

Inventory Best Practices Using Dynamics GP



Proven Methods.

Real Results.

Agenda



- **Inventory Control vs Inventory Management**
- **Requirements for success**
- **Inventory Control**
 - Inventory vs Stuff
 - Organization
 - Tools
 - MRO
 - Floor Stock
- **Inventory Management**
 - Classification
 - Item Parameters
 - ABC
 - Stock Counts
 - Metrics
- **Bar Coding**

Proven Methods.

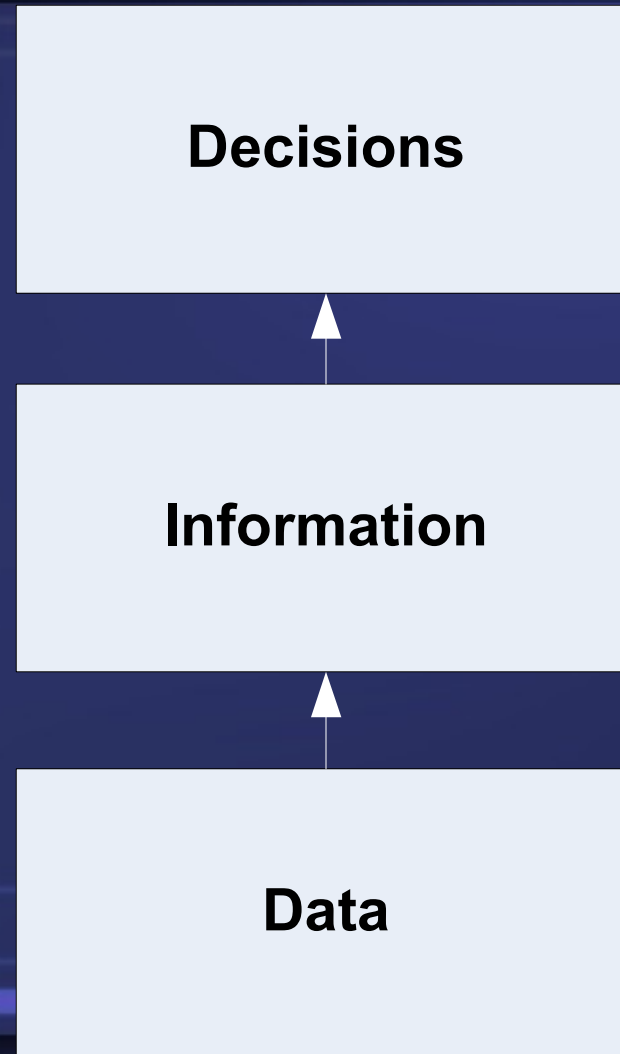
Real Results.



Expectations

- Review Basics
- GP is a Tool
- Apply The Tool Set
 - Report Writer/Crystal/Rockton/SRS
 - Smartlist/Smartlist Builder
 - SQL Queries & Views
 - Not Out Of the Box
- More Than One Way to Skin the Cat
 - Different Strategies for Different Items/Commodities
- No MRP, No MOs, No POs
- Inventory Management and Control is Only Part of an Organizational Strategy, but is a Foundation Strategy

Importance of Data Integrity



Proven Methods.

Real Results.

Inventory Control vs. Inventory Management



Proven Methods.

Real Results.

What is Inventory Control?



- How much of what is where?
- Separate stock from stuff
- Parts is Parts
- Technical Exercise
- If a 1 cent screw can prevent shipping a \$1000 item, it's relevant!

Proven Methods.

Real Results.

What is Inventory Management?



- Understanding the demand patterns for an item
- Knowing what one needs to meet demand
- Understanding cost model for item
- Understanding the service level for an item
- Policy Exercise
- Not too little, not too much, just right

Inventory Control



Proven Methods.

Real Results.

Why Have Inventory Control?



- Respond to customer inquiries in real time
- Reduce interruptions to operations by reducing calls and people wanting to check on availability
- Reduce expediting costs to cover unknown stock outs
- Reduce excessive inventories built to cover prior stock outs
- Accurate valuation of the firm's inventories

Proven Methods.

Real Results.



Organizational Requirements for Inventory Control

- Top Management Support
- User Involvement (all)
- Training (all)
- Policies and Procedures
- Organizational Structure
- Best people performing transactions
 - Not a low skilled position => very detailed
 - It takes experience to know what is what and where it goes
- Ease of Access to Data Collection Points
- Metrics for Monitoring and Reporting Performance
- A Place For Everything

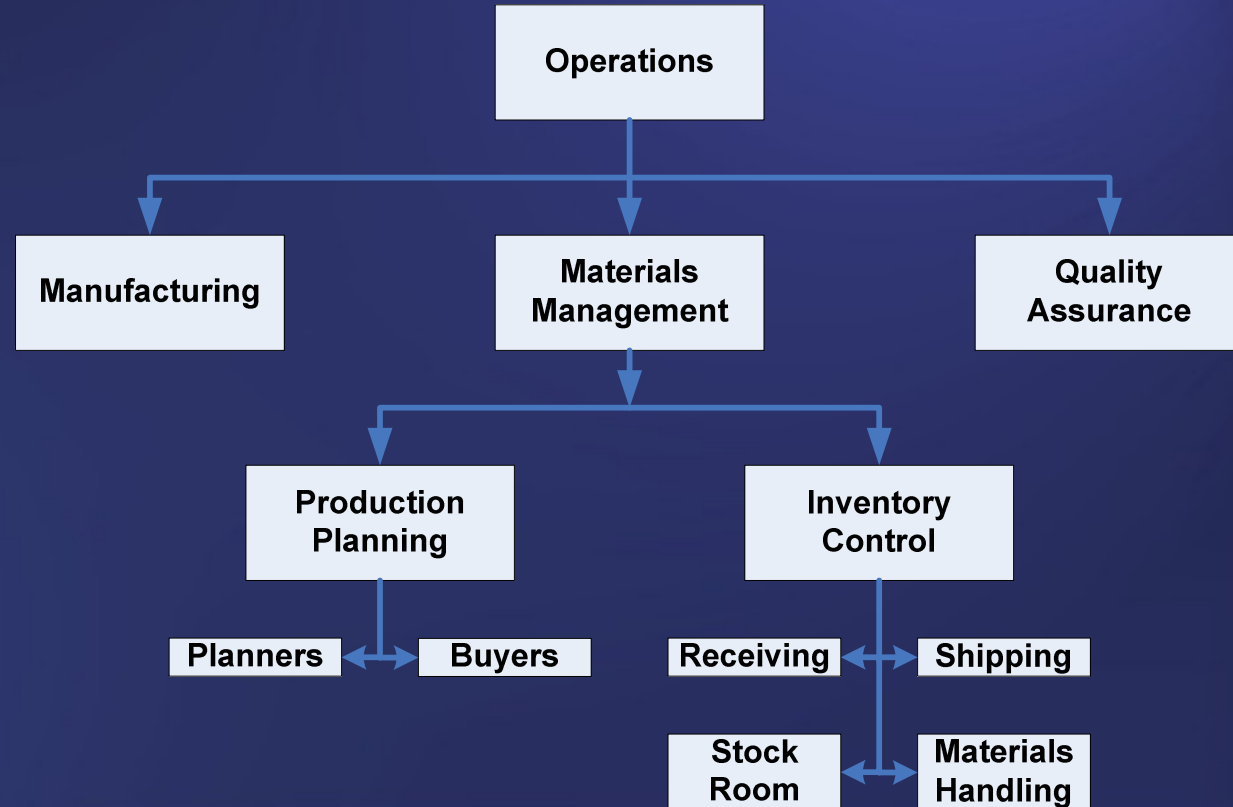
Dynamics GP Roles for Operations



Proven Methods.

Real Results.

Typical Operations Org Chart (Fully Developed)



Proven Methods.

Real Results.

Roles, Responsibilities and Hats



- **Manufacturing and Materials have Different Motivations**
 - Manufacturing is driven by Production
 - Materials Management is driven by Inventory
- **Manufacturing Operations and Materials Management are Different Skills**
 - Technical vs. Analytical
- **Supports a More Proactive Approach to the Business**
- **Planning becomes the conduit for the rest of the organization to Manufacturing**
- **Materials Management substantially absorbs the transaction processing for Operations**

What Is It?

Stock or Stuff



Proven Methods.

Real Results.

Separate Stock from Stuff



- What is Inventory?
- Has an Item Number
 - Item Numbers are Unique Identifiers
 - Label Inventory
 - Drawings
 - Specifications
 - Vendor Part Numbers
- Independent Demand
 - Sales Inventory
- Dependant Demand
 - Purchased Components
 - Sub-Assemblies
- Indirect\Expense Items (MRO)

Separate Stock from Stuff



- What is stuff?
- Anything that is not inventory
- No Item Number
 - Computers
 - Chairs
 - The Owner's Boat
- Get rid of the stuff!

Indirect\ Expense Items



- If it's Important to Ongoing Operations Consider using an Item Number.
 - Adhesives
 - Lubricants
 - Drill Bits
 - Sand Paper
 - Bags, Labels, & Shipping Cartons
 - MRO
- Expense Items can be Managed like Inventory
 - Reorder Point Planning
 - Develop Usable Consumption Data
 - Reduce Purchasing Headaches
- Has Liquidation Value

Indirect\ Expense Items



- **Classify It**
 - Item Class
 - Attribute
- **Manage It**
 - Set a Reorder Point
 - Buyer/Planner
 - Expense Account in Account Setup
- **Control It**
 - Purchase it
 - Use Alerts/Reminders
 - Receive It
 - Stock It
 - Issue It to an Expense Account as Consumed

Managing Items



- Logical Groupings
- Generally Commodities
 - Hardware
 - Packaging
 - Metals
 - Semi Conductors
 - Transistors
 - Powders
 - Liquids
 - SA
 - FG

Proven Methods.

Real Results.

Managing Items - Classification



- Planning by group tends to be easier and more efficient than item by item.
- Grouping Options
 - Buyer
 - Planner
 - Options Categories
 - Item Classes (Product Line)
 - Vendor
 - Short Description
 - Long Description
 - Extender
 - Site

How Dynamics GP stores Inventory Data



- Data is Stored by Site
- Buyer
- Planner
- Order Policy
- Quantity Modifiers
 - Minimum
 - Maximum
 - Multiple
- Lead Times
 - Manufacturing
 - Purchasing
 - Vendor
- Shrink
- Planning Time Fence

Proven Methods.

Real Results.

Demo

Item Data



Proven Methods.

Real Results.

Where Is It?

Location, Location, Location



Proven Methods.

Real Results.

Stock Rooms



- **Inventory Exists in a Storage Location**
 - Site
 - Site/Bin
 - QOH
- **WIP (Work In Process) has been Issued from Storage to a Work Order**
- **Storage Locations have Defined Boundaries**
 - Painted Lines
 - Walls, Doors, Fences
- **Limiting Access to Product**
 - Shrink
- **Requisitions/Transfers/Orders**



Stock Room Organization

- **Fast Movers Up Front**
- **Slow Movers Down Back**
 - Determination Based Upon Usage
 - Reduces Picking Times
 - Locate with Bin Description
- **Rotate Inventory**
 - Flow Racks
- **Inbound Staging Area**
 - PO Receipts
 - MO Receipts
- **Outbound Staging Area**
 - MO Kits
 - SO Picks



Item Storage and Identification

- Bins\Boxes
- Label Bins\Boxes
 - Item Number
 - Description
 - UOM
 - Bar Code
 - Weights for Counts/Issues
- Maintain Packages ->
 - Only Have One Open Pack at a Time
- Understand Conversions - Case\Box\Each
 - Reel\Roll Product Tends to be Problematic
 - Purchase UOM
 - Sales UOM



Back Flush & Floor Stock

- **Back Flush vs Floor Stock**
- **Exists in a Storage Location (Site)**
 - Typically the GP Work Centers Site
- **Back Flushed at Assembly Receipt**
 - Simultaneous Issue and Receipt
- **Included in Products' Cost**
- **Point of Consumption Inventory**
- **Generally Low Cost, Frequently Used Items**
- **A Small Portion of the Items On Hand Inventory**
- **Defrays Some of the Handling Costs**
- **Floor Stock Items Should be Identified as Such**
 - Colored Bins, Etc

Virtual Stockroom



- Not Floor Stock
- Unsecured Open Access
- Problem Symptoms
 - Inventory Variances
 - Expedited Freight
 - Visibility
- Conflicting Objectives
- Accountability – Finger Pointing
- Different Skills (MFG vs MTLs)
- Apply the Same Controls on your Inventory as you do on your Payables and Receivables.

Proven Methods.

Real Results.

Tools



- Digital Scale < \$100
- Label Printer < \$100
- Colored Duct Tape \$5-7/roll
- Bins – Cardboard and Plastic
- Adjustable Shelving Racks
- Totes/Carts
- Standard Bags/Boxes (internal)

Proven Methods.

Real Results.

Where Did It Go?

Material Movements



Proven Methods.

Real Results.

Inventory Transactions



- **Got to do the Paperwork!**
 - The TX is a Fundamental Part of Inventory Control
- **Basic Transactions**
 - Sales Order Fulfillment (GI)
 - PO Receipt (GR)
 - MO Issue (GI)
 - MO Receipt (GR)
 - Misc. Issue/Receipt (GI\GR)
 - Transfer (GI\GR)
- **Many variants....**

Scenarios



- Scenarios help us Understand the Nature of Inventory Movement
- Scenarios Support Training
- Scenarios Should Evolve into Procedures
- Procedures are the Guidelines with Which to Validate Transaction Processing Accuracy
- Document Each
 - Sales Order Fulfillment (GI)
 - PO Receipt (GR)
 - MO Issue (GI)
 - MO Receipt (GR)
 - Sales Samples
 - Scrap Materials
 - Returns – Good, Damaged, Wrong item
 - Returns to Vendors – Credit, Replacement, Repair
 - **Bulk Stock
 - **Floor Stock

Proven Methods.

Real Results.

Demo

Floor Stock Replenishment



Proven Methods.

Real Results.

Scenario – Floor Stock



- **WidgetScrew1 is Purchased to WAREHOUSE**
 - Order Point Quantity = 1000
 - Minimum Order Qty = 6000
 - Multiple Order Qty = 6000
- **A Smartlist Alert Indicates that WidgetScrew1 has reached it's Replenishment Point for WC1**
 - Order Point Quantity = 500
 - Minimum Order Qty = 1000
- **A Stock Count is Performed to Validate that the OH equals the ROP. (Optional!)**
- **An Inventory Transfer is used to Replenish WC1**
- **WidgetScrew1 is Consumed in MOs from the WC Site via Backflush.**

Demo

Samples – Expensing Inventory



Proven Methods.

Real Results.

Scenario - Samples



- A Engineer Wishes to Obtain A Sample of Product for use in Testing (WidgetScrew1)
- The Engineer Completes a Requisition for the Item including Quantity, Account and Approvals
- The Requisition is Submitted to Materials Management for Review and Approval
- Items are Issued from the WAREHOUSE Location to the Posting Account Specified on the Requisition

Demo

MRO & Expense Items



Proven Methods.

Real Results.

Scenario – Shop Supplies



- The Finishing Department uses Touch-Up Paint in the Production of Product. The WAREHOUSE Location Stocks for the item for this Purpose.
- Touch-Up Paint is Purchased by the Case, and Issued to the Floor by the Pint. The Touch-Up Paint has set as its ROP:
 - Order Point Qty - 3 Pints
 - Minimum Order Qty – 6 Pints => 1 Case
 - Multiple Order Qty – 6 Pints
- Production Uses a Requisition to Obtain the Touch-Up Paint from the WAREHOUSE Location
- Items are Issued from the WAREHOUSE Location to the Posting Account Specified on the Requisition
- When the Order Point is Reached an Alert is Triggered for Purchasing

Inventory Management



Proven Methods.

Real Results.

Not Too Little, Not Too Much, Just Right



- What's important?
- If a 1 cent screw can prevent shipping a \$1000 item, it's relevant
- Keep more inventory of lower priced, inherently inaccurate items (C Items)
- 80/20 rule
- Usage
- Service Levels
- Acceptable Performance Levels – What is good?
- Metrics – Measure Accuracy & Performance

Inventory Strategies



- It's a Stock Item
 - Stock for 10?
 - Stock for 100?
 - Stock for 1000?
- 100 % Availability is Not a Cost Effective Strategy

Proven Methods.

Real Results.

Inventory Strategies (Classification)



- Stock – On Hand to Cover a Certain Amount
- Non-Stock – Defined Lead Time
- Special Order – Undefined Lead Time
- Obsolete – Generally Not Available

Proven Methods.

Real Results.

Demo

Item Attributes



Proven Methods.

Real Results.

Planning Strategies



- AFLO
- OSWO
- FISH
- Reorder Point
- MRP
- KANBAN
- Lean
- Etc.

Proven Methods.

Real Results.

Dynamics GP Order Policies



- **Not Planned**
- **Lot for Lot**
 - Creates an Order Between the Minimum and Maximum Inclusive
- **Fixed Order Quantity**
 - Creates an Order Between the Minimum and Maximum Inclusive in Increments of the Fixed Order Quantity
- **Period Order Quantity**
 - Creates an Order for the Specified Number of Days
- **Order Point (non-MRP)**
 - Reorder Point Planning via PO Generator
- **Manually Planned**

Discussion

Planning Strategies - Order Policies



Proven Methods.

Real Results.

Metrics

Getting to Just Right



Proven Methods.

Real Results.

Cycle Counting

Stock Counts



Proven Methods.

Real Results.

Physical Inventory



- Physical Inventory is a “ Call to ARMS”
- Generally During Shutdown
- Forced Vacation
- Time Pressure to Finish and Reconcile
- Untrained Employees Counting Stuff They Know Nothing About
- Lost and Found
- People Do Not Like the Task
- How Long Does the Inventory Stay Accurate?

Cycle Counting



- **No Down Time**
- **One Hour or Less per Day First Thing in the AM**
- **Uses Those Familiar With the Product**
- **Count Different Items Each Day**
- **Counts Items Based Upon Some Relative Usage Criteria**
- **Frequency Varies Based Upon Importance and Number Of Items to Count**
 - A – Most frequently Counted - 30 Days
 - B – Frequently Counted – 90 Days
 - C – Least Frequently Counted – 180 Days

Proven Methods.

Real Results.

Cycle Counting



- **The Goal is Operational Tolerance**
 - Not Financial
- **Verification or Blind Count**
 - Verification is Faster, Leading to More Counts per Day
 - Verification will Encourage the Counter to Look for Missing Items
- **Recounts**
 - Goal is count the material
 - Performed by a different individual

ABC Assignment



- **Pareto's Law**
 - 80/20 Rule
- **Criteria**
 - Usage Volume =>Quantity
 - Usage Dollars => Cost
 - Number of Transactions => Amount of Handling
- **Define Code Tolerance**
- **Define the Count Tolerance**
- **Score the Number of Hits with in Count Tolerance**

Stock Count Tolerances - Example



ABC Code	Percent of Items	Target Accuracy	Count Tolerance
A	5%	98%	Exact
B	15%	95%	+/- 3%
C	80%	90%	+/- 7%

Proven Methods.

Real Results.

GP Stock Counts (Cycle Counts)



- **Periodic Setup**
 - Define Stock Count Calendar
 - Define ABC
 - Distribute Count Dates (item site)
- **Daily Process**
 - Create a Count
 - Start the Count
 - Reconcile the Count
 - Post the Count

Demo

Stock Counts



Proven Methods.

Real Results.



Considerations When Using GP Stock Counts

- **Reuse Stock Counts?**
 - New Items are Not Added to Count
 - New Bins do not Get Added To Existing Stock Counts
 - Old Bins do not Get Removed From Existing Stock Counts
 - Define A Procedure
- **Stock Counts Update Last Counted Date, Variance Transactions Do Not**
 - Inventory and Variance Account from Account Maintenance
- **Mass Add Functionality Selection Criteria**
 - Last Stock Count Date\Site
- **Can not have 2 Active Counts with the Same Item/Site**
 - See the Exception Report

Stock Count Factoids



- Posting Batch in Inventory Batches in the form of **INVSTCXXXXX**
- The Transaction Source in the SY30300 Inventory transactions Table is **IVADJXXXXXXXXXX**, and **DOCTYPE 2**
- ABC Codes are Stored in **IV00101- IV_Item_MSTR, ABCCODE**
- Stock Count Interval Values Are Stored in **IV00102 - IV_Item_MSTR_QTYS, STCKCNTINTRVL**, along with Count Date and Times

Order Point Calculations



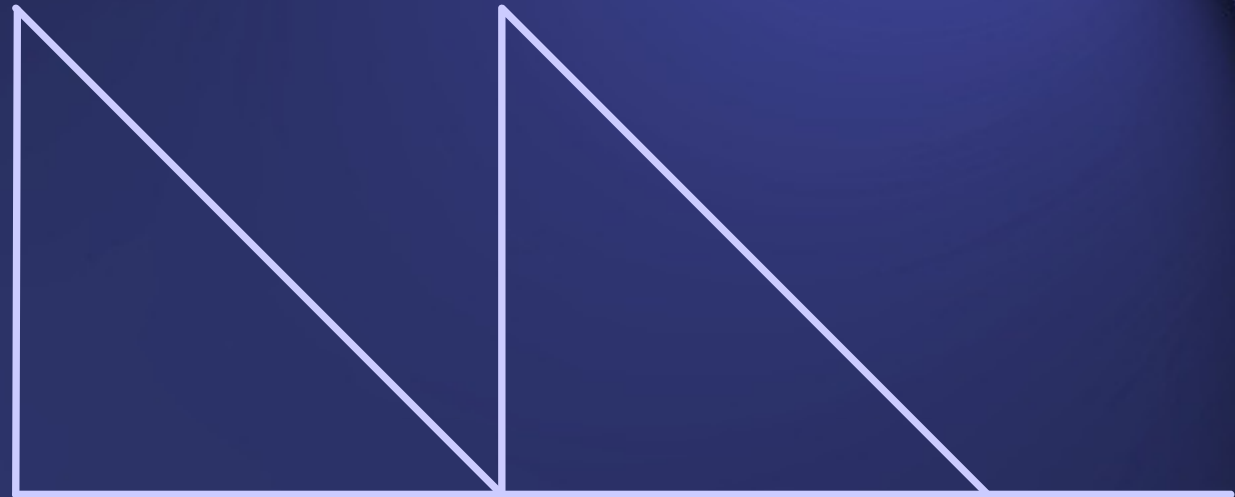
Proven Methods.

Real Results.

Replenishment



↑
Qty

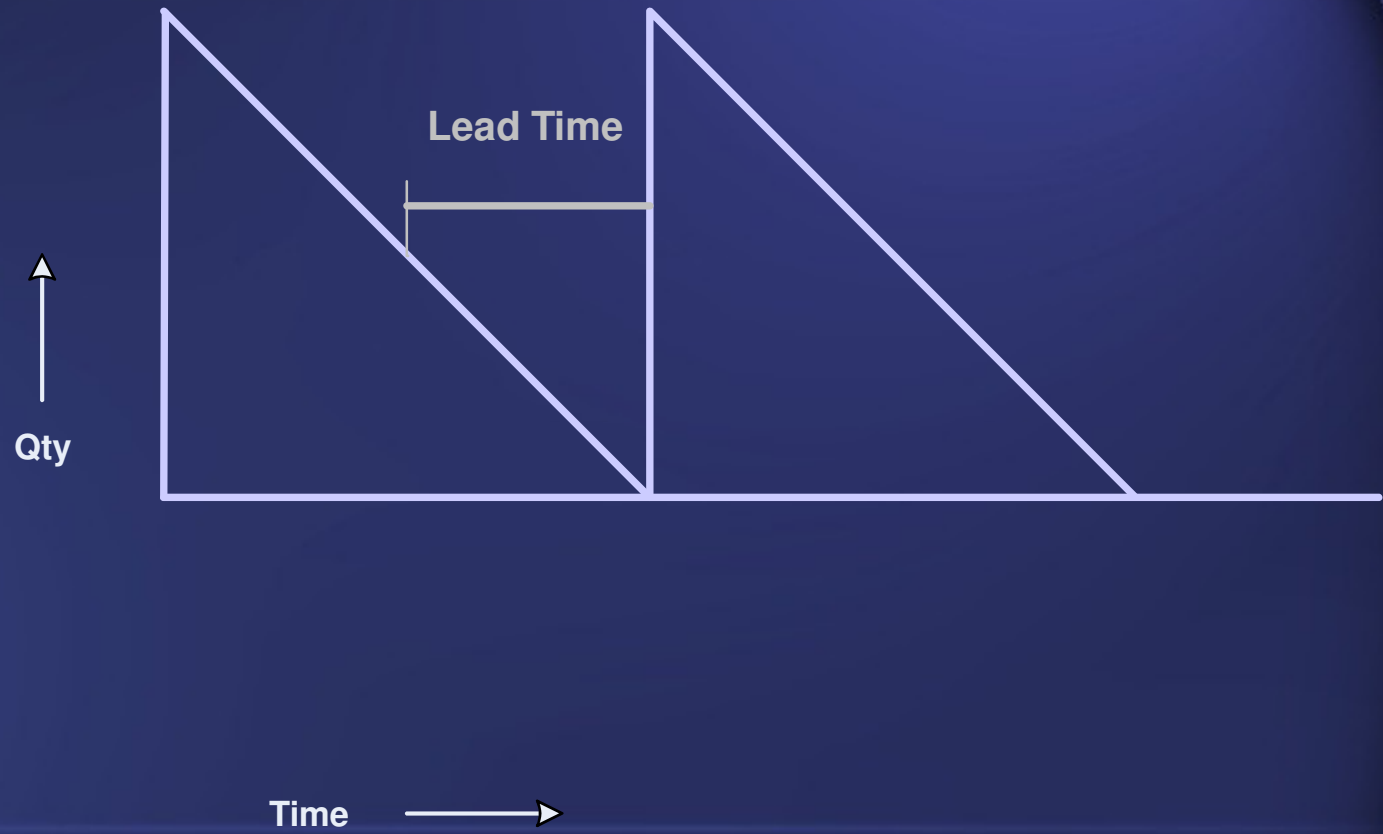


Time →

Proven Methods.

Real Results.

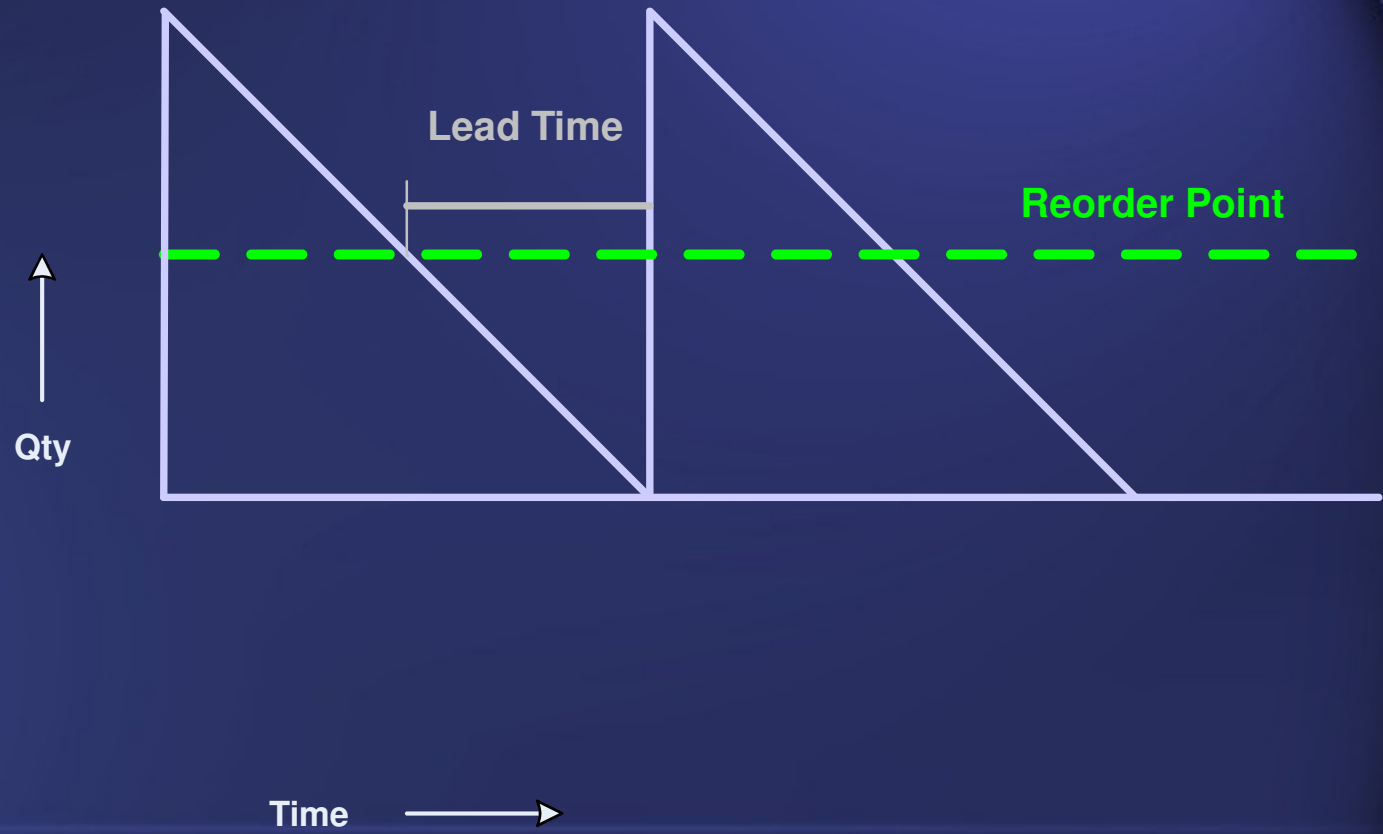
Replenishment



Proven Methods.

Real Results.

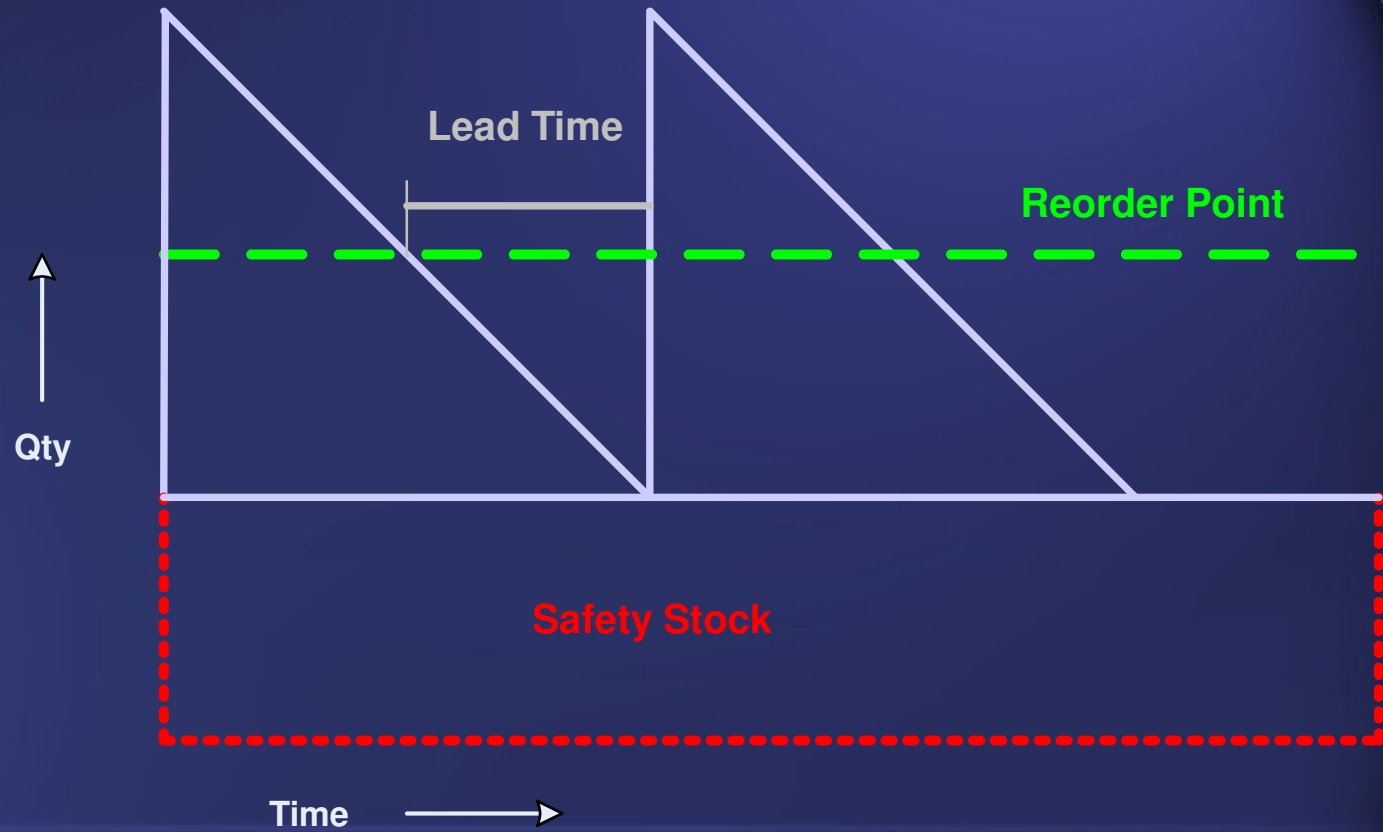
Replenishment



Proven Methods.

Real Results.

Replenishment



Proven Methods.

Real Results.



Replenishment

- Usage over time => Daily Average Usage
- Lead-time * Usage => ROP
- Variability in LT
 - LT Should Include Planning and Receiving Time
- Variability in Usage
 - Add Safety Stock
- Other Replenishment Factors
 - Demand Insensitive
 - Does not Consider Order Costs
 - Does not Consider Carrying Costs

More Metrics



Proven Methods.

Real Results.



Inventory Turnover

- Sales figure should include Adjustments
- $\text{COGS} = \text{Units Sold} * \text{Cost to Produce OR Inventory Value @ beginning of the period} + \text{production materials and supplies purchases} - \text{Inventory Value @ end of the period.}$

Generally calculated as:

$$= \frac{\text{Sales}}{\text{Inventory}}$$

However, it may also be calculated as:

$$= \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Inventory Turnover



- Things to Remember
 - Sales are recorded at Market Value while Inventories are recorded at Cost.
 - A low turnover is usually a bad sign because products tend to deteriorate as they sit in a warehouse.
 - Companies selling perishable items have very high turnover.
 - For more accurate inventory turnover figures, the average inventory figure (beginning inventory + ending inventory/2) is used when computing inventory turnover. Average inventory accounts for any seasonality effects on the ratio.

EOQ – Economic Order Quantity



$$EOQ = \sqrt{\frac{2(\text{Annual usage in units})(\text{Order cost})}{(\text{Annual carrying cost per unit})}}$$

- Considers The Cost of Placing a PO (Order Cost)
 - Enter PO/Requisition and any Approval Steps
 - Process Receipt and Incoming Inspection
 - Invoice Process and Vendor Payment
- Considers The Cost of Carrying Inventory
 - Cost of Inventory + Storage Costs
- Frequency Ordered Not Quantity Ordered

Proven Methods.

Real Results.

Service Levels



- Measures On Time Delivery
- Similar for MO Performance
 - Picklist for Components Dates & Quantities
 - IV30300 for Transaction Dates & Quantities

$$\frac{\text{No. of Stock Line Items Shipped Complete by Due Date}}{\text{Total No. of Scheduled Stock Line Items}}$$

Proven Methods.

Real Results.

Bar Coding

Bar Coding



Proven Methods.

Real Results.

Bar Coding



- Real Time vs. Near Real Time
- Reduces Clerical Entry and Errors Due to Typos
- Enforces Accuracy
- Increases Speed
- Improves Ease of Use for Non-technical Users.
- Realistically Required for Labor Data Collection
- Strongly Suggested for Lot\Serial Tracking
- Game Like, So it's Fun

Proven Methods.

Real Results.

Summary and Wrap Up



Proven Methods.

Real Results.

Summary



- **Inventory Control Does Not Just Happen**
- **It Takes Deliberate Action**
 - Policies
 - Procedures
 - Training (and Retraining)
 - Controls
 - Metrics
- **Control – Technical**
- **Management - Policy**

Summary



- What Inventory Control Is
- Organizational Topics
- Stock, Stuff, MRO
 - Get rid of the stuff
 - Organize the Inventory
- Item Parameters and Classification
- Material Movements, Why and How
- Inventory Strategies vs Planning Strategies
- Metrics
 - Cycle Counting
 - Item Usage
- Smartlist Builder and Alerts
- Tables, Fields and Math



Appendix 1 - Inventory

- IV00101 – Item Master – Main Item Table, Default Site, ABC
- IV00102 – Item Quantity Master – Site data, Item Resource Planning, Buyers, Planners, Default Vendor
- IV00103 - Item Vendor Master
- IV00106 - Item Purchasing
- IV00108 - Item Price List
- IV00113 – Item Price List Details
- IV00115 – Multiple Manufacture Items Master
- IVR10015 - Item Engineering File

- IV10300 - Stock Count
- IV10301 – Stock Count Line
- IV30700 - Stock Count History
- IV30701 – Stock Count Line History
- IV41000 – Stock Calendar

- IV30300 – Item Transactions Amount History - (1-7)

Appendix 2 - Manufacturing



- BOMV1000 - MFGBomList
- WO010032 – Manufacturing Order Master
- MOP1200 – MOP_PickDoc_MSTR
- MOP1210 – MOP_PickDoc_Line
- MOP1220 – MOP_PickDoc_Line_WORK
- CT00102 – IC_COST_Item_Masterpop10500

Appendix 3 - Purchasing



- POP10100 - Purchase Order Work
- POP10110 - Purchase Order Line
- POP30110 – Purchase Order Line History
- POP30100 – Purchase Order History

- POP10300 – Purchasing Receipts Work
- POP10310 – Purchase Receipt Line
- POP30300 - Purchasing Receipt History
- POP30310 – Purchasing Receipt Line History

Appendix 4 – SOP



- SOP10100 – Sales Transaction Work
- SOP10200 – Sales Transaction Amounts Work
- SOP30200 – Sales Transaction History
- SOP30300 – Sales Transaction Amounts History
- SOP10106 – Sales User Defined Work History
- SOP10107 – Sales Tracking Numbers Work History

Appendix 5 - IV00303 – Inventory Transactions



TRXSORCE DOCTYPE APPLICATION

IVADJ	1	Transaction Entry - Adjustment
IVADJ	2	Transaction Entry - Variance
IVTFR	3	Transfer Entry
RRECVG	4	PO Receipt, PO Return
SLSTE	5	SOP Return
SLSTE	6	SOP Invoicing
INVCE	6	Advanced Invoicing
BMASM	7	Inventory BOM

Proven Methods.

Real Results.