



FLUKE®

Where are we on the road to the future?

2020 check-in

Accelix™
Webinar Series



About today's presentation



Oliver Sturrock

CTO, Fluke Reliability

- Oliver specializes in creating customer-centric solutions in IoT, analytics, machine learning, real-time systems, secure web architectures, and mobile.
- Oliver previously served as CTO at SCHAD GmbH, VP Mobile Solutions at OpenText and Chief Technology and Strategy Officer of weComm Ltd.

Fluke Reliability Mission: To be the one-stop shop for the systems, software, and services maintenance teams of all sizes need to achieve optimized asset reliability



Reflections on 2019

- What happened
- What's holding us back

Forecasting 2020

- What's going to happen
- Fear vs. excitement





What happened?

Big themes for maintenance operations in 2019



POLL QUESTION No. 1

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Which of these 2019 themes were true for your facility?

(Click all that apply)

- More sensors & other data-collecting devices were deployed
- Maintenance systems were integrated
- Reliability work is more valued than before
- Still hard to find qualified people for job openings
- Did not make as much progress as hoped in digitalization



Sensors moved from Pilot to Deployment

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Computerized
2000



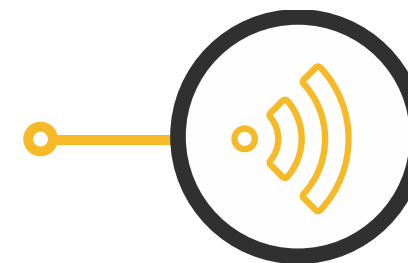
Mobile
2010



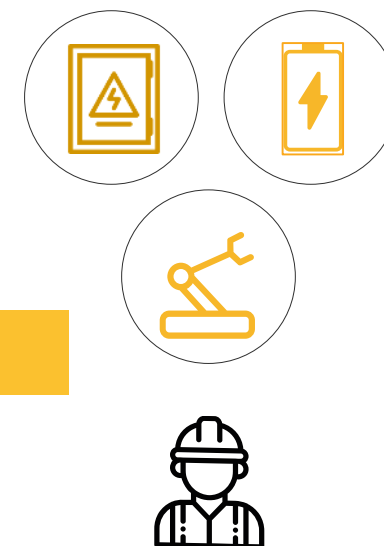
Maintenance Centric



Connected



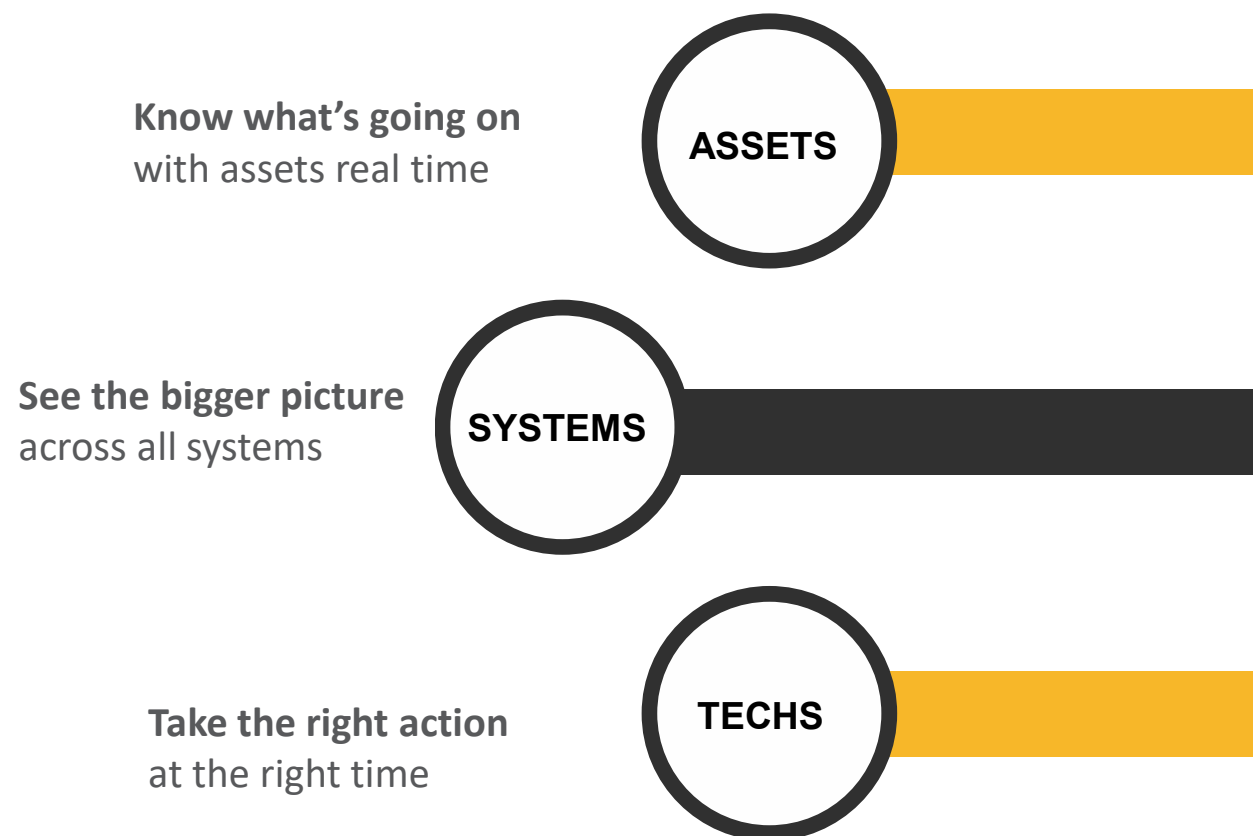
Asset Centric





Rise of Connected Reliability

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Generational change





What's holding us back?

What can we do to support more connected maintenance?



POLL QUESTION No. 2

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What ONE thing do you wish your organization would do to better support reliability maintenance? (Click only one answer)

- Allow more time for proactive maintenance work
- Add more ways to monitor machine performance/asset health
- Focus on getting all the data into one place
- More time for training
- Management-level support for reliability



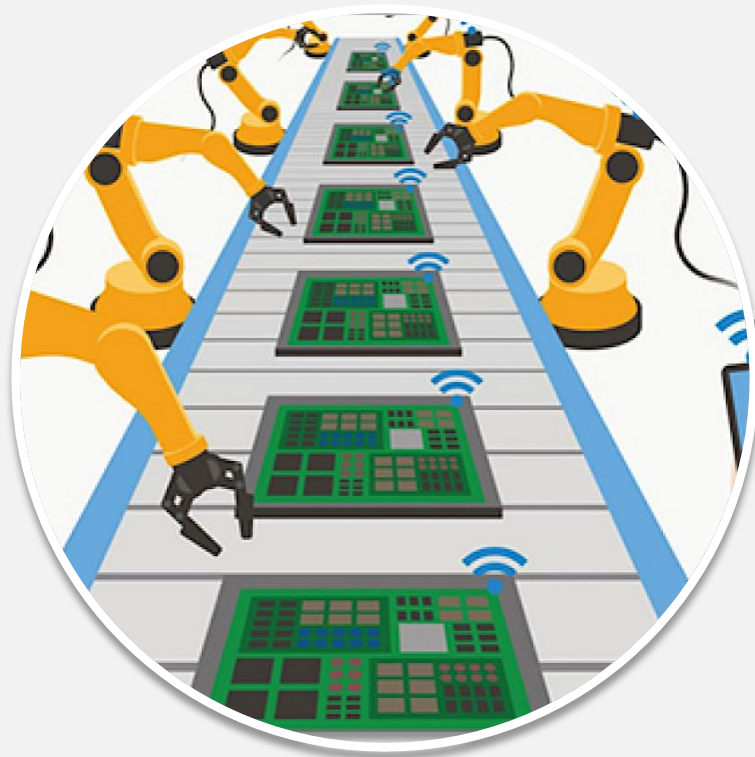
Break-fix maintenance culture





Enough meaningful data

One of the best thing maintenance teams can do at this point is figure out where you don't currently have enough meaningful data.



Interpret raw data



More context for our data



Turn data into insight



Proprietary data silos





How does next year look?

Which advancements are the most likely and will the changes be massive or incremental?



Which of these possibilities do you anticipate in 2020?
(click all that apply)

- More machines will be connected
- Data volumes will mushroom
- Fewer people will be working the plant floor
- Reactive maintenance will decline
- Better support for in-situ asset diagnostics



2020 is going to be about building context for our data

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Advanced Analytics Stack

Machine Learning

Rules based

Prescriptive

Recommend a specific course of action needed to avoid failure.

Prognostics

Predict specific failure modes along with timescales.

Diagnostics

Detect specific faults modes.

Anomaly Detection

Detect performance anomalies **indicating asset deterioration and** allowing relative asset health scores.

Smart Alarms

Algorithmically-set thresholds able to account for variations in asset performance and environment

User-set threshold based alarms

Asset Performance Data

Data sources for key reliability measurement modalities: Big 5 – Tools & sensors

Machine Context

Contextual data that describes the environment in which performance data was gathered.

Historical Data

Historical machine data can be used to fuel analytical algorithms, provided that sufficient context (asset parameters) is available.

Process Data

Tells what the asset **was** doing. Correlating this with performance data enables better diagnostics and enables process optimization algorithms.

Critical data fueling Analytics stack

Clean, contextual data lake enables insights – diagnostics, prognostics and prescriptive maintenance



Role of Machine Learning and Artificial Intelligence

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What about 5G?



5G “Fifth Generation” cellular technology



Wide area OT Networks



Low energy protocols



Should we be excited or afraid or both?



POLL QUESTION No. 4

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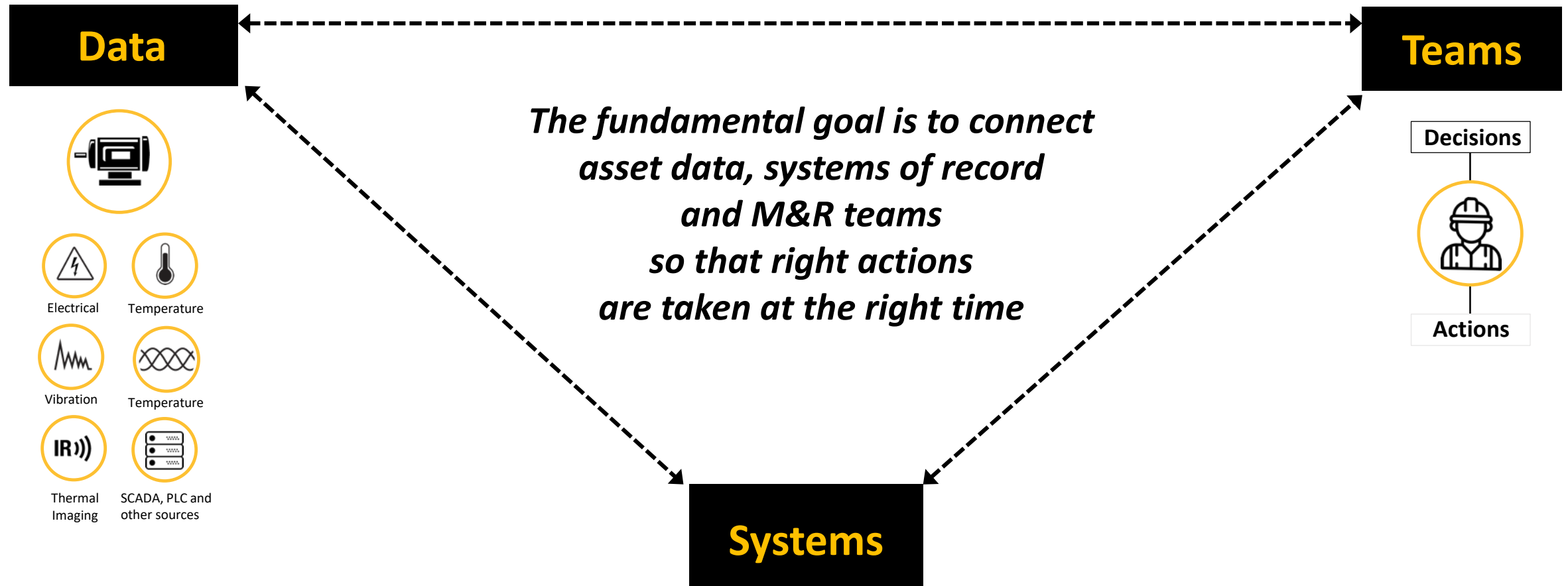
Which of these is most worrisome for you?
(click all that apply)

- Plants will close if they don't modernize
- My job is going to be taken by a robot
- Modernization won't be able to address manufacturing slumps



Symbiotic relationship between people, machines, and data

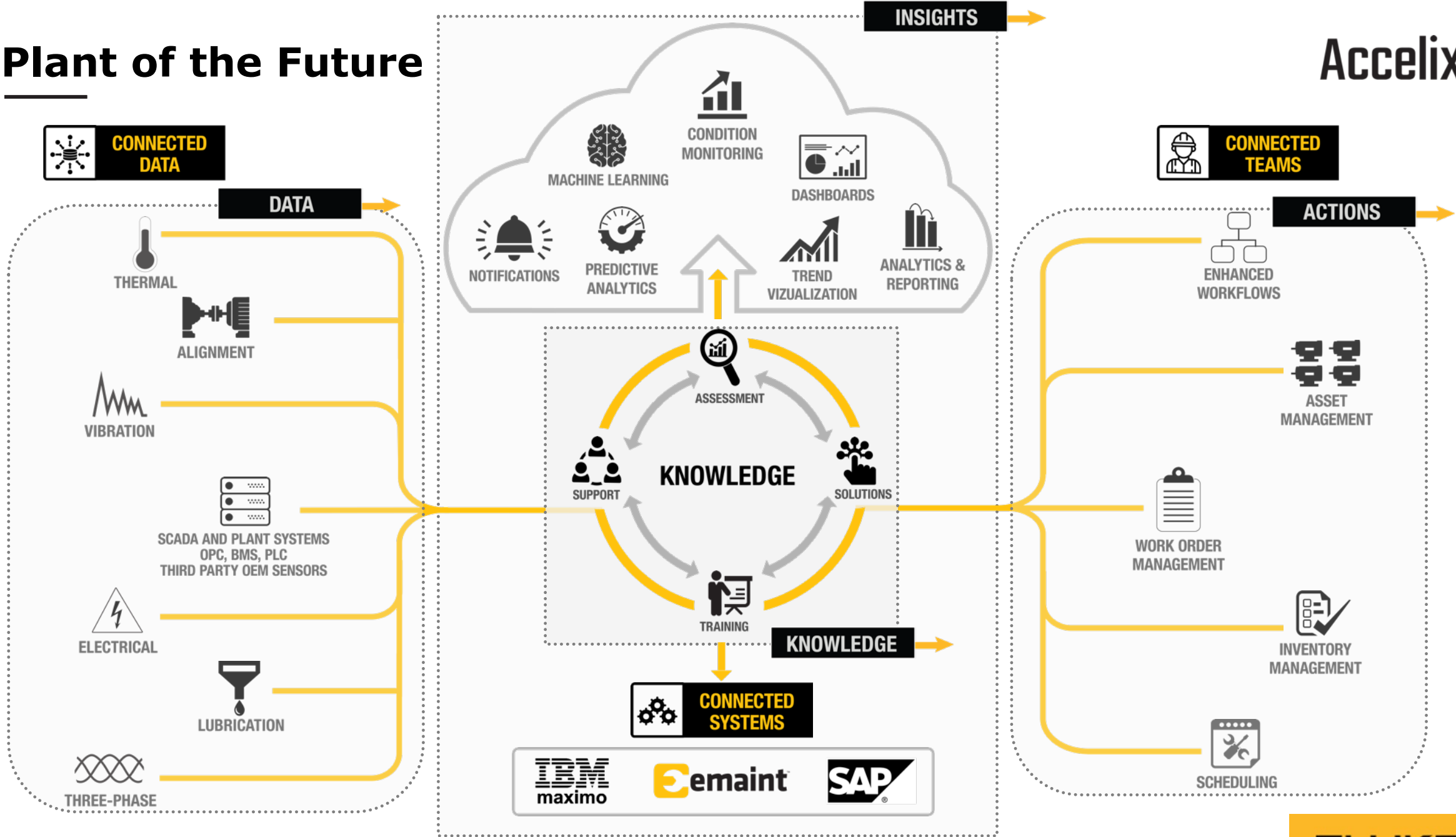
In the Factory of the Future, the elements won't change but what each are doing might





Plant of the Future

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QUESTIONS?



Thank you!

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DEMO

Visit Accelix.com for a free demo of our Connected Reliability Framework.



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