# PHILIPS: INVENTORY OPTIMIZATION JOURNEY AND VISION FOR IOT

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# PHILIPS INTRO

## Making a difference across the health continuum

**275 million patients** tracked with our patient monitors in 2015

Last year **6.5 million** people **improved their oral health** with our oral healthcare products

**1,000,000** patients monitored in their **homes every day**

**21 petabytes** of imaging study data **managed** for healthcare providers

**101 million lives** improved globally through access to diagnostic X-Ray

**250 million appliances** sold each year making homes healthier

**Hundreds of thousands** of people tracking their health with ActiveLink®

## We build on our strong leadership positions

Healthy living | Prevention | Diagnosis | Treatment | Home care

*Global leader*[1] **Male electric shaving**

*Global leader* **Power toothbrush**

*Global top 3* **Diagnostic imaging**

*Global leader* **Image-guided interventions**

*Global leader* **Sleep & Respiratory Care**

*#1 in China* **Air**

*Global leader* **Mother & Childcare**

*Global leader* **Ultrasound**

*#1 in North America* **Home Monitoring**

Connected care and health informatics

*Global leader* **Patient Monitoring**

*#1 in North America* **Cardiology Informatics**

**We are aiming to improve the lives of three billion people by 2025**

PHILIPS

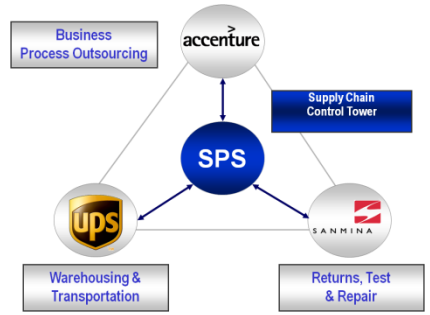
# Philips Healthcare Service Parts Supply Chain

We improve people's lives through reliable and cost effective delivery of high quality service parts worldwide with an engaged workforce.

## Our Performance

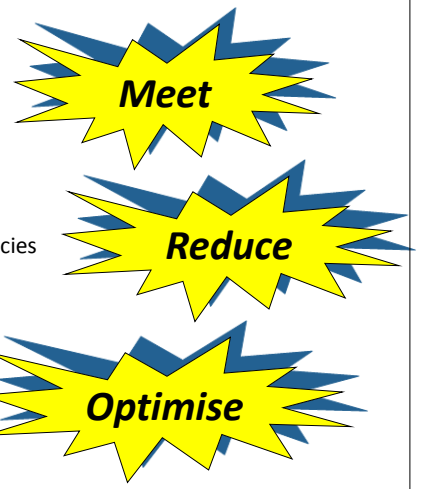
- Transaction volume: ~1M customer orders per year
- 120+ locations around the globe
- 8 distinct product lines, 100K+ SKU's
- Centralized planning & inventory management structure but team members in 10 different locations

## Our Partners

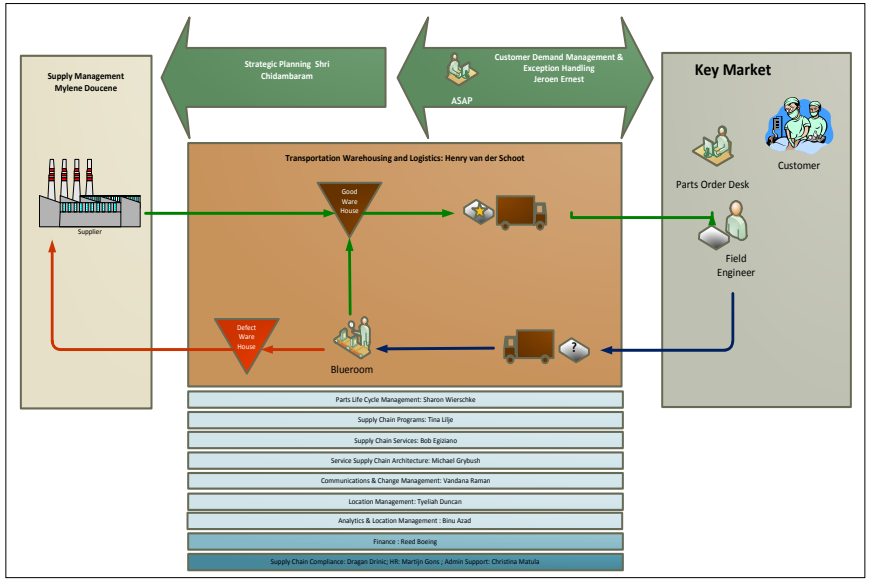



## Our Management Model

- **Customers**
  - Un-compromised quality
  - End-to-end integration
  - Performance Culture
- **Cost**
  - Scalability & Transparency
  - Utilise external core competencies
  - Exception based management
- **Cash**
  - Fluid inventory
  - Customer demand driven
  - Predictable supply chain

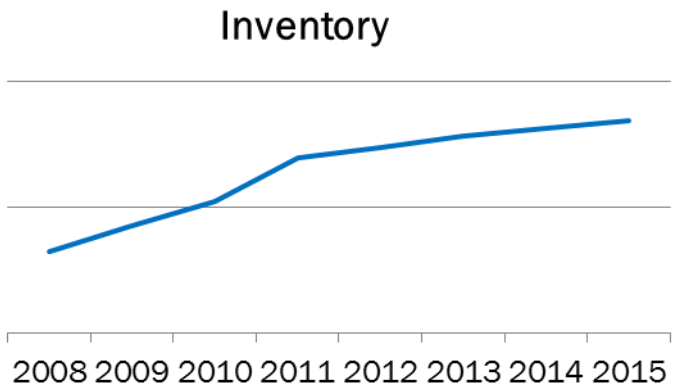


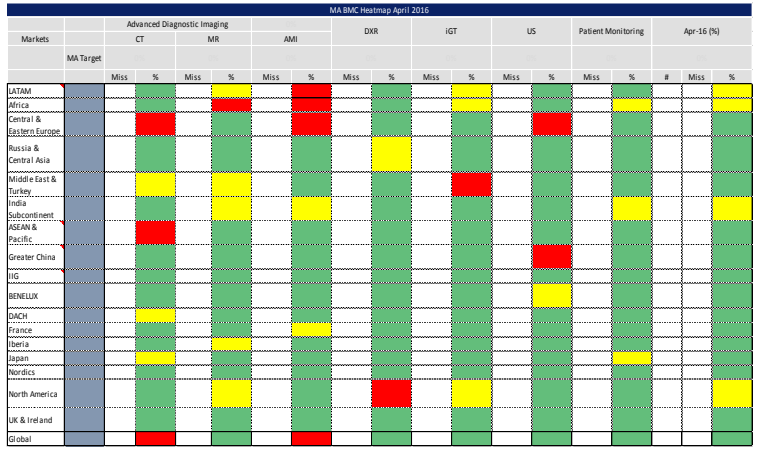

## Our Scope & Functions



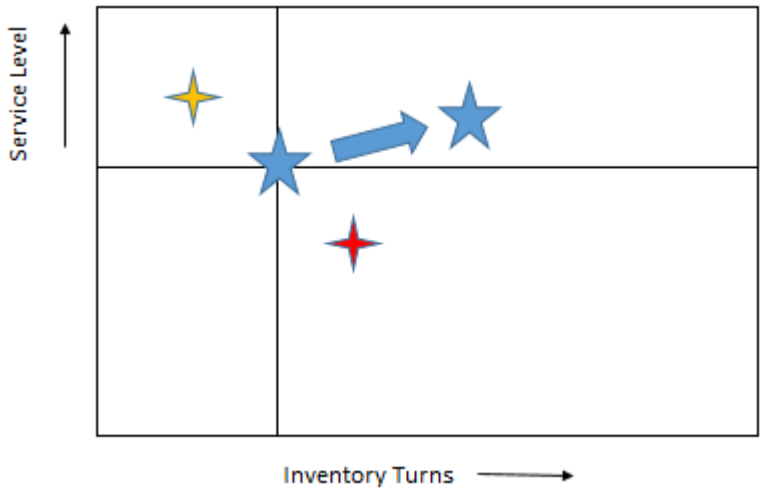

**SPS Right part…place…time…cost**

# ORIGINAL BUSINESS CASE FOR PTC (MCA)



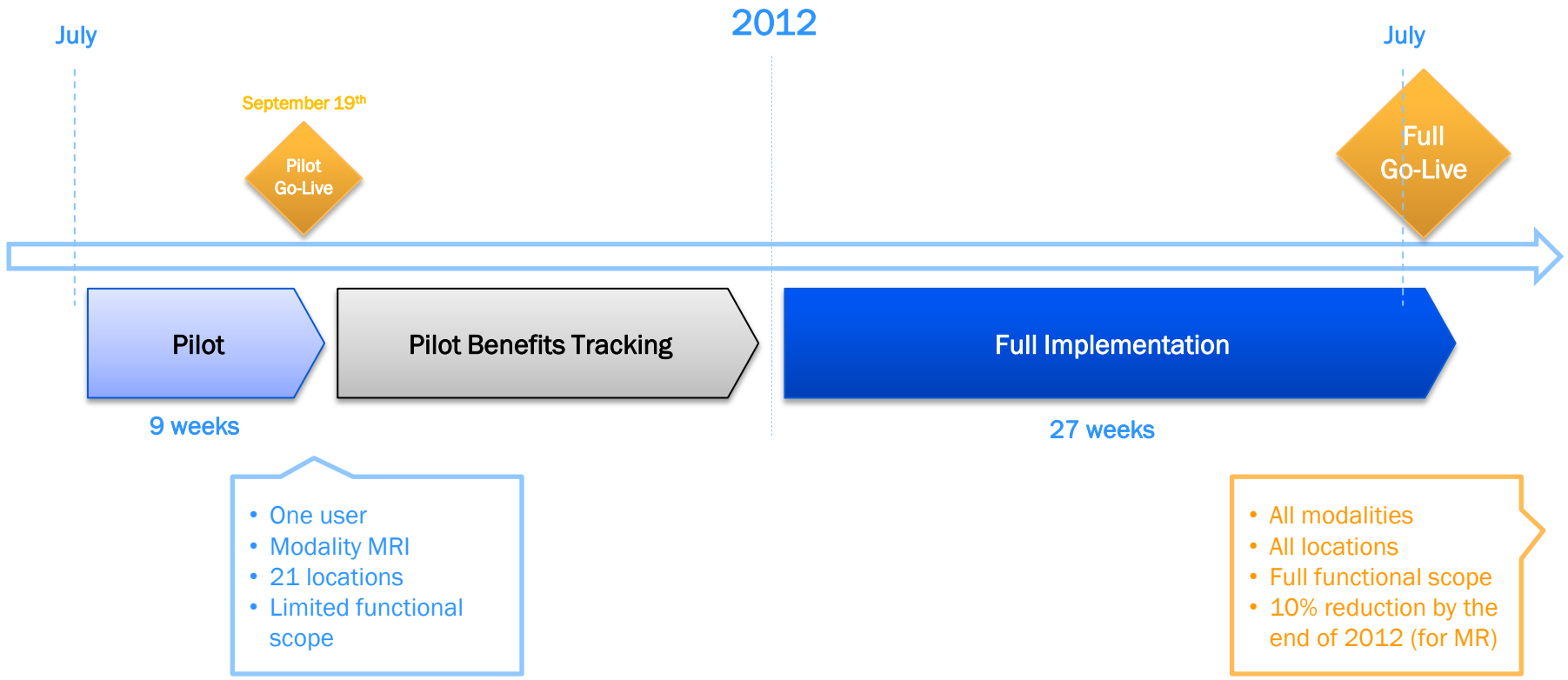

Meeting BMC requirements with non-optimized inventory is very expensive





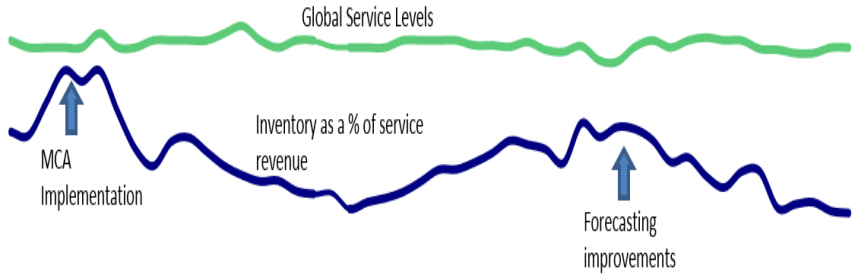
Service differentiation with competitive excellence is the next challenge

# FROM PILOT TO FULL IMPLEMENTATION



# ACHIEVED BENEFITS SUMMARY

- Inventory reduction/avoidance benefits (11% in 3 years)
- Higher Material Availability by location
  - Better bang for every buck of inventory invested
- Better forecasting of demand with multiple options
  - Improved trending and smoothing of demand volatility




- Capability to handle multiple supply and inventory scenarios
  - Local repair and local buys integrated into planning
  - Regional vs global rebalancing trade-off with logistics costs
- Improved customer service options
  - Customize FSL stock levels based on contract entitlements (manually)
  - Differentiate material availability based on products groups and segments
- Faster and better decision-making
  - Quicker what-if analyses on inventory vs fill-rate under various scenarios

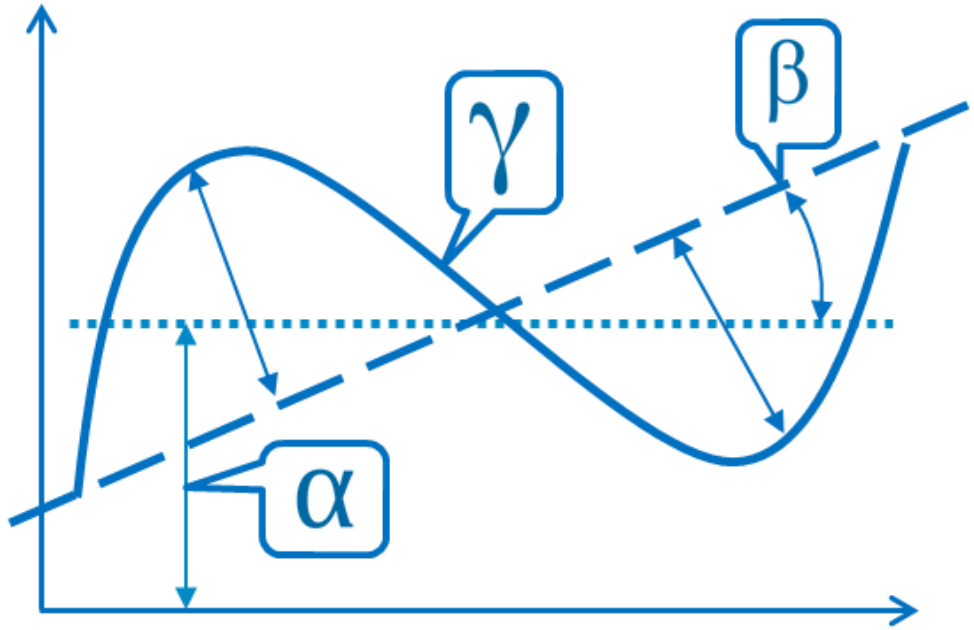
# CONTINUOUS IMPROVEMENT 2014-2016

- Projects to improve trade-offs with logistics costs
- Forecasting improvements
- Customization of replenishment/return lanes to/from specific countries
- Preparation for regulatory requirements, e.g. new parts only for some countries/customers

# LOOKING AHEAD: CHALLENGES AND OPPORTUNITIES

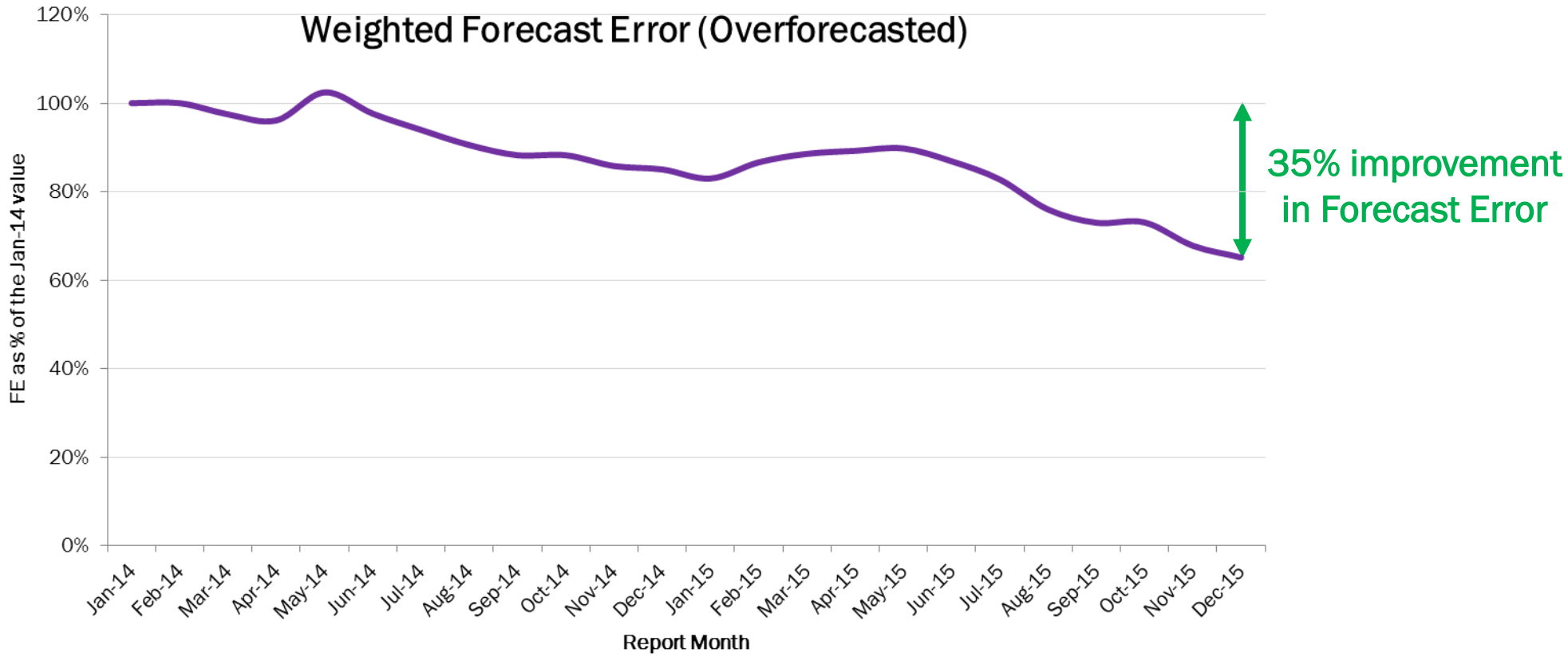
- Migration from MCA to SPM:  In planning for 2017
- Managed Equipment Services- multiple sites/equipment types with differentiated service levels
- Lean  and JIT inventory operating environment
  - What does it mean for service?
- Forecasting based on demand modeling powered by IoT

# FORECASTING IMPROVEMENT JOURNEY

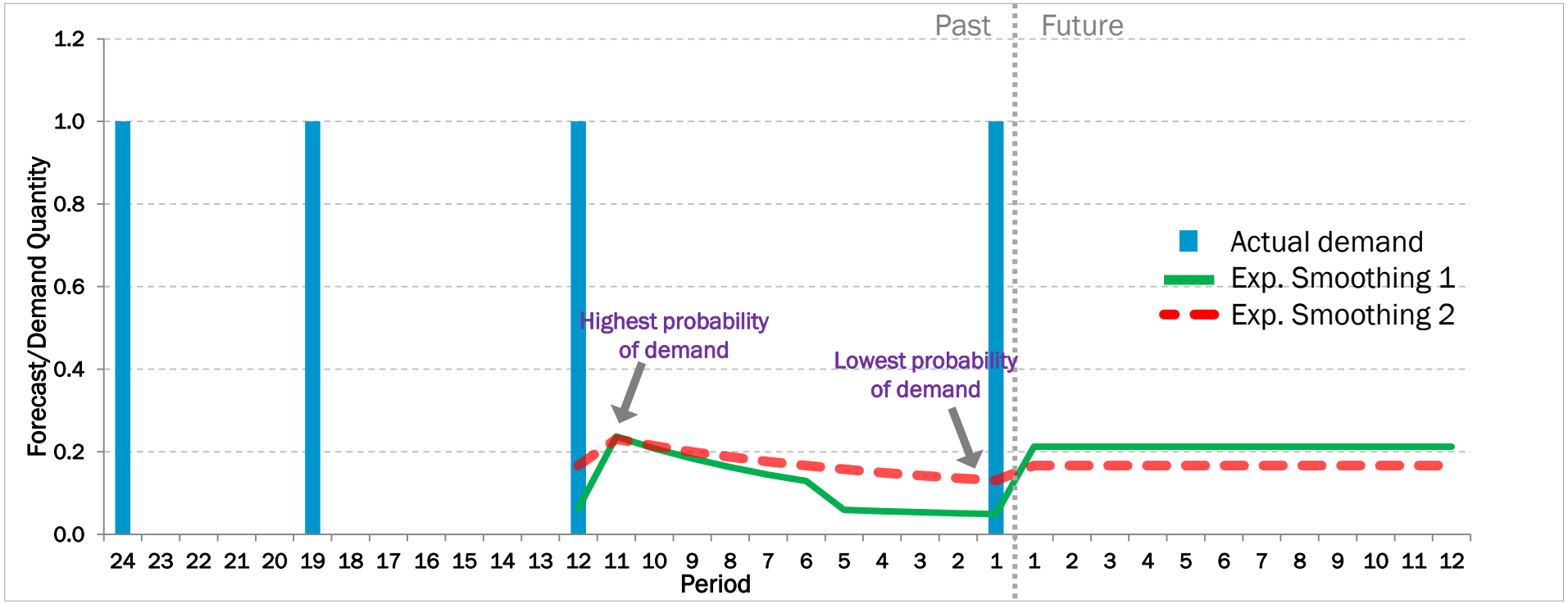

- Before: One-size-fits-all forecasting model across all location-part combinations with little-to-no-planner intervention
- After: Automated best-model selection solution (planners manage only exceptions)

# 35% IMPROVEMENT OVER 2 YEARS




- Improving Forecast Error led to a 10% reduction in Target Stock Levels

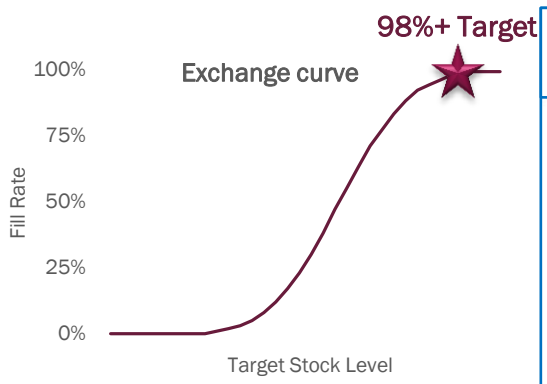
# FALLACY OF TIME-SERIES FORECASTING




- Time-series forecasting will always struggle with slow-moving intermittent demand
- Highest predicted demand probability is right after the latest demand instance which is not true in reality usually
- As we get further from the latest demand instance the predicted probability of demand falls gradually which is usually not true in reality

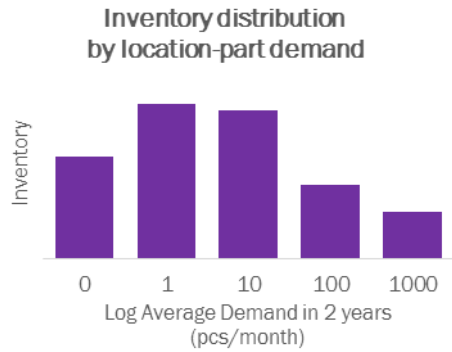
# TRADITIONAL PLANNING METHODS ARE INADEQUATE

## Required high service level

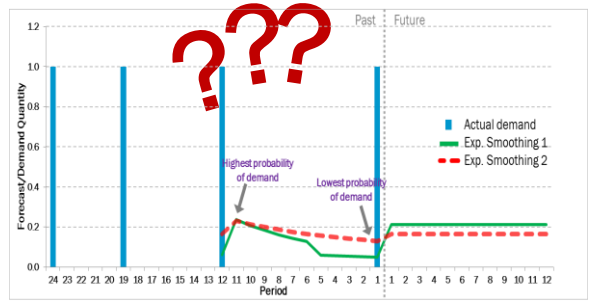



## Granular forward-placement distribution network

## Slow-moving intermittent demand



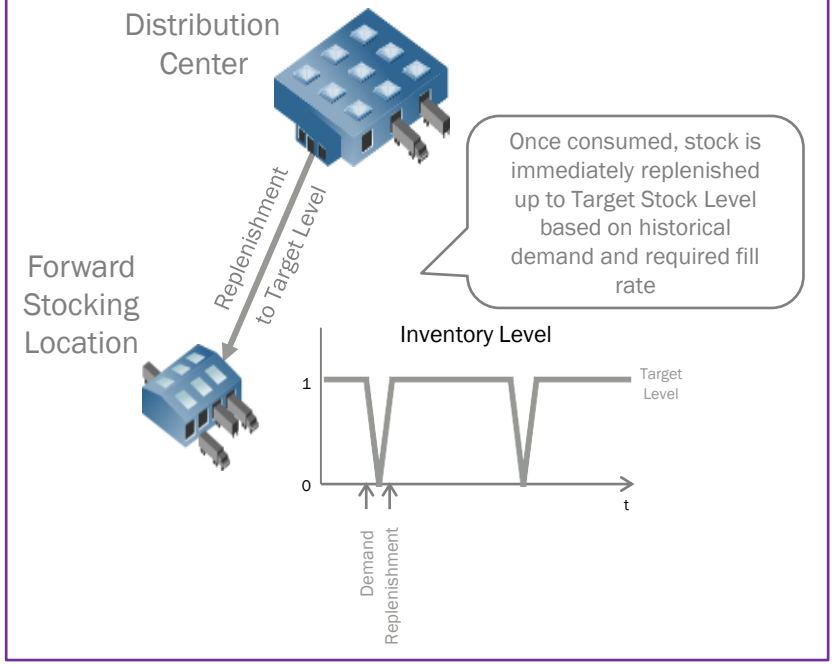

## Poor forecasting accuracy



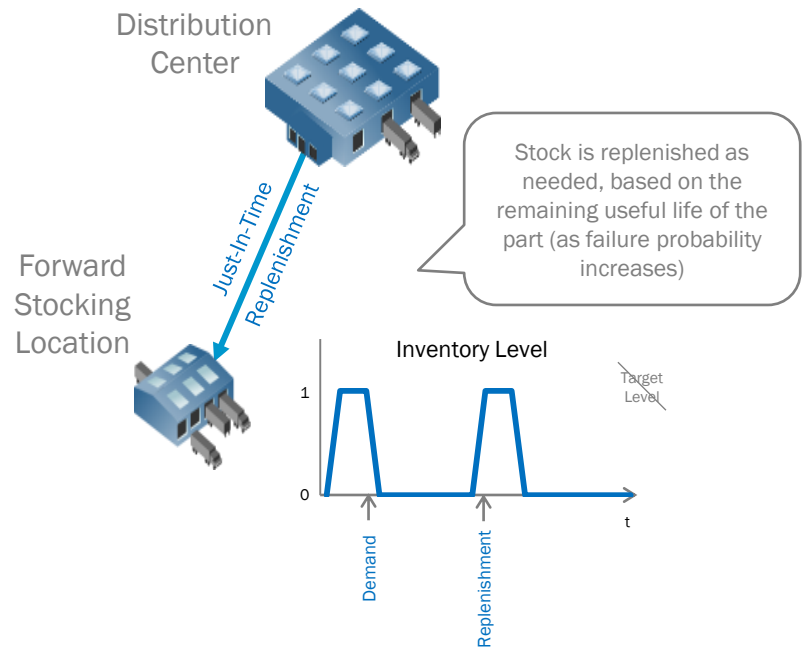

#LIVEWORX

# VISION FOR IOT IN PLANNING: FROM TSL TO JIT

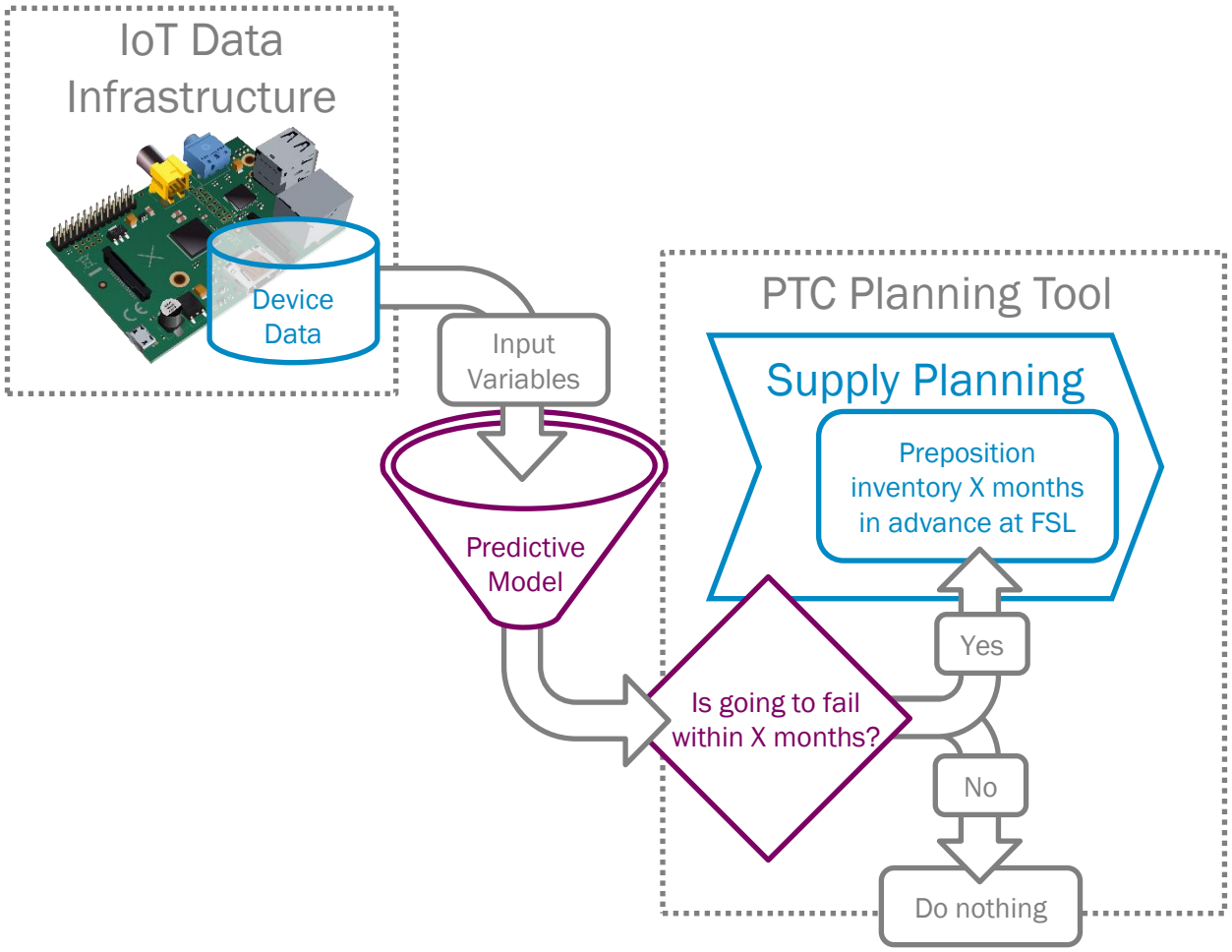
## PUSH
## Target Stock Level Model




## PULL
## Just-In-Time Model



# JIT SOLUTION CONCEPT




- For a very fragmented supply chain, inventory would be stored centrally and only allocated to a FSL at the point when the demand probability rises beyond a certain threshold (e.g. demand will appear within the next 3 months with 95% confidence)
- Based on simulations, inventory reduction may reach 15-20% on a part with the same high expected service level
- Retooling of supply chain infrastructure is a prerequisite for the solution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