



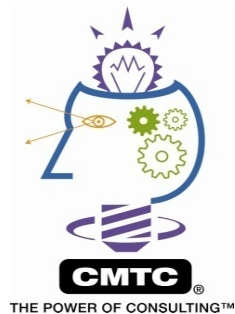
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# The Development of a CSA Smart Supplier – A Case Study

## Omega Precision

### Leveraging CSA Partner Relationships



[www.InnovateCalifornia.net](http://www.InnovateCalifornia.net)



Centers for Applied Competitive Technologies  
CERRITOS COLLEGE  
MAKING IT IN CALIFORNIA

# Leveraging CSA WIRED Partnerships

- As a partner in the CSA Workforce Innovation In Regional Economic Development (WIRED) Project, CMTC was asked to leverage work that we have done in the past along with the work of other CSA WIRED team members, Boeing and Cerritos Community College, in doing a pilot supplier improvement and development project with a selected aerospace supplier

# Why It Is Important

## SUPPLY BASE OPTIMIZATION



# SUPPLY BASE OPTIMIZATION

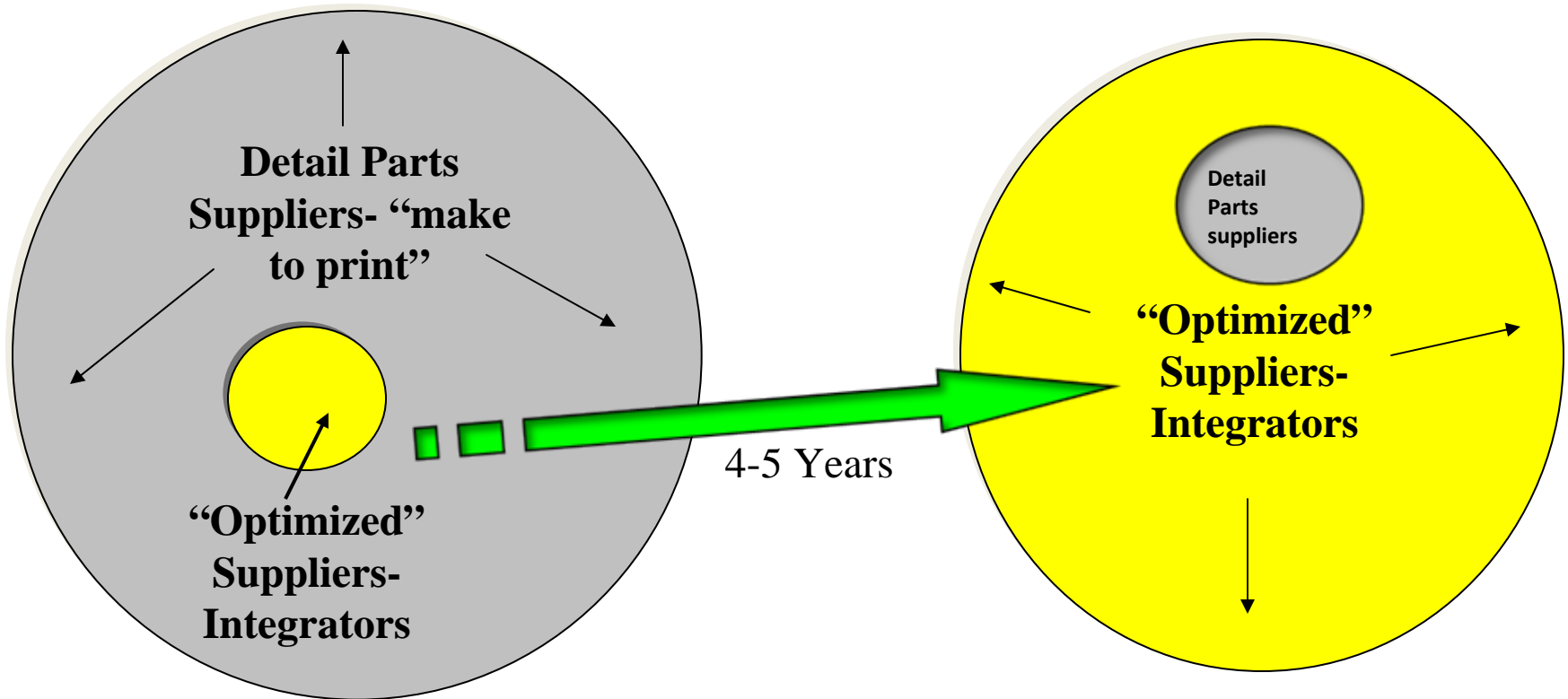


# SUPPLY BASE OPTIMIZATION

“Moving up the value chain”

Current State

Future State



# SUPPLY BASE OPTIMIZATION

## TIER 3

- LONG TERM STRATEGIC SUPPLIER DEVELOPMENT
- MIX OF DETAIL PARTS / KITS / ASSEMBLIES / PACKAGE CHUNKING

LONG TERM AGREEMENTS, HIGHLY FLEXIBLE CONTRACTS

### SUPPLY BASE CHARACTERISTICS

- LEAN BASE-CONCEPTS & INITIATIVES
- HIGH PERFORMING
- SELF-SUSTAINING
- e-ENABLED-EXOSTAR AUCTIONS
- VALUE STREAM ALIGNED-more assemblies
- EFFICIENT-ship to point of use, Min-Max
- BENCHMARK PRICING- PROFIT SHARING
- INITIATIVE IMPLEMENTORS-KITTING

## TIER 2

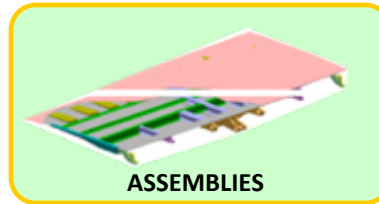
- LOGICAL WORK PACKAGE ASSIGNMENT
- VALUE STREAM ALIGNMENT
- MIX OF DETAIL PARTS / KITS / ASSEMBLIES

MODEL BASED DEFINITION-MBD

PROCESS VALIDATION AUTHORITY-PVA



KITS



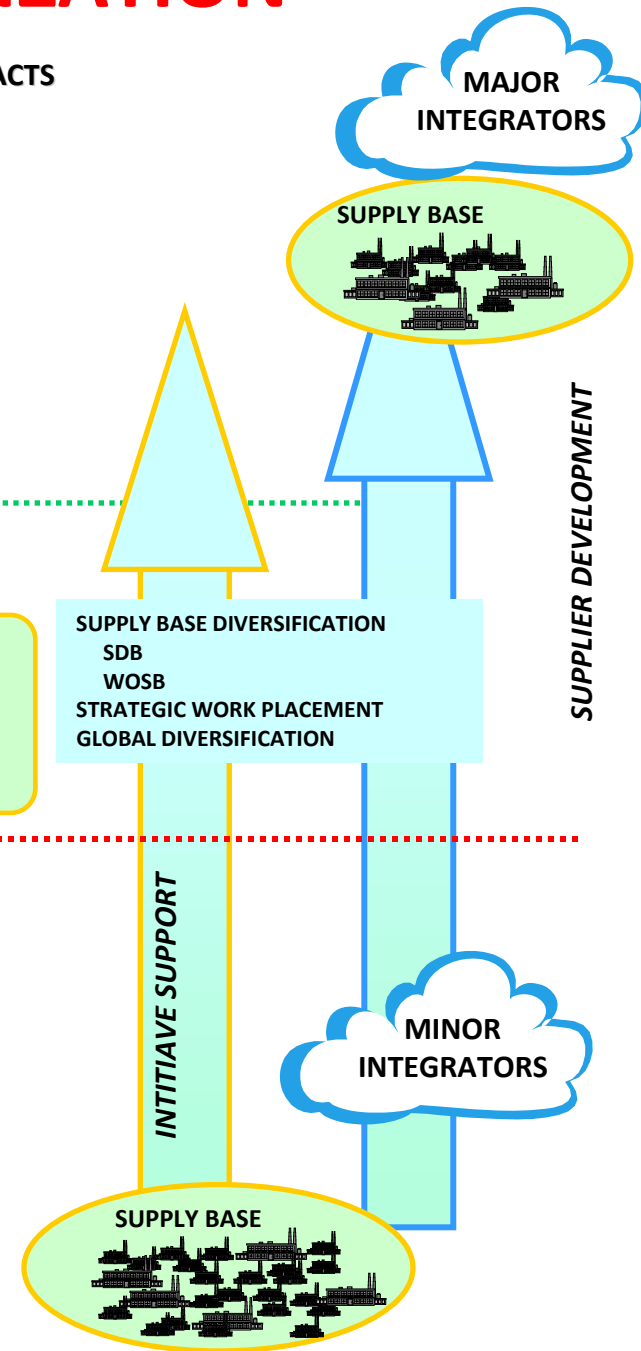
ASSEMBLIES



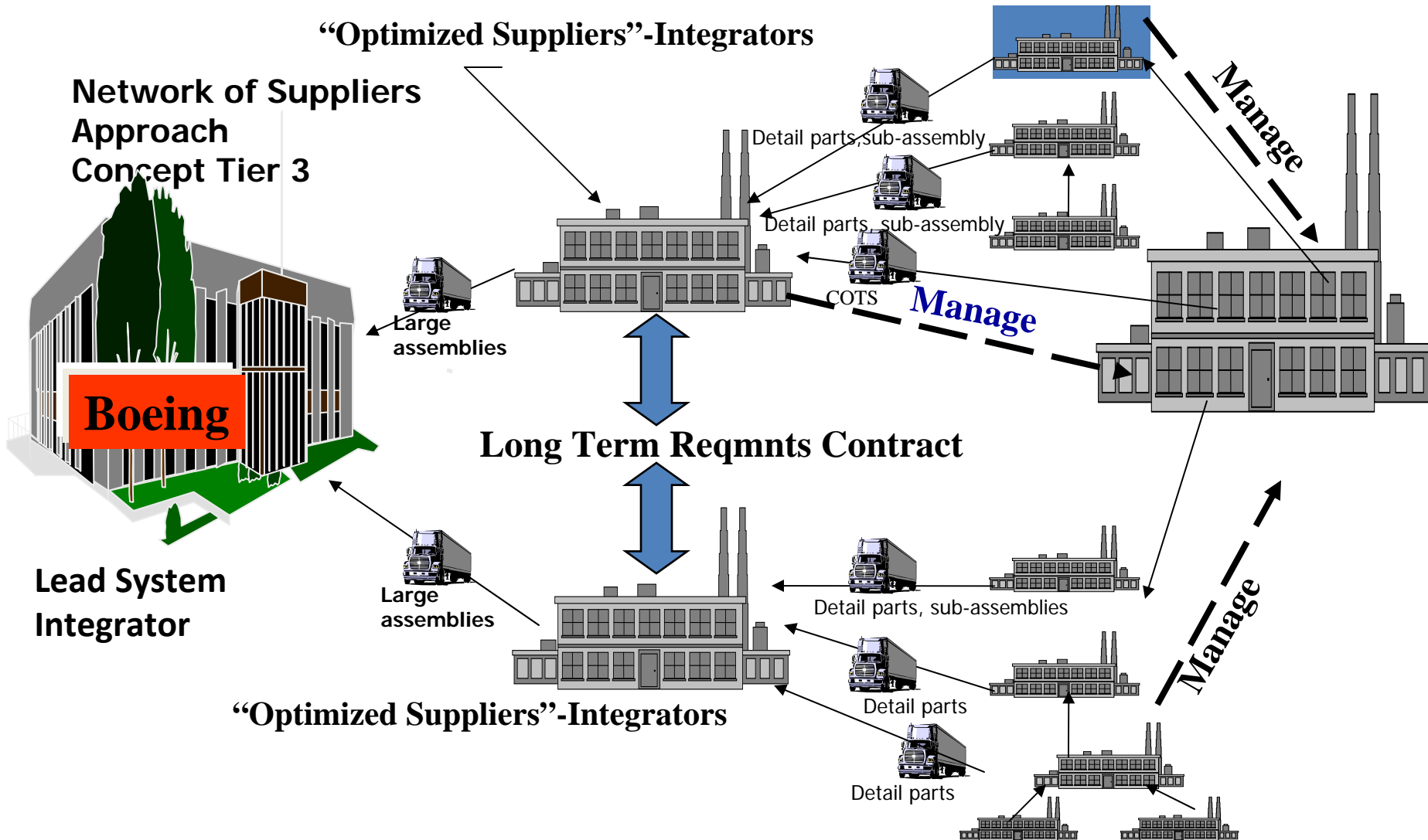
“As-is” or Current State Level

## TIER 1

- CROSS LOADING FOR UNIT PRICE REDUCTION
- DETAIL PARTS



# SUPPLY BASE OPTIMIZATION

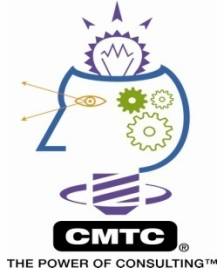


# Partnering for Success on an DOD - AF Mentor Protégé Program

## Developing Minority-Owned Aerospace Suppliers



# CMTC & Cerritos



- “DOC” - Department of Commerce
- “MEP” - Manufacturing Extension Partnership
- “NIST” - National Institute of Standards and Technology
- “CMTC” - California Manufacturing Technology Consulting
- “CCCD” - Cerritos Community College District
- “CACT” - California Applied Competitive Technologies



# Cerritos College

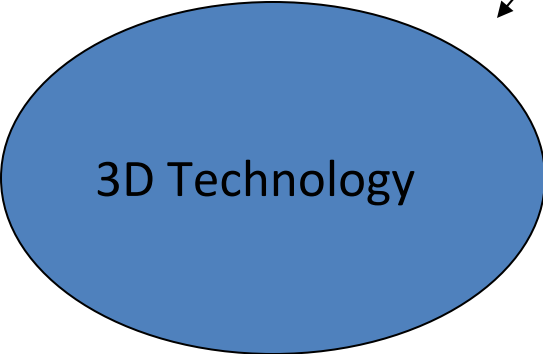
- Automotive
- Composites
- Computer Science
- Construction trades
- Drafting
- Electronics
- Engineering - CAD
- 3D Technology
- Machine Tool - CNC & CAM
- Model Making-prototype
- Metallurgy and Materials Testing
- Plastics
- Skills Development
- Textile & Garment Technology
- Wood & Solid Surface
- Welding Technology

**MANAGEMENT**

**MACHINE TOOL  
TECHNOLOGY**

**LEAN / QUALITY**

**AUTOMOTIVE  
TECHNOLOGY**



**WOOD &  
SOLID  
SURFACE**

**COMPOSITES**

**WELDING &  
FABRICATION**

**DESIGN &  
ENGINEERING**

# Maximize resources





## Nunn-Perry Award



The prestigious Nunn-Perry Award, named in honor of former Senator Sam Nunn and former Secretary of Defense William Perry, was first awarded in 1995 to recognize outstanding Mentor-Protégé teams formed under the auspices of the DoD Mentor-Protégé program.

# Why Training You Ask?



# Benefits to the Protégé

- Technology transfer
- Engineering and technical training production, ISO, and quality assurance
- Business infrastructure enhancement
- Develop long term business relationship with Prime Contractor
- Expands subcontracting opportunities
- Business development and planning
- Protégé may leverage technical expertise of mentor to bid on SB set-aside contracts
- Improve competitive advantage
- Use Program as a marketing tool

# Benefits to the Mentor

- Develop long term business relationship with qualified small businesses.
- Develop an effective and high quality pool of eligible small businesses
- Enhance technical capabilities of both firms
- Pursue new market opportunities as MP team
- Issue subcontractors to protégé on a noncompetitive basis
- Gain a source selection / past performance evaluation factor
- Receive cost reimbursement

# New methodologies



# Do it right the first time



# Avoid delays



# Apply lessons learned



# Learn to make decisions



# Avoid Operator Error



# Introduction to Omega Precision

- Founded more than 40 years ago
- Reputation for performing close-tolerance machining on a wide variety of materials
- Operating in a 16,000 square foot facility in Santa Fe Springs
- Specializes in complex precision machining
- Employs thirty highly-skilled craftsmen and professionals using state-of-the-art manufacturing technology.



# The Omega Precision Mentor Protégé Story

- CMTC began working with Omega Precision in late 2006 as part of the Mentor Protégé program sponsored by Boeing and Project Managed by Cerritos Community College.
- Omega Precision has responded to the desire of primes to provide higher levels of value and integrated solutions, by developing a widened range of subcontractors as well as the capability to manage them.
- This has resulted in Omega Precision being selected by Boeing as Supplier of the Year in May 2008. These improvements have also resulted in the company winning a large program requiring the use and management of several sub-tier contractors.
- Omega Precision's ability to improve in their supply chain management capability has resulted in an increase in business of more than 15% over the last year.



# Some of the Training Omega Precision Received

- Training to achieve AS9100 Certification
- High Speed Machining
- Gibbs CAM Training
- Sub Assembly Training
- Health & Safety Training
- Zeiss Training
- Lean 101 Manufacturing Training
- Lean Leadership Workshop
- Value Stream Mapping Workshop
- Principles of Kaizen Techniques Workshop
- ERP/MRP Workshop
- Microsoft Office Training
- Introduction to Project Management
- Team Building
- HR Process Training

AND

- Supply Chain Management

# **The CSA WIRED Program Helped to Take Omega Precision to the Next Step**

- CMTC applied the resources afforded through the CSA WIRED Department of Labor program to further develop supplier assessments to determine how well a supplier meets the “Smart Supplier” requirements

# Smart-Supplier Requirements

## A Three Dimensional Perspective

### 1. Looking Upstream in the Supply Chain

(What does my customer want?)

- ITAR compliance
- Capabilities for involvement with design collaboration – New product design, DFMA, Engineering Analysis, NDT, Prototyping, DFSS
- Metrics in place for On Time Delivery
- Risk analysis and mitigation planning
- Establish cooperative relationships and effective coordination
- Maximize flexibility and responsiveness
- A workforce development plan in place
- Pursue supplier-integrated product and process development

# Smart-Supplier Requirements

## A Three Dimensional Perspective

### 2. Looking Within the Enterprise

(What are my capabilities?)

- A Culture of Improvement - Management commitment, Infrastructure
- Visual Workplace - Value Stream Mapping, 6S, Visual Controls
- Lean Product Development - DFMA, Flattened BOM
- Process Focus - Continuous Flow, Parts Presentation, Cellular Mfg, Right-sized equipment, Operator versatility
- Just In Time - Inventory Levels, Pull Systems, Load Leveling, Single Piece Flow, Set-up Time Reduction, Takt Time
- Control of Processes - Mistake Proofing, Six Sigma, Self-Verification, Root-Cause Analysis, TPM
- Standard Work - Defining, Cycle Time, Sequencing, Standard WIP
- Continual Improvement - Kaizen, Performance Measures, Quality Management System, Six-Sigma, SPC

# Smart-Supplier Requirements

## A Three Dimensional Perspective

### 3. Looking Downstream in the Supply Chain

(What do I need from my suppliers?)

- Design of the supplier network architecture
- Development of complimentary supplier capabilities
- Creation of flow and pull throughout the supplier network
- Cooperative relationships and effective coordination throughout the supplier network
- Maximize flexibility and responsiveness
- Pursue supplier-integrated product and process development
- Integrate knowledge and foster innovation
- Demonstrate continuous performance improvement

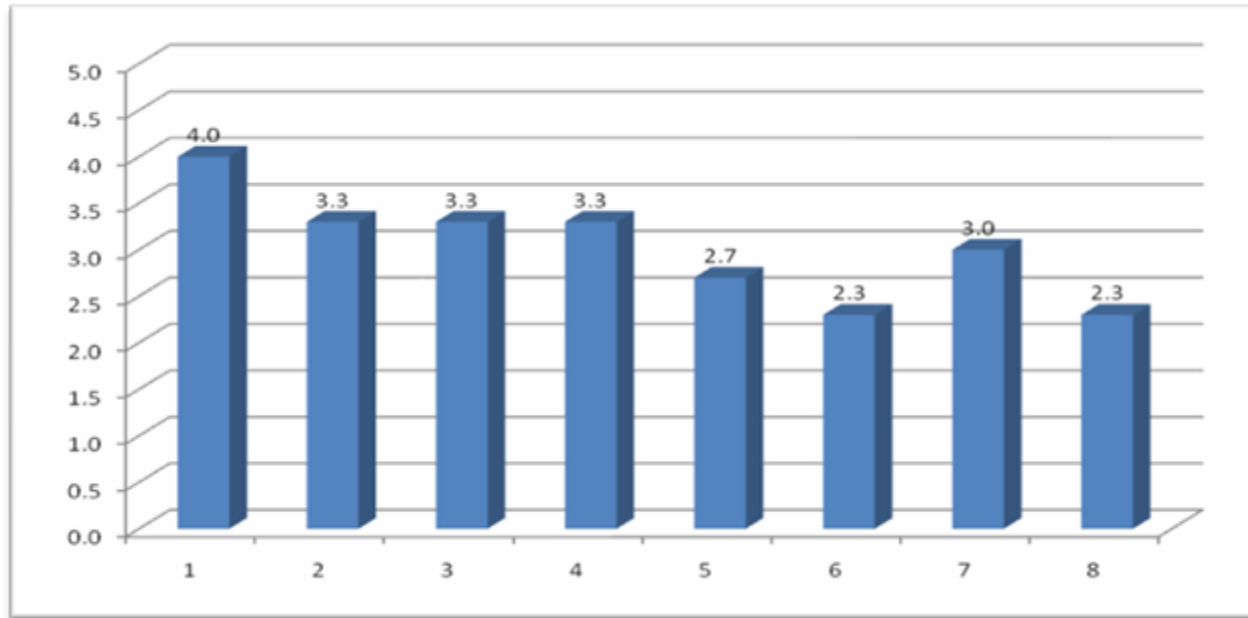
# Supply Chain Management Self Assessment

- Adopted from work that CMTC did with the Lean Aerospace Initiative
- Looks at eight core processes that are key to developing a lean supply chain
- Evaluates several enablers for each of the eight core processes
- Establishes the current level of development in each area
- Establish a basis of measuring future improvement.

# The Assessment Format

| 1. Core Process:              |                                |                             |                                |                              |                                |               |
|-------------------------------|--------------------------------|-----------------------------|--------------------------------|------------------------------|--------------------------------|---------------|
| <b><u>DEFINITION:</u></b>     |                                |                             |                                |                              |                                |               |
| <b>Diagnostic Questions</b>   |                                |                             |                                |                              |                                |               |
| <b>Lean Indicators</b>        |                                |                             |                                |                              |                                |               |
| <b>Potential Metrics</b>      |                                |                             |                                |                              |                                |               |
| <b>Key Enabling Practices</b> | <b>Capability Levels</b>       |                             |                                |                              |                                | <b>Scores</b> |
|                               | <b>LEVEL I<br/>TRADITIONAL</b> | <b>LEVEL II<br/>ADOPTER</b> | <b>LEVEL III<br/>PERFORMER</b> | <b>LEVEL IV<br/>REFORMER</b> | <b>LEVEL V<br/>TRANSFORMER</b> |               |
| <b>1.</b>                     |                                |                             |                                |                              |                                |               |
| <b>2.</b>                     |                                |                             |                                |                              |                                |               |
| <b>3.</b>                     |                                |                             |                                |                              |                                |               |
| <b>4.</b>                     |                                |                             |                                |                              |                                |               |
| <b>5.</b>                     |                                |                             |                                |                              |                                |               |

# The Omega Precision Assessment Tells Us

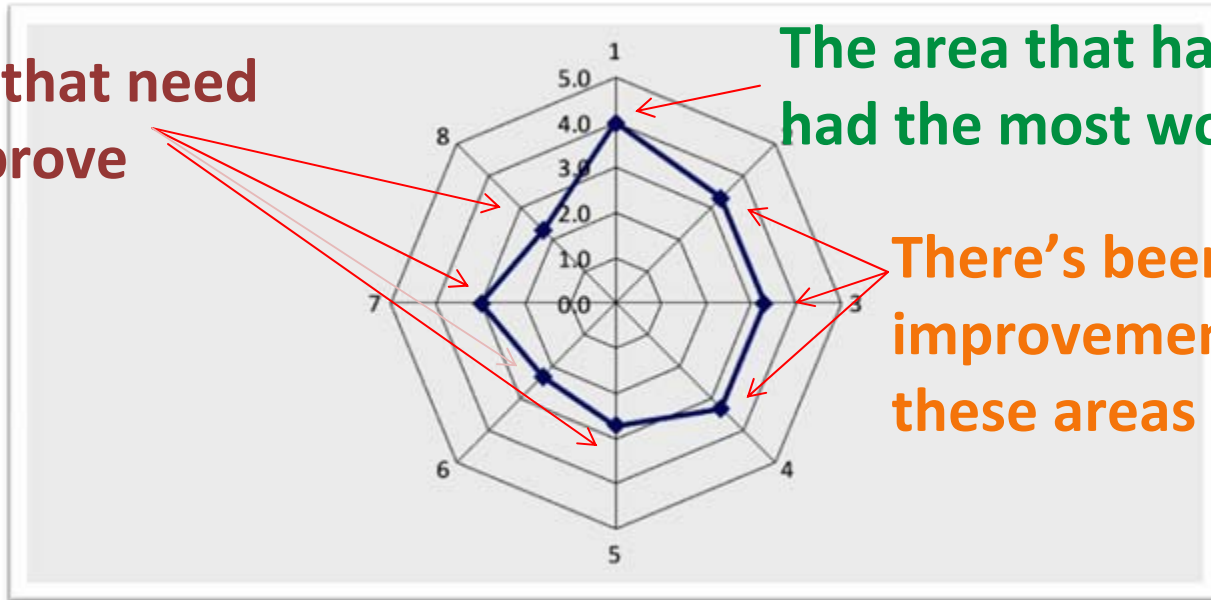


- 1. DESIGN SUPPLIER NETWORK ARCHITECTURE
- 2. DEVELOP COMPLIMENTARY SUPPLIER CAPABILITIES
- 3. CREATE FLOW AND PULL THROUGHOUT THE SUPPLIER NETWORK
- 4. ESTABLISH COOPERATIVE RELATIONSHIPS AND EFFECTIVE COORDINATION

- 5. MAXIMIZE FLEXIBILITY AND RESPONSIVENESS
- 6. PURSUE SUPPLIER-INTEGRATED PRODUCT AND PROCESS DEVELOPMENT
- 7. INTEGRATE KNOWLEDGE AND FOSTER INNOVATION
- 8. DEMONSTRATE CONTINUOUS PERFORMANCE IMPROVEMENT

# The Assessment Tells Us

Areas that need to improve



- **1. DESIGN SUPPLIER NETWORK ARCHITECTURE**
- **2. DEVELOP COMPLIMENTARY SUPPLIER CAPABILITIES**
- **3. CREATE FLOW AND PULL THROUGHOUT THE SUPPLIER NETWORK**
- **4. ESTABLISH COOPERATIVE RELATIONSHIPS AND EFFECTIVE COORDINATION**

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- **8. DEMONSTRATE CONTINUOUS PERFORMANCE IMPROVEMENT**

# CMTC Transformation Planner



Omega Precision

*Aircraft/Aerospace suppliers*



# Industry Specific Benchmark

- CMTC Transformation Planner gathers both financial and performance related organization data
- Presents a benchmark comparison against a database of several thousand manufacturers across the United States
- The benchmark data is stratified according to the organization's industry

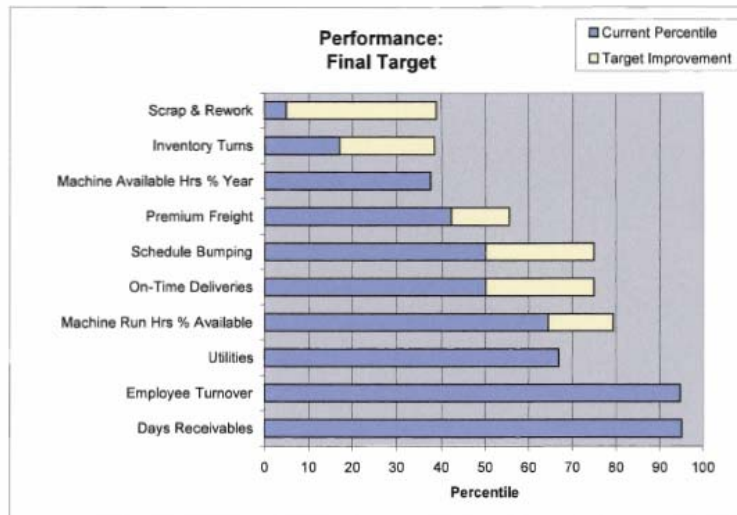
# The Results and Proposed Improvements

Omega Precision



Figure C - Opportunities

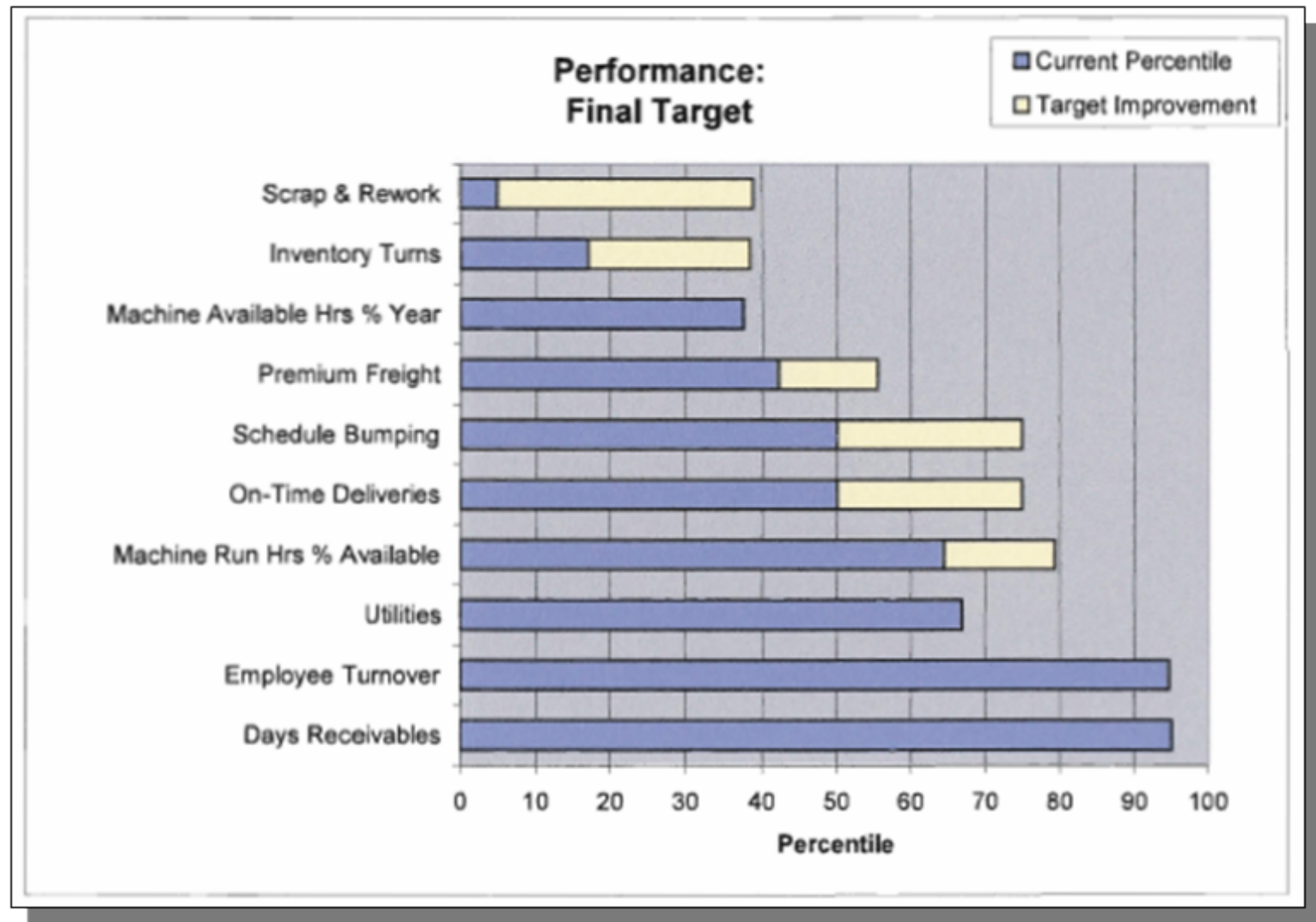
|                              | Current Percentile | Target Percentile | Target Improvement |
|------------------------------|--------------------|-------------------|--------------------|
| Days Receivables             | 95                 | 95                | 0                  |
| Employee Turnover            | 95                 | 95                | 0                  |
| Utilities                    | 67                 | 67                | 0                  |
| Machine Run Hrs % Available  | 64                 | 79                | 15                 |
| On-Time Deliveries           | 50                 | 75                | 25                 |
| Schedule Bumping             | 50                 | 75                | 25                 |
| Premium Freight              | 42                 | 56                | 13                 |
| Machine Available Hrs % Year | 38                 | 38                | 0                  |
| Inventory Turns              | 17                 | 38                | 21                 |
| Scrap & Rework               | 5                  | 39                | 34                 |



# Defining the Current and Future States as a Percentile

|                              | <b>Current Percentile</b> | <b>Target Percentile</b> | <b>Target Improvement</b> |
|------------------------------|---------------------------|--------------------------|---------------------------|
| Days Receivables             | 95                        | 95                       | 0                         |
| Employee Turnover            | 95                        | 95                       | 0                         |
| Utilities                    | 67                        | 67                       | 0                         |
| Machine Run Hrs % Available  | 64                        | 79                       | 15                        |
| On-Time Deliveries           | 50                        | 75                       | 25                        |
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| Inventory Turns              | 17                        | 38                       | 21                        |
| Scrap & Rework               | 5                         | 39                       | 34                        |

# Defining the Current and Future States Graphically



# We Still Have Work to Do

The areas showing the greatest need for improvement are:

- Scrap and rework
- Inventory turns
- Schedule bumping
- On-time delivery
- Machine run hours - % available

# Continuing to Work on the Smart-Supplier Requirements

- The combination of areas of improvement identified in the assessments above defines the focus that will be worked on over the next year
- This will give Omega Precision a continuing advantage in the development of shortened lead time and a diversified, reliable supply chain

# Continuing to Work on the Smart-Supplier Requirements

- CMTC will be working to simplify the Supply Chain Management Self Assessment to make it easier for suppliers to accurately rate their position on the maturity model scale.