

- Service Trends and Transformation
- PTC SLM Portfolio and Strategic Direction
- PTC Connected SLM Solutions
- Conclusion



Service Trends and Transformation

Leading Manufacturers Understand Lifetime Service Value



Sale of Products ■ ■ Sale of Outcomes

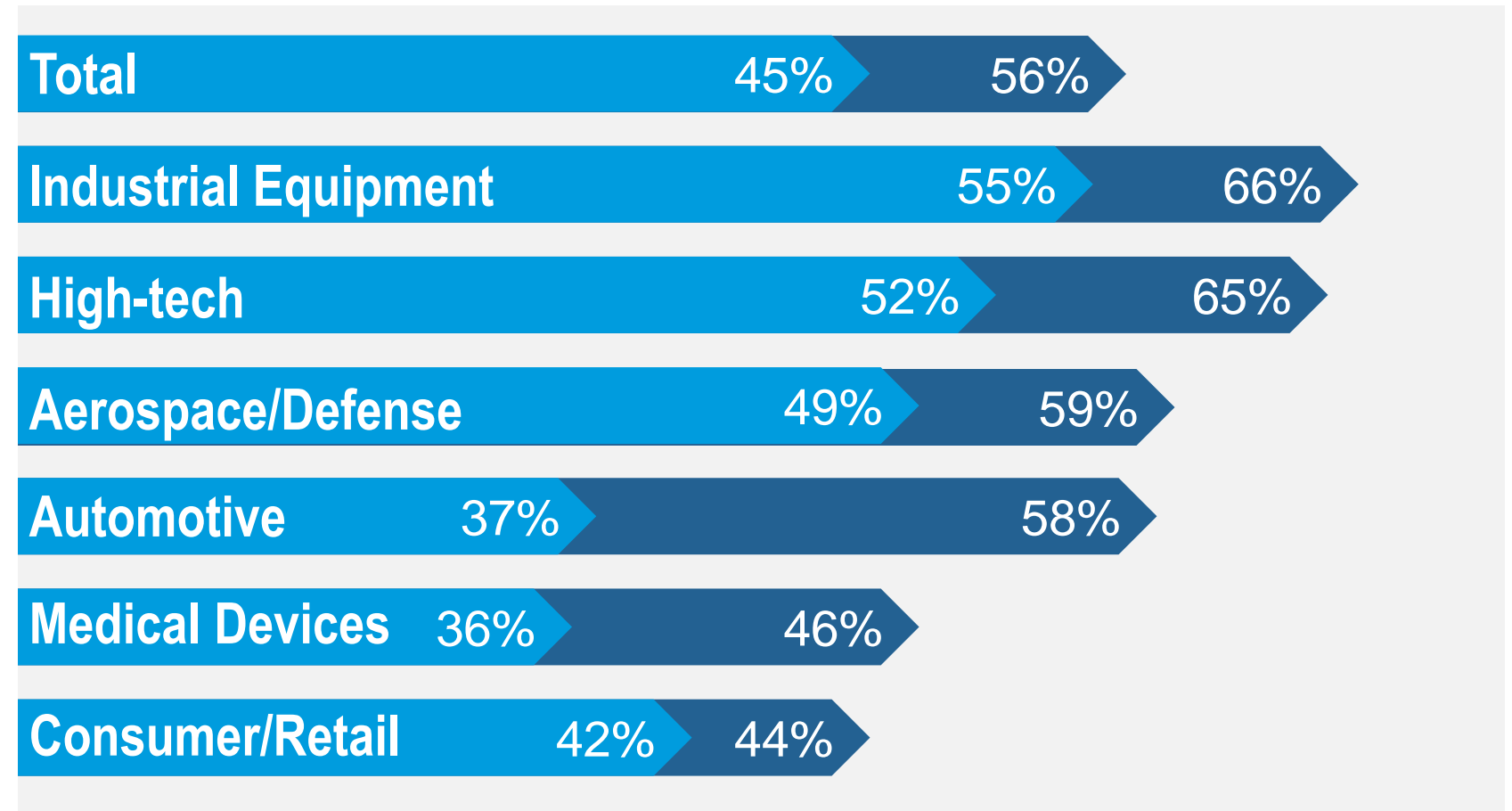
Service is a Key Source of Both Revenue and Profit Growth for Manufacturers

Service
Drives Revenue
and Profit

Customers
Prefer Outcome- or
Performance-based
Contracts

Internet of Things
Enables Operational
and Strategic
Service Transformation

Firms operating service as a profit center



Today ■ In 3 Years ■

Source: Oxford Economics study commissioned by PTC

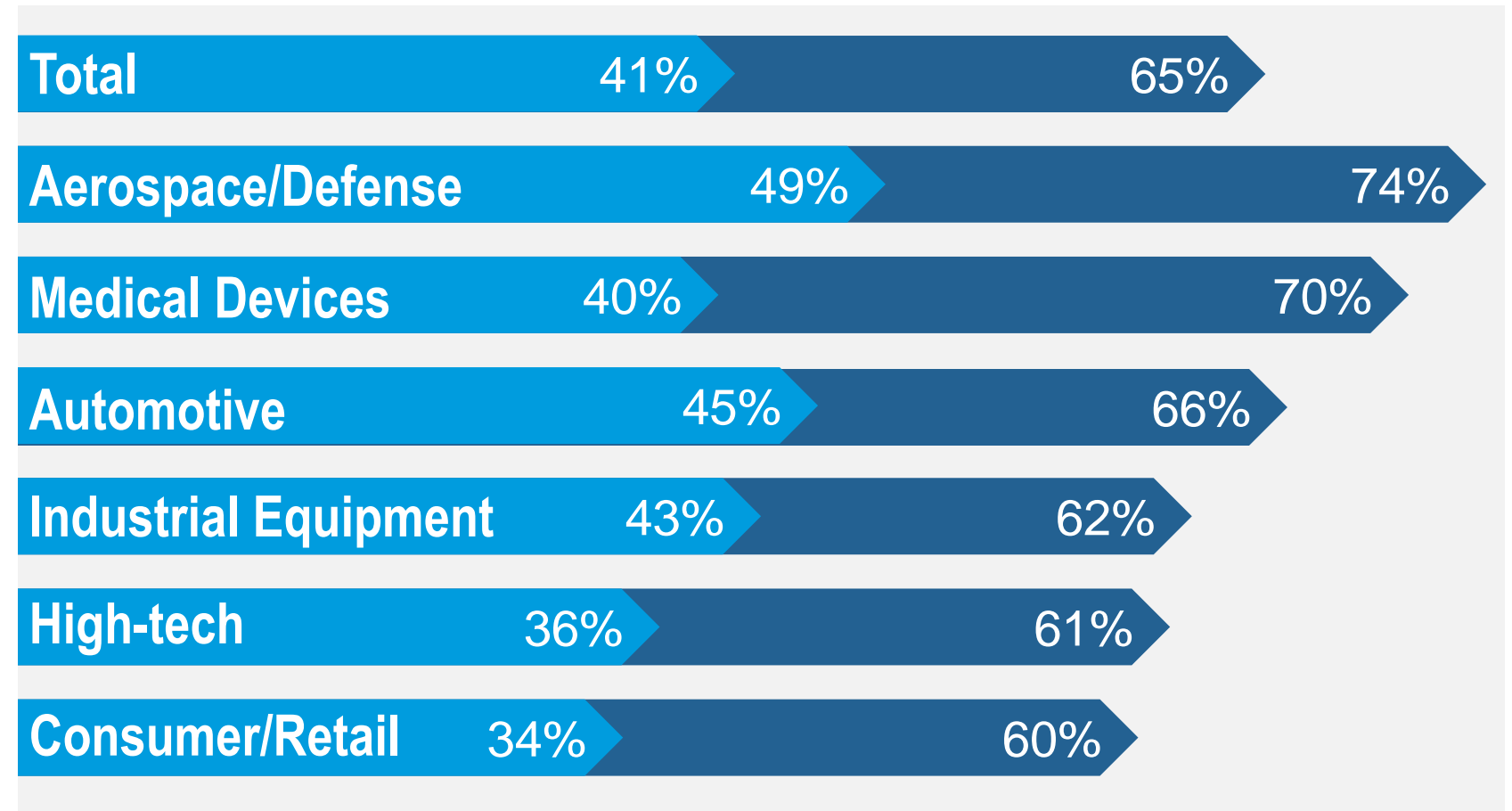
Manufacturers are Rapidly Migrating to Outcome Based Services

Service
Drives Revenue
and Profit

Customers
Prefer Outcome- or
Performance-based
Contracts

Internet of Things
Enables Operational
and Strategic
Service Transformation

Performance-based Service Contracts Becoming Common



Today ■ In 3 Years ■

Source: Oxford Economics study commissioned by PTC

Smart, Connected Products Drive Two Levels of Accelerated Service Transformation

Service
Drives Revenue
and Profit

Customers
Prefer Outcome- or
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Service Transformation

Breakthroughs in Operational Effectiveness

Reactive → Proactive

On Site → Remote

Blind → Data Driven

Historic → Present & Future

Strategic Differentiation

New Product Sales → Products as a Service

Break Fix → Performance Based

Equipment Uptime → Operation Optimization

Product Value Chain → Customer Value Chain

“Remote data, which can track performance, failure reasons, and potential fixes, provides service technicians with the answers to solve customer problems faster.”

Aly Pinder Jr.

Senior Research Analyst, Service Management

Aberdeen Group

March 2015

50 Billion Connected Devices

7 Billion
Connected
Devices



2010



5M
APPS

2020

2035

1 Trillion

100M APPS

5B





Prior engines:

- 1 KB/Flight
- 30 Parameters measured
- 1 snapshot/flight

New generation engines:

- 500 GB/Flight
- 5,000 parameters measured
- 1 snapshot/second



"If you went to bed last night as an industrial company, you're going to wake up today as a software and analytics company"

Jeff Immelt, CEO GE
GE Minds + Machines Conference



~18 million vehicles in the field

~4,000 dealerships in 90
countries

~50,000 service people

~12,000 diagnostic trouble
codes implemented in onboard
diagnosis

Up to 70,000 diagnosis
sessions per day worldwide

> 40 terabytes of data ready to
be used now > Big Data!





“The lines between hardware, software, and services are blurred or are disappearing.”

Tim Cook, CEO
Apple

Smart Embedded Software Service

Check software
compatibility

Install and validate
software update

Configuration and
operation changes via
software patch
download

Connected Asset Service

Access real-time and
historical asset data

Remote monitoring

Remote access,
perform diagnostics,
transfer files

Real time location,
owner, condition,
operation data

Shifting Service Delivery and Business Models

Paradigm Shift:

Product is now the sensor
for the customer

Diagnose before dispatch

Create alternate business
models






Evolving Service Landscape

A world of connected products | Providing customers with outcomes | No more customers, just partners



PTC SLM Portfolio and Strategic Direction

1 Service Information
Create, Deliver, and Advise

PTC Technical Information PTC Service Parts Information PTC Service Knowledge and Diagnostics




2 Service Event Management & Execution



Field Service Management


PTC Warranty & Contract Management

3 Service Parts
Revenue Optimization






PTC Service Parts Management PTC Service Parts Pricing PTC Service Network Management

Smart, Connected Service for Smart, Connected Products



Remote monitoring, access, content and configuration



COLDLIGHT

Machine learning and predictive analytics

In process - Release dates TBD

Enhancement to Existing Portfolio Capabilities

ServiceMax Connected Technician App

Connected InService

Connected Diagnostics & Remote Service


Causal Forecasting (Connected SPM)

Net New Application Development


Connected Warranty and Contract Compliance App

Predictive Service


1 Service Information
Create, Deliver, and Advise



PTC Technical Information



PTC Service Parts Information



PTC Service Knowledge and Diagnostics

2 Service Event Management & Execution



Field Service Management
PTC Warranty & Contract Management

3 Service Parts Revenue Optimization



PTC Service Parts Pricing




PTC Service Network Management




PTC Service Parts Management

Smart, Connected Service for Smart, Connected Products



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Machine learning and predictive analytics

Enhancement to Existing Portfolio Capabilities



ServiceMax Connected Technician App



InService Advisor



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Connected Warranty and Contract Compliance App



Predictive Service

The Only End-to-End Solution on the Market



PTC
Technical
Information

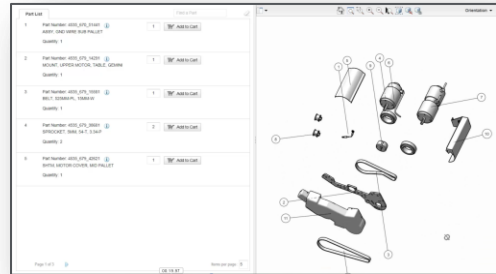


PTC Service
Parts
Information

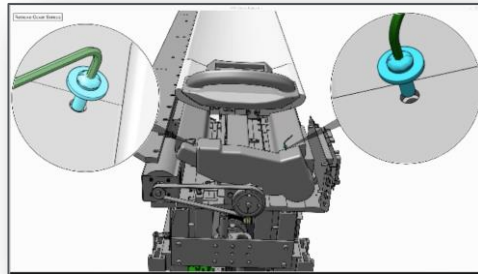


PTC Service
Knowledge
and
Diagnostics

3D Parts Catalogs



3D Animated Procedures



Automate issue diagnosis and response

Enable self-service, customer center, field service, and depots

Create structured, visual content

Improve content reuse and localization

Manage product-centric content and change

Deliver up-to-date, configuration-specific content

BENEFITS

Improve first
time fix rates

Increase
technician
productivity

Higher equipment
uptime and
productivity

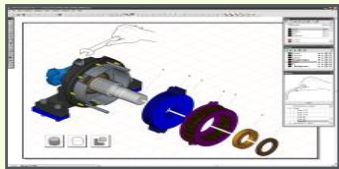
Increase company
& service profit

Create/Manage/Deliver: End-to-End Service and Parts Information

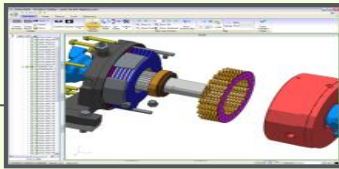
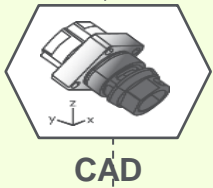
CREATE



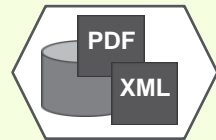
PTC® Arbortext® IsoDraw



PTC® Creo® Illustrate



PTC® Arbortext® Editor/Styler



MANAGE

PTC® Windchill® Service Parts

sBOM's and Parts Catalogs

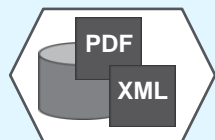
Number	Version	Status	Quantity	Unit	...
1000000000	1.0	Released	1	each	...
1000000001	1.1	Released	1	each	...
1000000002	1.2	Released	1	each	...

PTC® Windchill® Service Information Manager



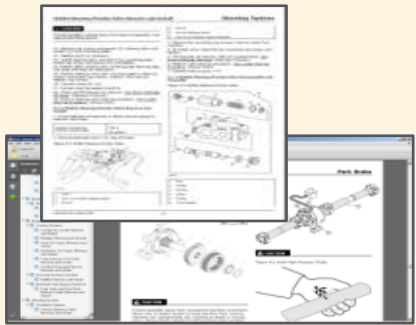
- Make/Model/SN range
- System/sub-system
- Options and variants
- Information type
- Language variants

Context-Based Content Management

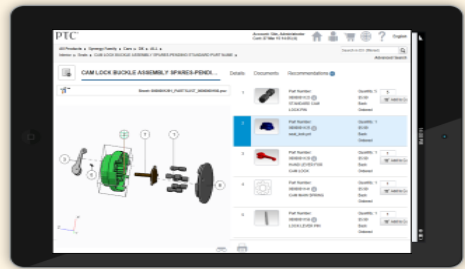


DELIVER

PTC® Arbortext® Publishing Engine



PTC® Servigistics® InService

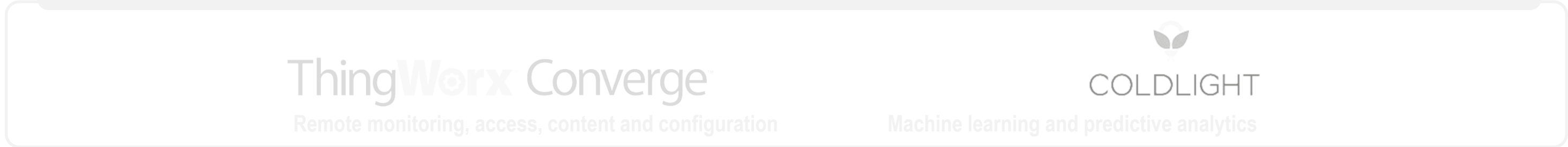


Electronic Content Delivery

FEEDBACK FROM SERVICE USERS



Smart, Connected Service for Smart, Connected Products





 servicemax + PTC[®]

Smart, Connected Service for
Smart, Connected Products



- Recognized IoT leader with most complete portfolio through acquisitions: Axeda, ThingWorx, ColdLight
- SLM leader, used by leading manufacturers
 - End-to-end Service Information & Diagnostics
 - Service Parts Management & Revenue Optimization
- Shared vision for service + Complimentary offerings + Cultural compatibility



- Leading field service management solution
- Choice solution for the world's largest service companies
- Differentiated mobile solutions
- Pace of innovation
- Vision for connected products and outcome service

125 Joint Customers Pre-dating the Partnership

Alcon®

AMS
an endo health solution

P&G

DOMINO

RANCILIO

EXIDE®

tyco



pitney bowes



marel

BALLARD®

B | BRAUN
SHARING EXPERTISE

SONY

neopost[®]

[e] enphase
ENERGY

Schneider
Electric

SPP
PUMPS

MARK ANDY
PRINT PRODUCTS

mindray

PHILIPS

Medtronic

Johnson
Controls

LUMENIS™

Luminex

N
Northern
POWER SYSTEMS

MEDIVATORS
A Cantel Medical Company

RICOH

CareFusion

DMG MORI

400 ServiceMax customers, 28,000 PTC customers

**Service Execution
with**



Gartner Leader

Complete Field Service Product
Suite

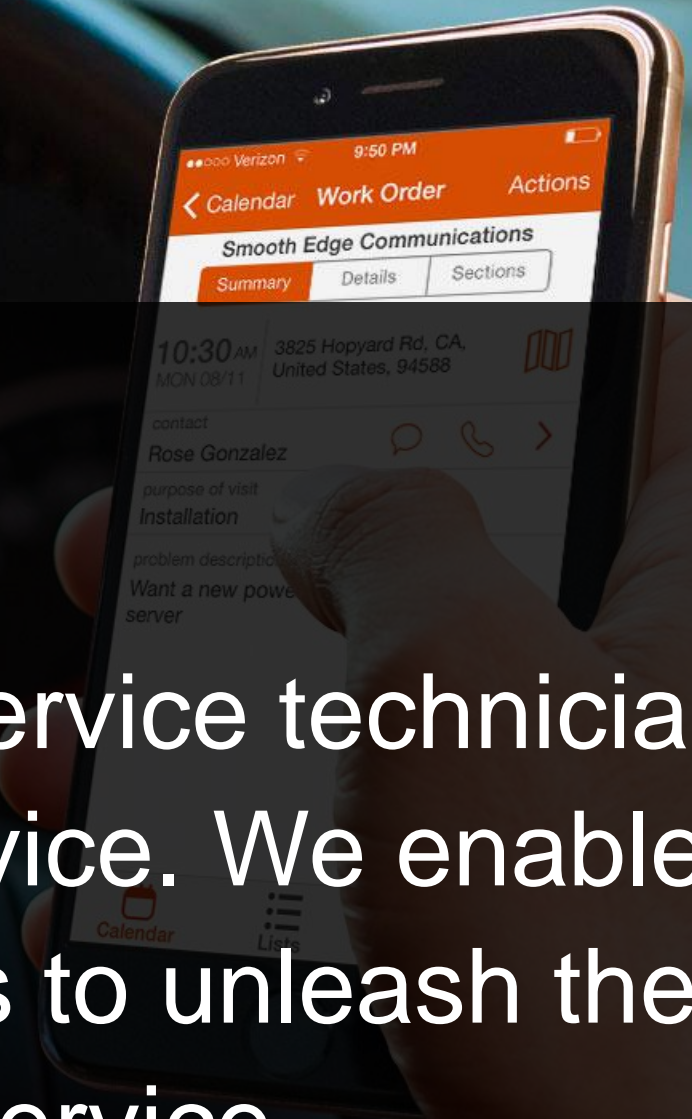
100% Cloud, Built on
Salesforce1 Platform

Field Ready Mobile Solutions

Extensive Partner Network



Our mission is to empower every field service technician in the world to deliver flawless field service. We enable organizations of all sizes and industries to unleash the untapped growth potential of service.



The Only Complete Field Service Solution Delivered 100% in the Cloud



OPERATING SYSTEM OF THE NEW SERVICE ECONOMY

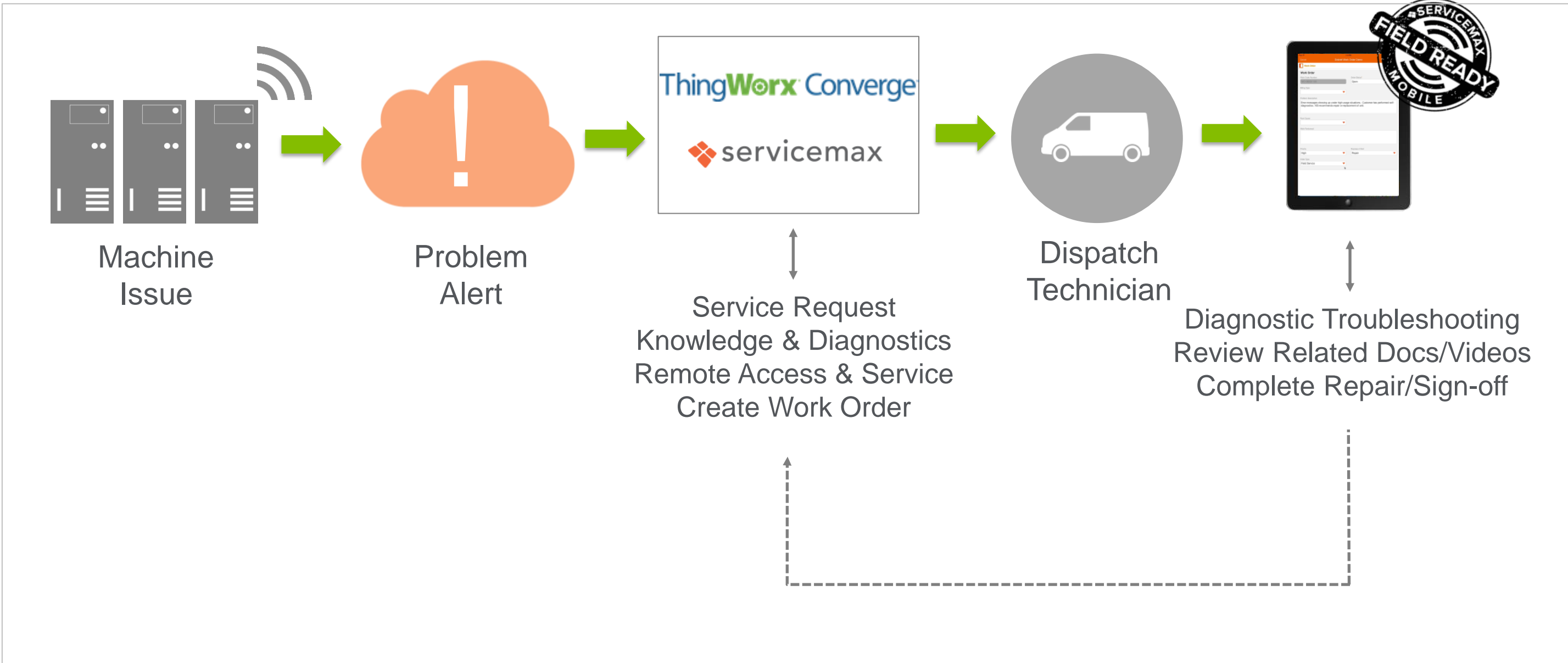


Connected Products

Predictive Service

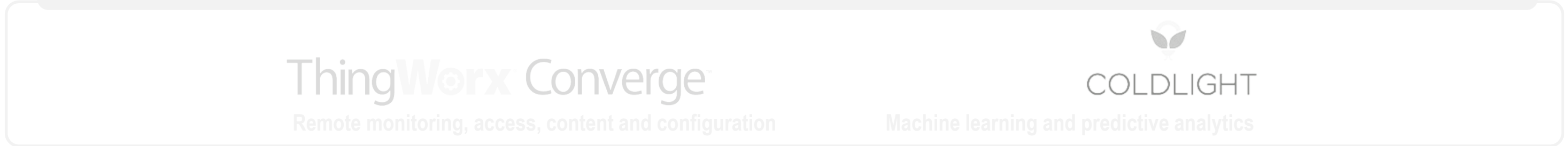
Outcome Business Model

PTC and ServiceMax have Developed a Prototype Integrated Offering





Smart, Connected Service for Smart, Connected Products



Service Parts Optimization Drives Efficiency Across the Service Supply Chain



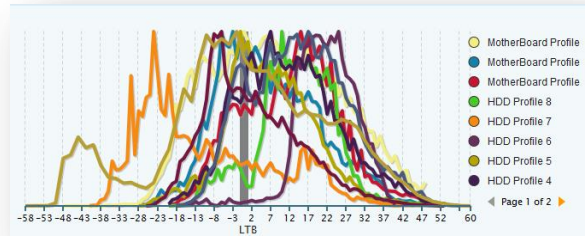
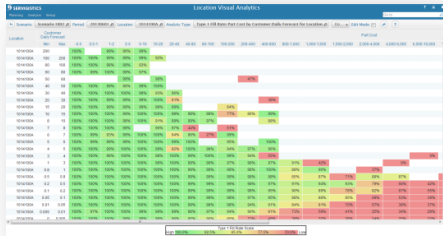
PTC Service Parts Management



PTC Service Parts Pricing



PTC Service Network Management



Optimize inventory globally

Mitigate excess and shortages with strategic and tactical planning

Simulate and set optimal parts prices

Monitor and affect change in response to market, competitors, and customer sensitivity

Monitor & analyze service network performance

Visualize inventory balances, order responsibilities and all transactions

BENEFITS

Improve parts revenues and profitability

Higher percentage of parts are value-priced

Lower inventory investment with higher customer service levels

Faster reaction to real time conditions

WE OPERATE THREE AIRCRAFT DIVISIONS



← **EMBRAER**
Commercial Aviation

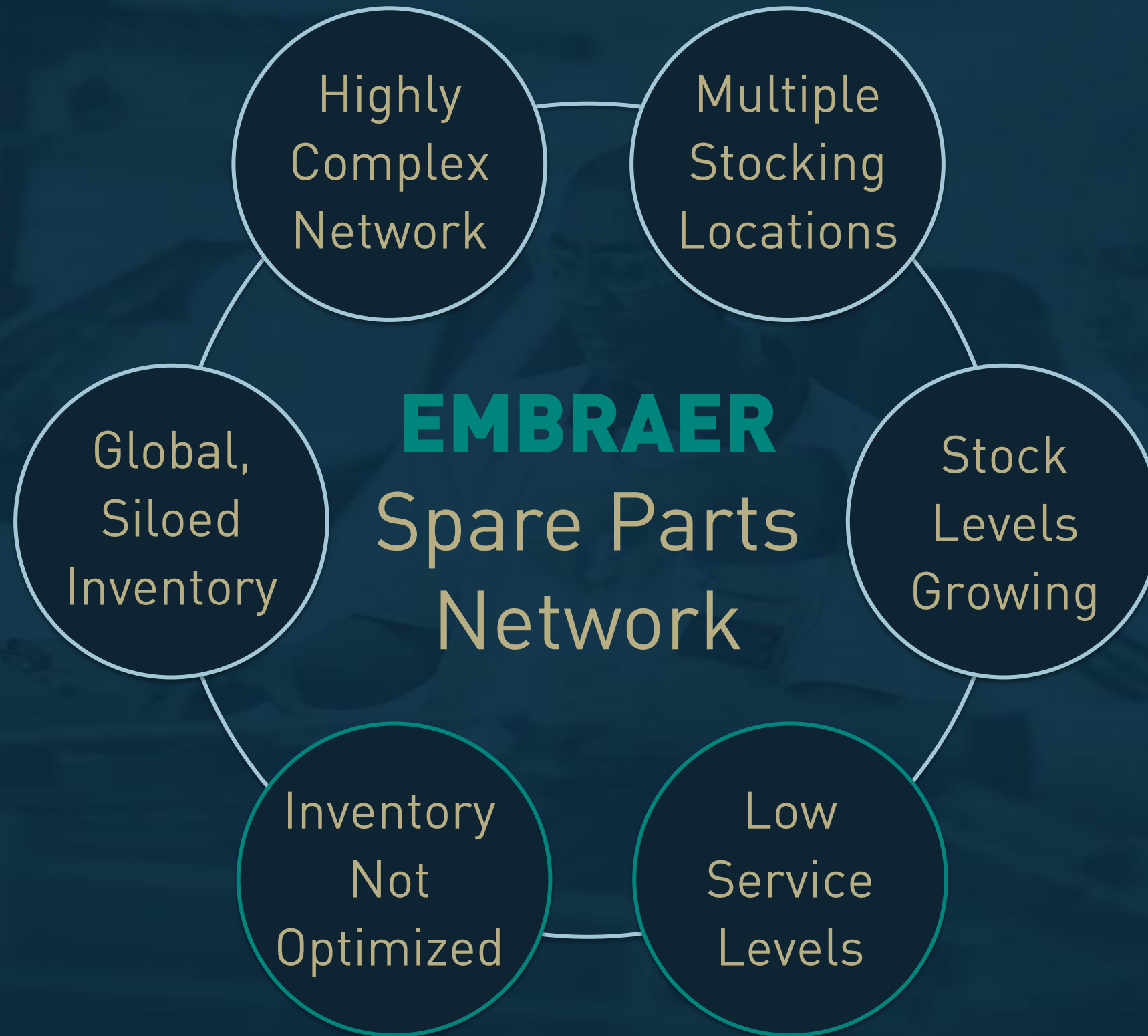
← **EMBRAER**
Executive Jets



← **EMBRAER**
Defense & Security



2007



2008



Requirements:

- **Forecast Modeling**
- **Stock Balancing**
- **Inventory Management**
- **And more...**

Implement Solution for Service Parts Optimization



↑
IMPROVED

Forecasting
Visibility
Availability
Control
Productivity

OPTIMIZED

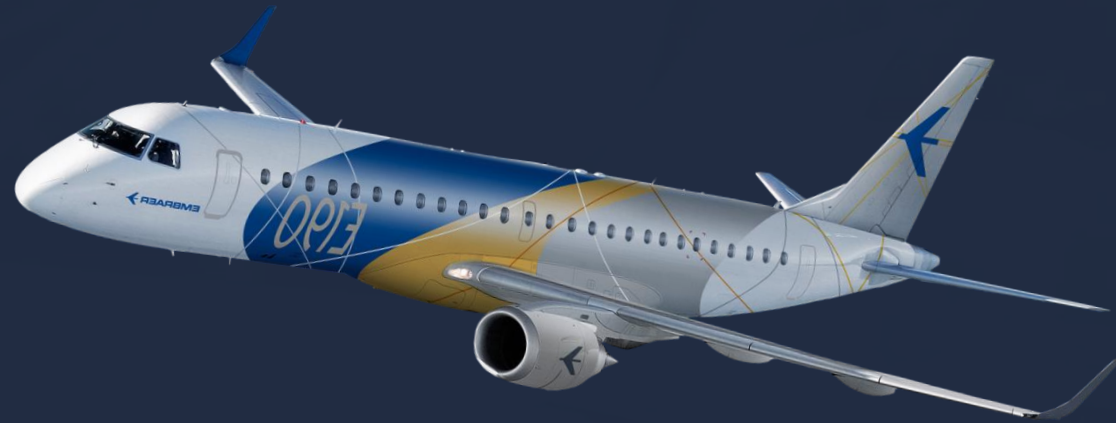


Inventory Levels
Service Levels
Spare Parts Planning

2009



2015



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Strategy:

- **Manage Complexity / Challenges**
- **Optimize Parts Planning**
- **Collaborative Inventory Planning**



Deliver highest service levels with lowest inventory





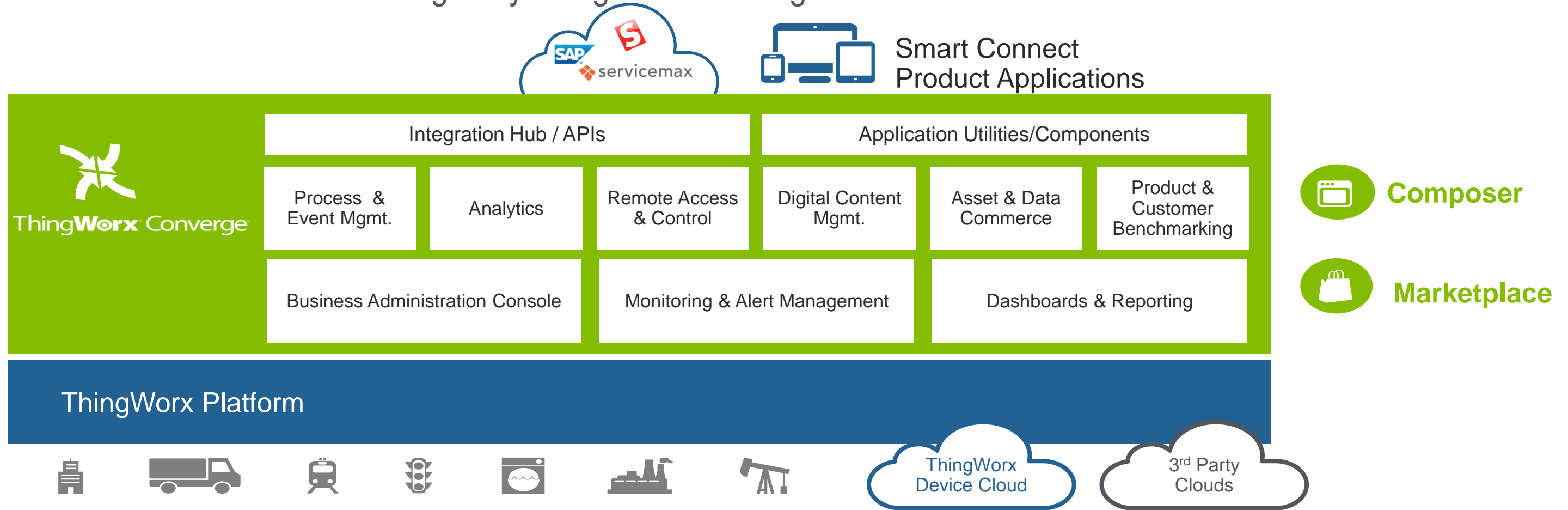
Make Life Easier



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PTC Connected SLM Solutions

Devices are Connected and Managed by ThingWorx Converge



1. Centralized Hub for Real Time Product Data
2. Best Practices-Based Data Model
3. Enhanced Out-of-the-Box Capabilities
4. A Synergistic Marketplace Of Applications And Integrations



Smart, Connected Service for Smart, Connected Products

ThingWorx Converge™

Remote monitoring, access, content and configuration



COLDLIGHT

Machine learning and predictive analytics

In process - Release dates TBD

Enhancement to Existing Portfolio Capabilities

ServiceMax Connected Technician App

Connected InService

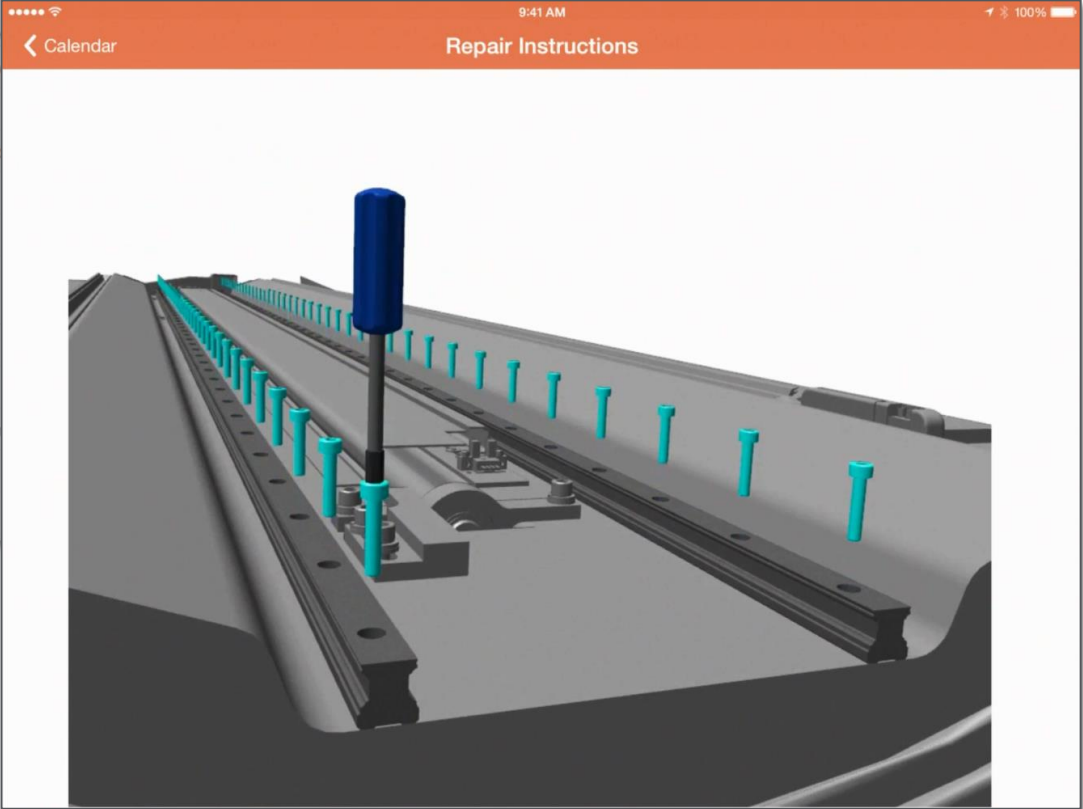
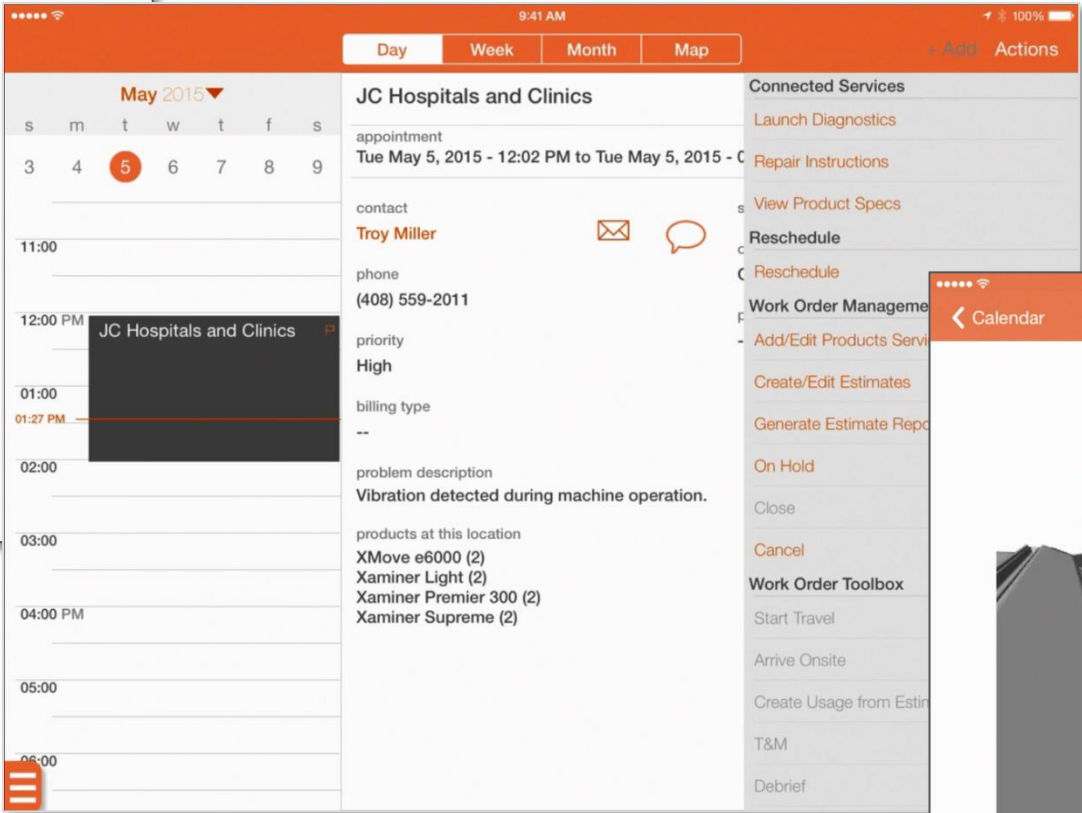
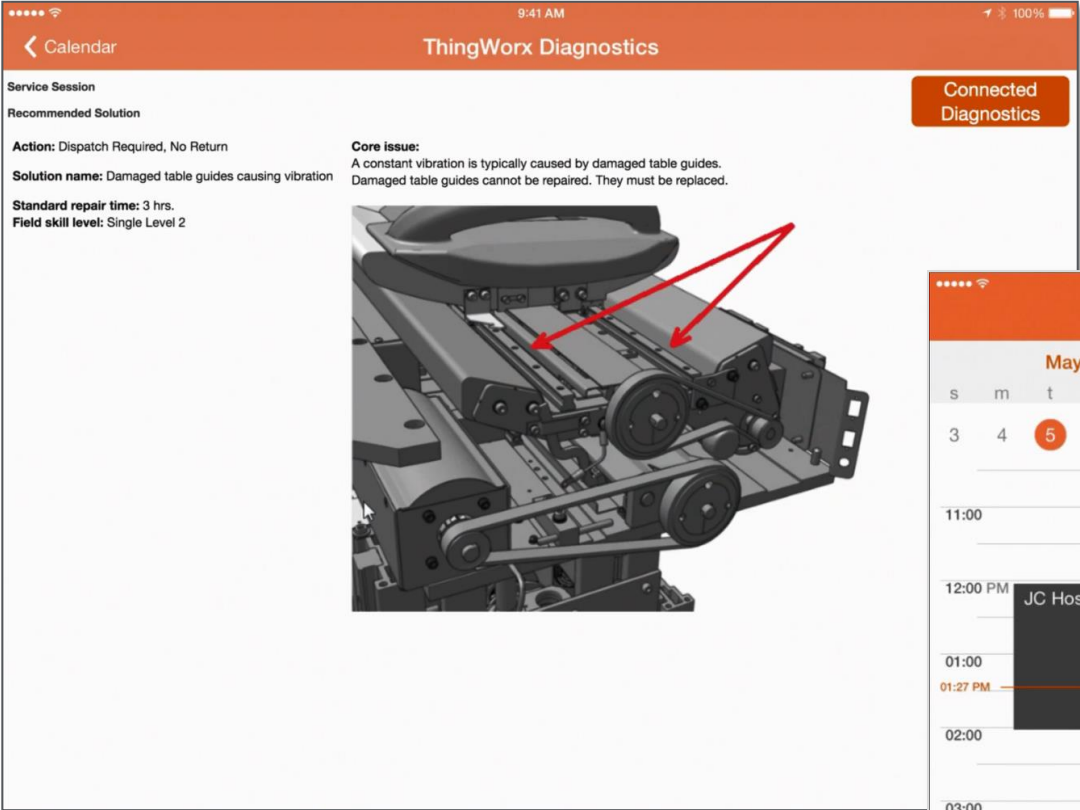
Connected Diagnostics & Remote Service

Causal Forecasting (Connected SPM)

Connected Warranty and Contract Compliance App

Predictive Service

Net New Application Development



- **Context:** filters the information to exactly what the user needs
- **Content:** efficient and effective for performing the needed service
- **Connection:** access to the product or related business systems to perform service

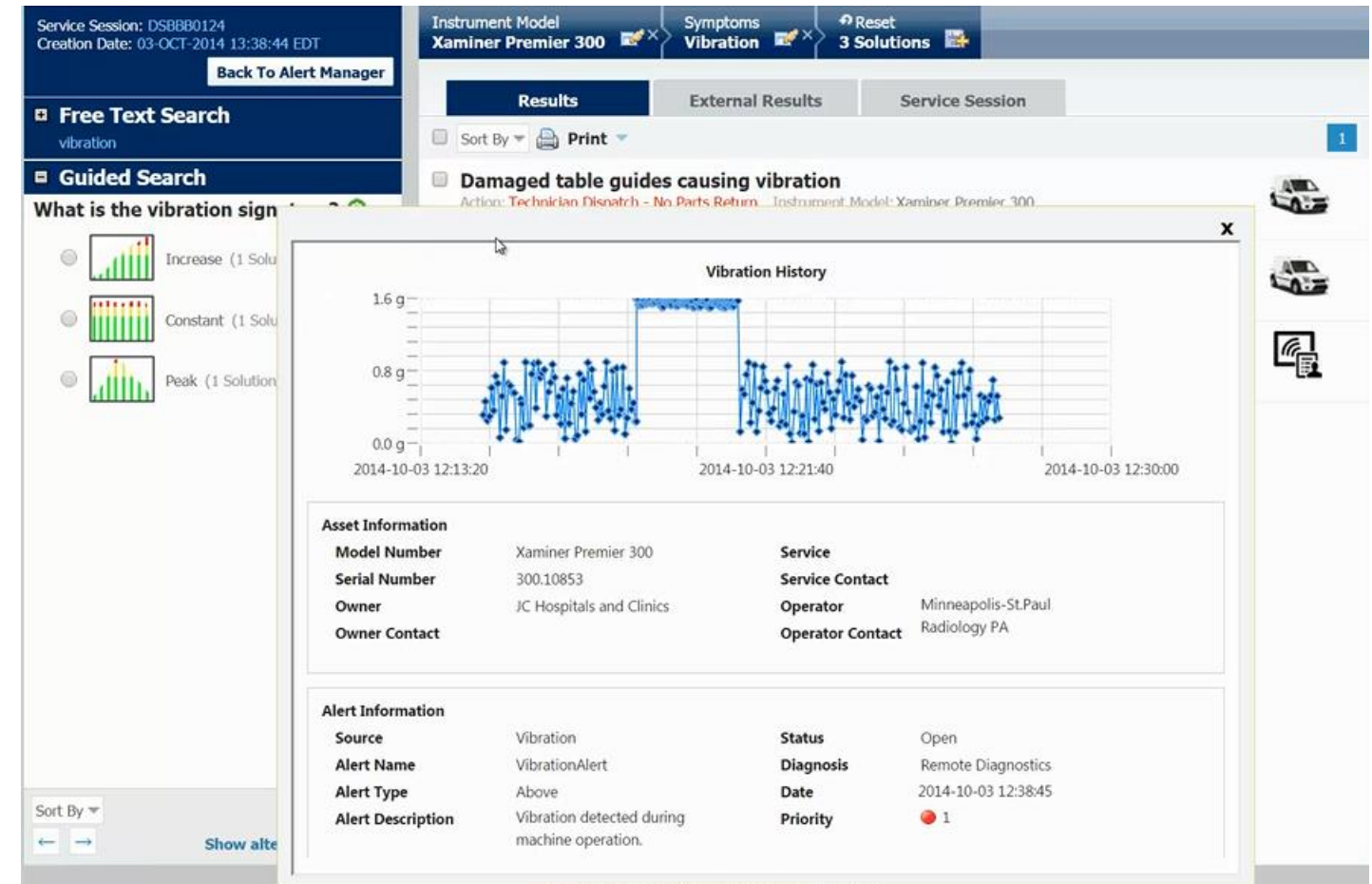


IoT Plus Core SLM Portfolio Unleashes Augmented Reality for Service



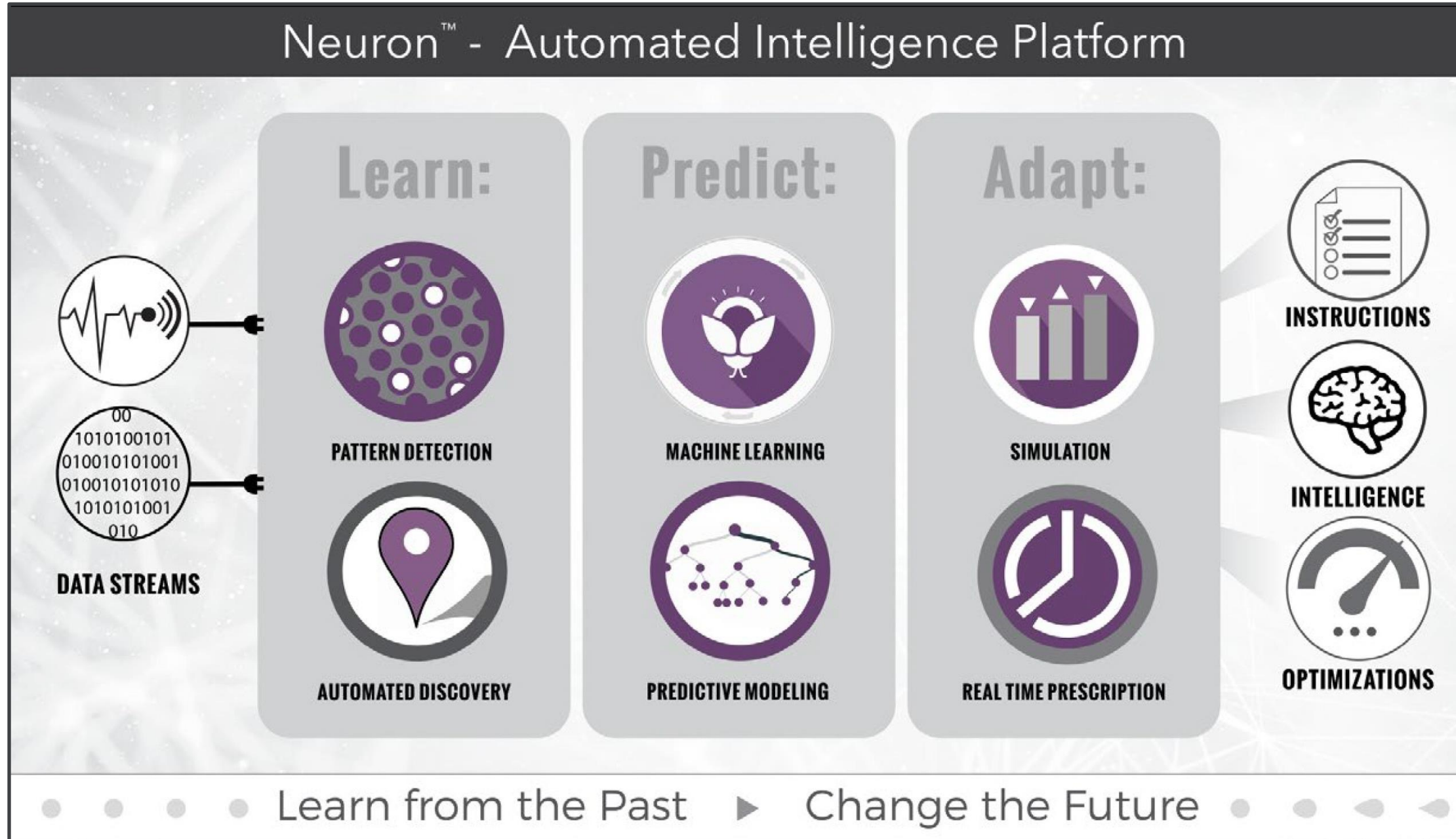
Key Features

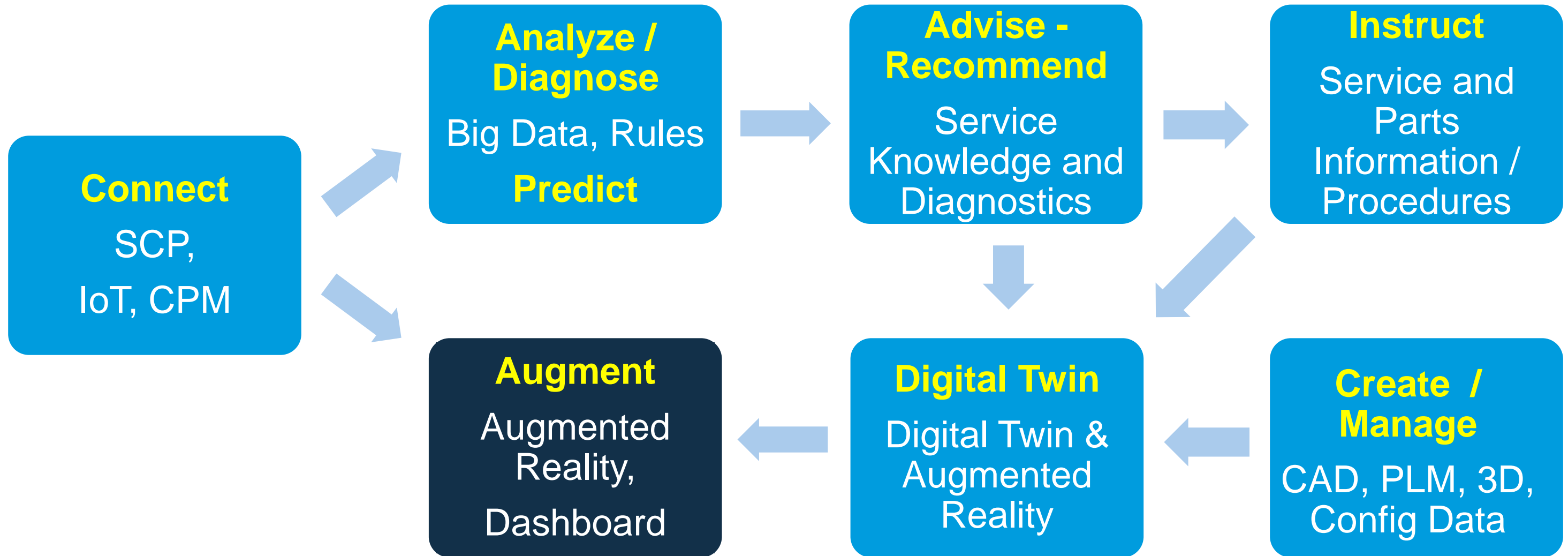
- Remote Access, Monitoring, File Download
- Automated Diagnostics and Solution Identification
 - When possible, solutions can be automatically identified via mapping to error codes, conditions, and other monitor able machine state.
- Interactive Diagnostics
 - Leverage real time and historic machine data while troubleshooting via “Guided Search’ capability.
- Ticket / Case Creation
 - Leverage ThingWorx event monitoring to trigger creation of call center tickets and diagnostics sessions based on error codes, conditions, or utilization levels.



Remote access to real-time and streaming machine data for complex diagnostic situations

Product Intelligence will Guide Proactive and Predictive Service and Drive New Business Models





Conclusion



Evolving Service Landscape

A world of connected products | Providing customers with outcomes | No more customers, just partners



PTC[®] Live Global