GEAPS/GRAIN JOURNAL EDUCATIONAL WEBINAR SERIES

This webinar reviews an education session presented at GEAPS Exchange 2017

GEAPS EXCHANGE 2018

March 24-27, Denver, CO

EXCHANGE 2018

The Industrial Internet of Things

Industrial Internet of Things

“The Internet of Things is ground zero for a new phase of global transformation powered by technology innovation, generating significant economic opportunities and reshaping industries.”

Marc Benioff,

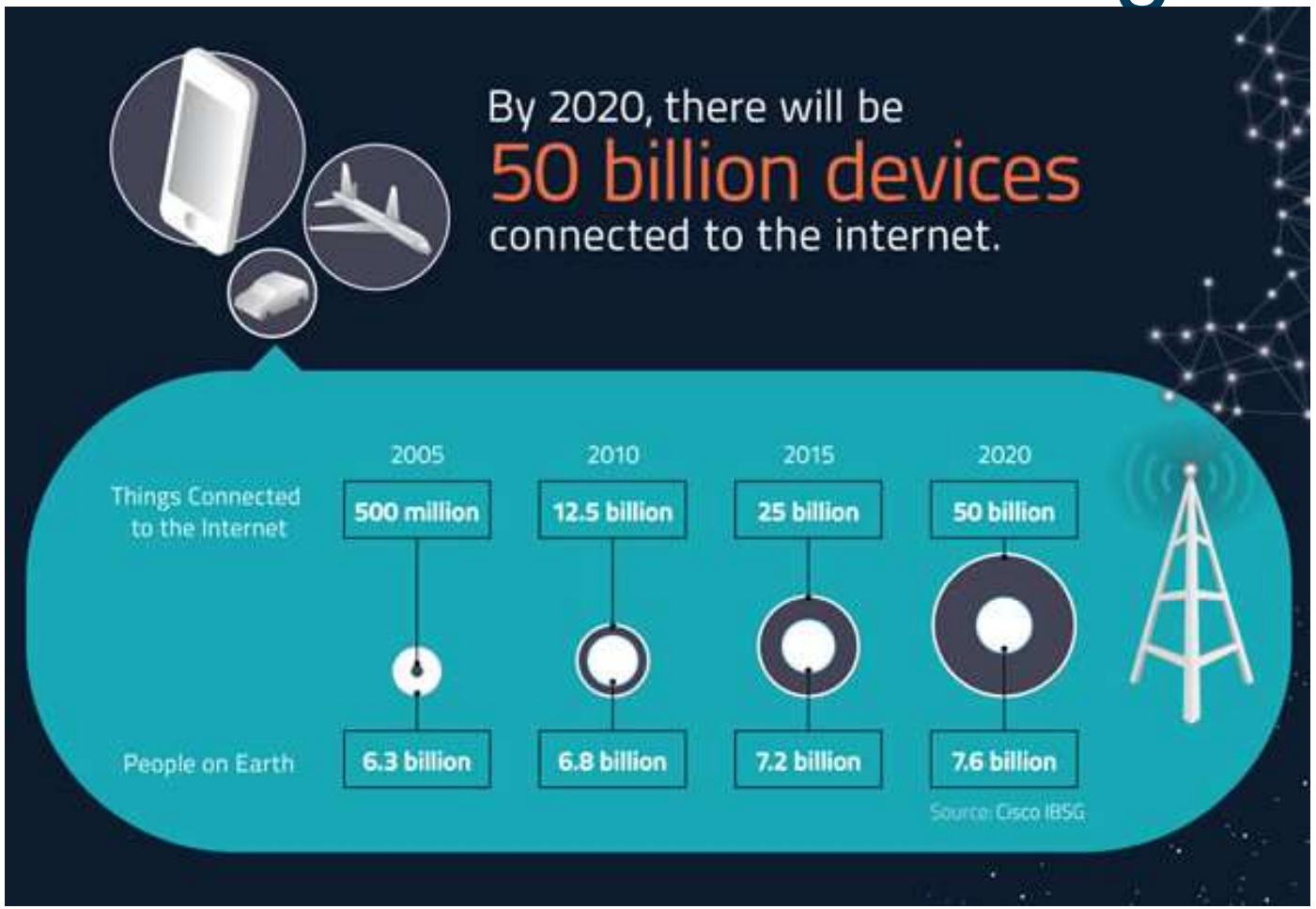
Chairman and Chief Executive Officer,

Salesforce.com, USA

Industrial Internet of Things

- Industrial Internet (of Things), is the latest wave of technological change that will bring unprecedented opportunities, along with new risks, to business and society.
- It will combine the global reach of the Internet with a new ability to directly control the physical world, including the machines, factories and infrastructure that define the modern landscape.

Industrial Internet of Things



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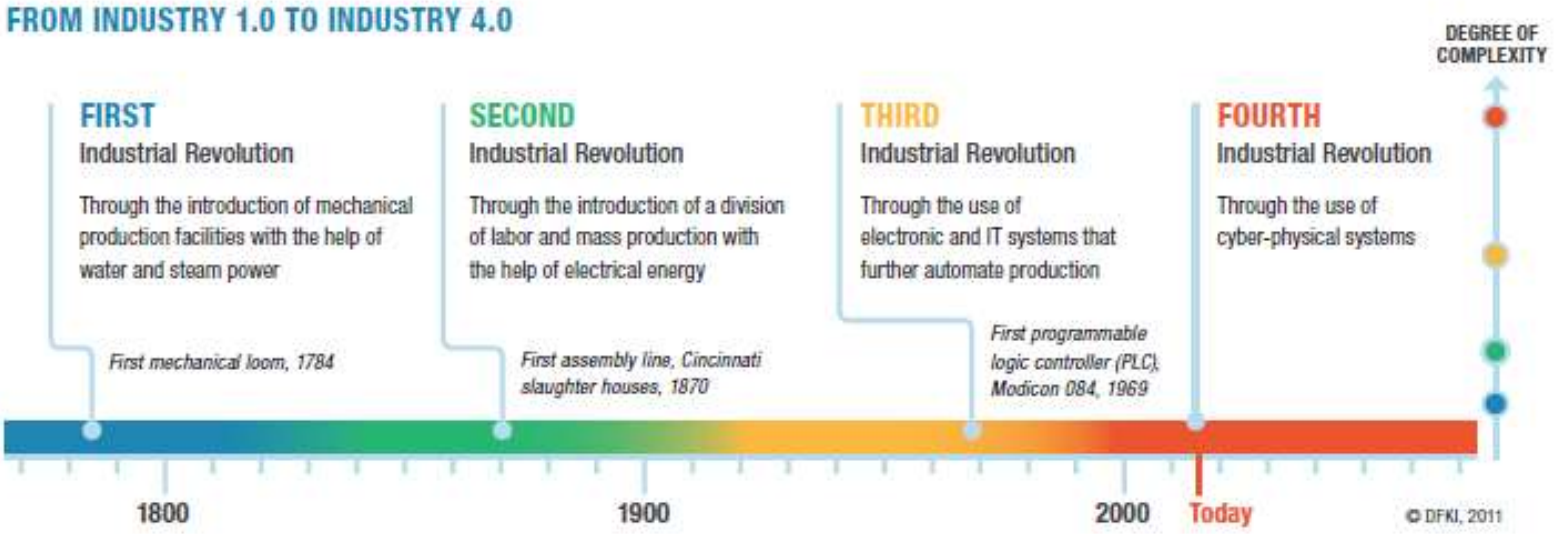

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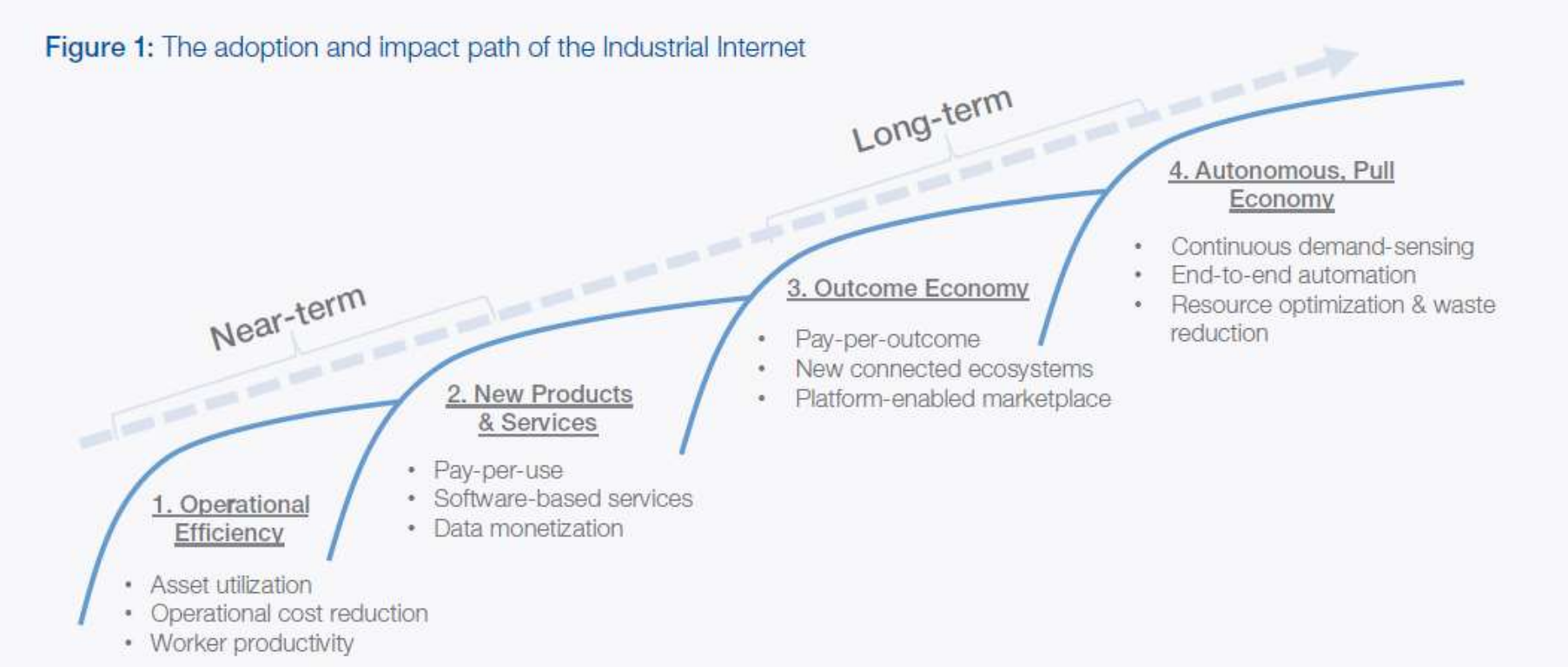


Industrial Internet of Things

- Like the Internet was in the late 1990s, the Industrial Internet is currently in its early stages.
- Many important questions remain, including how it will impact existing industries, value chains, business models and workforces.
- In addition, what actions business and government leaders need to take now to ensure long-term success.

Industrial Internet of Things

Opportunities & Benefits

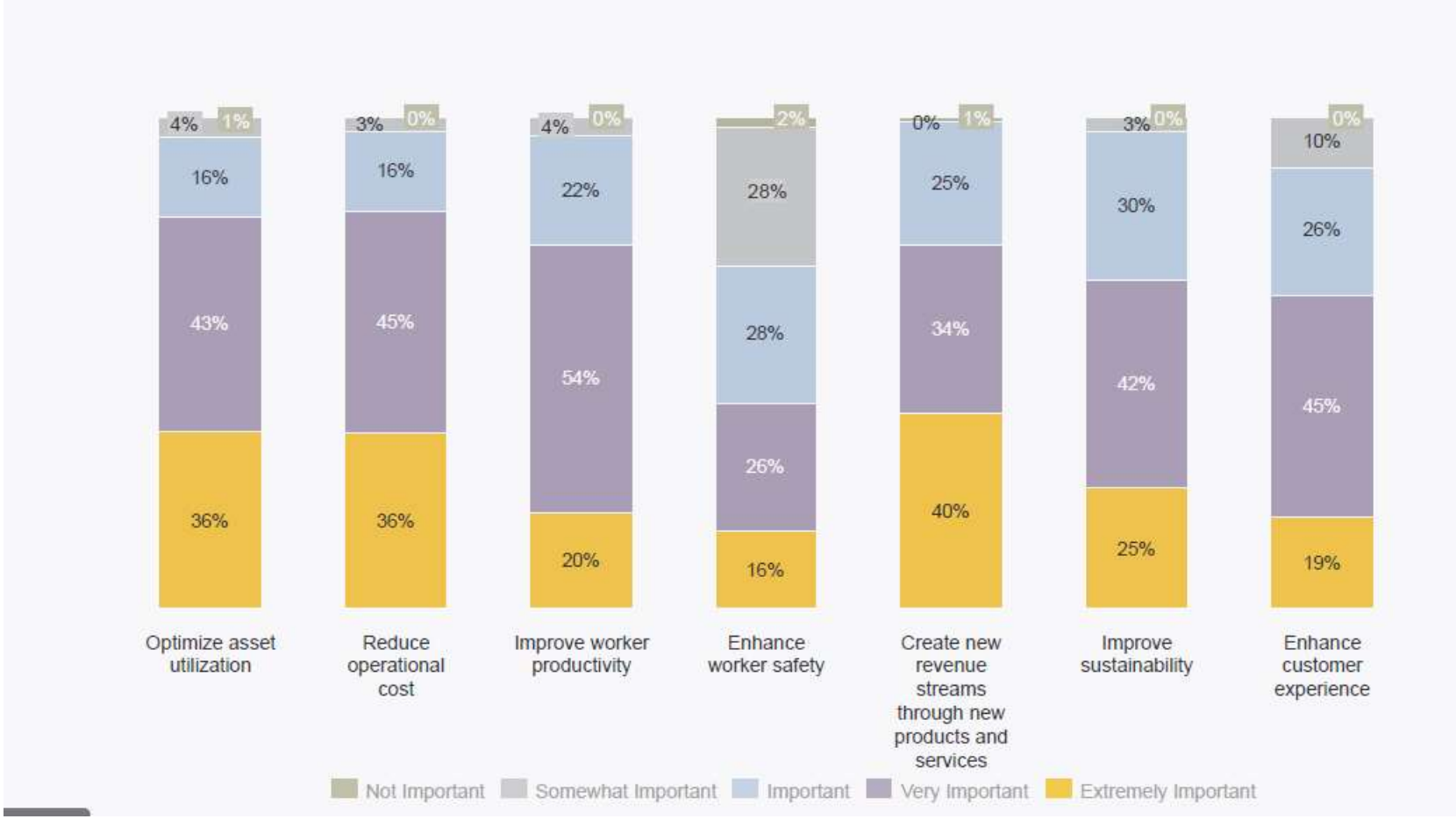
Opportunities & Benefits

- Massive volumes of data from connected products, and the increased ability to make automated decisions and take actions in real time.
- Vastly improved operational efficiency (e.g., improved uptime, asset utilization) through predictive maintenance and remote management.
- The emergence of an outcome economy, fueled by software-driven services; innovations in hardware; and the increased visibility into products, processes, customers and partners.

Opportunities & Benefits

- New connected ecosystems, coalescing around software platforms that blur traditional industry boundaries.
- Collaboration between humans and machines, which will result in unprecedented levels of productivity and more engaging work experiences.

Opportunities & Benefits



IIOT & How to use it?

USE CASE 1: Managing Recipe Variation

Let's bring the framework to life with some examples. Brewing beer is a touchy process that must balance the relationships between live cultures, bacteria, time, ambient and equipment temperatures, ingredients, equipment, elevation, and much more. The inherent variation can cause quality issues.

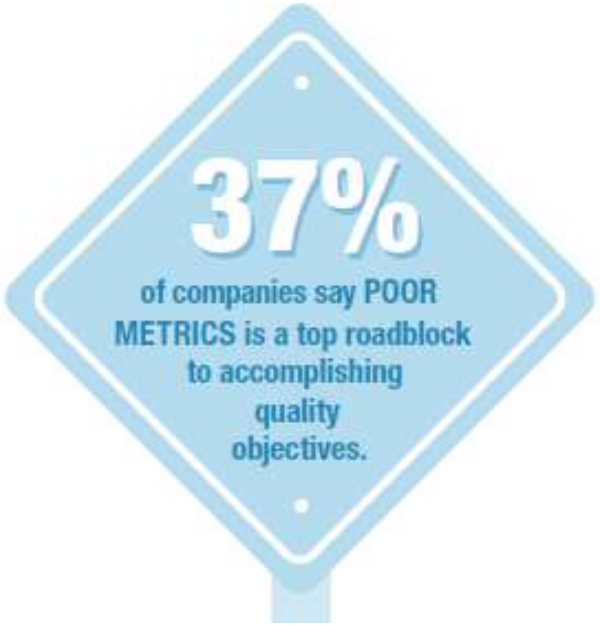
One of the largest craft brewers in the US recently implemented machine learning (ML), artificial intelligence (AI) and historical process data to solve a batching problem that was causing a major quality issue and the loss of entire batches.

The brewmasters thought the problem was the relationship between pressure and temperature; instead it was an issue with the timing of batch processes determined by natural variances in yeast. They used ML/AI to build a model to alter the recipe and optimize batches on previously unknown relationships. By establishing a new process, the brewer eliminated lost batches associated with this quality issue and recaptured two weeks of extra capacity per lost batch.

TAKEAWAY:

The brewmasters applied Quality 4.0 analytics to traditional data and processes to drive quality improvement and new competencies.

IIOT & Analytics

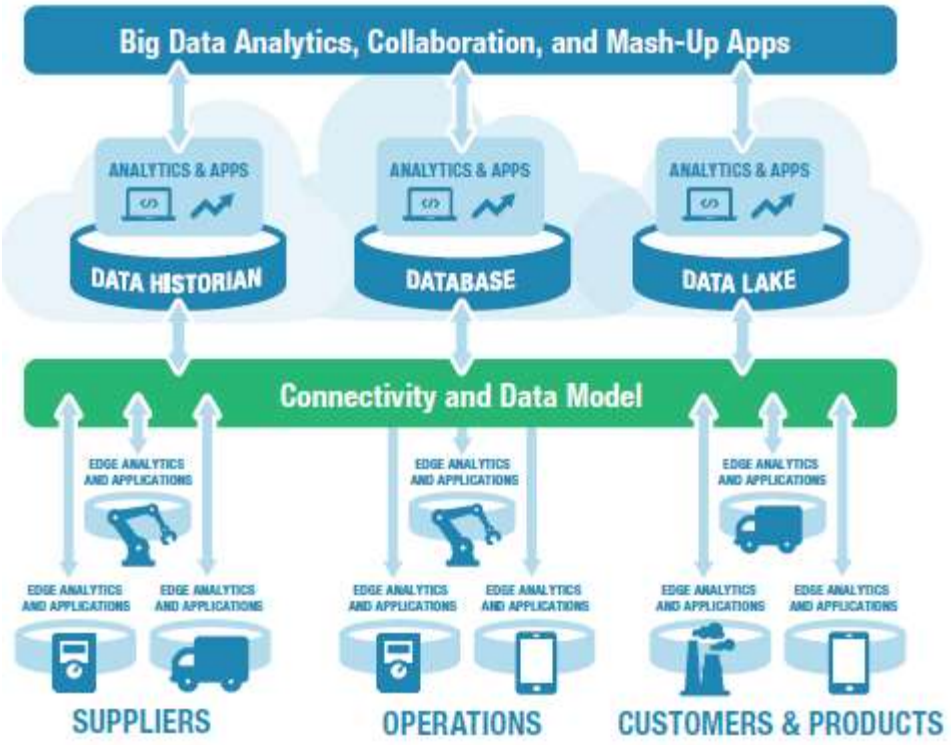


IIOT & Big Data

Within this mountain of data, some of it is useful, the rest is noise.

Software that creates useful insight from this overwhelming amount of information is extremely valuable.

IIOT & Big Data



Risks
&
Challenges

Risks & Challenges

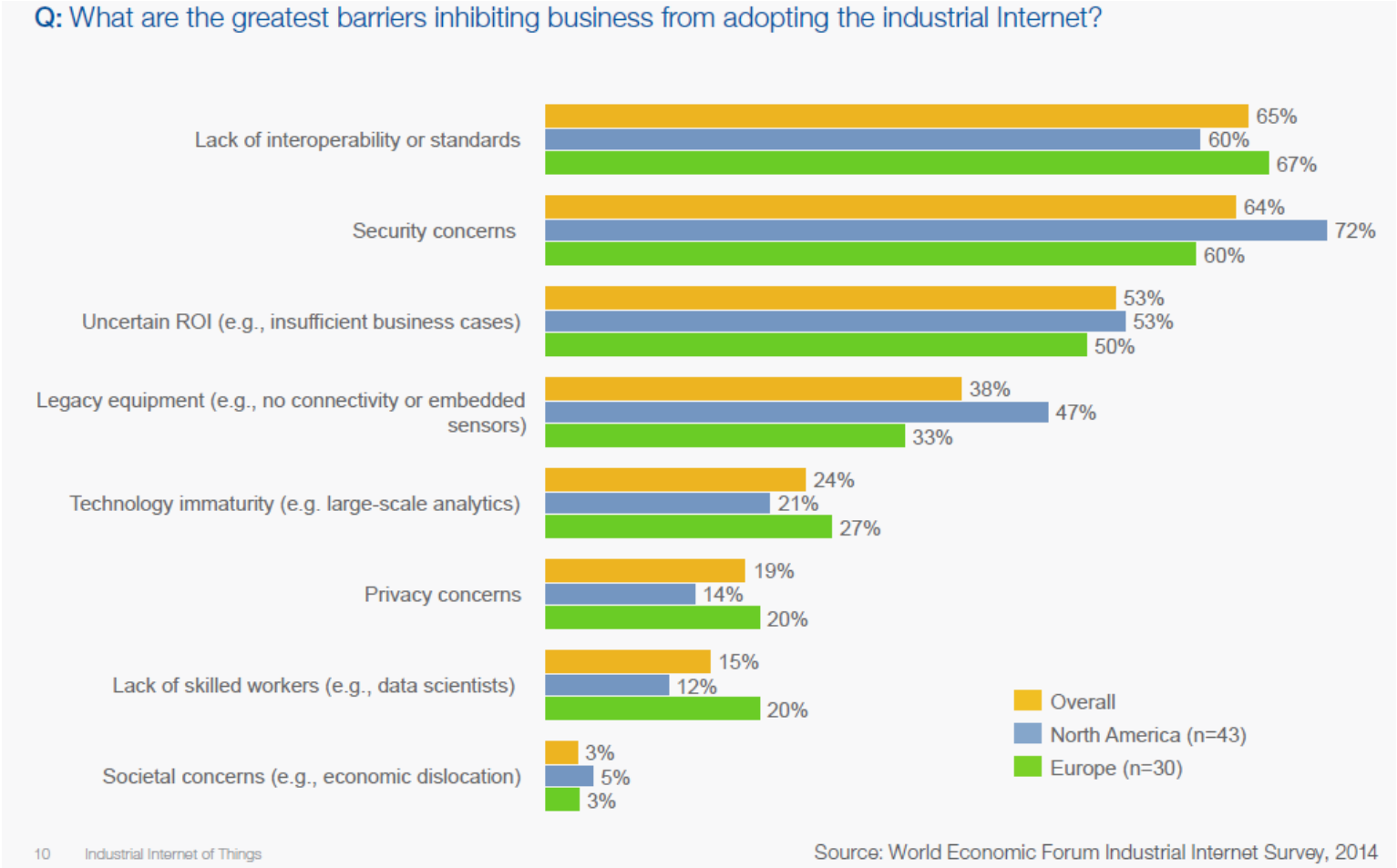
- Security and data privacy, which are already rising in importance given the increased vulnerabilities to attacks, espionage and data breaches driven by increased connectivity and data sharing
- Another crucial barrier is the lack of interoperability among existing systems, which will significantly increase complexity and cost in Industrial Internet deployments. Today’s operational technology systems work largely in silos.

Risks & Challenges

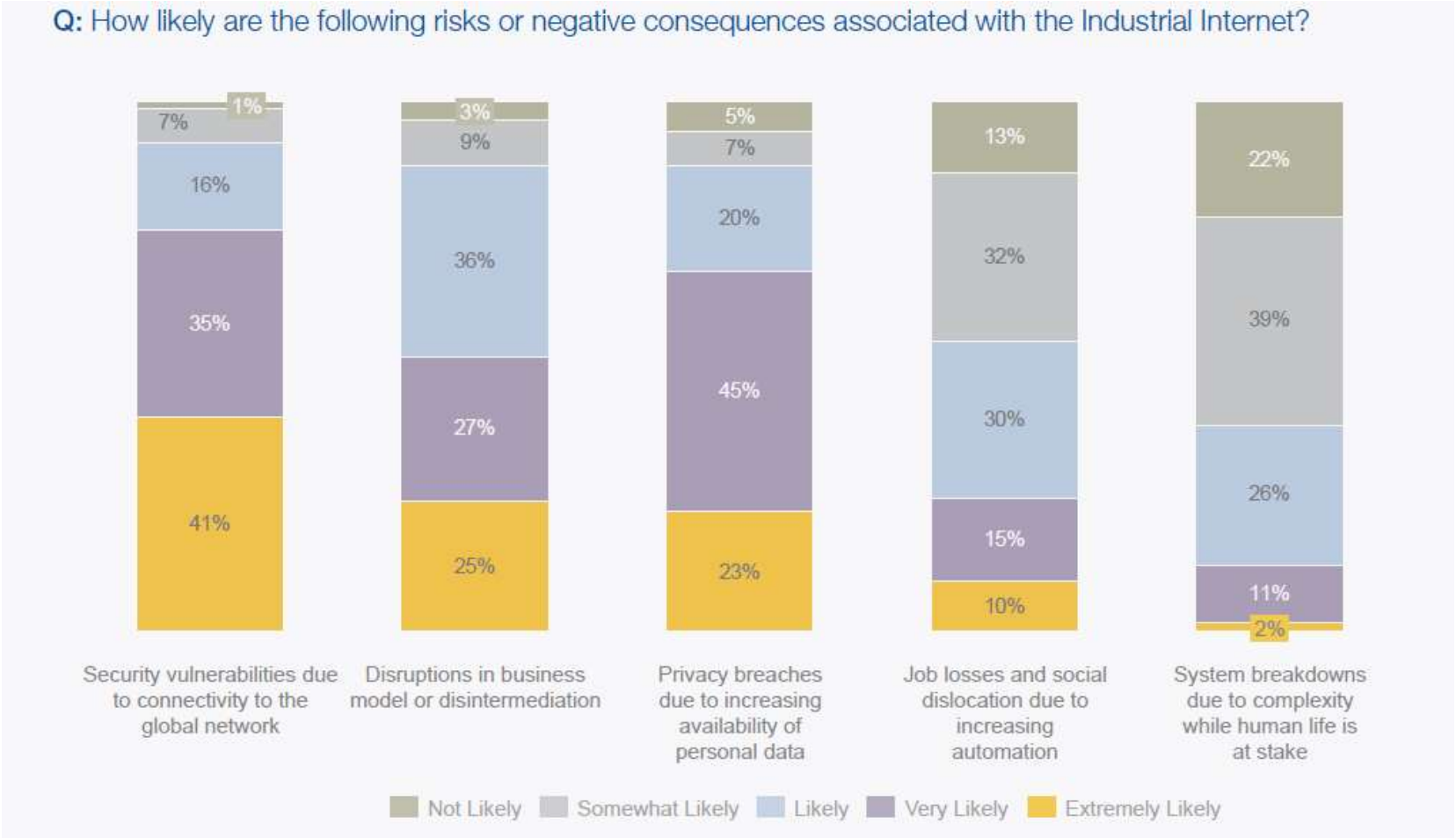
- Uncertain return on investments on new technologies, immature or untested technologies.
- Lack of data governance rules across geographic boundaries and a shortage of digital talent.

- Overcoming these challenges will require leadership, investment and collaborative actions among key stakeholders.

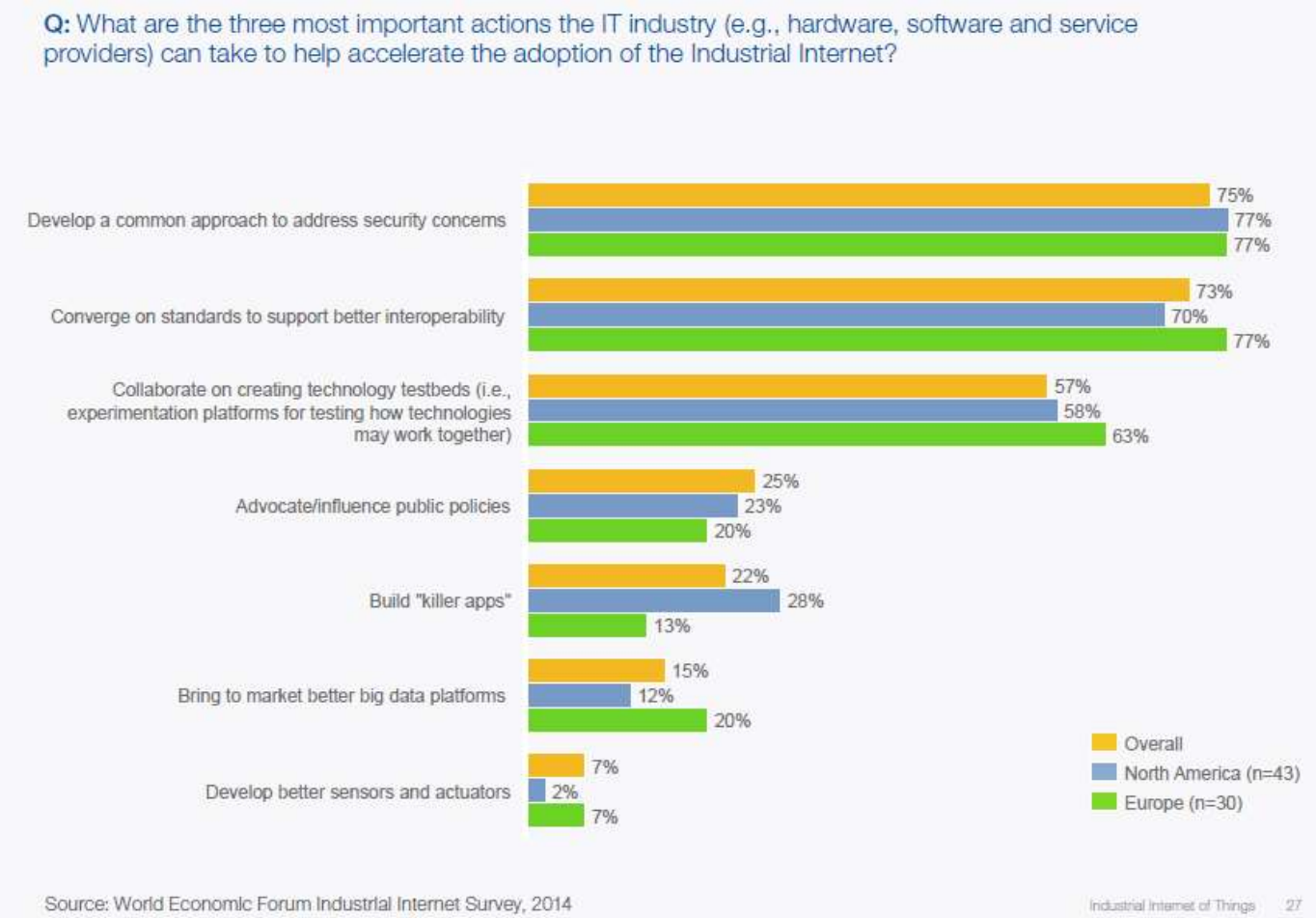
Risks & Challenges



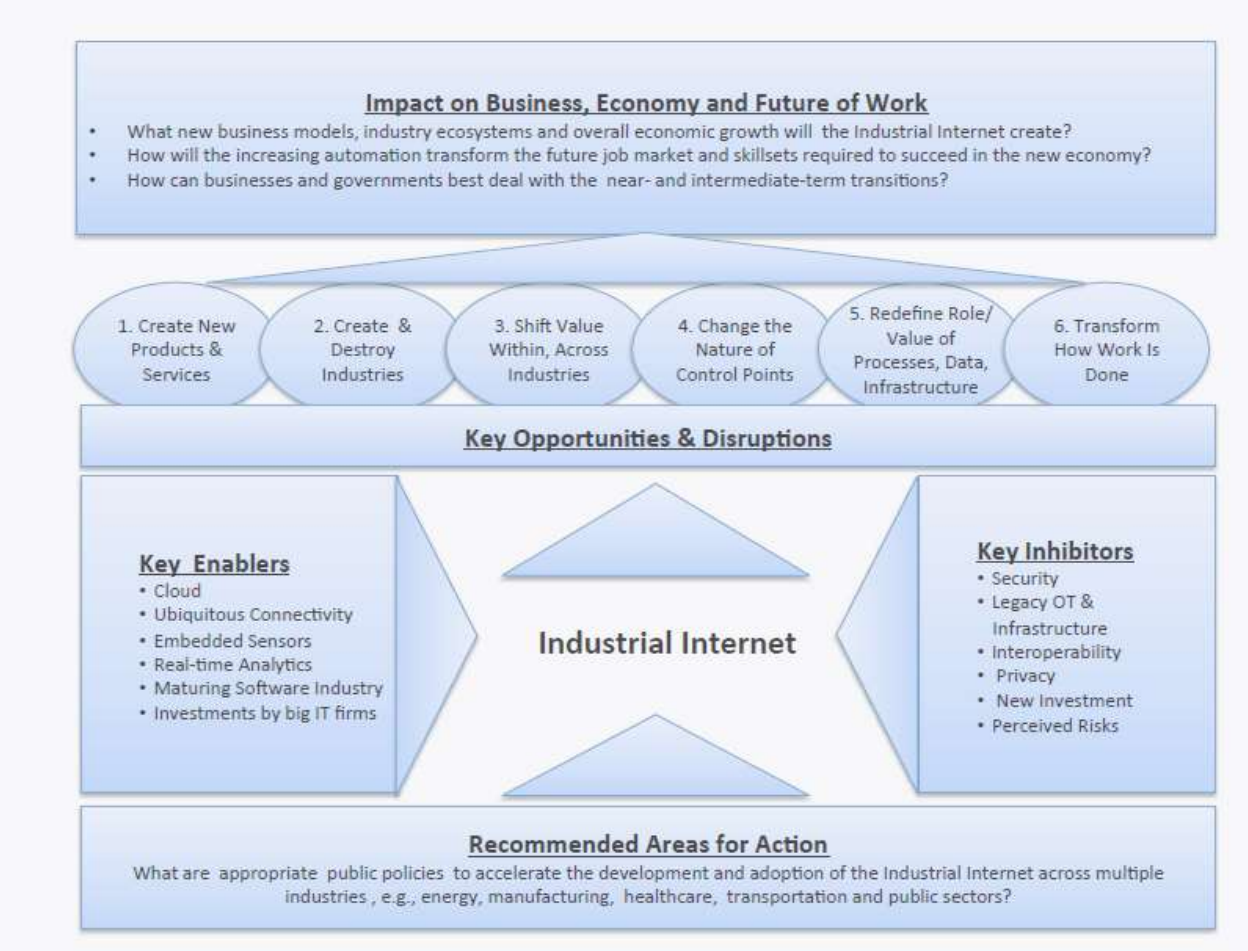
Risks & Challenges



Three Important Actions

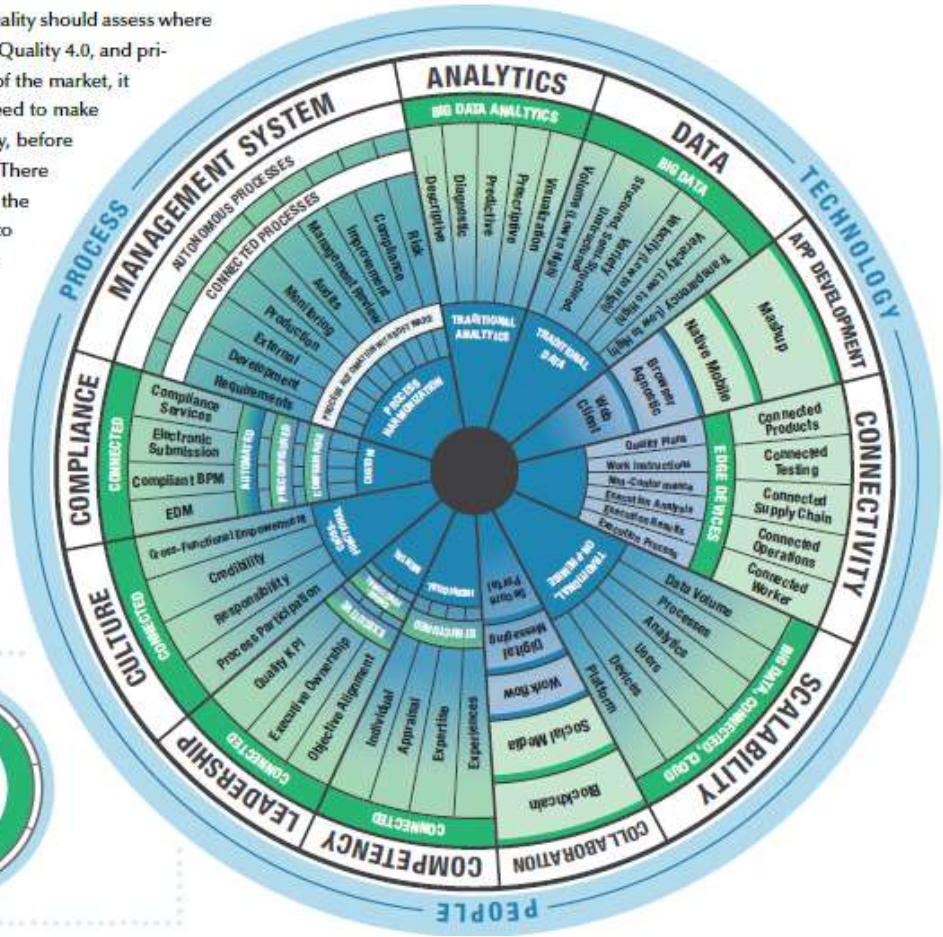


IIOT Project Framework

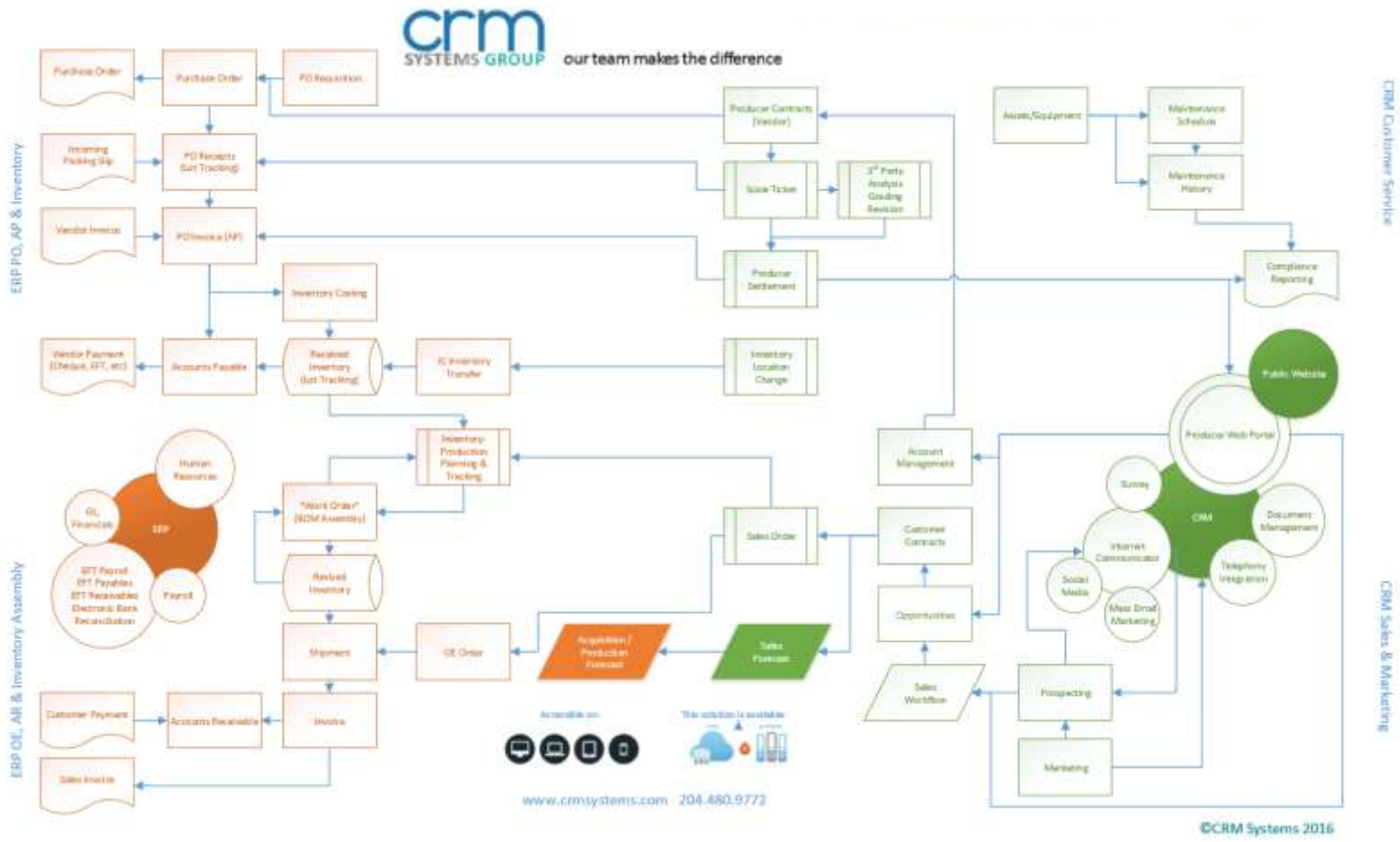


IIOT Today

Manufacturers looking to improve quality should assess where they stand on each of the 11 axes of Quality 4.0, and prioritize investments. Given the state of the market, it is likely that many companies will need to make investments first in traditional quality, before they can fully leverage Quality 4.0. There are clearly interrelationships among the axes, and adding new capabilities to certain axes enables new applications on other axes.



Examples of where IIOT can be applied



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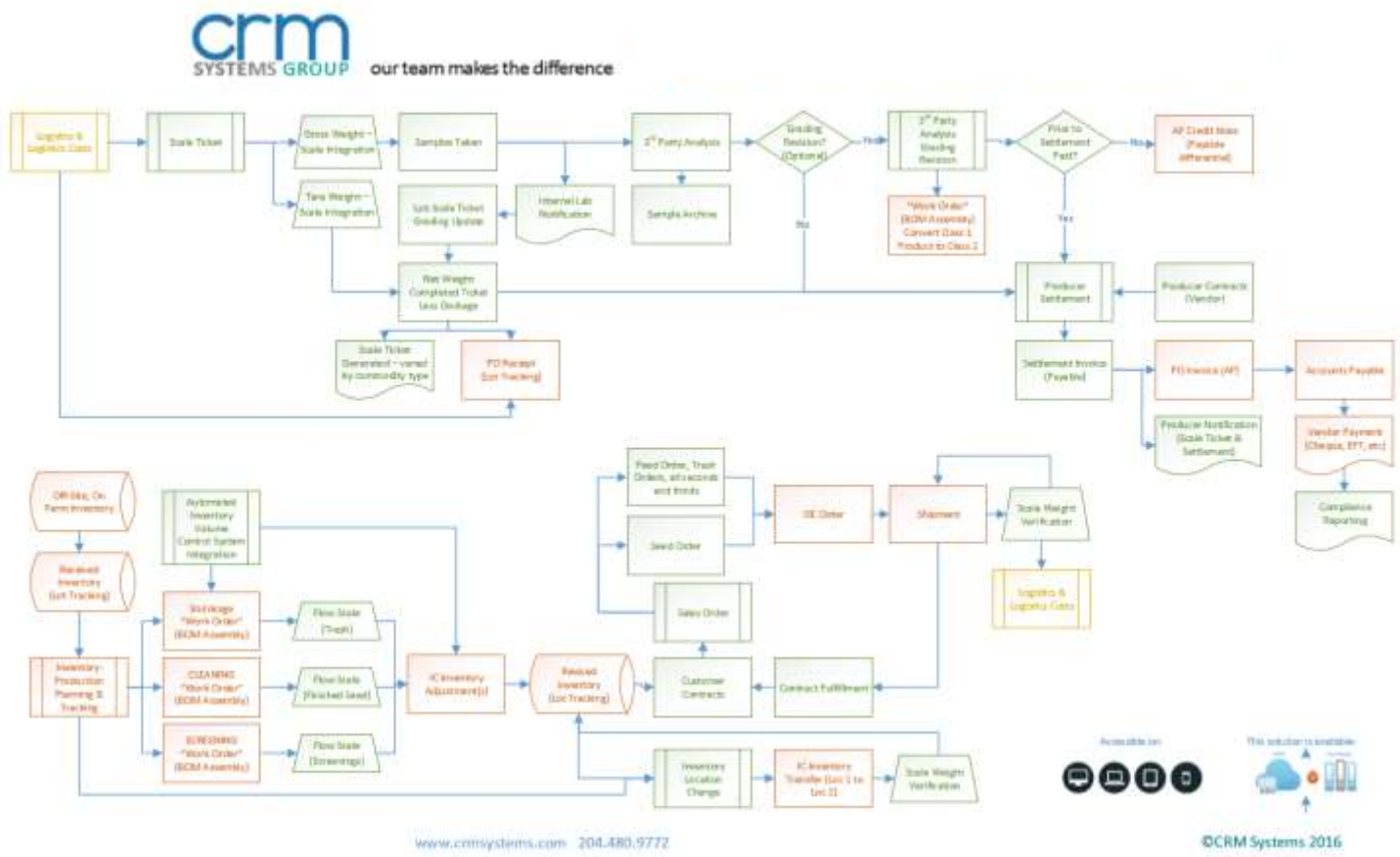

Questions?

Thank you for your time and attention

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