



# Demand Planning

**innovia**  
CONSULTING

**Customer** 20  
**Conference** 23

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Demand Planning Consultant

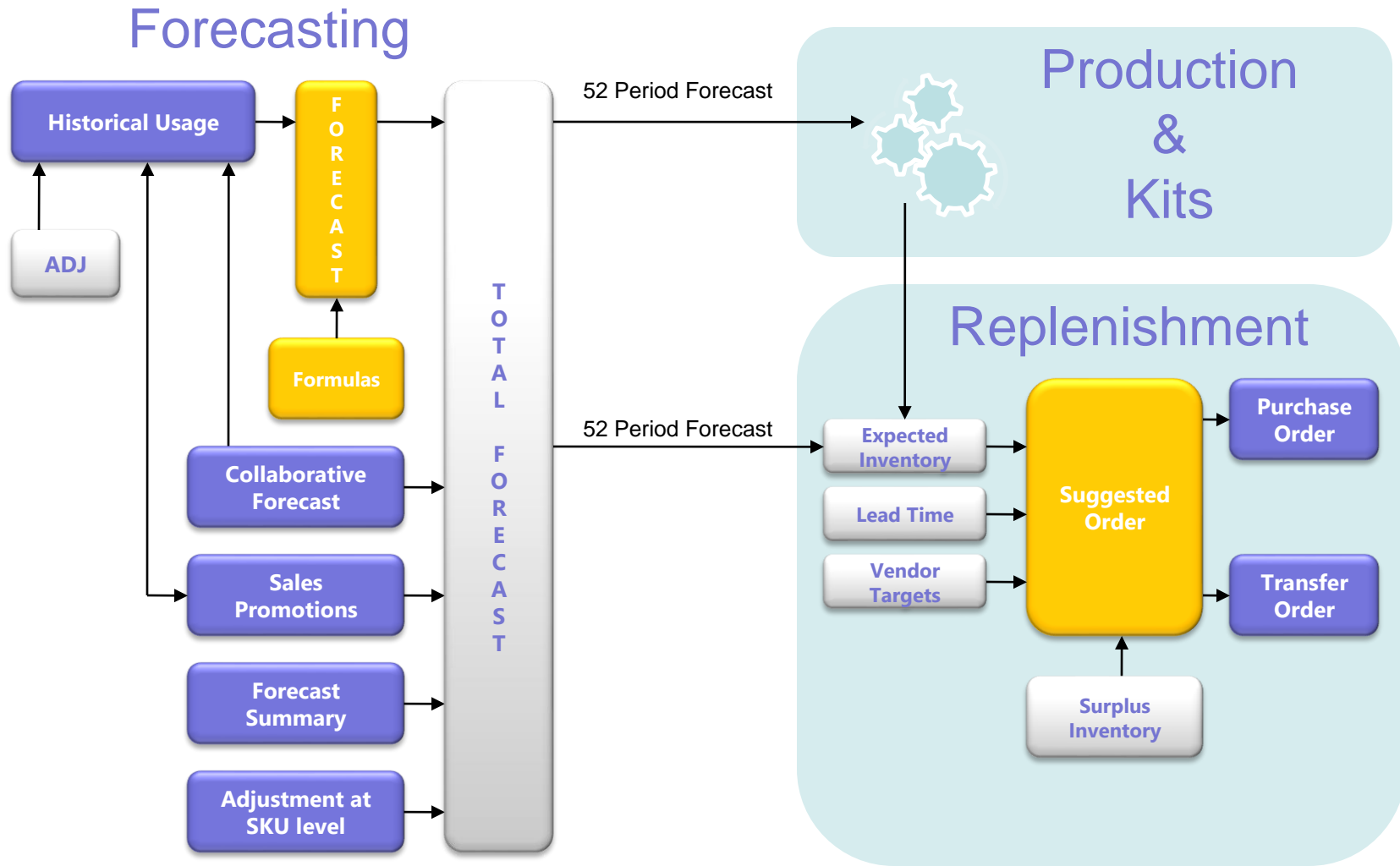


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*Supply Chain Excellence*

# Basis for Lanham's Demand Planning Solution

- Forecasting (50% of the total solution)
- Replenishment (completes the solution)
- Visibility
  - Out-of-the-box solution -- not a black box solution
  - You are in full control with visibility

# Forecasting & Replenishment



# Forecasting Concepts Applied

- Filtered usage
- Formula-based forecasting
- Customer collaborative forecasting
- Combined forecast



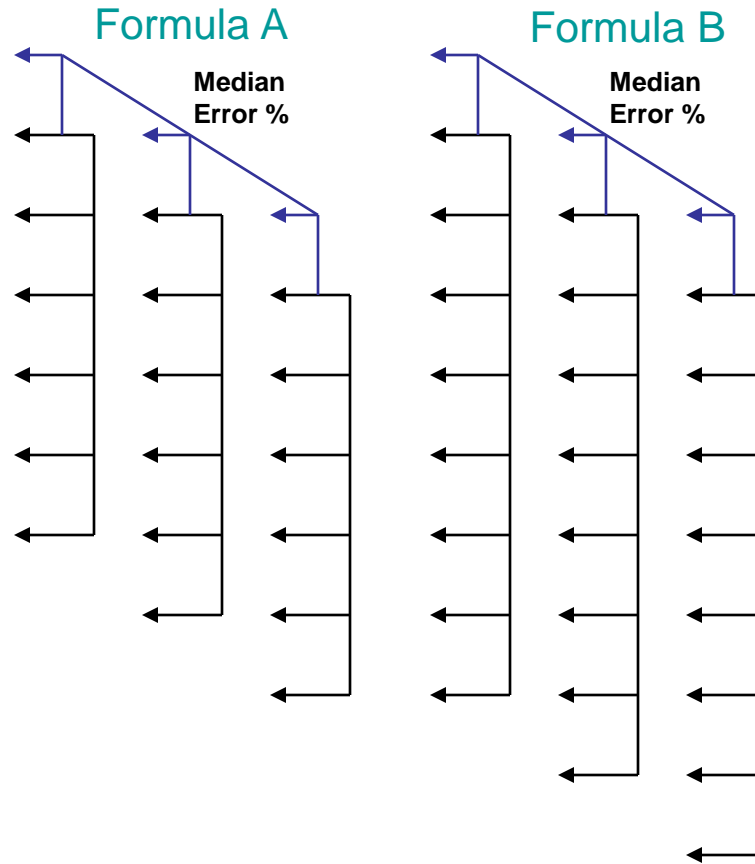
# Filtered Usage (Reoccurring Usage)

- Sales to customers
- Excluded from usage (marked on sales order)
- Adjustments
- Drop shipment usage (optional via setup)
- Redirect usage to another item
- Clone usage (by %)



# Best-Fit Formula

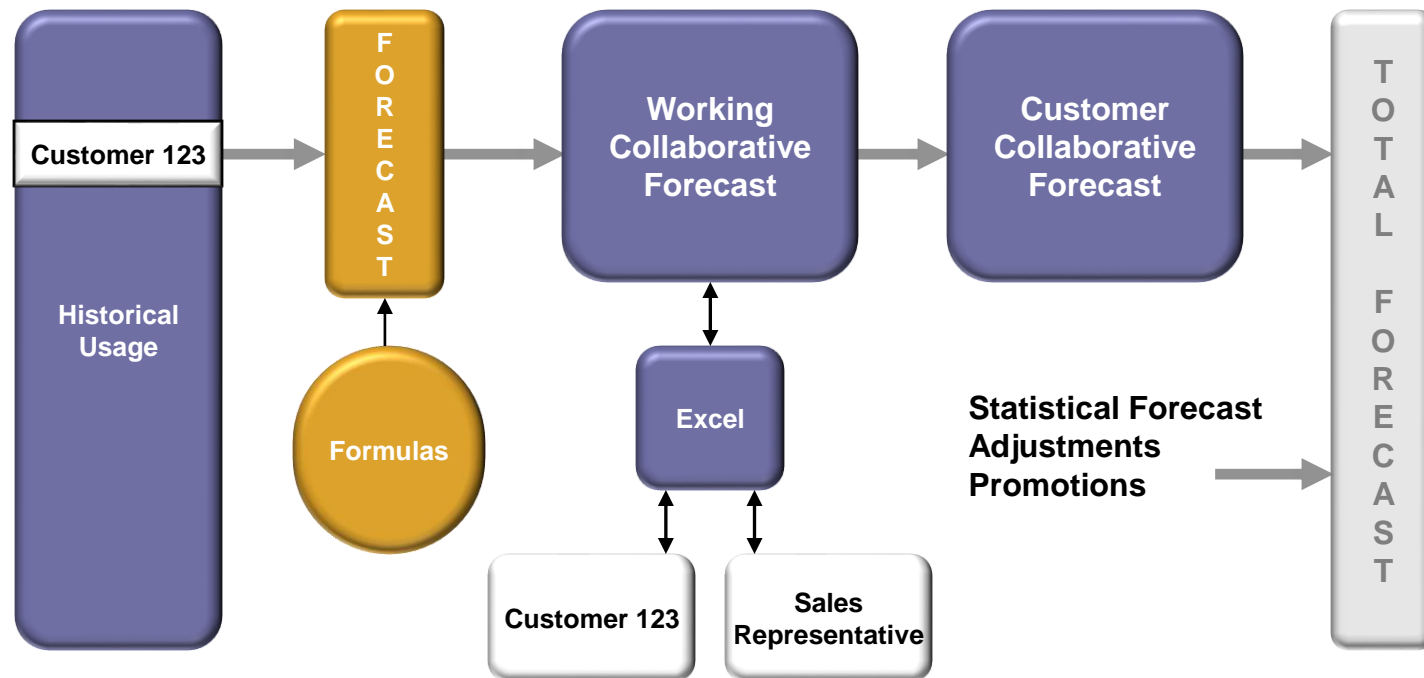
Last Closed Period
LCP - 1
LCP - 2
LCP - 3
LCP - 4
LCP - 5
LCP - 6
LCP - 7
LCP - 8
LCP - 9
LCP - 10



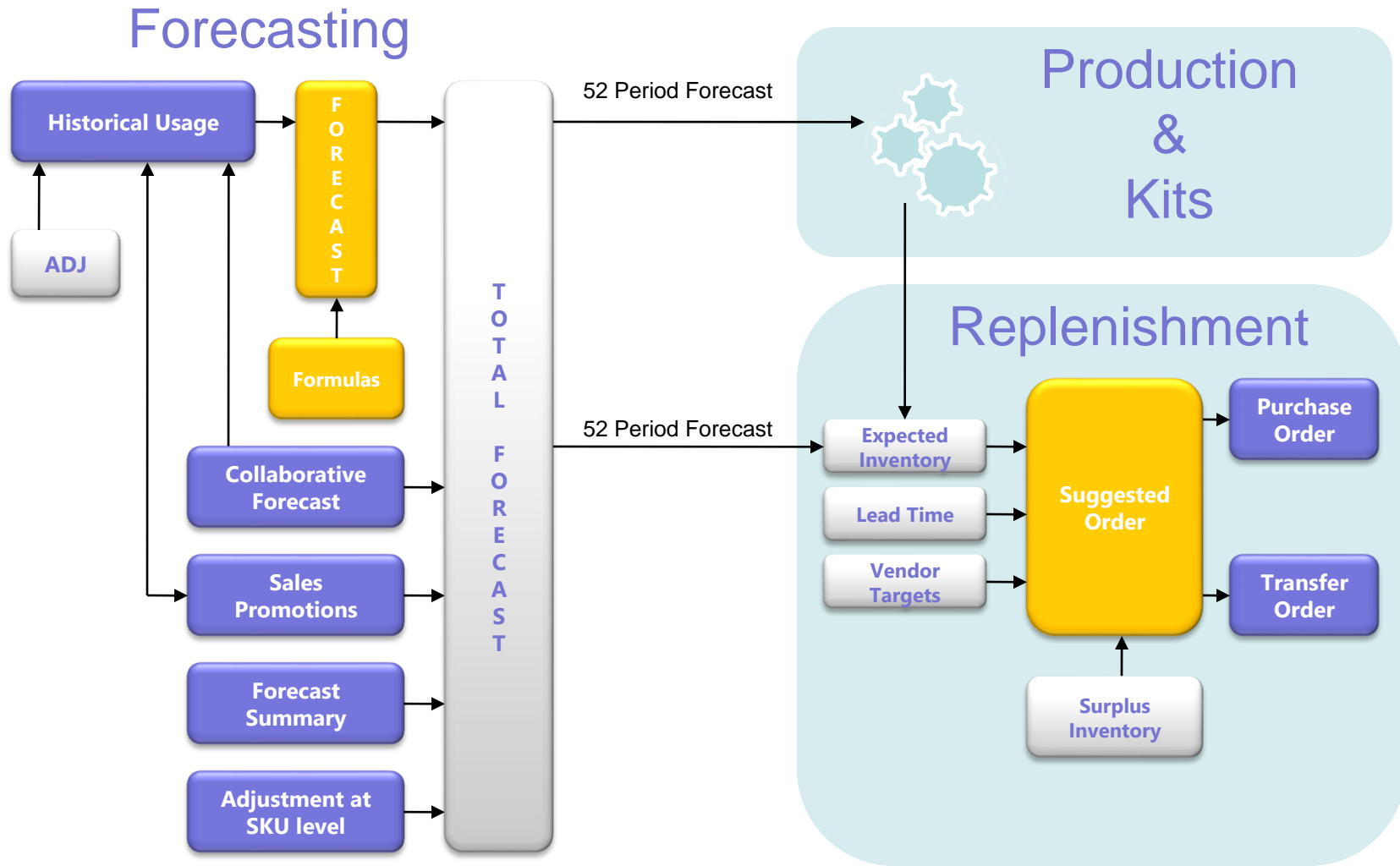
## Choose Best Formula

- Reforecast x Periods
- Establish Error %
- Establish Median Error %
- Choose Formula With Lowest Median Error %

# Collaborative Forecasting Cont.



# Forecasting & Replenishment





# Replenishment Tools

- Vendor lead time calculation
- Net time phased expected inventory
- Vendor buying calendar
  - Vendor review
- Suggested order
  - Purchasing decision
- Warehouse transfers
  - Surplus inventory
- Purchase order
  - Release purchase request
- Posted suggested order
  - Save criteria from purchasing decision



# Vendor Lead Time

- Vendor lead time by item, vendor, and warehouse
- User-defined average lead time calculation
  - Use last X receipts from the last X periods
  - Exclude the highest & lowest & average the remaining
- Frozen lead time
  - User-specified frozen lead time by item or vendor

# Replenishment

- Decision 1
  - Should I replenish?
- Decision 2
  - How much to replenish?
- Decision 3
  - Surplus inventory in another location?
- Decision 4
  - Vendor targets met for this P/O?



# Procurement – Replenishment Models

- Min/Max
- Min/Max Days Supply
- Target Stock Level
- Lead Time Horizon (lead time + review cycle + safety stock days)
  - Reorder quantity is determined by expected inventory on lead time horizon date (order negative expected inventory quantity)
  - Economic Order Quantity (EOQ) determines reorder quantity



# Net Time Phased Expected Inventory

## Additions to inventory:



Inventory on hand

Quantity on purchase orders

Quantity on transfers in

Quantity on customer returns

Quantity on planned production orders (finished goods)

## Subtractions from inventory:



Quantity on sales order

Quantity on transfers out

Quantity on vendor returns

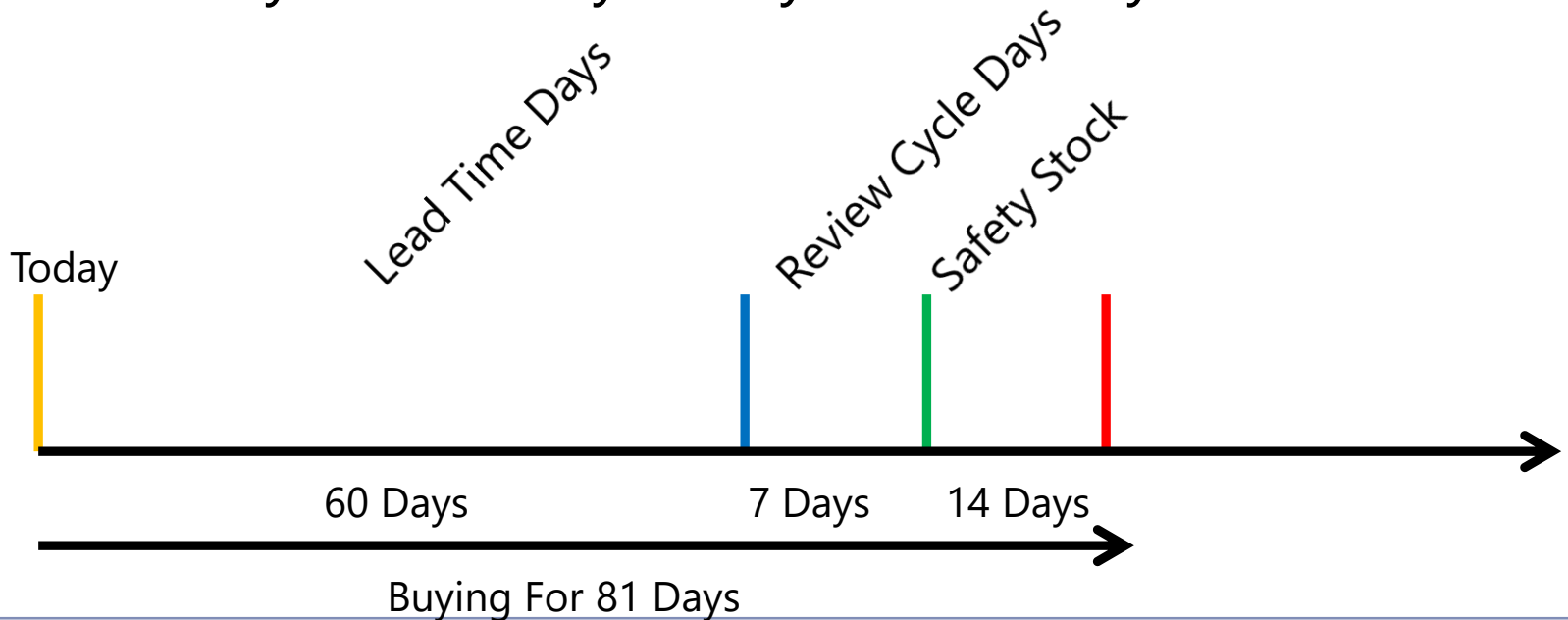
Quantity on service orders

Quantity on component lines




# Vendor Replenishment




- Lead Time Horizon calculation
  - Lead time - days
  - Review cycle - days
  - Safety stock – days or dynamic safety stock



# Lead Time Horizon

04-82-405 04-82-405 DESC | WORK DATE: 1/27/2022

✓ SAVED 

Search  Open in Excel | More options   

Horizon Date:  

Title	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8
→ AFP1	01/01/22	02/01/22	03/01/22	04/01/22	05/01/22	06/01/22	07/01/22	08/01/22
Forecast	180	168	144	48	120	120	108	36
Forc. Adj.	0	0	0	0	0	0	0	0
Cust. FC	0	0	0	0	0	0	0	0
Demand	459	0 P(0)	0	0	0	0	0	0
Consumed	0	0	0	0	0	0	0	0
Auto Forc. Adj.	279	0 P(0)	0	0	0	0	0	0
Total FC	459	168 P(102)	144	48	120	120	108	36
Consumed FC	0	0	0	0	0	0	0	0
Accum FC	459	627 P(561)	771	819	939	1,059	1,167	1,203
Inventory	30	-	-	-	-	-	-	-
Transfers	15	0	0	0	0	0	0	0
Pur. Orders	0	15	0	0	0	0	0	0
Assy./Prod. Ord...	0	0	0	0	0	0	0	0
Assy./Prod. Com...	0	0	0	0	0	0	0	0
Sales Ret. Orders	0	0	0	0	0	0	0	0
Net Inv. Pos.	-414	-567	-711	-759	-879	-999	-1,107	-1,143
Horiz 02/17/22	-	-501	-	-	-	-	-	-
Prior Yr	36	72	432	0	0	144	216	0
	-	-	-	-	-	-	-	-

## Forecast Info

Replenishment Source	London Postmaster
Calculation	SEA3-0
Calculated Trend	No Trend
Average Order Qty.	15
Lead Time Days	7 Frozen
Vendor Review Cycle	7
Safety Stock	7 Days at 82
Spor. Target Stock	0
MinShelf	0
Additional Stock	0
Net Inv Pos (-501) = Inventory Expected (60) - Need (561) [Forecast 561]	

## Procurement Unit

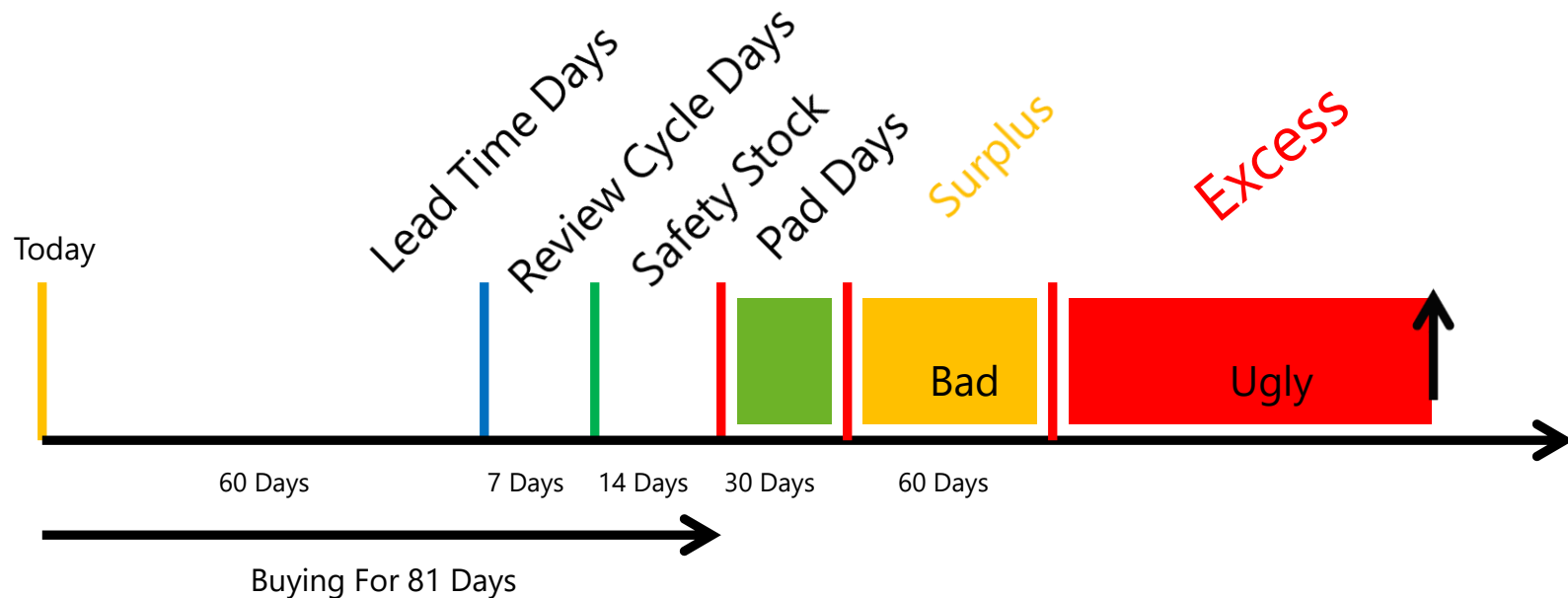
Nonstock	No
Review	Yes
Alert	Yes
Surplus	No
Replenishment Alert	No
Reforecast	No

# Decision 3-Surplus & Excess Inventory

Lead Time Horizon calculation = Lead Time + Review Cycle + Safety Stock

Surplus = Lead Time Horizon + Pad + Surplus Days

Excess = Lead Time Horizon + Pad + Excess Days





# Procurement

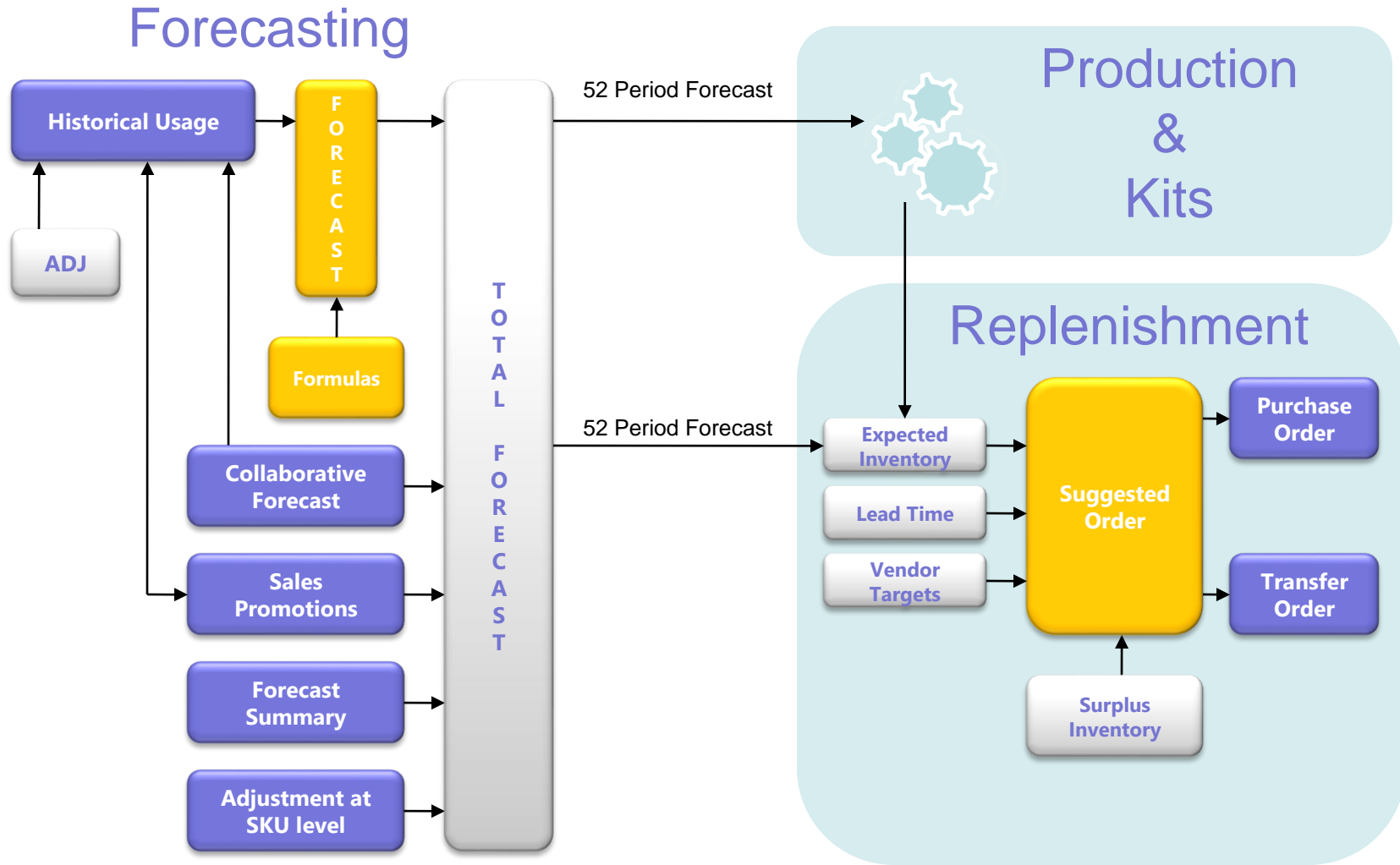
- Decision 4
  - Vendor targets
    - Amount
    - Net weight
    - Gross weight
    - Volume



# Result - The Suggested Order

- Recommended replenishment quantities
- Drill down to all information from suggested order line
  - Detailed forecast
  - Historical usage patterns
  - Formulas and data that caused recommended replenishment
  - Surplus inventory and where
  - Time-phased expected inventory
  - Order statistics
    - Comparison to vendor targets

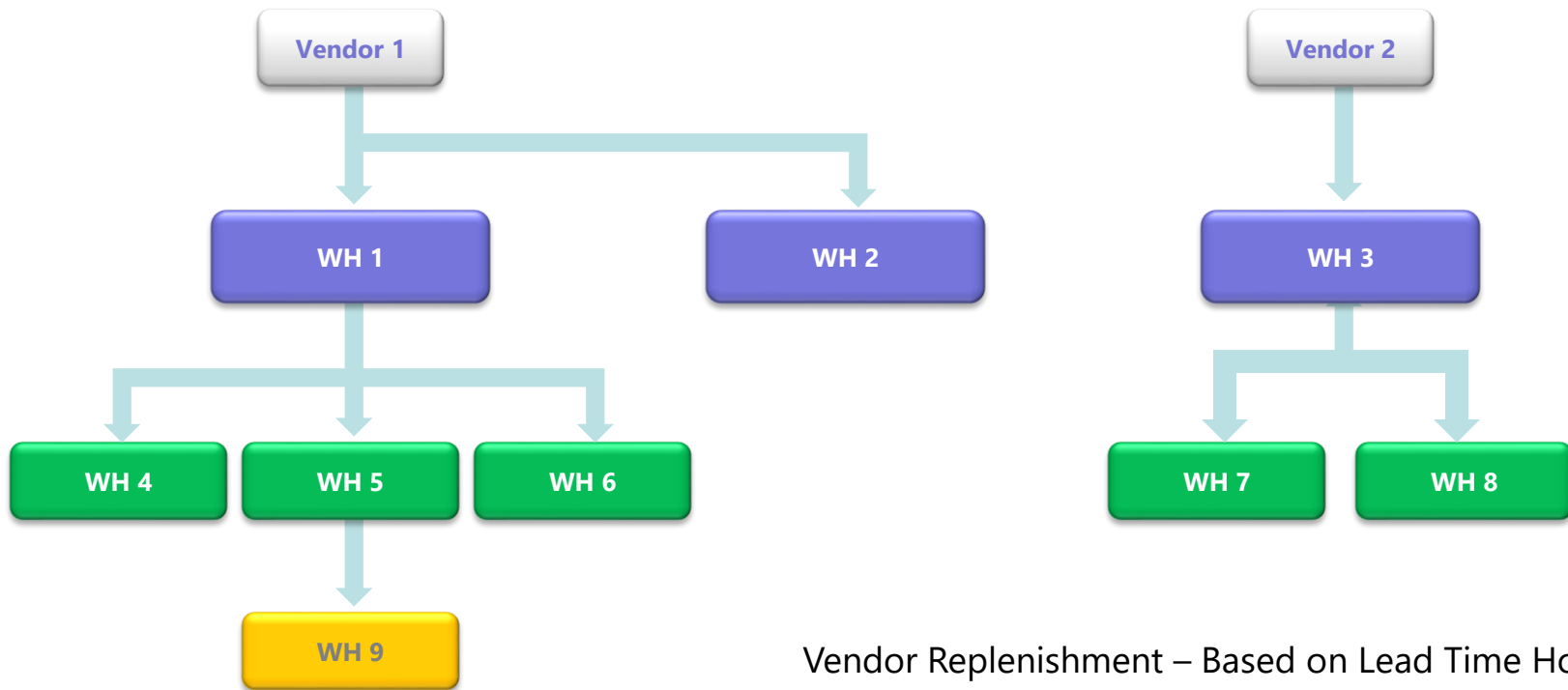
# Forecasting & Replenishment



# Distribution Requirements Planning (DRP)

- DRP looks at the entire company and optimizes inventory across all warehouses
  - Rolls historical usage up based on replenishment path
  - Forecast at each warehouse/item
  - Compares time phased inventory to rolled up forecast
    - Manages
      - Vendor replenishment
      - Hub and spoke
        - » Branch replenishment
      - Inventory balancing

# Hub & Spoke Replenishment



Vendor Replenishment – Based on Lead Time Horizon

Warehouse Replenishment – Based on Days Supply

**Example:**

WH 1, WH2 = Lead Time Horizon 90 Days

WH 3 = Lead Time Horizon 30 Days

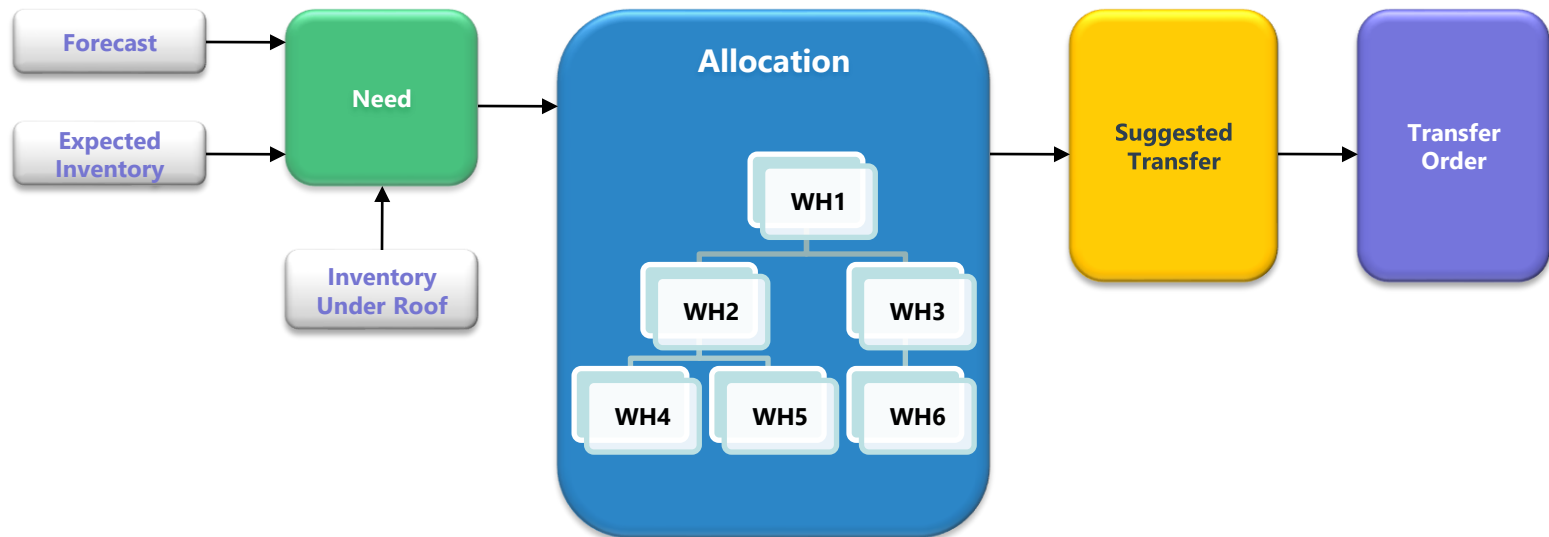
WH 4, WH 5, WH6 = Min Days 14 Max Days 21

WH 9 – Min Days 10 Max Days 14

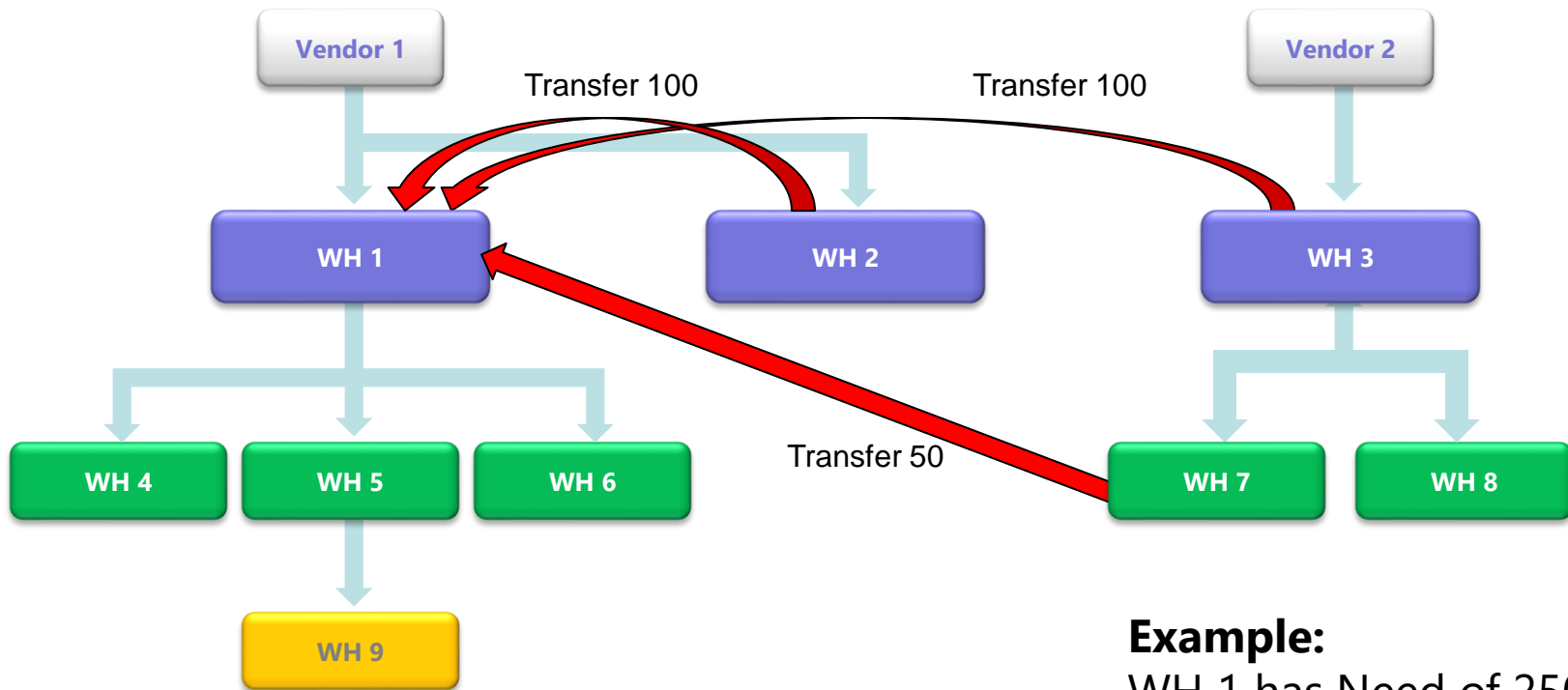
WH 7, WH 8 – Min Days 10 Max Days 14



# Suggested Transfer Per Replenishment Path



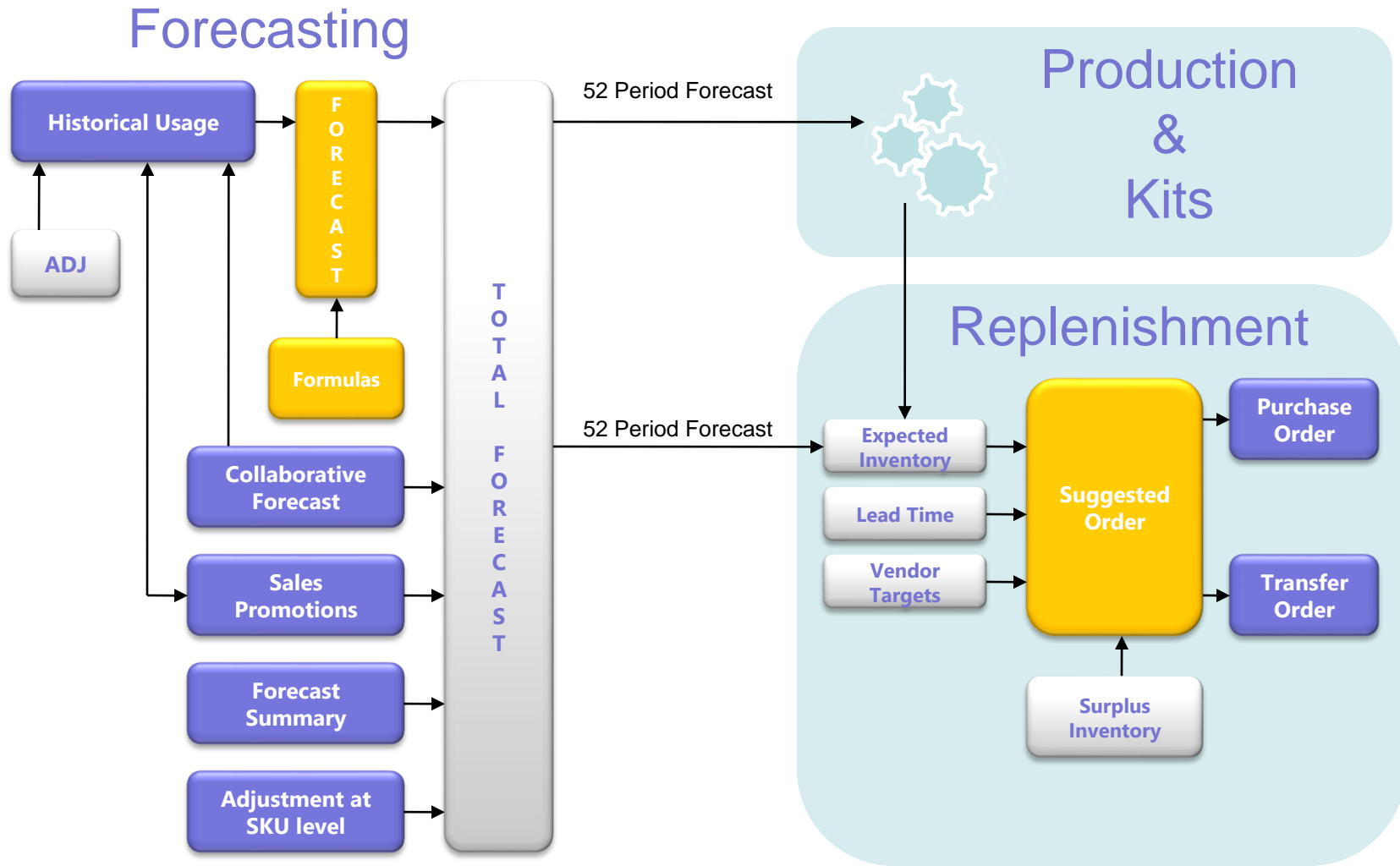
# Inventory Balancing



## Example:

WH 1 has Need of 250  
WH 2 has Surplus of 100  
WH 3 has Surplus of 100  
WH 7 has Surplus of 75

# Forecasting & Replenishment





# Software Demonstration

# Thanks for Joining Us



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