

Our path to Demand Driven Supply Chain

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Software giant, has a Supply Chain? Why?

Microsoft's Hardware Journey



Microsoft Softcard for Apple II 1980



Microsoft Mouse 1983



Microsoft MacEnhancer 1985



Microsoft MACH 20 1988



Microsoft Keyboard 1994



Microsoft Sidewinder 1996



Microsoft Xbox

2001



Microsoft Xbox 360 2005

Microsoft Hardware story (courtesy <u>pcmag.com</u> and <u>pcworld.com</u>) Microsoft Confidential

Microsoft's Hardware Journey



Microsoft's Hardware Journey





MSC Functions and Numbers



Last Updated: February 2016

Microsoft Confidential

Changing Landscape

Earlier	(1) 2015		Pressures	Opportunities
One major event every year – The Holiday Season	Multiple events and markets	CO 159	OGS Growth YOY % to 33%	Build to Order
New product every 2-3 years	Multiple new products every year		solescence	
3-5 years average shelf life	Shelf life 1-2 years	Coping Mechanisms		
COGS as % of revenue: 20%	COGS as % of revenue: 35%	Allo	Allocate product and capacities based on forecast / statistics	

Manohar's Personal Story 2014



Lenovo Yoga















Design and Development 2015

Oct 2014 -> July 2015	Aug 18	Aug 26
Adhoc analysis of stock out impacts Possible solutions Excel simulation of TOC logic	30 min conversation with Shane Kolar, Sr Director, Planning on how TOC could offer a robust solution	1 st workshop with CTO, IT GM, Planning Team

Aug 28 – Sep 13	Sep 14-18	Sep – Dec	Dec 16
Analysis of current data 1 st version of simulator	Joint workshop with GRL, Illumati, Microsoft Planning and IT Teams on system design	System development and testing Simulation refinement	System Changes live in production with BTO, BTA logic

Implementation and Adoption 2016



Results

Highest ever Inventory Turns for Microsoft



TOC Based Supply Chain Solution Design



Simulation Model



Hybrid TOC Model

Demand is king, forecast is guide On Order RRLT Demand 70 Set on-hand + on-target quantity target Set initial 90 <mark>8</mark>5 Target Based on total demand within lead time 300 80 0 On hand 2 Replenish Place orders whenever PO for 75 product On-Hand + On-Order falls below target -75 units Adjust Could we have stocked out? Target Increase target 1200 Increase target if stock was in Red for a lead time duration (Too Much Red - TMR) b Do we have too much? 600 Reduce target if stock was in Green for a lead Reduce target time duration (Too Much Green - TMG) Forecast 1800 Target 1800 Is forecast from step 1 significantly different from TMR, TMG or current target? TMR 1200 Adjust to forecast Target 1200 Forecast 1500

TMR

1200

Special Situations









100% Subcontracting model

- Forecasting needed to continue procurement
- Priority communication challenges

Varying and long lead times

- Product life cycle 1 to 2 years
- Component lead time 3 to 4 months



Demand peaks 5 to 10 x normal run rates Frequent Demand peaks

Design and Development Cycle





Supply collaboration



Benefits

- Better traceability with automated waterfall reporting
- Discussion focused around exceptions
- High automated process
- Scalable to multi-tier
- Better visibility of consignments parts to CM as same process is being leveraged
- Color coding to denote priority

Ariba T2/T3 Supplier Orchestration



Microsoft Status: Ariba Supply Chain Collaboration

Status:

- Ariba Network is the backbone for Xbox and Surface line of products supply chain
- As of 3/17/17: 46 enabled suppliers out of which 35 transacting suppliers transmitting 118K+ of purchase orders worth \$3.5Bil+



Scorecard:

- Efficiency and Speed Gains:
 - Supplier Supportability process improvement: 90%+ (1-2hrs to ~5min)
 - Planner's Efficiency improvement: 95%+ (order follow-ups/expediting reduced from 1-2 days to 1-2 hours)
- Supplier On-Boarding time improvement: 75% (on-boarding time reduced from 3-4 months to 3-4 weeks)

Microsoft Planning Team quote: "Today we successfully received automated (via Ariba) supportability from the supplier which took ~5 mins to approve, updated PREQS and create PO's (vs. 1-2 hours leveraging the previous process)"



Microsoft – E2E Supply Chain Process Overview Level 1



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Future Architecture - IBP

Current: Manual, Subjective & Siloed

Demand Planning Supply Planning & External Data Sell thru & Collaboration CM Sell thru & **Promotion Planning Promotion Planning** CM PoS Demand Fier2..n Planning 墨 Tool Tier2..n Tier2..n 맘 RAD SAP òòò Tier2...n Consensus S&OP Demand Supply PLM Forecast Decisions Plan Plan Integrated Business Planning S&OP Decisions Independent Planning ××× F 25 **Financial Forecast** PoS PLM **Financial Forecast** Master Data Historical Data

After: Integrated, Objective & E2E

Path forward

Simulation model to test rules at each implementation



Expand solution to component purchases



Expand solution to exchange and B-SKUs



Systemically communicate Build Priority with Suppliers



Work with SAP to include TSL priorities into Response and Supply Modules



Demand Driven MRP implementation in SAP



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