



Manufacturing Transformation

Manufacturing IP Solutions

How Concurrency Helps You Leverage Technology to Drive Business Outcomes



Scenarios for Transformation



Automate Supply
Chain Optimization



Automation Sales
Quoting with
Intelligent Agents



Predictive Maintenance
Manufacturing
Framework



Smart Warehouse & AI
for Good



Smart Products



Customer Insights



Quality Management



Cycle Counting

Concurrency Manufacturing IP & Offers



Concurrency Manufacturing IP Solution	MFG Priority Solution Impacted	Activation Method	Customer Cost (funding available)	Customer ROI	Customers	Workloads
Demand & Inventory Forecasting	<ul style="list-style-type: none"> Create more resilient supply chain Build more agile factories 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$250k - \$500k project	10% – 30% inventory & logistics optimization = \$40m	Clover, Ryerson, Dominion, Milwaukee Tool, Brunswick, Valmont	Azure ML, AKS, Azure Synapse, Databricks, Power BI
Inventory Location & Shipping Optimization	<ul style="list-style-type: none"> Create More Resilient Supply Chain Build More Agile Factories 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$250k - \$500k project	Up to 60% reduction in customer shipping costs = 80% optimization	Clover, Ryerson, Dominion, Milwaukee Tool, Brunswick, Valmont	Azure ML, AKS, Azure Synapse, Databricks, Power BI
Cycle Counting	<ul style="list-style-type: none"> Accelerate cycle counting processes 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$250k project	50% reduction in cycle counting, 75% increase in accuracy over manual	Clover	Azure ML, AKS, Azure Synapse, Databricks, Power BI
Flash Quoting with Intelligent Agent or Bots	<ul style="list-style-type: none"> Engage customers in new ways 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$650k project	1 – 2% sales uplift = \$40m	Ryerson, Duff & Phelps, Clover Technologies	Bot Framework, AKS, Synapse, Azure ML
Quality Management	<ul style="list-style-type: none"> Inspect quality of produced products 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$900k project	25% reduction in re-work, 300% reduction of inspection time, 25% increase in revenue tied to discovered service failures	Quad, Brunswick, Clover, Burgess & Nipel, Perigen, Hereaus, Barr Engineering, Baliwick	Bot Framework, AKS, Synapse, Azure ML
Predictive Maintenance Manufacturing Framework	<ul style="list-style-type: none"> Build more agile factories 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$250k - \$500k project	Per hour manufacturing cost optimization and repair cost optimization = \$10m+	Johnson & Johnson, Burgess & Nipel, Hereaus, Brunswick, Perigen, Barr Engineering	Azure IoT, Azure ML, AKS, Synapse
Smart Warehouse and (AI for Good)	<ul style="list-style-type: none"> Build more agile factories Transform your workforce 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$200 – \$300k project	Improved picking efficiency, ability to employ individuals with cognitive disabilities	Clover, Open Source, CESMII	Bot Framework, Cognitive Services, Azure ML
Product IoT Framework	<ul style="list-style-type: none"> Unlock innovation and deliver new services 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$250k - \$1m project	10 – 20% price increase through “smart” product uplift= \$25m+	Burgess & Nipel, Hereaus, Brunswick, Perigen, Barr Engineering, Microsoft, Reinhart, Clover	Azure IoT, Azure Sphere, Synapse, Azure ML
Product Catalog & Customer Usage	<ul style="list-style-type: none"> Unlock innovation and deliver new services 	Customer Two Hour Workshop, Leading to Pilot	\$50k pilot \$200k – \$500k project	5% sales uplift tied to new products or offers to customers with existing needs discovered	FedEx, UL, Sun Country, MPTC	Azure Synapse



THE WORLD'S LEADING
MARINE
TECHNOLOGIES

Connected Product

Accelerating New Revenue

Connected Product



Summary

Create new revenue opportunities to sell predictive maintenance through sold product

Create new digital experiences through connected product engagement

Engage customers directly even when selling through intermediaries



Customer ROI

Up to **50% increase in service revenue** tied to predictive maintenance attached to smart products

Up to **200% increase in customer attach** (vs. rebate or registration-oriented approaches)



Customer Examples

Burgess & Nipel, Hereaus, Brunswick, Perigen, Barr Engineering, Microsoft (we wrote the documentation), Reinhart, Clover



Timeline

An initial model activated **over 5 weeks**, with 16 week operationalized environment

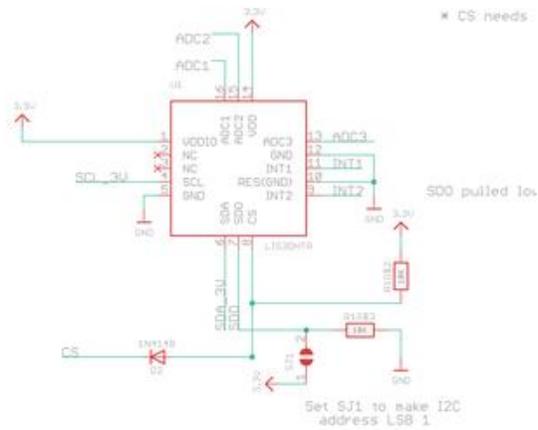
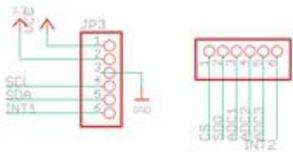


Workloads

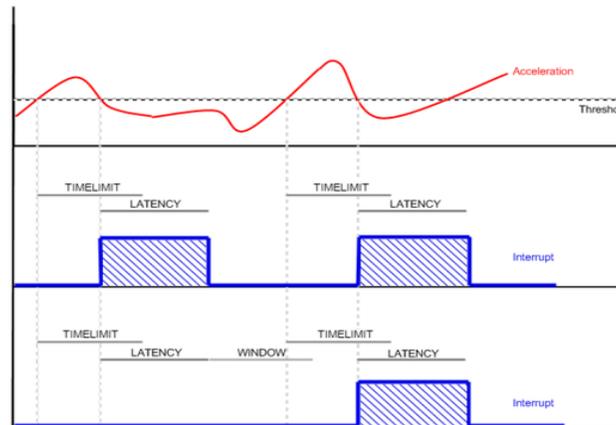
Modern Data Framework

- Drone base AR
- Azure Synapse
- Databricks
- Azure ML
- Power BI
- Azure Bot Service
- Azure IoT, bot enablement,

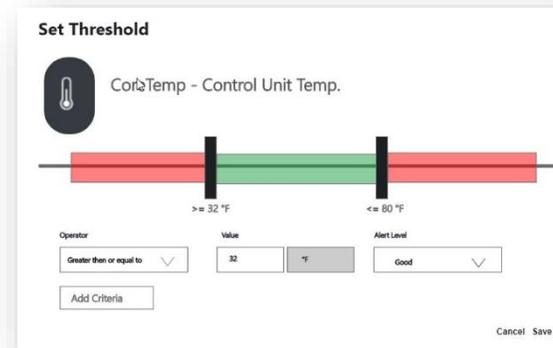
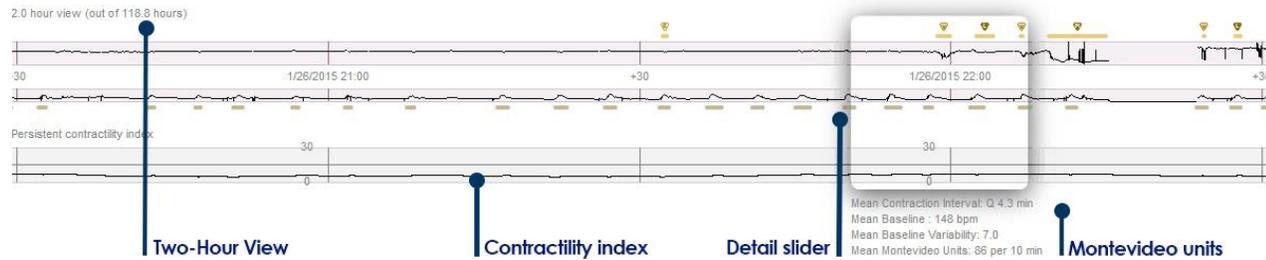
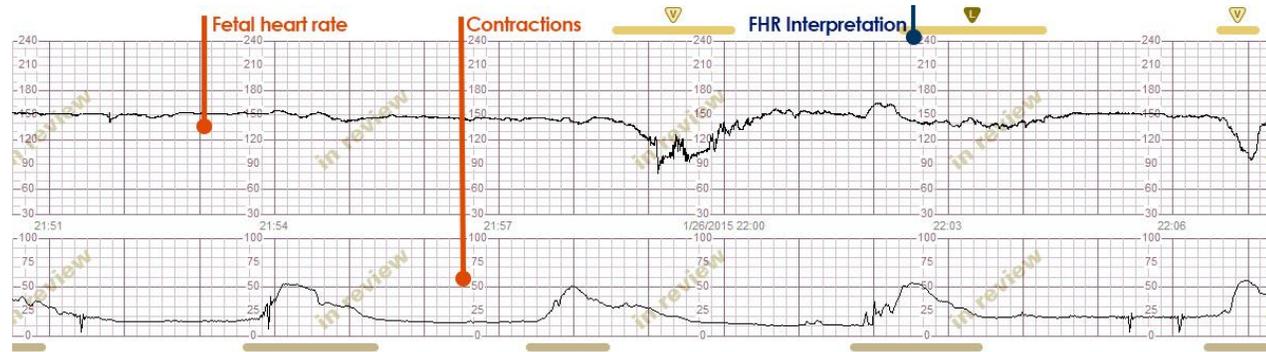
Finding patterns...



X: 2928	Y: 6528	Z: -1520	X: 0.36	Y: 0.80	Z: -0.18 m/s ²
X: 3472	Y: 6528	Z: -3872	X: 0.42	Y: 0.81	Z: -0.47 m/s ²
X: -4896	Y: 6240	Z: -1424	X: -0.62	Y: 0.75	Z: -0.19 m/s ²
X: -3856	Y: 496	Z: -7104	X: -0.48	Y: 0.20	Z: -0.92 m/s ²
X: -144	Y: -3120	Z: -7968	X: -0.02	Y: -0.42	Z: -0.98 m/s ²
X: -128	Y: 2784	Z: -5488	X: -0.16	Y: 0.37	Z: -0.71 m/s ²
X: -1344	Y: 4048	Z: -5552	X: 0.29	Y: 0.49	Z: -0.67 m/s ²
X: 6416	Y: 5264	Z: 1360	X: 0.79	Y: 0.64	Z: 0.18 m/s ²

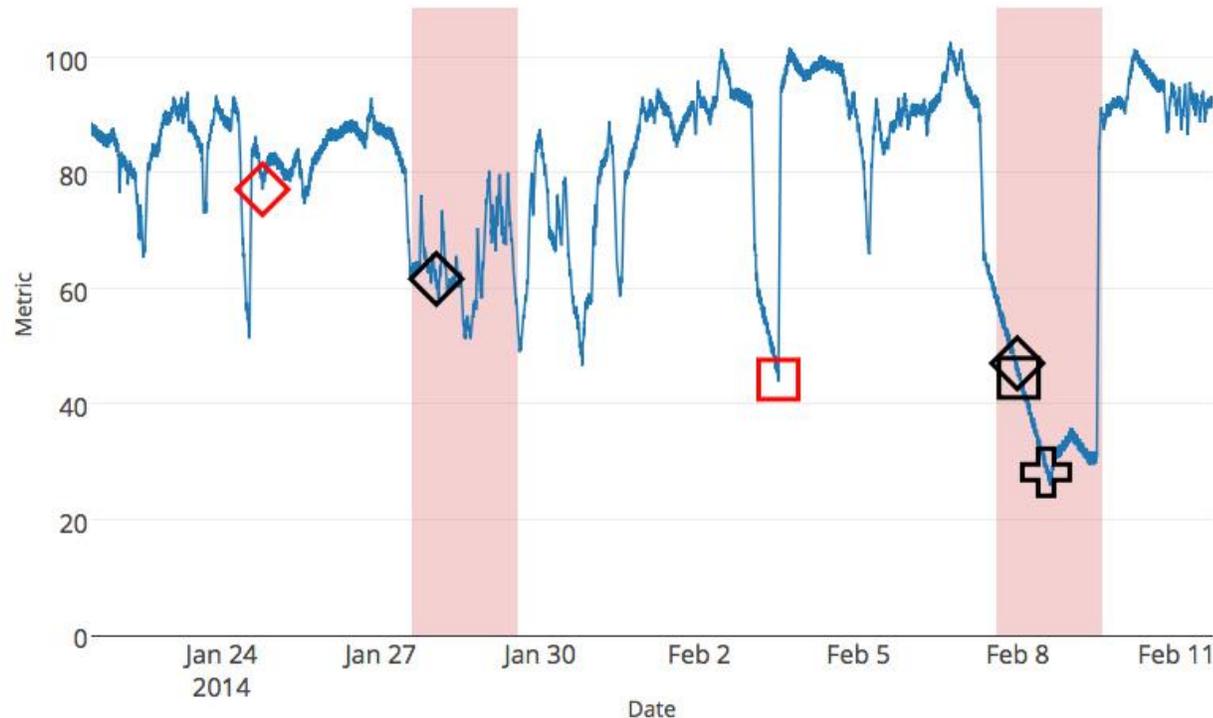


Anomaly Detection (Perigen, Hereaus)



Anomaly Detection

- Identifying an asset's abnormal behavior from sensor data



- Unsupervised approach to identify abnormal patterns from sensor data
- Identify how the various anomalies translate to the observed failures
- This can be used for:
 - Identifying future failures within a time window
 - Condition-based maintenance
 - Maintenance optimization

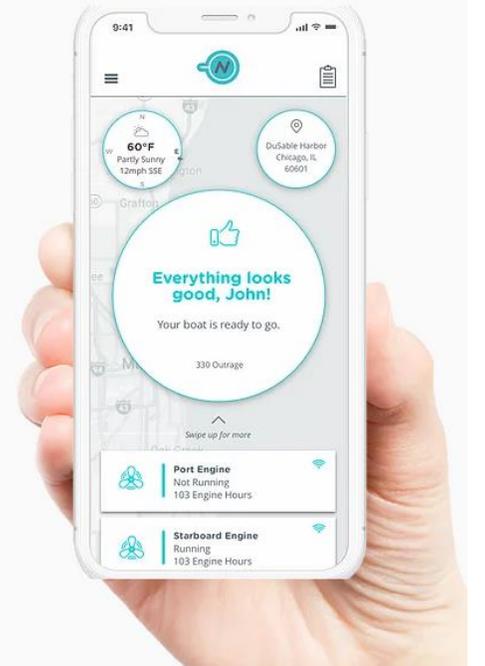
Connected Product Drives Direct Sales

Welcome to Smarter Boating!

Learn more >

Keep in touch with your boat remotely.

Always On.



- Augment distributor model
 - Establish direct customer relationship
 - Provide direct value add
 - Achieve direct product sale and recurring revenue

Nautic-On Projects

Project 1: Conversion off GCP

- Migrate existing container-based application off GCP
- De-couple application from GCP services
- Deploy into DevOps model

Project 2: Refactor for Cloud Native for Scalability

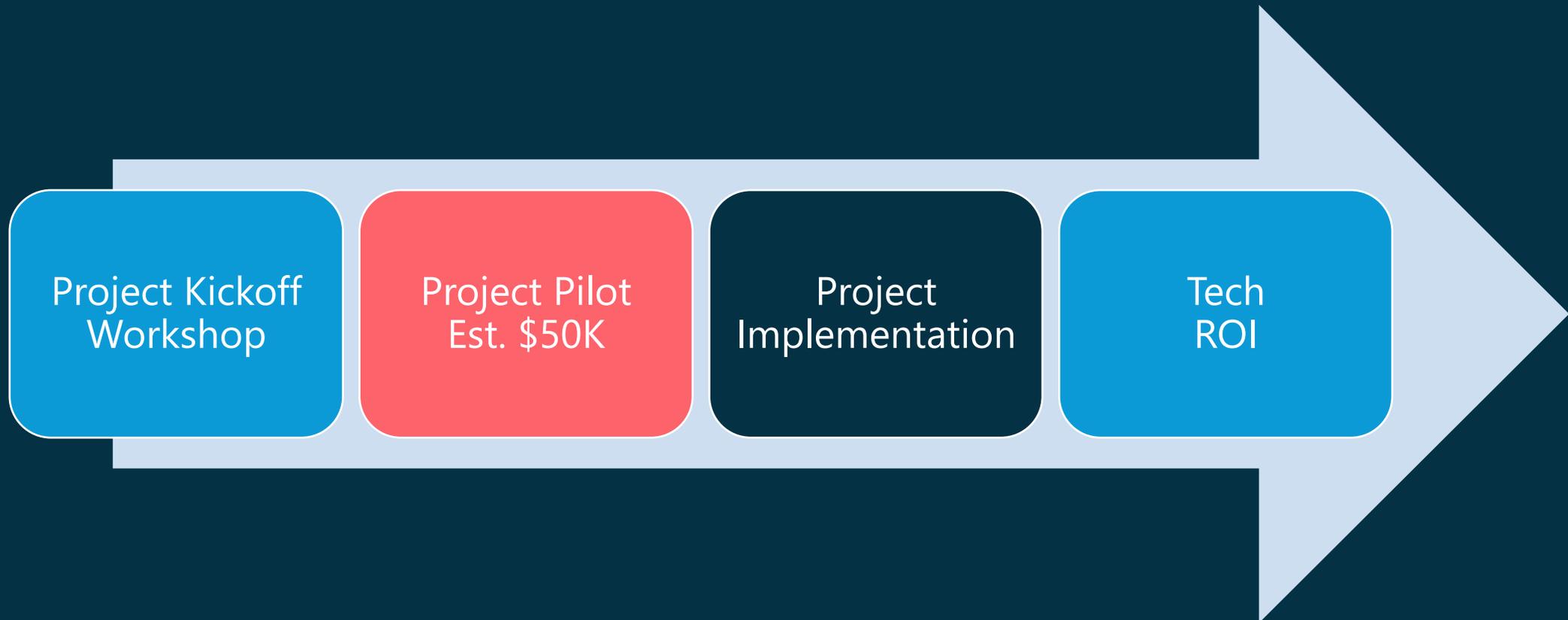
- Azure IoT Hub
- Azure Synapse
- Hardware selection
- Improved DevOps model

Architecture



Getting Started

- Manufacturing IP Solutions offer a simple path to execution so your organization can quickly realize the benefits



Next Steps

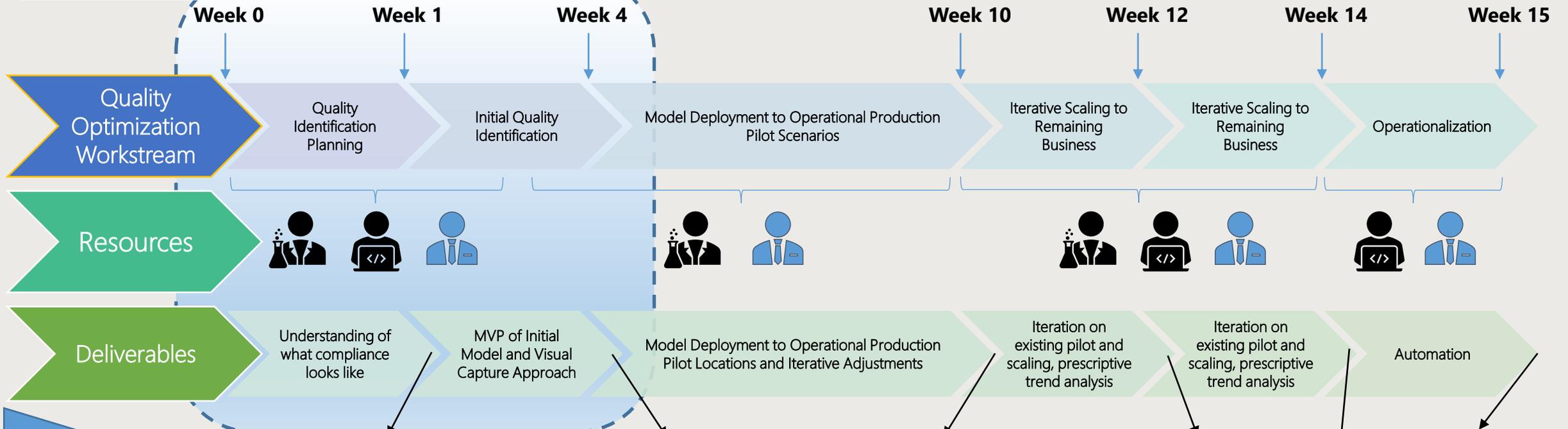
- Meet virtually one-on-one with Concurrency to discuss how a well thought out manufacturing transformation plan can benefit
- Join our upcoming webinar:
Thursday, Feb. 25th: Creating Digital Lines of Business
- Visit concurrency.com for blogs, videos and other resources

Concurrency

Thank You

Quality Optimization Project

Proposed SOW



Resources

- Data Scientist
- Data Engineer
- DBA

Understanding of Compliance Parameters
identification of what compliance is and isn't as requirements, preparation of information necessary to train initial model

MVP Model and Identification Approach
creation of initial train model and validation that it identifies compliant and non-compliant production. Combination with pilot capture

Production Pilot Live
across target locations and providing real time quality improvements

Holistic prescriptive analytics - enable fast actions on inventory investment and replenishment

Scheduled analytics processes, which **automate actions or recommend actions** for inventory optimization

Prescriptive analytics that conform to business nuances **resulting in user acceptance**

Duration

15 weeks

Estimate

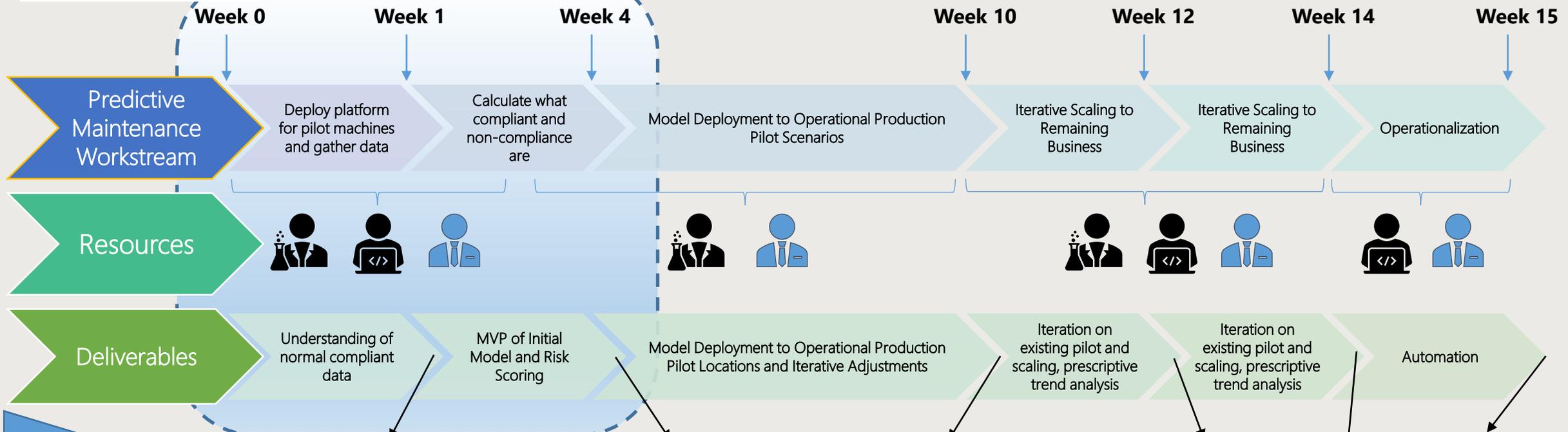
400k



Digital Transformation Realized™

Predictive Maintenance

Proposed SOW



Resources

- Data Scientist
- Data Engineer
- DBA

Understanding of Compliance Parameters
 identification of what compliance is and isn't as requirements, preparation of information necessary to train initial model

MVP Model and Identification Approach
 creation of initial train model and validation that it identifies compliant and non-compliant production. Combination with pilot capture

Production Pilot Live
 across target locations and providing real time quality improvements

Holistic prescriptive analytics - enable fast actions on inventory investment and replenishment

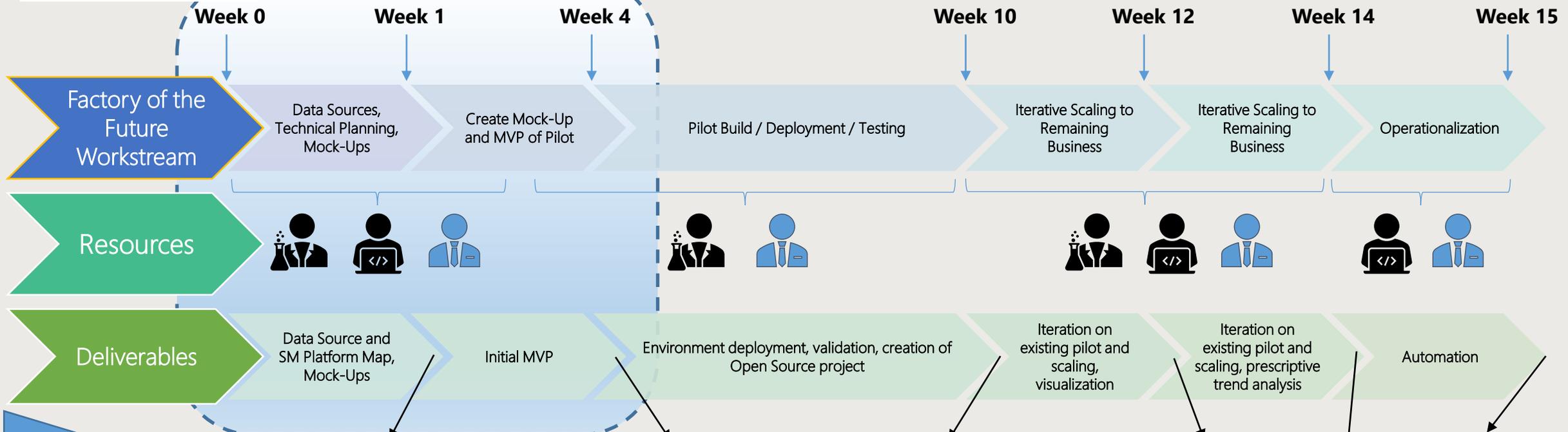
Scheduled analytics processes, which **automate actions or recommend actions** for inventory optimization

Prescriptive analytics that conform to business nuances **resulting in user acceptance**

Duration 15 weeks **Estimate** 400k

Factory of the Future

Proposed SOW



Resources

- Data Scientist
- Data Engineer
- DBA

Understanding of Data Sources, Mock-Up
 identification of data sources and SM profile / data map. Mock-ups for user interface

MVP creation of initial MVP
 environment and actualization of mock-ups, initial sm profiles

Production Pilot Live
 across target locations and providing real time quality improvements

Holistic production usage- enable global visualization of manufacturing environment

Scheduled analytics processes, which **automate actions or recommend actions** for inventory optimization

Prescriptive analytics that conform to business nuances **resulting in user acceptance**

Duration

10 weeks

Estimate

200k



Digital Transformation Realized™