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Reliability

Data Analytics and IIoT in maintenance and reliability

Best Practices Webinar Series

Meet the Speakers

Mitch Kruse

Software technology evangelist, Fluke Reliability

- 3 years at Fluke Reliability managing software technologies
- 25 years of software product management and marketing
- 11 years in the Oil and Gas industry
- Mechanical Engineer, MBA

Mitch Kruse is the technical marketing leader for software products at Fluke Reliability. He has worked in the software industry and in manufacturing for over 35 years spending time in various roles including engineering, sales, product management and marketing at companies including Siemens, Microsoft, and Amazon. Mitch has deep energy industry experience in oil and gas, nuclear, and renewables, and in now focused on software and technologies for industry 4.0 in manufacturing, maintenance, and other industries.

Agenda

Data Analytics and IIoT in maintenance and reliability

- Industry 4.0 introduction
- Technology trends for predicting failures
- Lessons learned implementing automation and data analytics
- The role big data and analytics play keeping assets alive
- What the future holds
- How to get started

Industry 4.0

1.0 (1760 – 1840) - from hand production methods, to machines with steam and water

2.0 (1871 – 1914) - installation of extensive railroad and telegraph networks

3.0 (1950s on) - digital revolution – computers

4.0 - Fourth Industrial Revolution (4IR) includes automation and data exchange in industrial technologies and processes including SCADA/PLC, IIoT (industrial internet of things), cloud computing, machine learning, artificial intelligence, etc.

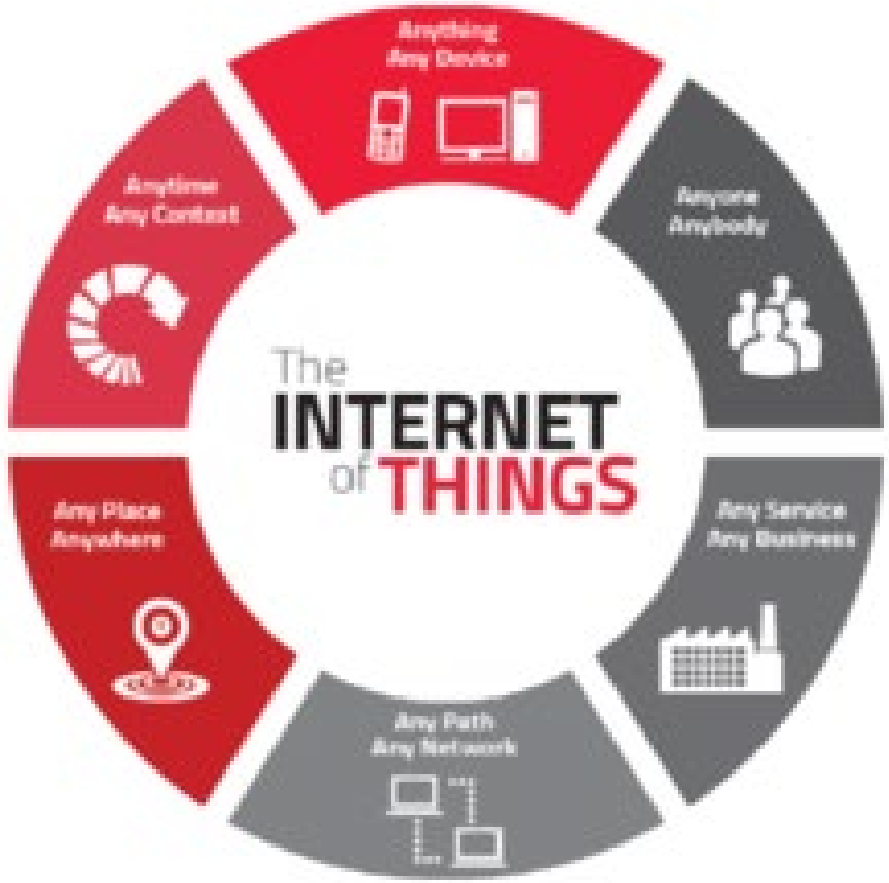
Evidenced with:

- **Interconnection**
- **Information transparency**
- **Technical assistance**
- **Decentralized decisions**

Industry 4.0

Fourth Industrial Revolution is realized through:

- Industrial Internet of Things (IIoT)
- Mobile devices
- Location detection technologies (electronic identification)
- Advanced human-machine interfaces (HMI)
- Authentication and fraud detection
- Smart sensors
- Big data analytics and advanced processes
- Augmented reality/ wearable computers
- On-demand availability of computer system resources
- Data visualization and triggered "live" training
- 3D printing



POLL QUESTION No. 1

Based on the definition of 4IR how would you characterize your adoption?

(Select only one answer)

A. Not at all

B. Just getting started

C. Using but not investing much

D. Using and investing heavily in new technologies

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Technology trends in maintenance and Industry 4.0

- Its not perfect
- Enough data must be obtained
- System needs to be trusted
- Benefits outweigh the risks
- Having insight gives better control over reliability
- Who is using it?

Technology trends in 4IR

- Smart factories
- Data analytics and predictive maintenance
- 3D printing
- Smart sensors

Lessons learned implementing automation and data analytics

1. Prioritize ATS (Advanced Troubleshooting) and CBM (Condition Based Maintenance)
2. Combine domain expertise with an effective model
3. Instill a data-friendly mind-set
4. Employ a data-capture strategy

Lessons learned implementing automation and data analytics

5. Applicable data
6. Amount of data
7. Quality of data
8. History

What role big data analytics plays

- Information and communication systems
- Advanced data processing tools
- Data must be the right data and able to detect issues
- Think in terms of the ‘6C’s:
  - **C**onnection – sensors and networks
  - **C**loud – computing, applications, storage, analytics on demand
  - **C**yber – model and memory
  - **C**ontent – meaning and correlation
  - **C**ommunity – sharing and collaboration
  - **C**ustomization – personalization and value

What role big data analytics plays

- Intelligent maintenance systems
- Data analysis
- PM Optimization

POLL QUESTION No. 2

Are you currently using at least some data analytics from IIoT sensors to improve overall asset reliability? **(Select only one answer)**

A. Yes

B. Not currently

C. I’m not sure

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What does the future hold?

- More sensors and more analytics
- More historical data means more learning
- Data brokers
- Just imagine…

How to get started

- Start small
- Establish a long-term vision
- Achieve consensus on asset criticality ranking
- Create dedicated cross-department team
- Partner with a vendor that has experience in the area
- Track and measure savings for ROI calculation
- Get management buy-in and a data-friendly mindset
- Create a realistic expansion plan and track the program
- Stay persistent

Questions

QUESTIONS?

Thank you!

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THANK YOU!