

# Designing a Scalable MTConnect Data Architecture

Will Sobel  
Founder and Chief Strategy Officer

**VIMANA** | by System  
Insights

California | India

## The Predictive Analytics Platform for Manufacturing Intelligence



*Industrial Internet of Things*



*Industry 4.0*



*Client Initiatives*



*Industry Initiatives*

Meet us at Booth E4149



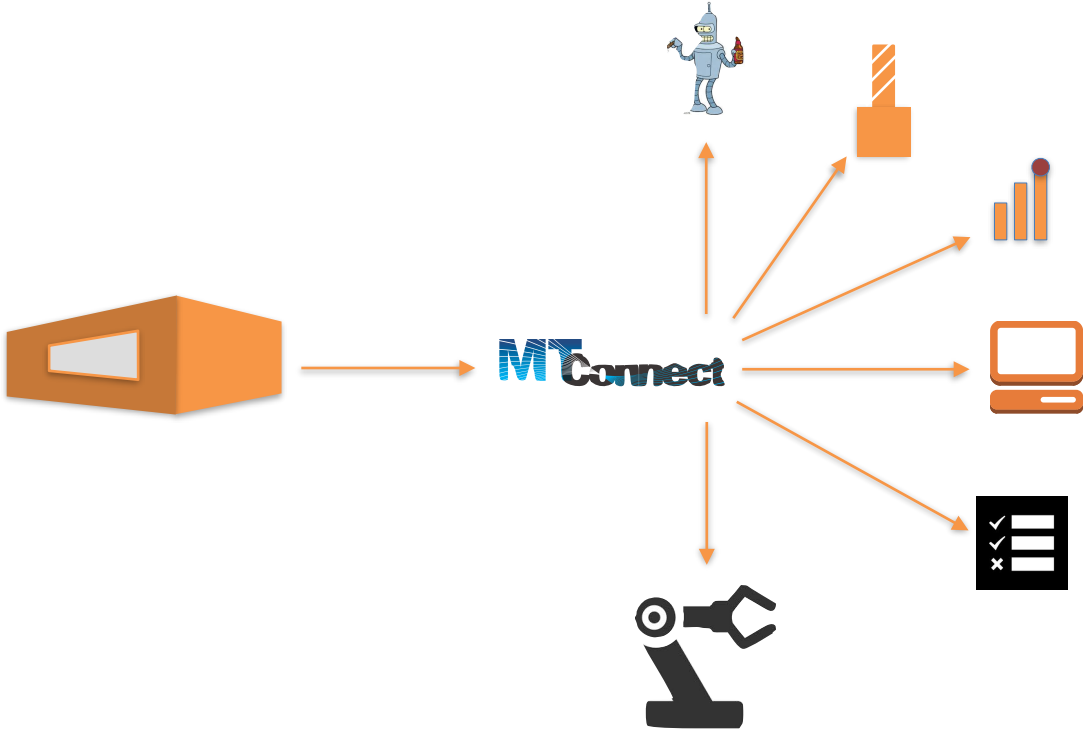
Predictive Analytics and Smart, Connected products (IoT) #1 and #2 in future importance of manufacturing technologies

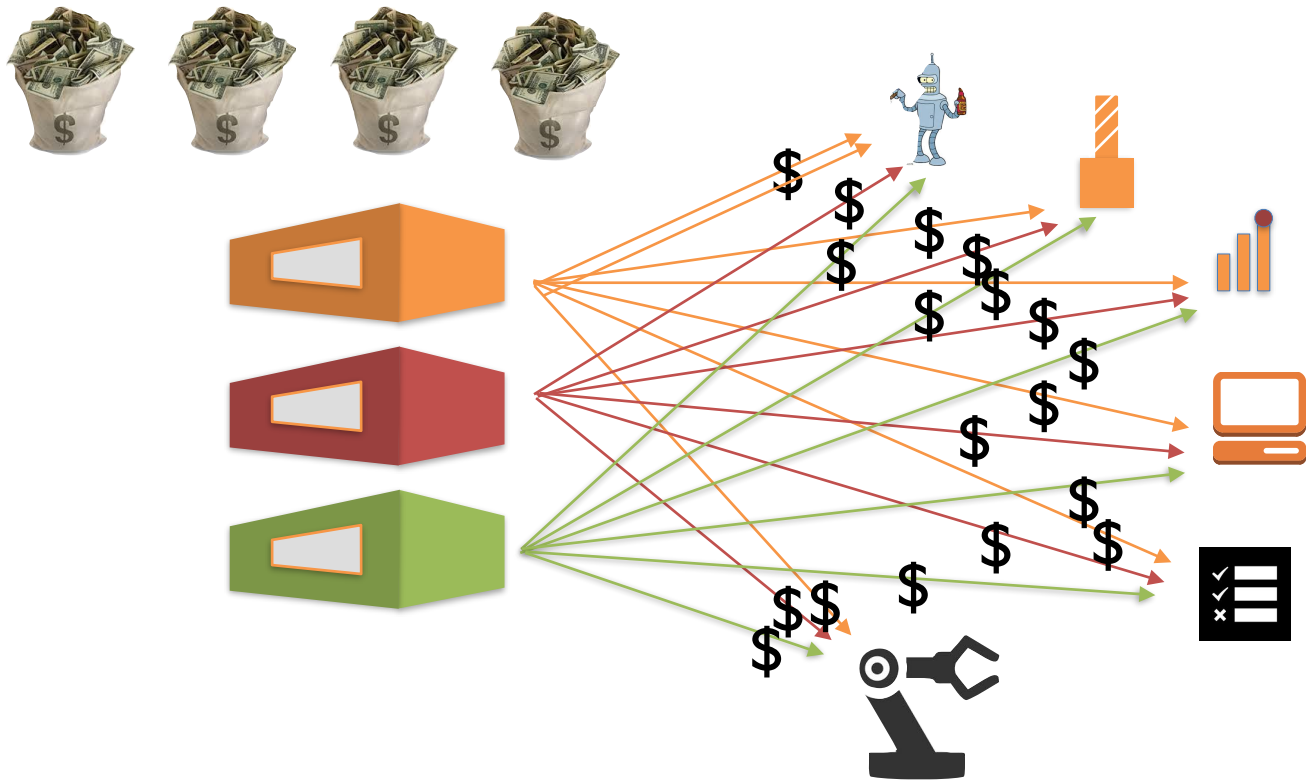
Deloitte Global CEO Survey 2016, Global Manufacturing Competitive Index

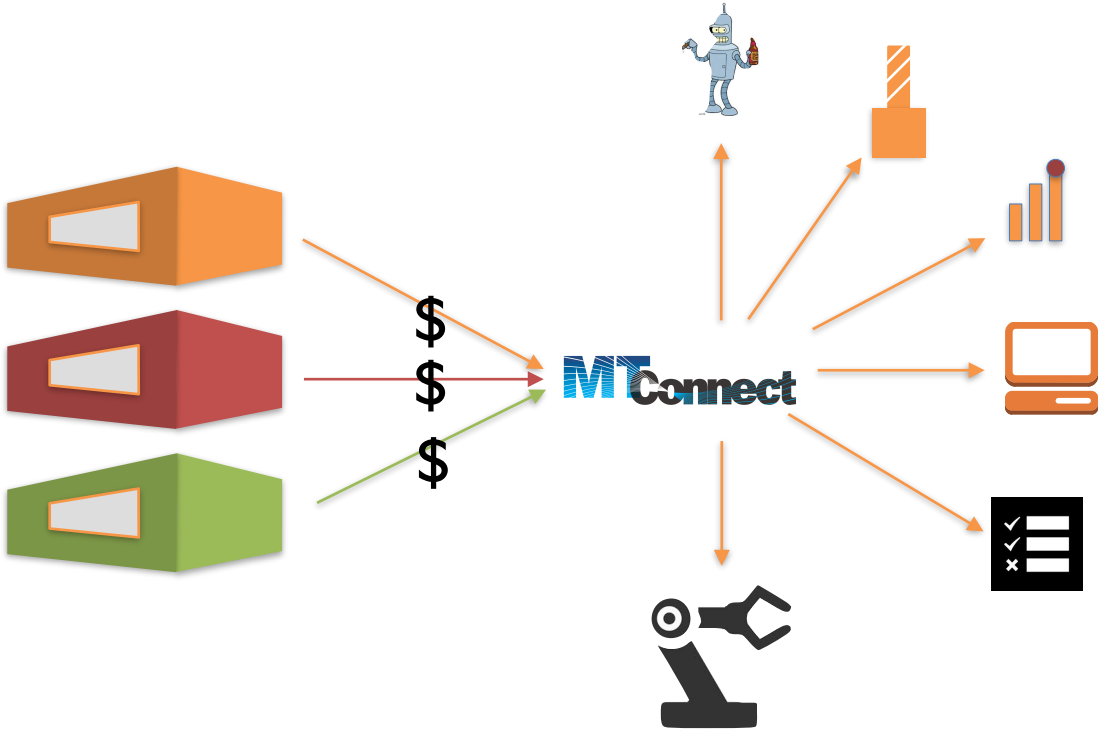
But 86% of plants DO NOT use manufacturing data in analytics

LNS Research, 2016

How do you close that gap with MTConnect?







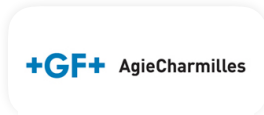


## Software and Hardware for Shopfloor Connectivity

### CNC



### EDM



### CMM



Data Store



### PLC



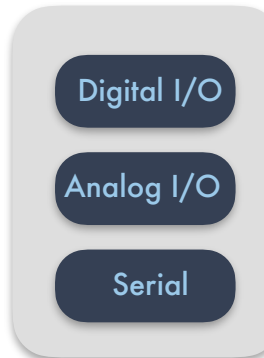
### Identity

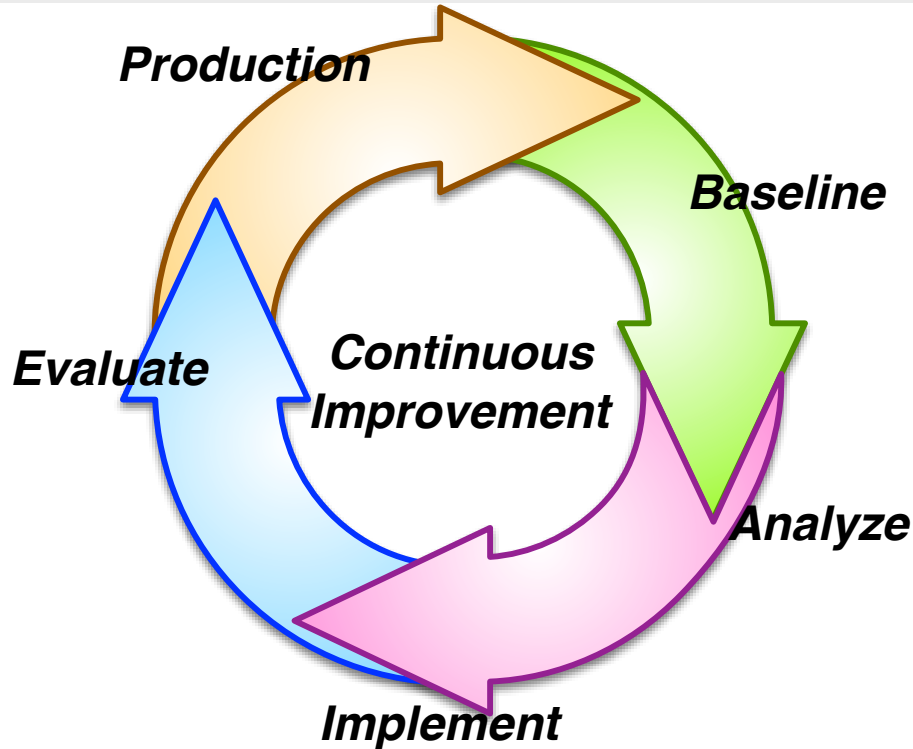


### Standards



### Legacy HW

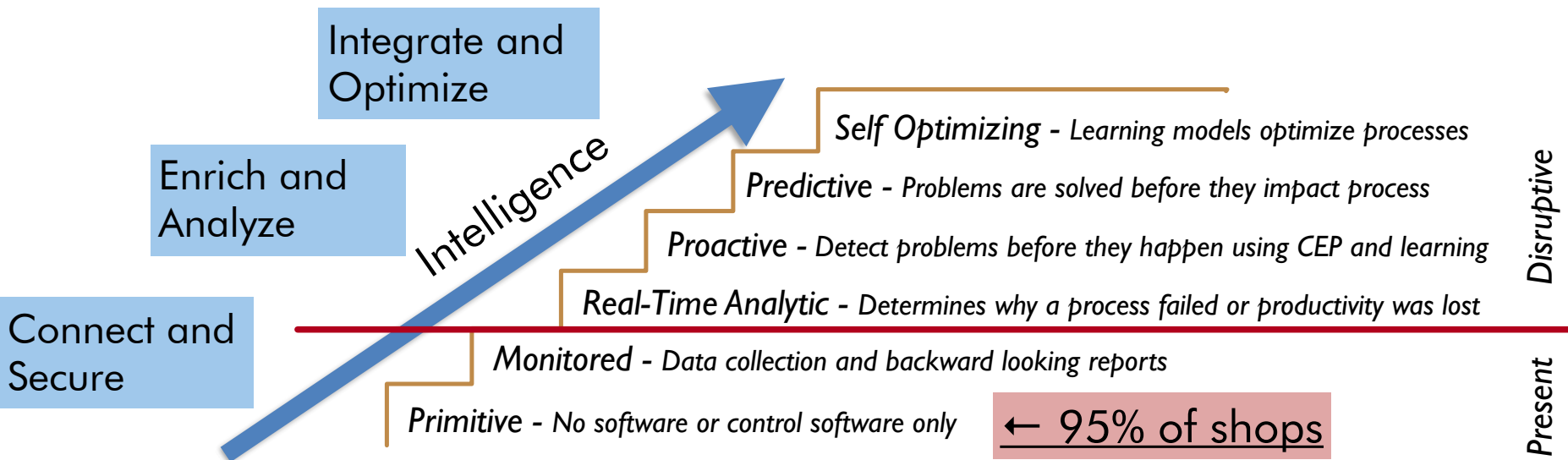




- Manufacturing process improvement
- Operational excellence programs
- Better forecasts of production across multiple plants
- Better forecasts of production in a plant
- Asset performance improvement across plants
- Real time alerts based on manufacturing data

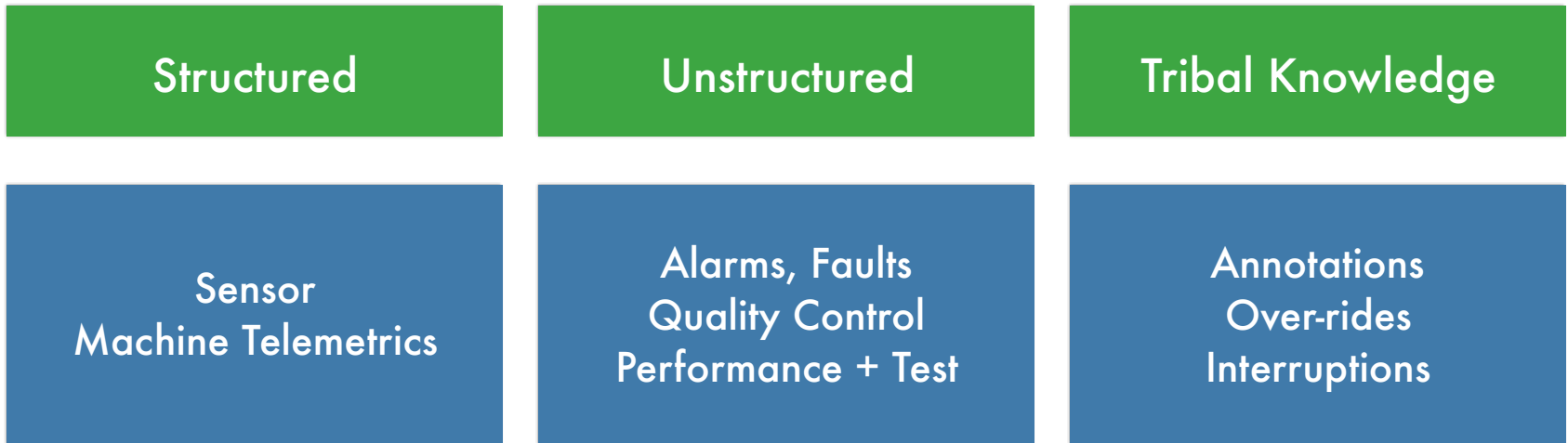
LNS Research, 2016





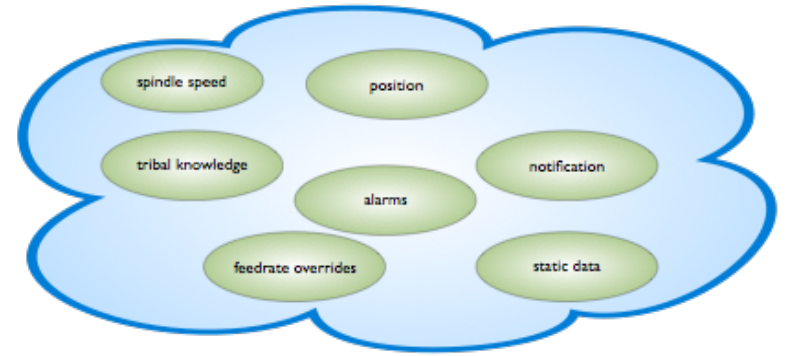


Typical manufacturing plant: 5~25 TB of data per year

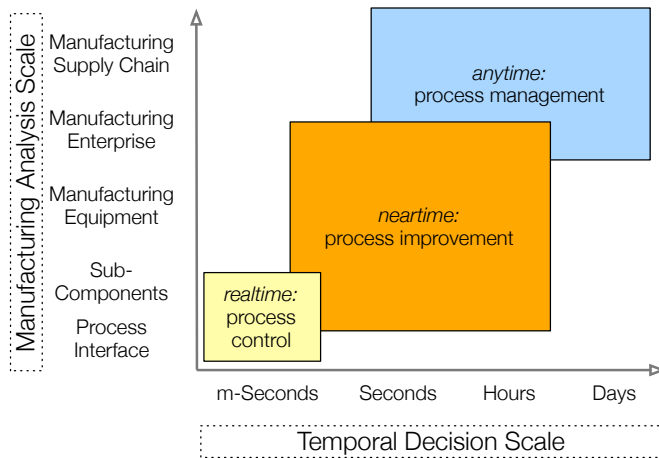


So what do we do with all of this data?

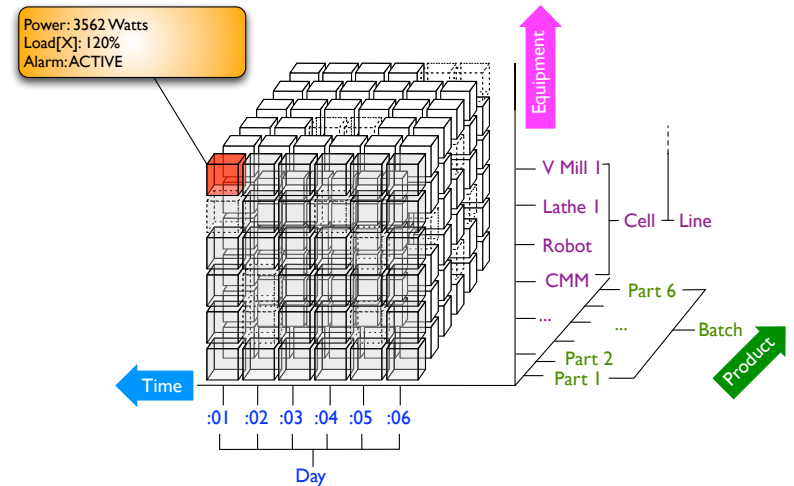
What are the key considerations in selecting a platform to handle scalability?



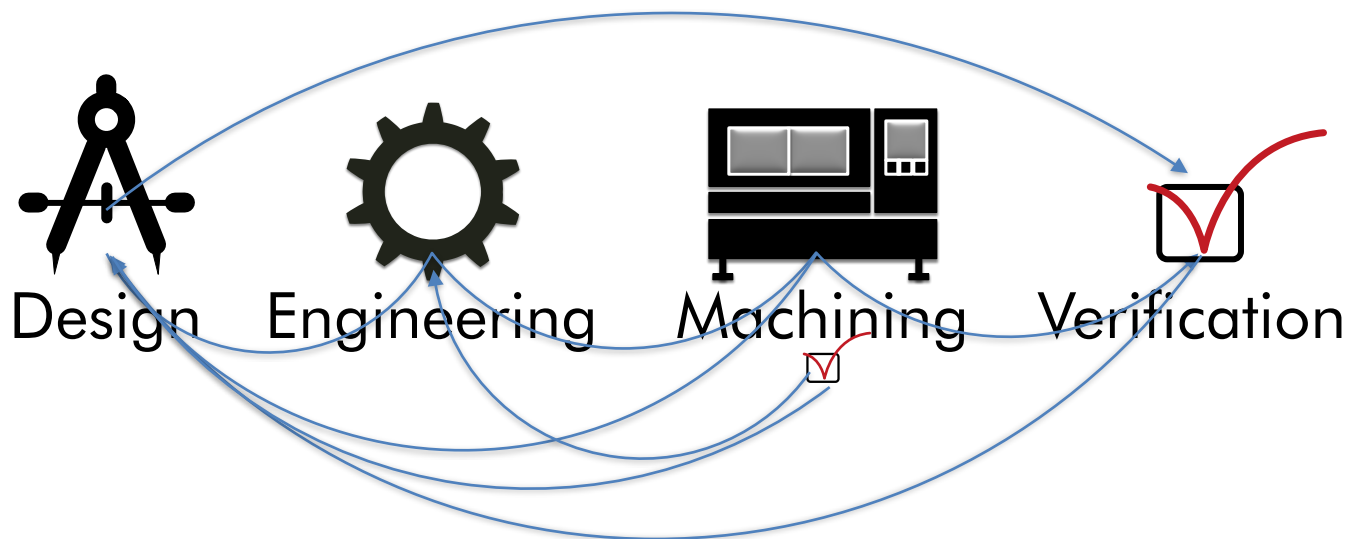
Pattern matching on large data volumes



Reasoning over multiple time-scales



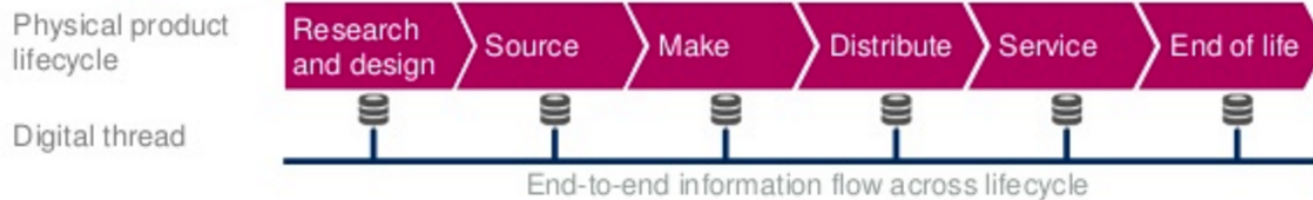
Reasoning across multiple dimensions



## OPERATIONAL EFFECTIVENESS

### Disruptive technologies increase the value of digital information along the entire product lifecycle

The **digital thread** is the digital representation of the physical product lifecycle



#### 4 activities are required to manage the **digital thread**

##### Information capturing and recording

- Relevant set of data to prevent information overflow
- Automated, real-time capturing via sensors
- Recording and storing of both historical and new data in a single information system

##### Information transfer

- Digitally transfer information across departments, production sites, value chain steps, and company borders

##### Information analysis and synthesis

- Identification of relevant data and analysis (ideally, automated)
- Synthesis of analysis into relevant insights

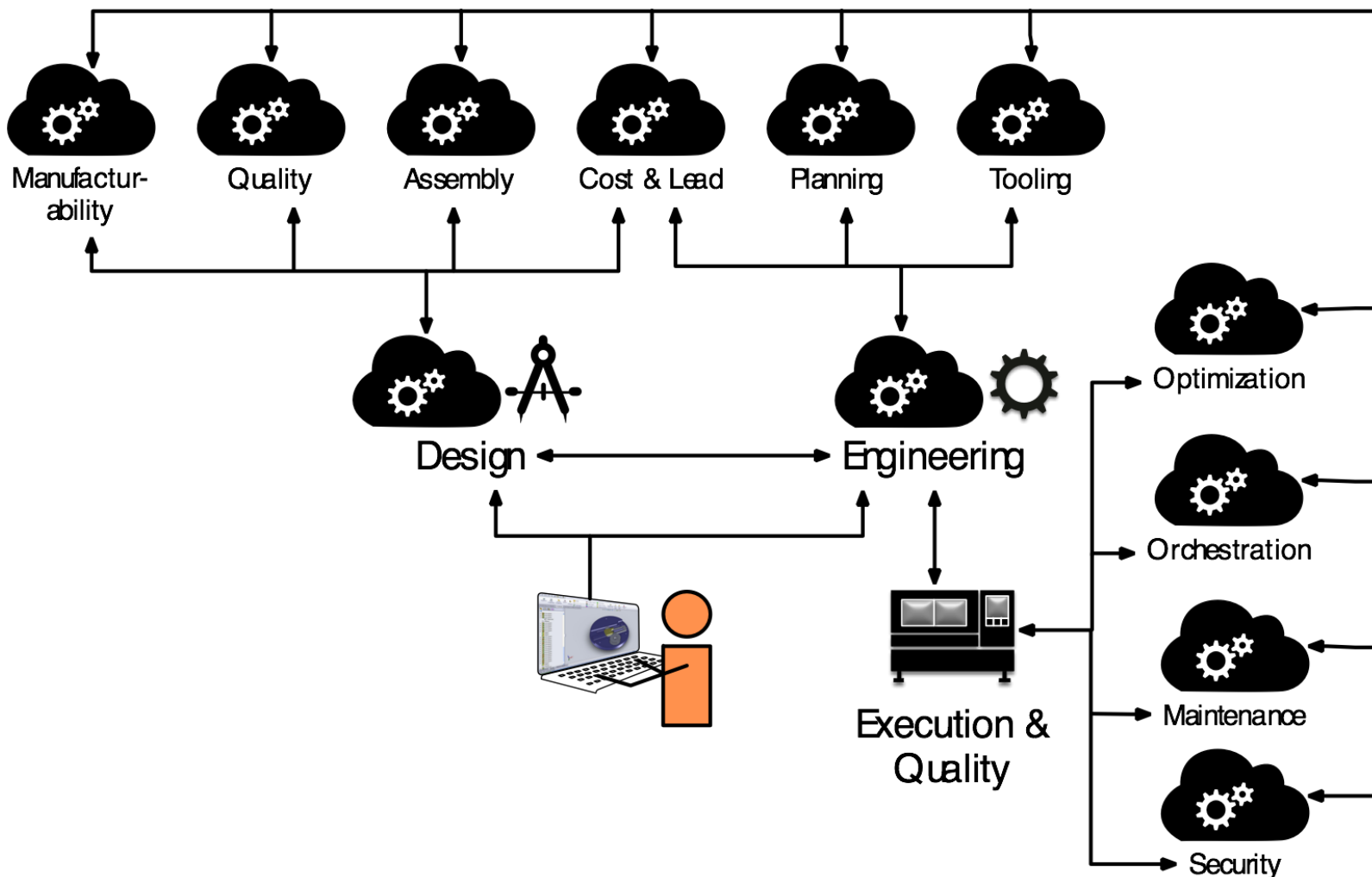
##### Turning information into outcomes

- Translation of analysis results into recommendations that suggest actions for workers or automatically trigger actions of machines
- Feedback and continuous improvement

SOURCE: McKinsey

McKinsey & Company 5

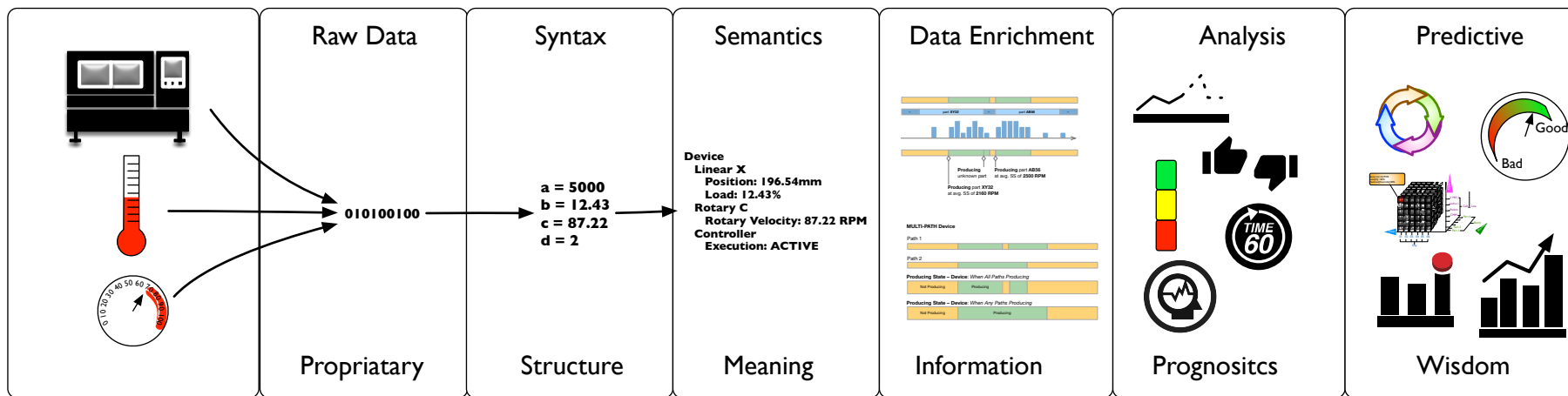
Support integration across all components of the digital thread



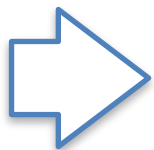


## Steps to transition from data collection to making predictive decisions

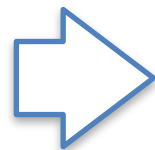
Value



Connect and Secure



Enrich and Analyze

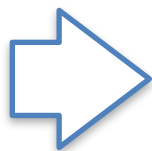


Integrate and Optimize

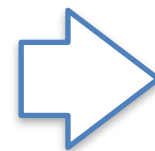
# VIMANA SUITE



Connect and Secure



Enrich and Analyze



Integrate and Optimize

Connect securely to a wide array of multi-vendor and legacy factory assets, using MTConnect and OPC-UA.

Enrich and analyze volumes of machine data, generating metrics and insight to gain visibility and control.

Integrate and optimize shop floor data with industrial platforms and mission critical systems.

Meet us at Booth E4149





- MTConnect is the first piece in the Analytics stack
- Scalability is required:
  - Vertically: To handle complexity in data from the shop floor
  - Horizontally: Across the digital manufacturing pipeline
- Path to Predictive
  - Secure and Connect
  - Enrich and Analyze
  - Integrate and Optimize
- Lets continue this discussion at our booth, E4149



THANK YOU

## Our Offices

United States  
1900 Powell Street  
Suite 600  
Emeryville CA 94608

India  
506 Velachery Main Road  
East Tambaram  
Chennai 600059