

Let's
talk about
what's
possible.™

Best Buy

Optimizing Supply Chain Strategies
Cross Talk 2019

Cara Graham, Demand Planning Director, Best Buy

Nicholas Oswald, Associate Director Demand Planning and Forecasting, Best Buy

About Best Buy

We are the leading provider of consumer technology products and services, with approximately 125,000 employees in North America and approximately \$40 billion in annual revenue.

We at Best Buy work hard every day to enrich the lives of consumers through technology, whether they come to us online, visit our stores or invite us into their homes.



- Best Buy has more than 1,000 large-format stores in the United States, Canada and Mexico.
- Through its recycling program, Best Buy collects 409 pounds of electronics each minute the stores are open.

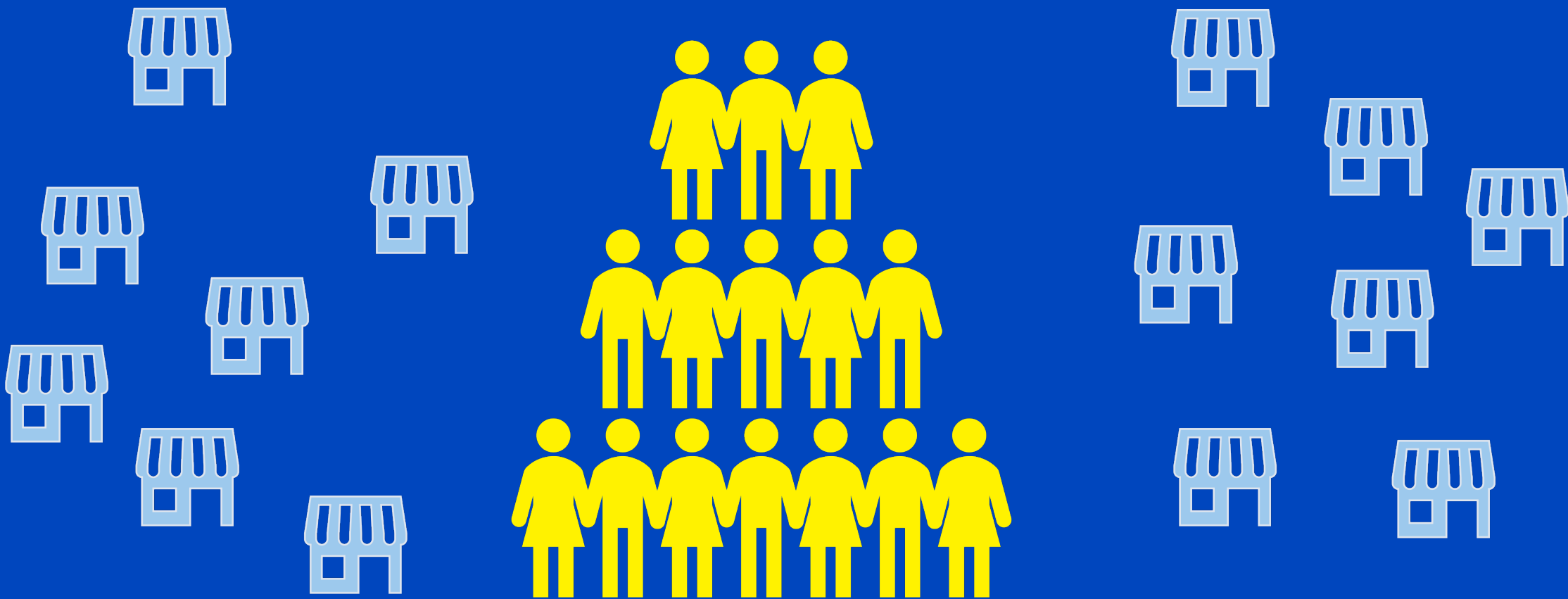
Our Story

Who do you love? **Our customers**

What do they love?..... **Inventory**

What brings it together?..... **The plan**

Customers



Customers



Inventory

Our most exciting and expensive asset

Exciting

“causing great enthusiasm and eagerness”

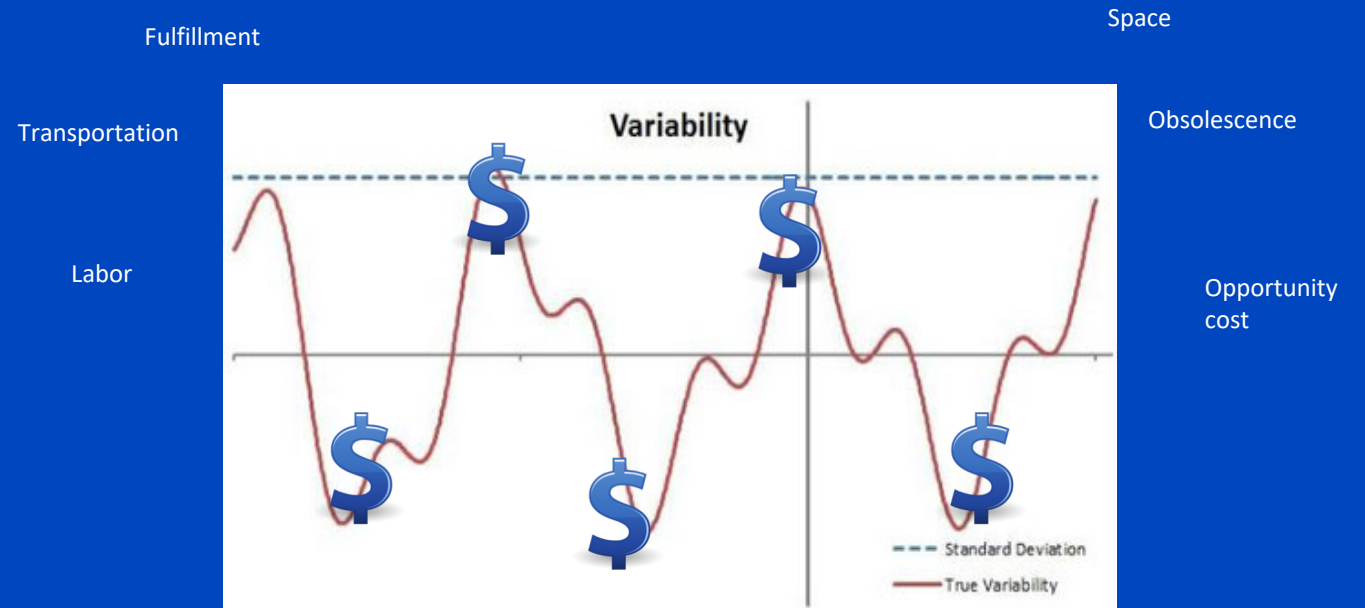
Key component of customer experience
Foundational element of many strategies



Expensive

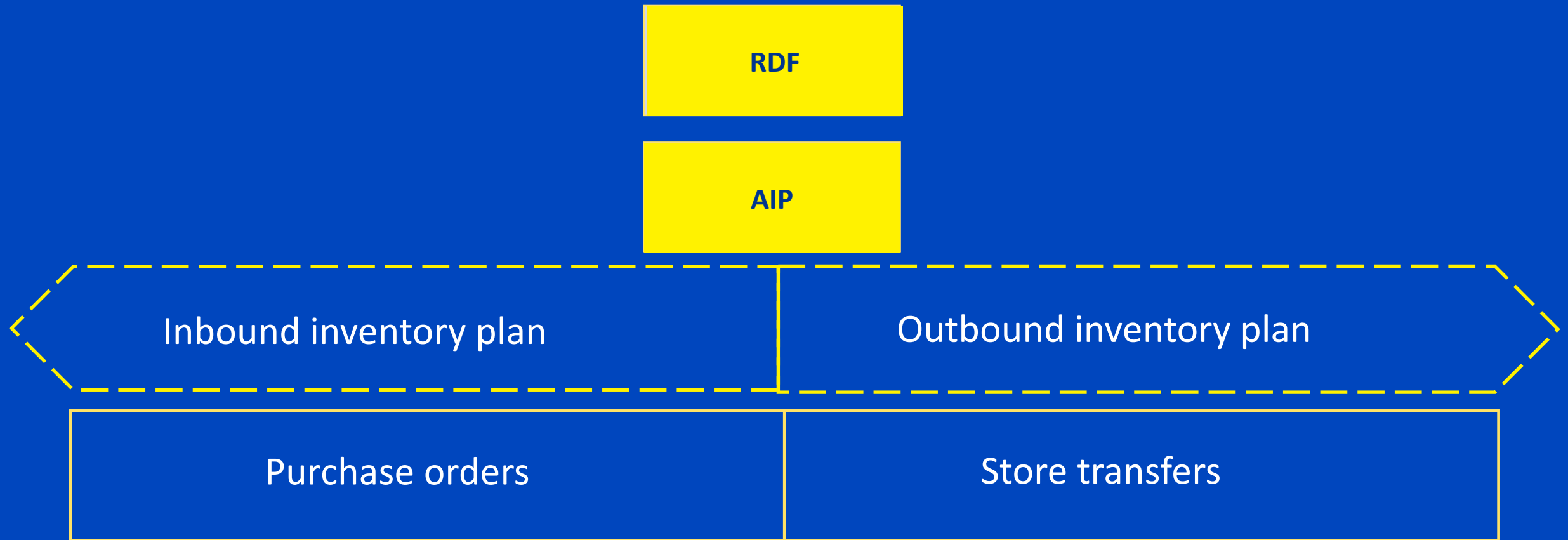
“costing a lot of money”

The cost of inventory includes all costs associated with holding or storing inventory for sale



The Plan

The valuable plan is the one associated with both planning and execution activities

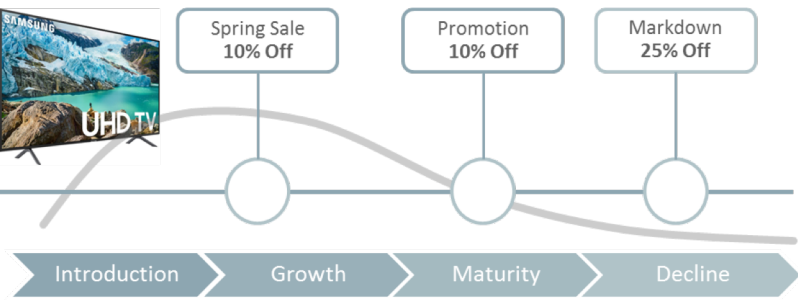


Retail Demand Forecasting

Making the customer the center of the plan

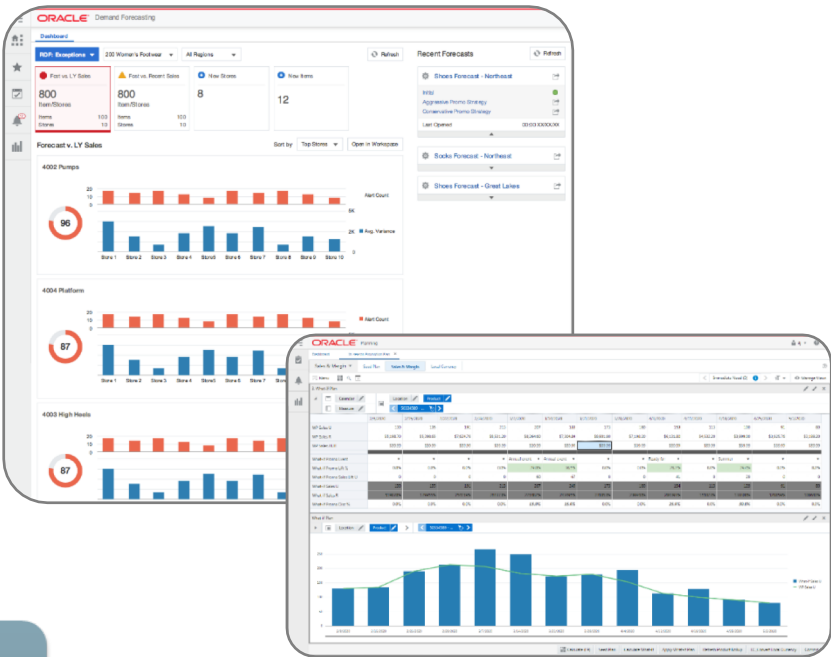
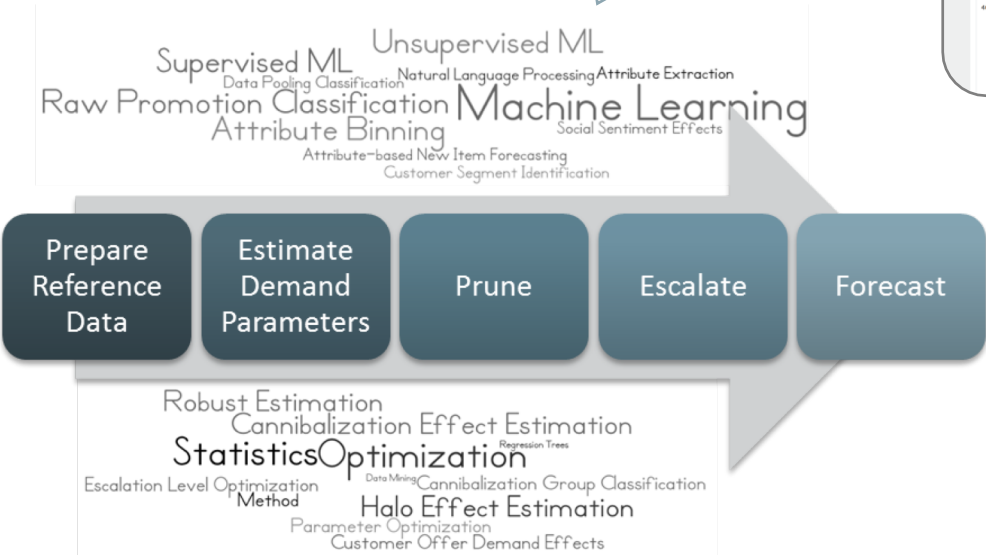
Retail Demand Forecasting

Next Generation Objectives



Exploit AI to Manage Speed & Scale

Maximize forecast for the entire product lifecycle



Maximize the value of the end-user

Joint Research for Joint Success

Partnering for the Next Generation

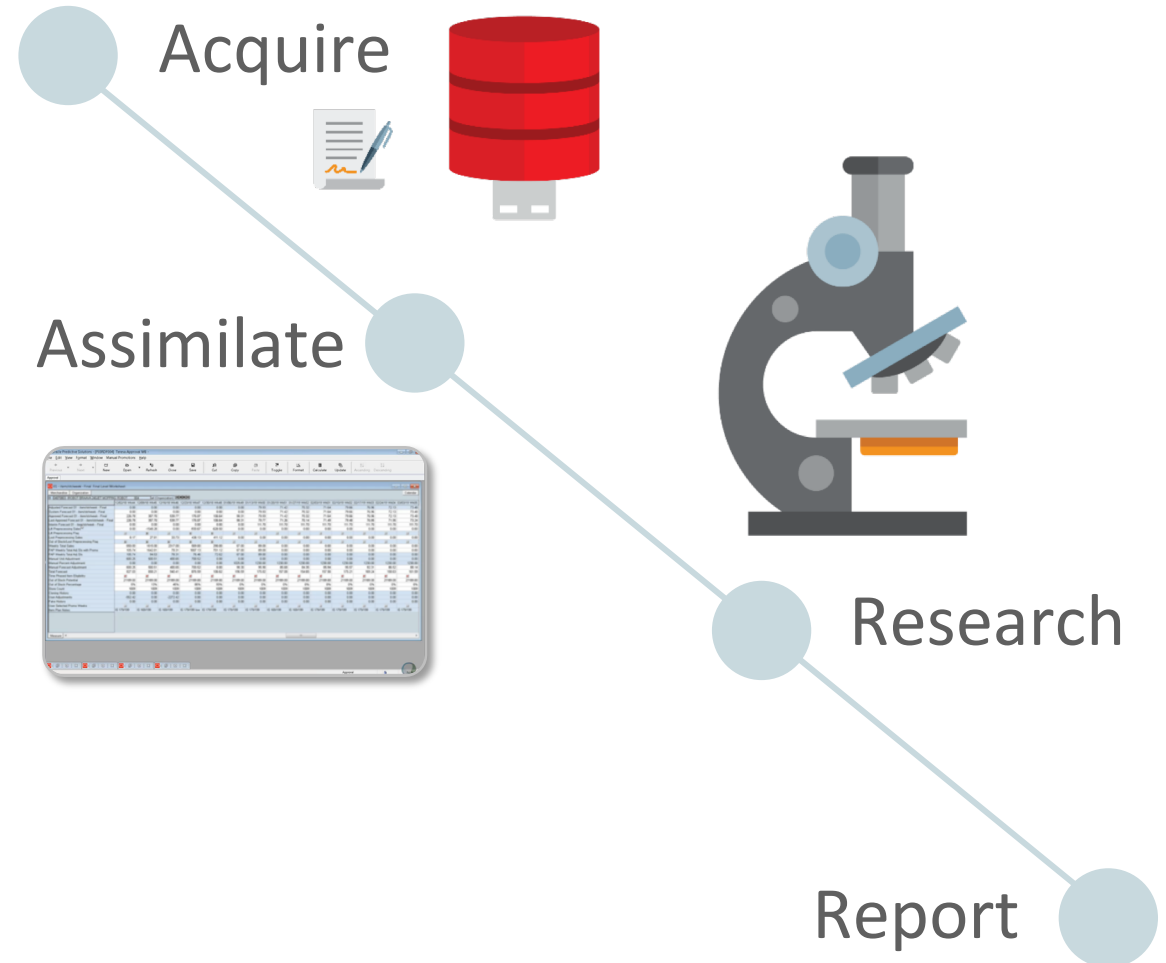
Key Opportunities

Promotional Forecasting

Automation

Inventory Optimization

User Experience



Joint Research for Joint Success

Demonstrating Mastery of the Basics

Initial Focus

Long Lifecycle Baseline Forecast

High-Touch and Low-Touch
Categories across All Locations

13 week highly promotional
period

Approach

Purely Analytical
(i.e. no end-user intervention)

Evaluation

MAPE

Filter Slow Movers

Joint Research for Joint Success

Demonstrating Mastery of the Basics

Category	Average SaaS % Improvement	Average SaaS Improved %	Sum of Sales
Category A	57.7%	94.3%	1,304,575
Category B	26.4%	100.0%	4,579,289
Summary	48.4%	96.0%	5,883,864

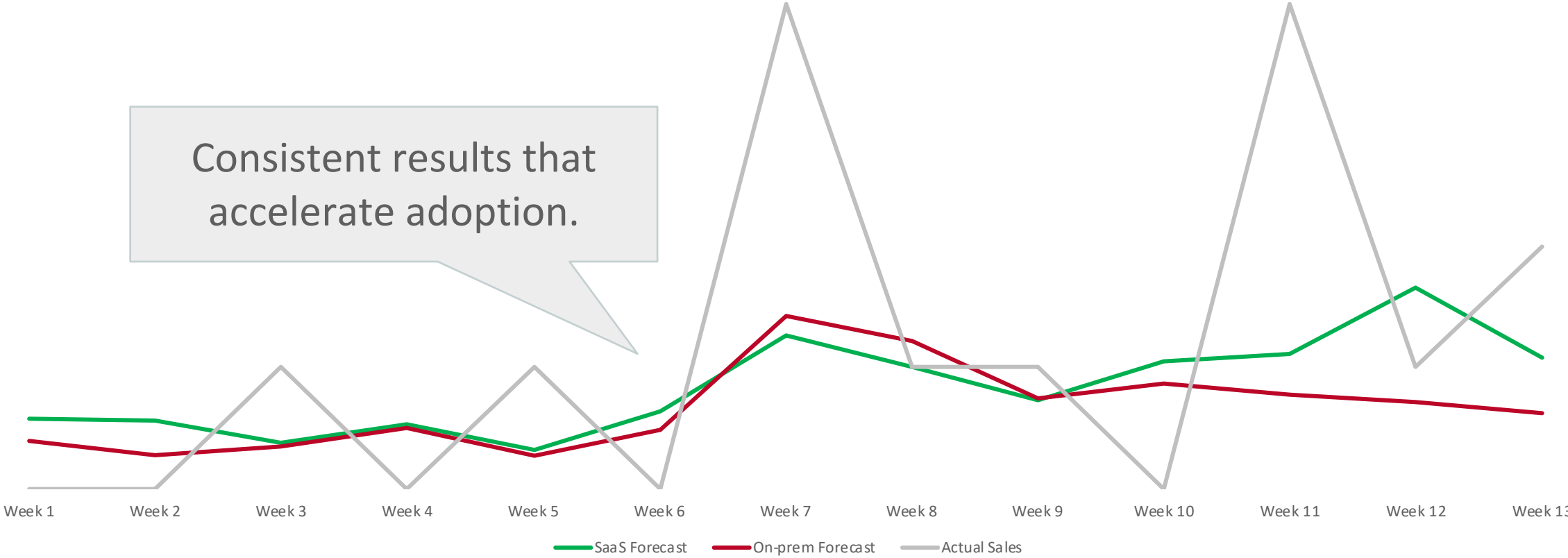
Measurable Increase
In Accuracy

Consistent
improvement

Substantial
Opportunity

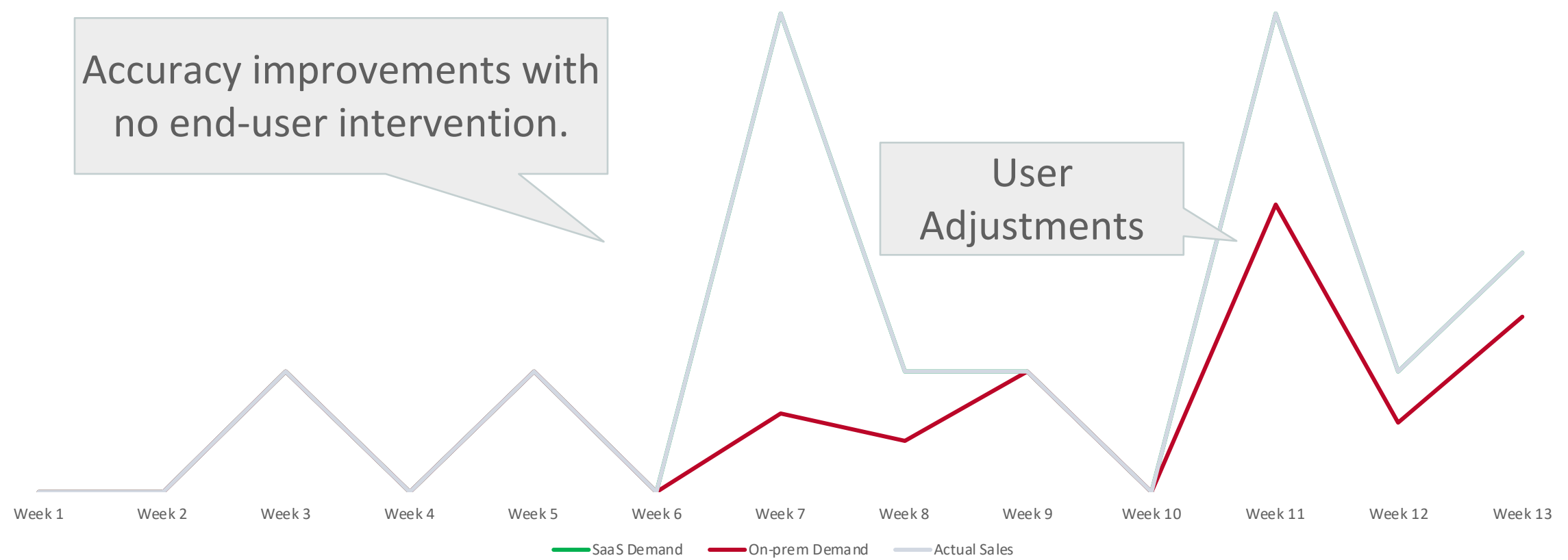
Results

Store / Product Example



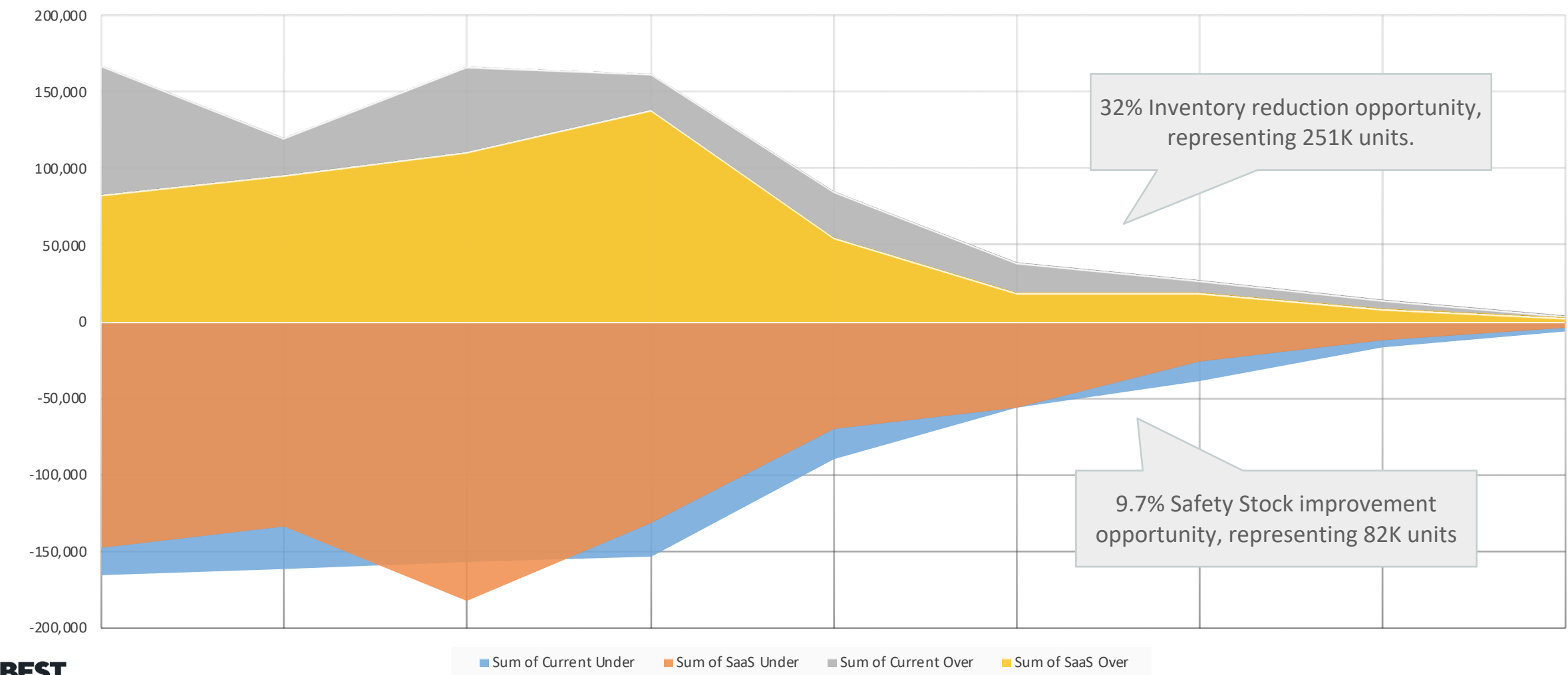
Results

Store / Product Example



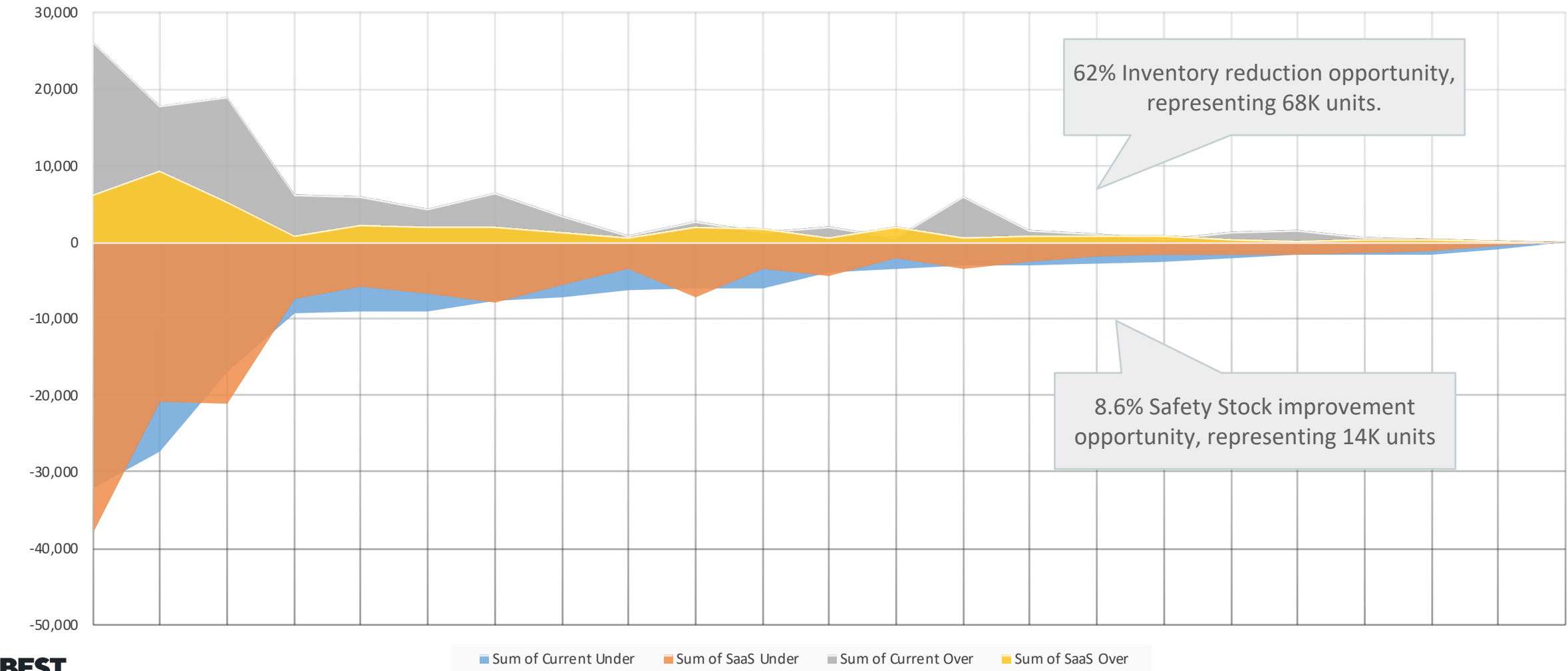
Quantifying Business Value

Promotional Results - Category A



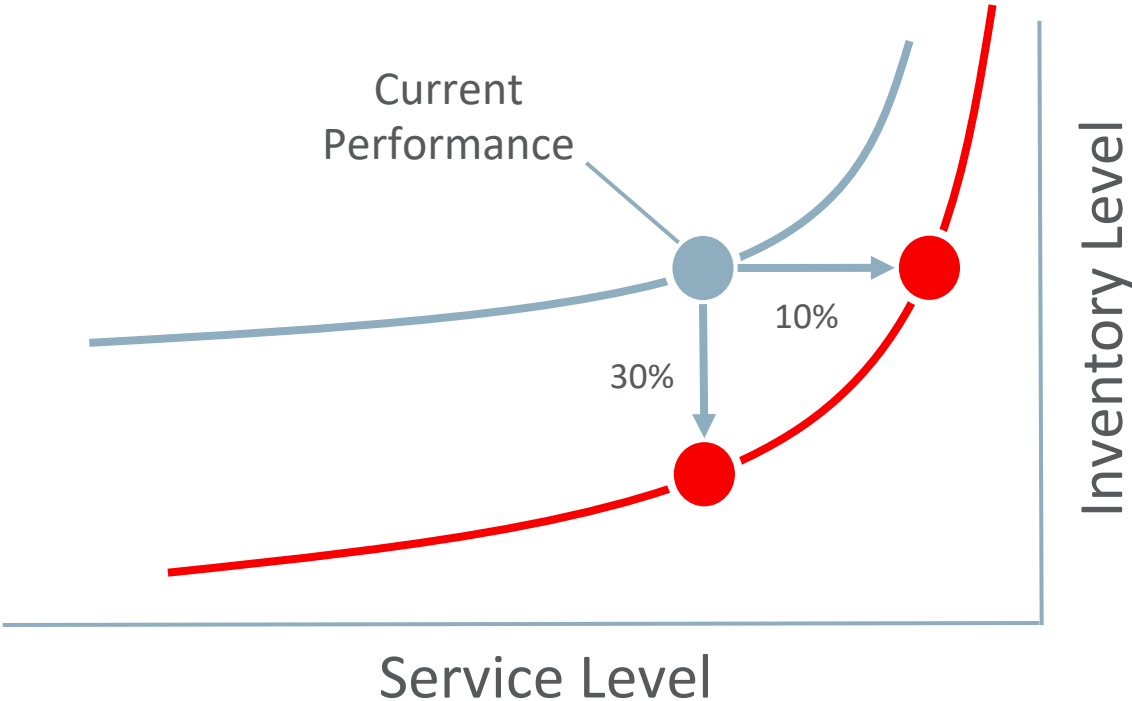
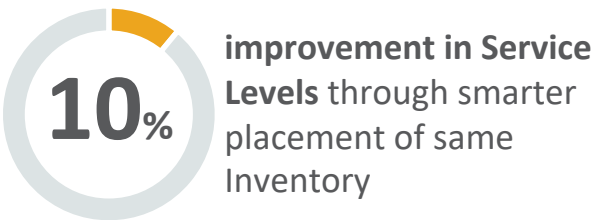
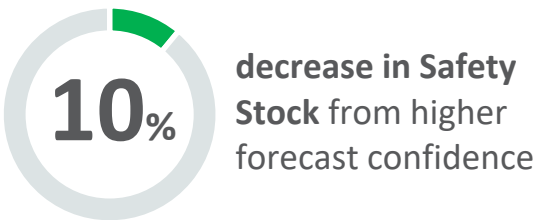
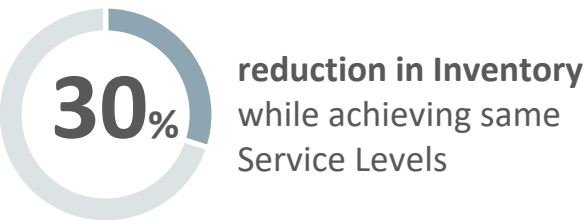
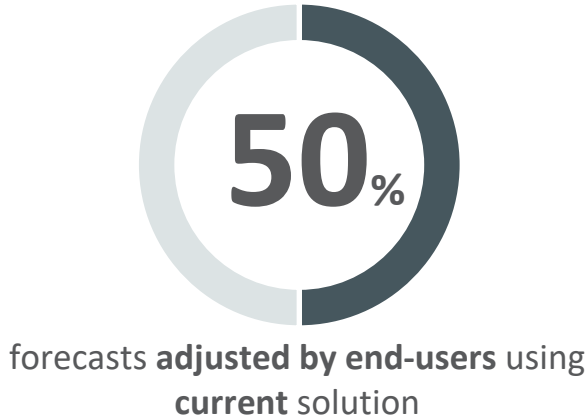
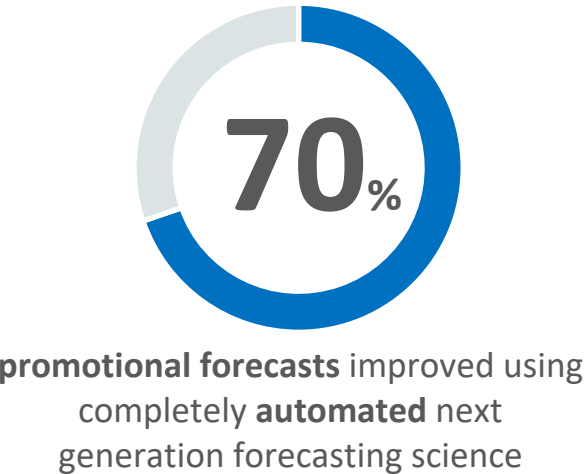
Quantifying Business Value

Promotional Results - Category A



Quantifying Business Value

Promotional Results



Business Opportunity:
Achieve same 2.2M units sold with 345K less units of inventory

Maximize the Value of Your Data

Next Generation Retail Science

Machine Learning

Out-of-Stock & Causal Correction
Base Rate of Demand
Trend & Seasonality
Causal Effects
Robust Estimation

Artificial Intelligence

Data & Model Quality
Method Optimization
Pruning & Escalation

Decision Science

Accuracy & Effectiveness
Simulation & Responsiveness

Prepare
Reference Data

Estimate
Demand
Parameters

Prune

Escalate

Forecast

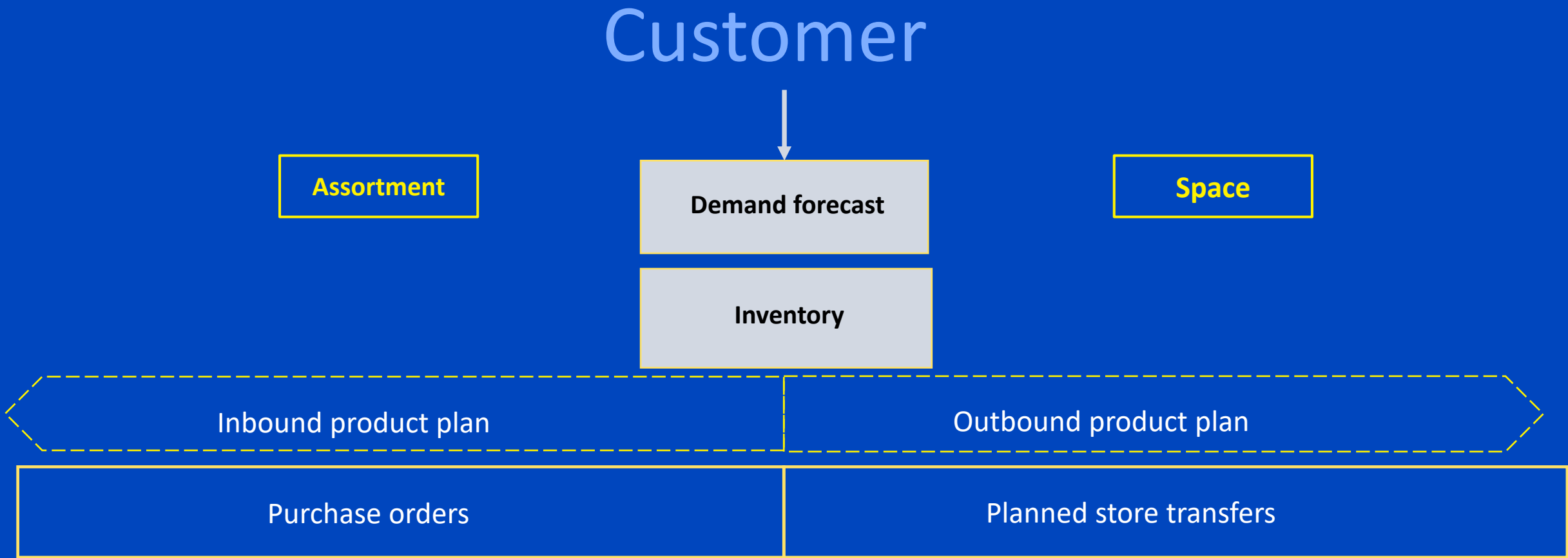
Robust Estimation
Cannibalization Effect Estimation
Statistics Optimization
Escalation Level Optimization
Method
Data Mining
Cannibalization Group Classification
Halo Effect Estimation
Parameter Optimization
Customer Offer Demand Effects

Supervised ML
Unsupervised ML
Natural Language Processing
Attribute Extraction
Data Pooling Classification
Raw Promotion Classification
Attribute Binning
Social Sentiment Effects
Machine Learning
Attribute-based New Item Forecasting
Customer Segment Identification

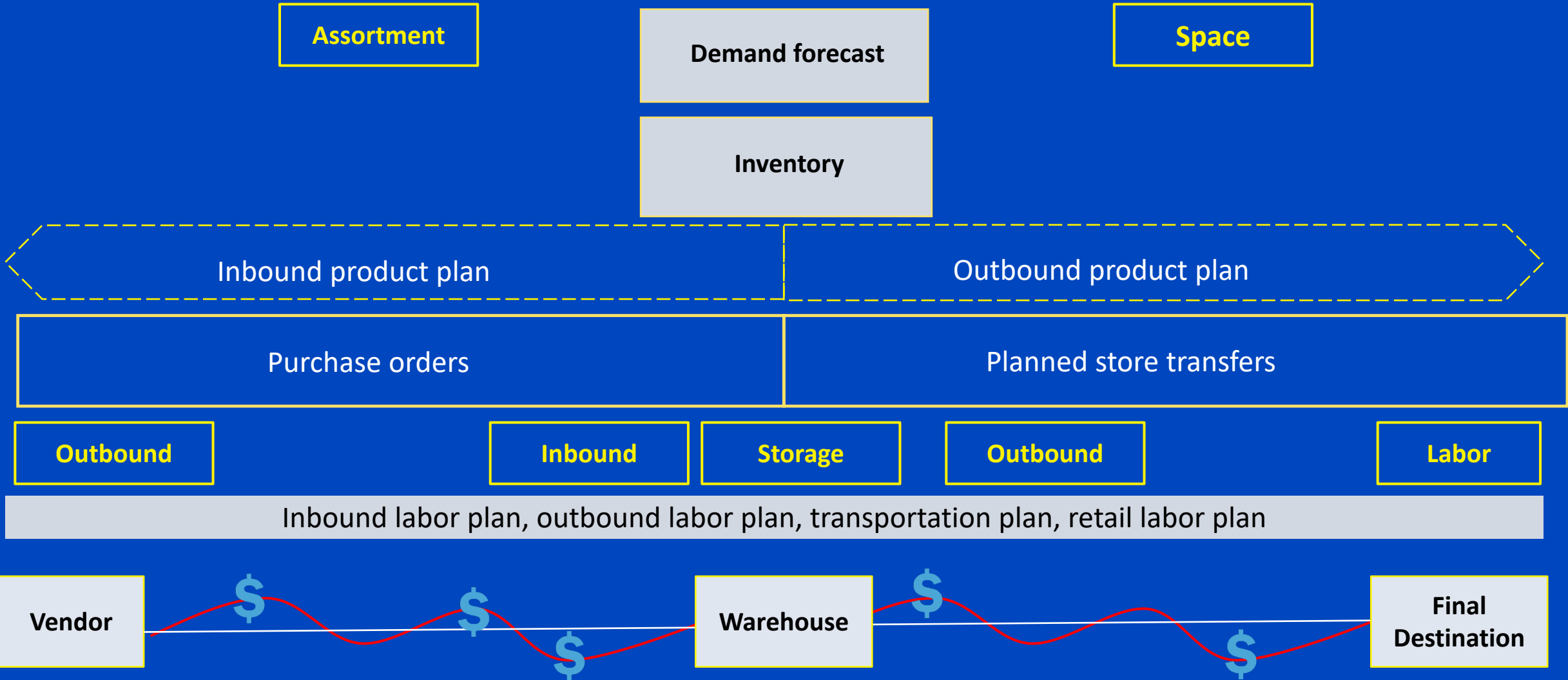
Advanced Inventory Planning

Translating customer demand into profitable product movement

The Plan



The Plan

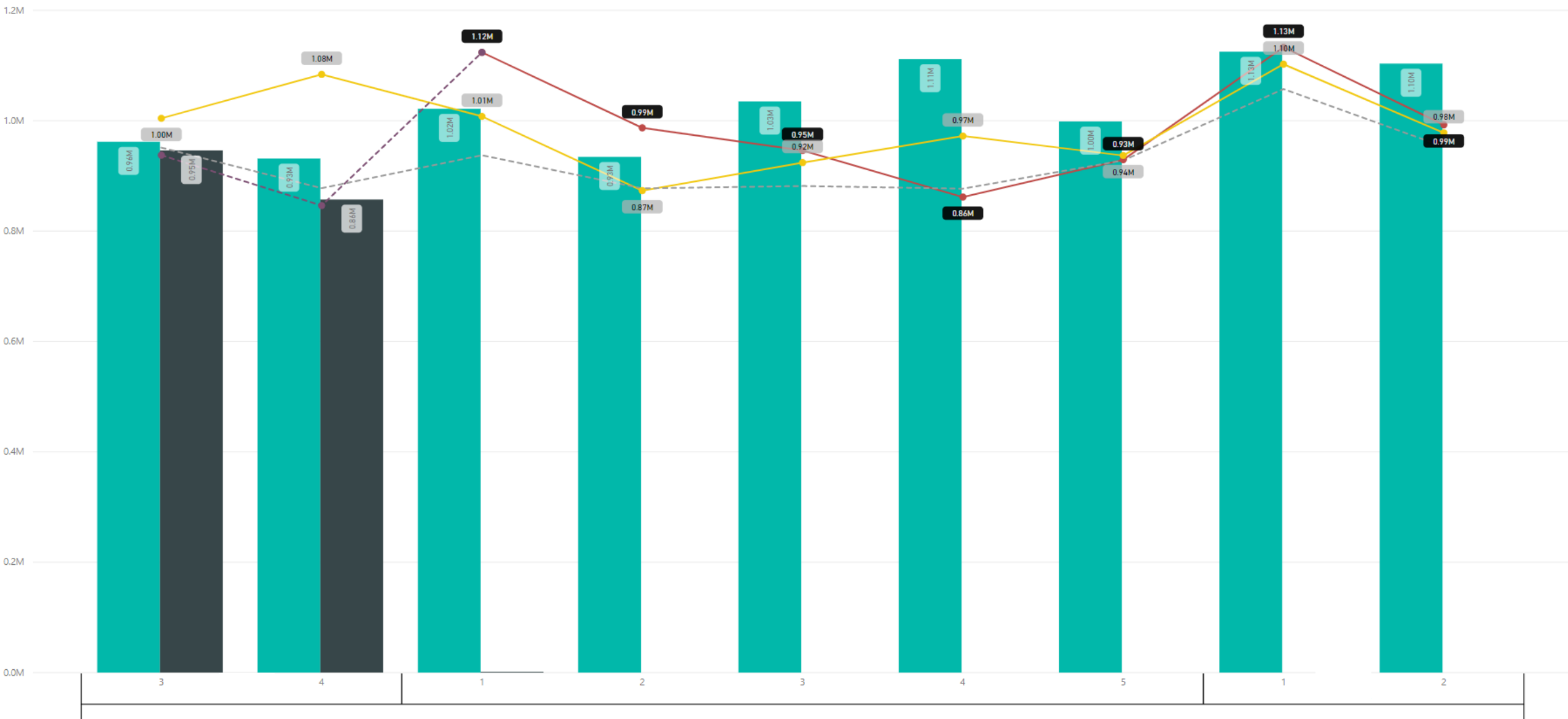


Advanced Inventory Planning

Utilizing technology to drive plan visibility and results

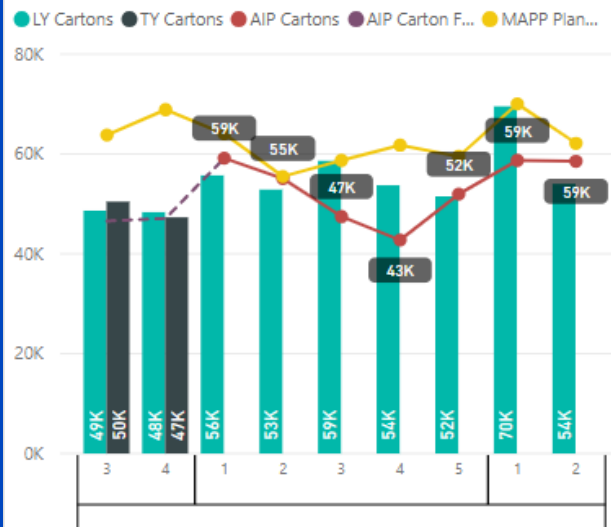
Inbound Carton Flow

LY Cartons ● TY Cartons — AIP Cartons — MAPP Planned + Unplanned Cartons — AIP Carton Forecast History — AIP -2 Week Carton Snapshot

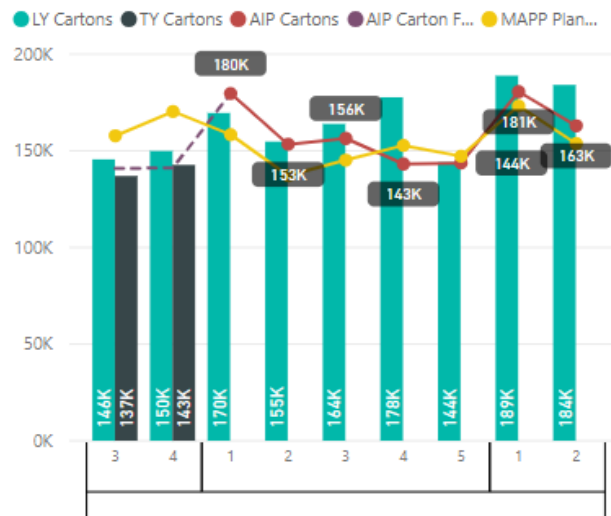


Inbound Carton Flow – RDC Comparison

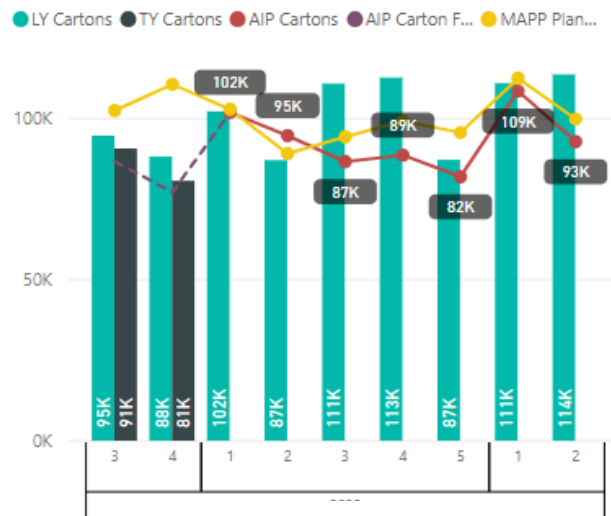
RDC 70



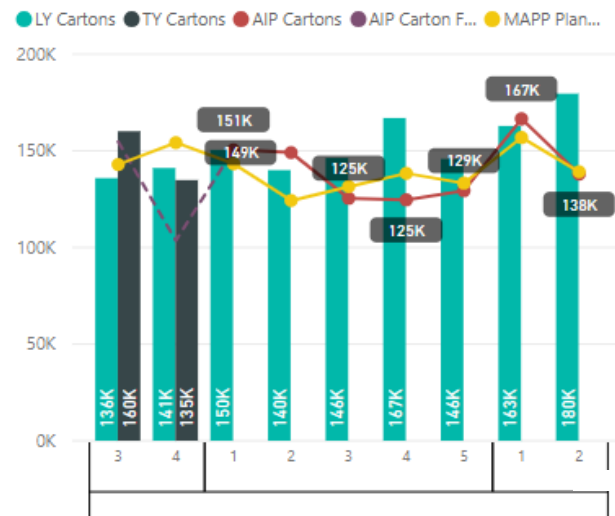
RDC 77



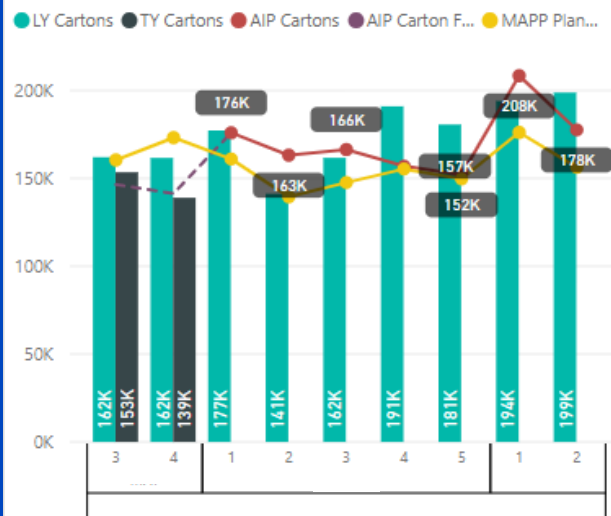
RDC 84



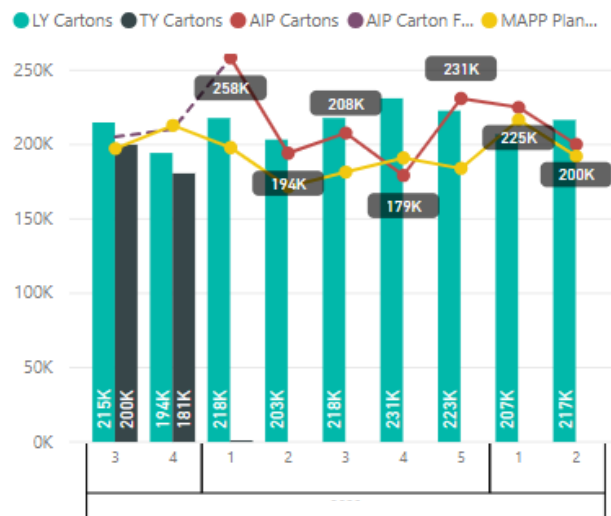
RDC 87



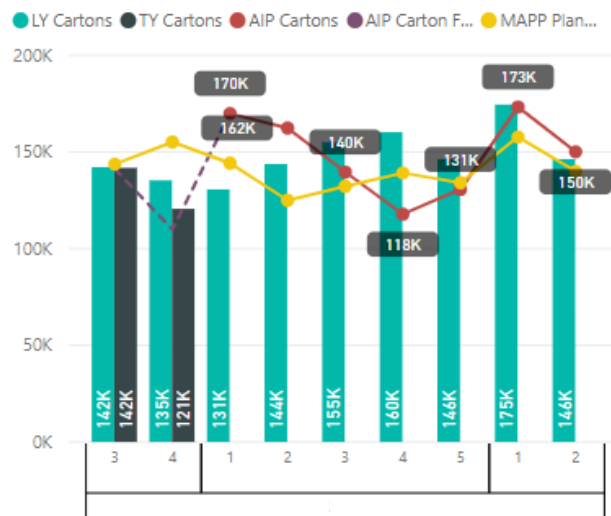
RDC 717



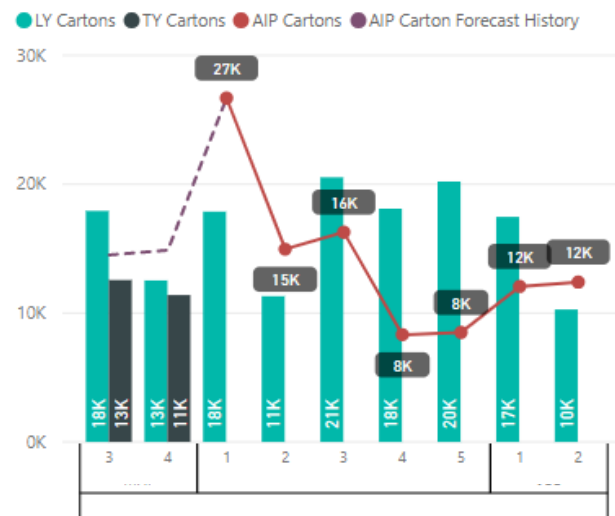
RDC 725



RDC 781

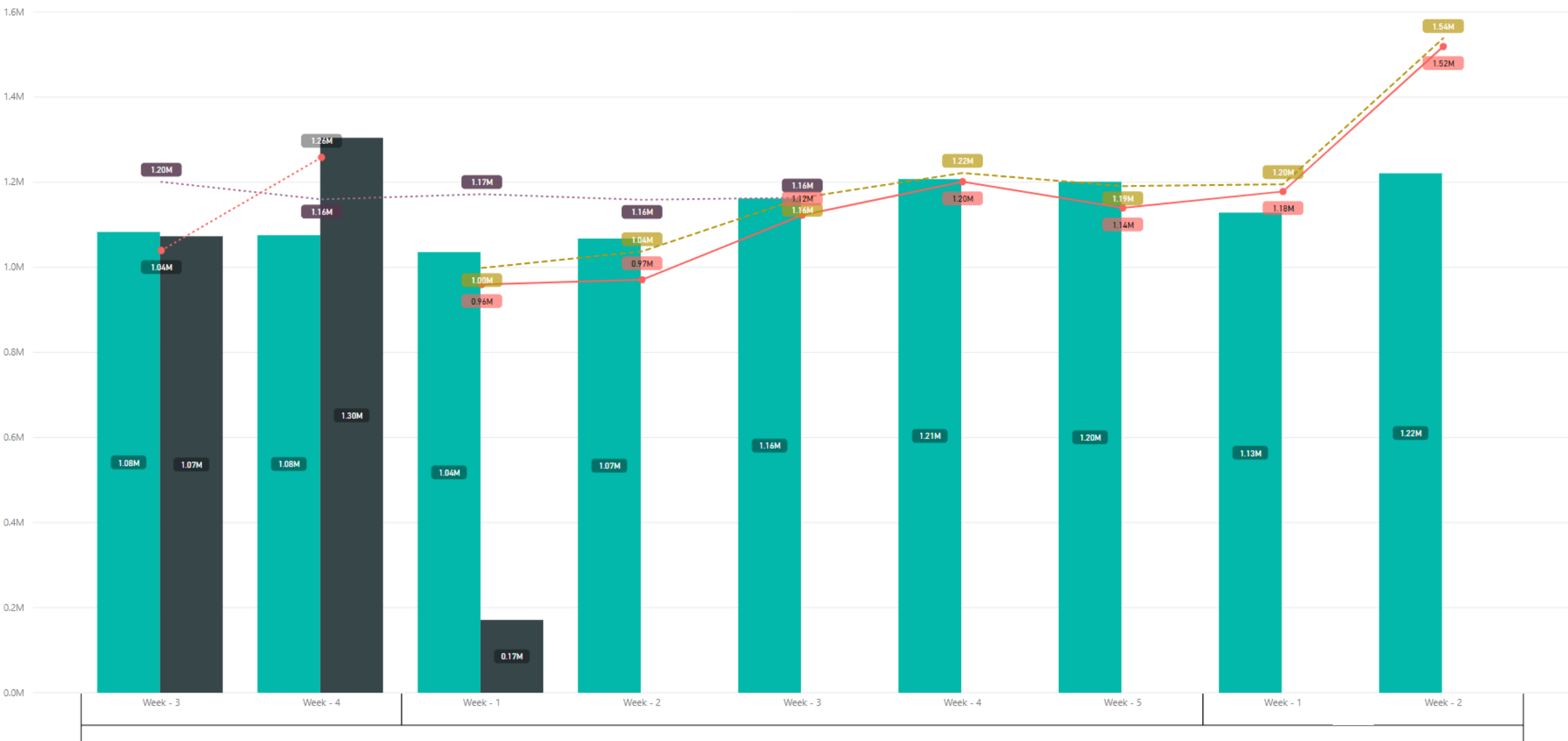


RDC 1376



Outbound Cube

LY Cube Outbound ● TY Cube Outbound - - - AIP Outbound Cube Snapshot (2 weeks ago) - - - AIP Outbound Cube + Manual Push Snapshot (Sunday) - - - AIP Outbound Cube + Manual Push remaining this week (today's refresh) - - - Historical AIP Cube Forecast + Manual Allocations



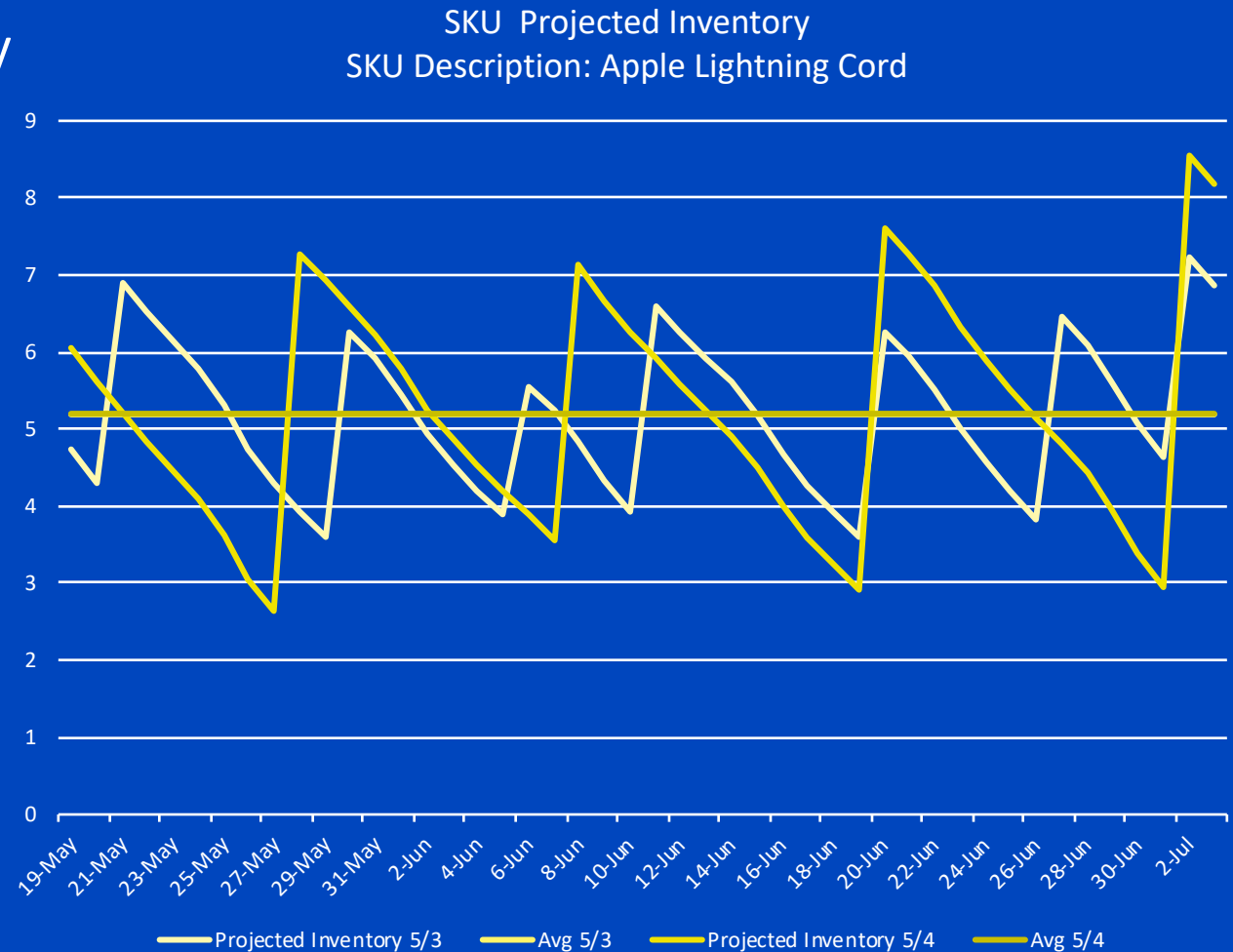
WHAT

- Reduce labor costs by lowering pick frequency of high velocity SKU/Store Combinations
- Maintain current inventory investment and demand fill rates

HOW

- Separation of Receipt Point & RUTL
- SKU/stores with forecasts greater than 1.31 weekly avg
- Existing RO Version (Optimize, Maintain, etc)

Graph



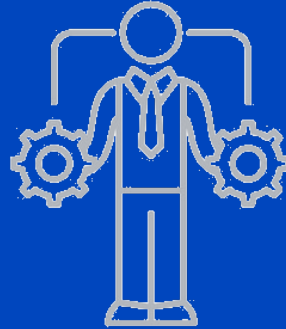
Looking Forward

**Accelerating the capabilities of people and process
with technology**

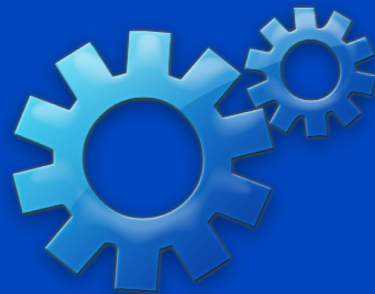
Our people



Tasks moved to technology



Decisions augmented with science



Elevated scope and ability to drive innovation



Our people

FROM

Managing everything

Local management

Functional knowledge source

Item level planner

Manual recapping

Reactive investigative research

TO

Managing exceptions

Centralized management

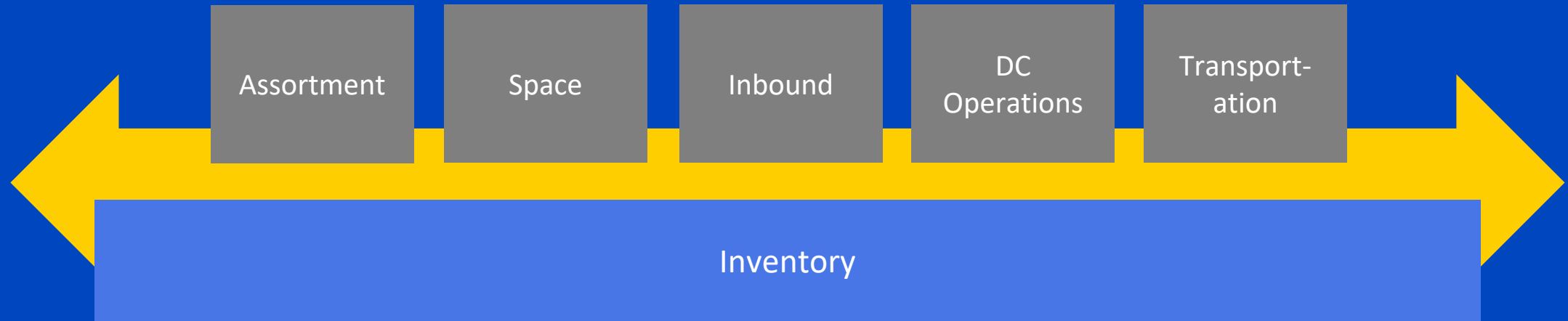
Collaborative influencer

Operational advocate

Business analysis

Proactive insight driven action

Our processes



Our processes



Our technology



Data Driven Intelligence

- *Achieve greater business outcomes by applying data driven intelligence to influence the execution systems*
- *Leverage these influencers to increase margin, attachment rate, and revenue*

Analytics and Insight



Demand Planning



Inventory Placement Planning



Demand Fulfillment Insight



Demand Shaping Insight

Omni-Channel Influencers

Purchasing



Allocation Replenishment



OMS Sourcing Engine



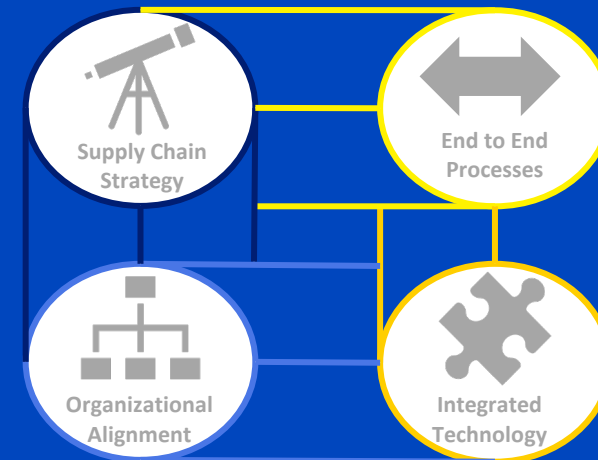
Marketing Loyalty Clienteling



Execution Systems

Our technology

- Develop a **demand driven** lens of the supply chain and **drive collaborative processes** around **balancing** those **demand signals** with **supply chain constraints**.
- Evolve Supply Chain centers of excellence with a focus on **gaining visibility and transparency** to current state process and performance through **systemic and automated capabilities**.
- Improve **forward looking KPIs** to be reviewed and **integrated** into not only reaction processes, but **planning cycles**.
- **Collaborate with technical partners** to develop **a single source** of supply chain data and KPIs and lay the foundation for a **long term data strategy**.



Our goals

1

Make the customer the center of the plan

2

Connect the plan to eliminate costly variability

3

Empower the teams to drive business results

4

Drive results through data driven technology solutions