

Energy & Store  
Development Conference

2016  
E+S&D



THE VOICE OF FOOD RETAIL 

Energy & Store  
Development Conference  
**E+SD** 2016



# Using Big Data in Store Facilities Maintenance

Dan Sugg  
Vice President  
North American Grocery  
Verisae, Inc.  
[dsugg@verisae.com](mailto:dsugg@verisae.com)

Mike Parks  
Vice President  
Customer Innovation  
Verisae, Inc.  
[mparks@verisae.com](mailto:mparks@verisae.com)

# Session Topics

- ✓ What Is Meant By “Big Data”
- ✓ The Impact of Mobile Technology
- ✓ The Internet of Things (IoT)
- ✓ Case Study – Machine To Machine Monitoring
- ✓ Example Use Cases For “Big Data” In Facilities
- ✓ Questions and Next Steps



# What Is Big Data?

Industry leaders like Gartner use phrases like...

- Volume: the amount of data
- Velocity: the speed of information flowing into the enterprise
- Variety: The kind of data available

...to define big data.

Helpful Definitions:

- **Big data** is any collection of data sets so large and complex that it becomes difficult to process them.
- **Big data** is a collection of data from traditional and digital sources, inside and outside your company, that represents a source for ongoing discovery and analysis.



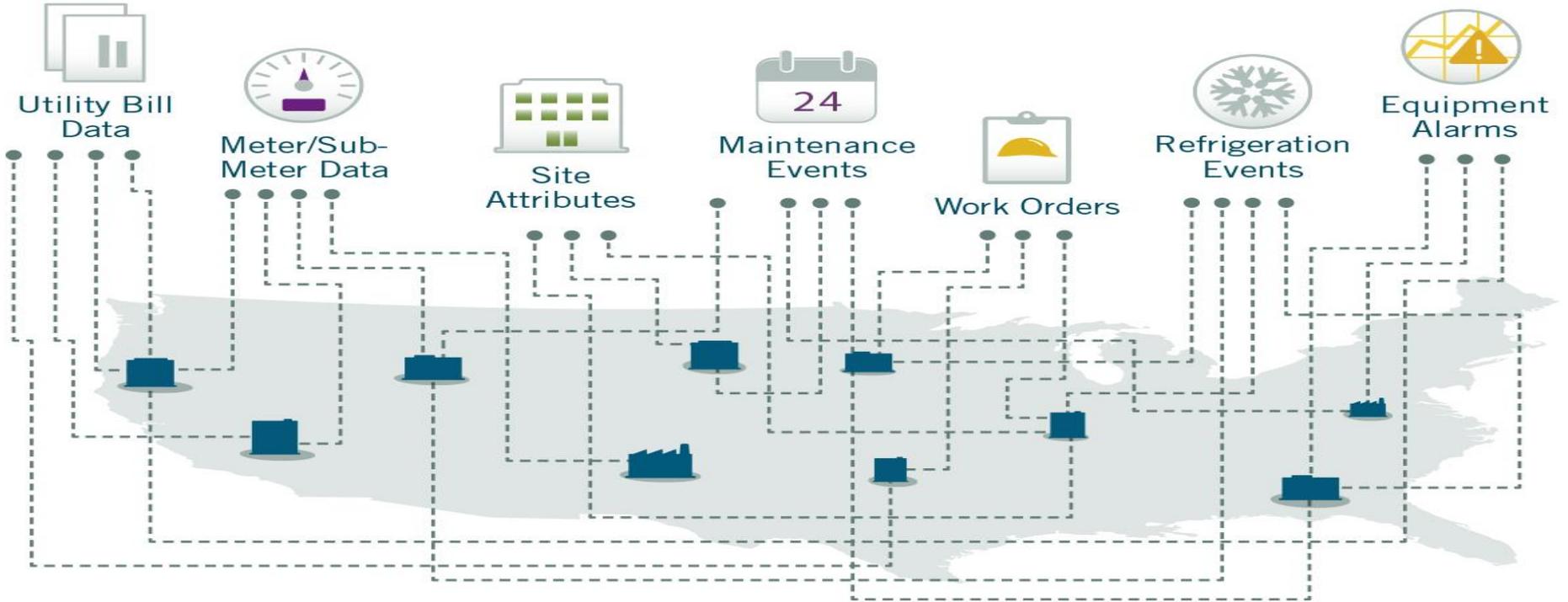
# What Is Big Data?

## Types of Big Data:

- **Unstructured data** comes from information that is not organized or easily interpreted by traditional databases, - it's text-heavy, think Twitter tweets, and other social media posts.
- **Multi-structured data** refers to a variety of formats and types, and can be derived from interactions between people and machines, such as web applications or social networks. A great example is it includes a combination of text and visual images.
- **Machine-to-Machine data**, which is likely to increase drastically in the coming years. More and more things are being equipped with sensors to better understand, analyze and make decisions about the way the business processes perform.



# What Is Big Data?



# What Is Big Data?

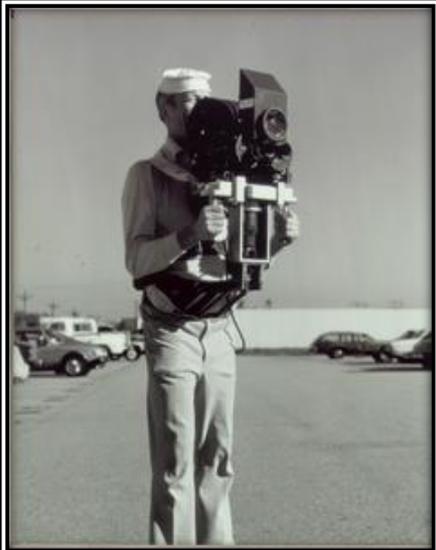
*“As customers become more and more demanding, organizations are being tasked with finding the right answers at a faster pace. Further complicating the issue is the challenge of ever more complex equipment and products.”*

*“As a result of connecting service and asset management, Best-in-Class companies experience less unscheduled asset downtime and greater improvements in average repair time.”*

\*THE FUTURE OF SERVICE: BUILD A BOND WITH ASSET MANAGEMENT

- Aberdeen Group May 2015

# The Desire To Go Mobile Is Not New



# The Impact of Mobile Technology



- Video and pictures are more important than ever
- Everything is aware
- Discovery is the new black
- Data, data, data

# The Impact of Mobile Technology

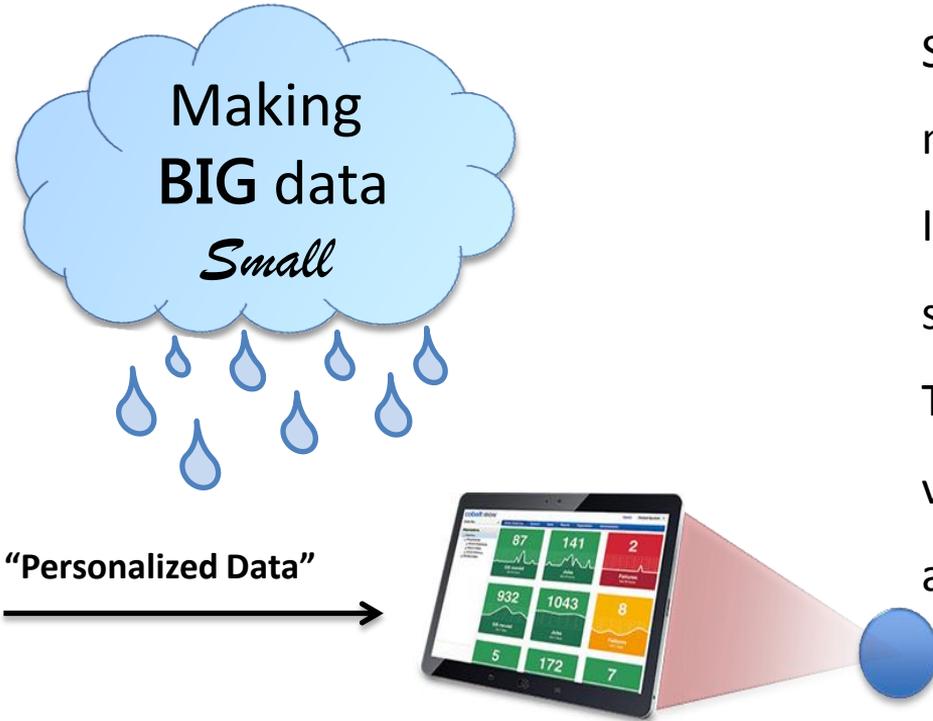
Emerging mobile technologies include:

- Geo-location
- Low-power Bluetooth or Wi-Fi beacons
- Out-building and In-building navigation
- HTML5 & CSS3
- Contextual application/augmented reality
- Cloud computing
- Near-Field Communications (NFC)
- Voice and sensory-based recognition
- M2M
- Pervasive Wi-Fi in facilities
- “Wearables” or mobile-embedded sensors

The combination of these technologies will revolutionize the way mobile services are offered and facilitate a whole new layer of ‘everything - everyone - everywhere’ interactions (“The Internet Of Things”).



# The Impact of Mobile Technology



Small data connects people with timely meaningful insights.

It is derived from big data and/or “local” sources.

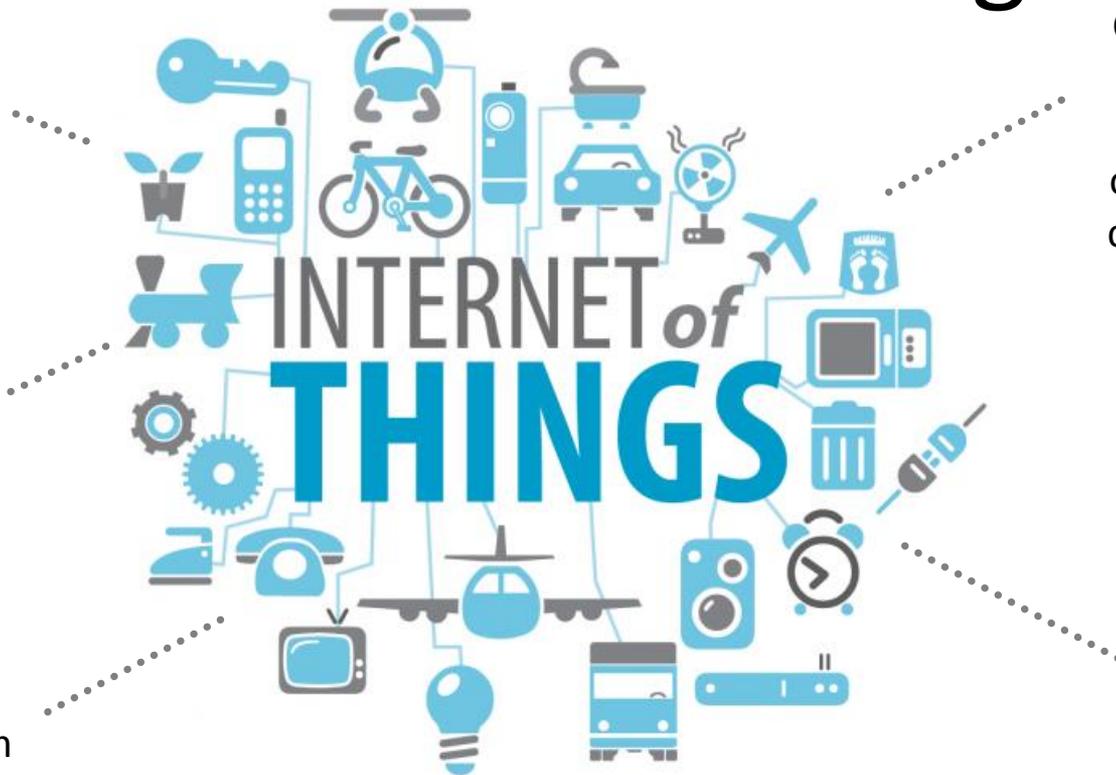
The challenge is to have it organized, often visually, to be accessible, understandable, and actionable for everyday tasks.

# The Internet of Things

Granular control

Tracking areas of high value by combining complimentary data sets

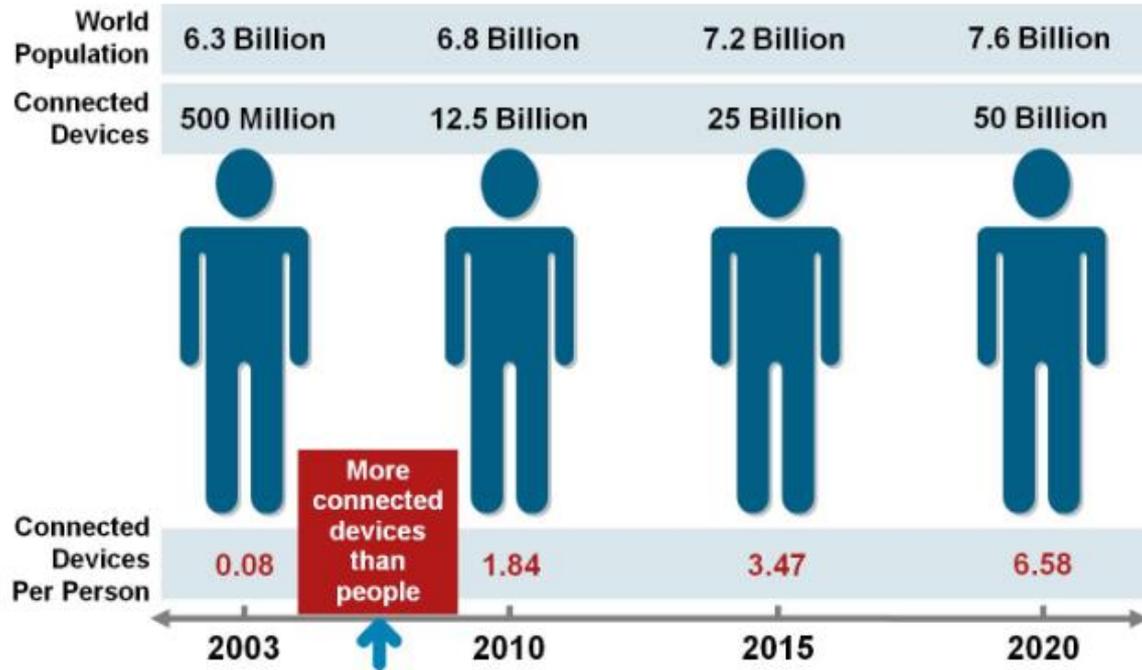
Machine to Machine communication



Connecting wirelessly enabled objects to a central data platform

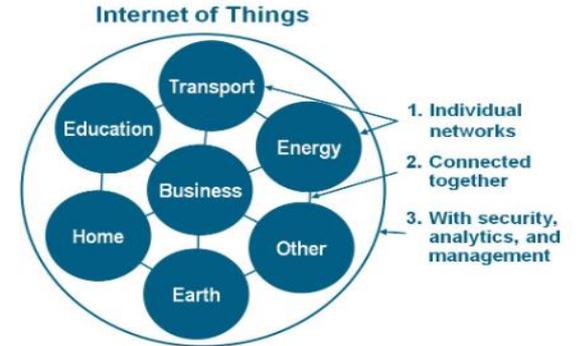
Allows for cloud analytical capabilities

Figure 1. The Internet of Things Was "Born" Between 2008 and 2009



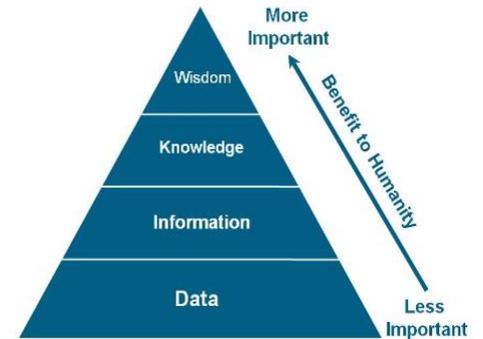
Source: Cisco IBSG, April 2011

Figure 2. IoT Can Be Viewed as a Network of Networks



Source: Cisco IBSG, April 2011

Figure 3. Humans Turn Data into Wisdom



Source: Cisco IBSG, April 2011

# Case Study – Machine To Machine Monitoring

Sainsbury's *live well for less*

“THINGS”



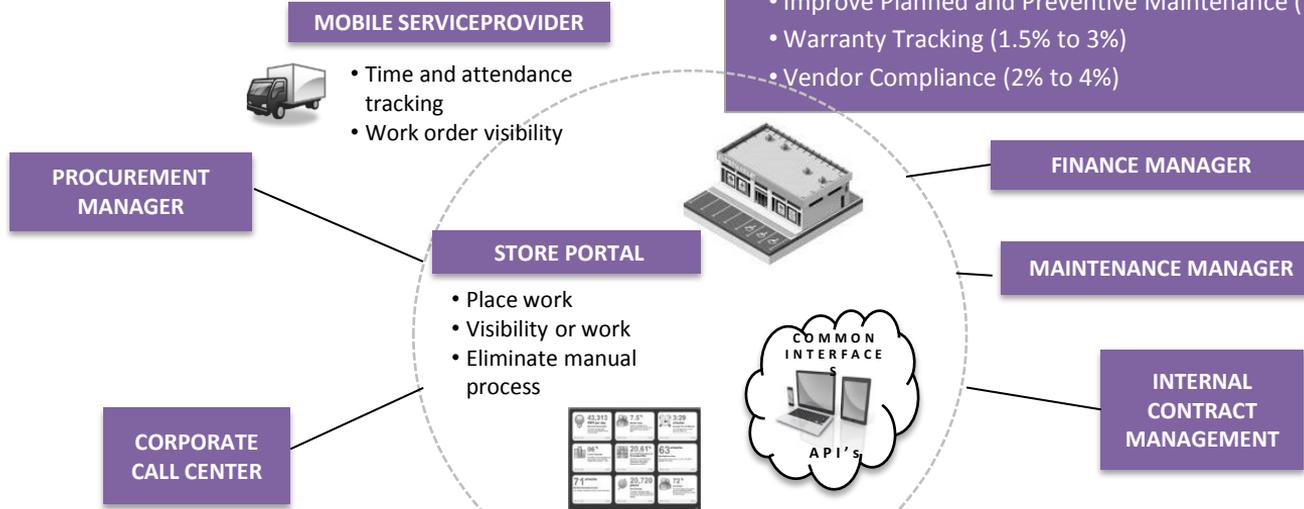
# Step One – Tracking and Maintain Assets

## Business Challenges

- 0.5% - 2% of total revenue is spent on maintenance
- Lack of automated processes have driven up costs and inefficient spending
- Inefficient management of third party contractors

## 9% to 22% Maintenance Savings

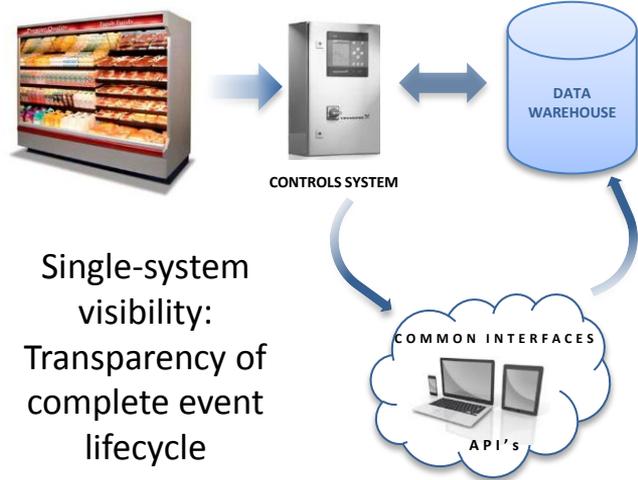
- Contractor Time and Attendance (1% to 3%)
- Automated Invoicing (0.5% to 2%)
- Improve Fix and Replace Decisions (0.5% to 2.5%)
- Capture billing errors (2% to 3%)
- Reduction in personnel (0.5% to 2%)
- Improve Planned and Preventive Maintenance (1% to 2.5%)
- Warranty Tracking (1.5% to 3%)
- Vendor Compliance (2% to 4%)



# Step Two – Connection of Things

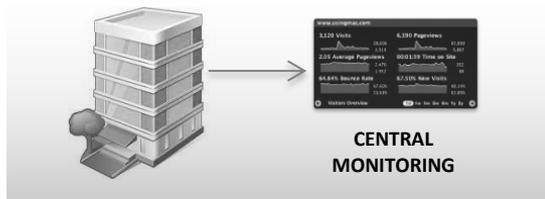


## RESULTS

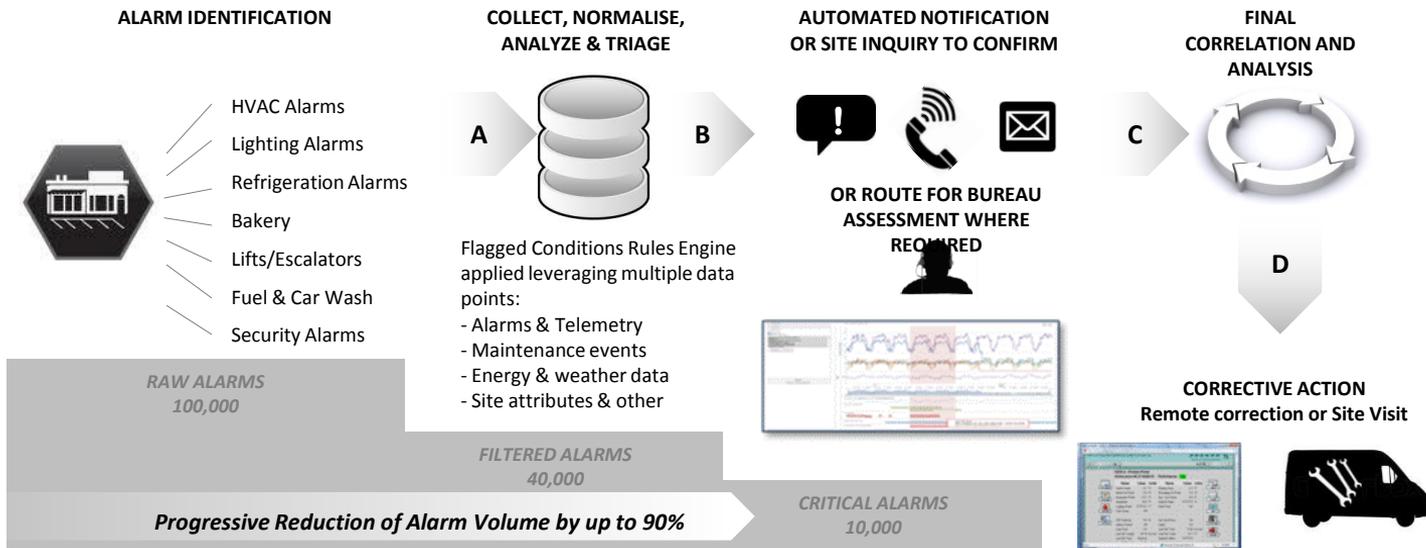


Reduction in maintenance work following implementation

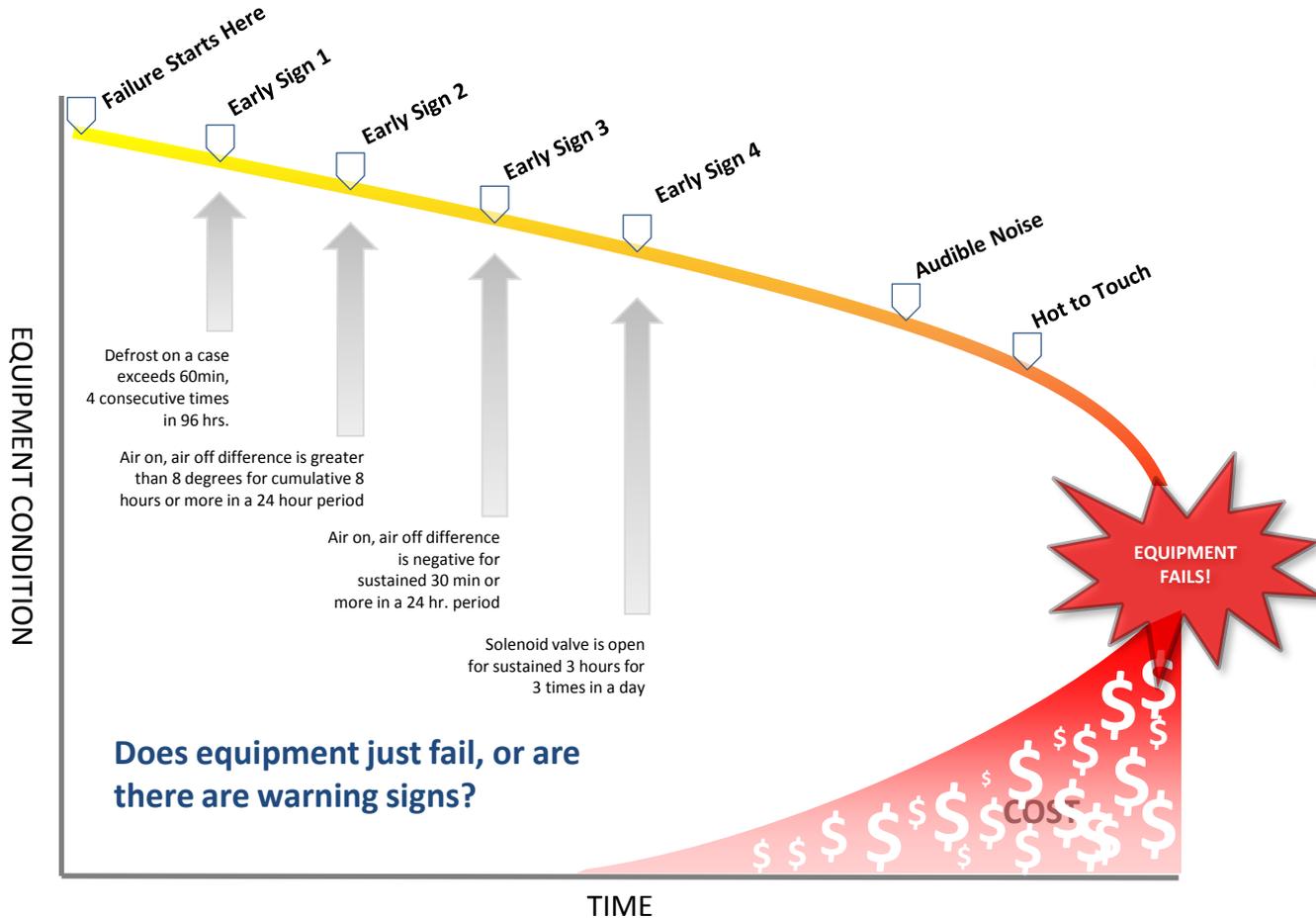
# Step Two – Connection of Things



## How it works



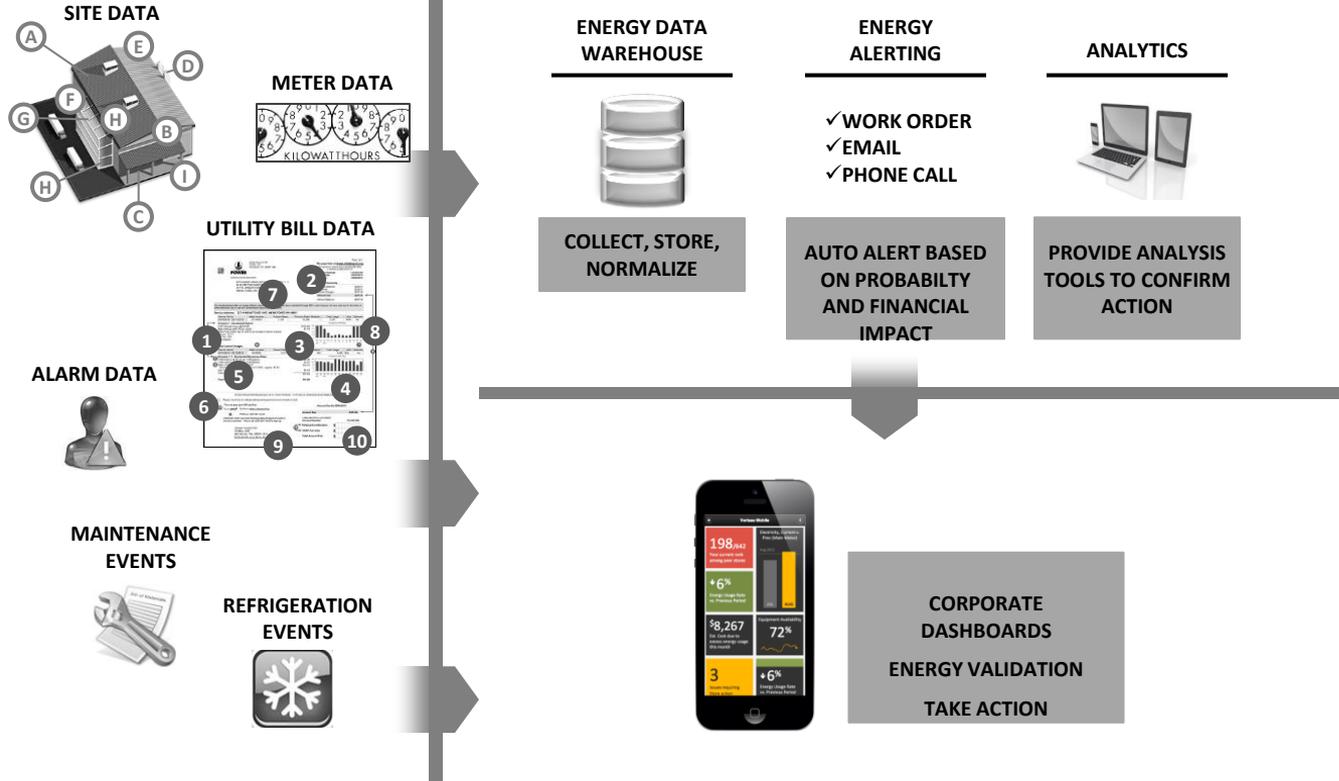
# Step Three – Using Big Data to Predict Failure



This refrigerated case is holding temperature however there is a 95% likelihood it will fail in the next 3-7 days

- Using 45% more energy
- Defrost Cycle extended
- Air on/air off difference > 8 degrees

# Step Four – Sustainability and Energy



# Case Study – Results

**Sainsbury's** *live well for less*

- ✓ Equipment uptime
- ✓ Food Loss
- ✓ Food Quality
- ✓ Reduced Alarms
- ✓ Compliance
- ✓ Store Engagement
- ✓ Work Orders

# Example Use Cases For Big Data In Facilities

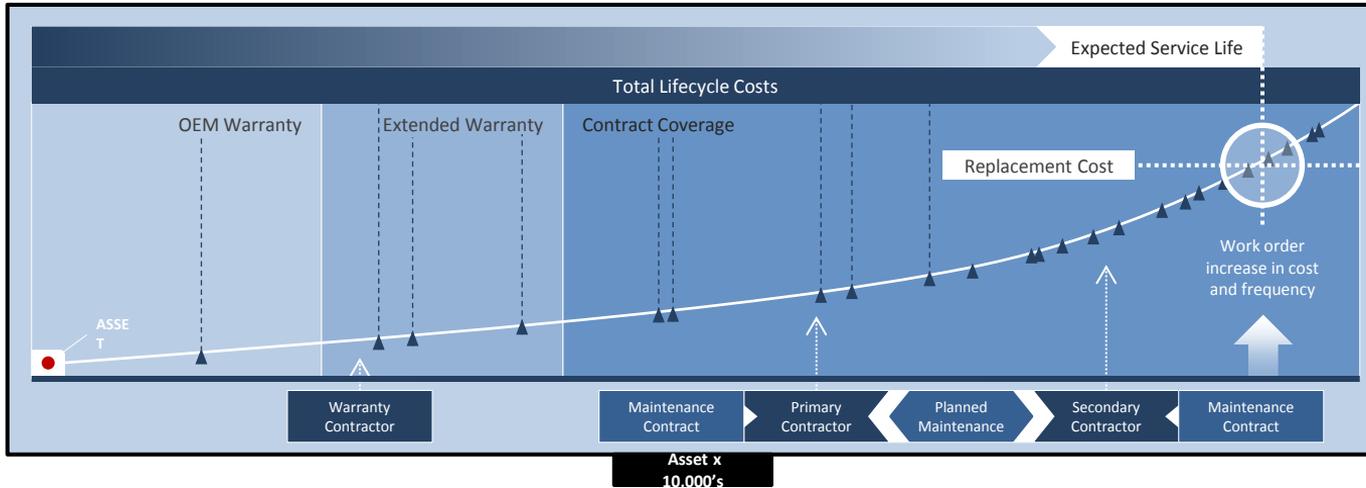
Current business processes within facilities, energy, and new store design need to be evaluated with big data, mobile, and IoT as a means to improve.



# Example Use Cases For Big Data In Facilities

## Asset Tracking

Understanding The Total Cost Of Ownership For Assets



- Understanding the value of an asset at a facility allows maintenance teams to better manage expense and efforts taken to support it.
- Tracking equipment and data including maintenance activities, specifications, purchase date, expected lifecycle, warranty information, service contracts, service history, and replacement cost enables decision makers to effectively make repair/replace decision ad-hoc as well as do advanced capital budgeting analysis.

# Example Use Cases For Big Data In Facilities

## Warranty Management

- Warranty details create a rule for a CMMS to follow
- Work performed under warranty is automatically deducted from the invoice
- Reporting can be done on warranty savings, new equipment failure rates, and mean time to failure

Total Work Order Charges		
SubTotal (Not Incl Tax)		\$0.00
Sum Of All tax Above		\$0.00
Additional Tax		\$0.00
Total Tax		\$0.00
<b>Billable Work Order Total</b>		<b>\$0.00</b>
Non-Billable Charges		
Covered By Contract		\$0.00
Covered By Warranty		\$325.00

**EVAPORATOR Detail**  
Currently held at Site Eden Prairie

Asset Details | Warranty | Remote Monitoring | Energy | Costs | Docs | Legacy

Installing Provider: Refrig Co  
In-Service Date: 08/14/2012

Warranty Name: OEM  
Warranty Description: Two Years

Warranty Provider: Refrig Co  
Warranty Period Setting: Separate Parts and Labor  
Parts Warranty Period: 730  
Labor Warranty Period: 365  
Total Warranty Period: 730

Warranty Expiration Dates  
Parts Warranty Expiration Date: 11/02/2015  
Labor Warranty Expiration Date: 11/02/2014  
Total Warranty Expiration Date: 11/02/2015

Recalculate Warranty Expiration Dates

Warranty SLA Setting: Based on Work Order Type

# Example Use Cases For Big Data In Facilities

## Root – Cause Analysis

- Best-in-Class operators are using identified problem types (symptoms) and technical fault and action codes to benchmark equipment performance
- Layering in site attributes, such as trading volume, intensity, climate, and operational environment provides much needed context
- Reporting and Business Intelligence is used to evaluate mean time to failure, effectiveness of PPM activities, and conduct root/cause analysis
  - Why is equipment failing?
  - Who is most efficient at repair?
  - What is the failure’s monetary impact to the organization?
  - What OEM equipment performs best in each environment?

“Corporations want value for money for the services they pay for and are prone to making comparisons with others to ensure they are not paying over the odds for the level of the service they receive.”

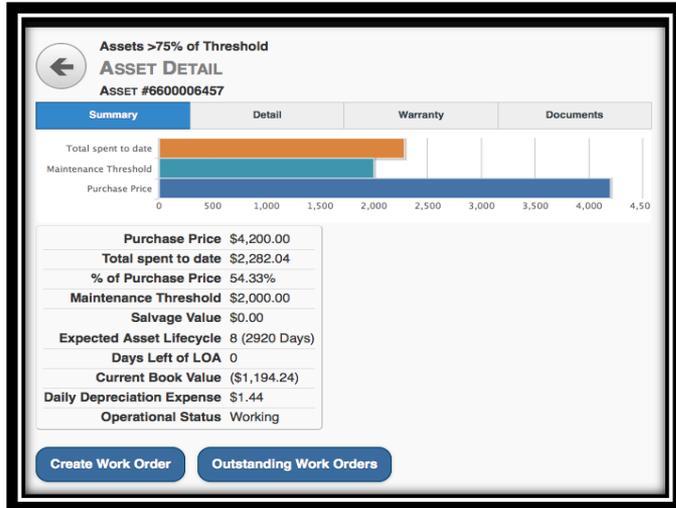
-Paul Barton and Hui Min Ch'ng

# Example Use Cases For Big Data In Facilities

## Capital Replacement

## Actionable Data

- Work Order notifications
- Exceeding asset thresholds
- Ad-hoc Repair vs. Replace decisions
- Comprehensive reporting



### Maintenance Cost – Replace vs. Repair Decision Tool

Work Order Creation Date Range : 10/01/2012 - 01/20/2013  
Maintenance Cost : 2000 And More

Site	Asset Category	Asset SubCategory	Asset Type	Manufacturer	Location	Asset Number	Total # Of Recalls	Total Wk Cost
01 - Grocery Store - Onalaska	HOT FOODS EQUIPMENT	OVENS	RACK OVEN	HOBART	BAKERY	540000104425	2	\$ 3,022.11
01 - Grocery Store - Onalaska	REFRIGERATION	MULTIDECK CASES	MULTIDECK CASE 12FT	HUSSMANN	MEAT	540000104135	1	\$ 2,080.99
03 - Grocery Store - Holmen	FOOD PREPARATION EQUIPMENT	SAUSAGE STUFFERS	SAUSAGE STUFFER	FREY	MEAT	540000102958	1	\$ 2,308.26
05 - Grocery Store - De Pere	BAKERY EQUIPMENT	MIXERS	MIXER	HOBART	BAKERY	540000101395	3	\$ 2,167.15
05 - Grocery Store - De Pere	REFRIGERATION	CONTROLS-REFRIG	EMS RACK CONTROL PANEL	CPC	MACHINE ROOM	540000101425	1	\$ 2,699.49
06 - Grocery Store - Green Bay West	DOORS	SECTIONAL OVERHEADS	DOOR SECTIONAL OVERHEAD	LIFT MASTER	BACKROOM	540000105249	1	\$ 2,833.75
06 - Grocery Store - Green Bay West	HOT FOODS EQUIPMENT	OVENS	COMBI OVEN	HENNY PENNY	DELI	540000105338	1	\$ 2,477.76
06 - Grocery Store - Green Bay West	MATERIAL HANDLING EQUIPMENT	MAN LIFTS	MAN LIFT	CROWN EQUIPMENT	BACKROOM	540000105223	3	\$ 2,343.62
09 - Grocery Store - Marshfield	REFRIGERATION	RACKS	RACK SYSTEM REFRIGERATION	HUSSMANN	MACHINE ROOM	540000102238	1	\$ 4,372.58
11 - Grocery Store - Eau Claire	REFRIGERATION	MULTIDECK CASES	MULTIDECK CASE 6FT	HUSSMANN	DAIRY	540000102558	2	\$ 3,203.23
11 - Grocery Store - Eau Claire	REFRIGERATION	MULTIDECK CASES	MULTIDECK CASE 8FT	HUSSMANN	DAIRY	540000102557	2	\$ 7,415.62
13 - Grocery Store - Darbooy (Appleton East)	HOT FOODS EQUIPMENT	OVENS	RACK OVEN	GEMINI	BAKERY	540000100837	2	\$ 4,995.03
13 - Grocery Store - Darbooy (Appleton East)	REFRIGERATION	SELF CONTAINED CASES	BLAST CHILLER/FREEZER	HENNY PENNY	DELI	540000100910	2	\$ 2,683.40
15 - Grocery Store - Northland (Appleton West)	REFRIGERATION	CONTROLS-REFRIG	EMS RACK CONTROL PANEL	CPC	MACHINE ROOM	540000100390	3	\$ 3,802.91
15 - Grocery Store - Northland (Appleton West)	SCALES AND PRINTERS	SCALES	SCALE - PRINTER	METTLER TOLEDO	DELI SERVICE	540000100196	2	\$ 3,649.80
21 - Grocery Store - Sheboygan	MATERIAL HANDLING EQUIPMENT	MAN LIFTS	MAN LIFT	JLG	BACKROOM	540000103059	2	\$ 2,002.76
22 - Grocery Store - Village	MATERIAL HANDLING EQUIPMENT	MAN LIFTS	MAN LIFT	JLG	BACKROOM	540000104780	2	\$ 2,024.95
22 - Grocery Store - Village	REFRIGERATION	COMPRESSORS REFRIGERATION	COMPRESSOR REFRIGERATION	COPELAND	MACHINE ROOM	540000104812	1	\$ 2,210.49

# Example Use Cases For Big Data In Facilities

## Additional Use Cases

- Service provider contracts and associations
  - Warranty, OEM, problem type
- Asset level documentation
  - Service & parts manuals
  - Photographs
  - Troubleshooting guides
- Misuse and abuse
- Straight line depreciation
- Energy consumption
  - By site type
- Improved equipment uptime
  - Capturing operational time
  - Monetizing impact of out of service assets
- Advance work order triage
  - Provide your dispatchers with all of the relevant information for the asset in question on one screen
- Service and invoice validation
  - By equipment type



Mike Parks, RFMP

Vice President, Customer Innovation

Verisae, Inc.

[mparks@verisae.com](mailto:mparks@verisae.com)

Dan Sugg

Vice President, North American Grocery

Verisae, Inc.

[dsugg@verisae.com](mailto:dsugg@verisae.com)