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Toward an AI-Powered Logistics Grid for Maintenance, Repair, and Overhaul

Why the DoW Must Become a Digital OEM to Win the Sustainment War

Presented at the Naval Postgraduate School's 23rd Annual Acquisition Research Symposium & Innovation Summit

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THE READINESS CRISIS

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Combat-aircraft platforms met mission-capable goals in FY24

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Years the EA-18G Growler & CH-47F Chinook met mission-capable goals (FY15-FY24)

55%

Of F-35s are mission-capable vs. 90% objective

62%

Of Navy surface fleet is combat surge ready vs. 80% objective

-99%

In the number of Army depot ground vehicle overhauls since FY15

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INVESTIGATING THE DOW'S MRO MODEL ON PLATFORM AVAILABILITY

Purpose-Built for Defense Acquisition

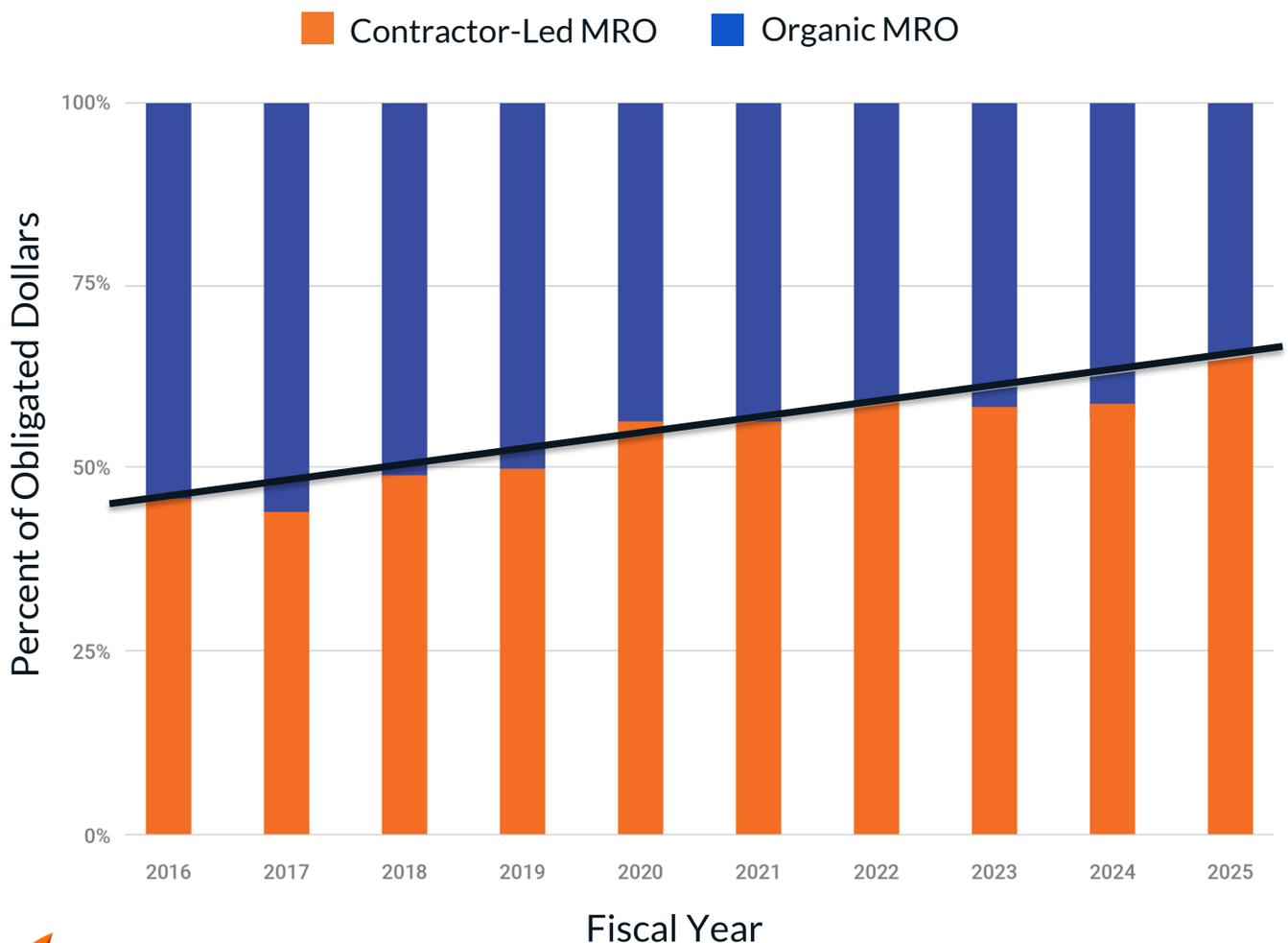
- Suite of AI-enabled Applications powered by integrated government & commercial data
- Govini's AI/ML algorithms link over 10,000 disparate datasets to form the National Security Knowledge Graph (NSKG)

Data & Analytic Scope

- DoW/DoD contract obligations for Maintenance, Repair, and Overhaul (MRO) (FY16–FY25)
- Mission-capable/availability rates for Major Defense Acquisition Programs (MDAPs) spanning Aviation, Ground, & Maritime capabilities
- Technical part characteristics & data rights by program

THE CURRENT MRO MODEL

Share of DoW Awards for Organic vs. Contractor-Led MRO



Growing Contractor Reliance

Contractor-led MRO (e.g. via Contractor Logistics Support, Performance-Based Logistics) grew at a 5.7% CAGR from FY16-FY25, outstripping MRO conducted by the Organic Industrial Base

Siloed Proprietary Data

Limited ability for independent or competitive sourcing & repairs

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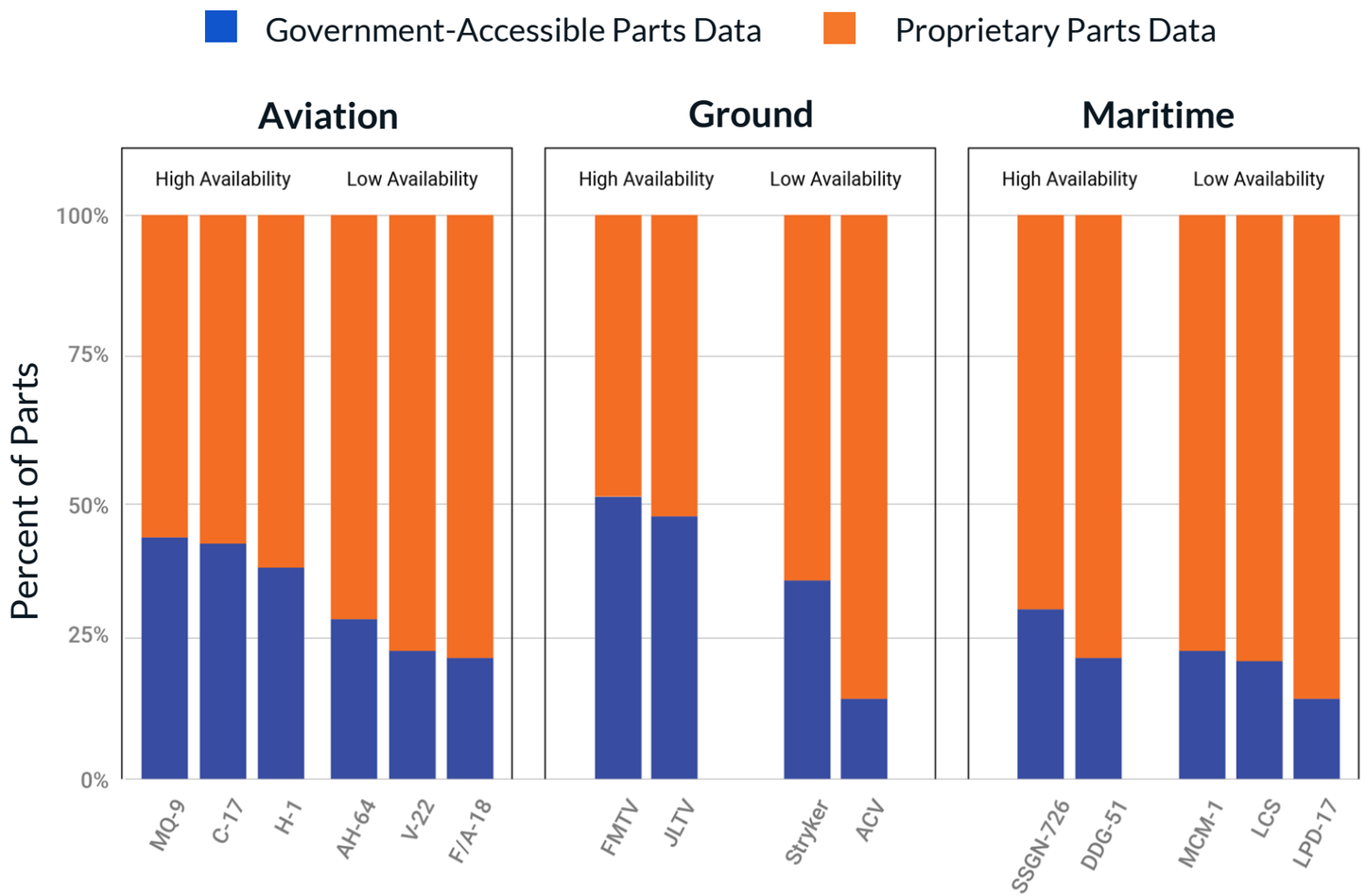
LOW AVAILABILITY CORRELATES WITH PROPRIETARY DATA

- Across Aviation, Ground, & Maritime capabilities, the percent of parts for which the Government has data access or data rights is routinely below 50%

- Platforms with the lowest levels of government-accessible parts data have lower operational availability and/or mission-capable rates

Technical Data Ownership & Relative Platform Availability by Capability



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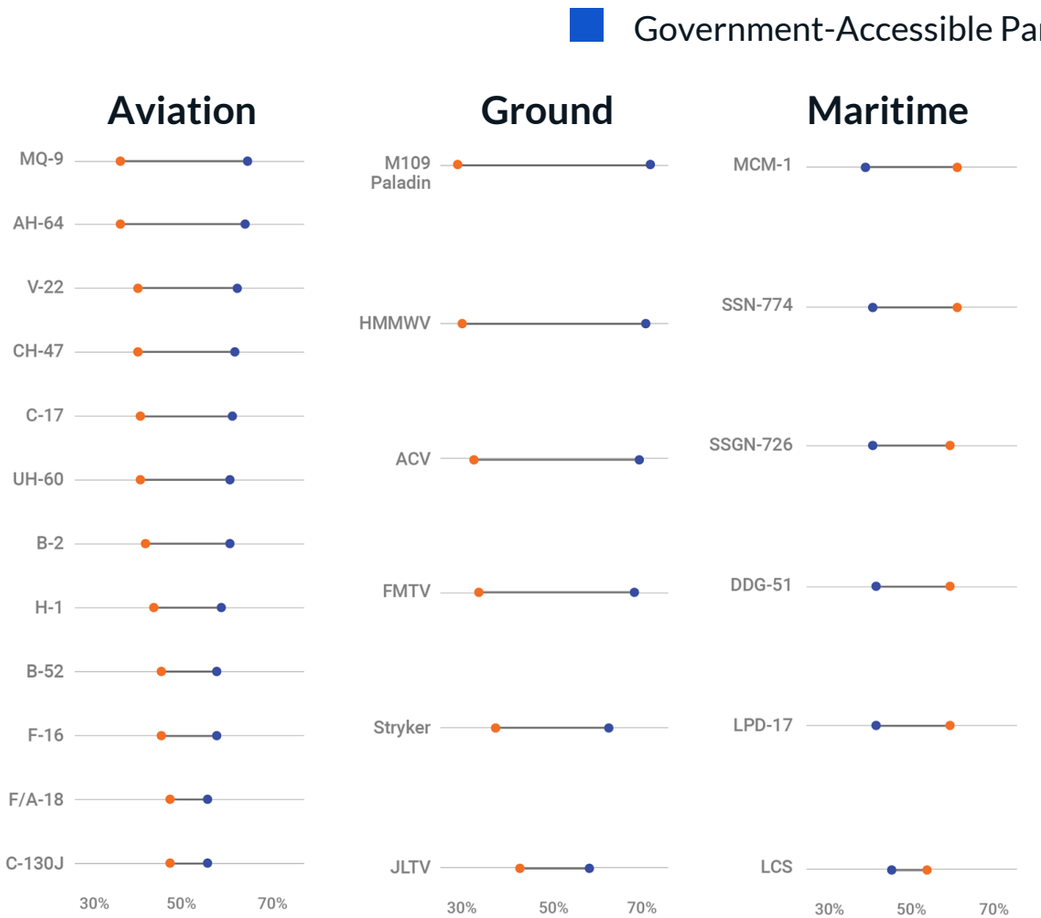
WITHOUT TECHNICAL DATA, FEWER SUSTAINMENT OPTIONS

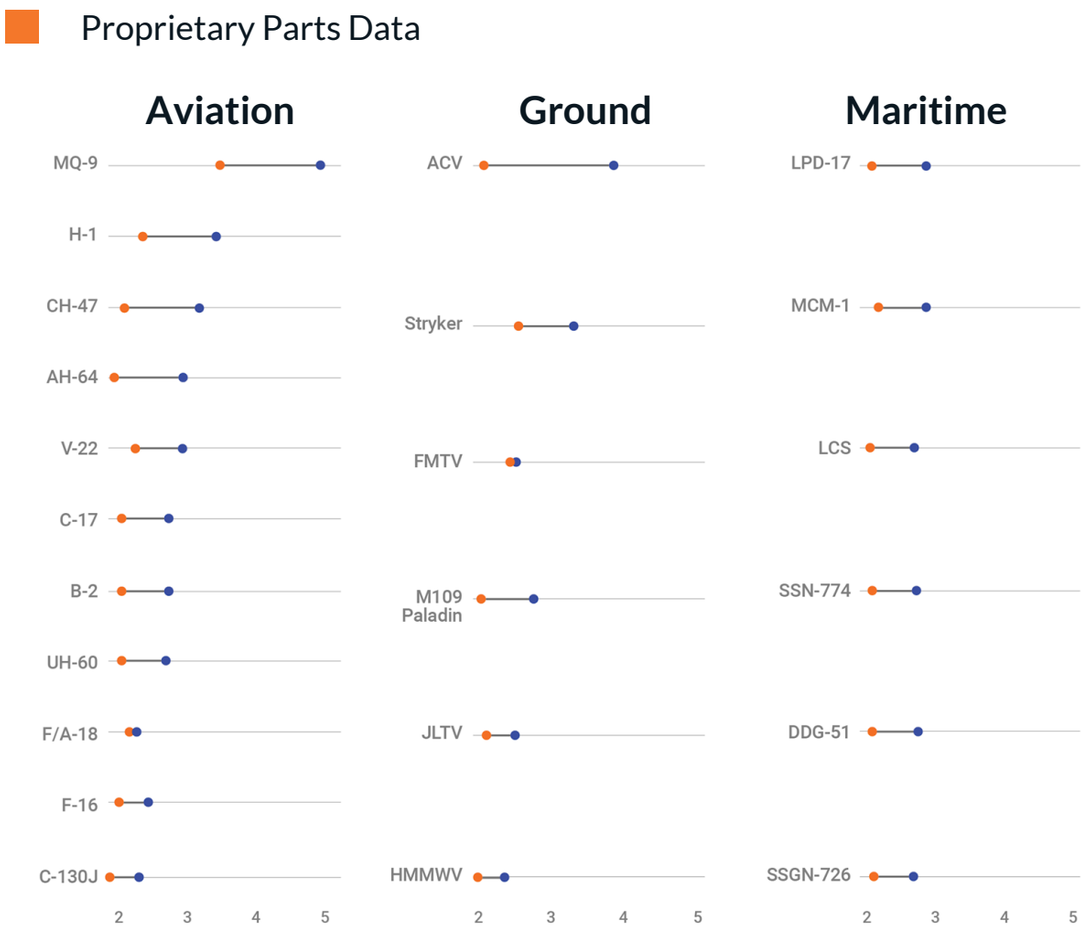
The Impact of Technical Data Access

… on Part Interchangeability



Percent of Interchangeable Parts

…. on the Number of Authorized Suppliers



Average Number of Authorized Suppliers

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FOR YEARS, THE DOW HAS WRESTLED WITH SUSTAINMENT AS A **LOGISTICS PROBLEM**

IT IS, FIRST AND FOREMOST, A DATA PROBLEM

THE FUTURE OF MRO LIES NOT IN MORE FUNDING OR BETTER WRENCH-TURNING, BUT IN **SMARTER DATA OWNERSHIP AND UTILIZATION**

TRANSFORMING MRO: FROM PHYSICAL INVENTORY TO DIGITAL READINESS

1. Transform the DoW into a Digital OEM

Secure access to technical data via digital blueprints as a non-negotiable condition of procurement

2. Fuse Data for MRO Intelligence

Leverage AI-enabled software to forecast failures, coordinate cross-program procurement, and optimize repair solutions

3. Operationalize the Grid

Deploy a decentralized logistics network using additive manufacturing at the point of need, turning centralized depots into distributed sustainment hubs

TOWARD AN AI-POWERED LOGISTICS GRID

	EXISTING MRO PARADIGM	AI-POWERED GRID
Repair Authority	OEM Dependent (Government as Tenant)	**Government-Accessible** (Digital OEM)
Lead Time	Measured in Production & Shipping Schedules	**Measured in Data Transmission Speeds**
Inventory Limit	Physical Stockpiles (Limited & Vulnerable)	**Theoretically Unlimited** (Additive Manufacturing)
Strategic Posture	Centralized Depots (Inefficient & Vulnerable)	**Distributed Resilience** (Forward-Deployed MRO Hubs)

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REFERENCES FOR SLIDE 2 - READINESS CRISIS

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