



THE FORCE BEHIND THE FLEET

NAVSEA CBM+

17 December 2018

Presented to:

DOD 2018

**Maintenance
Symposium**

Presented by:

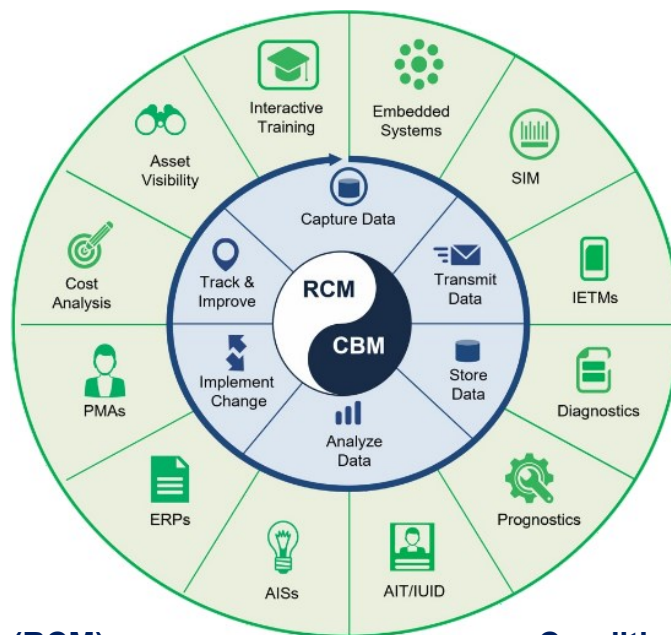
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EXPAND THE ADVANTAGE

CBM+



Reliability Centered Maintenance (RCM)

- Since 2001 over 10K trained and certified
- FY19 Plan has 66 RCM Courses and 6 Fleet Maintenance Effectiveness Reviews which will review ~9000 maintenance Procedures
- RCM is the feedback mechanism with the Fleet operators and maintainers

Condition Based Maintenance (CBM)

- Over ten years of investment in CBM
- Recent improvements the CBM+ enablers are going to make vast improvements in our Operating Availability, reduce system down time and also save money
- This new information will be fed back into the RCM process to drive further improvements

NAVSEA CBM+ is Results Driven and Aligned with OSD

eRM and CMAS

Integrated Condition Assessment System (ICAS)

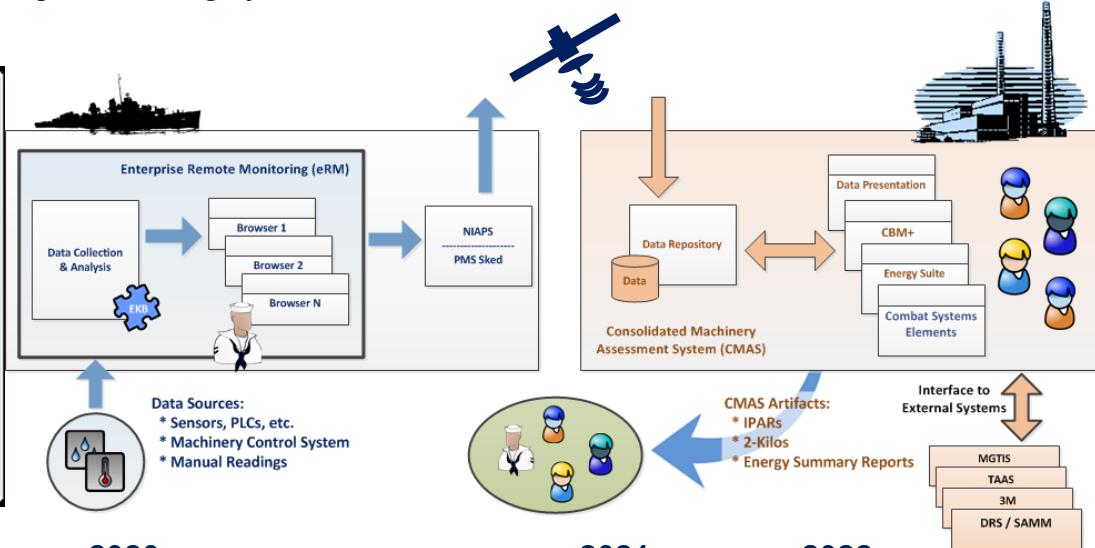
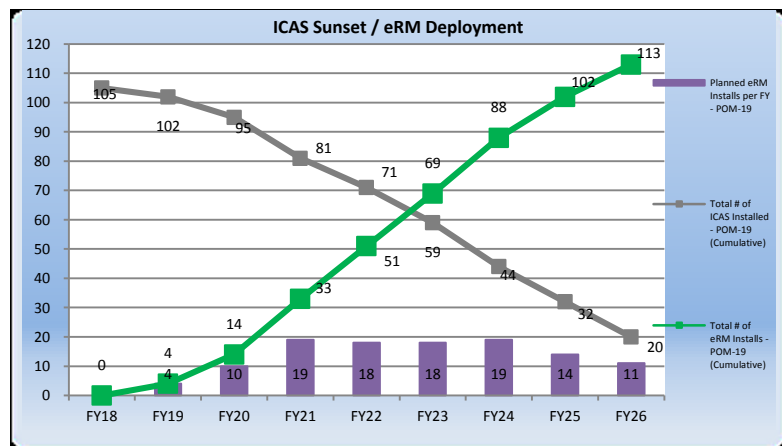
- Has been NAVSEA's common tool to support Condition Based Maintenance (CBM) for the past 20+ years

Enterprise Remote Monitoring (eRM)

- Increased speed, scalability, cyber posture
- Able to support rapid development for
 - new algorithms
 - Digital Twin
 - Linkage to existing systems and sensors

Consolidated Machinery Assessment System ashore (CMAS)

- Diagnostics, parametric trend analysis and providing condition alerts



2018

2019

2020

2021

2022

eRM First in class

CG

LCS

DDG

LSD

LPD

LHD

Advanced Analytics

Gas Turbines

Drive Trains

Diesels / Air Cond & Reefers / Air Compressors

Others

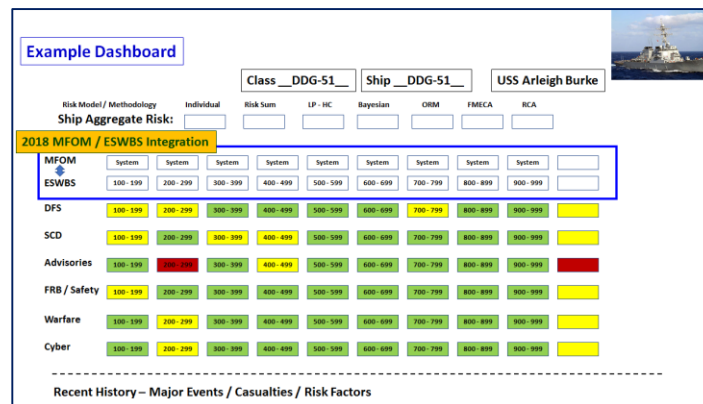
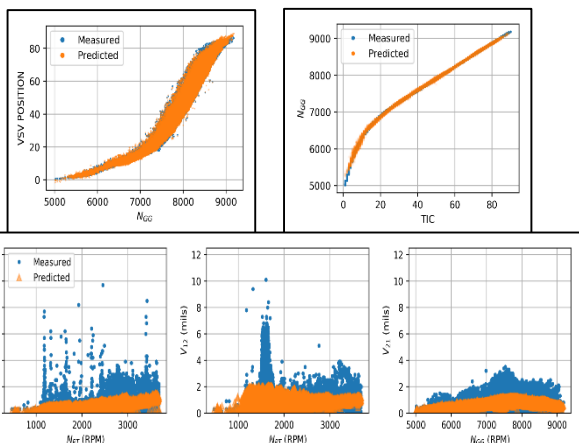
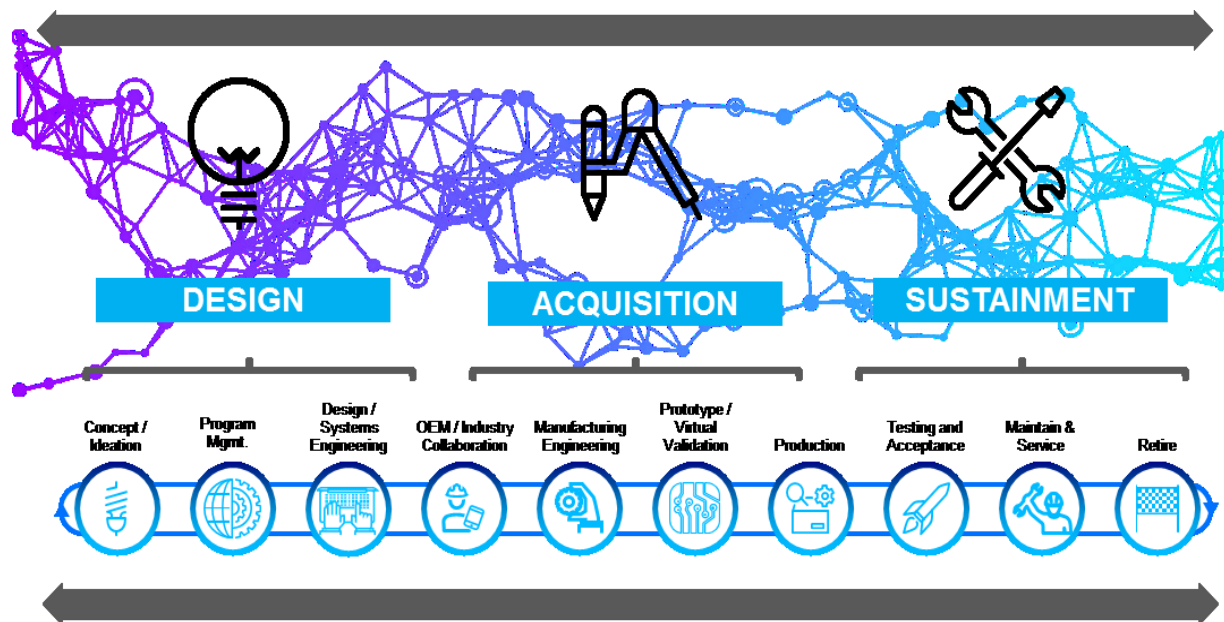
Software

CMAS v1.2 to v1.3

eRM v3.1 to v3.3

CMAS is in The Early Stages of Realizing Digital Twin Capability for CBM+

CBM+ into the BIG picture



CBM+ is a Critical Enabler to Close the Digital Thread