Convergence of Technology

Supply chain meets the world wide web!

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What will we chat about for the next 90 minutes?

- Influences that drove Honeywell to embrace the internet
- Our B2B Supply chain architecture model and solution overview
- "A day in the life of our web enabled supply chain"
- Implementation strategies, critical eBiz success factors, and lessons learned
- Open the floor for a question and answer session

The burning platform: Why did we jump into eBiz?

Conventional, non-integrated supply chains **fail to satisfy customer expectations:**

- Respond too slowly to meet dynamic customer requirements
- Are difficult, if not impossible, to optimize for specific customer and supplier relationship requirements
- Drive significant internal and hidden costs for all trading partners
- Rely on expensive inventory instead of information to provide agility
- Sub-optimize individual performance at the expense of the supply chain
- Sequentially pass data instead of collaboratively share information
- Hamper our ability to rapidly reposition our businesses to leverage new market opportunities

The evolutionary thought process to guide our journey...

Competition is global and supply chain versus supply chain, no longer supplier to supplier

Only fully integrated supply chains can compete against one another

No integration is possible in the absence of infrastructure!

The internet and collaborative web based tools, successfully integrated with our internal systems and business processes, provide the enabling infrastructure

We **will** use eBiz as our competitive weapon to allow our integrated supply chains to replace inventory with information and collapse response times!

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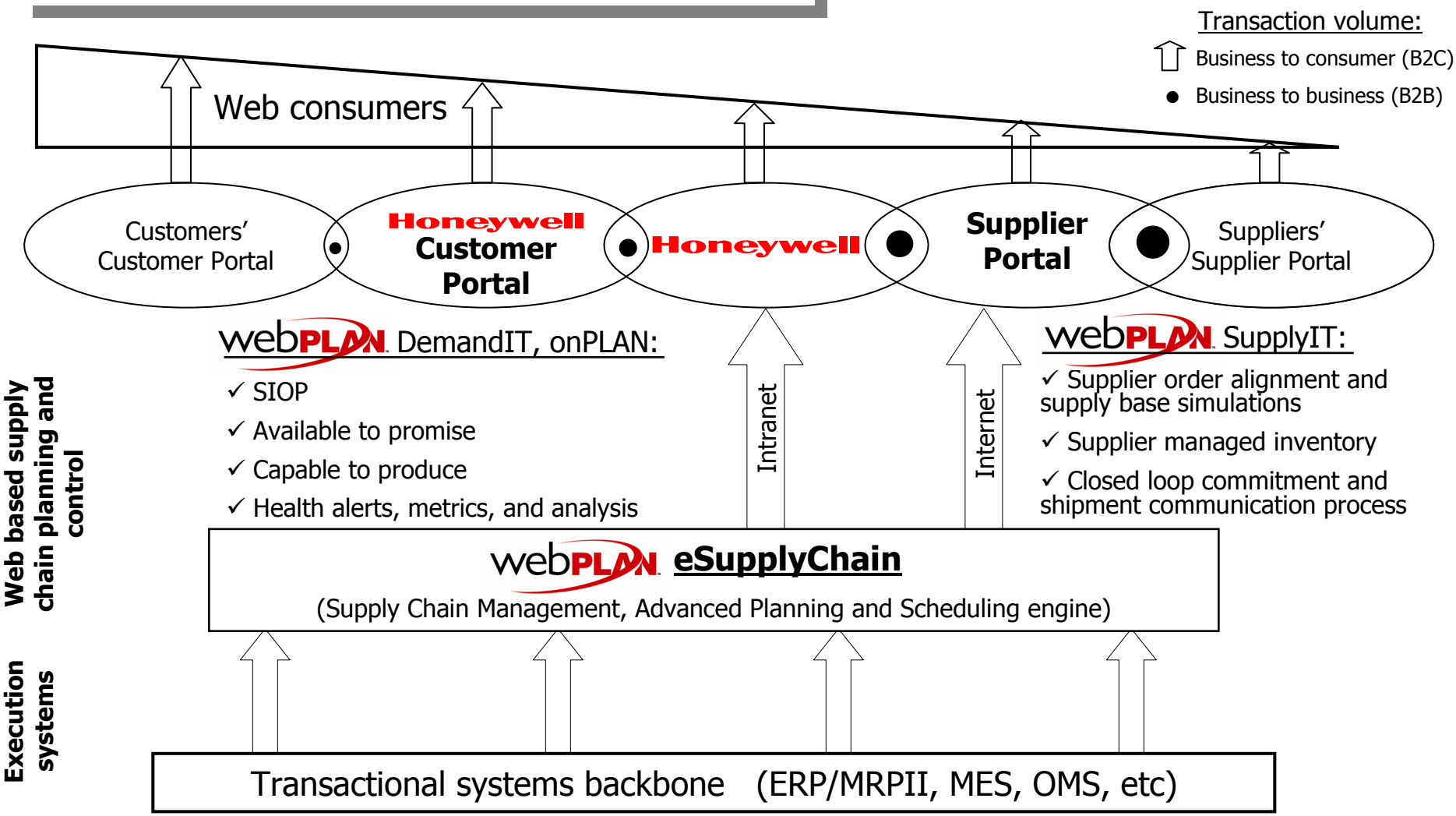
B2B Systems architecture model



DemandIT (SIOP): Inventory out, information in!

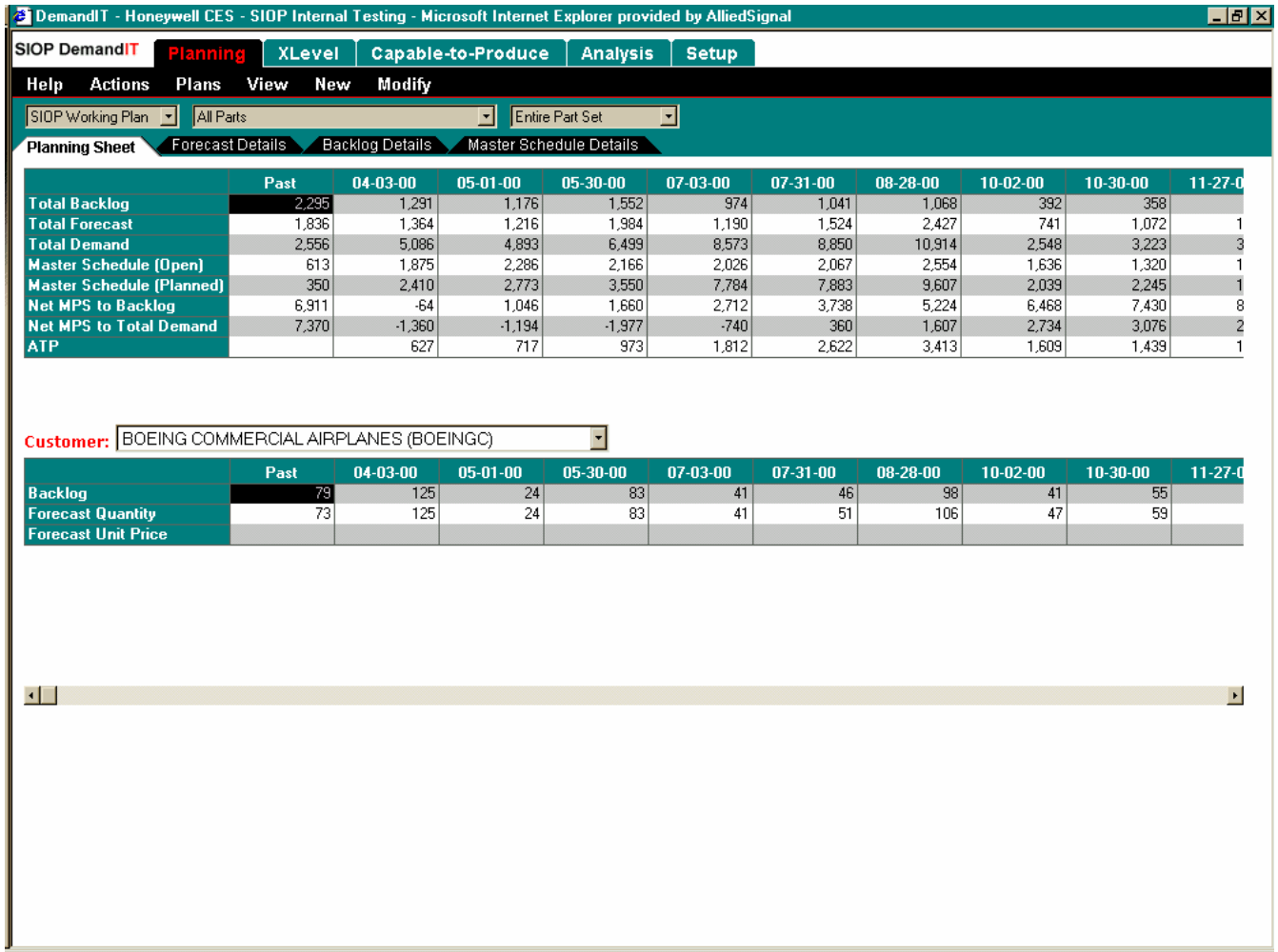
Demand management symptoms:

- Proliferation of non-working inventory as an expensive buffer for demand uncertainty
- Excessive SIOP process cycle time that does not allow the supply chain to quickly respond
- "Dueling data at the SIOP corral" from competing data sources that degrade the process
- Difficult to synchronize and integrate efforts between the demand and supply teams resulting in plan disconnects
- Difficult to analyze and predict our ability to execute a proposed plan before committing our valuable resources

webPLAN enabled solutions:

- Customer centric demand data provide statistical inputs that determine "flex" and "hedge" levels to reduce finished goods
- Rules based, daily net change at the MPS level allows the demand and supply teams to rapidly make course corrections that arrest inventory growth
- Automated, closed loop data management with our legacy systems provide a single, integrated data environment for both demand and supply teams
- Browser based tool that allows all demand planning stakeholders to collaborate in one integrated environment using consistent data
- Available to promise and capable to produce analysis predict material and capacity constraints based on the current or simulated plan

Sample SIOP DemandIT page: (Pilot mode)



DemandIT - Honeywell CES - SIOP Internal Testing - Microsoft Internet Explorer provided by AlliedSignal

SIOP DemandIT | Planning | XLevel | Capable-to-Produce | Analysis | Setup

Help | Actions | Plans | View | New | Modify

SIOP Working Plan | All Parts | Entire Part Set

Planning Sheet | Forecast Details | Backlog Details | Master Schedule Details

	Past	04-03-00	05-01-00	05-30-00	07-03-00	07-31-00	08-28-00	10-02-00	10-30-00	11-27-0
Total Backlog	2,295	1,291	1,176	1,552	974	1,041	1,068	392	358	
Total Forecast	1,836	1,364	1,216	1,984	1,190	1,524	2,427	741	1,072	1
Total Demand	2,556	5,086	4,893	6,499	8,573	8,850	10,914	2,548	3,223	3
Master Schedule (Open)	613	1,875	2,286	2,166	2,026	2,067	2,554	1,636	1,320	1
Master Schedule (Planned)	350	2,410	2,773	3,550	7,784	7,883	9,607	2,039	2,245	1
Net MPS to Backlog	6,911	-64	1,046	1,660	2,712	3,738	5,224	6,468	7,430	8
Net MPS to Total Demand	7,370	-1,360	-1,194	-1,977	-740	360	1,607	2,734	3,076	2
ATP		627	717	973	1,812	2,622	3,413	1,609	1,439	1

Customer: BOEING COMMERCIAL AIRPLANES (BOEINGC)

	Past	04-03-00	05-01-00	05-30-00	07-03-00	07-31-00	08-28-00	10-02-00	10-30-00	11-27-0
Backlog	79	125	24	83	41	46	98	41	55	
Forecast Quantity	73	125	24	83	41	51	106	47	59	
Forecast Unit Price										

SupplyIT: Next generation supplier collaboration

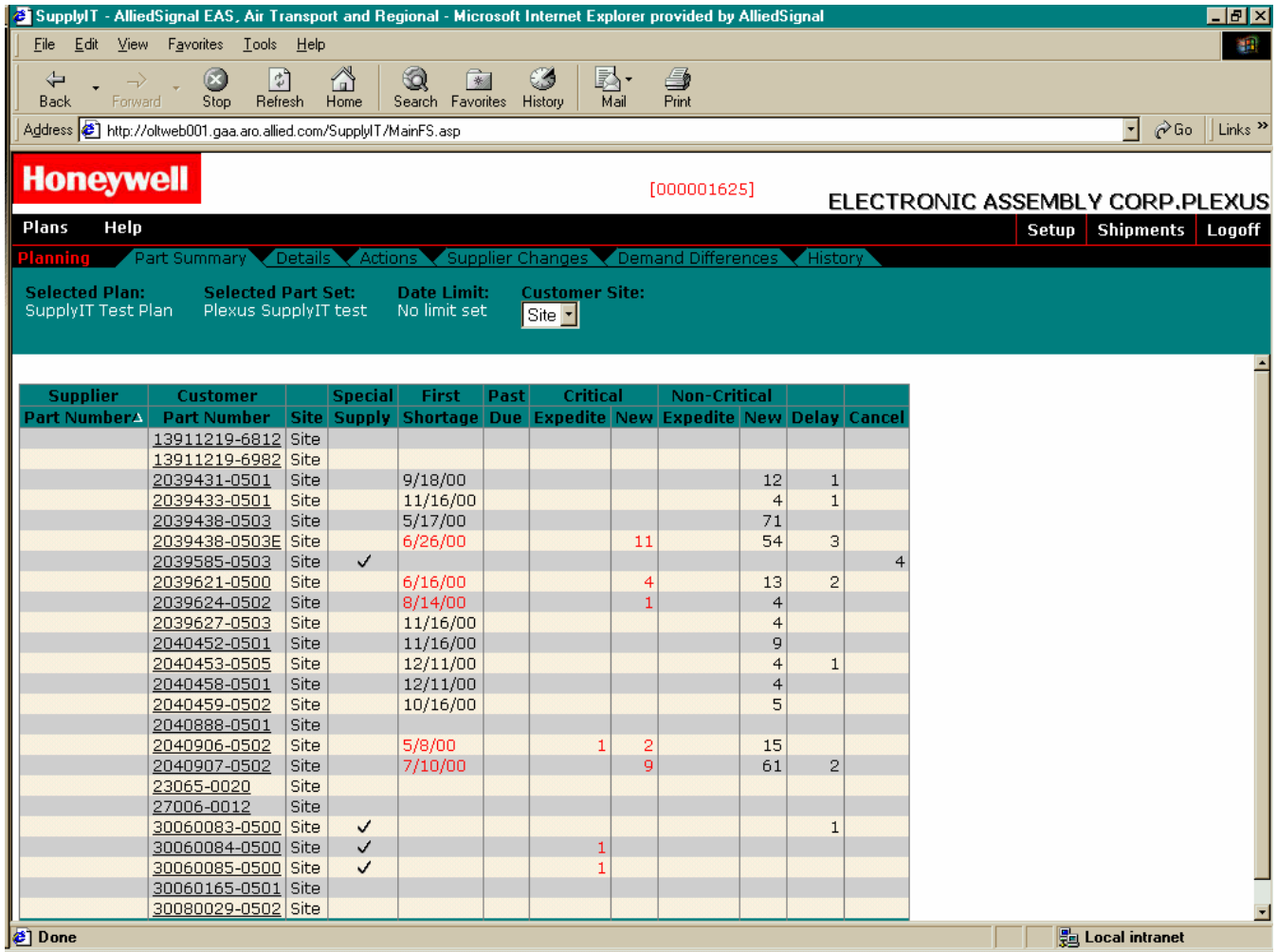
Supplier collaboration symptoms:

- MPS demand to MRP supply conversion process takes too long to communicate
- Informal and manual communication processes waste valuable resources and are usually open loop
- Minimal data exchanges, as opposed to information, diminish the relationship and are difficult to enhance, increase, or modify
- Conventional communication efforts, such as EDI, typically use the 20/80 rule and focus on transaction reduction
- Minimal support for supplier managed inventory strategies

webPLAN enabled solutions:

- "DemandIT" + "SupplyIT" provide full web based daily net change, even if the host ERP/MRPII system runs on a weekly regeneration
- Rules based email "alerts" automatically notify suppliers to respond; commitments are directly uploaded into our host system for exception analysis
- XML technology allows us to own all web content. Not restricted to standards or data elements only contained within host ERP/MRPII systems.
- XML promotes mass adoption with zero to minimal entry cost. Real time access to our planning environment through active server pages.
- Since XML allows us to own the content, we can tailor web experiences as a function of supplier relationships.

Sample SupplyIT page: (Pilot mode)



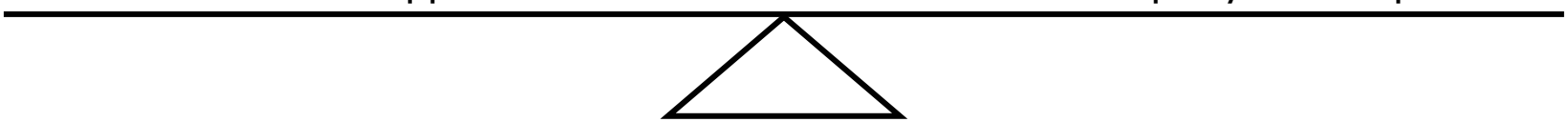
Supplier Part Number	Customer Part Number	Site	Special Supply	First Shortage	Past Due	Critical Expedite	Critical New	Non-Critical Expedite	Non-Critical New	Delay	Cancel
	13911219-6812	Site									
	13911219-6982	Site									
	2039431-0501	Site		9/18/00					12	1	
	2039433-0501	Site		11/16/00					4	1	
	2039438-0503	Site		5/17/00					71		
	2039438-0503E	Site		6/26/00			11		54	3	
	2039585-0503	Site	✓								4
	2039621-0500	Site		6/16/00			4		13	2	
	2039624-0502	Site		8/14/00			1		4		
	2039627-0503	Site		11/16/00					4		
	2040452-0501	Site		11/16/00					9		
	2040453-0505	Site		12/11/00					4	1	
	2040458-0501	Site		12/11/00					4		
	2040459-0502	Site		10/16/00					5		
	2040888-0501	Site									
	2040906-0502	Site		5/8/00		1	2		15		
	2040907-0502	Site		7/10/00			9		61	2	
	23065-0020	Site									
	27006-0012	Site									
	30060083-0500	Site	✓							1	
	30060084-0500	Site	✓			1					
	30060085-0500	Site	✓			1					
	30060165-0501	Site									
	30080029-0502	Site									

A brief discussion regarding EDI and XML technologies

- 30 years ago, EDI combined with VANs provided breakthrough capabilities by allowing main frame computers to talk to one another, even though they spoke foreign languages
- Standard translation protocols, such as ANSI X12 or EDIFACT, provided the common language required to connect main frame computers
- Today, web enabled EDI using the internet as the backbone has dramatically dropped transaction costs while reaching a broader audience
- However, incorporating a browser does not improve the underlying communication method, it only provides a better user interface
- Extensible markup language (XML) does not treat the symptom of translating foreign languages, it solves the problem by allowing desk top to desk top communication over the web by shipping universally accepted "metadata" with each message

Consider these contrasts between the technologies

EDI	**XML**
Interpreter	Telephone
Communicate	Collaborate
Sequentially pass data	Share information
Reduce transaction costs	Custom content management
Infrastructure and support costs	No third party service provider



While they clearly represent different technological generations, they can be used as complementary solutions:

- ✓ EDI for fully integrated transactional processing (brawn)
- ✓ XML for the decision and collaboration support to drive the transactions (brains)

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A day in the life of our web enabled supply chain

Day 1: Voice of the customer

- Customer/consumer order capture
- Available to promise
- Forecast generation/ revision
- Download from order management and forecast systems into ERP/MRPII

Day 2: Analyze our MPS supply response

- ERP/MRPII uploaded into webPLAN
- Rules based, email alert messaging for out of balance MPS demand/ supply exception conditions
- Sales, inventory, and operations planning (SIOP)
- Rules based, daily net change at the MPS level
- Capable to produce analysis

Day 3: Submit new supply response for execution

- Revised MPS downloaded into ERP/MRPII
- New SIOP performance results (Inventory, fill rate, financial projections, supply chain health, etc.)

A day in the life of our web enabled supply chain

Day 4: MRP Analysis of new MPS

- ERP/MRPII uploaded into webPLAN
- Rules based, email alert messaging for out of balance MRP demand/ supply exception conditions

Day 5: Supplier notification

- Suppliers logon to web site for requirements and inventory analysis
- Suppliers provide updated commitments, text communication, and shipment information
- The supply base includes the factories

Day 6: Supplier response

- All supplier responses are directly downloaded into ERP/MRPII
- Responses are not tested or measured during the download process

Day 7: Validate commitments

- ERP/MRPII uploaded into webPLAN
- Rules based, daily email alert messaging to the Buyers and suppliers for out of tolerance commitments

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Web specific implementation strategies:

Many of the usual "101" rules apply:

- Involve key stakeholders right out of the gate
- Develop strong partnerships between functional and technical communities
- Strong project management and communication skills
- Business process redesign as required

Web implementations surface new requirements:

- "Nothing exposes business systems deficiencies faster than eBusiness", Jim Shepherd, senior vice president, AMR Research. Supply chain execution is critical, or it will create serious customer backlash.
- Cultural integration and acceptance issues elevate to a significantly higher plane. These are not just new tools, but new technology that represents a completely different way of doing business.
- Speed is everything. Late technology adopters will lose the valuable time required to successfully build B2C/B2B relationships. Web implementations have lethal allergic reactions to "analysis paralysis".
- Balance speed with the overall eBiz vision and corresponding strategic alignment. Understand that eBiz vision and strategy constantly flux in light of emerging technologies, the teams must be nimble.
- While technology is not the issue, systems integration and constant site updates are.

Critical eBiz success factors

✓ Develop a cohesive eBiz strategy that incorporates customer objectives, internal financial targets, market and channel growth, your organizations tolerance to absorb quantum change, talent pool, and the current/future state of your internal systems. Live and breath it, plaster it on the cafeteria trays!

✓ Break it into easily digestible phases and execute accordingly. "Big bang" is a slow, expensive, and tortuous way to find yourself internet road kill!

✓ This also positions you to respond to the inevitable course corrections

✓ To ensure alignment, use the strategy to guide your make/buy decision process when selecting web based tools and integration resources

✓ Begin the cultural adoption path by growing "leadership evangelists" and nurturing informal "beach heads" at all organizational levels

✓ Be prepared to burn your plan overnight and start all over again

✓ Oh yeah, better have *really good* data and process integrity!

Lessons learned: Cultural adoption issues

➔ Shedding the EDI paradigm to enthusiastically embrace XML enabled possibilities

- ✓ Conducted a pilot workshop
- ✓ Collected raw feedback to understand site improvement opportunities
- ✓ Made site changes on the spot

➔ Accepting that information is a superior substitute for inventory

- ✓ "…but we can *touch* the parts!"
- ✓ Moving inventory from one link to another does not decrease the overall inventory level for that supply chain
- ✓ Learn how to use information in addition to data (inventory analysis tools, days of supply projections, etc.)

Lessons learned: Cultural adoption issues

➔ Supplier empowered requirements management

- ✓ Buyers could perceive it as a power shift, and consequently a threat
- ✓ Must ensure that they see it as a productivity tool to relieve them of routine schedule and commitment maintenance
- ✓ Allows buyers to efficiently manage increasing work loads by putting the tools, systems, and data in the hands of the information consumer: the supplier
- ✓ If buyers utilize the email alert capabilities, they can use the system to proactively find pain points before they explode
- ✓ The web site complements and augments other supplier relation tools
- ✓ Shifts buyer activities from tactical to strategic allowing them to focus on negotiations, supplier partnerships, supplier development, etc

Question and answer session...

Thank you for your time!

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