



# Engaging Suppliers in Transforming the Extended Enterprise

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# Agenda

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- About TechSolve
- Transformation – Why Involve Suppliers?
- Engaging Suppliers in Extended Enterprise Transformation
- Examples and Lessons

# About TechSolve

- TechSolve helps manufacturers *increase profits* by *eliminating waste* and *increasing productivity* on the factory floor and in the front office
- Specialty is implementing **Lean Enterprise** and **Machining Solutions** at a company and **throughout a supply chain**
  - Independent Not-for-profit organization founded 1982
  - 40 manufacturing specialists and business analysts with over 700 combined years of industry experience
  - Member of the Ohio Edison Technology Center system and the nationwide NIST MEP system

# TechSolve Lean Services

- Lean Enterprise Assessment
- Value Stream & Process Mapping
- Enterprise VSM
- Establishing the Business Case
- Lean Leaders, Teams and Teamwork
- Kaizen/Rapid Process Improvement
- Plant Layout
- Creating Cells
- Kanban Systems
- Pull Systems
- Quick Change Over
- Total Preventive Maintenance
- Inventory Management
- Lean Administrative Processes
- Lean Supplier Development



# Some Definitions...

- *Enterprise Transformation...*
  - Process of shifting performance from a defined current state to a desired future state guided by a roadmap framed to achieve specific goals and improvement targets
- *Extended Enterprise...*
  - Customer, Prime/OEM and suppliers connected by their common association with the same value stream

# Why Focus on Suppliers?

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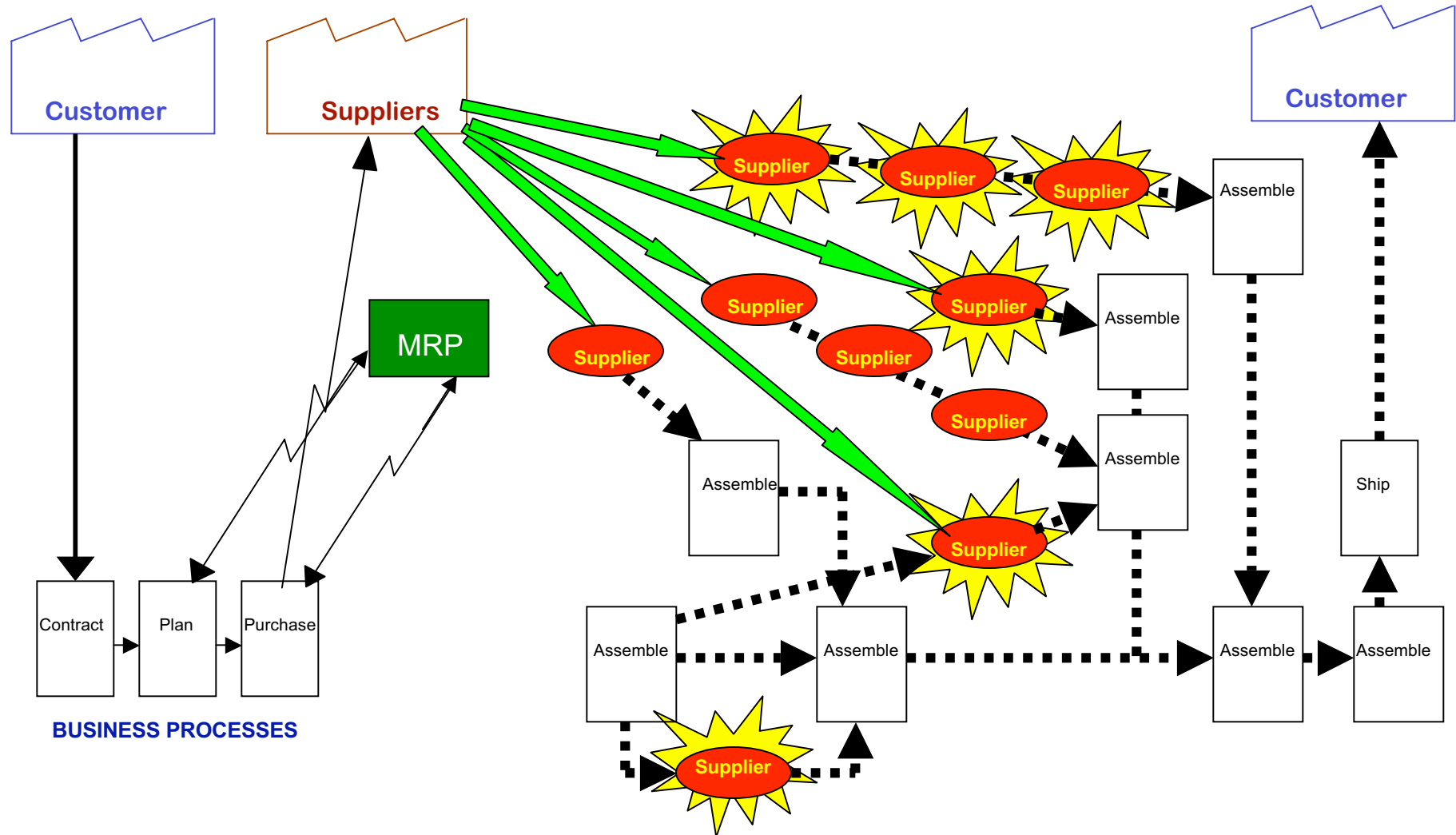
- Suppliers produce 65-80% of the value-added in many products
- “Becoming Lean” requires attention beyond your own four walls
- Leadership involvement and collaboration at and across suppliers in a value stream is essential for overall performance change and on-going sustained improvement

# Engaging Suppliers – What Works?

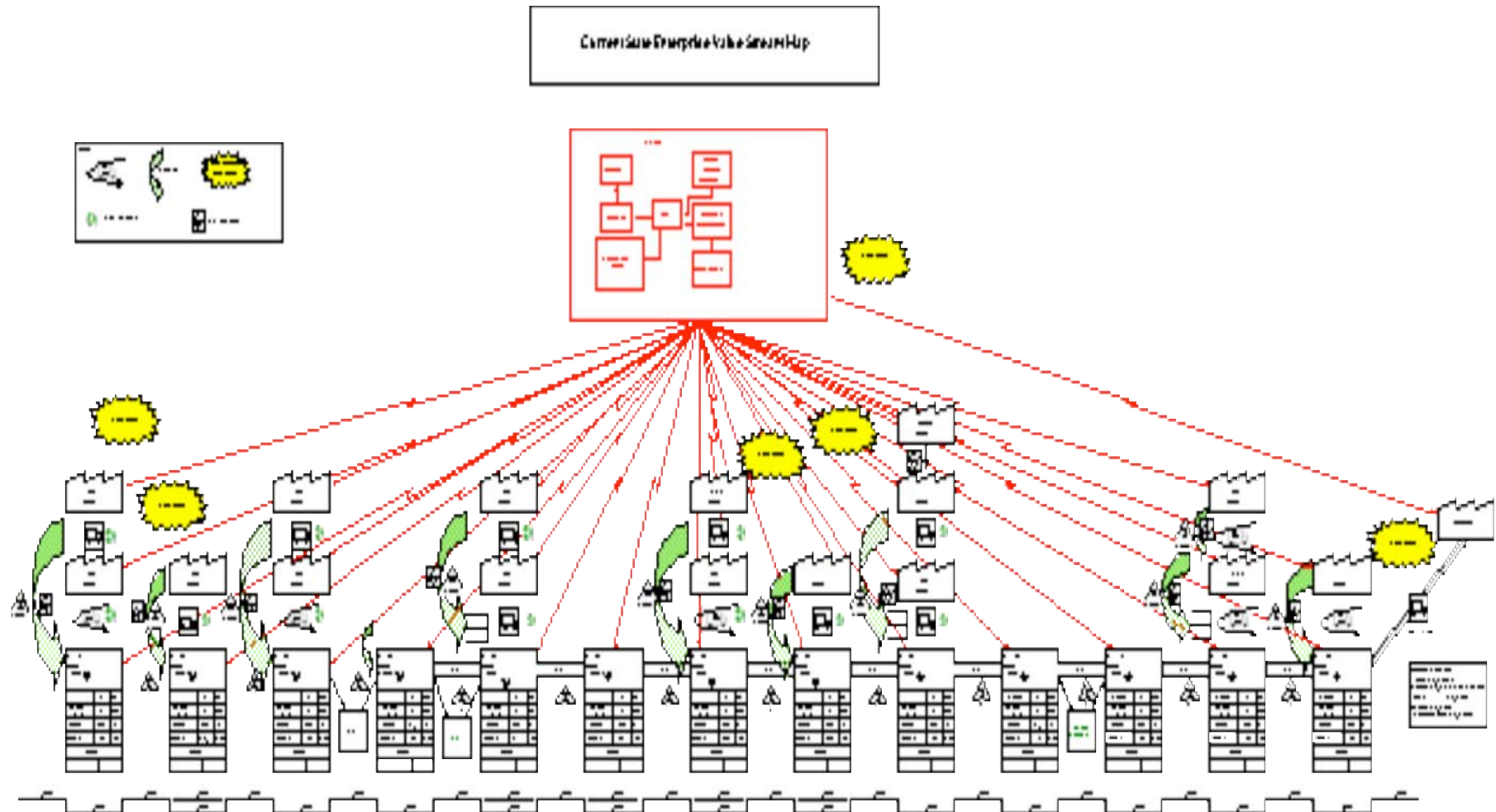
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- Defining the Extended Enterprise - Macro Value Stream Analysis
- Setting Goals and Targets
- Using a Structured Engagement Processes
- Linking Value Stream Transformation to Supplier Transformation - WIIFM
- Setting up a Collaborative Environment for Change – Customer, Prime/OEM, Suppliers

# Macro VSM Describes Extended Enterprise



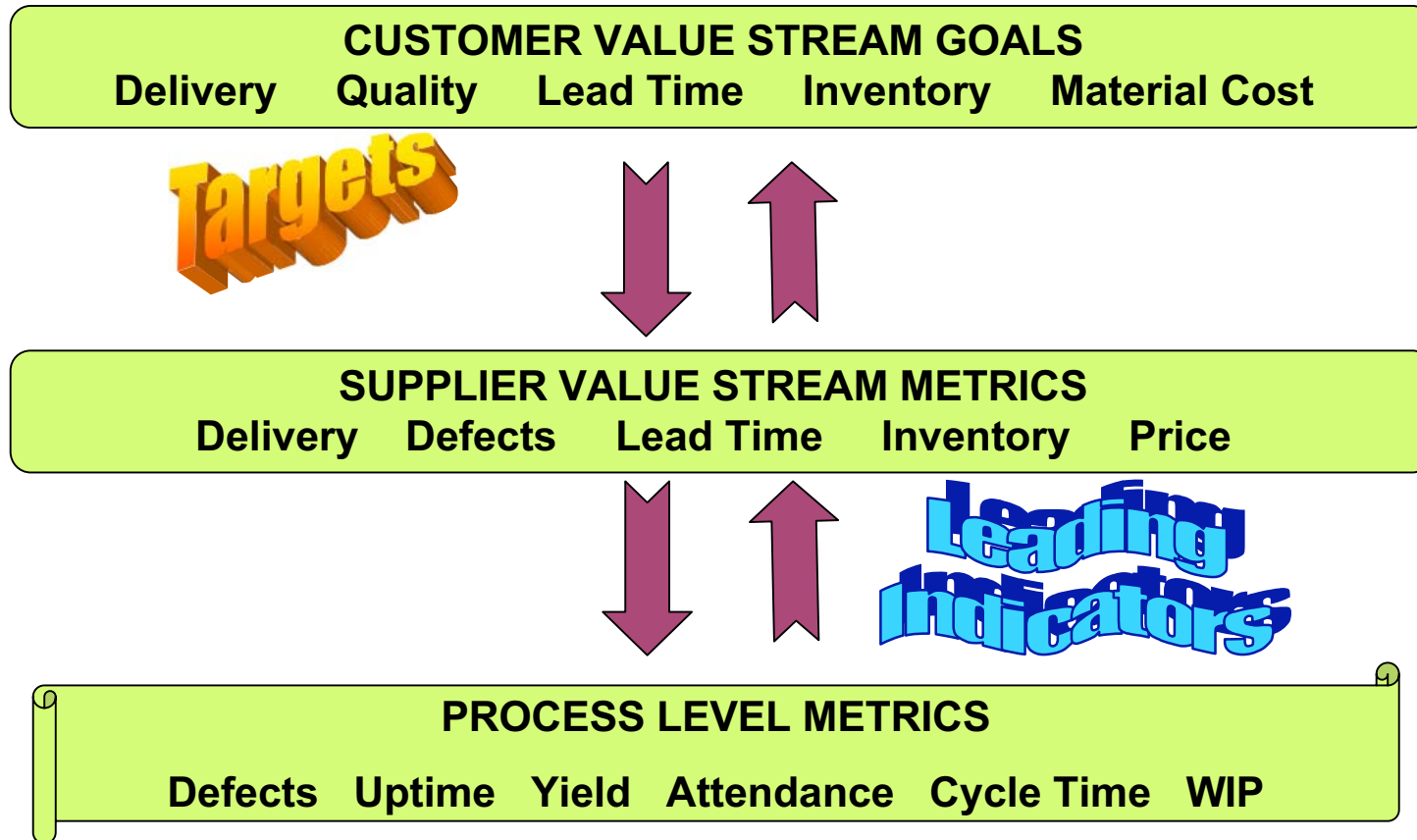
# Extended Enterprise VSM Quantifies the Opportunities



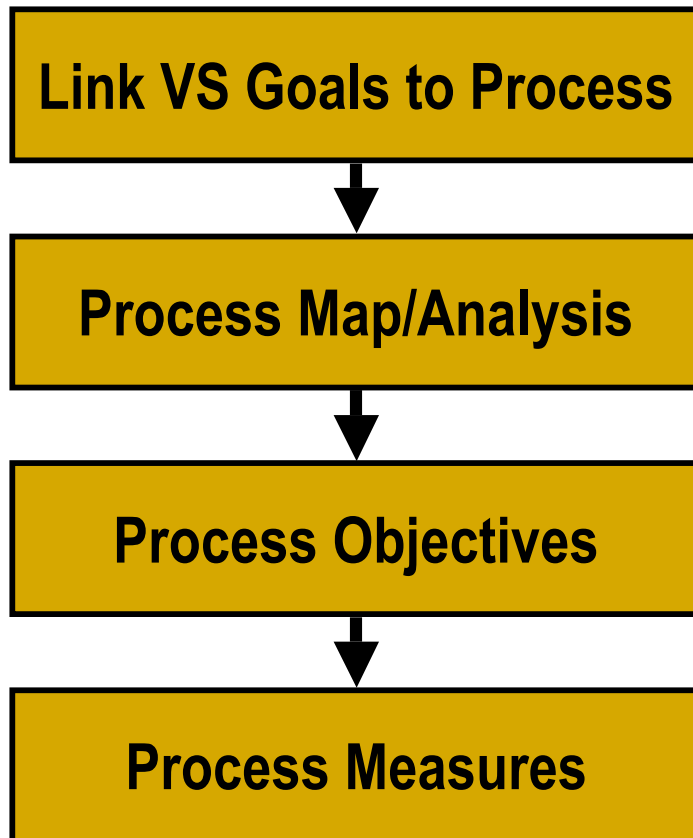
# Shared Goals Create Transformation Context

Measure	Customer Target	Supplier "A" Target
Delivery	98.5% On Time	100% On Time
Quality- Part Acceptance	99.7% Accepted	100% Accepted
Quality - Defects	10/year Total	Zero
Lead Time	42 weeks	38 weeks
Throughput (Inventory)	12 Turns	20 Turns
Price	5% Reduction	3% Reduction

# Aligned Goals Set Improvement Framework



# Value Stream/Supplier Process Interplay



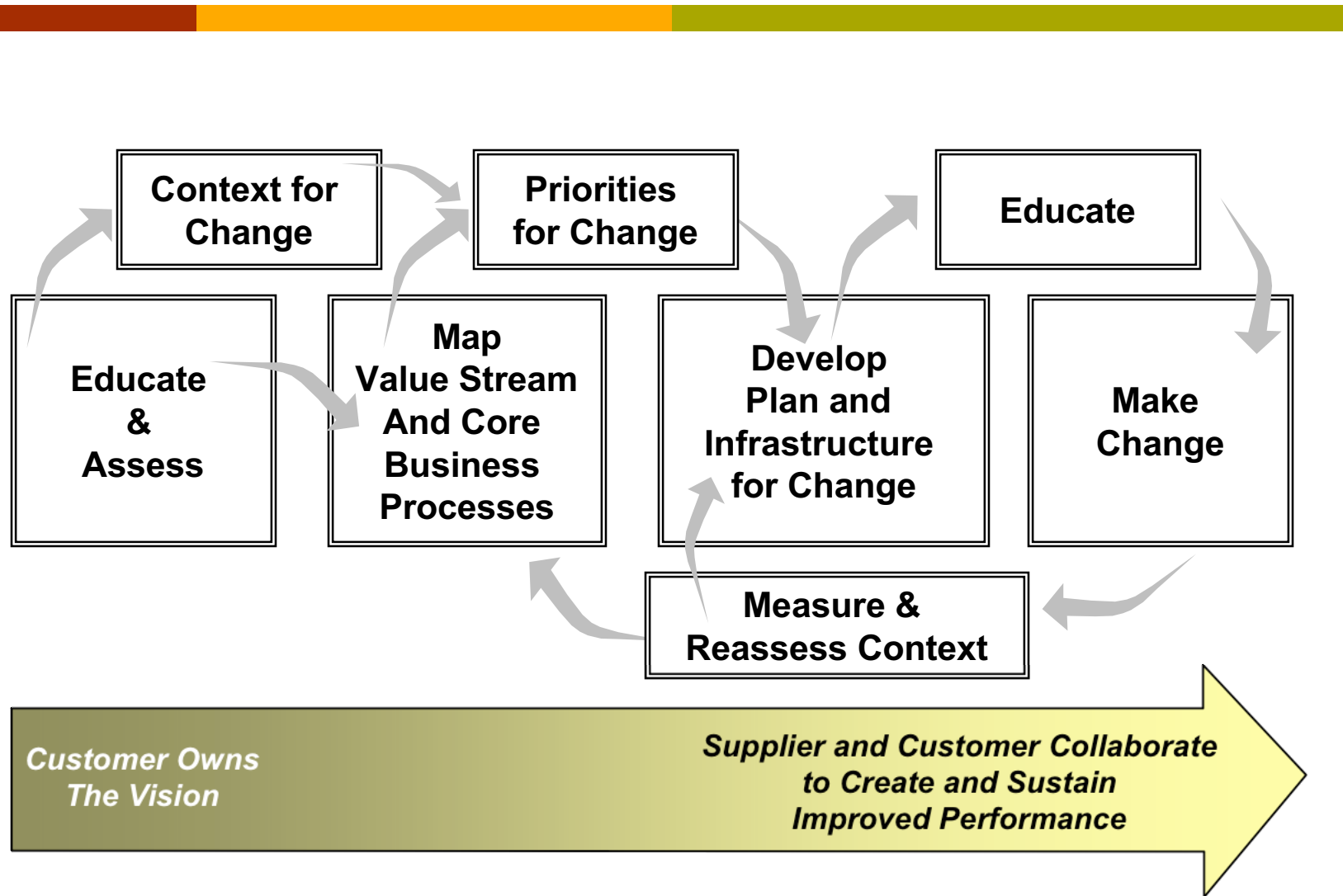
- What Processes Impact Value Stream Goals?

- What Problems Occur in These Processes?

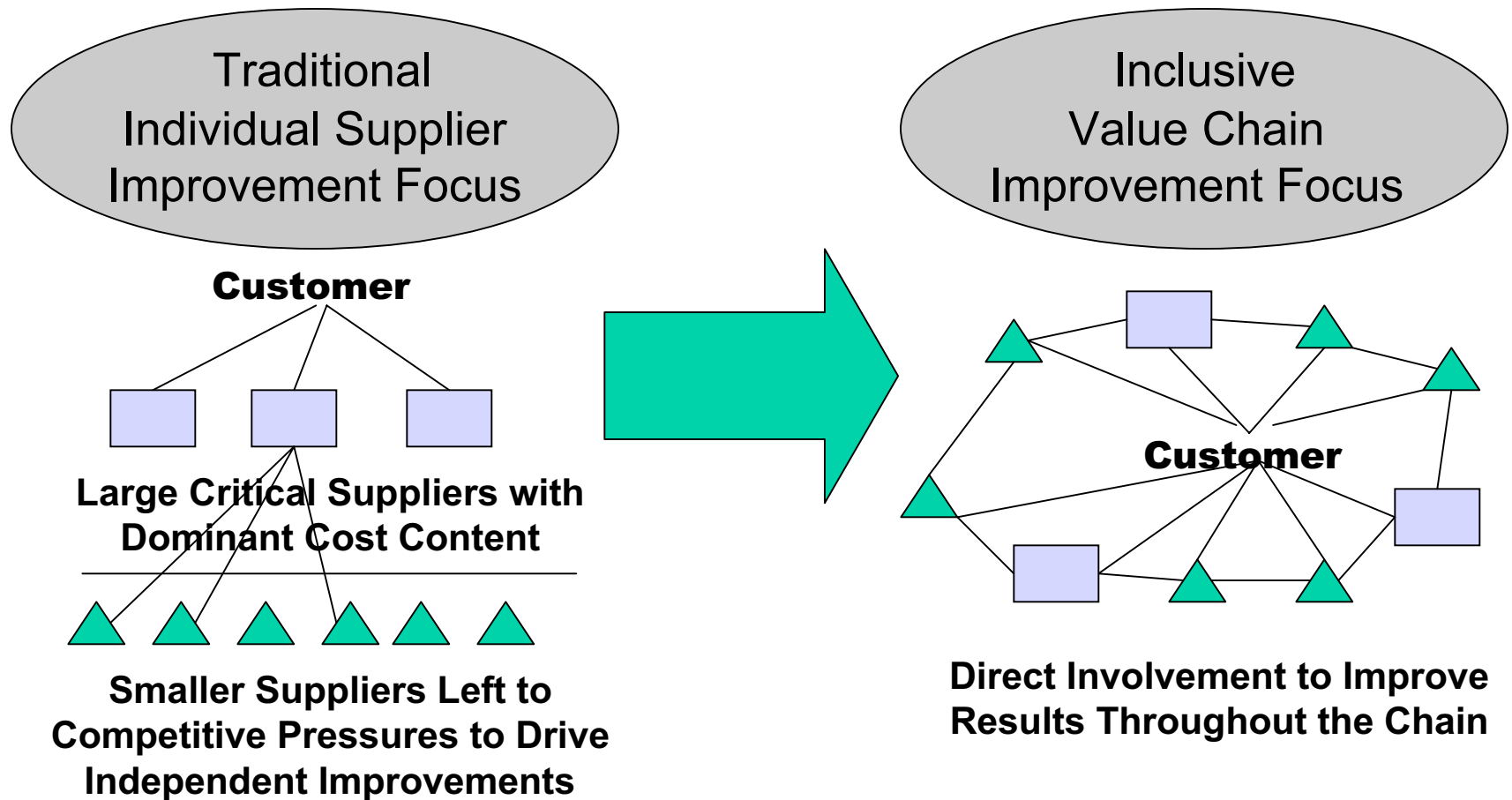
- What Behaviors/Conditions Will Enable Process Outcomes?

- What Measures Will Promote Achieving Process Objectives?

# Basic Transformation Process Elements



# Value Stream Approach Creates Collaborative Transformation Environment

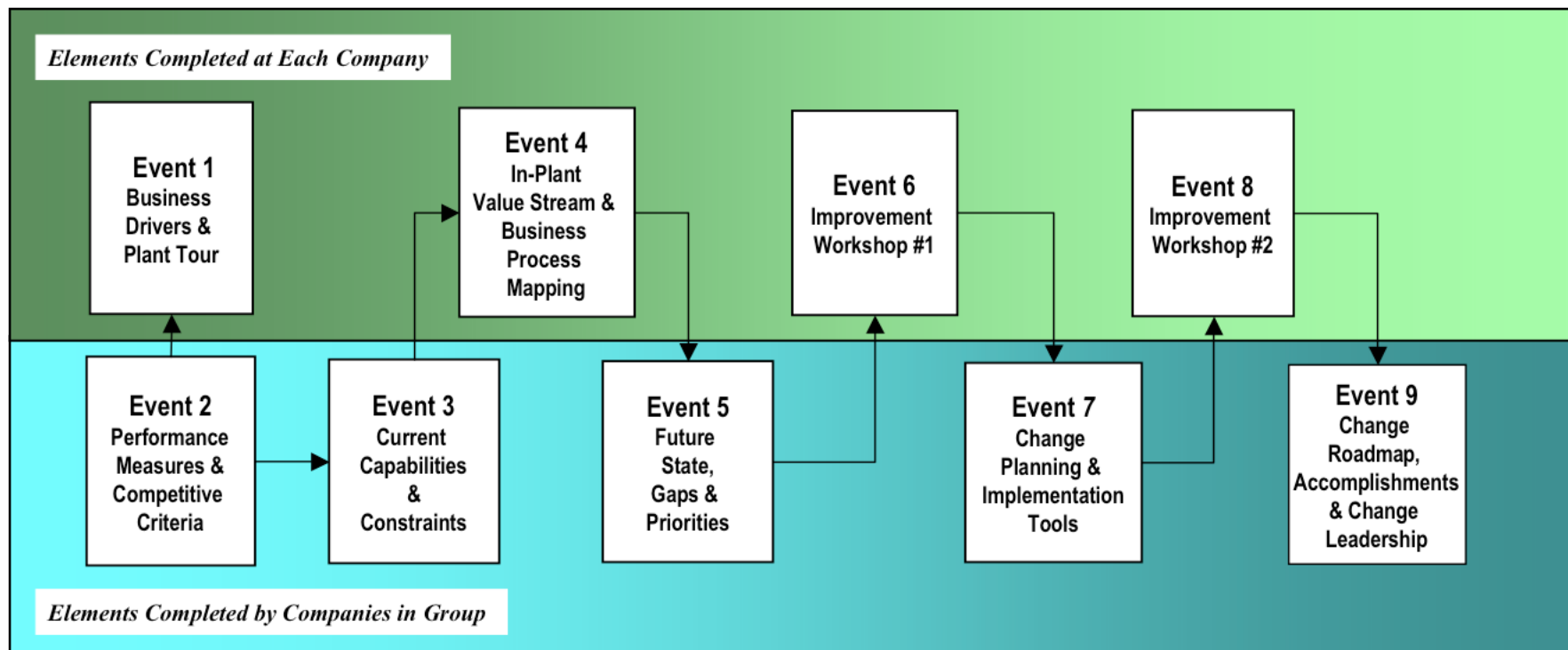


# Extended Enterprise/Supplier's Enterprise



- Structure the Collaboration Process
  - Common approach yields predictable results
- Engage groups of Suppliers simultaneously, if Possible
  - Multiplier effect that accelerates transformation
- Link the Extended Enterprise Goals to Supplier Enterprise Goals
  - Build the business case for transformation that benefits the supplier too

# Multi-Supplier Engagement Process Example



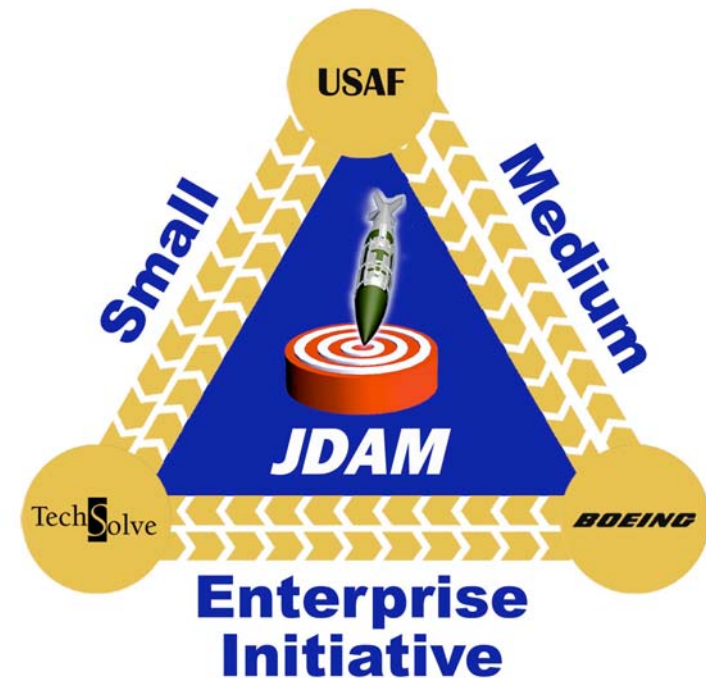
# Extended Enterprise Transformation Projects



- The Boeing Company
  - Lean Manufacturing skill-building enabling synchronized production by nine suppliers to JDAM (Air Force SMEI).
  - Lean Transformation at three suppliers to F/A-18, V-22, and Missile Programs and collaboration on overall lead time reduction at 8 suppliers to the SLAM-ER missile (Navy MANTECH).
- Northrop-Grumman Ship Systems
  - Lean transformation at 10 suppliers to the LPD-17 class ships (Navy MANTECH and LPD-17 Program Office).

# USAF/Boeing JDAM SMEI Project

- JDAM = Joint Direct Attack Munition
- SMEI = Small Medium Enterprise Initiative
- Four-year JDAM extended enterprise program with 8 small suppliers & Honeywell
- **Goal: transform suppliers into lean organizations to meet price, quality, and delivery goals.**



# Boeing/USAF JDAM



## One Supplier's Accomplishments

- **Reduced fin manufacturing lead time by 46%.**
- **Decreased product travel by 92% and people travel by 53%.**
- **Reduced Machine Cycle Time 10% and manual Cycle Time 31%.**

Reported Cost Savings to Air Force  
\$120,000,000  
First Year Throughput Increase  
\$450,000,000

# JDAM SMEI Metrics

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- Delivery
  - 99%
- Quality
  - 99%
- Lead Time
  - 25% reduction
- Inventory
  - 20% increase in turns at OEM
- Value Added per FTE
  - 20% increase

# Metrics Tracking Example

Metric	Goal	Actual	A	B	C	D	E	F
		Jan 01	80	99	99	99	99	99
Quality 12 Mon.	> 99%	Dec 01	99	98	100	100	100	100
		Aug 02	99.9	100	99.9	100	100	99.9
		Jan 01	94	99	99	99	100	100
Delivery 12 Mon	> 99%	Dec 01	95	100	100	100	100	100
		Aug 02	100	100	99	100	99.9	100
		Jan 01	24	38	38	12	12	30
Lead Time	< 25%	Dec 01	15	30	29	12	10.5	21
		Aug 02	15	30	29	12	9	12
		Jan 01	3	2.3	5.9	90	7	7
Inventory Turns	> 20%	Dec 01	8	3.5	25.35	87	8	13
		Aug 02	8	8.7	32.35	87	4	32
		Jan 01	\$ 76,000	\$ 50,310	\$ 375,000	\$ 55,260	\$ 305,600	\$ 58,185
Business Process Results	> 20%	Dec 01	\$ 95,007	\$ 53,000	\$ 433,440	\$ 66,660	\$ 378,600	\$ 96,748
		Aug 02	\$ 101,355	\$ 44,828	\$ 431,001	\$ 79,932	\$ 390,000	\$ 104,254
		Value Added per fulltime employee						
(Net Sales - (Material +Services))/FTE								

# USN/Boeing SLAM-ER Project

- SLAM-ER = Stand-off Land Attack Missile – Expanded Response
- 2-year extended enterprise program with 8 suppliers
- **Goal: Extend lean transformation to suppliers to meet price, quality, lead time and delivery goals.**



# Missile Systems Business Goals

Lead Time ..... 12 months SLAM-ER  
18 months Harpoon  
Inventory ..... > 8 turns year  
Defects ..... 95% reduction  
Competitive price .... Maintain/Decrease

***Lean Transformation to achieve business goals***

# Identifying the Opportunity

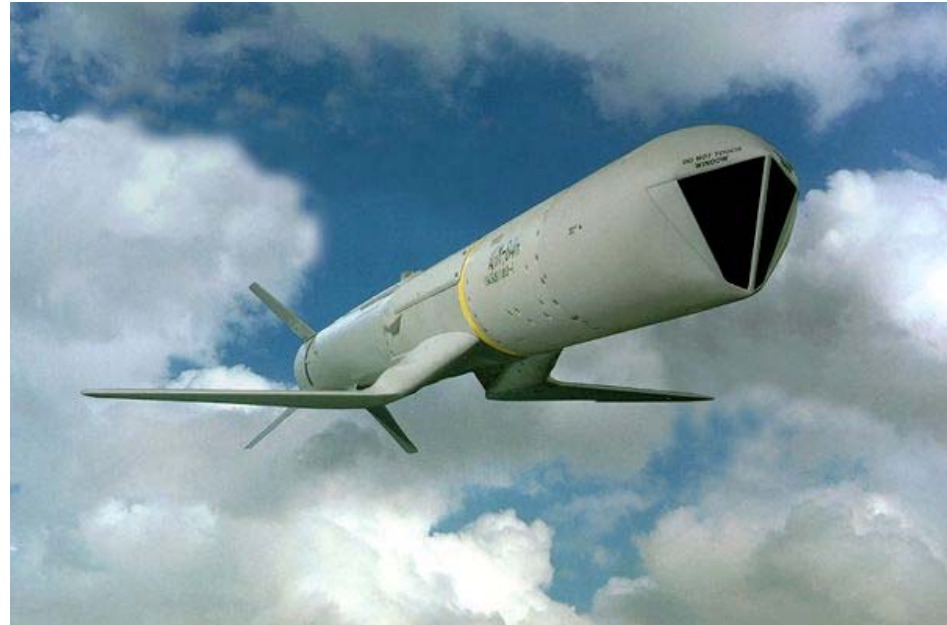
- 80% of the SLAM-ER missile cost is subcontracted to suppliers
- Missile lead time exceeds customer funding cycle
  - 70% of lead time at suppliers
  - Requires company investment & risk
- Delivery and quality performance
  - Several line delays in CY2000

***Reduce Supplier Lead Time and Improve Performance***

# Boeing/USN SLAM-ER Missile

## Extended Enterprise Impact:

- Supplier quality performance improved to 98%
- Supplier delivery performance improved 18%
- Lead time reduced by 22%
- Inventory turns increased by 100%



This Program Received the  
**2002 Defense Manufacturing  
Excellence Award**  
and the  
**2002 Missouri Team Quality Award**

# Transforming Attitudes

- Enthusiasm and commitment
  - 25-person machine shop changed thinking: No longer can't or 'have to' do something. Now making changes proactively.
  - QA supervisor in 45-person shop changing from flat "we have to do that inspection" to "we can get rid of it if we do this..."
- Customers' active involvement at every step is critical
  - Great power in asking "What do we do that causes you problems? What could we do to make your life easier?"

# Some Lessons...

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- The opportunities and priorities may be different but the method for identifying them is not
- May want to begin with enterprises that are not too complex
  - May take too long to assess and be difficult to grasp
  - Learning from a few representative value streams will lead to broadly applicable approaches

# More Lessons...

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- Leadership at participants at all levels is essential for success
- May need a multi-year commitment
- Up-front planning critical
- Consistent process with each supplier
- Focus on implementation and results
- Benchmarking / Plant Tours / Training
- Teamwork makes all the difference

# Lessons from Collaboration...

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- You can make dramatic improvements on a focused project with a dedicated team
- Frustrations are lessened when people work together, and it isn't up to one person.
- “Ownership of the Process” helps people begin to care and take personal pride in what they do.

# Closing Thoughts

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- Enterprise Transformation Must Include Suppliers
  - Value Stream View Creates Enterprise Impact
- Need Not Take The Entire Supply Chain On Initially
  - 80/20 Rule Applies
  - Many Opportunities Are Broadly Applicable
- Structured Approach And Collaborative Environment Is Key
  - Effective Solutions Cannot Be “Imposed” From Above
  - Customer/Supplier Involvement Throughout Is Critical