Old, Out of the Way and All Over The Place

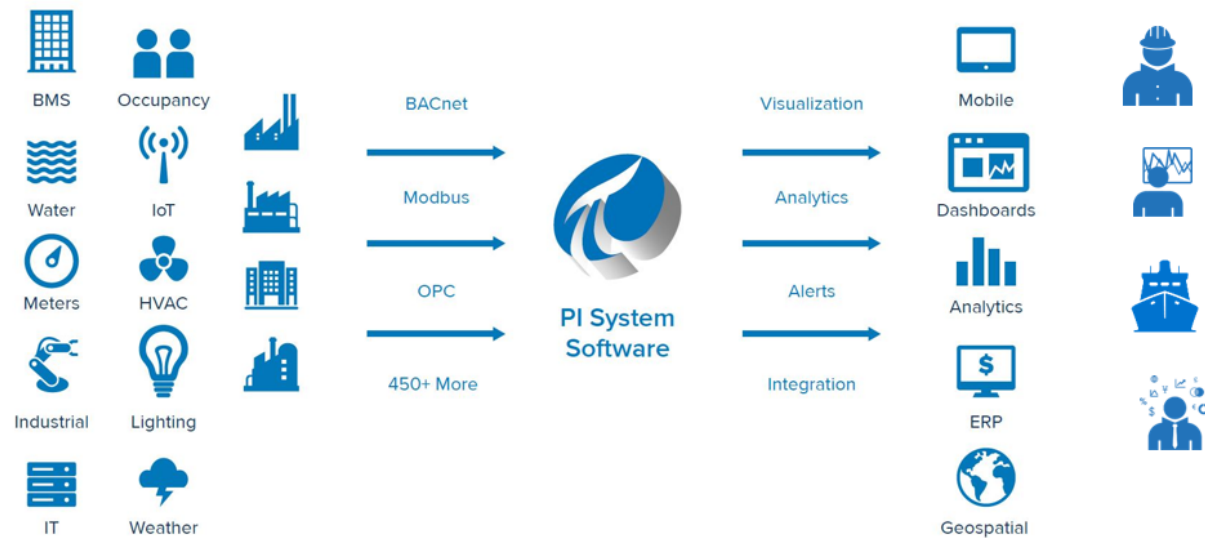## The Future of IoT and Industrial Devices

Michael Kanellos

IoT Analyst OSIsoft

Flash Memory Summit

The PI System: Insight on Demand

The Right Data to the Right People, at the Right Time in the Right Format
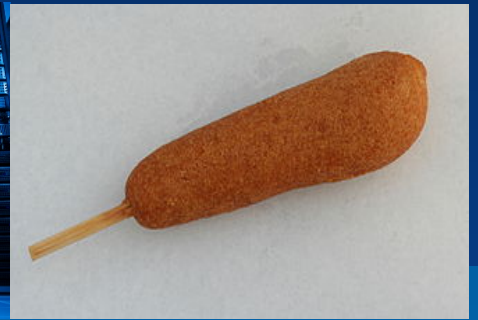
Flash Memory Summit

ArcelorMittal
$40 million in extra production via supply chain mods

Maynilad
Finding leaks = Delivering 640 million more liters a day

IBM
$10 million saved in fab water and power

Tyson Foods
"Lost" production cut by over 1M pounds

Some Peculiar Things About Industry

The Equipment is Ancient

Large Power Transformers
- $2-$7 million
- 40,000 in U.S.
- 6 mo. to 2 years to install
- Avg. age is 42-44 years

It's Often Out of the Way

Predictive Maintenance: can cut turbine repairs by 90%

650 data streams per wind turbine (300-1000 range)

Tracked every 10 mins = 93,600 reads per day

57,636 turbines in US = 5.4 billion reads a day

Wind Turbine typical components

1. **Blade**
2. Hub controller
3. Blade bearing
4. Main carrier
5. **Composite disk coupling**
6. Main disc brake
7. Oil cooler
8. Yaw gears
9. **Generator**
10. Polipasto
11. Anemometer and wind vane
12. **Pitch actuator**
13. Machine foundation
14. Tower
15. Bearing controllers
16. Shock absorbers
17. Turning crown
18. Turning differential
19. **Electrical control**
20. Hydraulic group
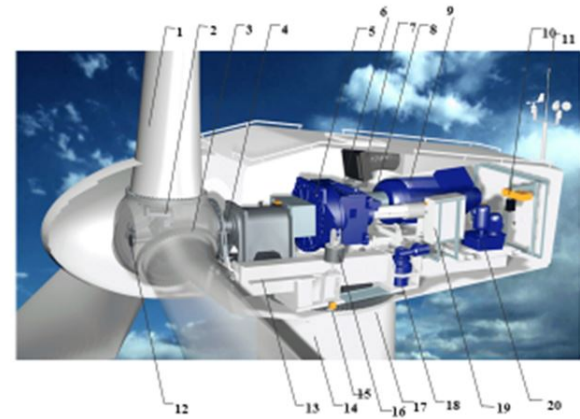
10,000 Feet Out of the Way

A Blow Out Preventer: The Achilles Heel of Offshore Drilling

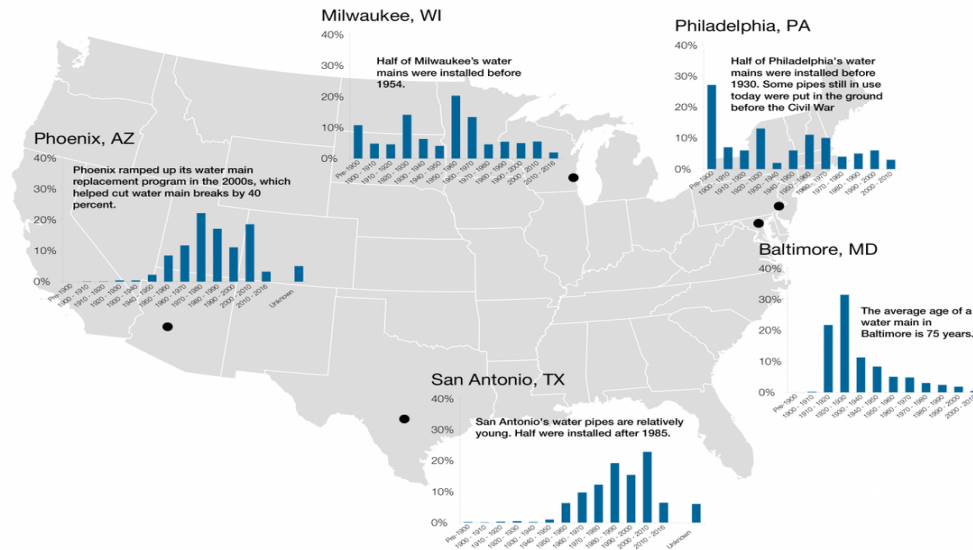Photo credit and copyright: Ed Schipul, Houston Chronicle via Creative Commons

And All Over the Place

These Are Not Streams

WHUD saving $2.5 million per year

The Future of Industrial IoT Devices

Retrofits

- Sawing Toilet Paper Since the 1970s
- Traditional Upgrade: $31,500
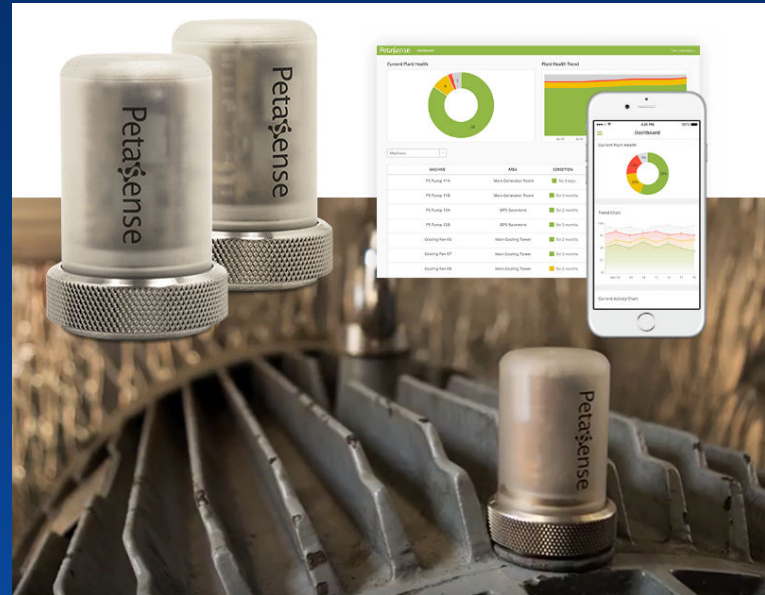- IoT Gateway and Sensors: $9500

The Future of Industrial IoT Devices

Stick-on Sensors and
Gateways

The Future of Industrial IoT Devices

Systems As Devices

Thank You

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