

- More flexible than the typical Automation Control system.
- Tends to be simple, quick and low cost.



Bakeries Need Information

Production, Maintenance, QA, Sanitation are affected by constantly changing conditions in the plant.

Examples:

- Air Pressure
- Temperature
- Humidity
- Vibration
- Light
- Counts
- Hours
- Motion

And Many More Available!



Equipment Monitoring

Predictive Maintenance

- Vibration
- Power Draw
- Thermal (IR)
- Unit Counts



Field IoT

Sensors added to a display is able to identify a loyalty shopper is near, engage them, track their activity



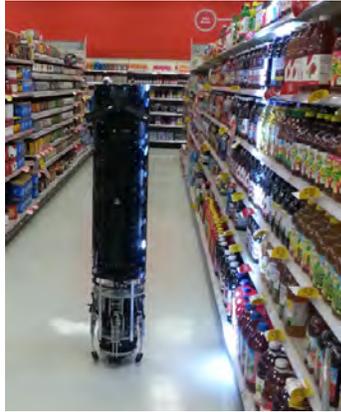
Field IoT

Analytics added to a merchandising workflow is able to determine:

- Planogram Compliance
- Pricing & Promotions
- Out of Stocks
- And more



Field IoT



Robotics

Fixed or Semi-Fixed Mounted Cameras



Field IoT

Smart Refrigeration Solutions with Bosch XDK sensor to collect up to 14 different data points including:



- Temperature
- Entries into Cooler
- Location
- Orientation and more



Field IoT

NFL Next Gen Stats



Getting Started

- **Start with a goal**
 - Choose several items to measure
 - Determine where to measure
 - How to measure – what sensors are available
 - Connectivity – Wifi or Wired to plant network
 - Security – Include it in from the start!
 - Data Storage – Cloud or in house
 - Analysis – turning data into information



Thank You!



*Nexcor
Technologies*

Paul Hilton
Zebra Technologies
+1 317-506-7742
Paul.Hilton@zebra.com

Robert Burgh
Nexcor Technologies, Inc.
+1 770-831-9191
Robert.Burgh@nexcortech.com

