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DIGITAL TRANSFORMS PHYSICAL

SERVIGISTICS

AUTONOMOUS OPTIMIZATION OF LARGE-SCALE SERVICE SUPPLY CHAINS

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April 18, 2023

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ADVANCED DATA SCIENCE

SOLVING COMPLEX

SERVICE SUPPLY CHAIN CHALLENGES

GLOBAL LEADER OF INDUSTRIAL DIGITAL TRANSFORMATION

Business Transformation

SaaS

CAD > PLM > IOT > AR > SERVICE > SPATIAL

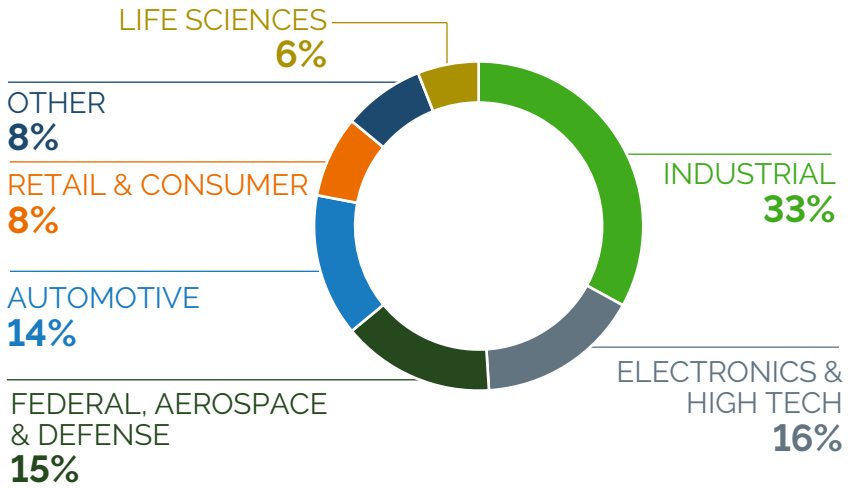
Fast Facts

35 Year
Heritage of Innovation

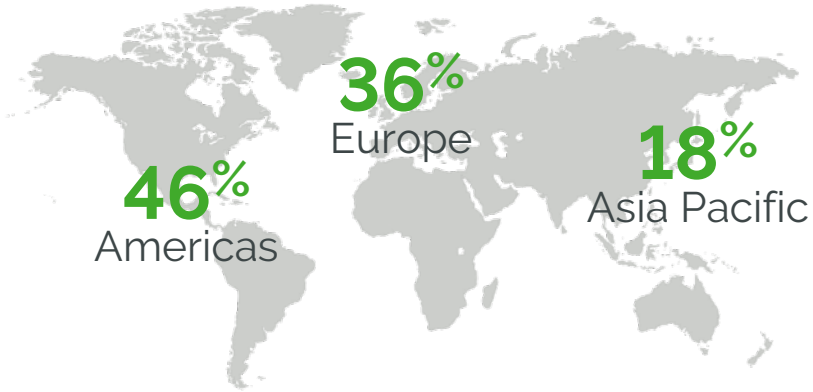
$1.51B
ARR

6.7K+
Employees

Verticals



Global Footprint



WHAT IS SERVIGISTICS?

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Servigistics is the **industry-leading service parts optimization solution** using advanced data science to solve the most complex service supply chain challenges. Ultimately, ensuring the *right part* in the *right place* at the *right time* for the *right price*.

SERVIGISTICS AT A GLANCE

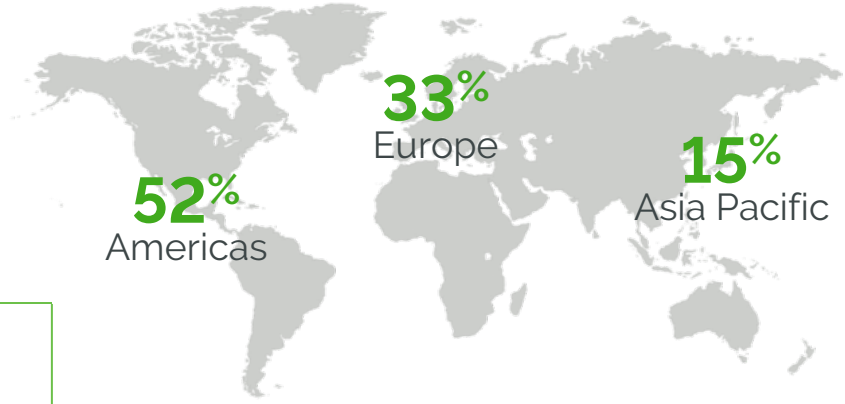
Fast Facts

35+ Years
Heritage of Innovation

206
Global Team Members

~15 Years
Average Tenure

Global Client Distribution



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Top Customers

U.S. AIR FORCE · BOEING · LOCKHEED MARTIN · JOHN DEERE · Metso:Outotec

HITACHI · DOOSAN · CISCO · Raytheon · Honeywell

Awards (Leader/Expert)

IDC

IDC MarketScape Manufacturing Service Parts Management Applications, 2021

BLUMBERG ADVISORY GROUP

Blumberg State of the Art Service Parts Management Benchmark Report, 2021

IDC

IDC MarketScape Worldwide Manufacturing Service Life-Cycle Management Platforms, 2022

INDUSTRY LEADERS CHOOSE SERVIGISTICS

LIFE SCIENCES

PHILIPS
ThermoFisher SCIENTIFIC
GE
Canon
Abbott A Promise for Life
Roche
sysmex

ELECTRONICS & HIGH TECH

Hewlett Packard Enterprise
Lam RESEARCH
SAMSUNG
cisco
Lenovo
APPLIED MATERIALS
Lexmark
acer
Tektronix
HITACHI Inspire the Next
iQor
xerox

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From Pioneer to Leader

INDUSTRIAL MANUFACTURERS

Mazak
LiuGong
TRANE TECHNOLOGIES
HiKOKI HIGH PERFORMANCE POWER TOOLS
JOHN DEERE
KOMATSU
SANY
KONGSBERG
Kubota
Metso:Outotec
MECALAC
CARGOTEC
Bobcat
Solar Turbines A Caterpillar Company
DAIKIN

Maximize Customer and Shareholder Value

FEDERAL, AEROSPACE & DEFENSE

QANTAS
LOCKHEED MARTIN
U.S. AIR FORCE
BOEING
DASSAULT AVIATION
Honeywell
EMBRAER
Alaska AIRLINES
Southwest
Pratt & Whitney
AIR CANADA
allegiant
Collins Aerospace
LIEBHERR
jetBlue
NORTHROP GRUMMAN
MEGGiTT
FedEx Express

AUTOMOTIVE AND TRUCKING

SCANIA
NISSAN
TATA
MARUTI SUZUKI
VW
gm
TOYOTA MATERIAL HANDLING
VOLKSWAGEN GROUP OF AMERICA

WHAT PROBLEMS DOES SERVIGISTICS SOLVE?

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CHALLENGES TO ADDRESS

There is a ubiquitous growing market need to improve asset availability or readiness while optimizing the associated costs within unprecedented volatility in the service parts supply chain. The right part in the right place at the right time is THE fundamental challenge to meeting this need.

SOLUTION / CAPABILITIES TO ADDRESS CHALLENGES

Service Supply Chain Optimization

Procurement-averse Sustainable Supply Chain

Connected Service Parts & Pricing Optimization

Performance Analytics and Intelligence

Machine Learning-based Forecasting

AI-powered Autonomous Planning

WHAT VALUE POTENTIAL DOES SERVIGISTICS CREATE?

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Availability

- **10-25%** increased part availability
- **6-35%** increased asset uptime
- **10-35%** inventory reduction
- **35-50%** increased parts sales

Satisfaction

- **5-25%** increase in customer satisfaction
- **20-55%** increased service levels
- **18-37%** reduced parts backorders
- **30-65%** first-time fix rate improvement

Value

- **100-900%** ROI within 12 months
- **8%** margin increase
- **3X** planner productivity
- **$10M-$45M** in cost avoidance

Strategic Benefit

Service Parts Availability

Inventory Reduction

Customer Satisfaction

Project ROI in 12 months

Margin Increase

WHAT MAKES UP THE SERVIGISTICS PRODUCT SUITE?

Servigistics exceeds the highest standards of compliance, security and capabilities managing billions of dollars of inventory globally with minimum human intervention by the world's most recognizable brands.

Demand Forecasting

Predict parts demands using history, equipment and maintenance data including predictions for new and last time buy parts using machine learning

Inventory Optimization

AI optimized stocking levels using a predictive twin of the supply chain ensuring product uptime at the least cost

Order Planning & Planner Workbench

Optimize return, repair, transfer and reuse of existing assets to ensure a procurement averse and sustainable service supply chain

Pricing

Optimize and manage service parts' prices globally incorporating rules and competitive data

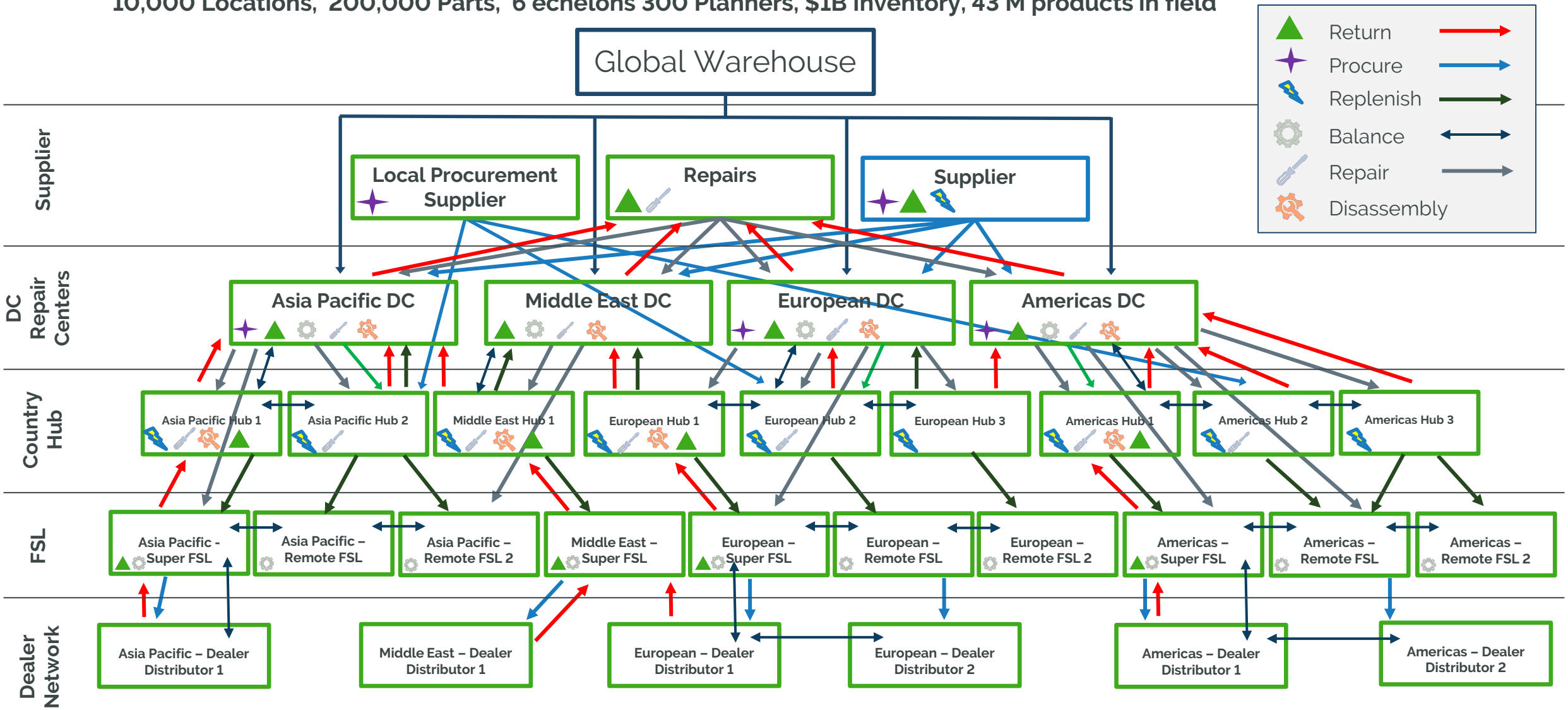
Advanced Analytics & Modeling

Continuous improvement with performance analytics, ML based root cause analysis, what-if modeling and simulation


ptc
CRITICALITY
COST
VOLUME
OPTIMIZE SERVICE PARTS SUPPLY CHAIN
AVAILABILITY
COST
DELIGHTFUL EXPERIENCE!
BILL OF MATERIALS
AVAILABILITY TARGET
HISTORICAL
CAUSAL
CONNECTED
SCHEDULED DEMAND
SLA
MANAGE RISK
ECN
FORECAST
PART CATEGORIES
"TRUE NORTH"
SIOP
KPIs
TUNE THE MODEL
SYSTEM AUTOMATION
MANAGEMENT BY EXCEPTION
DECISION SUPPORT
MOVE
REPAIR
BUILD
UPGRADE
BUY
PLANNER
SOURCING
OPTIMIZED PART MIX
MACRO-ECONOMICS TRENDS
POLITICAL TRENDS
COMPETITION
SHAREHOLDER VALUE
YOUR CUSTOMER
servigistics
ASSET AVAILABILITY
INVENTORY
CUSTOMER SATISFACTION
DELIGHTED CUSTOMERS DEMAND
PLANNING EXCELLENCE
LEADER
VISUALIZED BY INKFACTORYSTUDIO.COM

SERVICE PARTS MANAGEMENT – MATERIAL FLOW

10,000 Locations, 200,000 Parts, 6 echelons 300 Planners, $1B Inventory, 43 M products in field



SERVIGISTICS INVENTORY OPTIMIZATION DIFFERENTIATORS

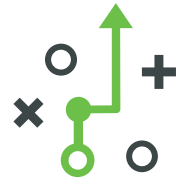
the ptc® servigistics® advantage

Independently verified service parts inventory optimization science

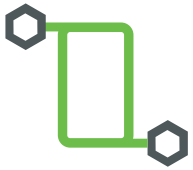
Optimize entire supply chain in single model (OEM+Dealers)

Undisputed leader in data science-based Simulation, MEO, PAI, Connected, and Machine Learning innovation

Service parts focused and fit for purpose at global scale



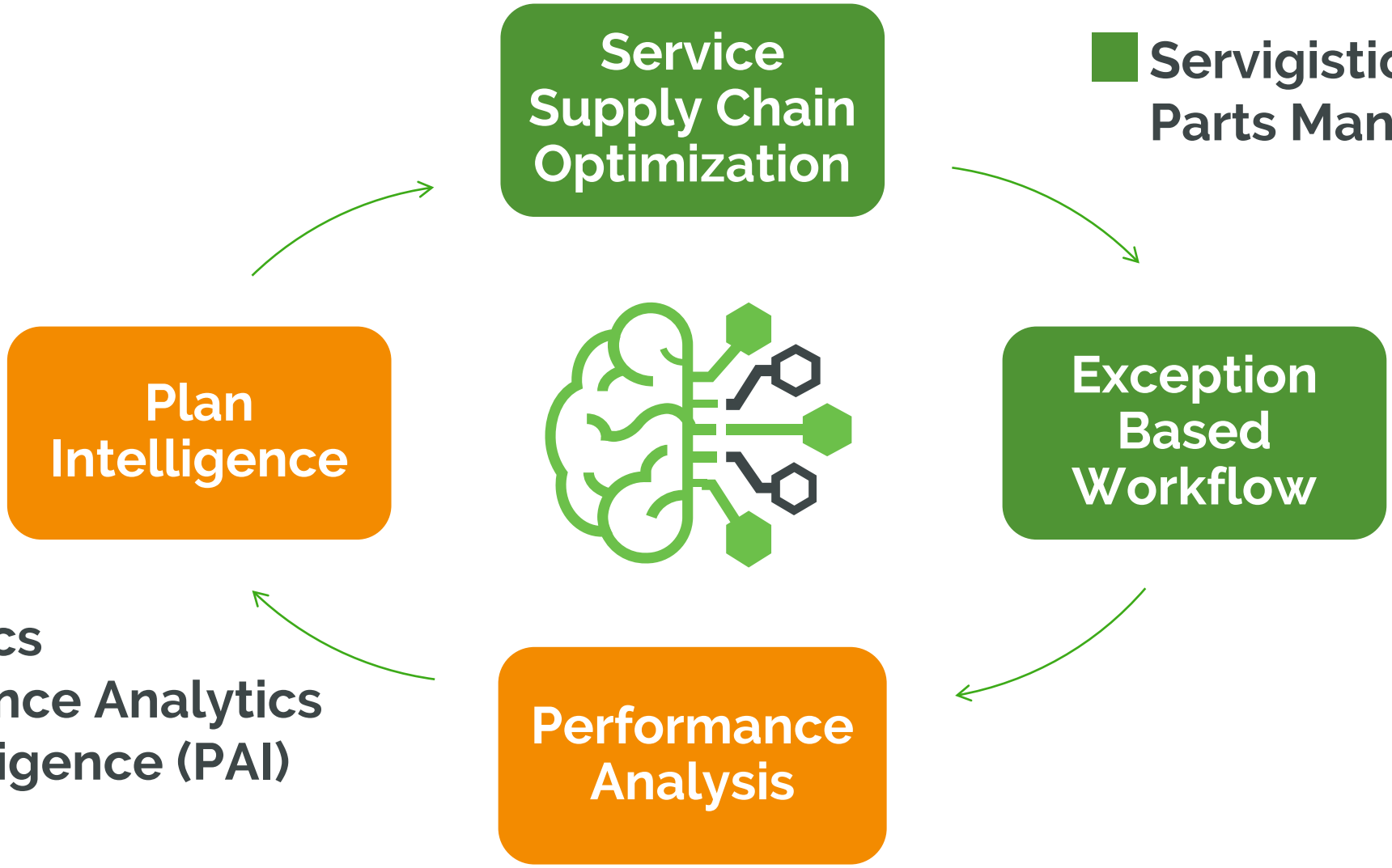
Multi-period optimization for seasonality and part supersessions



Scale to massive global supply chain performance requirements

Servigistics has significantly differentiated service parts inventory optimization algorithms

VISION - AUTONOMOUS SELF-IMPROVING OPTIMIZATION AND PLANNING



Servigistics Service Parts Management

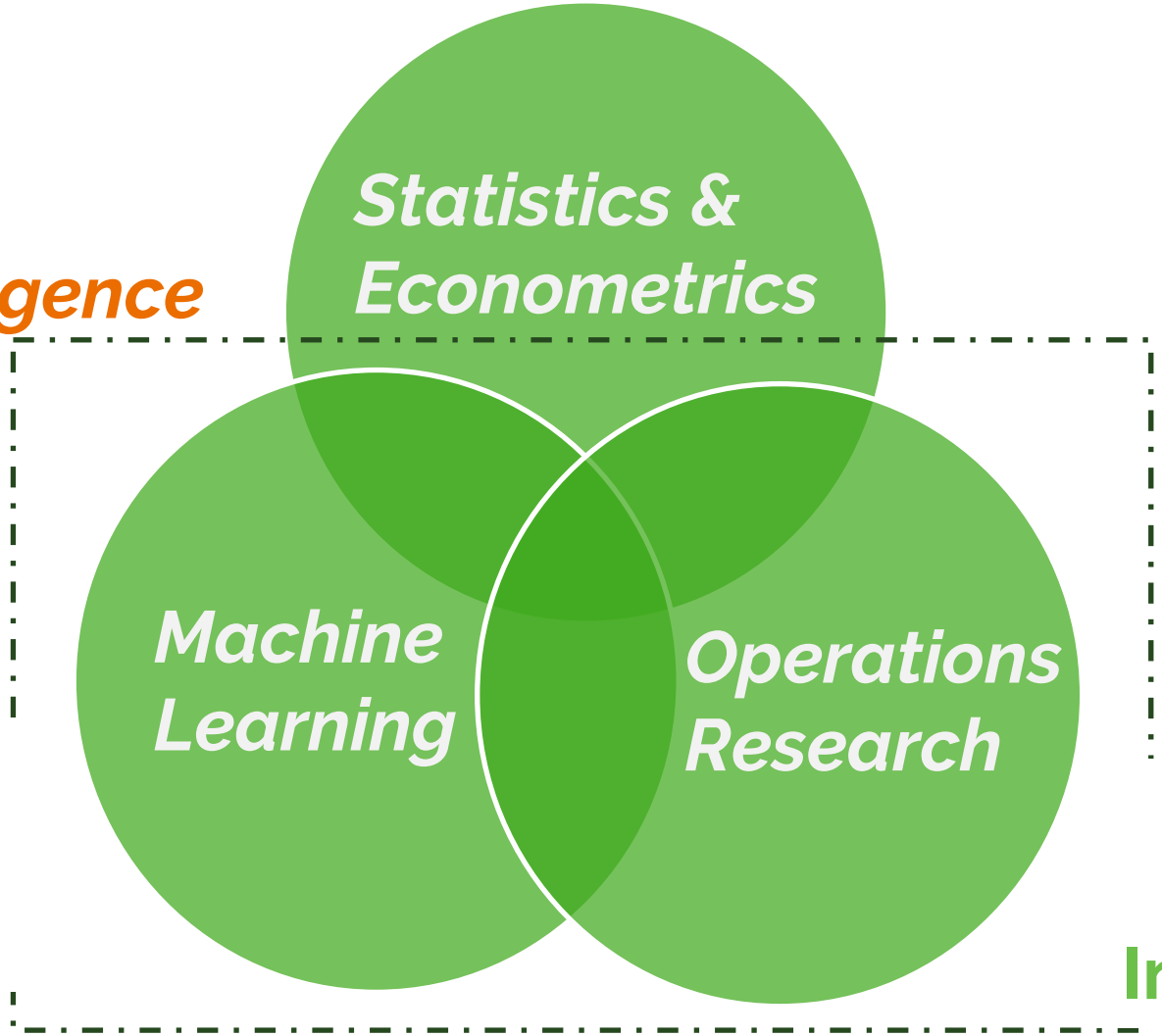
Servigistics Performance Analytics and Intelligence (PAI)

SERVIGISTICS KEY PERSONA AND ANALYTICS/ML NEEDS

Global Parts Planner	• **Planning intelligence; Granular KPIs and root causes; Preempt shortages**
Forecaster/Modeler/Super User	• **Improved Results; Configuration improvement intelligence;**
Service Executive/ Planning Manager	• **Optimal Results; KPIs and Trends; Root causes; Strategic Guidance**
Life Cycle Planner	• **New parts and End of Life Forecast; MTBF; Life cycle KPIs**
Data Science / Business Analytics SME	• **Self serve analytics with SVG data; ML notebook with SVG data**

ADVANCED DATA SCIENCE FOR SERVICE SUPPLY CHAINS

Artificial Intelligence



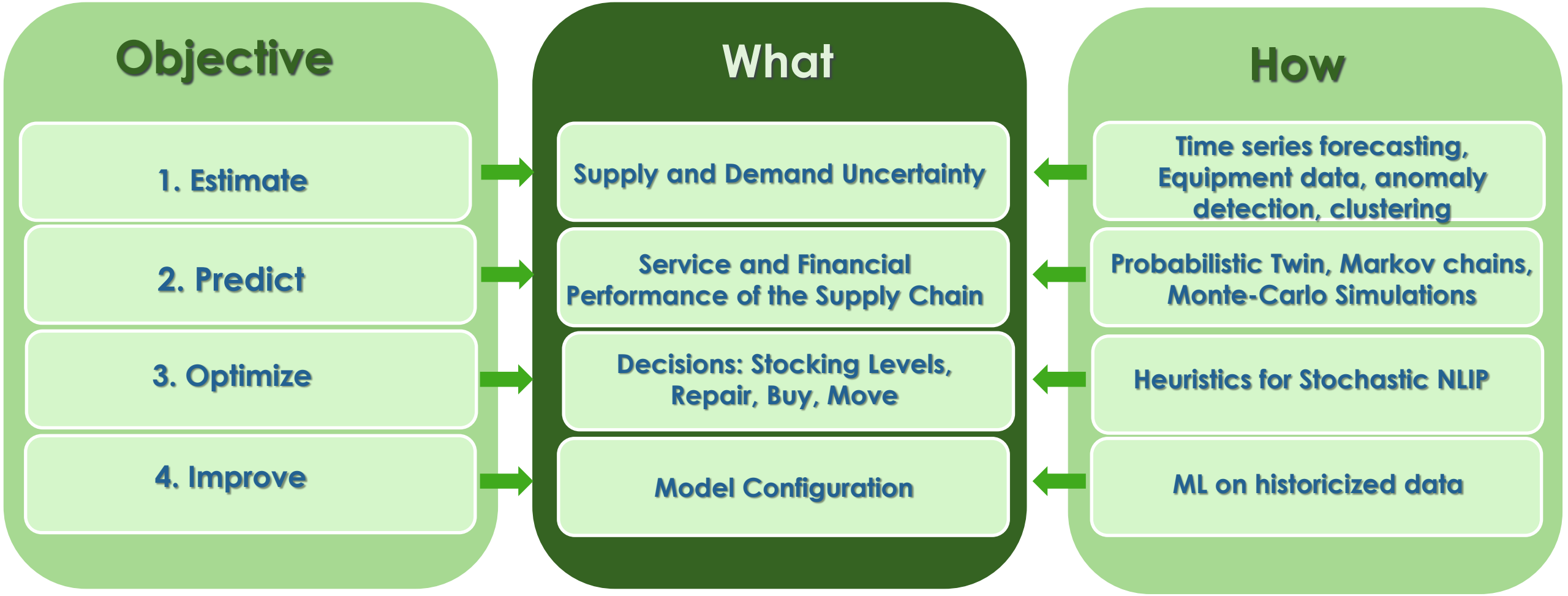
Predictive

Forecasting

Prescriptive

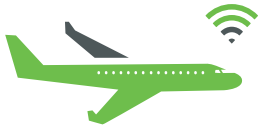
Inventory Optimization

KEY STEPS IN SUPPLY CHAIN OPTIMIZATION



ESTIMATE: TWO WAYS OF LEVERAGING CONNECTED DATA

1



Data from connected equipment to forecast MTBF and removals

Use equipment installed base and utilization (flight hours, cycles – important in forecasting unscheduled removals)

2

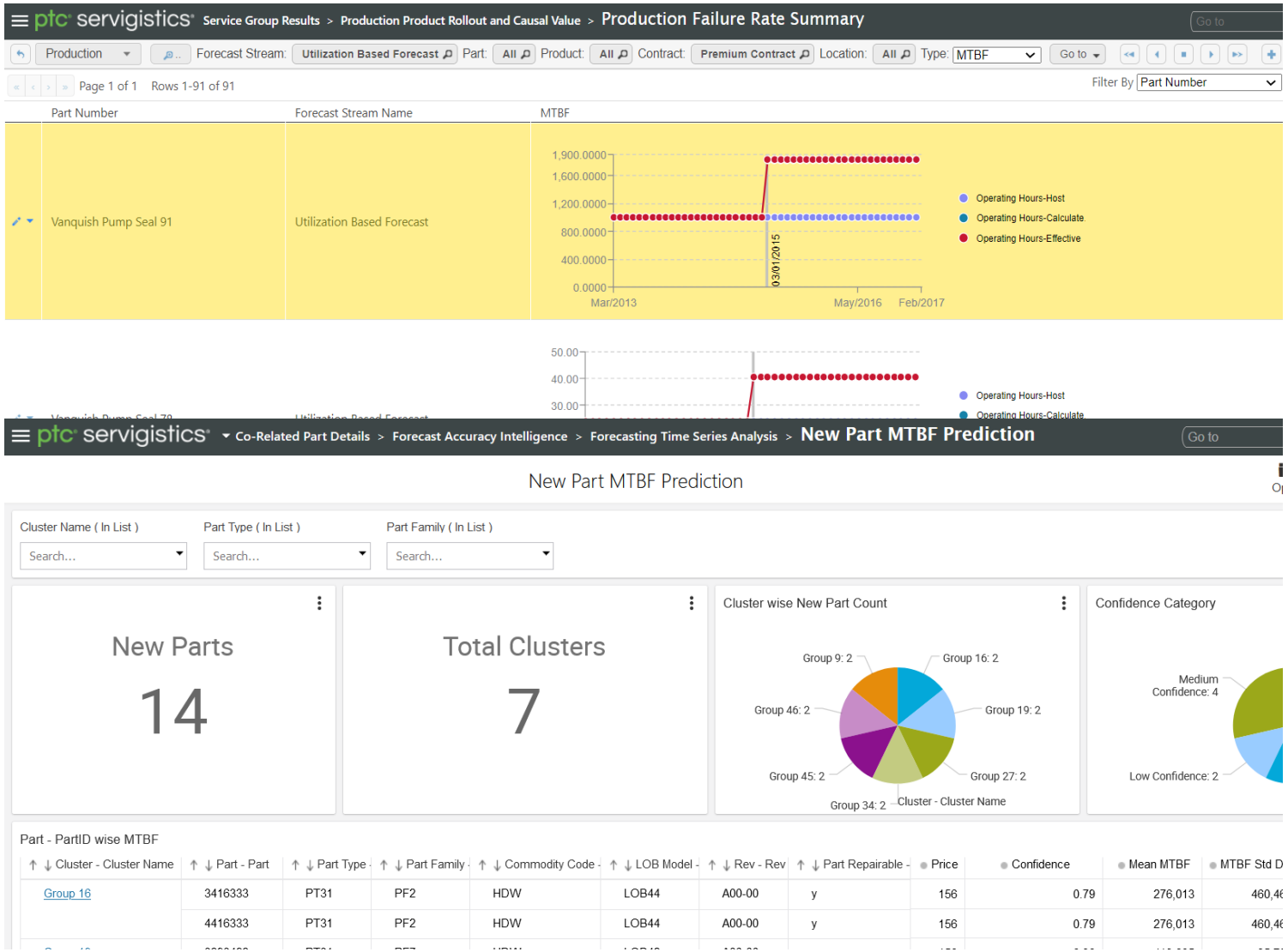
Data from Connected Components to forecast rotable/life limited parts removals and maintenance events

Use serialized utilization of rotables/life limited part

Additionally, the installed base data can be used to create ***optimization service targets*** specific to contract/customer/product etc.

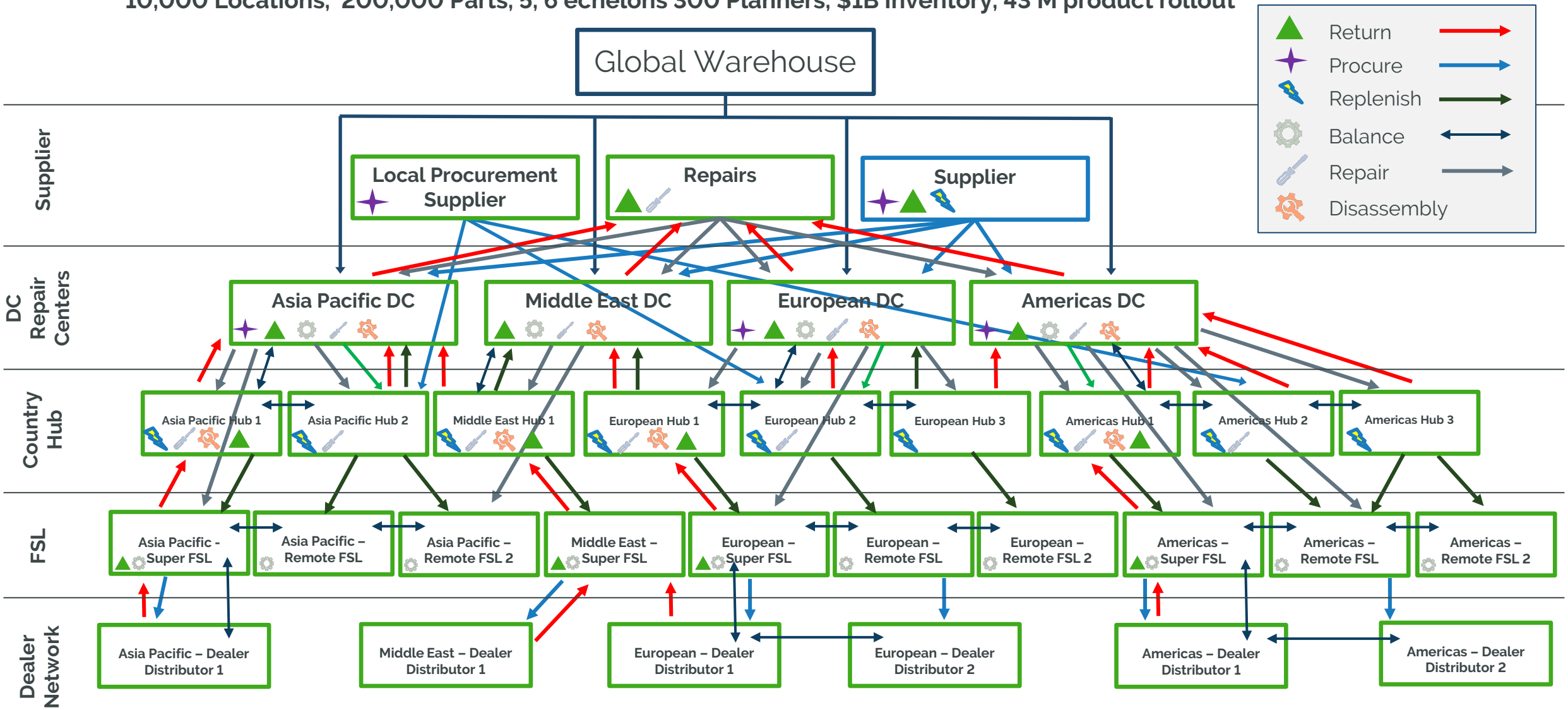
Estimate: Mean time Between Failure

- Forecasted MTBF/Failure rate using statistical and ML algorithms
- Part and Bill of Materials changes over time
- Cutover from Engineering to Forecasted MTBF
- MTBF over time
- New Part MTBF prediction
- Product and Region specific MTBF



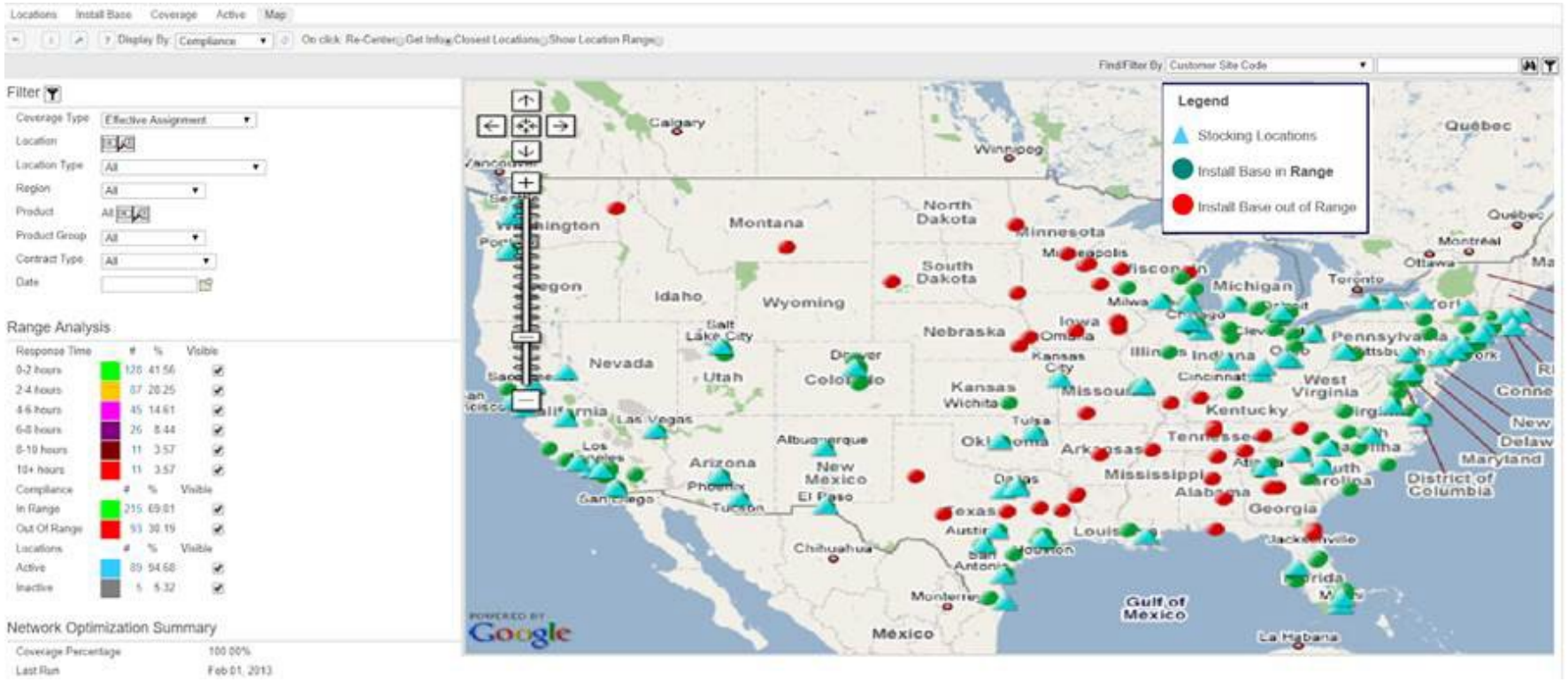
PREDICT: CREATE PREDICTIVE TWIN OF THE SUPPLY CHAIN

10,000 Locations, 200,000 Parts, 5, 6 echelons 300 Planners, $1B Inventory, 43 M product rollout

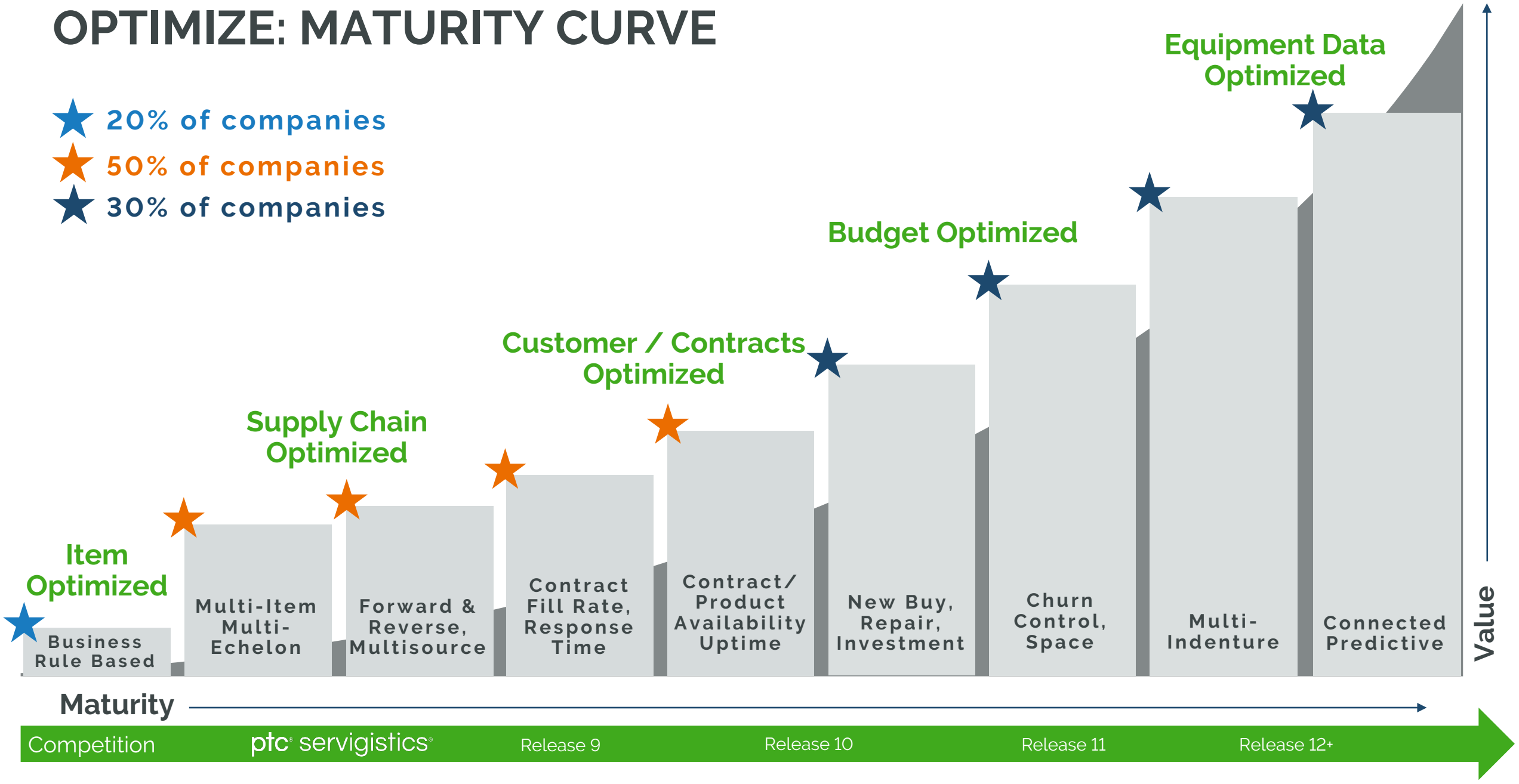


OPTIMIZE: NETWORK DESIGN

- Uses driving distance and SLA to
- Minimize the number of stocking locations needed
- Model location start-up, shut-down, operating costs
- Assigns Installed Base/contract customer sites to best stocking locations



OPTIMIZE: MATURITY CURVE



Metso:Outotec

Servigistics Service Parts Management

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METSO OUTOTEC LEVERAGES SERVIGISTICS

How Metso Outotec leverages Servigistics in the Cloud to deliver unprecedented value.

Challenges

- Complex Global Network
- Predicting Part Lead Time
- Existing Systems Strained
- Leaving business on the table

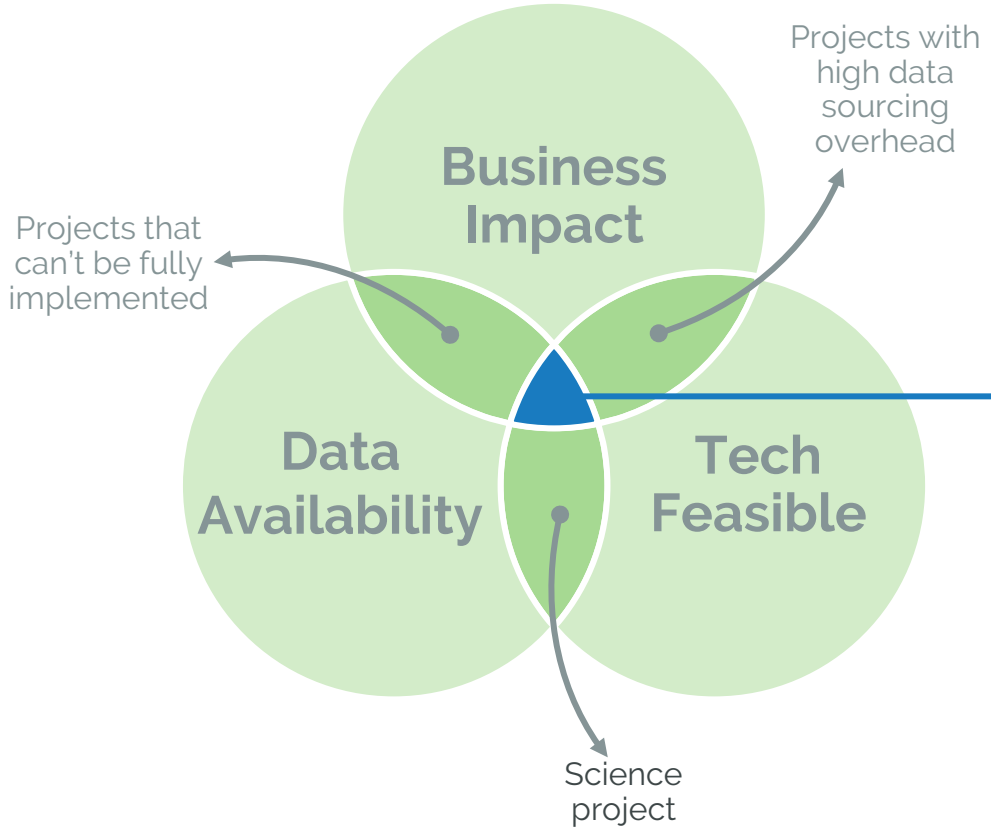
Solution

- Servigistics Service Parts Forecasting, Multi-echelon optimization, Planning, Performance Analytics & Intelligence, Machine Learning

Impact

- On-shelf availability increase 3.4%
- Inventory turns increase 18% in first 24 months
- Reduced inventory 42M EUR
- Empowered strategic decisions

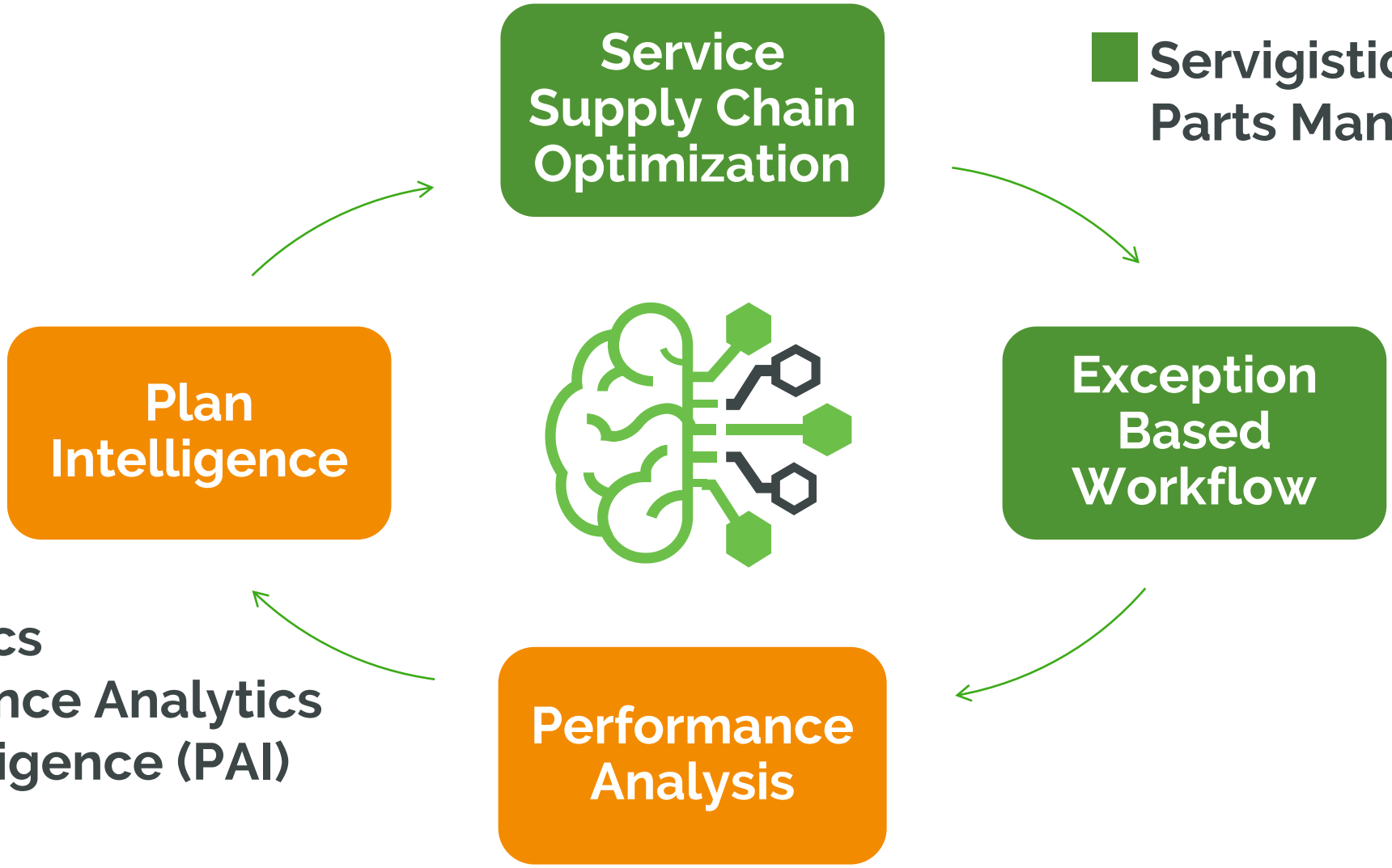
SUCCESS FACTORS IN INDUSTRIAL AI



Adoption Factors

- Prove Business Value
- Robustness and Repeatability
- Explainability
- Performance
- Adaptability
- Business Process Support

VISION - AUTONOMOUS SELF-IMPROVING OPTIMIZATION AND PLANNING



Servigistics Service Parts Management

Servigistics Performance Analytics and Intelligence (PAI)

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DIGITAL TRANSFORMS PHYSICAL

THANK YOU

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AUTONOMOUS OPTIMIZATION OF LARGE-SCALE SERVICE SUPPLY CHAINS

Service supply chains make our economy and daily lives possible. These supply chains span many industries, including transportation, computing, telecommunications, healthcare, defense, construction, agriculture, building, factory equipment, and more. The complexity of these supply chains is staggering, with each consisting of hundreds or thousands of intricately interconnected locations with inventory investments ranging from $200M-$2B for major equipment manufacturers and operators. When equipment requires service, the service parts are needed within minutes/hours of the failure, an impossible feat made possible through advanced technology. Servigistics, the leading service supply chain optimization solution, helps ensure service parts are available in the right place, quantity, and price. With sophisticated algorithms and advanced data science, Servigistics recommends what parts to buy, repair, and move around the supply chain, tuned to maximize equipment availability and readiness. These data science methodologies include statistics, machine learning, and operations research. Servigistics is a pioneer of industrial AI enabling autonomous optimization of complex service supply chains involving millions of decisions every day without user intervention. This talk describes the mission of AI-driven autonomous planning, explains how Servigistics is at the cutting edge of innovation, offers an overview of data science applications used, and explains the success factors and challenges in Industrial AI.