NAVAIR CBM+ Initiative and H-1 Case Study

26 MAY 2020

Presented To: Joint Technology Exchange Group CBM+ Technology Forum

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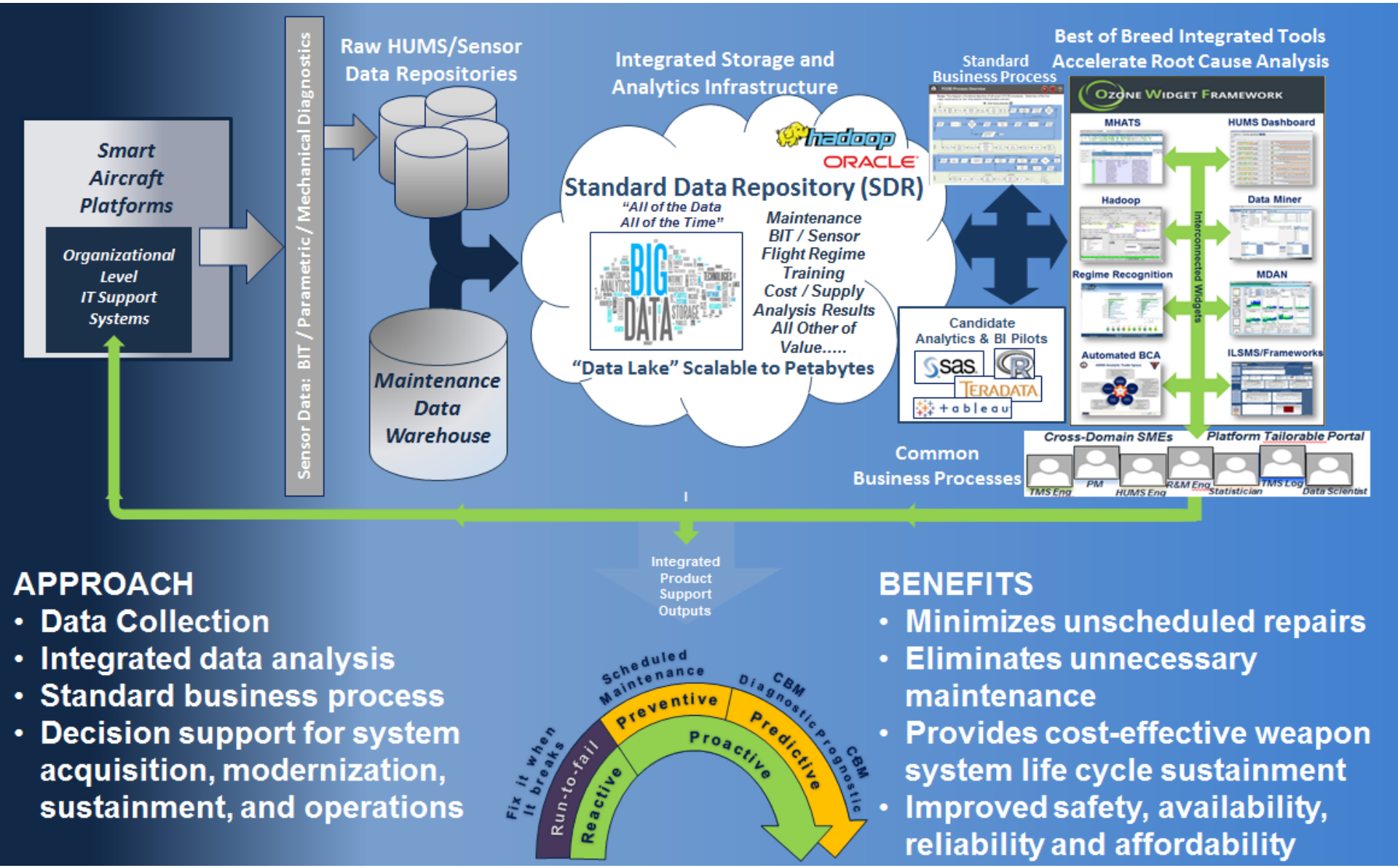
CBM/CBM+ Enabled Enterprise



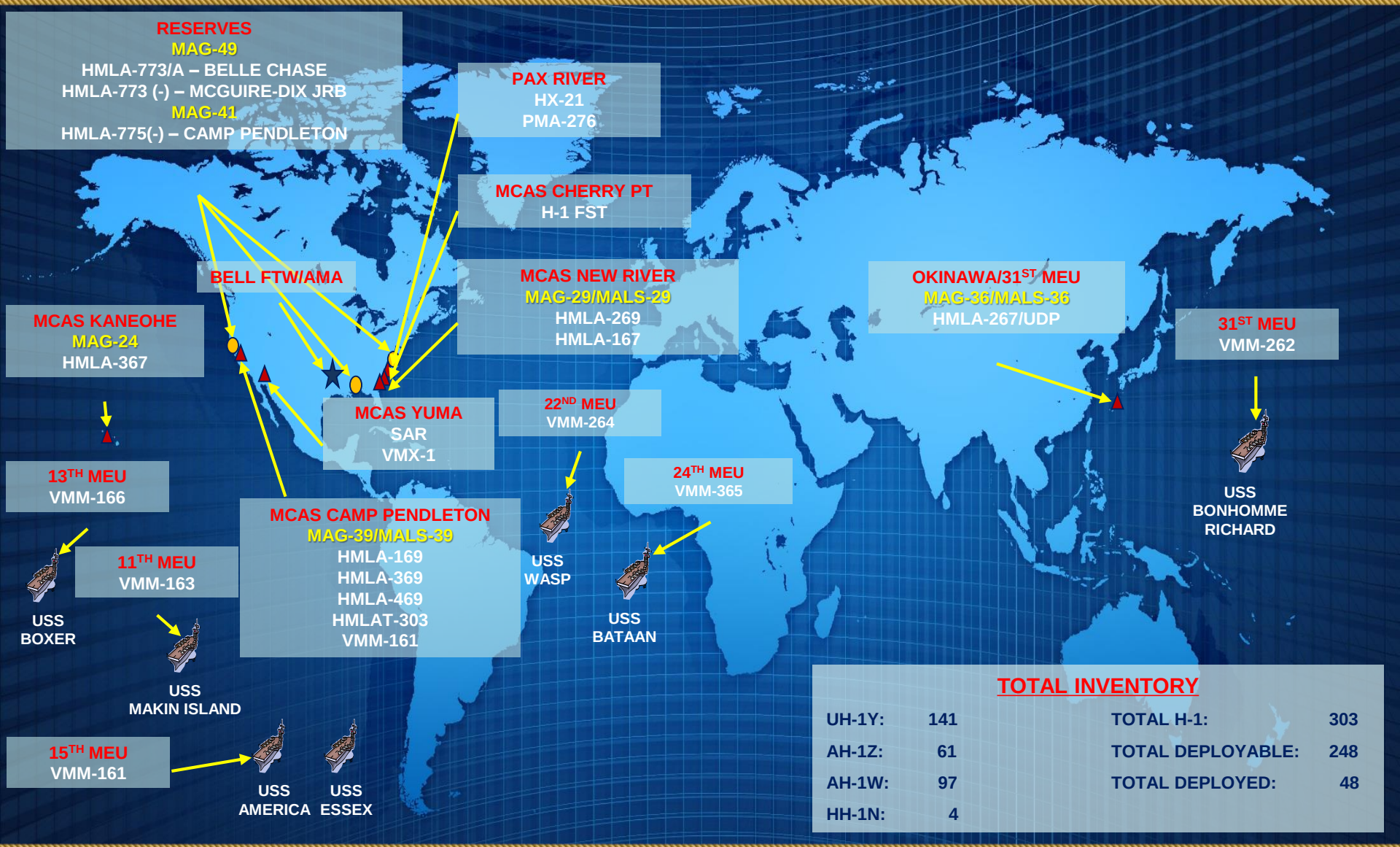
APPROACH

- Data Collection
- Integrated data analysis
- Standard business process
- Decision support for system acquisition, modernization, sustainment, and operations

BENEFITS

- Minimizes unscheduled repairs
- Eliminates unnecessary maintenance
- Provides cost-effective weapon system life cycle sustainment
- Improved safety, availability, reliability and affordability

H-1 Worldwide Presence



TOTAL INVENTORY

UH-1Y:	141	TOTAL H-1:	303
AH-1Z:	61	TOTAL DEPLOYABLE:	248
AH-1W:	97	TOTAL DEPLOYED:	48
HH-1N:	4		

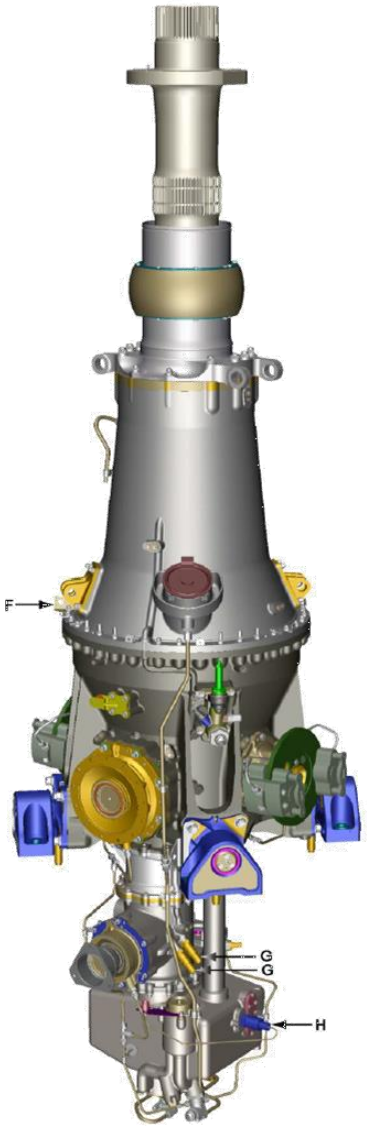
UH-1Y/AH-1Z Supportability

- 85% of maintenance-significant components are identical
  - Drive Train and rotor blades
  - Engines and IR suppressors
  - Hydraulic Systems
  - Electrical System
  - Fuel system components
  - Crashworthy seats
  - Integrated avionics & software
- Results in:
  - Reduced deployment footprint
  - Reduced spares pack-up
  - Reduced technical publications
  - Reduced support equipment
  - Reduced technical skills training
  - Reduced manpower requirements
  - Reduced sustainment costs

Significantly Reduced Total Ownership Costs

MRGB Predictive Diagnostics

- Damage caused by chips can result in ~ $1.2M repair
- Using the six accelerometers mounted around the MRGB, the H-1 Drives and Diagnostics team has developed a process to isolate fault progression to specific component(s) to recommend component removal
  - Avoid Precautionary Emergency Landings (PEL) from chip events
  - Avoid costs associated with downstream system damage
  - Minimize burden on the supply system
- Success Rate:
  - Since May 2016, 22 Main Rotor Gearbox component removals have been avoided for a savings of $39M and over 7000 MMHs avoided
  - Additionally, each of these impending events likely would have resulted in a Precautionary Emergency Landing if not proactively interdicted using CBM analysis



Summary

- Initiative investments are realizing CBM+ enablers that provide value to NAVAIR and demonstrate potential to exceed ROI expectations
- Pilots, Demos, Proof of Concept, and Govt/Industry collaboration efforts continue to fast track NAVAIR's CBM+ implementation
  - Hortonworks Standalone Closed Loop Pilot
  - Enterprise Readiness Integration Center Pilot (OWF)
  - Fleet Common Operating Environment Pilot
  - Impact/AIR-6.8 Big Data Collaboration
  - Wireless Infrastructure Pilot
  - SAS/Hortonworks/NAVAIR Analytics Pilot
  - SMART and Common Parser Pilots
- Engineering Analysis Tool Roadmap continues to enhance / reuse / consolidate to best of breed CBM+ core tools/processes for the connected CBM+ environment

Questions?