DMI
DRIVING MOBILE INNOVATION

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TOPIC

Role of IoT In Supply Chain Transformation

DATE

February 07, 2017

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OUTLINE

- About DMI and Stellium . . . . . 3 Mins
- . . 3 Mins
- Our Capabilities & Joint Value proposition . . . . . 3 Mins
- Innovation to Implementation . . . . . 4 Mins
- . . 5 Mins
- Factors driving the change . . . . . .7 mins
- . 5 Mins
- Role of IoT in Transformation . . . . . .5 Mins
- .

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ABOUT US

DMI
DRIVING MOBILE INNOVATION
Telit IoT Innovation

THE FIRST INTEGRATED END-TO-END MOBILITY COMPANY IN THE WORLD

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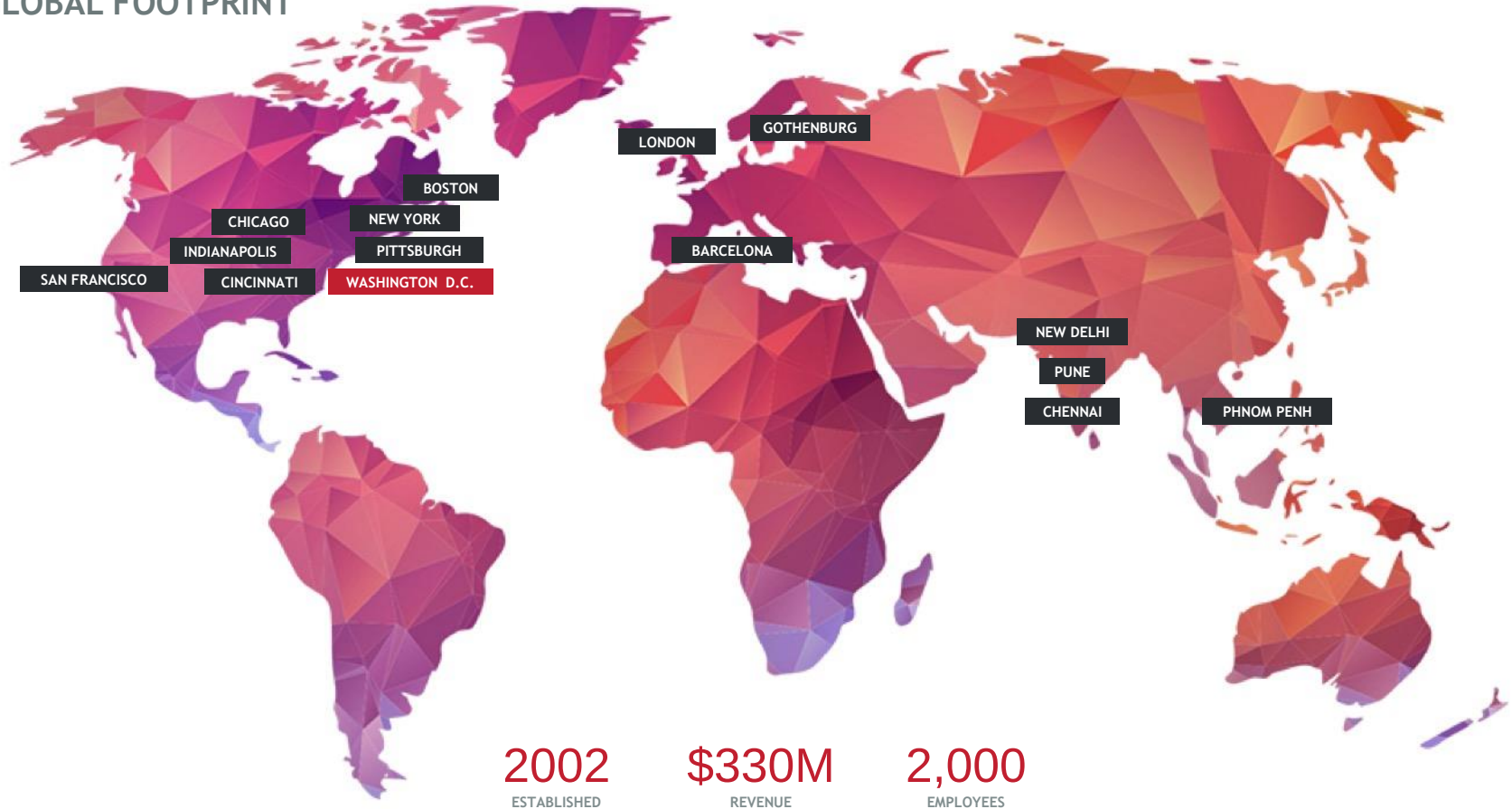
GLOBAL FOOTPRINT



2002	$330M	2,000
ESTABLISHED	REVENUE	EMPLOYEES

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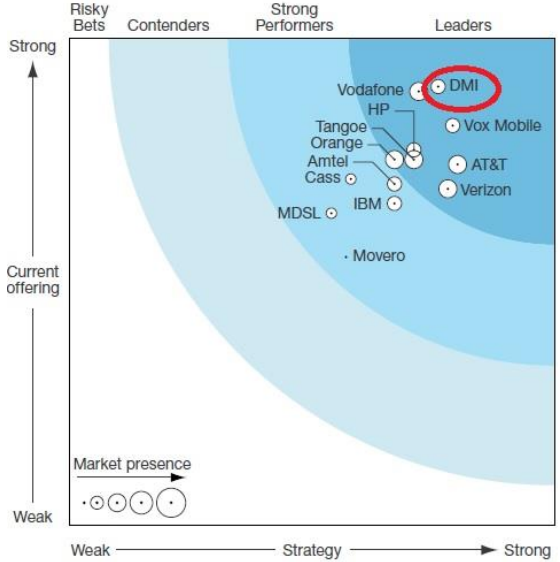
RECOGNIZED MARKET LEADERSHIP

FORRESTER®

The Forrester Wave Mobile Enterprise
App Services - Midsize Providers
March 2015



The Forrester Wave
Global BYOD Management Services
June 2014

Gartner

Magic Quadrant for
Managed Mobility Services (MMS)
October 2016

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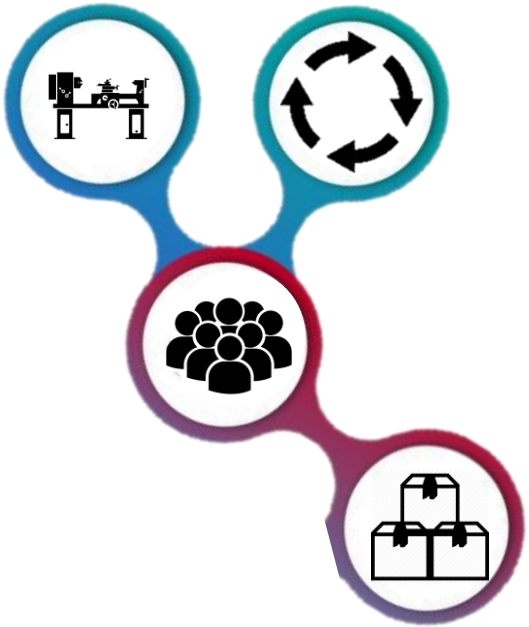
Reimagining Supply Chain & Manufacturing by Intelligently Connecting People, Goods, Systems & Machines

SAP Silver Partner

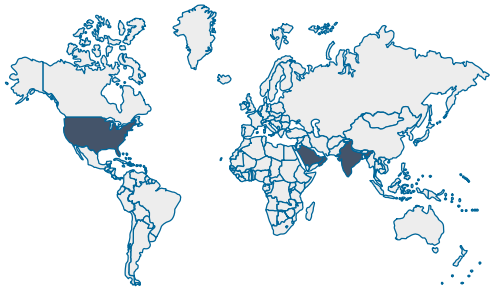
One of the **Top 5** SAP partners globally in Supply Chain



Serving

25+

Fortune 1000 Clients



Across Americas, Asia Pacific and Middle East

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CAPABILITIES

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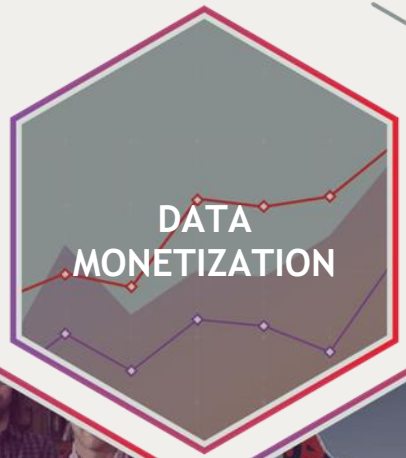
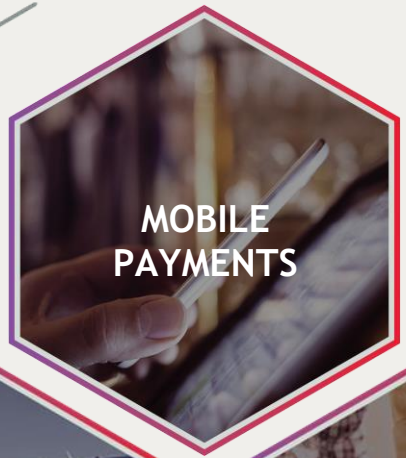
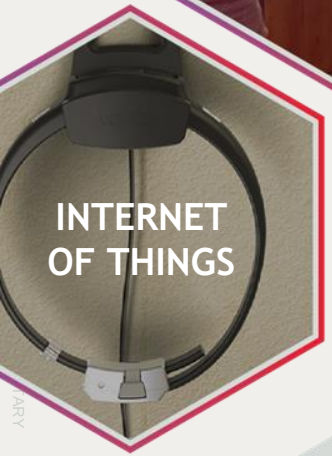
EMERGING SOLUTION AREAS







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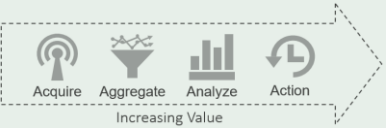
STELLIUM CAPABILITIES

Management Consulting

- Supply Chain Excellence
- IT Operational Excellence
- Industrial IoT Advisory Services

Technology Consulting & Implementation

- Digital Supply Chain (**SAP** EWM, TM, LM, MII, ME, IBP)
- Digital Enterprise Services (S/4, Worksoft, ALM by HP)
- Connected Factory & Connected Equipment



01 Connected Manufacturing

- Improve Quality
- Improve OEE / Productivity
- Improve Traceability
- Energy Management

02 Connected Intra-Logistics

- Improve Customer Service
- Improve OEE / Productivity
- Improve Quality
- Reduce Manpower / cost

03 Connected Products / Appliances

- Product-as-a-Service
- Improve OEE / Productivity
- Fleet / Asset Management
- Product Quality Improvement

We deliver business value for the clients using technology products as an enabler

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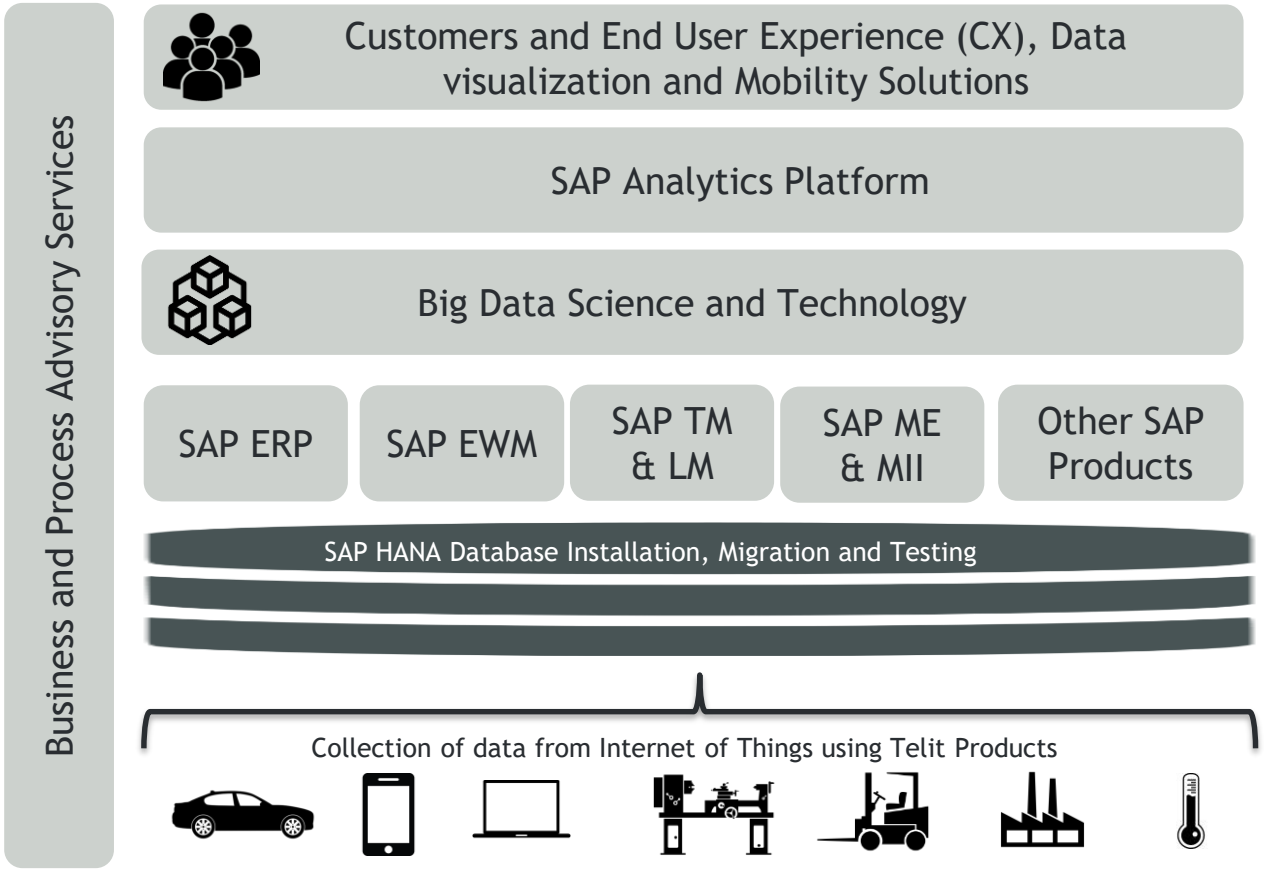
OUR VALUE PROPOSITION : AN END-TO-END DIGITAL ENTERPRISE SOLUTION FOR CUSTOMERS

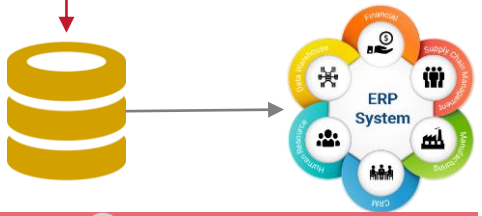


- DMI together with Stellium can offer **process driven, end-to-end solutions** which can deliver **business value** to customer
- The Solution can be implemented across industry verticals and manufacturing sectors

JOINT INNOVATION – SAP CO-INNOVATION LAB

Phase 1: SAP Products directly interact machine level PLC to get real time inputs and real time postings of transactions. The material movement in the shop floor is controlled directly by SAP

"IoT"



Enterprise Database

SAP HANA

Enterprise Applications

SAP S/4, EWM, MII & ME

Real time Data Collection & Information flow to Upstream

Real time actions based on data collected & decision flow to downstream

JOINT INNOVATION – SAP CO-INNOVATION LAB

Phase 2: Implementation of IoT Solution like Telit, Fetch Robotics to demonstrate connected shop floor and connected Equipment.

Big Data Analytics, User Interface and Mobility Solutions

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"IoT"

Edge Computing & IoT Modules

Telit

IoT Connectivity

Enterprise Gateways

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Enterprise Database

SAP HANA

Enterprise Applications

SAP S/4, EWM, MII & ME

Real time Data Collection & Information flow to Upstream

Real time actions based on data collected & decision flow to downstream

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Phase 1: Stellium

Telit Solutions provides device integration*

DMI provides data visualization and Big Data analytics*

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FACTORS DRIVING THE CHANGE

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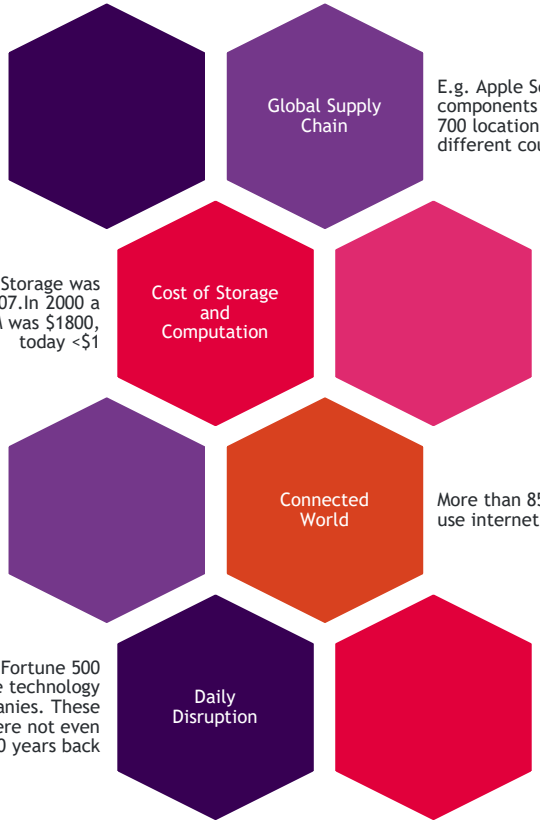
FACTORS DRIVING THE CHANGE



E.g. Apple Sources components from more than 700 location across 31 different countries

In 2000 a GB of Storage was $17, today <$0.07.In 2000 a GB of RAM was $1800, today <$1

More than 85% of US adults use internet

5 of the top 10 Fortune 500 companies are technology companies. These companies were not even started 40 years back

Increased Business Complexity

Shift in the trade-off between cost and benefit

Cost of failure is high due to rapid spread of information

Increased competition from non-traditional players

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ROLE OF IoT IN TRANSFORMATION

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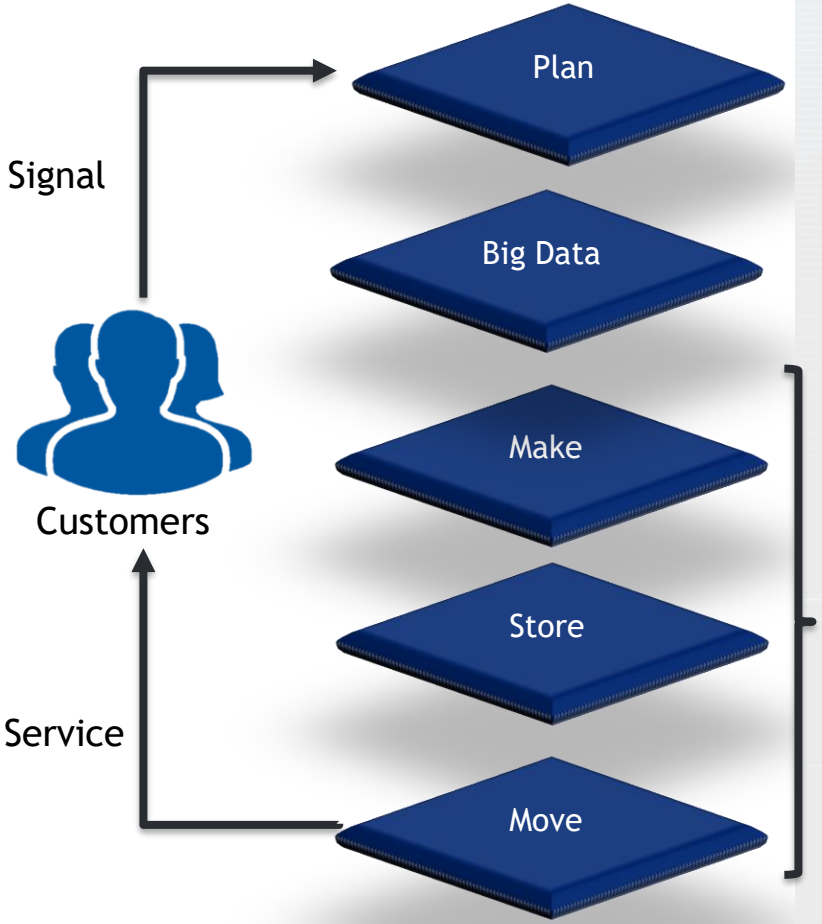
DIGITAL SUPPLY CHAIN



Sense

Measure - Social Feeds, Weather Forecasts & Other Variables
Use Cases - Customer Analytics, Demand Sensing and Advanced Planning

Decide

Use Cases- Personalized Promotions, Tactical Manufacturing and Resource Planning, Customer Micro Segmentation, Sentiment Analysis

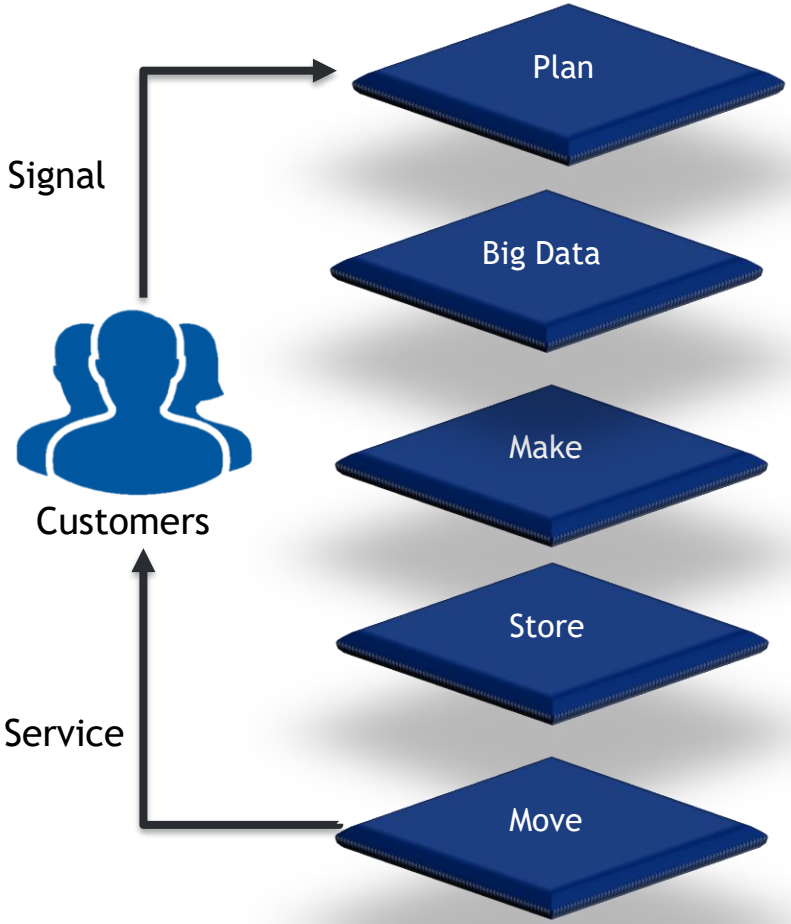
Respond

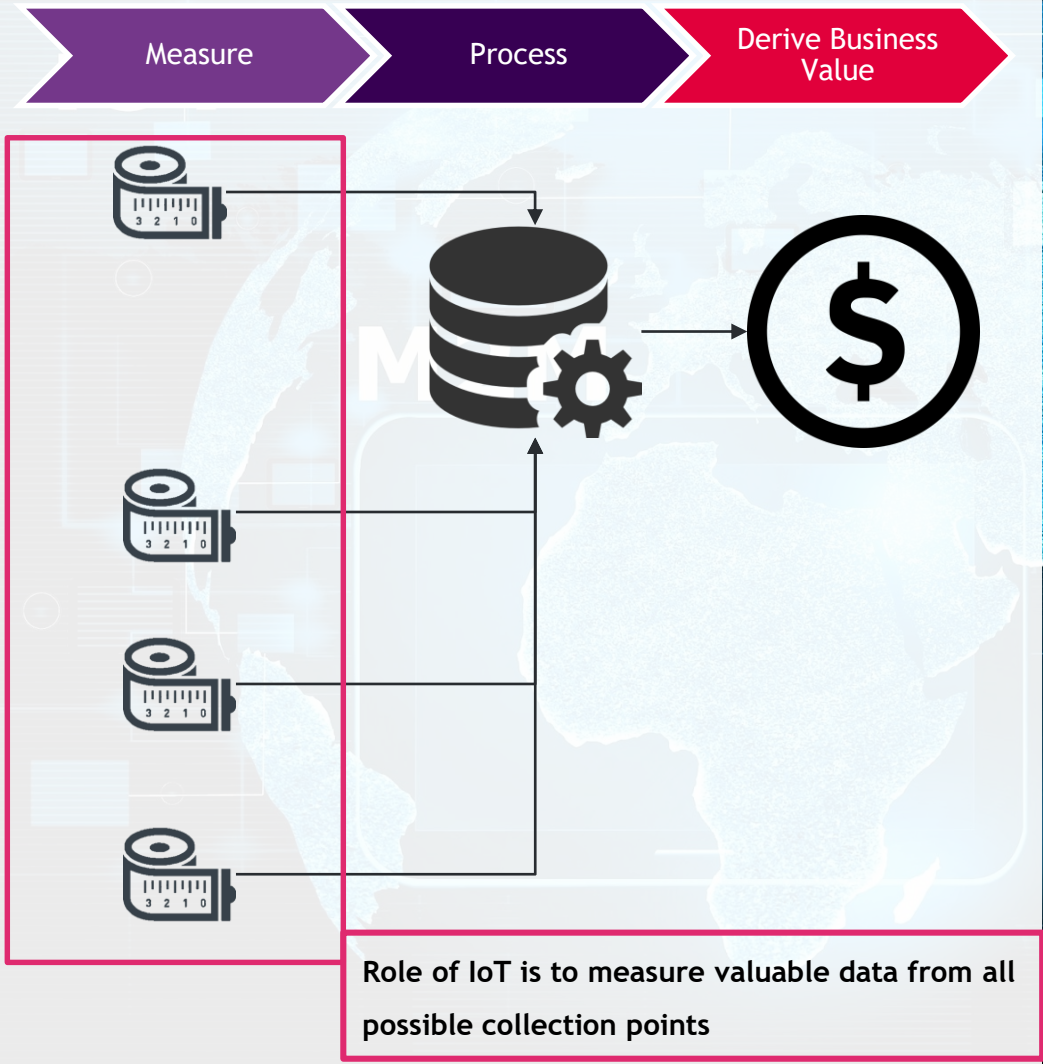
Measure - Motor Temperature, Vibration, flow etc.,
Use Cases- Predictive Maintenance, Quality Assurance, Resource Optimization

Measure – Product attributes, MHE Parameters etc.,
Use Cases- MHE Analytics, Storage, Material Integrity, Storage Condition Control

Measure – Fleet Locations, Fleet Parameters
Use Cases- Demand Micro Management, Quality & Compliance, Fleet Optimization

ROLE OF IOT IN TRANSFORMATION





ROADMAP TO TRANSFORMATION

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IOT IMPLEMENTATION ROADMAP

DIGITAL TRANSFORMATION

TECHNOLOGY

〉 Simple, Scalable, Flexible and Modular Architecture

TRANSFORMATION PLAN

CAPABILITY GAPS

IT CAPABILITY MODEL

DIGITAL STRATEGY

DIGITAL VALUE MAP

PROCESS

〉 Process Centric Design

CIO VISION

BUSINESS STRATEGY

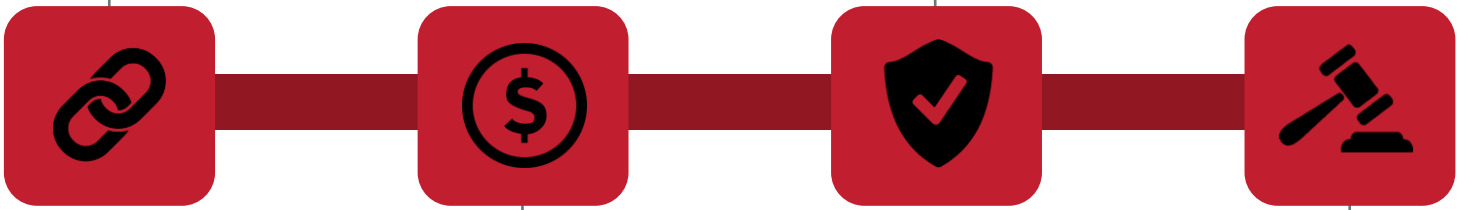
PEOPLE

〉 Identify Business Value and use technology as an enabler
〉 Customer-Centric Approach
〉 Cross functional team

CURRENT CHALLENGES

Interoperability: Lack of connection, communication and compatibility between devices from various manufacturers

Security: Increasing number of connected devices increases the opportunity to exploit vulnerability



Business Justification: The main inhibition with many companies is the inability to identify the business potential and thus not moving ahead in status quo

Regulatory issues: There are no concrete laws present which encompasses the various layers of IoT across the world. This restricts the cross country data flow

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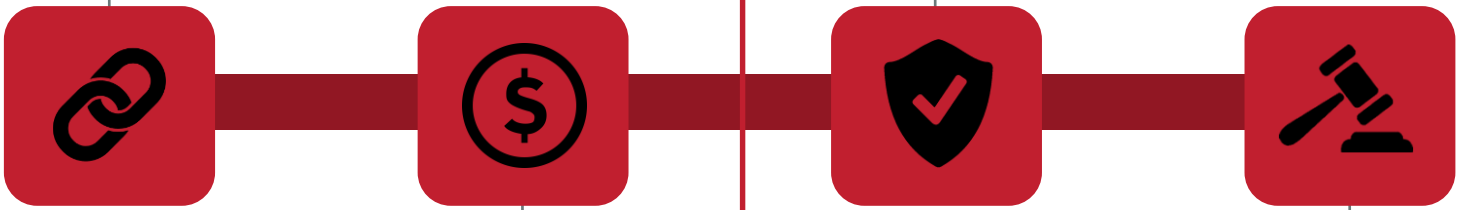
CURRENT CHALLENGES

CONTROLLABLE

Interoperability: Lack of connection, communication and compatibility between devices from various manufacturers

Better Architecture



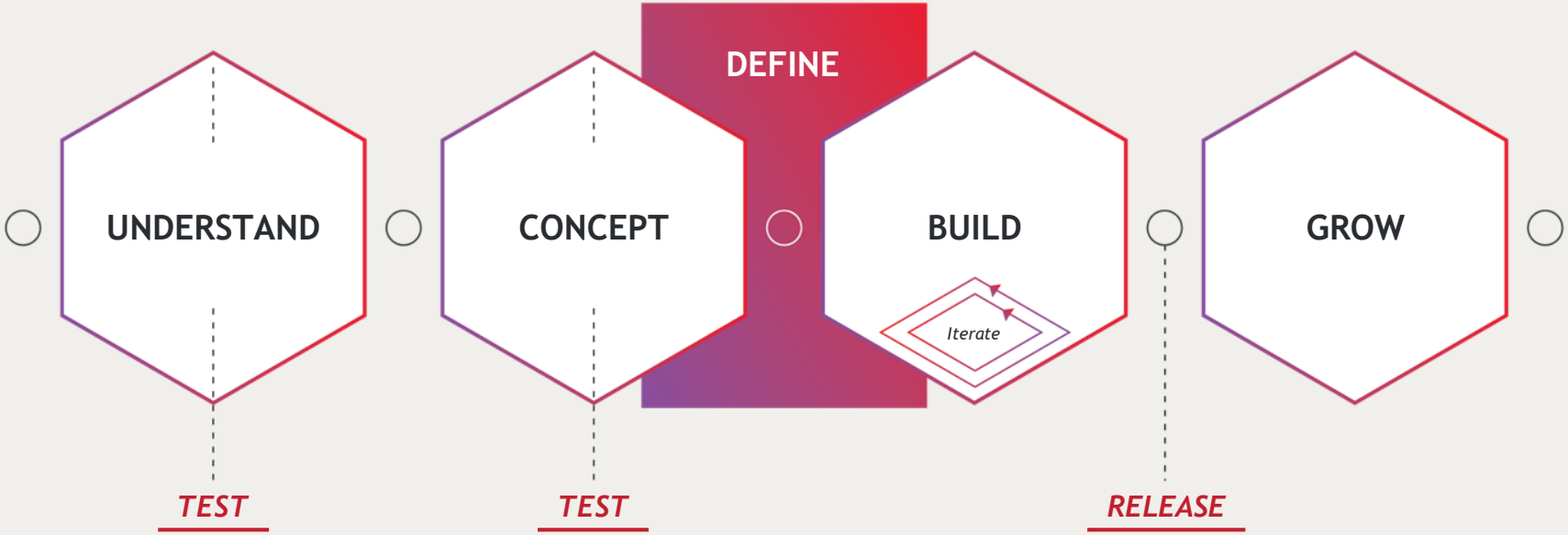
Hiring Experts

Business Justification: The main inhibition with many companies is the inability identify the business potential and thus not moving ahead in status quo

Security: Increasing no of connected devices increases the opportunity to exploit vulnerability

Regulatory issues: There are no concrete laws present which encompasses the various layers of IoT across the world. This restricts the cross country data flow

OUR APPROACH



FAST	USER-CENTRIC	VALIDATED	FLEXIBLE	INTEGRATED	LOW-RISK

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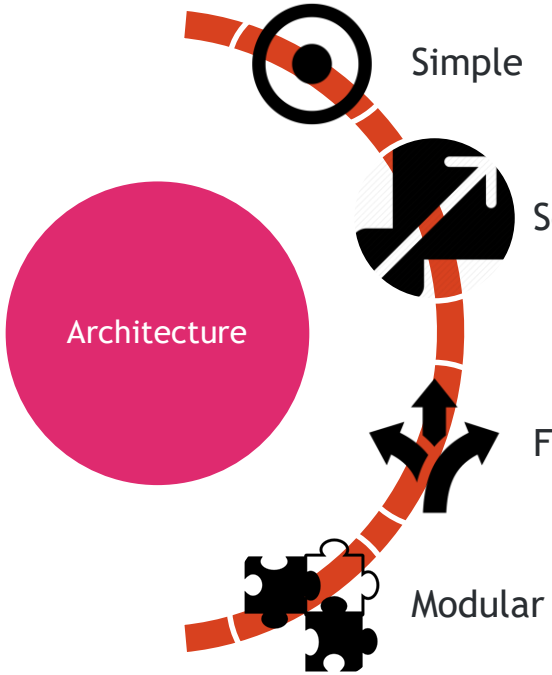
OUR IoT ARCHITECTURE DESIGN METHODOLOGY



Simple to USE, MAINTAIN AND DEBUG

> A simple to use Architecture rather than custom coding for each equipment integration.
> Deskilling the job enabling manpower without coding knowledge to configure, debug and maintain the system

Scalable w.r.t SIZE and FUNCTIONALITY

> Scalable Architecture which can be deployed from small cell to entire shop floor
> Functionality ranging from simple data collection to complex control

Flexible w.r.t DEPLOYMENT and TYPE OF SYSTEM

> Flexible Architecture to integrate legacy system and new age system
> Deployment can rage from “on-prem” system to remote monitoring

Modular w.r.t DEPLOYMENT and CONFIGURATION

> Deployment can rage from embedded distributed control to centralised control
> Configuration ranging from simple data pass through to Edge computing

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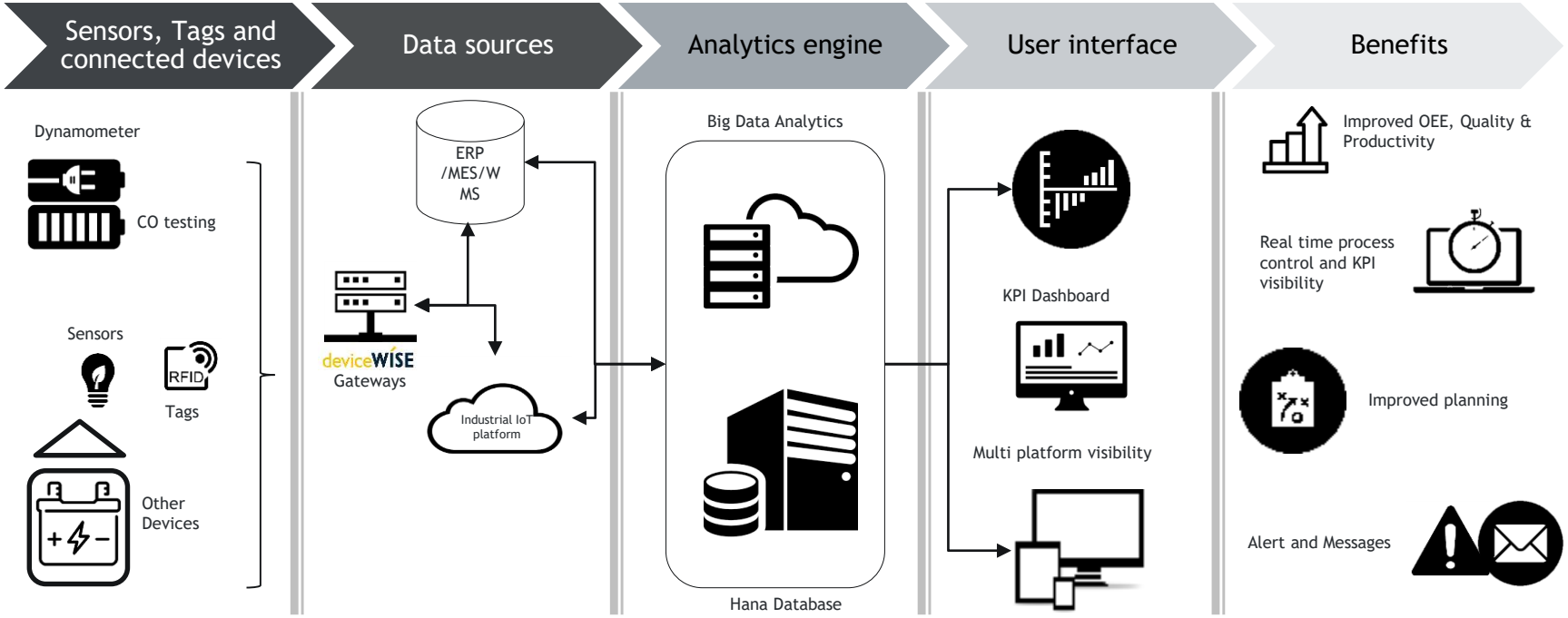
OUR IoT ARCHITECTURE



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CASE STUDIES

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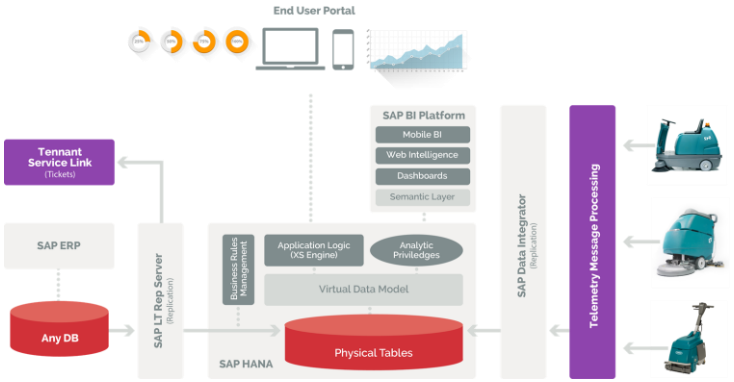
CUSTOMER & CHALLENGES

- **Tennant** with about 3000 employees **founded in 1870 and** provides cleaning products and solutions.
- Tennant Company is a recognized leader in designing, manufacturing and marketing solutions that help create a cleaner, safer, healthier world.
- The Company has offices across North America, Latin America, Europe and Asia Pacific
- It was awarded with "**America's Most Trustworthy Companies**," by Forbes Magazine

CHALLENGES

- No unified framework to collect and visualize data
- Disconnect between data collection and Business operations
- Challenges in remote data collection
- No real time data for management team and customers to take informed actionable decisions

OUR SOLUTION



- Strategy workshop to understand customer experience.
- Delivery of integrated ERP, Analytics, Customer Portal, Machine Telemetry through a comprehensive digital delivery framework
- Solution designed to collect machine data in real time from the field and use it to improve customer service, reduce cost and improve operating margins.

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BUSINESS VALUE

TRACKING & MONITORING ASSETS WITH MACHINE-TO-MACHINE DATA

RESULTS

Tennant's customers can now review machine data to monitor operator completion, track machines by physical location, review metrics at the fleet level and optimize overall operations. Better cleaning, better machine utilization, and ongoing customer engagement.

Role based data visualisation for both Tennant and Customers

Tennant IRIS Whitepaper 11/2015, citing
http://www.cmmonline.com/articles/230942-comparison-of-key-industry-performance-metrics

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CUSTOMER & CHALLENGES

TWO WHEELER MAJOR

- India based automobile major
- **World's sixth largest two wheeler** manufacturer
- Manufactures more than 4 million two wheelers in a year rolling out **a vehicle every 8 Secs**
- Operations over 50 countries in the world
- More than 8000 employees worldwide

CHALLENGE

- Valuable quality information from the Quality testing equipment are not captured
- Manual entry of quality inspection report by the operators
- No unified framework to define the shop information collection system
- No real time data for management team and customers to take informed actionable decisions

Customer | Challenges | Solution | Business Value

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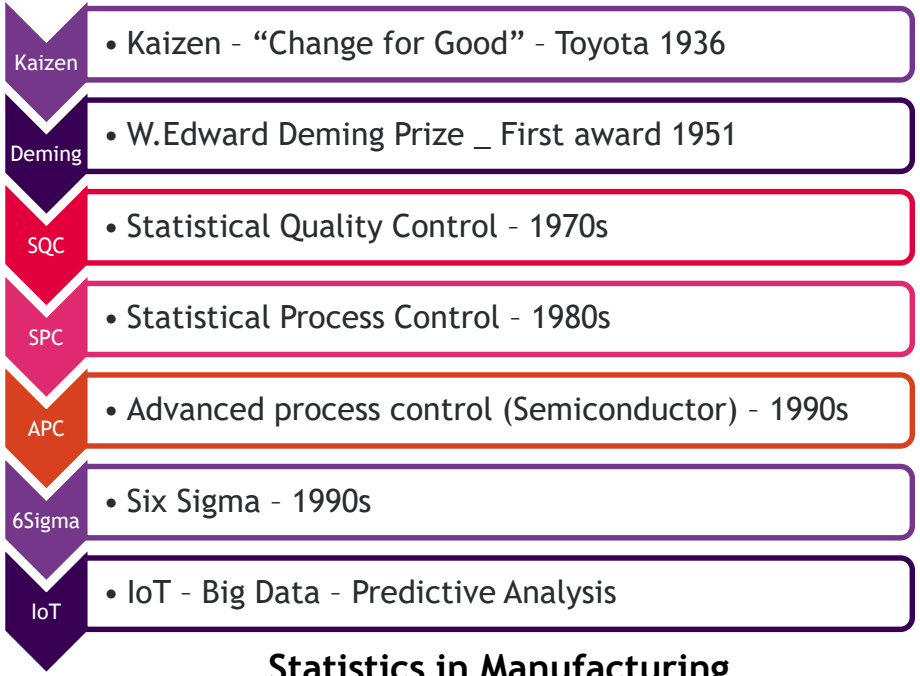
OUR SOLUTION

- Strategic business consulting engagement with CTO to define a scalable architecture for shop floor and remote data collection and to define the business value for digital transformation
- Technology evaluation of various data capturing and architecture
- Paperless automatic real time track and trace along with intralogistics movement of bikes in the assembly line
- Integrated ERP, Shop floor Information System and Analytics, through a comprehensive digital delivery framework
- Solution designed to collect information form Quality system combined with analytics to deliver insights for better quality control and for research and development



Statistics in Manufacturing

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BUSINESS VALUE

IMPROVE QUALITY & PRODUCTIVITY WITH AUTOMATIC RICH DATA COLLECTION SYSTEM

RESULTS

Customer can collect valuable information from their quality equipment which can them be analyzed to know critical insights about their engine performance and design.

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THANK YOU.

END-TO-END CAPABILITIES

(business process + IoT + CX + data science + technology) in solving connected supply chain, for faster go-to market

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