NDIA Logistics Software Data and Analytics Workshop

“CBM+---It’s all about data!”

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Deputy Assistant Secretary of Defense for Materiel Readiness
December 6 – NDIA Logistics Software Data and Analytics Workshop
Why Condition-Based Maintenance Plus?

• “The DoD is continually challenged to provide battle-ready ground combat systems, ships and submarines, and aircraft to its’ warfighters, spending nearly $90 billion each year on weapon systems maintenance.”
  ~ GAO Report 105556

• CBM+ have been proven repeatedly by industry…not a new concept!!

• Opportunity to leverage the DoD data journey to increase Materiel Availability, reduce cost, and provide operational value to Commanders at all echelons!
Designing for sustainment: I Need Your Help…

The Time To Act is Here

By the start of Procurement, ~90% of O&S Costs are decided based on design and programmatic decisions. Early in development, ~70% of O&S Costs are decided based on the materiel solution selected.

Procurement

- Funding (Depot Activation, Provisioning, Pubs-Manuals)
- Program Trades (Prioritization of acquisition cost, schedule, performance over sustainment over CBM+, reliability/maintainability improvements)

Sustainment

- Quantity in Service
- Operational Usage (Hours, miles, etc.)
- Maintainer/Operator manpower costs (Reactive)
- Fuel Costs (Reactive)

Efforts to reduce O&S costs during the Sustainment phase have marginal impacts.

Most effective time to influence O&S costs

Acronyms:
- MDD = Materiel Development Decision
- MS A/B/C = Milestone A/B/C
- IOC = Initial Operational Capability
- FOC = Full Operational Capability
- LCC = Life Cycle Costs
- RAM = Reliability, Availability, Maintainability
Historical and Projected O&S Costs

DoD’s Costs for Operation and Support, Acquisition, and Infrastructure, 1980 to 2031

Source: CBO Report - Long-Term Costs of the Administration’s 2022 Defense Budget

The Future is Unaffordable - We Need to Act Now!
Predictive Logistics (PL) provides precision logistics and Mission Command decision support to the warfighter. Its digitizes/automates the manual processes of today, providing standardized metrics of equipment readiness and critical levels of supplies/capabilities on the battlefield. Predictive logistics is comprised of four focus areas: maintenance, fuel, ammunition, and distribution; underpinned by information advantage.
Data, Data, Data + Organizing for success

Data-Centric Environment enabling Predictive Logistics and Timely Decision Making to Sustain Large Scale Combat and Multi-Domain Operations

<table>
<thead>
<tr>
<th>Platform Level</th>
<th>Mission Command Data Integration</th>
<th>Support Ops/Enterprise Data Integration</th>
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<tbody>
<tr>
<td>PL Capability</td>
<td>- Self Monitoring/Self Reporting assets</td>
<td>- Timely visibility of equipment part failures, fuel/ammo consumption, &amp; tactical supply status</td>
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<td>- Timely visibility of equipment part failures, fuel/ammo consumption, &amp; tactical supply status</td>
<td>- Anticipatory logistics &amp; precision resupply</td>
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<td>- Mounted Mission Command IT integration</td>
<td>- UMCP Log automation (reduce soldier touch pts)</td>
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<td>- Mounted Mission Command IT integration</td>
<td>- Equipment prognosis/diagnostic/PMCS tools</td>
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<td>- Integrated Intel/Ops/Sustainment data models</td>
<td>- Improved quality of enterprise log data and fleet management decisions</td>
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<td>- Command Post visualization &amp; decision support tools (e.g. AI/ML)</td>
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<tr>
<td>Required IT Investments</td>
<td>- Additional sensors (if/as needed)</td>
<td>- Asset wireless network</td>
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<td>- Embedded prognostic algorithms</td>
<td>- Mobile Devices &amp; Digital Logbook</td>
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<td></td>
<td>- Log data storage &amp; interfaces</td>
<td>- Data Store &amp; Forward and ERP integration</td>
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<td>- Prognostic algorithms</td>
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<td>PEOs</td>
<td>- GCS, CS/CSS, AVN</td>
<td>- EIS, C3T, CS/CSS, Soldier</td>
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<td>- C3T</td>
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Helping to keep the Department moving towards the goal of predictive maintenance…

- Focus on data first and foremost
- Add additional data sources when ready
- Continued prioritization will be essential
- Establish effective metrics

- Clear-eyed in terms of expectations
- Build in predictive maintenance tools and approaches into acquisition program development and sustainment
- Create trust in user community on predictive maintenance capabilities
- Enable maintainers to transition to a proactive maintenance culture
Considerations For Success

• **Leadership** – How engaged is the program with the enterprise senior leadership regarding CBM+ implementation?

• **Resourcing** – Have BCAs, CBAs, or ROIs been completed? Are CBM+ efforts funded?

• **Policy & Guidance** – Do Service policies provide an effective framework and does your program include guidance from DoDI 4151.22?

• **Strategic & Tactical Planning** – Is CBM+ planning in acquisition & sustainment documents? Do you have a CBM+ Roadmap?

• **Organization** - Are personnel designated with CBM+ duties & responsibilities, and participate in enterprise level CBM+ forums and activities?

• **Reliability Centered Maintenance (RCM)** - Is RCM used to determine optimum maintenance strategies / processes & reflected in your Maintenance Plans / scheduled maintenance publications? What is frequency of preventive maintenance task reviews?

• **Tools & Technologies** – Are CBM+ tools and technologies integrated; Data capture & use of sensor data; availability of data analytic tools?

• **Outcome Metrics** – Are CBM+ benefits and savings monitored with outcome metrics at initial implementation & throughout the life cycle? Which benefit categories are affected?
QUESTIONS?