

Lean Six Sigma in the Changing Business Environment



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Breakout Session Objective and Abstract

Performance Management



Lean Six Sigma in a the Changing Business Environment

- Objective

- Learn about the primary challenges key Lean Six Sigma leaders are facing in their efforts to keep their organizations relevant in today's demanding business setting

- Abstract

- Lean Six Sigma (LSS) is a continuous improvement methodology that stresses process velocity and the elimination of defects and waste. It has been applied in both the public and private sectors to achieve significant performance improvements. This panel will discuss how the LSS approach, which was originally conceptualized for the manufacturing environment, is being applied for success at the enterprise level. Panelists will discuss **key enablers, challenges, and lessons learned involved in moving LSS successes beyond the level of plant, site, or other relatively self-contained organizational unit.** They will address successful **enhancements to the methodology** that they have applied to nurture systematic change in their organizations. These insights may be required of organizations that apply traditional improvement approaches and intend to keep pace in an environment that includes increasing numbers of customers, challenges, new technologies, distribution methods, and economic uncertainty.

Key Enablers

- *Strategic Alignment*
- *Leadership Engagement*

Lessons Learned

- *Flexibility*
- *Results*
- *Project to define projects*
- *Requirements*



Strategic Alignment



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DoD Strategic* Goals...

Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Prevail in today's wars	Prevent and deter conflict	Prepare to defeat adversaries and succeed in a wide range of contingencies	Preserve and enhance the All-Volunteer Force	Implement Reform Agenda
<p>OBJ 1.1.OCO: Degrade the Taliban to levels manageable by the Afghan National Security Force (ANSF), while increasing the size and capability of the ANSF.</p> <p>OBJ 1.2.OCO: Execute a responsible drawdown of the U.S. military presence in Iraq.</p>	<p>OBJ 2.1.1F1: Extend a global posture to prevail across all domains by increasing capacity in general purpose forces and enhancing stability operations and foreign security force competency.</p> <p>OBJ 2.3.1F3: Strengthen cooperation with allies and partners to develop and field robust, pragmatic, and cost-effective missile defense capabilities.</p> <p>OBJ 2.4.1X2: Ensure sufficient ISR collection and analysis capacity for full</p>	<p>OBJ 3.1.1F2B: Improve the responsiveness and flexibility of consequence management response forces.</p> <p>OBJ 3.2.4F2C: Enhance capacity to</p> <p>OBJ 3.4.1X1: Expand capacity to succeed against adversary states armed with advanced anti-access</p> <p>technical foundation within the Department's Science and Technology (S&T) pgram.</p>	<p>OBJ 4.1.2M: Provide top-quality physical and psychological care to wounded warriors, while reducing growth in overall healthcare costs.</p> <p>OBJ 4.2.2B: Ensure the Department</p> <p>OBJ 4.3.2R: Better prepare and support families during the stress of multiple deployments.</p> <p>OBJ 4.4.2T: Train the Total Defense Workforce with the right competencies.</p>	<p>OBJ 5.1.2A: Increase use of renewable energy and reduce energy demand at DoD installations.</p> <p>OBJ 5.2.2C: Protect critical DoD infrastructure and partner with other owners in private sector to assure.</p> <p>OBJ 5.4.2L: Provide more effective and efficient logistical support to forces abroad.</p> <p>OBJ 5.5.2U/2V: Increase efficiencies in headquarters and administrative functions, support activities, and other overhead accounts.</p>

Execute a responsible drawdown of the U.S. military presence in Iraq.

Provide more effective and efficient logistical support to forces abroad.

*Based on crosswalk among the following strategic documents/sources: NDS, NMS, QDR, SMP, IPNSG, HPPG, GAO, OMB



MRAP Supply Chain is Critically Dependent on Kuwait-based Maintenance



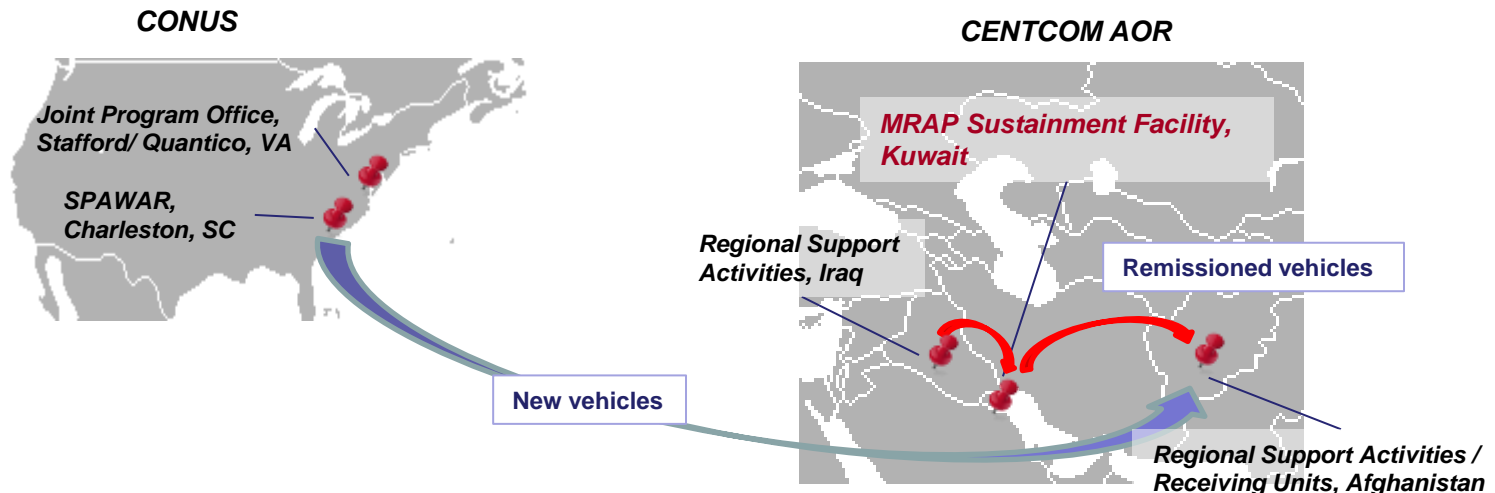
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- The MRAP Sustainment Facility (MSF)
 - Operated by Joint Program Office MRAP
 - Mission has evolved in its two-year life from fielding support in Iraq to remissioning for Afghanistan
 - Provide safe, fully mission capable vehicles in volume and locations needed to support the warfighter
 - Significant enabler of Afghanistan surge
 - 28% of MRAP vehicles flowed through this facility
- MSF must master both flexibility and efficiency
 - High mix, job shop
 - Variable work statement to satisfy rapidly evolving requirements
 - Rapid time-to-volume

In November 2009, facility was backlogged on the Cougar variant...
...since then improvement efforts focused on throughput and cost



Global flow of MRAP vehicles



An enterprise-level assessment led to identification of ten projects

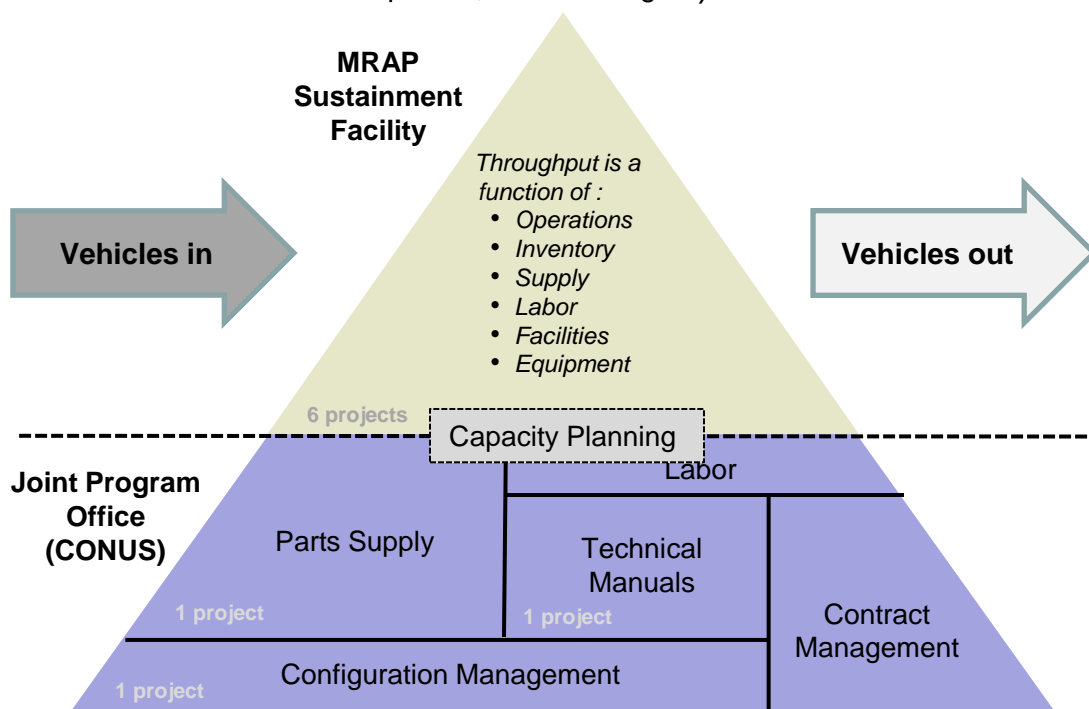


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While the immediate focus was performance at the MSF...

- Leadership (government oversight)
- Process (right subject matter expertise, Lean Six Sigma)

● Discussed today



Project	Status
MaxxPro Line Improvement	Closed ●
Requirements and Capacity Planning Process	Hold
Production Scheduling	Hold
Production Execution/SAMS IE Integration	Hold
Labor Lead Time, Streamlining and Planning Factors	Hold
MSF Inventory Optimization	Control ●
Configuration Management	Measure ●
Technical Manuals	Measure ●
Cataloging and Provisioning	Measure ●
MRAP Battle Damage Repair	Hold

...we had to simultaneously address supporting programmatic processes



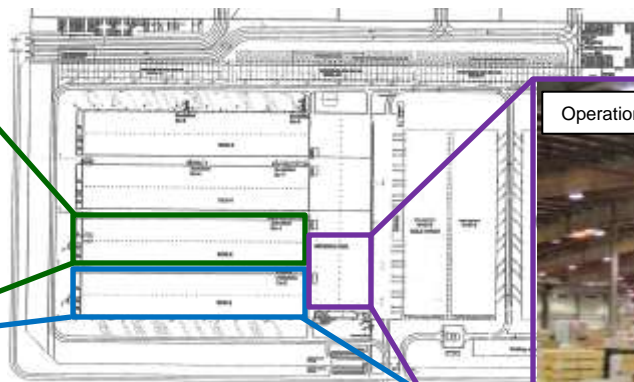
MRAP Sustainment Facility



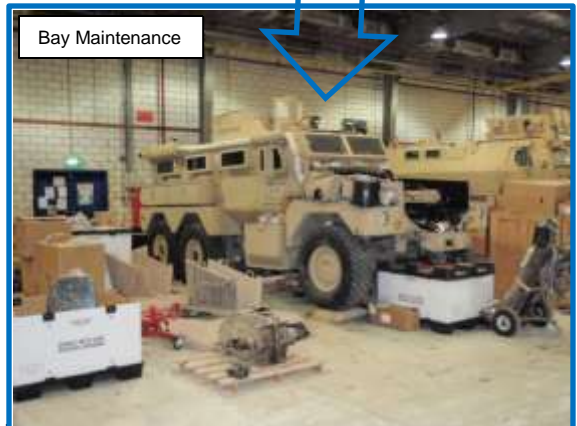
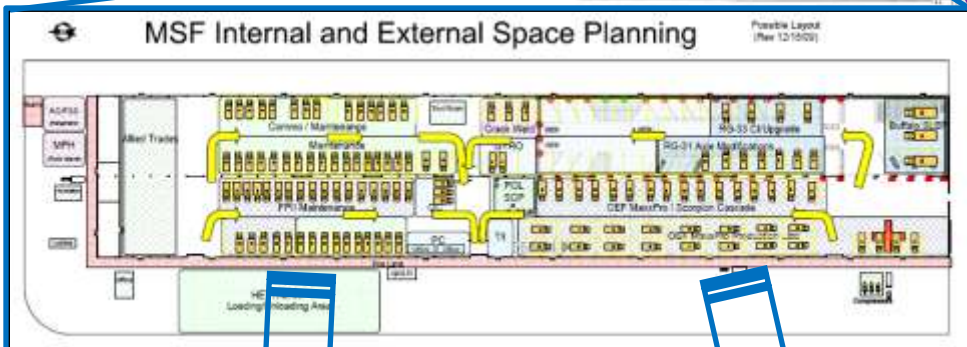
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C4I Integration



Operational Stock



Bay Maintenance



Line Maintenance

Basic Facts:

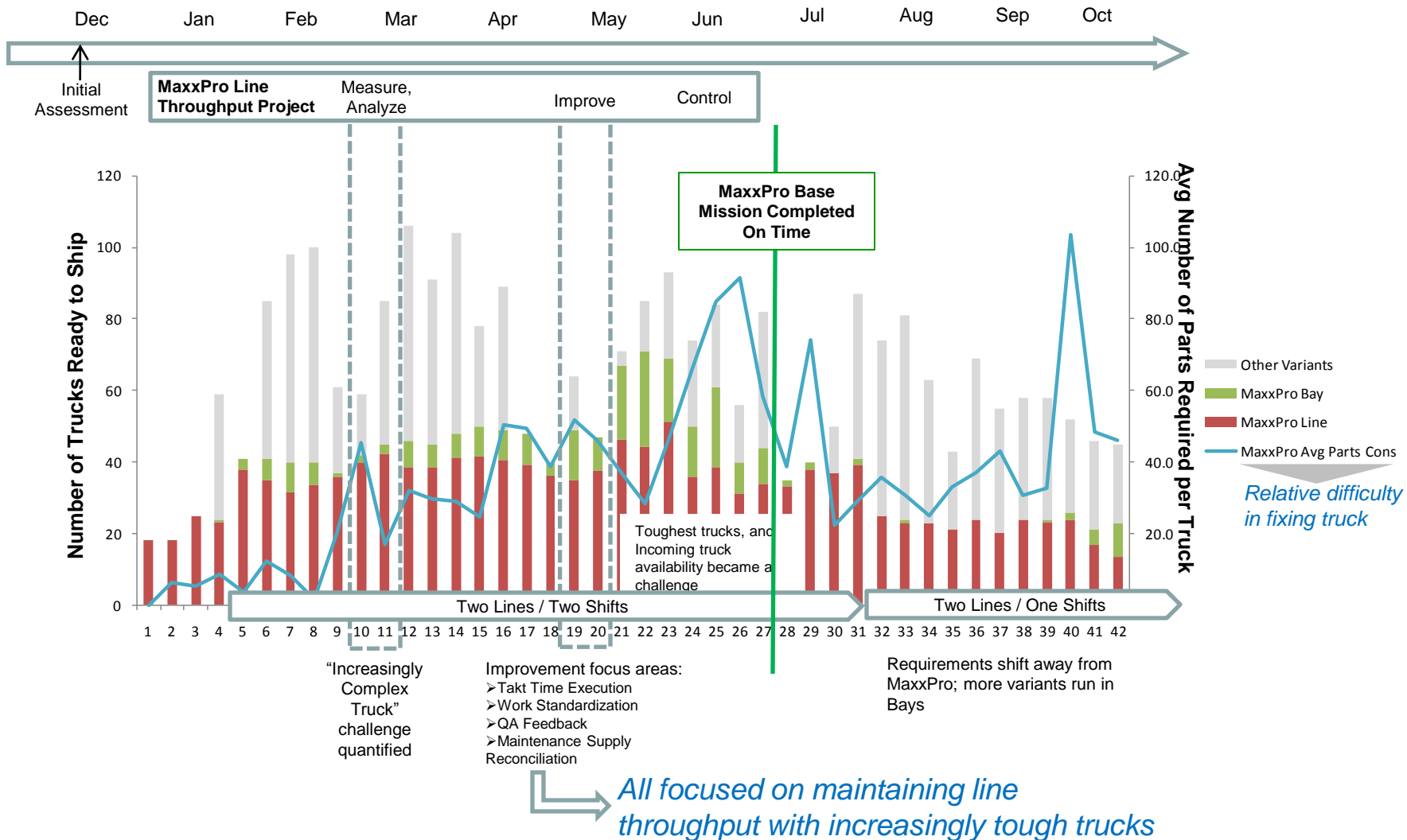
- Production floor space: 150,000 sq ft
- Work in progress: ~150 trucks
- Direct labor: ~500 mechanics
- Parts stock space: 65,000 sq ft
- Lines stocked: ~4300
- Quantity on hand: ~140,000 parts
- Incoming lot capacity: 3000+ trucks



Timeline: MaxxPro Line Throughput Project



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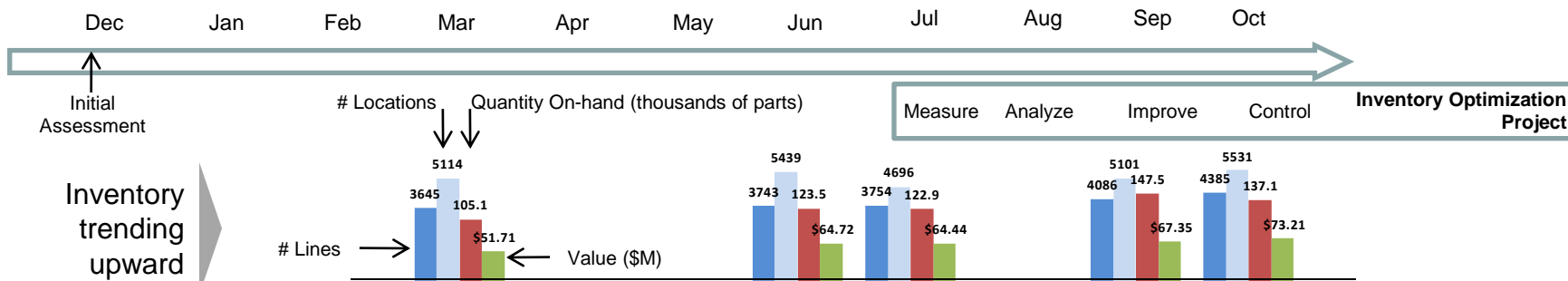




Timeline: Inventory Optimization Project



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Inventory trending upward
Driven by mission mix and requirements uncertainty...but is it the right inventory?

To answer this question, project considered both...

historic consumption

forecast future needs

historic consumption

Sum of OH QTY	Column Labels	No WON in 3 mo	Zero Consumption	< 1 Mo O/H	1 to 3 Mo O/H	3 to 6 Mo O/H	6 to 12 Mo O/H	> 12 Mo O/H	Grand Total
> 300% Fcst 3-Mo Req		4948	15021	71	1139	3920	5627	59327	90053
200-300% Fcst 3-Mo Req		131	175	23	1804	2254	940	1826	7153
100-200% Fcst 3-Mo Req		127	663	197	3545	1891	568	2243	9234
50% to 100% Fcst 3-Mo Req		12	139	1622	1340	364	285	196	3958
< 50% Fcst 3-Mo Req		47	12	1691	537	170	148	26	2631
No WON History		21573							21573
Zero Fcst Requirement		1530	841	10	48	21	14	29	2493
Grand Total		28368	16851	3614	8413	8620	7582	63647	137095

Project delivered a monthly review process and analytics

- Recommended inventory adjustments to reduce risk of stockout and excess

Significant risk of stockout
Moderate risk of stockout
investigate
No action required
Divest candidate
Inventory Reduction candidate

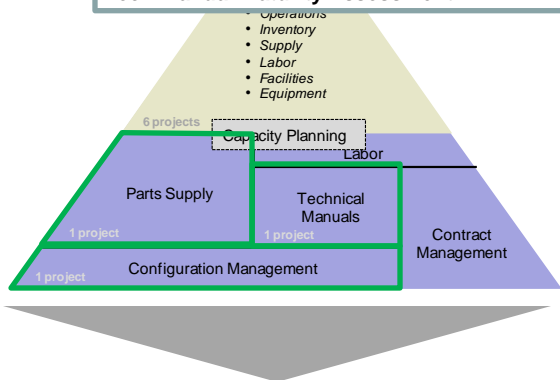
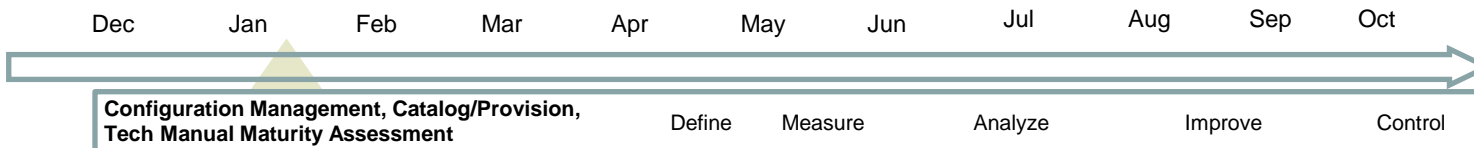
OH Qtys	% of Qtys OH
1750	1%
2480	2%
174	0%
11222	8%
24066	18%
97206	71%

Stocking Sweet Spot



Timeline: Configuration Management, Catalog/Provision, Technical Manual Maturity Assessment Project

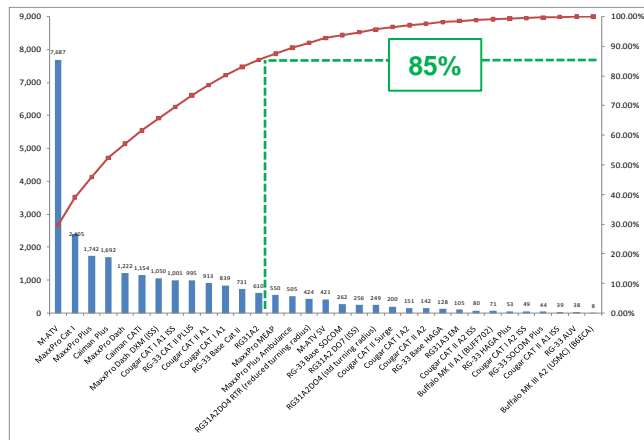
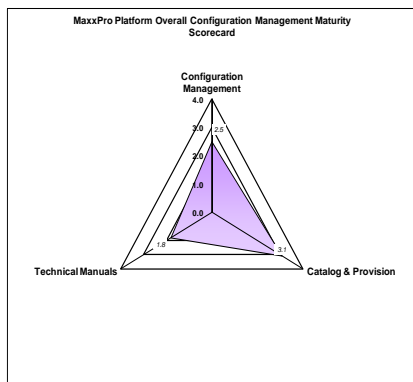
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Vehicle variant specific assessments...

OEM	Variant	Volume	Scorecard Results											
			CM				C&P				TM			
			1	2	3	4	1	2	3	4	1	2	3	4
BAE	RG-33 Base Cat II	731												
	RG-33 CAT II PLUS	995												
	RG-33 Base HAGA	128												
	RG-33 HAGA Plus	53												
	RG-33 Base SOCOM	262												
	RG-33 SOCOM Plus	44												
MaxxPro	RG-33 AUV	38												
	MaxxPro Cat I	2405												
	MaxxPro MEAP	550												
	MaxxPro Plus	1742												
	MaxxPro Plus Ambulance	505												
	MaxxPro Dash	1222												
	MaxxPro Dash DXM (ISS)	1050												
	RG31A2	610												
	RG31A2DO4 (std turning radius)	249												
	RG31A2DO4 RTR (reduced turning radius)	424												
Cougar	RG31A3 EM	105												
	RG31A2 DO7 (ISS)	256												
	Cougar CAT I A1	839												
	Cougar CAT II A1	913												
	Cougar CAT I A2	151												
	Cougar CAT II A2	142												
	Cougar CAT I A1 ISS	1001												
	Cougar CAT II A1 ISS	39												
	Cougar CAT I A2 ISS	49												
	Cougar CAT II A2 ISS	80												
Buffalo	Cougar CAT II Surge	200												
	Buffalo MK II A1 (BUFF702)	71												
B6ECA	Buffalo MK III A2 (USMC) (B6ECA)	8												
BAETIS	Calman CATI	1154												
	Calman Plus	1692												
Shkoshi	M-ATV	7687												

...analyzed across the entire program to identify highest priority risks...



...helped to focus improvement on 13 variants (85% of volume) and two OEMs



Key Enablers, Challenges, Lessons Learned

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Key Enablers	Challenges/ Lessons Learned
<p>Strategic alignment</p> <ul style="list-style-type: none"> ➤ Ensure results are relevant ➤ Must be continually revisited in dynamic environment <p>Leadership engagement</p> <ul style="list-style-type: none"> ➤ Ensure right process ownership ➤ Breaking down barriers will be required <ul style="list-style-type: none"> ▪ Tough calls ➤ Expect demonstration of results 	<p>Flexibility</p> <ul style="list-style-type: none"> ➤ Expect immature processes and scant/unreliable data <ul style="list-style-type: none"> ▪ Standardize on a best practice (leverage doctrine) ▪ Sanity checks and corroborating data are better than guesses ▪ Use sampling ➤ Tailor tools to situation <p>Results</p> <ul style="list-style-type: none"> ➤ Method must deliver... <ul style="list-style-type: none"> ▪ Actionable insight ▪ Urgency to make decision ▪ Means to monitor progress ➤ Project is about results...not methodology <ul style="list-style-type: none"> ▪ If communication involves education...something's wrong <p>Project to define projects</p> <ul style="list-style-type: none"> ➤ Provides the data to support mini-strategic alignment and prioritization <ul style="list-style-type: none"> ▪ Performance gap assessment <p>Requirements clarity</p> <ul style="list-style-type: none"> ➤ Customer(Warfighter) can be a source of variability <ul style="list-style-type: none"> ▪ Requirements management process is critical ▪ Particularly important at enterprise level ➤ For government/industry partnerships, time spend upfront on requirements, pays dividends in execution