A New World of DMSMS

DMSMS ’06

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Missiles and Fire Control

Focused on Customer Satisfaction and Shareholder Value
Electronic Systems Business

- 30,000 Employees
- 5 Principal Businesses Organized Into 3 Major Business Units
- 18 Primary Locations
  - In 14 U.S. States, Canada, U.K.
- 1,000+ Programs
- Customers Include:
  - U.S. DoD
  - International
  - Civil Agencies

Balanced Weapon Systems and Information-Driven Businesses
Missiles & Fire Control Business

- >70 Products
- 1,000+ Active Contracts
- Approximately 2,000 Proposals
- Pursuing Business in 50 Countries
- World Class Mission Success

2005 Sales
Approximately $3.7B
MFC DMS Perspective

- MFC is heavily reliant upon electronic and optical components and assemblies for its products

- MFC has been a pioneer in DMSMS strategy
  - Developed procedures, proactive strategies and cross-functional teams
    - Cross Functional Procedures for Component Selection
    - Standardization of Components based on roadmaps
  - Flowed to become an integral part of doing business across MFC and our supply chain
  - Enjoys an industry-leading success rate for low-cost solutions that do not impact product build and/or delivery schedules
DMSMS has been traditionally defined by DMEA as:

“...the loss or impending loss of manufacturers or suppliers of critical items and raw materials due to discontinuance of production, leaving the device unprocurable “.

Typically think of DMS as business-model related due to uneconomical production
- More challenging due to PBL contracts, product warranties and extended platform service life

Creates the generally well understood “Trailing Edge” DMS model
**DMSMS Influences**

- **Traditional tool sets:**
  - GIDEA, PCNs, Life Cycle tools
  - Supplier roadmaps, data mining and communication
  - Industry forums

- **Traditional solution options:**
  - Leverage
  - Alternate sources or parts
  - Commercial Technology Insertion
  - Aftermarket
  - Brokers
  - Repackaging
  - Emulation/Reverse engineering
  - LTB
  - Redesign
Non-traditional factors are now contributing
  More difficult to deal with because you cannot plan for them
  RoHS, Specialty Metals
  Creates the “Total Life Cycle” DMS model
**DMSMS Influences**

- **Tool sets:**
  - GIDEP
  - Data mining and communication
  - Industry forums

- **“Solution” options:**
  - Leverage
  - Alternate sources or parts
  - Redesign
  - Lobbying
  - Withholds
New twist on DMSMS issue emerging in high technology fields such as Optics

Reliance of military systems on optical technology for enhanced performance is increasing

Current optical materials and shapes cannot meet performance requirements for the next-generation systems

National Research Council (NRC) report *Harnessing Light: Optical Science and Engineering for the 21st Century*

“... the military viability of new optical system technologies depend upon further improving optical system performance and cost, which in turn requires critical breakthroughs in optics manufacturing capabilities.”
**DMSMS Influences**

- **Performance Requirement Challenges**
  - Fabrication accuracies orders of magnitude beyond metal machining
  - Materials very hard and brittle
  - Unusual shapes

- **MFC Observations:**
  - Tighter packaging constraints
  - More aspheric surfaces
  - Larger diameter components
  - Use of a larger percentage of optical surface
  - More complex coating requirements
  - New materials

- Beyond current capabilities of supply chain

- Negative effects on quality, schedule and cost targets
• Has created “Leading Edge” Technology DMS model

• Double-Edged Sword: As technology advances to meet leading edge requirements, additional DMSMS losses incurred on the trailing edge
Military market continues to be an insignificant factor

Must continue to seek innovative solutions to a dwindling supply base
Majority of dollars remain in military IR systems

Market erosion by commercial applications
  - Growth rate ~20%

Optical components comprise larger percentage of commercial system cost

Military growth not as significant: <10%; led by Airborne applications
  - Requires capture or take-away plan

* Maxtech International, Inc.
**DMSMS Effects**

- Shrinking supply base
  - Unique capabilities required
  - Dependence on labor-intensive equipment and special skills
  - Dramatic globalization-US base has lost the lead in some key areas
  - Increased opportunities in commercial applications
  - Significant consolidation/partnering activity
  - Vertical integration by Prime Contractors

- To counter these challenges we must…
  - Understand the capabilities of our supply chain
  - Form true “strategic partnerships”
• OEMS must engage in strategic sourcing activities to mitigate against all life-cycle DMSMS models
  – Started in 1980s by General Motors
  – MFC, like many other OEMs, purchases a significant percentage of products via its supply chain
  – Allows formation of close alliances with supply base to better understand capabilities and technology roadmaps
  – Benefits
    • Minimize costs while reducing risks
    • Improving performance
    • Strong relationships with “best value” supply chain partners
    • Consolidated purchasing power
  – Issues: Suppliers are leery of strategic sourcing initiatives
    • Aerospace industry has been challenged regarding misapplication of strategic sourcing tenets*

DMS & Strategic Sourcing Implementation

• Strategic sourcing process
  – Assess current supply base purchases
  – Evaluate supply base capabilities
  – Establish optimized supply base
  – Identification of suitable suppliers
  – Implementation of new supply structure
  – Metrics and maintenance
Supplier Manufacturing Capabilities - Introduction

• Goals:
  • To optimize the MFC supply base
    • Identify and validate supplier capabilities
    • Establish strategic sources

• Benefits:
  • Provide engineering community with the manufacturing capabilities of the MFC supply base during the design process (design-to-capabilities)
  • Provide buyer community and supplier selection community with a tool to assess supplier capabilities and performance to those capabilities during the selection process
Supervisor Manufacturing Capabilities – GT Code

• To effectively compare the supply base, we must establish key characteristics that classify ‘like’ products

• Key characteristics must be based on manufacturing discriminators

• Developed Group Technology coding scheme
  • Uniquely identifies product sets in terms of a hierarchy of manufacturing discriminators

• Code used to categorize MFC Optics part numbers
Supplier Manufacturing Capabilities - Survey

- Determine supplier capabilities
- Phase I survey developed and distributed
  - Questions focused on establishing capabilities of suppliers relative to Group Technology Code components
  - Focused on 4 primary product groups
- Demographics & Commodity sections
- Business structure & Hierarchical product capabilities
• Validated via historical performance on GT Coded products
• Validation of products with no performance history achieved via survey responses and verification
Supplier Manufacturing Capabilities Matrix

- Supplier Manufacturing Capabilities Matrix
  - Highlights opportunities for resourcing due to poor performance or DMS (Trailing Edge DMS)
  - Identifies supply base to meet product requirements during the design phase (Leading Edge DMS)
    - Identifies if supplier development is required
  - Provides opportunities for supplier engagement
  - Allows review of supply base and performance against any characteristic in the GT Code
Closing Remarks

• As the military supply base continues to dwindle it is inherent upon the OEMs to...
  
  • Understand the supply base
  • Identify strategic suppliers
  • Engage in and maintain strategic sourcing relationships

• Only by teaming can we combat the effects of DMSMS and continue to support warfighter readiness