

# UTD SCM Seminar

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November 6, 2007

# Agenda ...

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- **Introduction**
- **Business and IT Challenges**
- **Opportunity Assessment Process**
- **Lean SCM and MFG Concepts**
- **Solution and Roadmap to Implementation**
- **Conclusions**
- **References**
- **Q and A**

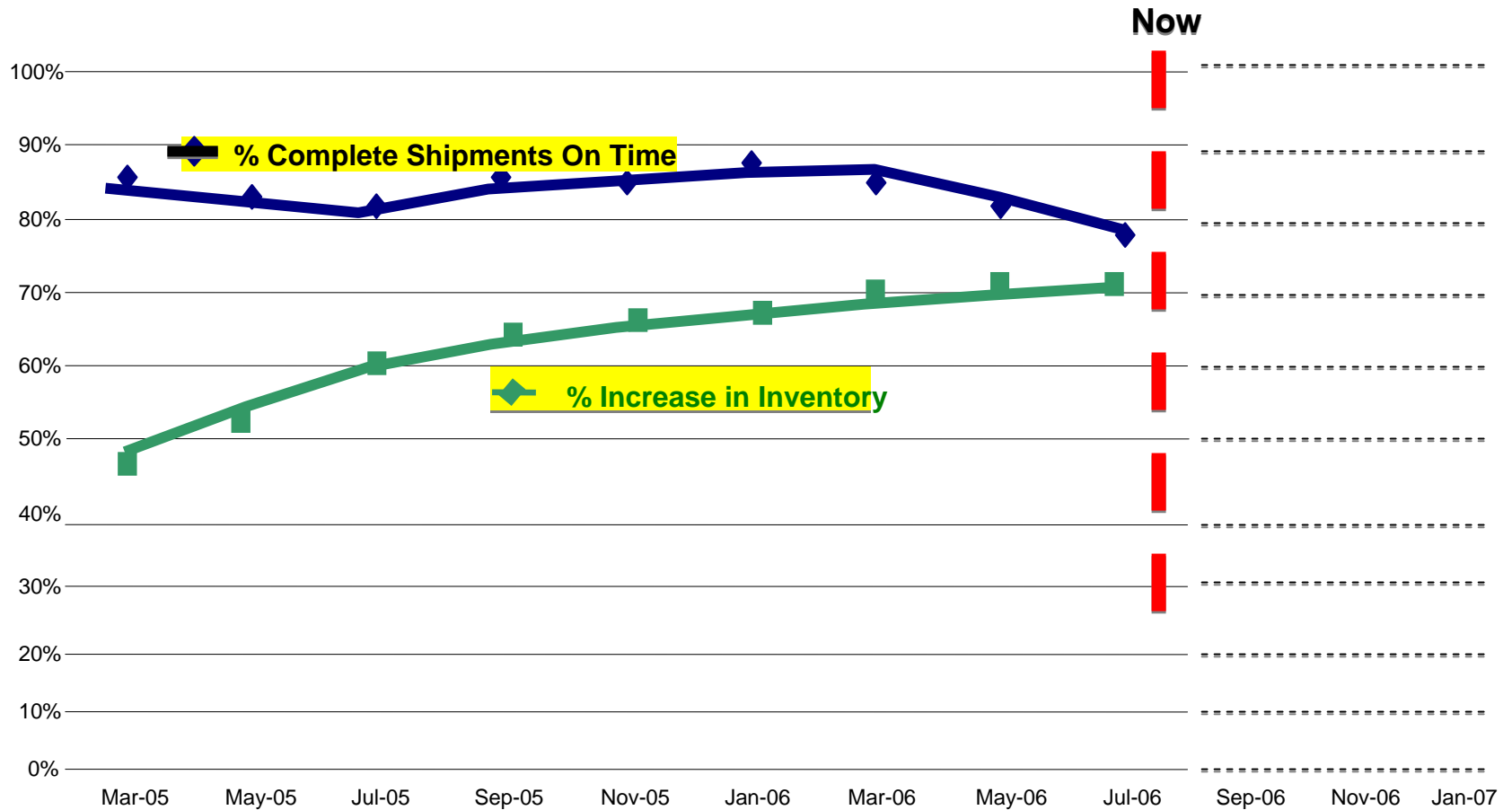
# Abstract ...

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XT was experiencing significant service deterioration as measured by complete orders shipped on time, and inventories were increasing significantly. The problem persisted even as the entire SC management was replaced. Audience participate in what they would do to remedy this situation, and I will present some of the actions we took. We will emphasize the power of real time information versus obsolete inventory clogging the SC. I will touch on consulting methods used such as: Opportunity Assessment Process, Scoping, Solution Value Assessment, Project Management, and Change Management. We show that not every wild idea gets funding and implemented in the business world. Also, that in spite of good intentions, projects fail if not managed well. We touch on SKU reduction techniques, Lean Enterprise Concepts, Demand Pull Production, Kanban Planning, Supplier Communications, Auto ID and RFID. We conclude with potential benefits and results that we achieved in this case. Students may pursue further using references.

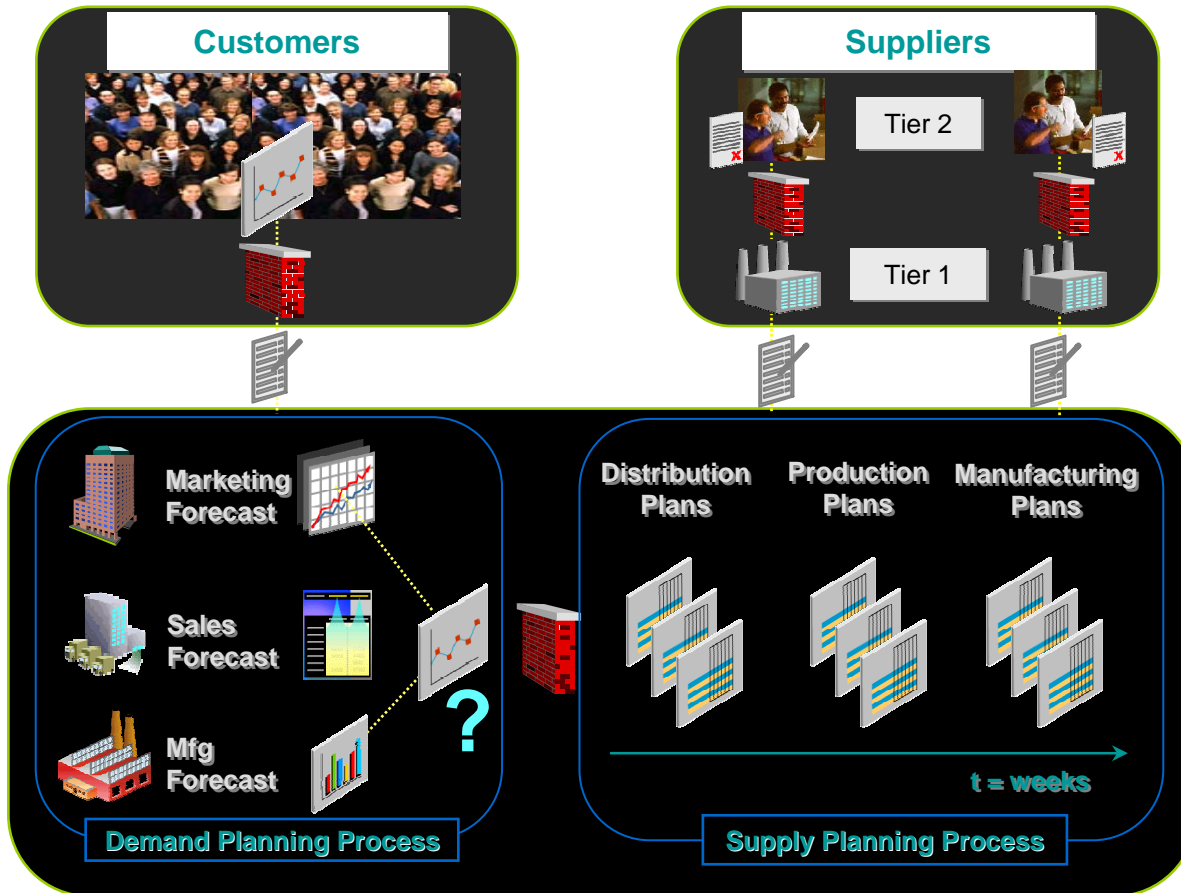
Rather than going into any one topic in depth, we will touch on an end to end business process improvement cycle; from definition to funding, to solution design, to implementation.

# Customer Service & Inventory Over Time



# Multi-Step Processes (current SC)

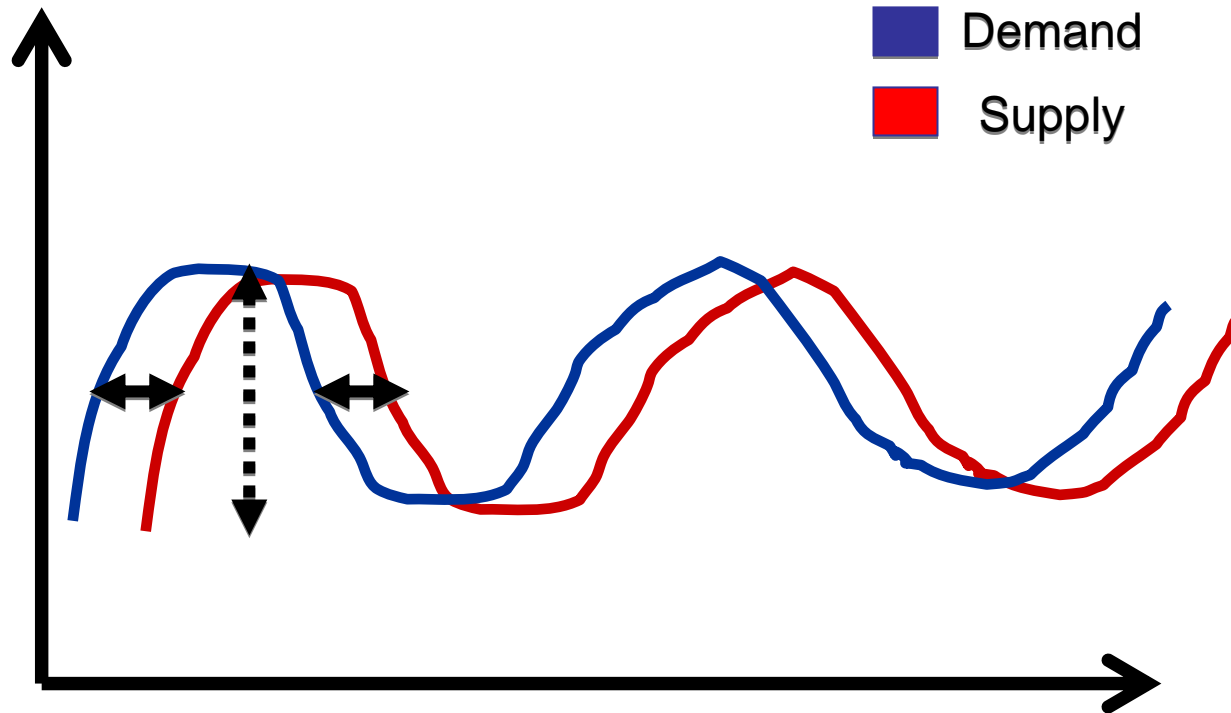
High Latency and Limited Collaboration



- Excess Inventory!
- Reserve Production Capacity!
- Expedite!
- Low Service

*Efficient Supply Chain Built on INVENTORY*

# Supply and Demand Concepts



Real Time Sales and Operations Planning  
Change Recognition and Mitigation  
**STAYING ON TRACKS!**



# XT Operations Overview

## XT Overview:

- **Leading Mfg & Distributor of Printing Technologies,**
- **Global Manufacturing and Supply NW**
- **45K+ active items, with 17K+ in inventory**
- **Above Average Engineering and BOM**
- **Installed mission critical base of 250K+**
- **On Oracle ERP: Financials, Mfg, Planning, Procurement, and Inv. Management**

# XT Challenges

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## XT Tech Challenges Included:

- **Components Shortages**
- **"Excess and Expedite" Buying**
- **Broken Processes**
- **Growing SKU and Product Complexity**
- **Variable supply and demand**
- **Lack of Collaboration with Suppliers**
- **Erroneous Moves and Shipments**
- **Plunging Service Level**
- **Employee Turnover**

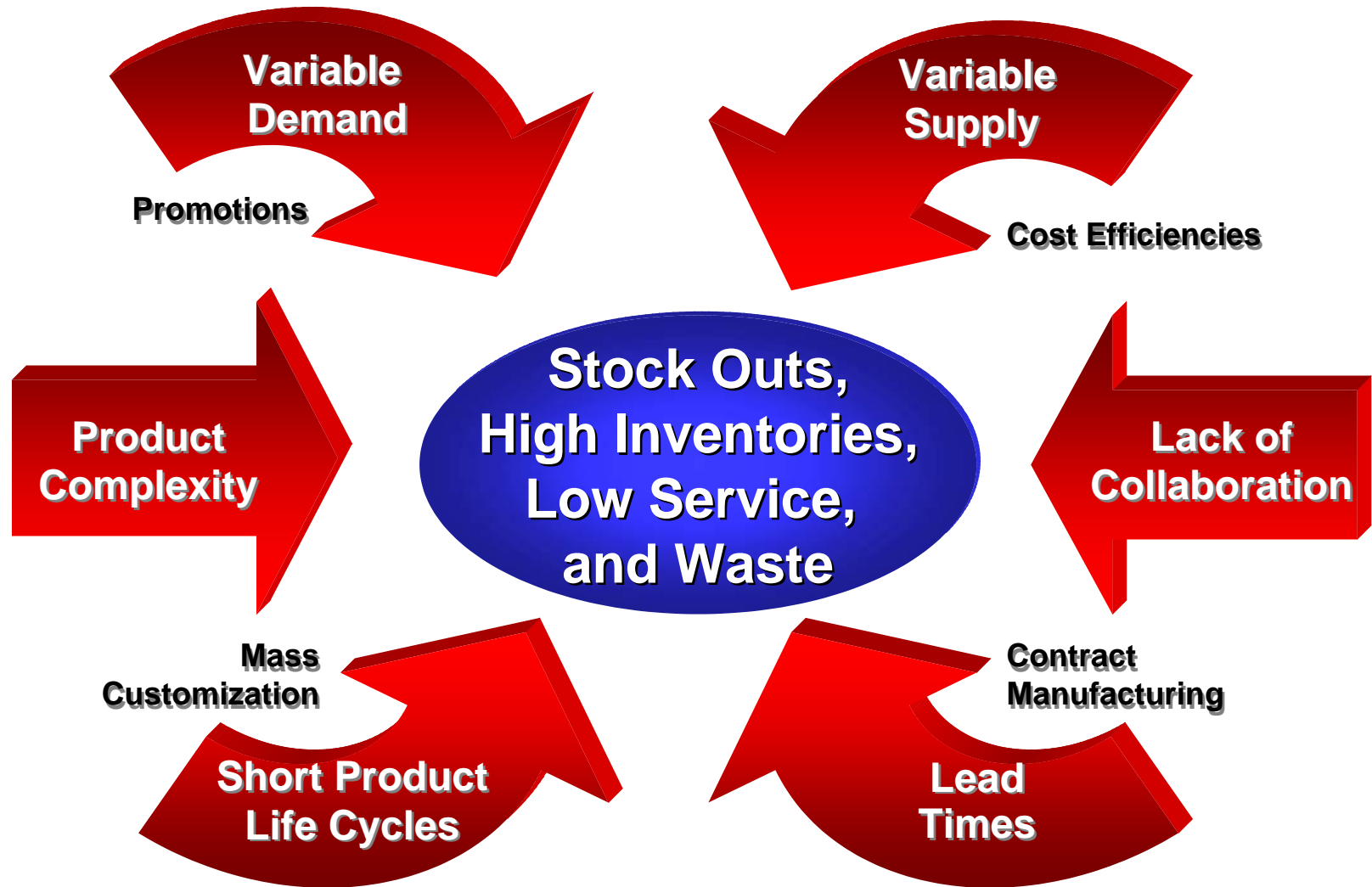


# XT Operational Disconnects ...

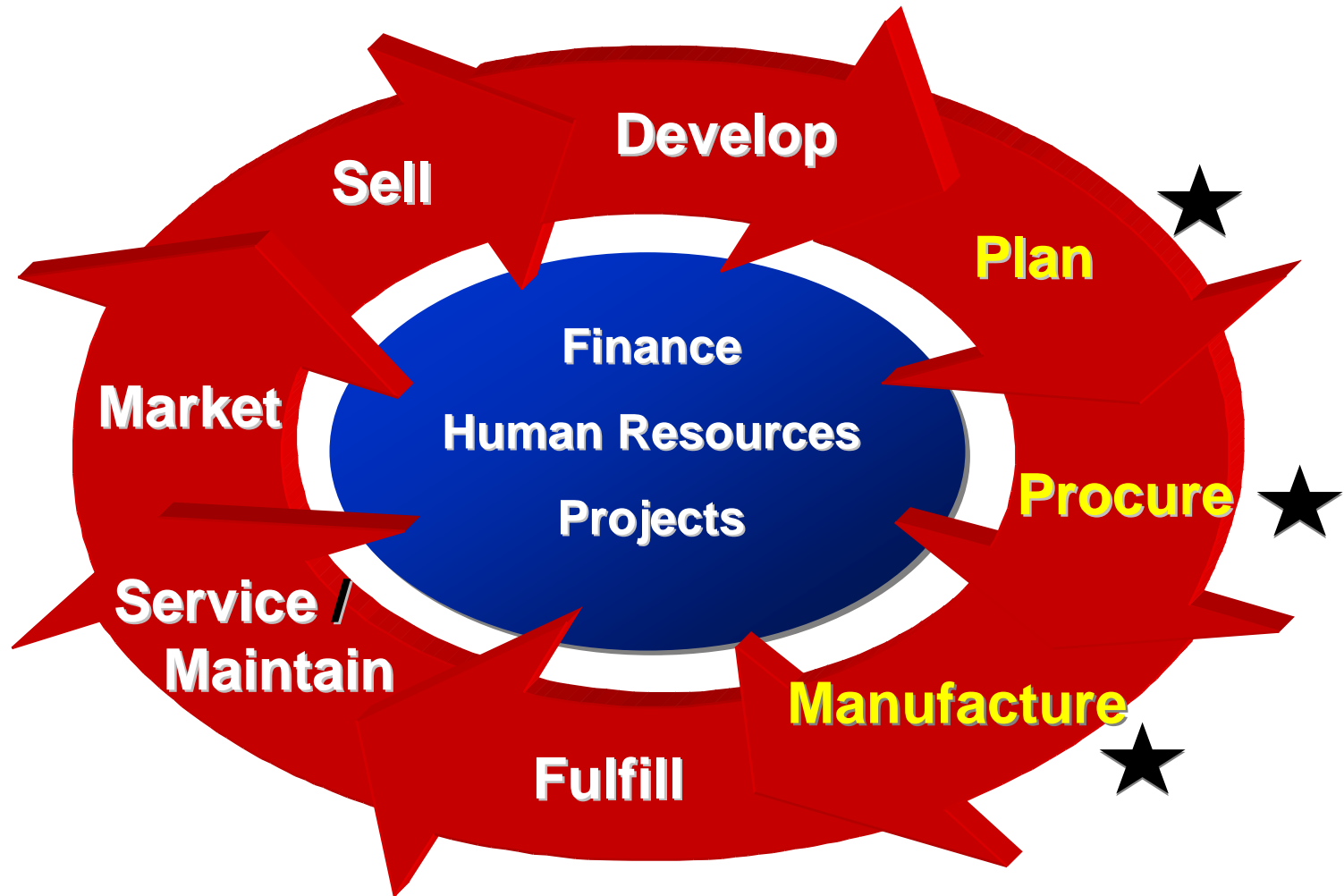
## Disconnects Included:

- **Silos of sub systems**
- **Inaccurate and latent data**
- **Lots of waste throughout**
- **No visibility into spike demand**
- **Erroneous planning options & prams**
- **Inaccurate ASL and Sourcing Rules**
- **Standard POs vs. Open PO with Releases**

# Mfg and SC Industry Challenges



# Integrated ERP Solution

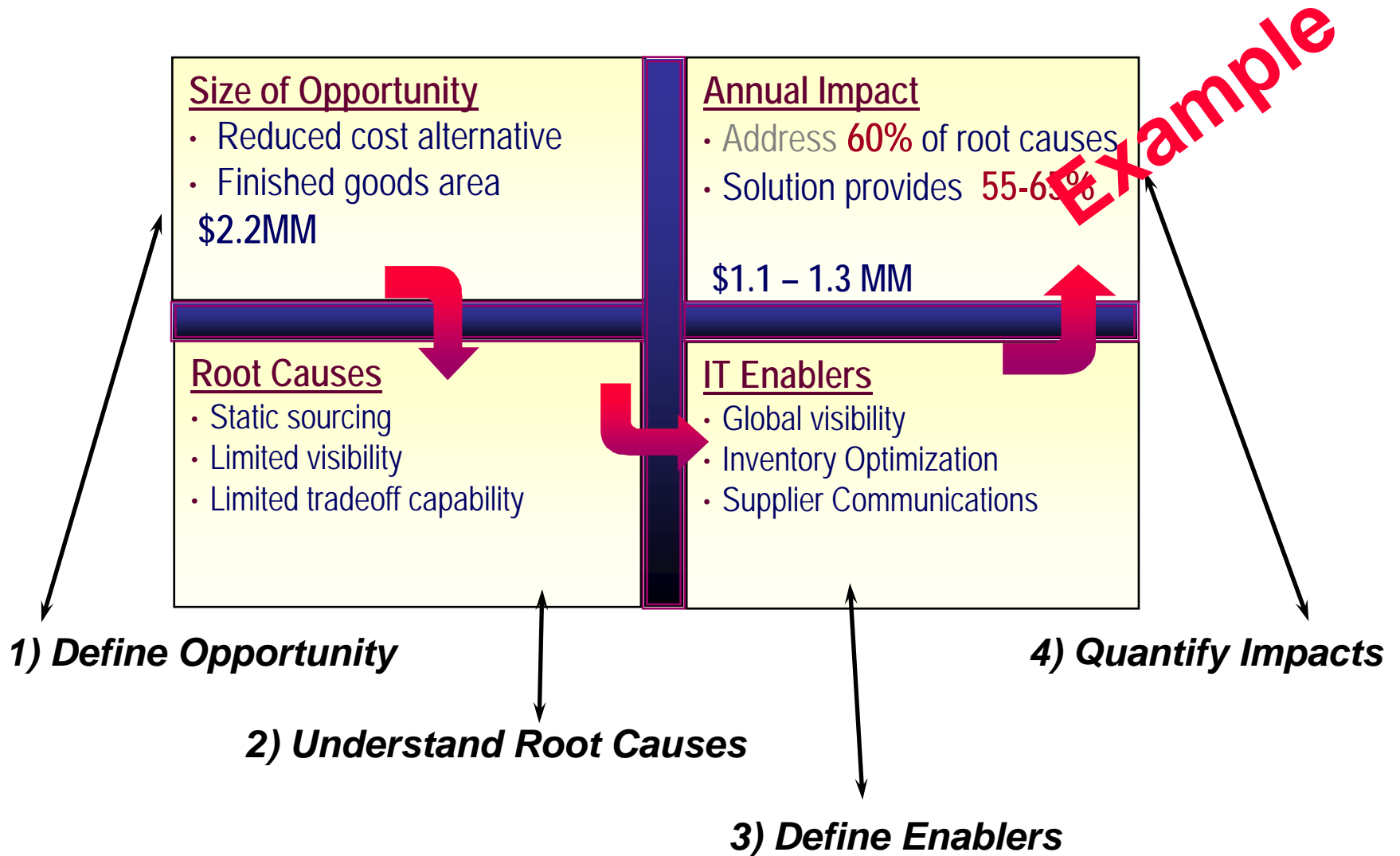


# Opportunity Assessment Outline



*Identify & quantify value to be delivered.  
Define a strategy to implement.*

# Identify High Impact Areas

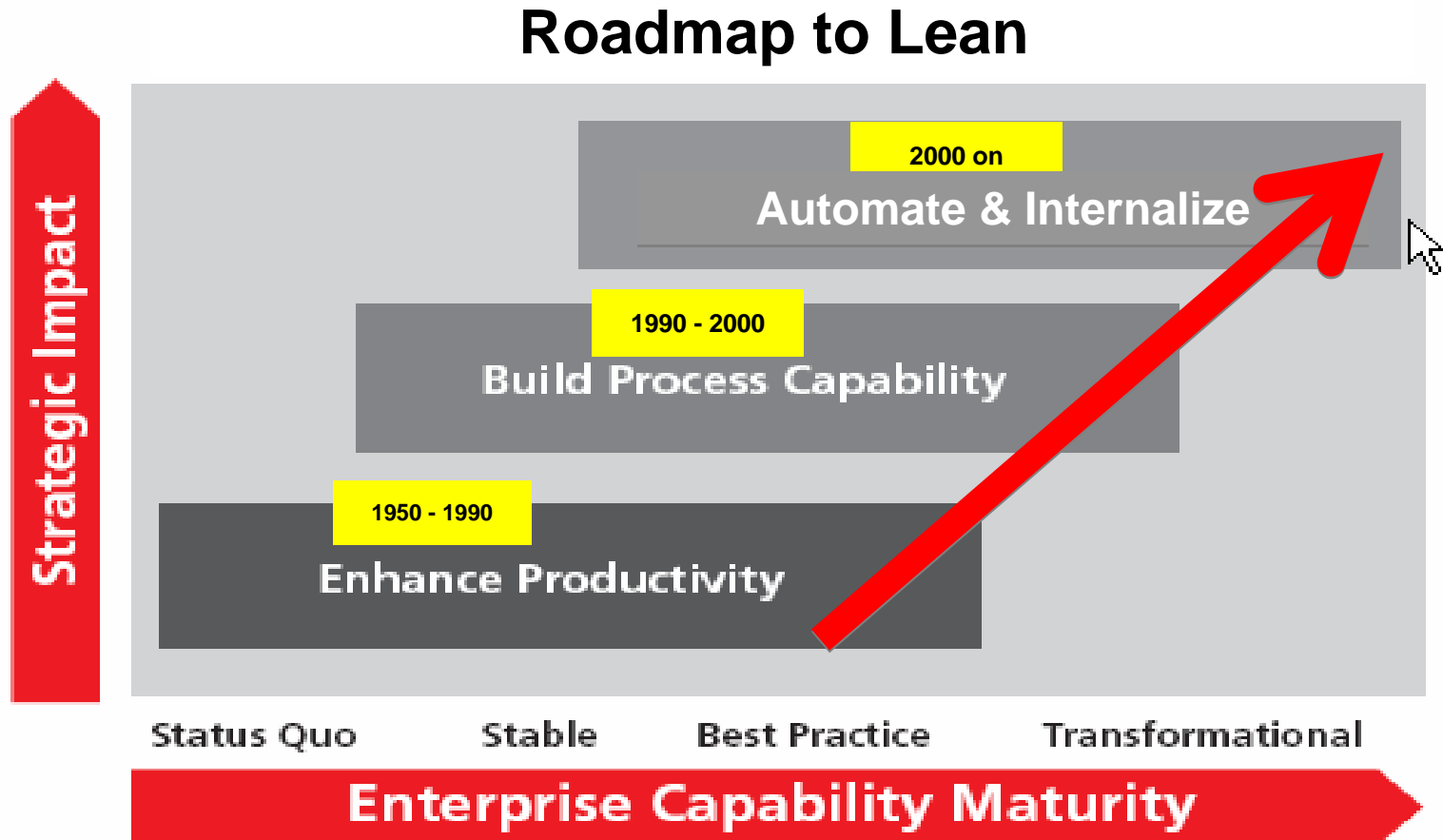


# Lean Concepts - SCM and MFG

## Key Concepts Include:

- **Eliminate wastes and obsolete inventory**
- **Demand pull production (flow) vs. push**
- **Understand what the customer values and wants, then provide exactly that**
- **Make, engineer, configure to order vs. make to stock**
- **Continue to improve processes, clean data, and train employees (kaizen)**
- **Keep it simple!**

# Progress Towards Lean



# Lean Enterprise!

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**Lean concepts have been around since the 1950's, however only recently ERP is used to plan and respond to demand**

- **Extend lean to the broader enterprise**
- **Let customer orders drive production and Procurement activities, and increase responsiveness**
- **Analyze and manage all segments of total cycle times**
  - Pre processing
  - Processing Fixed
  - Processing Variable
  - Post Processing
  - Logistics
  - Accounting



# Potential Benefits ...

## Potential Benefits Include:

- **Inventory Accuracy, > 98%**
- **Obsolete Inventory Reduction, 50%+**
- **Complete Orders Shipped On Time, >95%**
- **Supplier & Employee Satisfaction, >95%**
- **Total Cycle Time Reduction, 25%+**
- **Waste Reduction, 45%+**
- **Significant cost reduction**

# Visual Lean Vs. ERP?!

## Justifications for ERP Systems

- **Integration**
- **Multiple, overlapping corporate domains**
- **Real time accurate information**
- **Quick “what if” simulation analysis**
- **Geographic spread & growing SKUs**
- **Quick Kanban planning and processing**
- **One Plan**

# One Size Does Not Fit All!

- **Product Family**
- **SKUs**
- **Characteristics**
- **Demand Behavior**
- **Lead Times**
- **Inventories**
- **Suppliers and Sourcing Rules**
- **Replenishment Method**
  - Kanban
  - Consignment
  - MRP/ASCP
- **Laser Product Line**
- **1700 SKUs**
- **Mature Product?**
- **Various**
- **Up to 12 weeks from suppliers, <2 weeks to the customer**
- **400+ SKU in Stock**
- **ASL and Sourcing Rules Defined**
- **Various**

# “Big Bang” or Divide and Conquer?

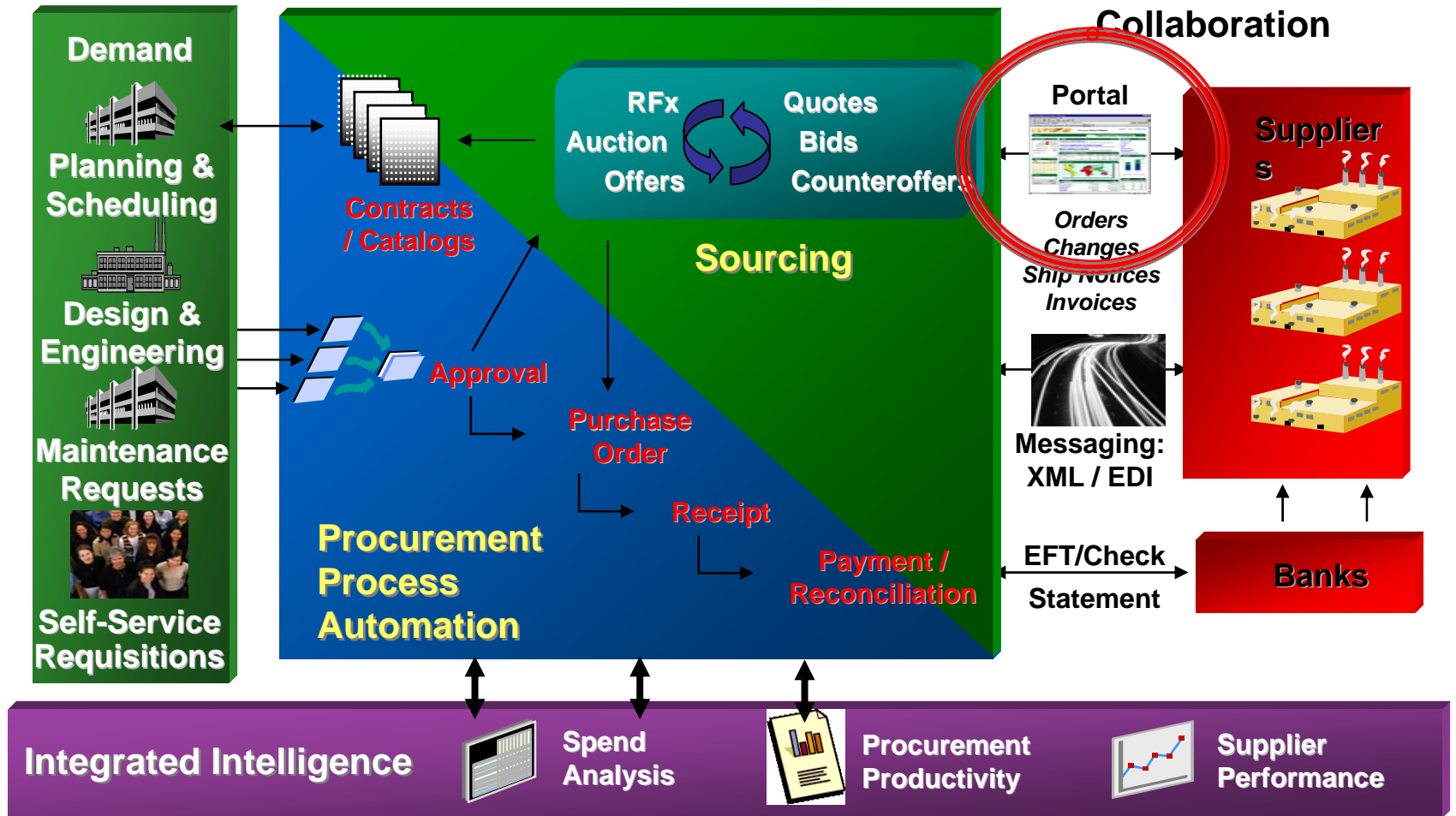
## Scope of Work:

- **One Product Line, 1,700 SKU, One Mfg Line, 50 Suppliers**
- **Kanban Planning and Execution**
- **Inventory Consignment and VMI**
- **iSupplier Portal and iProcurement Implementation**
- **Planning Process (options, input, output, and people)**
- **Daily MRP, with 3:00 pm net change with SO**
- **Implement Oracle MSCA in One US location**
- **Prototype ASCP and IO on a Dev/Test Instance**
- **Explore WMS, RFID, and AUTO ID Concepts, Tools and Value**

# Visual Project Progress Reporting

Tools	Action Plan	Fact Find	Gap Analysis	Biz REQ	RD050 (SPECS)	Data Prep	DEV/ Cust	Config Test	Set Params	Func Pilot	Config Prod	Train CM	Live BY	
Kanban	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	AUG 4	✖
i-Supplier	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	AUG 4	✖
Consign-ment	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	AUG 4	✖
Planning	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	AUG 4	✖
Flow	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	AUG 4	✖
Fore-casting	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	AUG 4	✖
MSCA	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	Sep 15	✖
ASCP	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	Sep 15	✖
INV OPT	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	Sep 15	✖
WMS	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	Sep 15	✖
iProc	✓	✓	✓	✓	✖	✖	✖	✖	✖	✖	✖	✖	Sep 15	✖

# Procurement Solution Overview



# Set Up and Verify Supplier Information

Oracle Applications - Vision

File Edit View Folder Tools Window Help

ORACLE

Navigator - Purchasing, Vision Operations (USA)

Functions Documents Processes

**Supply Base:Approved Supplier List**

**Define Approved Supplier List**

- Notifications Summary
- Supplier Item Catalog
- Item Search
- + Requisitions
- + Purchase Orders
- AutoCreate
- + Receiving
- + RFQ's and Quotations
- Supply Base
  - Suppliers
  - Supplier Merge
  - Supplier Lists
  - Approved Supplier List**
  - Summary Approved Supplier
  - Supplier Statuses
  - Sourcing Rules
  - Assign Sourcing Rules
  - + Supplier User Management
  - + Supplier Management
  - + Management
  - + Items
  - + Accounting

Top Ten List

1. Requisitions
2. Requisition Summary
3. AutoCreate Documents
4. Purchase Orders
5. Purchase Order Summary
6. Releases
7. Change Organization - MRP

Open

start | Inbox - Microsoft Ou... | 3 Internet Explorer | Zensar Files | Microsoft PowerPoi... | 11:56 AM

# Communication with Suppliers

## Purchasing

- Enter PO acknowledgements and changes
- View orders, agreements, and releases



## Outside Processing

- Enter quality plans for shipments
- View outside processing orders

## Receiving

- Enter advanced shipment information
- View open delivery schedules

## Invoices & Payments

- Enter billing information
- View invoices sent and payment received

## Subcontractor Mgmt

- Enter capacity updates
- View on-hand inventory
- Review quality information



Search

- PO Number
- Shipment Number
- Invoices
- Payments

[Personalize Home Page Right Column](#)

**Notifications**

[Personalize Notifications Worklist Function](#)

Subject	Date
<a href="#">Expense W17643 (1,210.00 USD)</a>	13-Jun-2006 17:12:51
<a href="#">Expense W17686 (540.00 USD)</a>	13-Jun-2006 17:12:51
<a href="#">T14_LOOK_MSG3</a>	13-Jun-2006 11:58:12
<a href="#">T07_MESSAGE2</a>	13-Jun-2006 11:57:27
<a href="#">Quote 60 has been timed out</a>	06-Jun-2006 13:30:14

[Personalize Notification Worklist Table](#)

**Orders At A Glance**

[Personalize Orders List Region](#)

PO Number	Description	Order Date
<a href="#">4641</a>		26-May-2006 17:34:10
<a href="#">4612</a>		27-Apr-2006 14:51:10
<a href="#">4572</a>		08-Mar-2006 10:04:41
<a href="#">4558</a>		06-Mar-2006 17:51:08
<a href="#">4554</a>		03-Mar-2006 17:41:32

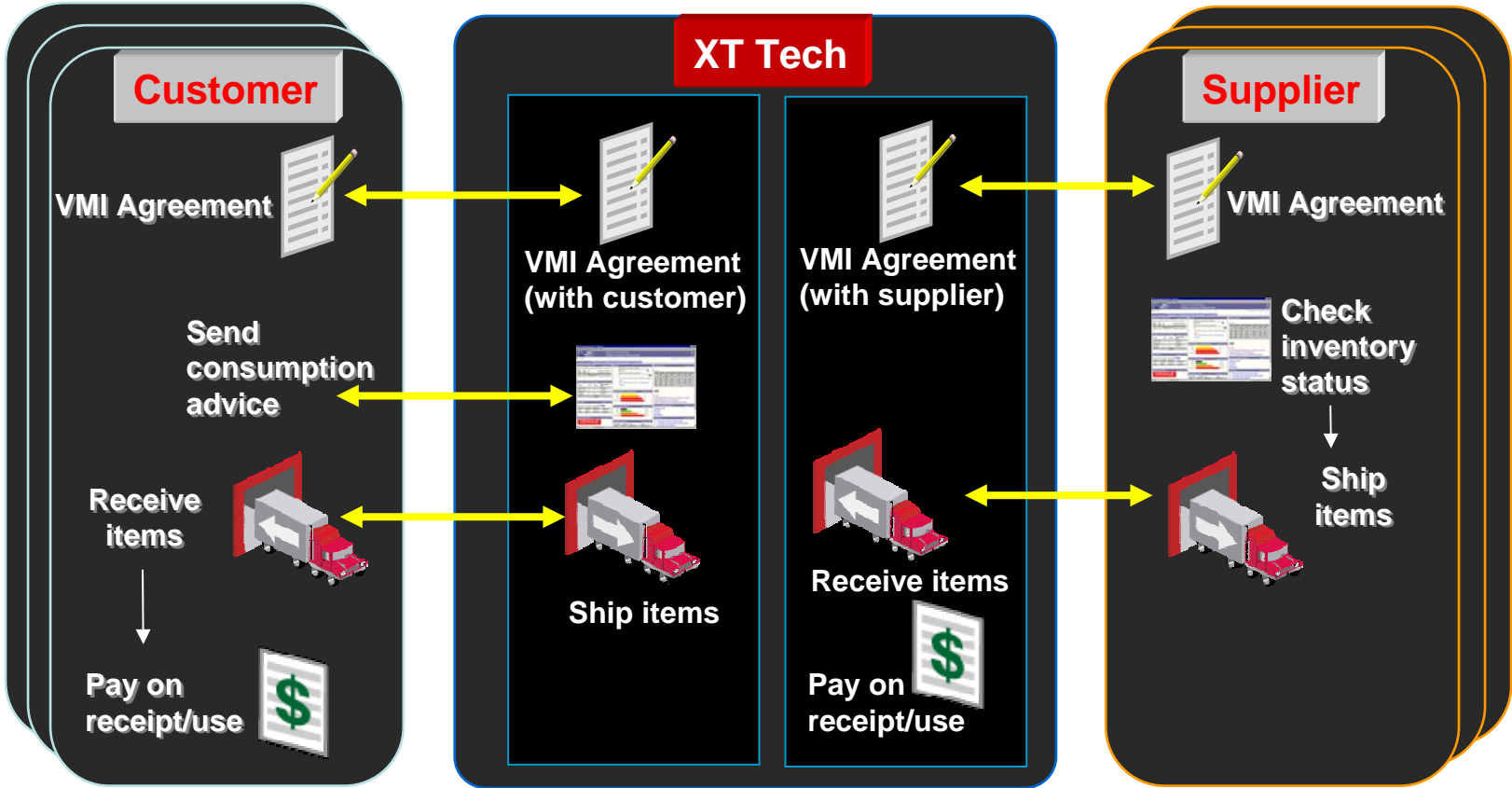
[Personalize Home Page Orders](#)

[Personalize Home Page Right Column](#)

- Planning**
  - [Forecast Schedules](#)
  - [VMI](#)
- Orders**
  - [Agreements](#)
  - [Purchase Orders](#)
  - [Purchase History](#)
- Shipments**
  - [Delivery Schedules](#)
  - [Overdue Receipts](#)
  - [Advance Shipment Notices](#)
- Receipts**
  - [Receipts](#)
  - [Returns](#)
  - [On-Time Performance](#)
- Invoices**
  - [Invoices](#)
- Payments**
  - [Payments](#)

# Inventory Responsibility?

## Automate Inventory Replenishment with Suppliers

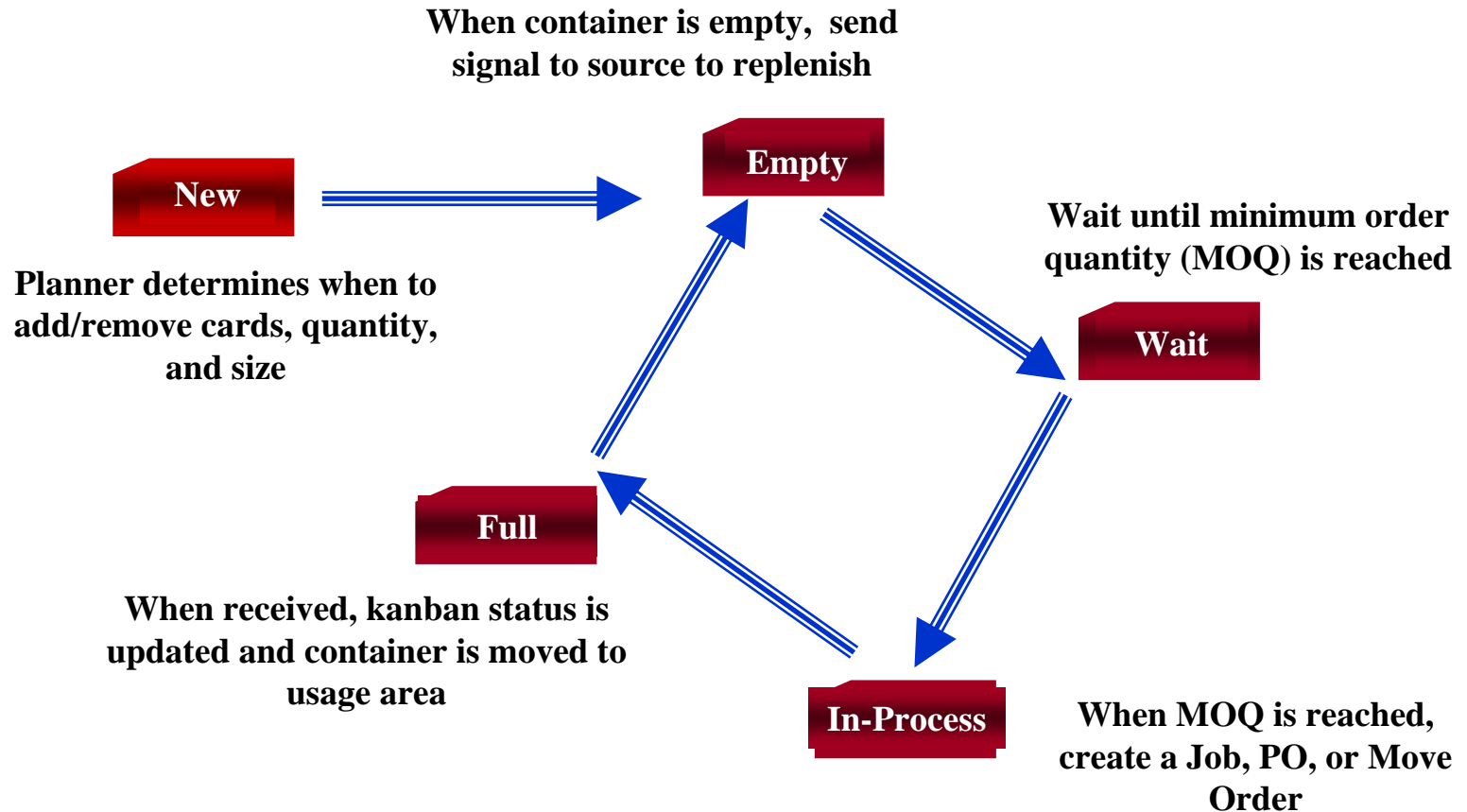


# Kanban Planning and Execution

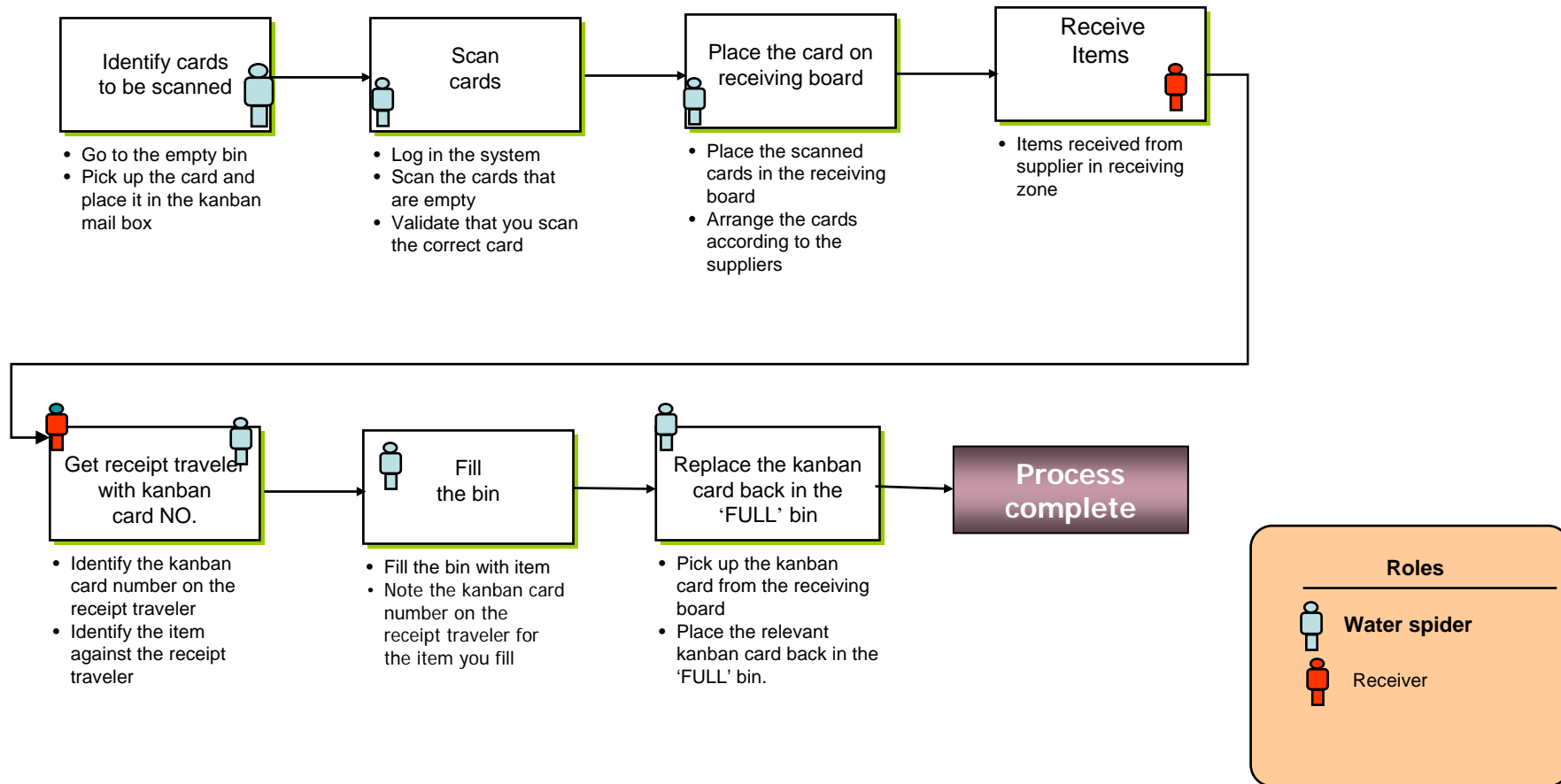
## Process improvements include:

- **Set up an item as kanban**
- **Set up the pull sequences of the item**
- **Generate and Print Kanban Cards (standard or custom)**
- **Replenish (signaling “Empty”) a kanban card**
- **Import requisition and create a release**
- **Retrieve ASN from the receiving open interface, and change the status to ‘In-Transit’**
- **Update the plan details to production**
- **Manage spikes in demand**

# Replenishment Flow for Kanban Cards



# Kanban Process Details



# BOM and Engineering Data

## Improvements include:

- **BOMs had not been updated ever since first data conversion!**
- **Data Quality Team was established to work on BOM accuracy**
- **An intensive cycle count effort began to address inventory accuracy issues**
- **Exploring modularizing common components**

# Mobile Supply Chain Apps (MSCA)

**Out-of-the-Box: Complete and Integrated**



## **Manufacturing**

**Moves, Issues, Returns,  
Scrap, Completions**

## **Receiving**

**Direct, Std, Inspect,  
Cross-Dock, Print**

## **Inventory**

**Misc. Transactions,  
Transfers, Physical,  
Cycle Counts**

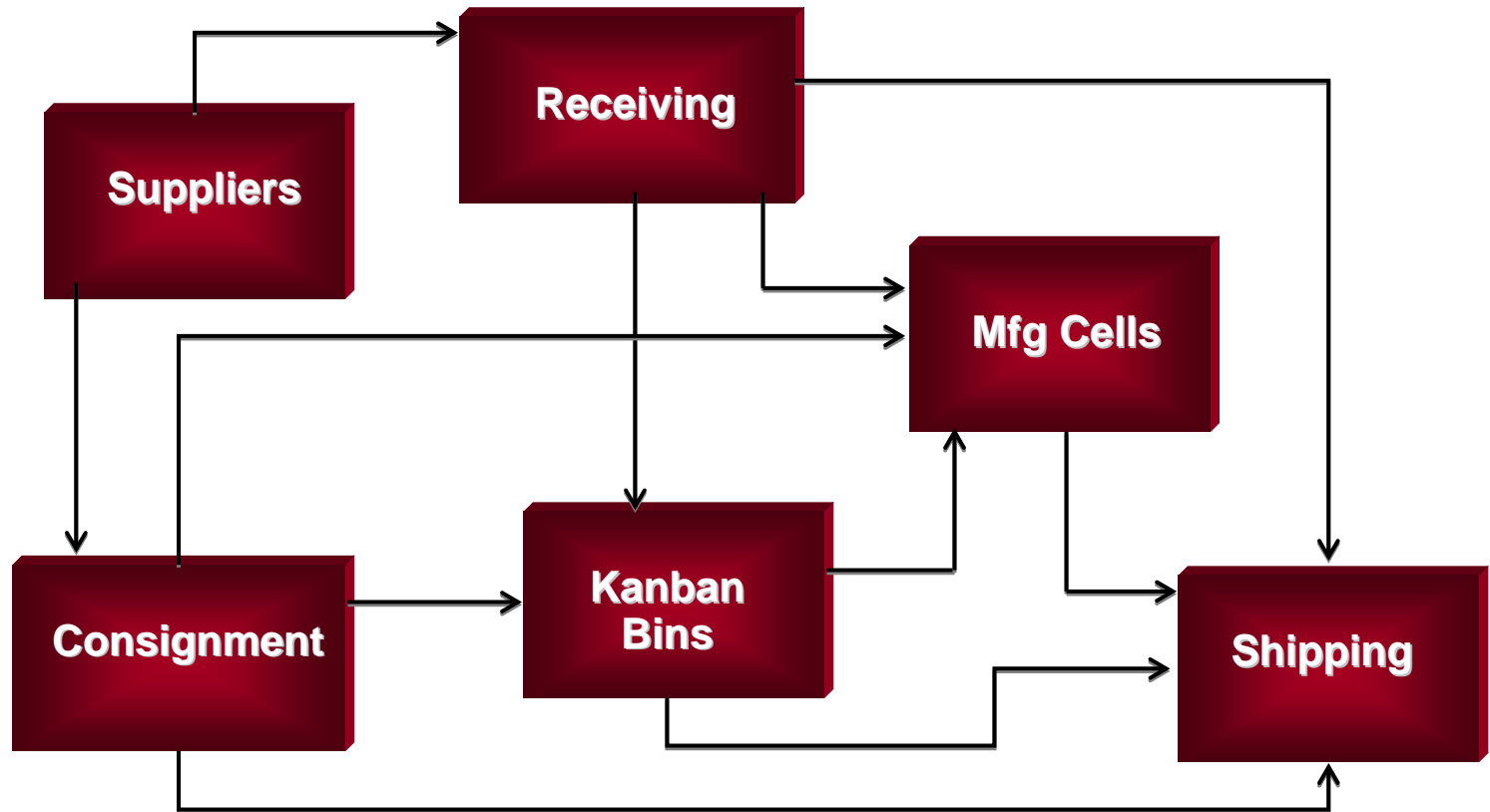
## **Shipping**

**Pick, Confirm, Ship,  
Confirm, Print**

**Receive, Replenish, Pick, Ship, WIP Moves, Cycle Counts,**

# Moves for MSCA - Record Accuracy!

High frequency and high impact moves





# Planning Options & Parameters - GIGO!

Oracle Applications - EDEV - Cloned as of 21-MAY-2006 from NPROD

File Edit View Folder Tools Window Help

Continuous Collections

Run this Request...

Name **Continuous Collections**

Parameters

Language **American English**

At these Times...

Run the Job **As Soon as Possible**

Upon Completion...

Save all Output Files

Layout

Notify

Print to **noprint**

Help (C)

Organization Security  
- Collaboration  
Publish Order Forecast

Parameters

Instance

Collection Group

Number of Workers **3**

Timeout (minutes) **180**

Snapshot Threshold (%) **40**

Analyze Staging Tables **Yes**

Approved Supplier Lists (Supplier Capacities) **Yes**

BOM/Routings/Resources **Yes**

Bill Of Resources **Yes**

Forecasts **Yes**

Items **Yes**

Master Demand Schedule (MDS) **Yes**

Master Prod. Schedule (MPS) **Yes**

On Hand **Yes**

Purchase Orders/Purchase Requisitions **Yes**

Sales Orders **Yes**

OK Cancel Clear Help

Open

start | Inbox - Microsoft ... | 2 Windows Expl... | Microsoft PowerP... | 3 Internet Explorer | 5:50 PM

# Planning Options and Parameters

Oracle Applications - EDEV - Cloned as of 21-MAY-2006 from NPROD

File Edit View Folder Tools Window Help

Supply Chain Plan Names (NPR:WD)

Production  
ATP | Notifications

Name	Description	Plan Type	Inactive Date
test			

Plan Options (NPR:WD)

Plan  Plan Type **Manufacturing Plan**

Main Aggregation Organizations Constraints Optimization Decision Rules

Planned Items **All planned items** Assignment Set

Material Scheduling Method **Operation Start Date** Demand Priority Rule

End Item Substitution Set  Overwrite **All**

Schedule By **Schedule Ship Date** Demand Class

Demand Time Fence Control  Append Planned Orders

Planning Time Fence Control  Move Jobs to PIP

Display Key Performance Indicators  Lgt for Lot

Include Critical Components

**Forecast Allocation and Consumption**

Do Not Spread Forecast  Spread Forecast Evenly

Consume by Forecast Bucket  Explode Forecast

Backward Days  Forward Days

Enable Pegging

Peg Supplies by Demand Priority

Reservation Level **None**

Hard Pegging Level **None**

Load T  
Purge I  
- Legacy Sy  
Collect  
Collect  
Purge C  
Purge I  
- Sourcing

# Improvements Summary

## Process improvements include:

- **Items Grouping based on Replenishment Method**
- **Forecasting and Demand Planning**
- **Demand Spike Management**
- **Improved supplier communications**
- **Mobile Receiving, Moves, and Shipments**
- **Sourcing Rules, Lead Times and Safety Stock**
- **ASL and Supplier Information - iProcurement**
- **New product introductions process**
- **Planner WB, and Open PO with Releases**

# Solution Benefits

## Solution benefits include improved:

- ✓ **Inventory Position (target = \$3/\$17 million)**
- ✓ **Customer, Employee and Supplier Satisfaction**
- ✓ **Planning Cycle Time (weekly to daily)**
- ✓ **Inventory Record Accuracy (target >95%)**
- ✓ **Shipping Accuracy (target >95%)**
- ✓ **Kanban Planning Cycle (from weeks to hours)**
- ✓ **Pricing Accuracy (no loss of revenue)**

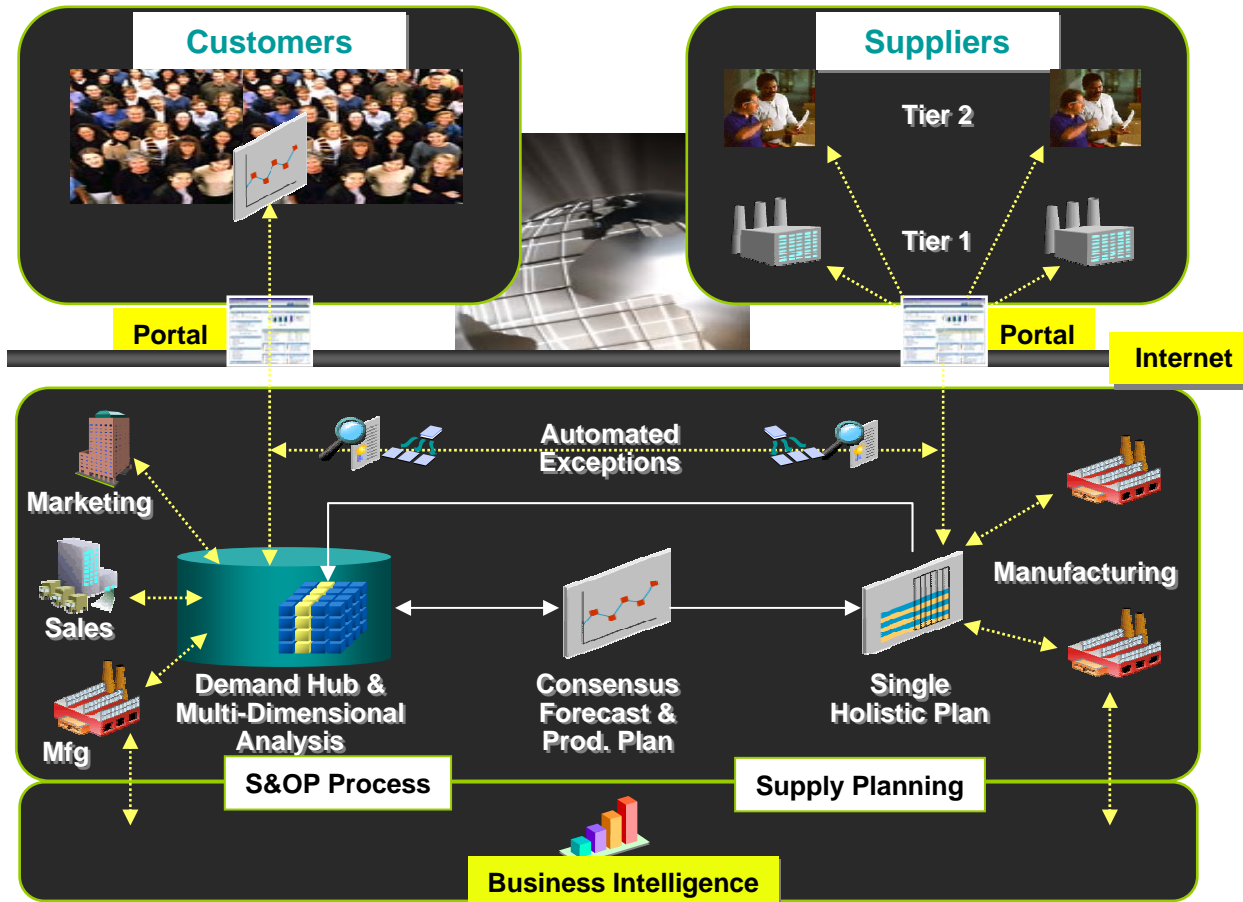
# Agile, Aligned, and Adaptive SC NW

- **Communicates Real Time With Customers**
  - About Last Minute Demand Changes?
  - About Delivery Capability (ATP, GOP, CTD)?
  - About Value and Service
- **Communicates Real Time With Employees**
  - About When, What and How Much To Replenish?
  - Purchase or Make, and Location?
  - About resources and Material, right place, right time!
- **Communicates Real Time With Suppliers**
  - About True Demand, Time Phased, and Expectations
  - About Inventories and Costs of Excess
  - About Quality and Performance

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# Real Time Competitive Planning

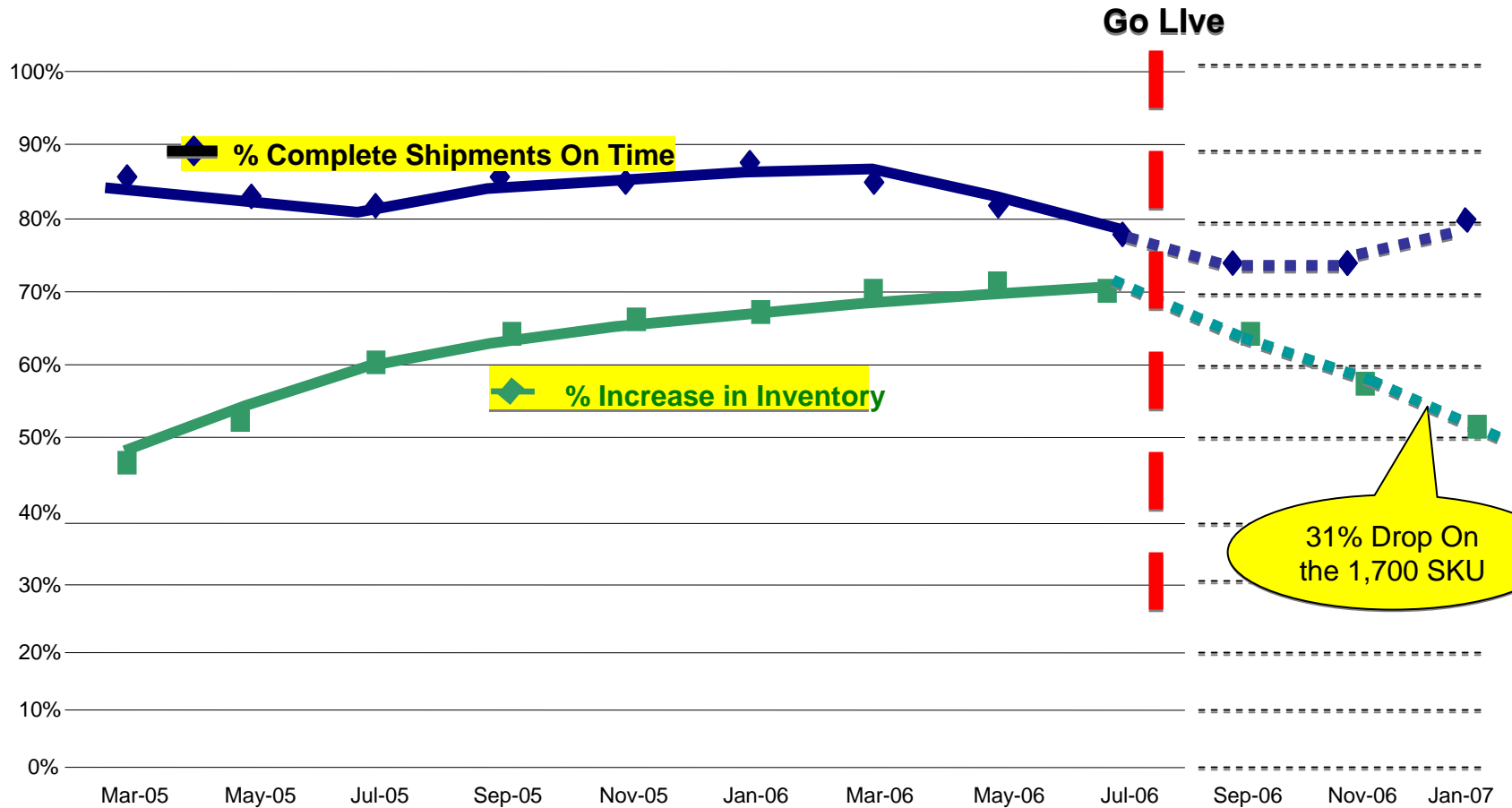
## Zero Latency and Real-Time Collaboration



- Enable closed loop collaborative planning across the value chain
- Complete supply chain visibility
- Proactive response
- Information not inventory

*Responsive Supply Chain Built on INFORMATION*

# Customer Service vs. Inventory



31% Drop On the 1,700 SKU

# Conclusions ...

## To implement Lean Enterprise:

- Enforce Lean principles as the foundation
- Accurately and timely capture transaction data
- Introduce ERP as an enabler tool to provide integrated information wisely
- Eliminate non-value-adding activities, and
- Streamline core business processes

Keep in mind -

**users must understand and**  
**guide the processes, and**  
**maintain the data!**



# Next Steps ...

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- **Team from Planning, Finance, Mfg and IT are rolling out the solution to all Product Lines and Locations**
- **i-Supplier was limited to 50 (80%) suppliers**
- **Planning to implement WMS next**
- **Other consideration**
  - Advanced Supply Chain Planning
  - Inventory Optimization

# References

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Q & A

**Thank you!**