

# *NDIA Logistics Software Data and Analytics Workshop*

***“CBM+---It’s all about data!”***



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December 6 – NDIA Logistics Software Data and Analytics Workshop



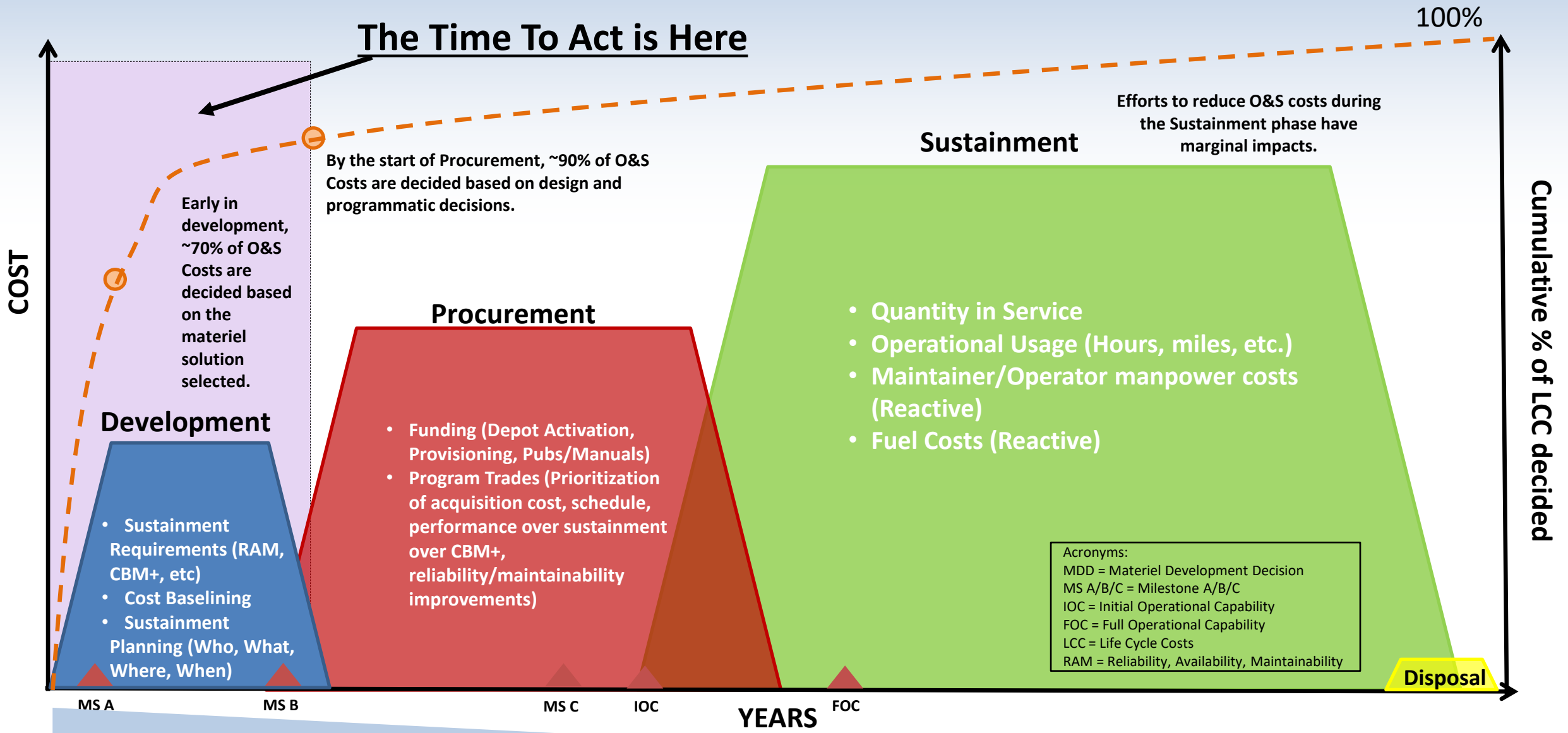


# Why Condition-Based Maintenance Plus?

- “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!



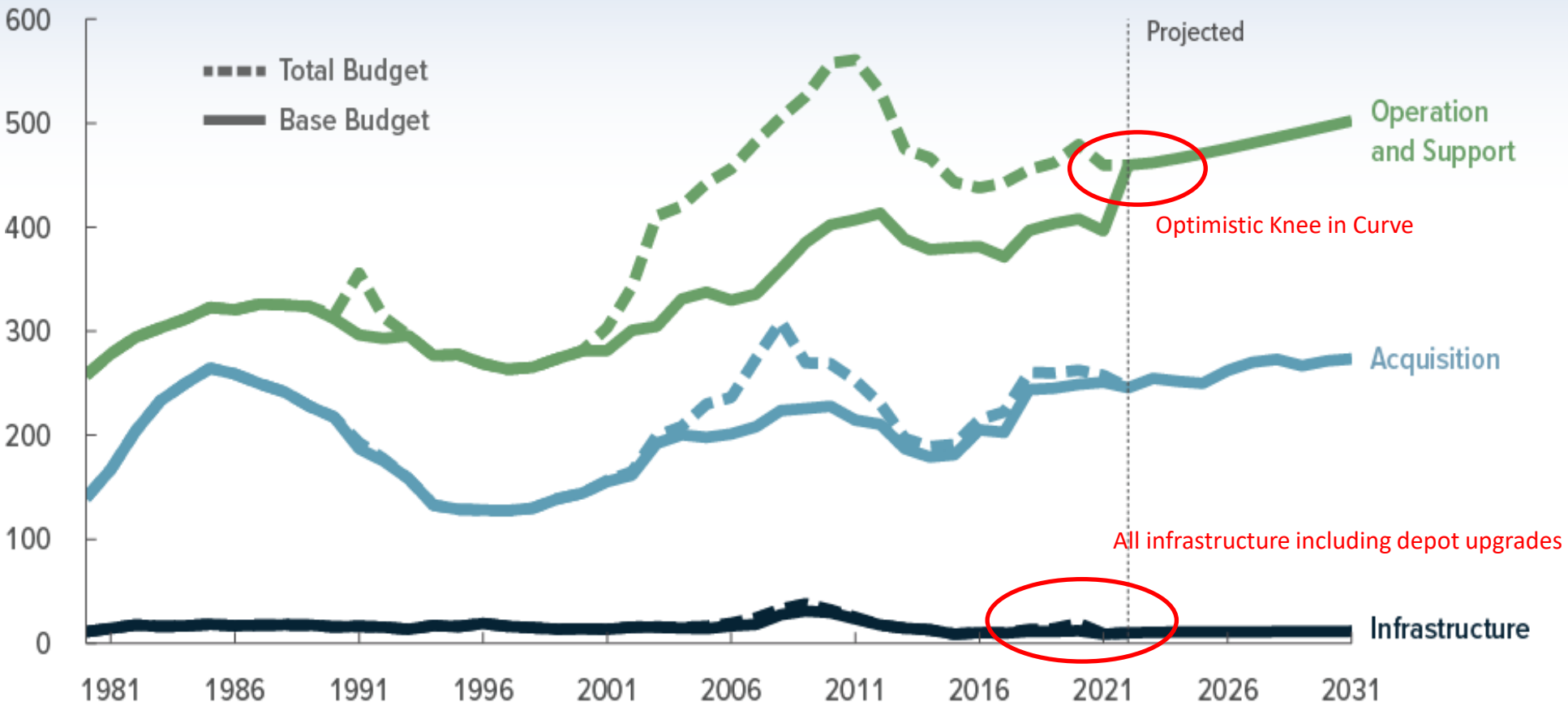
# Designing for sustainment: I Need Your Help...





# 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) Operational Viewpoint OV-1

STRATEGIC SUPPORT AREA

OPERATIONAL SUPPORT AREA

TACTICAL SUPPORT AREA

CLOSE AREA

DEEP AREA

**Enterprise Logistics Planners and Engineers**

- Gather current and historical data and conduct analytics incorporating AI/ML
- Generate predictive algorithms that inform decisive action at all echelons
- Master Data Management (MDM)

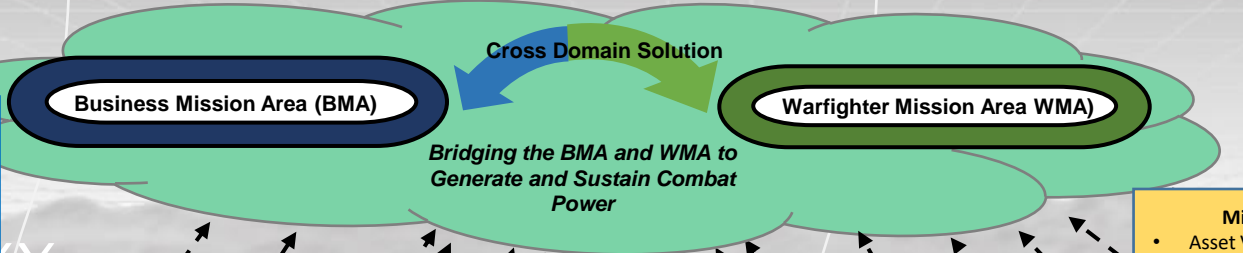
**Senior Sustainment Leaders/Materiel Managers**

- PL-informed sustainment oversight and materiel management
- Assess and manage the fleet operational status and availability
- Informs fleet-wide decisions on recap, procurement, upgrade, and divestiture

**LEGEND**

- ← → Data flow
- Bulk Fuel Supply Point
- Ammo Supply Point
- Data Broker

**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.**



**Mission Command at Echelon (BCT, BN)**

- Asset Visibility/In-Transit Visibility of real time critical consumable Class III(B), V, and requested IX
- Quickly anticipates sustainment requirements (supply, distribution /transportation)
- LOGSTAT, Consolidated COP

**Maintenance Managers at Echelon**

- Scalable readiness SA
- Anticipate maintenance/supply requirements
- Streamline maintenance and supply processes

**Ammo and Bulk Fuel On-the-Move**

- Share status and location information
- Allow requirements forecasting

**Combat Platform in the Fight In a D-DIL Environment**

- Reports platform critical faults and consumables usage status (Class III & V)

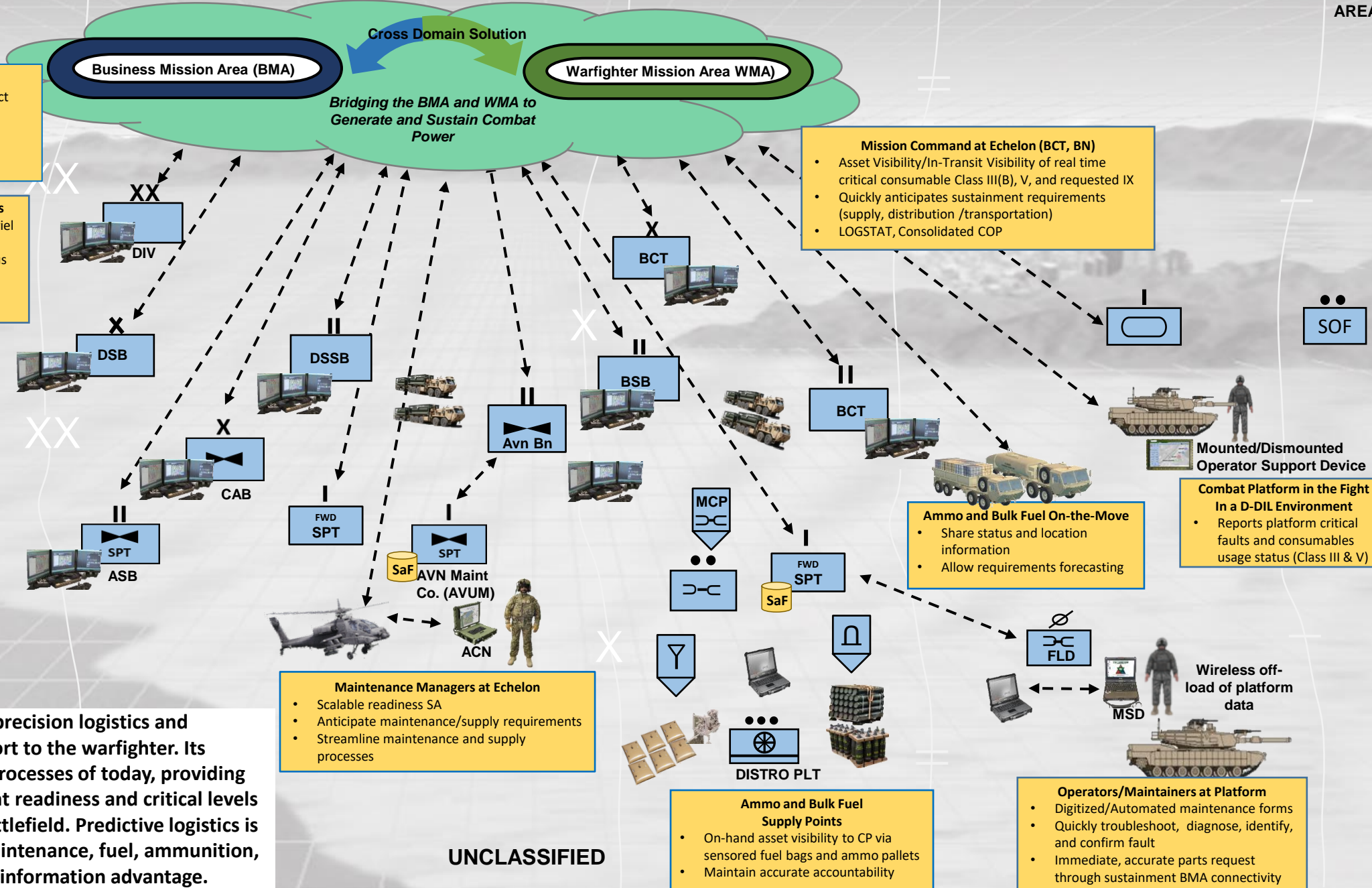
**Ammo and Bulk Fuel Supply Points**

- On-hand asset visibility to CP via sensed fuel bags and ammo pallets
- Maintain accurate accountability

**Operators/Maintainers at Platform**

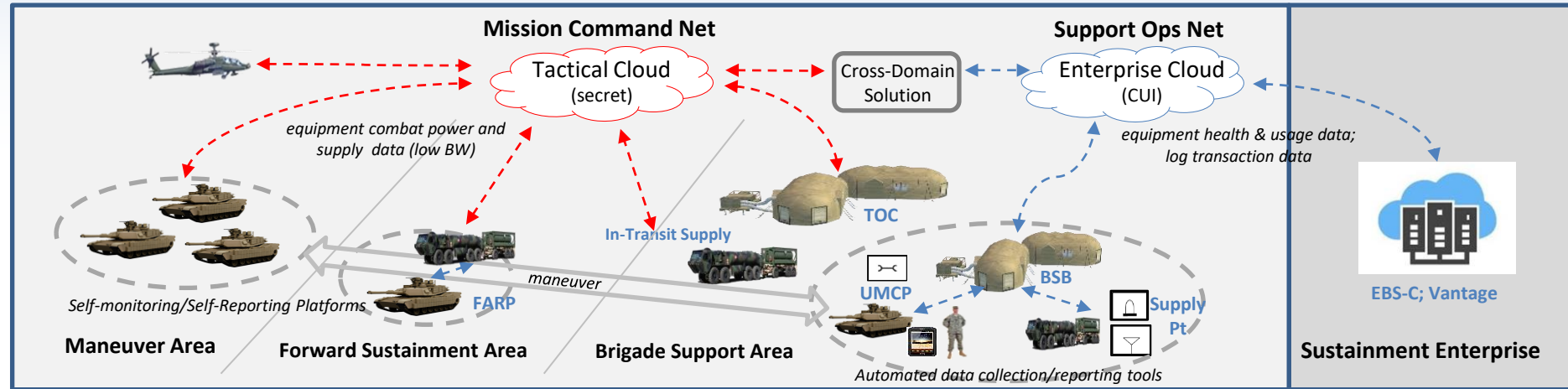
- Digitized/Automated maintenance forms
- Quickly troubleshoot, diagnose, identify, and confirm fault
- Immediate, accurate parts request through sustainment BMA connectivity

UNCLASSIFIED



# 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



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



# *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?