Department of Defense
Lean Six Sigma Deployment

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Director

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Agenda

★ The role of the Department of Defense
★ The problem
★ The solution
★ The progress
★ The road map for change

Acronyms defined:
★ DoD = Department of Defense
★ OSD = Office of the Secretary of Defense
★ LSS = Lean Six Sigma
★ CPI = Continuous Process Improvement
Defending the United States is a large responsibility

- $515 Billion budget
- 5 Million people are committed to our national defense
- Imagine DoD in terms of a country*
  - By population, it is greater than 43% of the world’s countries
  - By GDP, it is the 16th largest* economy

Largest LSS deployment ever undertaken

**Workforce** (in thousands)

<table>
<thead>
<tr>
<th>Service</th>
<th>Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSD</td>
<td>77</td>
</tr>
<tr>
<td>Air Force</td>
<td>570</td>
</tr>
<tr>
<td>Navy/Marines</td>
<td>550</td>
</tr>
<tr>
<td>Army</td>
<td>1500</td>
</tr>
</tbody>
</table>

**Net fixed assets** (in billions) excluding military equipment

<table>
<thead>
<tr>
<th>Company</th>
<th>Net fixed assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>DoD</td>
<td>$128</td>
</tr>
<tr>
<td>Exxon Mobil</td>
<td>$114</td>
</tr>
<tr>
<td>Wal-Mart Stores</td>
<td>$88</td>
</tr>
<tr>
<td>Conoco Phillips</td>
<td>$86</td>
</tr>
<tr>
<td>Chevron</td>
<td>$69</td>
</tr>
<tr>
<td>General Motors</td>
<td>$42</td>
</tr>
<tr>
<td>Ford Motor Co.</td>
<td>$38</td>
</tr>
</tbody>
</table>

*1 - World Bank, 2006
*2 - w/ supplemental
DoD is an extremely complex global organization

Varying LSS Maturity

Located Around the Globe

42 Distinct Organizations

DoD Matrix Organization Structure
Continuous Process Improvement is DoD strategy

★ On May 12, 2008, the Deputy Secretary of Defense issued a Directive to all DoD components, establishing policy to use LSS to improve:

- Productivity
- Performance against mission
  ★ Availability, reliability, cycle time, investment, and operating costs
- Safety
- Flexibility to meet DoD mission needs
- Energy efficiency

Lasting change starts with policy that transcends administration changes
The world is changing at a faster rate than the DoD

★ Change
- Middle East
- Technology
- Economy
- Dynamic political/military situations

★ The status quo is unacceptable

★ The DoD provides
- Protection of the country
- Presence in foreign nations
- Protection from terror
- Protection of allies and political interests around the world
- Humanitarian aid

Is the DoD flexible enough to face the next crisis?
DoD’s success depends on agility

- The threats to our nation are evolving and challenge DoD’s capacity to adjust or evolve
Lean Six Sigma leverages a proven methodology to maximize the taxpayer dollar and increase agility

★ To create and sustain process and organizational change
- Lean eliminates waste and improves flow
- Six Sigma reduces variation and improves quality
- First make it effective, then make it efficient, then make it last

DoD annual spending per US citizen*

DoD LSS deployment is a work in progress

Deployment Summary

OSD, DoD Agencies and Field Activities
Deployed in October 2007
- Active Projects: 863
- Completed Projects: 889
- Black Belts: 392
- Green Belts: 3630

Air Force
Deployed in May 2006
- Active Projects: 587
- Completed Projects: 5256
- Black Belts: 308
- Green Belts: 1263

Army
Deployed in August 2005
- Active Projects: 3371
- Completed Projects: 3090
- Black Belts: 1272
- Green Belts: 3479

Navy
Deployed in January 2003
- Active Projects: 2252
- Completed Projects: 6774
- Black Belts: 1376
- Green Belts: 9826

*All data based on September 2008 DoD LSS Data Call
Operational Improvements – Example #1

Heavy Expanded Mobility Tactical Truck (HEMTT)

Mixed Model line
★ 6 different vehicles
★ 26 different variants

Key Achievements:
★ Improved productivity from 2003 hrs/vehicle to 1100 hrs/vehicle
★ Increased output from 13 vehicles per month to 32 vehicles per month
★ Decreased lead time from 120 days to 30 days

Results Achieved:
• 75% cycle time improvement
• Reduced rework by 51%
• Meet or exceed delivery requirements of assets

Warfighter Advantages – Dependable, Workhorse – the “Dragon Wagon”
Operational Improvements – Example #2

AN/TYQ-23 Tactical Air Operations Module (TAOM)

Key Achievements:

- Created a work balanced, streamlined, pull process in order to generate value while providing exceptional service to the Warfighter
- Reduced cycle time from 180 days to 120 days
- Decreased direct labor hours per unit from 5,019 to 4,240
- Cost savings of $386K through July 08

Results Achieved:
33% cycle time improvement
15% reduction in direct labor hours

Silver Medallion Recipient
Operational Improvements – Example #3

US Army Armament Research, Development and Engineering Center

Key Achievements:

- **Procurement Administrative Lead Time**
  - Integrated Army, Department of State and contractor approval and review processes
  - 24 months reduced to 11 months (savings: $2M), milestones met

- **M734A1 Mortar Fuze Production Yield**
  - Analysis identified design deficiency
  - Re-design reduced scrap from 5.0% to 0.1% (savings: $50K/month)

- **Insensitive Munitions Waiver Process**
  - Streamlined PEO-Ammunition’s approval process
  - 2+ year cycle reduced to 7 months

- **120mm Mortar Fin Malfunction Investigation**
  - Developed corrective actions to release suspended mortar ammunition (stockpile worth $200M)
  - Reduced risk in future procurements

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>ARDEC Cost Benefit/Avoidance ($M)</th>
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<tbody>
<tr>
<td>FY01</td>
<td>$38</td>
</tr>
<tr>
<td>FY02</td>
<td>$1,511</td>
</tr>
<tr>
<td>FY03</td>
<td>$670</td>
</tr>
<tr>
<td>FY04</td>
<td>$105</td>
</tr>
<tr>
<td>FY05</td>
<td>$542</td>
</tr>
<tr>
<td>FY06</td>
<td>$58</td>
</tr>
<tr>
<td>FY07</td>
<td>$300</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$3224M</strong></td>
</tr>
</tbody>
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First Federal & DoD Recipient of the Malcolm Baldrige National Quality Award
Transaction improvements

**Government Purchase Card Rebates**

**DEFINE**

- **Problem Statement:** 14A directives tell the process credit card purchase reconciliation in a timely manner which results in the loss of rebates. The amount of rebates directly proportional to the time of reconciliation.
- **Business Case:** As a result of this project, 14A will increase the amount of rebate by 30%.
- **Unit:** GPC Transaction
- **Defect:** Processing that is longer than 7 working days from receipt of statement
- **Start:** Receipt of Credit Card statements from bank
- **Stop:** Accurate GPC documentation is sent to NSA for processing
- **Scope:** Purchases made by directorate, invoice processed through 14A and NSL, rebate made to directorates

An effective reconciliation process will result in greater cash demands to directorates.

**MEASURE**

- **Improvement:**
  - **Graph:** Pareto chart showing the number of rebates per million dollars spent on GPC.
  - **Data:** Amount spent via GPC, rebate per million, total rebate.
  - **Yearly Analysis:**
    - FY 02 - FY 08:
      - FY 02 - $3.297
      - FY 03 - $1.990
      - FY 04 - $1.691
      - FY 05 - $1.564
      - FY 06 - $1.03
      - FY 07 - $1.03
      - FY 08 - $1.27

**ANALYZE**

- **Improve: FMEA Results**
  - **Process:** FMEA
  - **Data:** Analysis of results from FMEA.
  - **Recommended Actions:**
    - Implement IT solution
    - Increase cash demands
    - Prepare for increased footprint

**IMPROVE**

- **Control Plan:**
  - Follow-up plan for future iterations
  - SOPs updated, training occurred
  - Poke yoke!
  - Picture of new process (visual controls)
  - Redeployed people

**CONTROL**

- **Results:**
  - **319% increase in rebate per million spent with GPC**
  - **Standardized Processes** can now benefit from IT solution.
  - **Agency is better prepared for increased footprint** (DODIIS/JIC/JAC)

**RESULTS**

- **List:**
  1. 319% increase in rebate per million spent with GPC
  2. Standardized Processes can now benefit from IT solution.
  3. Agency is better prepared for increased footprint (DODIIS/JIC/JAC)
Current barriers to breakthrough change

Warfighter Mission

Barriers to Agility

Office of the Secretary of Defense

variation

waste

stove pipes
DoD needs enterprise-wide solutions to solve enterprise-wide problems to achieve exponential results

Warfighter Mission

Breakthrough Agility

Office of the Secretary of Defense (OSD)

OSD Enablers
1. Enterprise-wide Initiatives
2. Strategic Alignment
3. Integration
4. Consistency of Approach
5. Human Capital
6. Performance Management
The Department of Defense as an Enterprise

Core Support Missions

Human Resources Management

Who are our people, what are their skills, where are they located?

Weapon System Lifecycle Management

Who are our industry partners and what is the state of our relationship with them?

Materiel Supply & Service Management

What assets are we providing to support the warfighter and where are these assets deployed?

Real Property & Installations Lifecycle Management

How are we investing our funds to best enable the warfighting mission?

Financial Management

FUNCTIONAL COMPETENCIES

Plan/Budget  Procurement  IT  HR  Legal  Design/Dev  Storage/Trans.  Maintenance  Disposal
Deployment strategy transforms DoD by 2011

2008  2009  2010  2011  2012
Launch  Institutionalize  Sustain  Transform  Program Monitor

Keys to deployment success:
★ Leadership commitment
★ Strategic alignment (project selection)
★ Measurement
★ Consistency of approach: training, belt selection
★ Integration: knowledge management, replication, tracking, lessons learned
Critical Success Factors

★ DEPSECDEF Involvement
★ Established DoD CPI / LSS Program Office
★ DoD CPI/LSS Directive
★ Governing Body - Senior Steering Committee
★ Deployment Progress Metrics (Data Calls)
★ CPI/LSS Guidebook
★ Training and Certification
  – OSD Body of Knowledge and Course Curriculum
  – Training (Since Sep 07): 20 Champion classes; 19 one-week Green Belt courses; 9 three-week Black Belt courses
  – FY09 classes available: 12 Green Belt and 4 Black Belt
  – Certification Standards
  – 2nd of many DSD Certification Ceremonies
★ 2008 DoD CPI Symposium (1100+ attendees)
Senior leadership has provided authority, guidance and direction to implement Lean Six Sigma.
Focus On Excellence

Perfection may not be attainable, but if we chase perfection we can catch **excellence**.

- Vince Lombardi

*From Deputy Secretary of Defense, Gordon England*

*CPI Symposium, May 14, 2008*
Look to the Future

Good Enough for Government Work

FORTUNE
America’s Top Companies Look to Pentagon for Best Practices

LSS Methods Break Through Barriers
DoD Hits Exponential Returns!

Best Entrepreneurs of 2012