

# Transforming the DoD Using Lean Six Sigma: The Next Big Return on Investment

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# Where does Continuous Process Improvement (CPI) stand in the DoD today?

- ◆ Army, Navy and Air Force have launched enterprise wide CPI

## Why will it succeed? Why different from TQM?

- ◆ **Senior Leadership Engagement:** Admirals, Generals and SES are being trained to use the process( 2 day class), many becoming Executive Green Belts (5 day class plus 2 projects)
- ◆ **Critical Mass:** Upwards of 1% of personnel are trained as Black Belts and assigned full time to CPI projects
- ◆ **Sustained effort:** Training and Coaching are being internalized creation of Master Black Belts who replace external consultants
- ◆ **Results:** Thousands of *local* projects have been completed with an average *4 times* Return On Investment assuring support

# Key Insight of CPI: Long Lead time = High Cost

- ◆ All processes within the DoD thus far studied contain approximately 50% cost of no value to the user
- ◆ Non value add cost causes long lead time in a process
- ◆ CPI has a set of tools (e.g. Lean & Six Sigma) to reduce lead time by >60%, increasing flexibility, reducing non value add cost
- ◆ Resulting in a reduction in total cost of > 20%

Typical Example: Foreign Military Sales\* proposal lead time was reduced 63% and resulted in a 36% cost reduction as rework was cut from 91% to 8%

\* *Transforming Government using Lean Six Sigma*, George, Price, et al , page 12

# What is the next big Return on Investment?

- ◆ **Present:** Most current projects are locally selected within a “silo” and may reduce cost but not address warfighter needs. This phase was necessary to build capability and return.
- ◆ **Future:** A horizontal view across silos to the warfighter, operator, and threat, creating a “pull” signal and metric to:
  - Identify a relevant gap or excessive infrastructure
  - Focus CPI projects within the silo that is:
    - Causing the performance gap, or
    - Has excess cost and infrastructure capacity beyond “pull”
- ◆ **Result:** Projects with greater than *10 times* Return on Investment, more effective defense at 20% less cost DoD wide

# Why does the biggest return on investment come from a horizontal view to the operator/warfighter?

- ◆ “Improving a process that is irrelevant is a waste”  
Wally Massenburg, VADM, USN (ret.)
- ◆ Example of the Opportunity
  - An aircraft system’s reliability increased nearly 10 fold due to improvement projects
  - Demand for spare parts decreased 10 fold
  - Organization which provided spares *complained* because obligation authority was based on parts per year transactions
- ◆ The “pull” demand from the user/warfighter must size the supporting infrastructure capacity and related cost. Lean Six Sigma cost reduction should then be applied.
- ◆ Goal must be to reduce cost and return funds, not spend TOA

# What Are Prime Value Chains?

- ◆ Prime Value Chains (PVC) are interrelated value streams that – when combined – deliver war fighter capability
  - They seek to clarify the relationship between:
    - Strategy
    - Mission
    - Policy
    - Processes
    - Organizations
  - They cut across functions, organizations and command structures to define “pull” demand metrics. AKA High Impact Core Value Streams (HICVS) and Enterprise Value Stream Maps (EVSM)

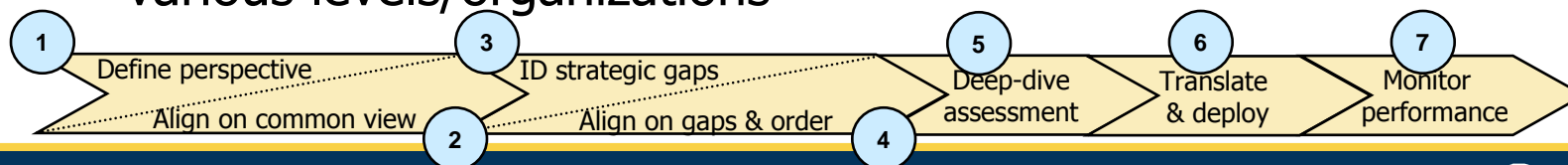
Developing a common understanding of the PVC provides the foundation for strategic transformation

# Strategic Performance Gap Examples

- ◆ Inaccuracy of stockpile requirements process causes downstream planning and performance shortfalls in acquisition and logistics processes
- ◆ Failure to provide smoke grenades to Army and Marines, precision weapons to Naval aviation
- ◆ Failure to match munitions outload capacity to COCOMs' 16 week war scenario
- ◆ Failure to deliver a specific ACAT-I weapon systems on-time & within budget
- ◆ Lack of an integrated Depot/Network strategy forces workload and positioning decisions to be highly reactive and suboptimal

# The 7 Step PVC Approach to Generate Strategically Important Results

1. **Define the perspective** (e.g. AMMO supply chain, Army Force Generation, Navy Weapons Procurement System)
2. Create the PVCs to **align leadership on a common view**
3. **Identify strategic metrics, gaps & priorities**
4. **Align leadership** on strategic gap metrics and order of attack
5. Perform **deep-dive PVC assessments on the “vital few”**
6. **Translate & deploy** assessment recommendations, implement Strategic, Organizational, Policy, Lean Six Sigma, and strategic projects
7. Design & deploy **metrics** that monitor performance vs. strategy at various levels/organizations

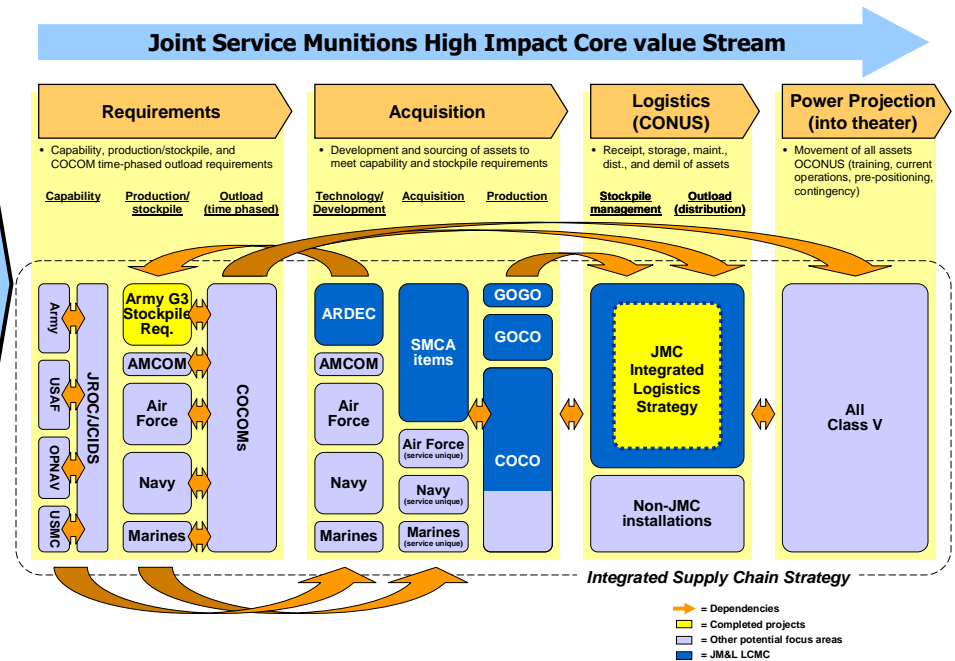
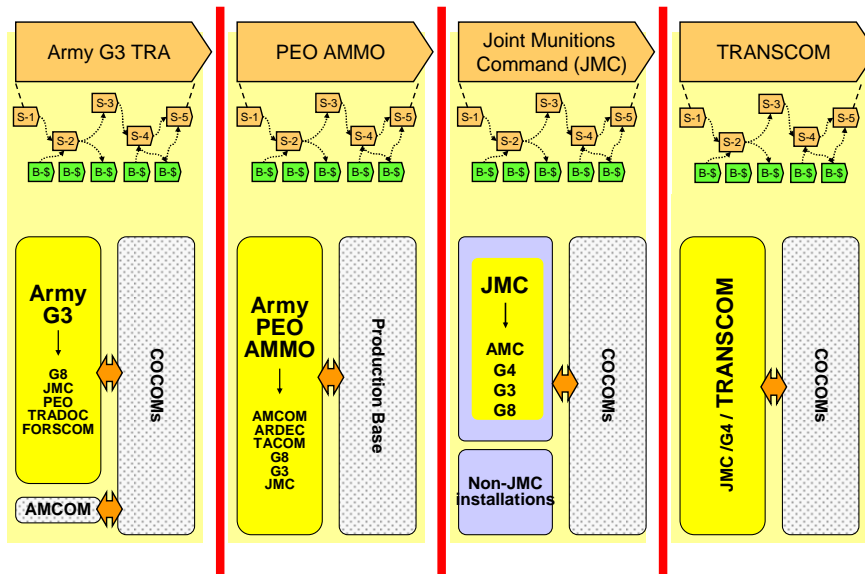




# Prime Value Chains Bring Clarity and Focus to Enable Strategic Transformation

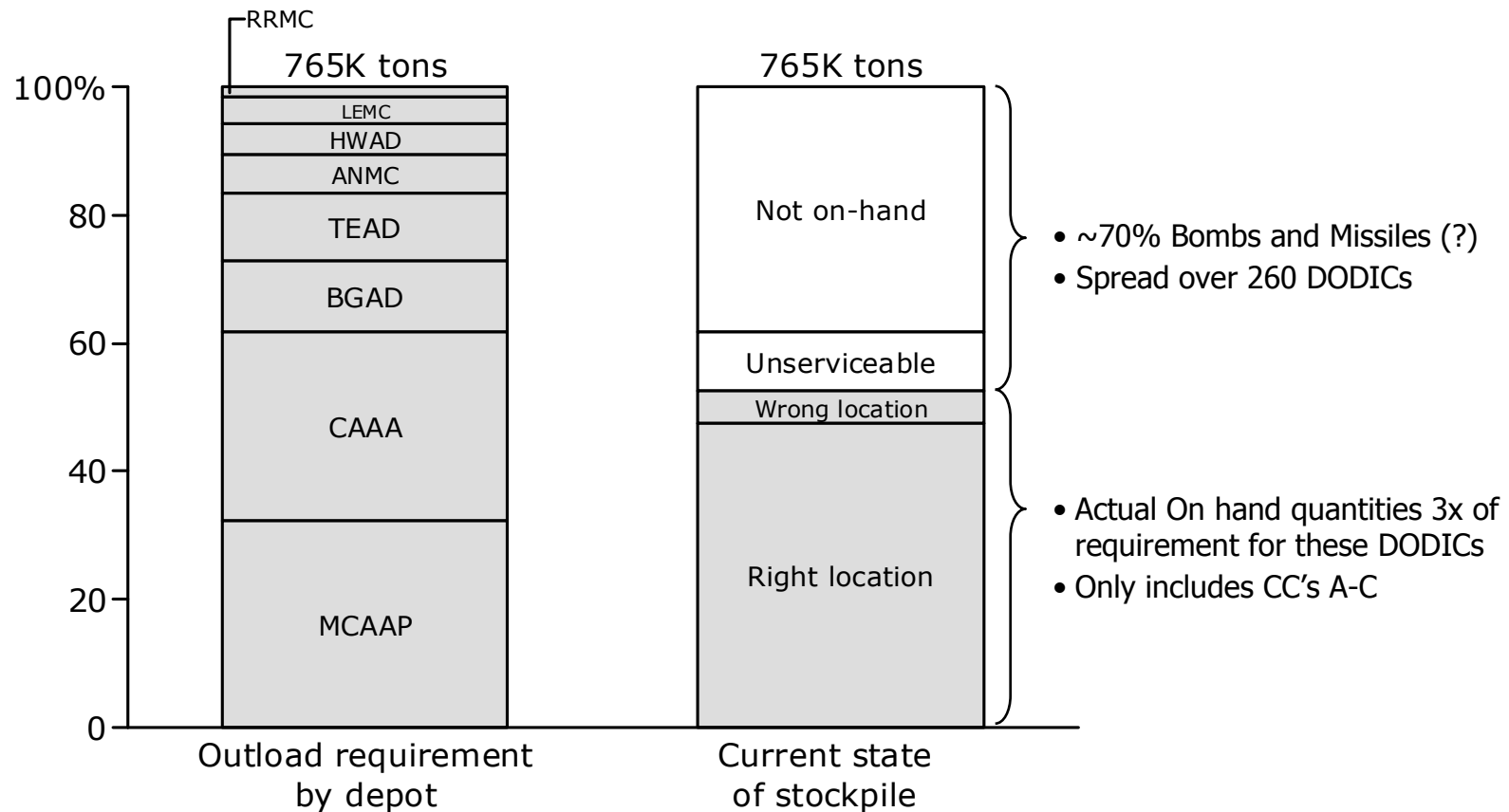
The historical approach to improvement was to focus project activities within individual command and/or process boundaries...the typical outcome was sub-optimization of results

In the PVC approach, the anchor organization actively works with stakeholders across the PVC to develop an *integrated strategy and transformation roadmap*



# Example: Joint Munitions Command Unable to Meet the COCOM 16-Week Time-Phased Out-Loading Quantity and Variety Requirement

Stockpile

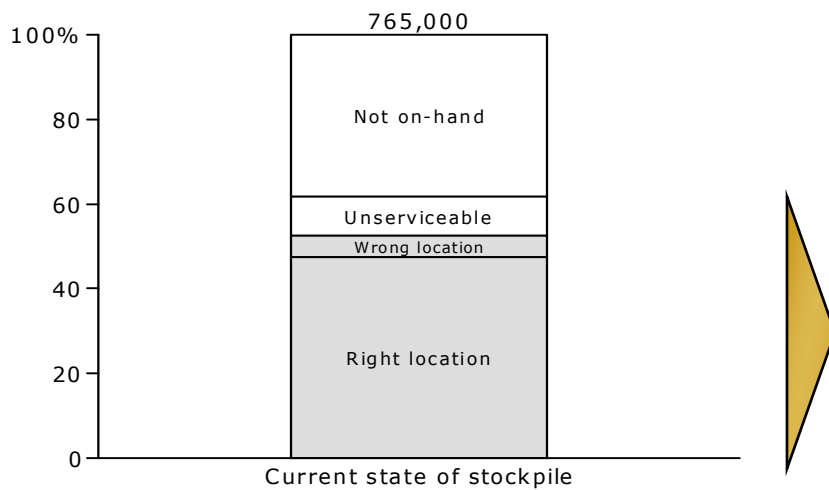


Note: WARS weight information augmented by weight file obtained from Jim Humphrey

Source: Outloading requirement – "Depot-Week Summary" file (Kurt Wheat); Current stockpile from WARS, March 30 (Lana Coleman)

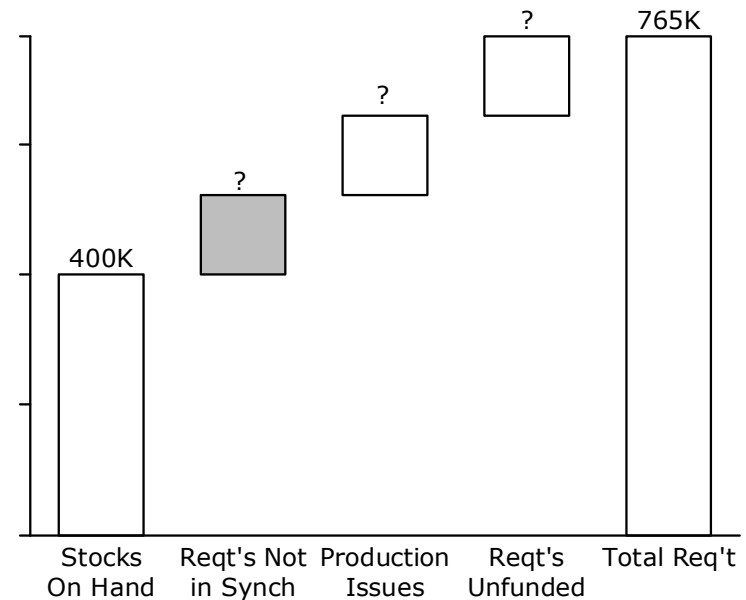
# Value Stream Mapping the Process Showed That a Cross-function, Cross-Command Solution Was Necessary: Drove Many Black Belt Projects Focused on a Few High Level Points Such as Schedule Demand Discrepancy Between JMC/COCOM

Readiness gap exists – approximately 50% of stocks of the outload requirement are on-hand and serviceable



Note: This project will bring JMC into alignment with COCOM requirements. It does not address sudden changes in COCOM requirements which is another project.

Addressing the requirements issues should decrease the readiness gap at lower cost

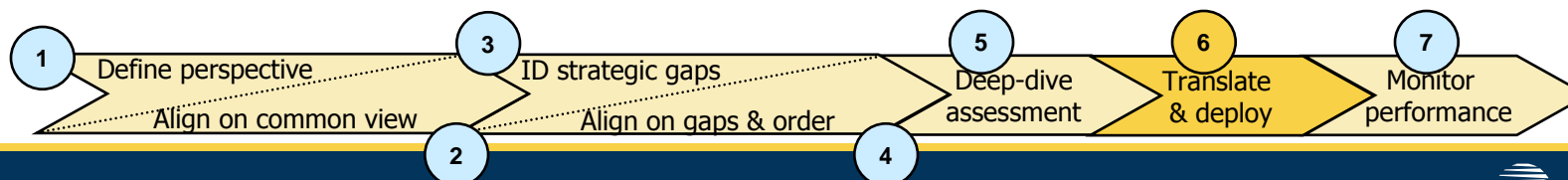


- ▼ COCOM/stockpile synch-up
- ▼ Sourcing Strategy
- ▼ If consistently under funded, maybe decrease requirements

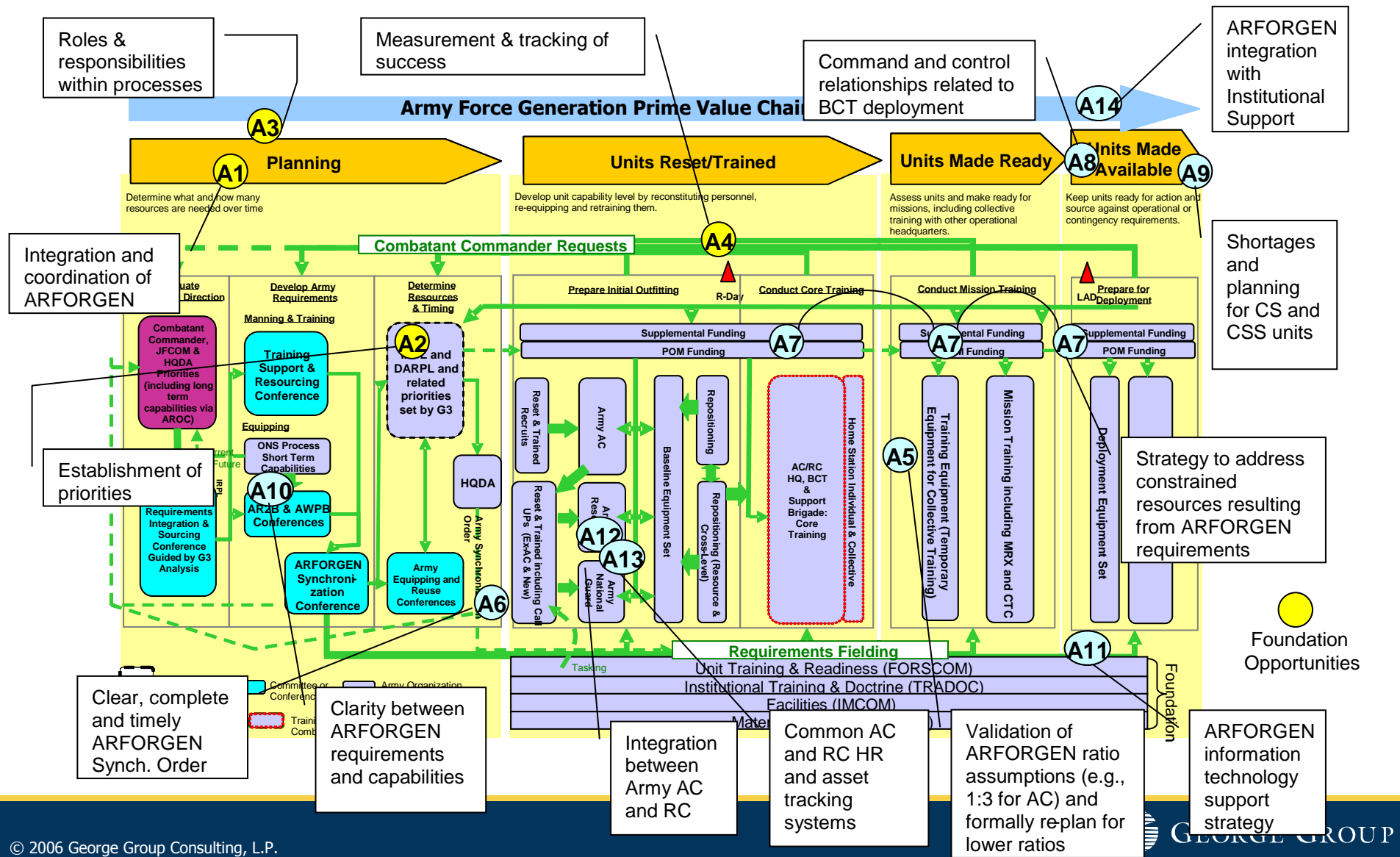
# The Munitions PVC Strategic Priority Assessment Led to a Mix of Lean Six Sigma and Strategic Projects

| Project | Name  | Project type | Priority | Project focus     |                |                   | Est. duration | Proposed sponsor | Proposed lead     |
|---------|---|--------------|----------|-------------------|----------------|-------------------|---------------|------------------|-------------------|
|         |   |              |          | Input variability | Feedback loops | Org R&R alignment |               |                  |                   |
| 2       | Establish common requirements & prioritization definitions  | Execute      | 1        | X                 | X              |                   | 2 mos         | G3               | G3                |
| 12      | Further integrate Critical Requirements and DA G3 priorities into acquisition & programming process | Kaizen       | 2        |                   | X              |                   | 3 mos         | G3               | G3                |
| 8       | Improve execution of ammo management responsibilities in Units                                      | Execute      | 3        |                   | X              | X                 | 9 mos         | G3               | CASCOM            |
| 23      | Improve DODIC integration planning  | Execute      | 4        | X                 | X              |                   | 5 mos         | G3               | G3                |
| 13      | Define QWARRM add-ons and revalidate add-on combat loads  | QH           | 5        | X                 |                | X                 | 2 mos         | G3               | CAA               |
| 24      | Establish a process to capture, coordinate and track New Equipment Training (NET) requirements      | LSS          | 5        |                   | X              |                   | 9 mos         | TRADOC           | TRADOC            |
| 14      | Improve identification of Industrial Base requirements  | Execute      | 7        | X                 |                |                   | 4 mos         | G3               | ASAALT (PEOs)     |
| 36      | Develop process to alert G3 of significant production problems potentially impacting Army readiness | Kaizen       | 8        |                   | X              |                   | 5 mos         | G3               | JMC               |
| 39      | Develop Ammo Enterprise strategy deployment process   | Strategy     | 9        |                   |                | X                 | 6 mos         | G3               | G3                |
| 42      | Develop simple focused strategies to account for demand uncertainty & supply chain risk             | Strategy     | 9        |                   |                |                   | 6 mos         | G3               | AMC (JMC)         |
| 7       | Develop the Ammo Value Chain performance scorecard structure & process                              | Strategy     | 10       |                   |                | X                 | 6 mos         | G3               | G3                |
| 31      | Improve database integration  | PISW         | 10       |                   | X              |                   | 9 mos         | G3               | ASAALT (PEO Ammo) |
| 41      | Improve CL accuracy & applicability to QWARRM process & theatre planning                            | Execute      | 10       | X                 | X              |                   | 9 mos         | G3               | G3                |
| 43      | Reduce the number of DODIC's with low mission alignment & high total risk adj. cost                 | Strategy     | 10       |                   | X              |                   | 9 mos         | G3               | G3                |
| 22      | Enable early notification of operational changes  | Execute      | Complete |                   | X              |                   | 5 mos         | G3/G4            | G4                |
| 3       | Develop the stockage objective setting process  | Kaizen       | Underway |                   | X              |                   | 6 mos         | G4               | G4                |
| 11      | Improve POI requirements accuracy   | LSS          | Underway | X                 |                |                   | 6 mos         | G3               | G3                |
| 19      | Enable range availability database use for forecasting  | LSS          | Underway | X                 | X              |                   | 6 mos         | G3 TRS           | G3 TRS            |
| 21      | Validate STRAC requirements   | LSS          | Underway | X                 | X              |                   | 6 mos         | G3               | G3                |

Assessment projects span the continuum from "execute" to strategic and address the key stockpile requirements strategic levers

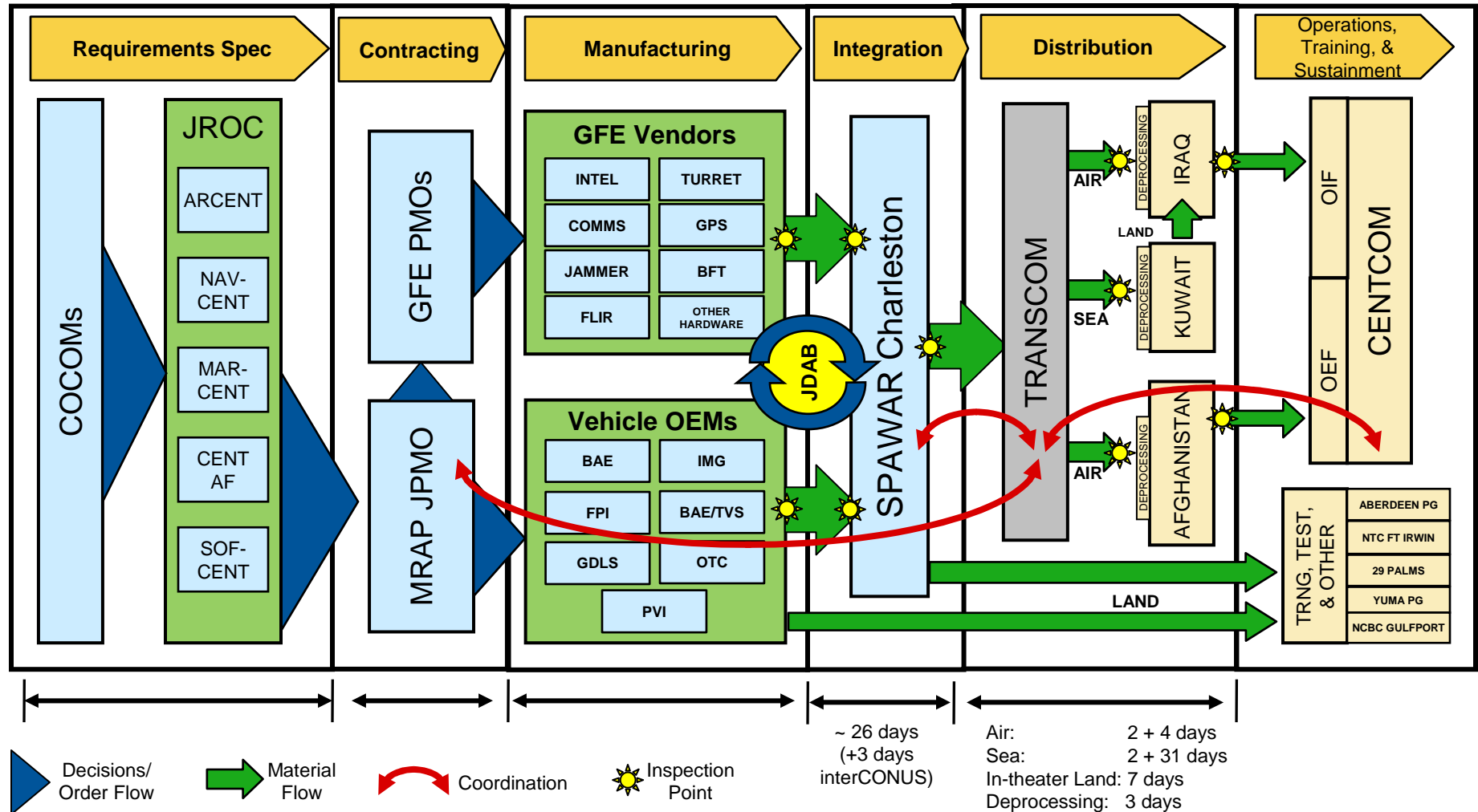


# Priorities and Interactions: PVC analysis identifies the "vital few" Organizational and Lean Six Sigma projects that will close the strategic performance gap



# PVC examines policy impact: MRAP exists in a complex 'ecosystem' ...upstream policies and activities profoundly impact downstream processes and deliverables performance

**DRAFT**



# Contractor IT & Weapons Development

- ◆ Many IT and weapons systems are over budget and late to contracted delivery lead time, compromising national security
- ◆ The origin of Lean Six Sigma was to drive 60% faster lead times, greater flexibility, and 20% lower unit cost *at lower volumes*, in both *design*<sup>1</sup> and *manufacturing*
- ◆ Current industrial infrastructure talks-the-talk but with few exceptions does not walk-the-walk and must eliminate waste. Retraining needs to begin with their Leadership.
- ◆ Systems Engineering lessons<sup>2</sup> must be re-focused and applied *independently* with the incorporation of CPI. Goal: to make programs schedule and cost wise effective through a system wide government industry partnership.

*1. Fast Innovation, George et al, 2The Business of Science, Simon Ramo, pp 91-93*

# Conclusion

- ◆ The DoD is presently building a firm foundation of CPI using proven industry best practices.
- ◆ Now the DoD must apply CPI horizontally using Prime Value Chain analysis to define user/operator/demand pull metrics
- ◆ Infrastructure cost and capacity must be resized up or down to meet demand pull ....and no more. Total cost should be reduced 20%
- ◆ Incentives should be aligned such that Moneys saved must be returned to the Department or OSD, not spent to preserve TOA and existing infrastructure cost and capacity
- ◆ The DoD must increase effectiveness of programs through the establishment of independent Systems Engineering with CPI.