

# eKryp



## **Reimagine Service Delivery using IOT and Artificial Intelligence**

*November 15<sup>th</sup> 2018*

# Agenda

- Service Challenges & Complexities
- AI/IOT/ML Solutions
  - Spare Parts Planning
  - Problem Identification
  - Predictive Maintenance
- AI/ML/IOT integration with ERP and CRM
- Customer Case Studies
  - ✓ ARCA's experience with IOT/AI Service
  - ✓ Case Study – Industrial Equipment
  - ✓ Case Study - Medical Devices
- Questions

## Service - Customer Relationship



\$1 Trillion is spent in United States alone every year on Devices already owned!

## Service Challenges

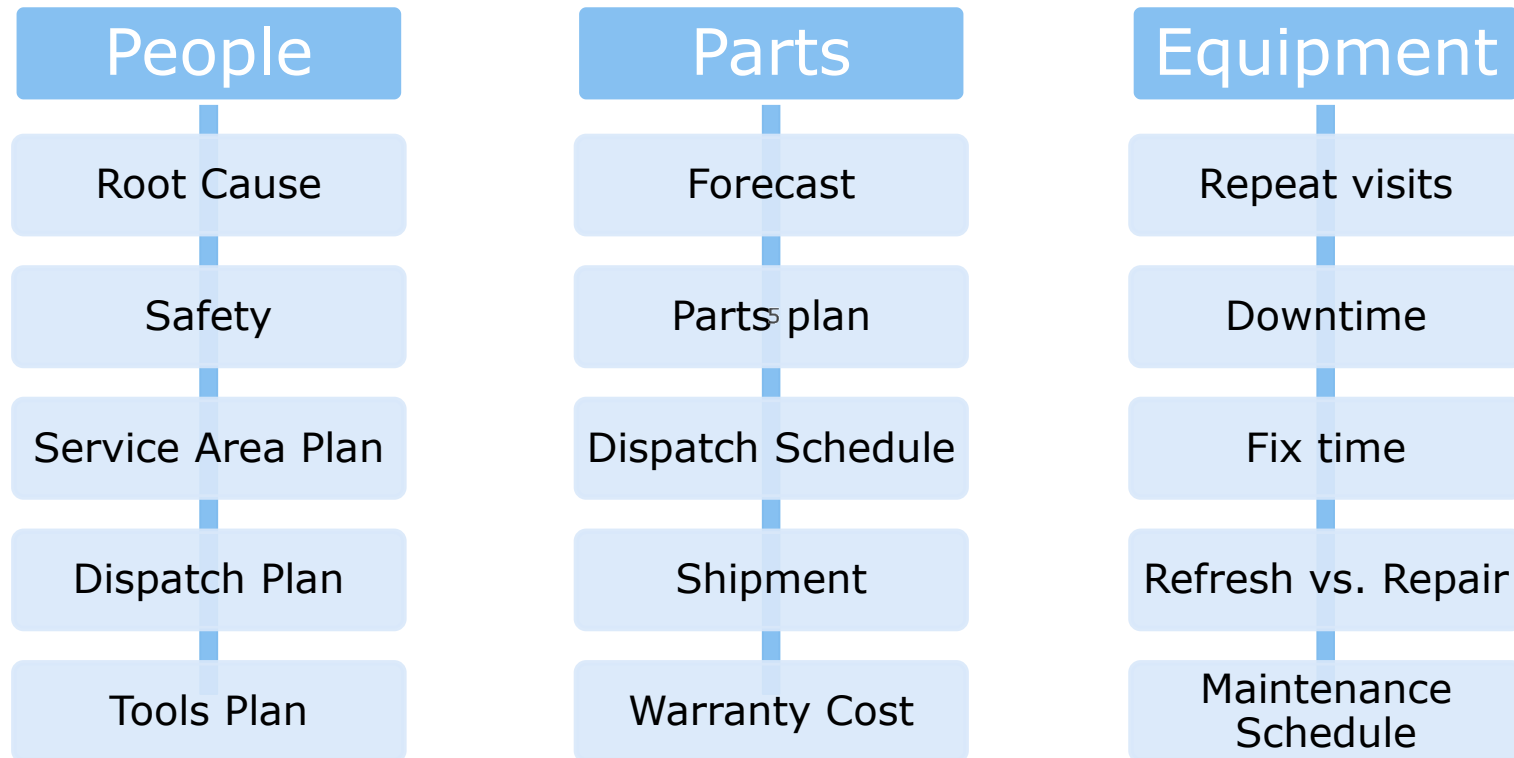


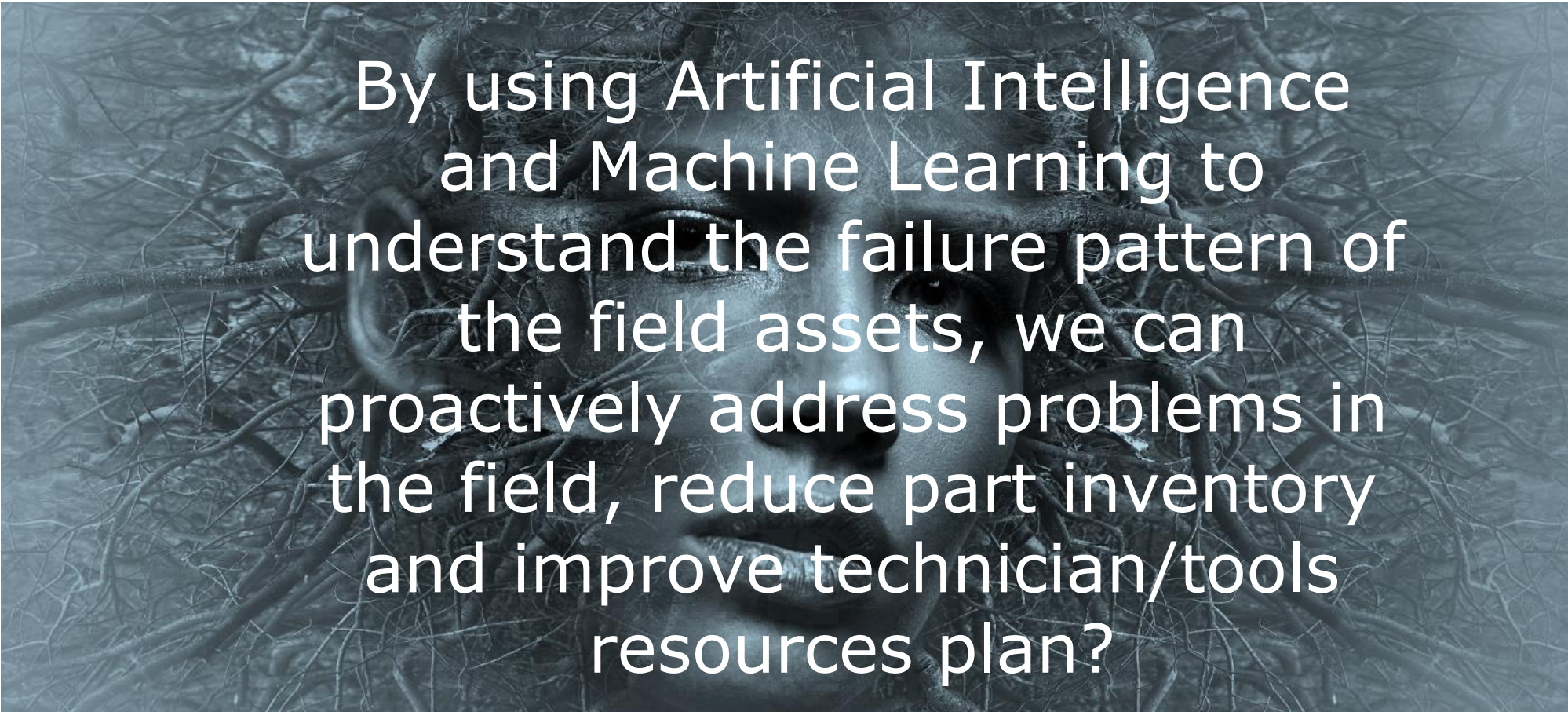
Reactive operations  
and wastage of  
resources

Increasing and  
Changing demand by  
Customers

Service Leaders need Intelligence driven technology

# Service Complexities





By using Artificial Intelligence and Machine Learning to understand the failure pattern of the field assets, we can proactively address problems in the field, reduce part inventory and improve technician/tools resources plan?

# Integrated Predictive Model



Use the field data and look for predictive signals to understand the failure pattern and anomaly



Create forecast from these signals and by applying learning method; proactively address problems; Predict parts in time  $t$  is for the demand in time  $t+L+R$  to account for Lead and Receive times

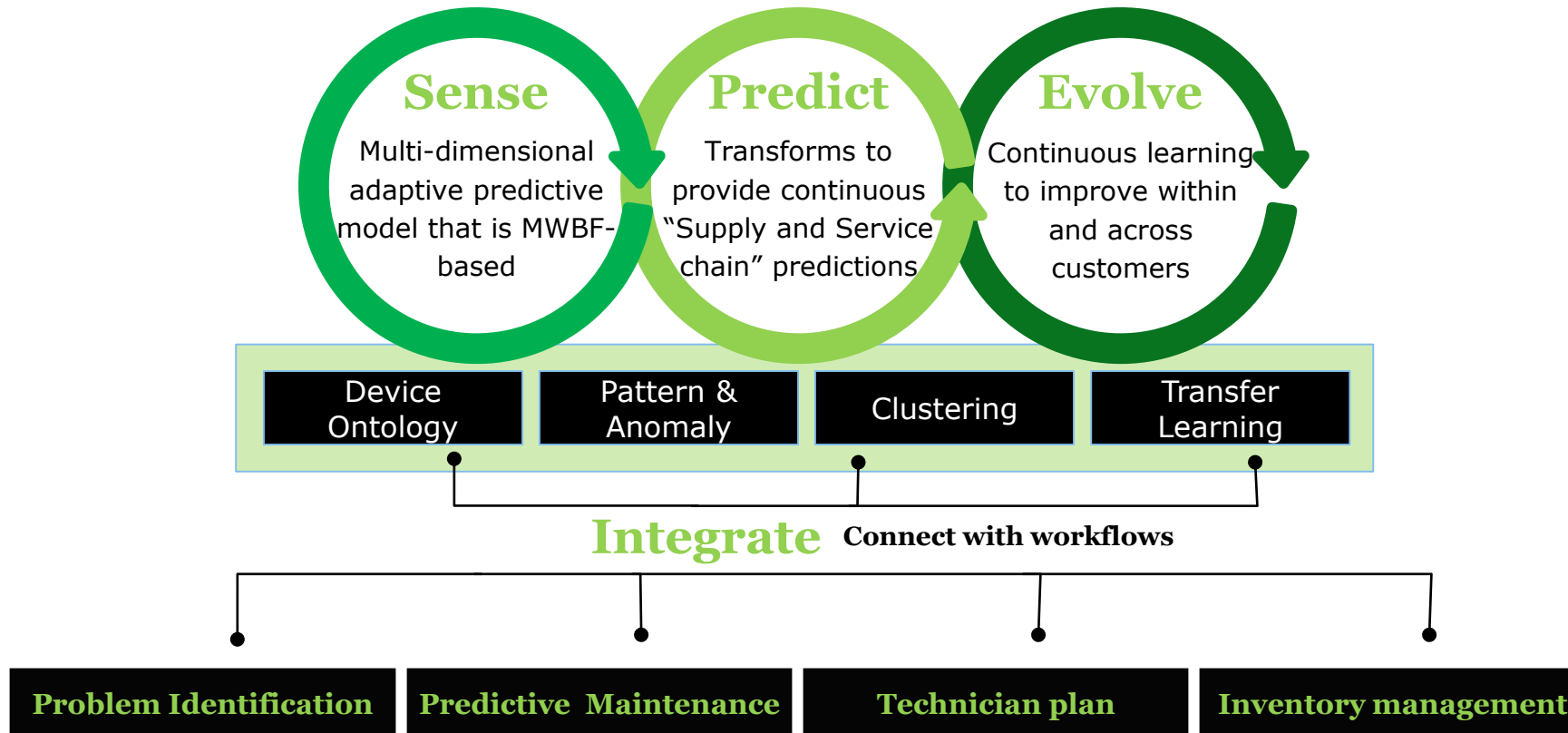


Account for variance by testing the data and adjust for the install base changes

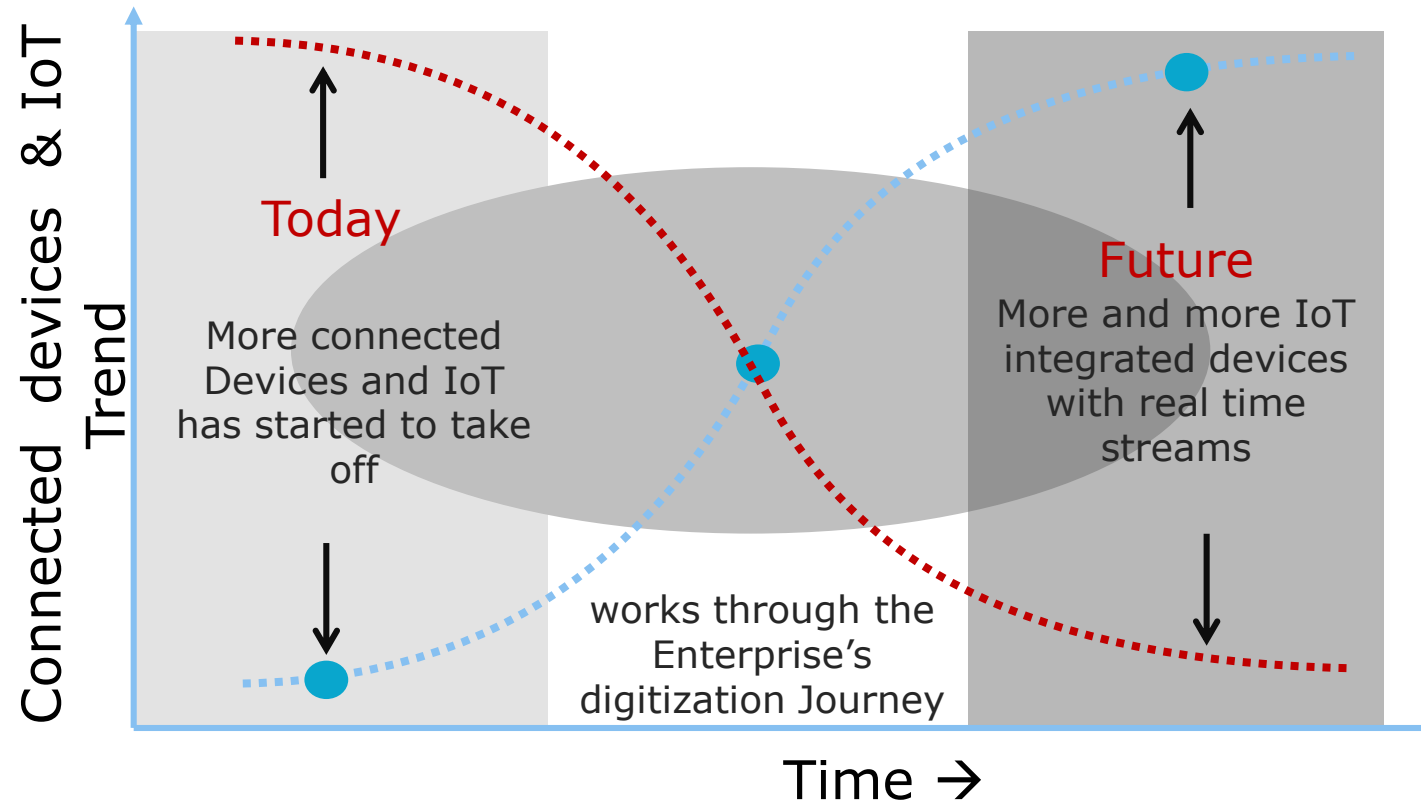


Integrate and provide visibility to see the impact at P&L level to make proactive operational decisions









# AI/ML/IOT Technology



# Ready to be deployed and works through the emerging IoT trend

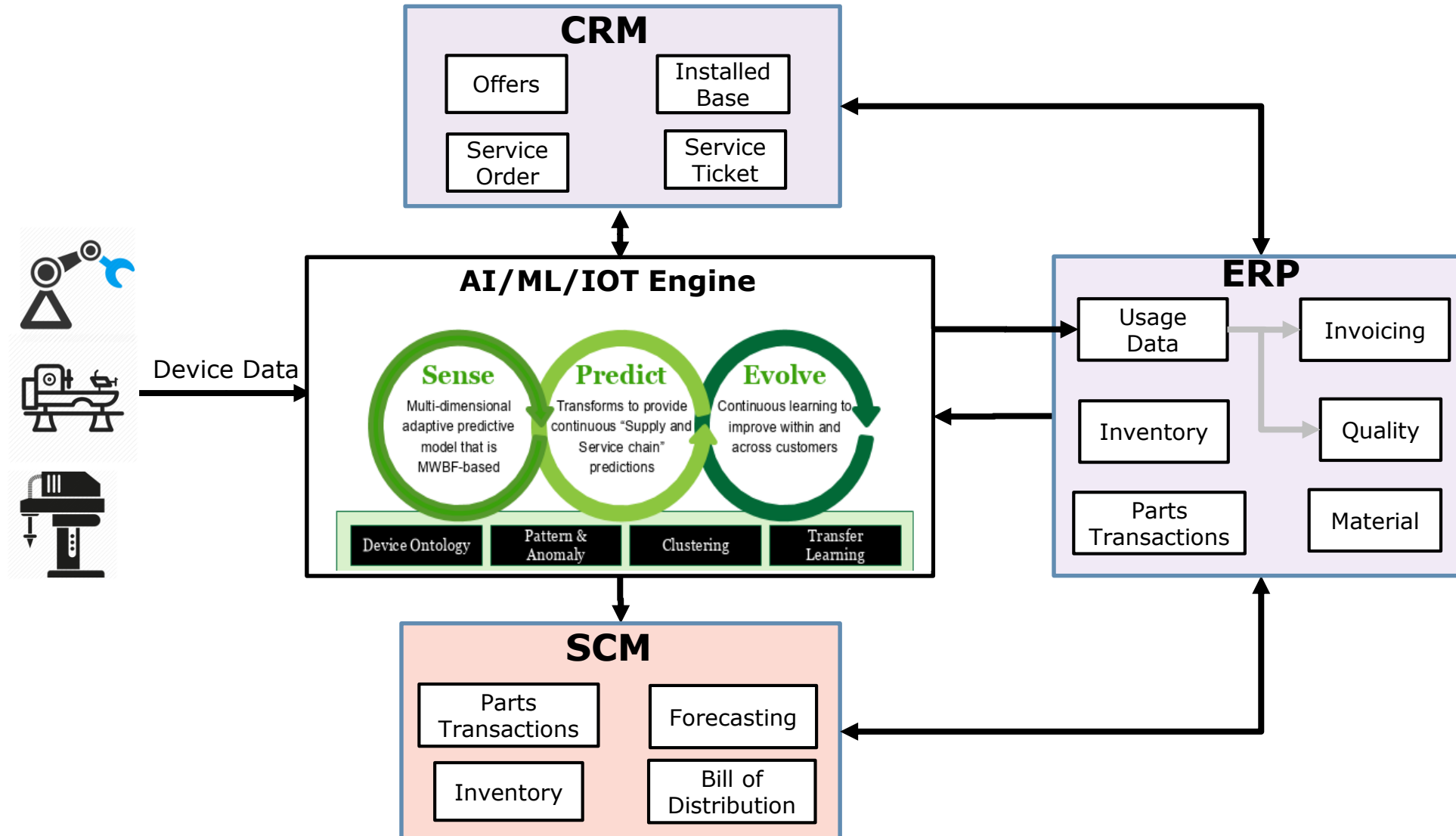


# Service Planning Solution: Differentiators

	Traditional	Prescriptive
Optimize Services operations based on device usage patterns and machine learning		
Provide early warning of an impending parts, assets, tools inventory problem		
Gain more accurate P&L impact based on future part demand prediction		
Gain comprehensive understanding on technician and tools projections based on predictive models		



# IOT/ML/AI integration with ERP & CRM



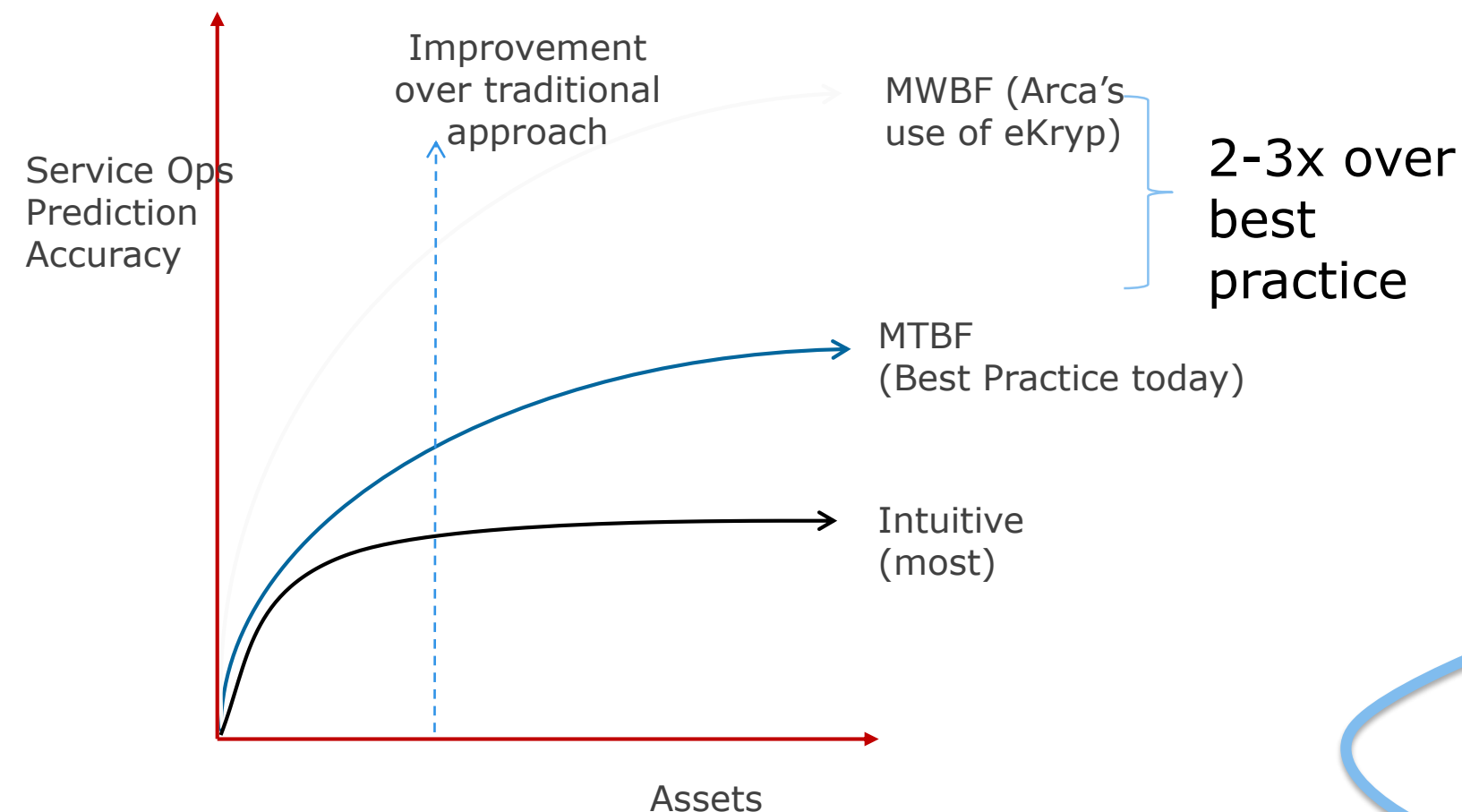
# ARCA – Company Overview



- Global cash automation company headquartered in North Carolina
- Celebrating 20 years in 2018
- Most widely deployed cash recycler in the world (CM18)
- Operating in Financial, OEM, and Retail channels
- US Service footprint covering all 50 states with a network of 600+ certified field technicians
- Full service installations and technical support maintaining approximately 6,000 contracted units

[arca.com](http://arca.com)

## Arca's advanced model is multiple times better than industry standard



Today's best practice is based on time and use(notes) whereas Arca is using multi dimensional model for much better predictability

**\$6.3M**  
**increased value**  
**by Arca's**  
**customers**

# Example Customer Downtime Analysis

## Track Jam Example

### REPAIR OPPORTUNITY

Do PM with a Purpose  
2 Hrs Scheduled Downtime

### REPAIR AT FAILURE

Dispatch 4 hrs plus  
Potential Parts (additional 2 hrs)

Realized Downtime: Downtime +  
Dispatch + Part replacement

→ Potential value

**6-8 HOURS**  
Unscheduled  
Downtime  
Avoided

### PREDICTION WITH DETAILS

04Feb - Device Failure  
Prediction with Confidence  
level and potential root  
cause

**\$ MAR**  
Unscheduled  
DOWNTIME  
(plus Dispatch  
hrs)

**EXPANDED  
POTENTIAL VALUE**

**222 DEVICES**

Based on Top 50 Prediction in  
Feb

**1,822  
Hours**

Unscheduled  
Downtime Avoided



**22,824 potential downtime hours  
avoided in one year**

# Large Contract Manufacturer involved in Flow Manufacturing

Case Study: Industrial

## Solution

eKryp Device prediction and Incident Insight modules to enable the Contract Manufacturer to increase Overall Equipment Effectiveness (OEE)

## Modules Used

eKryp Device Service Intelligence  
eKryp Real Time Streaming Connector  
eKryp Real Time Alert and Notification

Analysis of  
**Sensor**  
data in real time

**5%**  
increase in OEE

Use machine learning to predict potential anomalies from the sensor data and provide alerts to machine operators and shift manager to prevent downtime

**40%**  
increase in  
operator  
efficiency

**2x**  
improvement in  
PM schedule and  
operations

# Medical Device maker of high end scanning systems

## Case Study: Medical Equipment

### Solution

eKryp Device, Parts and Incident modules to enable the large provider of high end scanning machines to increase speed to resolve complex field issues, predict upcoming device downtime, and provide advanced service parts plan

### Modules Used

eKryp Incident Categorization  
eKryp Device Service Intelligence  
eKryp Service Parts Planning  
eKryp Data Integration Connector

Analysis of  
**5+ years**  
of field data on  
devices

**3+ hours**  
reduction in issue  
resolution time

Use machine learning to predict potential device anomalies, automatically categorize incoming issues to potential solution areas, and create service parts demand

**97%**  
accuracy in  
service part  
demand

**3x**  
faster warning  
during warranty  
period



# Thank You



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