Global Supply Chain Systems
UCSC Management of Technology Course
January 29, 2009 by Kai Hypko - Plantronics
Agenda Items

• Who Am I?
• Plantronics
• Global Supply Chain Challenges
• Plantronics Supply Chain Challenges
• SCORE Project
• Project Methodology
• The Economy

• Time permitting: Value-Driven Replenishment
My Story

- German
- Came to US in 1988
- BS Degree in MIS & BUAD
- 17 years in Supply Chain
- Hi-Tech, OEM, Retail experience
- Joined Plantronics in Fall 2006
- Senior Director Supply Chain Systems

Professional Associations

- APICS, the Association for Operations Management
- Board of Directors of NorCal OAUG
- Aberdeen Research Advisory Council member
- Speak frequently at Supply Chain events such as CES, ESCA and Open World.

Personal Motto:

- “You get what you tolerate”
Plantronics Profile

- Founded by two pilots in 1961
- Over 40 years experience in voice
  - Mission Critical Applications
- A Worldwide Corporation
  - 6,500 employees
  - Offices in 20 countries
  - FY 2008 Revenue of $856M
  - Profit $68M
- Publicly traded on NYSE
  - PLT
- Family of brands
  - Plantronics®
  - Altec Lansing®
  - Clarity®
  - Volume Logic®
• Leading worldwide designer, manufacturer, marketer and seller of lightweight communications headsets, telephone headset systems, and accessories for the business and consumer markets under the Plantronics brand.

• Leading manufacturer and seller of high quality computer and home entertainment sound systems, docking audio products, and a line of headsets and headphones for personal digital media under our Altec Lansing brand.

• Manufacture and sell, under our Clarity brand, specialty telephone products, such as telephones for the hearing impaired, and other related products for people with special communication needs.

• Provide audio enhancement products to consumers, audio professionals and businesses under our Volume Logic brand.
# Competitive Business Environment

## Customers are demanding:
- Accurate and timely commitments
- Shorter lead times
- Flexibility
- Product differentiation
- Dedicated inventory
- Visibility into the supply chain
- High quality
- Automation
- Lowest costs

## Increasing business risks of:
- Too much inventory
- Inventory in the wrong place
- Ordering the wrong inventory
- Missing delivery dates
- Losing orders
- Shipping the wrong products
- Increased expediting costs
- Losing customers
- Increased obsolescence

## Forcing businesses to better manage:

<table>
<thead>
<tr>
<th>Invenories</th>
<th>Supply/Demand</th>
<th>Stocking policies</th>
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<tbody>
<tr>
<td>Ability to promise</td>
<td>Forecasts</td>
<td>VMI/SMI processes</td>
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<td>Global suppliers</td>
<td>Cycle time</td>
<td>Replenishment</td>
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Today’s Market Reality

Orders: 20% filled imperfectly

Forecasts: only 65% accurate

Markdowns: on 30% of merchandise sold

Inventory: $1.2 trillion stockpiled in the supply chain

New Products: 75% fail to meet forecast expectations
Global Supply Chain Observations

- Supply chain management (SCM) efforts deliver the greatest results when SCM is part of an overall business strategy – not a stand alone effort.

- SCM is most likely to under deliver when there is poor connection between functions across a total business – often noted by poor supply chain visibility and lack of best practice sharing internally.

Source: Computer Sciences Corporation (CSC) and Supply Chain Management Review (SCMR) 2006 Survey
Global Supply Chain Observations

• Despite potential economies from global supply chain efforts, most companies optimize locally.

• In spite of the rhetoric around the importance of customers, few firms are collaborating closely with key customers.

• Companies continue to install software before rethinking their underlying processes and expect root cause problems to be eliminated.

Source: Computer Sciences Corporation (CSC) and Supply Chain Management Review (SCMR) 2006 Survey
World Class Supply Chain

• World Class Supply Chain Companies

:: collaborate effectively internally to optimize processing

:: work closely with key suppliers and customers

:: effectively apply technology as an enabler

Source: Computer Sciences Corporation (CSC) and Supply Chain Management Review (SCMR) 2006 Survey
Recent Key Changes at PLT

- Acquisition of Altec Lansing
- Entering of Consumer Retail Market
- New factory in China
- 4 additional Distribution Centers
Current Plantronics Challenges

- Customer service issues
- Constant reschedules
- Too much of the wrong inventory
- Manual disconnected planning processes (Excel)
- Too much obsolete inventory
- No formal S&OP Process
- Disparate Planning Systems

- Multiple source systems
- Competitive issues
- Inflexible planning tools
- Fragmented planning data
- Poor forecasting capability
- Global supply chain requirements
- Changing business conditions
PLT Supply Chain

Flow of Goods
- Manufacturing
- Manufacturing w/o Oracle
- Distribution
- Warehouse

Manufacturing Locations:
- Mexico
- United States
- Netherlands
- UK
- China
- UK
- Brazil
- Japan
- Australia

Distribution Locations:
- United States
- Netherlands
- China
- Japan
- Australia
PLT Supply Chain

• We manufacture 75% of our own products
• Buy raw material to forecast
• Assemble to min-max settings
• Pack to order
• Fulfill orders through our DC’s
• Decentralized purchasing & planning
PLT Supply Chain Status

- Inventories have increased dramatically
- Customer OTD has dropped
- Supplier OTD is unknown
- Ability to make accurate commits has dropped
- Lead time has increased
- Forecast accuracy is low
- Lack of ability to analyze potential opportunities quickly
- Global environment; localized system utilization
SCORE Project

• Launched the SCORE Project –
  :: Supply Chain Optimization and Re-Engineering

• Establish a world-class Supply Chain by:
  :: Creating a global, integrated, collaborative system and processes which are scaleable, without legacy knowledge and added manpower

• Single Source of Truth
Project Objectives

• Improve Forecasting Process & Accuracy
• Increase Inventory Turns
• Reduce Excess & Obsolete (E&O) Inventory
• Provide More Accurate Ship Dates to Customers at point of Order Entry
• Enable a faster, more effective Sales & Operations Planning process
• Accurate, Global Inventory Visibility
• Issue correct PO prices and receive acknowledgements and commits from suppliers
• Automate Manual Transactions
“Supply Chain Superiority is not achieved with a single project, but is an evolution of relentless focus and continuous improvement”

Author unknown
Overall PLT Project Plan 2007

Jan-07
- Demand Forecasting & Demand Management (Demantra)
- Supplier Collaboration (i-Supplier)
- Trade Management & POS
- Advanced Planning
- Data Clean-up
- Supply Chain "Quick Wins"

Jan-08
- S&OP (Demantra)
- Supplier Collaboration (Consignment/VMI)
- Inv Optimization (Proof of Concept)
- Trade Management & POS
- Advanced Planning
- Data Clean-up
- Supply Chain "Quick Wins"

Jan-09
- Promotions Management (Demantra)
- Global Order Promising (GOP)
- Promotion Optimization (Demantra)
- Inv Optimization (Proof of Concept)
- Trade Management & POS
- Advanced Planning (Constrained Plan)
- Data Clean-up

Jan-10
- Customer Collaboration (Portal / CMI)
- Warehouse Optimization & Mobile / Sensing Services (WHMS)
- Product Life Cycle Mgt
- Advanced Planning (Constrained Plan)
- Data Clean-up

Mar-10
- Strategic Network Optimization (SNO)
- Transportation Planning (G Log) (Review / Proof of concept)
- Production Scheduling
- Advanced Planning (Constrained Plan)
- Data Clean-up
World Class SCM

• Supply Chain transformation

Old Model: Push
(Linear Supply Chain)

- Supply-Centric
- Internally Focused
- Vertically Integrated
- Physical Asset Based
- Mass Momentum

New Model: Pull
(Integrated Networks)

- Demand-Driven
- Global
- Virtual Supply Chains
- Decision Based
- Lean Practices
Oracle Advanced Planning Model

- E-Business planning solution: zero latency, real-time collaboration

- Enable closed loop collaborative planning processes across your value chain
- Have complete supply chain visibility
- Make better decisions
- React immediately to disruptions in supply chain

Build a responsive Supply Chain on INFORMATION not inventory
Planned APS Systems Architecture

- Forecast
- Forecast
- Forecast
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- Forecast

Demantra

Internal Sourcing Rules / SO/PO

North America Mfg / Dist. Inv. Org

EMEA Mfg / Dist. Inv. Org

Asia Mfg Inv. Org

- New
  - Distrib Inv. Org
  - Distrib Inv. Org
  - Distrib Inv. Org

- ASL
- Quotations
- VMI/CVMI
- Supplier Portal

- Pricing
- Promise Date
- Quantity
- Forecast
- Receipts
- Invoices
- QOH
- Min/Max

Supplier
Supplier
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Supplier
Planned APS Systems Architecture

- Forecast
- Distrib. Inv. Org
- New
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2008 Projects

• Demantra S&OP
• Global Order Promising
• Inventory Optimization

• Create a Single Source of Truth

• Our Implementation Partner is Supply Chain Fusion
Example of a detailed Milestone plan
Key Methodologies & Assumptions

- Design Globally – Implement Locally
- 80/20 rule; Implement quickly, evolve quickly
- No Customizations – Work within the software
- Software based re-engineering
- Get to decisions quickly; avoid decision paralysis
- PLT Resources available per required allocation to drive and participate in project
- Project participants have real ownership to make decisions
- “Self Service” project information warehousing
- Team environment – Win as a team, Lose as a team
Keys to Success

- Super users are critical
- Core team involvement and support is paramount
- Executive support is critical
- Change Mgt, Communication & Training are always underestimated

- Process is the glue
- A bad process is even worse with the right technology.
Typical Project Members

- **Core Team Sponsor**
  - Director Supply & Demand

- **Project Leads**
  - Sr Manager Supply & Demand

- **Site Leads**
  - Director Materials, Mexico Plant
  - Planning Manager, AEG Division
  - Sr. Supply Chain Manager, EMEA
  - Director Sales, North America
  - Director Materials, Clarity Division

- **Super Users**
  - Planning Manager, EMEA
  - Supply/Demand Analyst, EMEA
  - Sales Manager
  - Sales Manager
  - Forecast Analyst, Clarity

- **Team Members**
  - Finance
  - Finance

- **IT Business Analyst**
  - Applications
  - Data Base (Technical)

- **Consulting Lead:**
  - Supply Chain Fusion

- **Oracle PMO Office**

**Keys:**
- Executive sponsorship
- Cross functional inputs
- Cross Geo participation
- Super Users are key drivers to success (advocates)
- Oracle PMO for ongoing support
Project Risks to Manage

- Resistance to Change (not embracing new business processes/System)
- “Jump Ship” mentality at the first sign of struggle
- Competing Departmental Interests (projects, etc.)
- Scope Creep
- Discipline to new processes
- Availability of resources
We must “weather the storm” and make it through the adoption phase.
Lessons Learned

• Selection of the right “Project Owner”
• Pick the right Partner
• Eight quarters are less than 2!
• Change Management
  :: Communicate, Communicate, Communicate
• Give yourself some buffer for the unexpected
• Make sure you have commitment, not just engagement
Overall PLT Project Plan July 2008

Jan-07
- Demantra Demand Planning
- Supplier Collaboration (i-Supplier)
- Advanced Planning & Scheduling
- Data Clean-up
- Supply Chain Business Intelligence (DBI)

Jan-08
- Demantra 7.2 upgrade
- Supplier Collaboration (Consignment/VMI)

Jan-09
- Demantra S&OP
- Global Order Promising, EMEA
- Inventory Optimization
- Advanced Planning, Phase II
- Altec iSupplier ASCP GOP

Jan-10
- Demantra Promotions Management & Optimization
- Global Order Promising, ROW
- Agile
- Transportation Planning (G Log)
- Customer Collaboration (Portal / CMI)
- Warehouse Optimization & Mobile / Sensing Services (WHMS)
- Strategic Network Optimization (SNO)
- Production Scheduling

Plantronics Secret
2009 SCORE Objectives

• Sharpen the saw
  :: Retraining
  :: Update documentation
  :: Continue roll outs
  :: Improve use training
  :: Enhancements
What’s Next?

Advanced Collaborative Demand Planning and Sensing
What would happen if we sell Milk?

- Things you can’t do:
  - Stockpile
  - Build ahead
  - Min-Max
  - Wait for the order
  - “Milk” to forecast

- Force a paradigm shift in supply & demand
**Current approach**

- **Forecast**
  - **PLT**
    - **Right Inventory?**
  - **Buy RM to Forecast**
    - **Build to min/max based on history**

- **Wait for Customer Order**
  - **US Retail Customer**
    - **Shipment**
    - **Sales Order**
  - **No visibility into Customer**
Current approach - detail

PLT

Forecast based on bookings
Buy RM to Forecast
Build FG to min/max based on history

Sequential, Non-Synchronized Events

Customer

Suppliers

Buy RM to Fcst

China

Build per SO/PO

Right Inventory?

Build to Min/Max and Sales Orders

Sales Order

Shipment

Time
Real Time Consumption Driven Model

Collaborate & synchronize activities with our customer
Real Time Consumption Driven Model

Collaborate & synchronize activities with our customer using Point of Sale (POS)
Forecast based on customer consumption
Buy RM to consumption Forecast
Build based on actual consumption

Customer Disti Center

Customer Disti Center

Customer Disti Center

Customer Disti Center

Customer Disti Center

Customer Disti Center

Customer Disti Center

China

Plamex

Stores

Stores

Stores

Stores

Stores

Stores

Stores

Stores

Stores

Stores

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Stores

Stores

Stores

Suppliers

Suppliers

Suppliers

Suppliers

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Suppliers

Suppliers
Replenishment Progression: A Journey

• “Rule of Thumb” Pull:
  :: Channel “pulls” as needed.
  :: Weeks of supply or simple statistics used to choose stock levels.
  :: Demand is an “order”

• CPFR:
  :: Collaborative forecast & replenishment.
  :: Channel continues to pull
  :: But retailer shares POS data to help vendor improve forecast

• VMI
  :: Vendor places reverse PO on behalf of channel
  :: Vendor owns inventory risk in return for share of efficiency gain.

• Value-Driven Replenishment
  :: Like VMI, but inventory risk depends on network profitability, leverage
  :: Vendor conducts demand sensing, shaping
  :: Network re-design to optimize inbound supply chain for flexibility
## Winning at the Store Shelf: Distinct Projects At Each Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>I (Reactionary)</th>
<th>II (Stabilize the Core)</th>
<th>III (Demand-Driven)</th>
<th>IV (Value-Driven)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner relationship</td>
<td>![Arrow 1]</td>
<td>![Arrow 2]</td>
<td>![Arrow 3]</td>
<td>![Arrow 4]</td>
</tr>
<tr>
<td>Organization</td>
<td>Functional silos; replenishment entirely short-term sales driven</td>
<td>Cross-functional involvement, but still order vs. profit driven</td>
<td>Joint demand response</td>
<td>Joint business planning, market outreach</td>
</tr>
<tr>
<td>Inventory Plan</td>
<td>Target WOS Based On EDI History + Orders</td>
<td>Tune Buffer Stock Based on Monthly Statistical Forecast + Svc. Level Goal</td>
<td>Track DC-level Sell-through + Co-Plan Promos</td>
<td>POS sensing + attribute forecast + Demand Shaping + Network Flex</td>
</tr>
<tr>
<td>Order Trigger</td>
<td>Channel places orders based on historic pull with a 5-10 day latency</td>
<td>Channel places PO based on warehouse withdrawal with a 2-5 day latency</td>
<td>Supplier sends reverse PO based on store DC behavior and promotions</td>
<td>Predictive demand shaping programs based on supply network capability</td>
</tr>
<tr>
<td>Culture</td>
<td>“Push” sell-in deals Pull</td>
<td>CPFR</td>
<td>VMI</td>
<td>VDR</td>
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</table>

### Target WOS Based On EDI History + Orders

- POS sensing + attribute forecast + Demand Shaping + Network Flex
- Predictive demand shaping programs based on supply network capability
- Joint business planning, market outreach
- Joint demand response
- Cross-functional involvement, but still order vs. profit driven
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### Demand Buffer Stock Based on Monthly Statistical Forecast + Svc. Level Goal

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### Track DC-level Sell-through + Co-Plan Promos

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### POS sensing + attribute forecast + Demand Shaping + Network Flex

- Predictive demand shaping programs based on supply network capability
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- Cross-functional involvement, but still order vs. profit driven
- Functional silos; replenishment entirely short-term sales driven
- POS sensing + attribute forecast + Demand Shaping + Network Flex
Major Changes

• Collect POS regularly (daily/weekly) at the store level
• Collect OH information from customer distribution centers daily
• Build FG based on consumption
• Use POS information to drive builds
• Either anticipate replenishment or auto replenish
Benefits

• Build to consumption, not history based min/max
• Carry little to no FG
• Higher fill rate
• Higher on-time delivery
• React to consumption changes in real time
• Less E&O
Conclusion

• Supply Chain Management is a very exciting profession
• Ever changing
• Essential to a company's success
• Everybody needs it
• Innovation & Leadership
• Those that do it best are among the most successful and profitable companies in the world

:: Apple, Nokia, Wal-Mart, Procter & Gamble, Toyota, Cisco, Samsung, Best Buy, Coca Cola, Nike, HP, IBM