Warner Robins Air Logistics Center

High Velocity Maintenance (HVM)

9 September 09

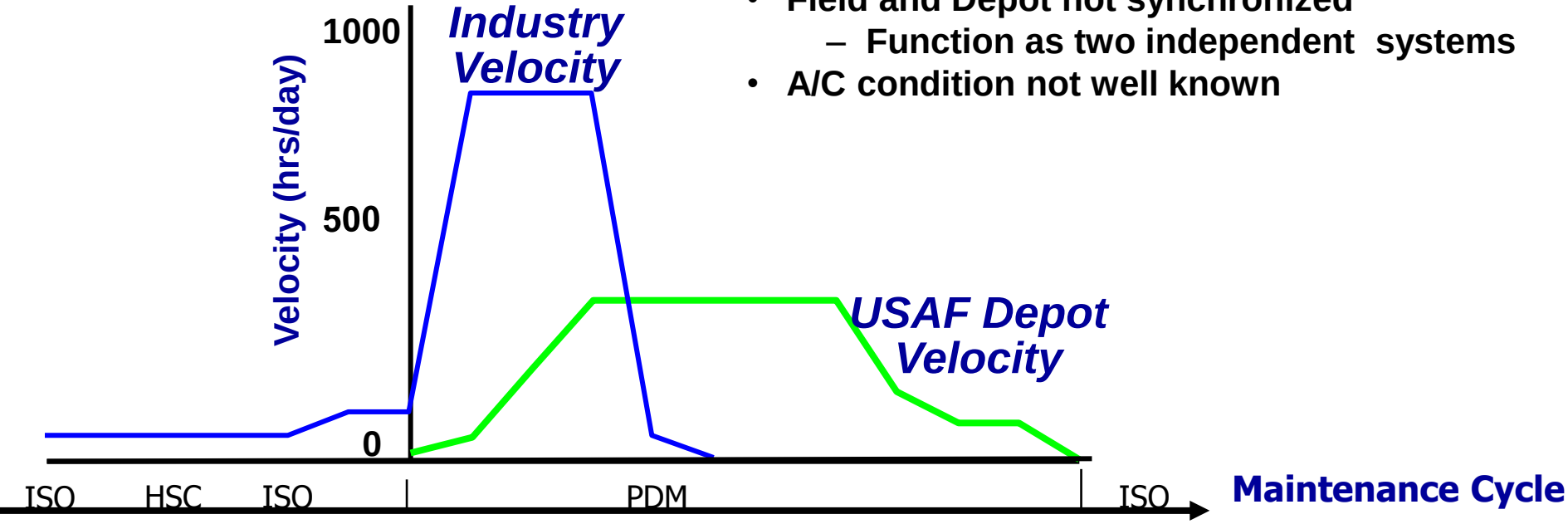
What is High Velocity Maintenance?

An AFMC-wide initiative to dramatically transform production operations in support of increasing aircraft availability, seeking to better emulate industry's high daily rate of touch-labor maintenance

HVM examines all processes which impact aircraft programmed depot maintenance across the enterprise, including not only product flow but funding; requirements; infrastructure; materiel support; and information technology

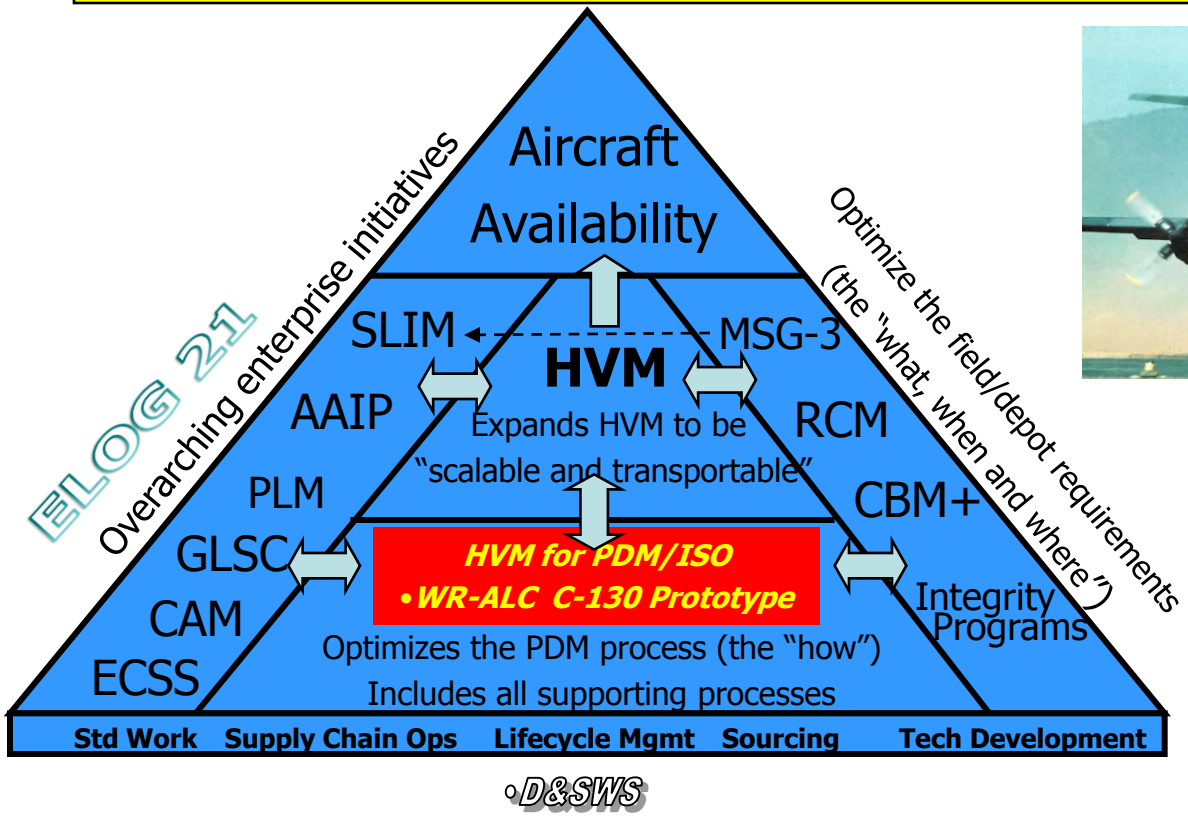
Why HVM?

- **Aircraft Availability**
  - **GWOT, Aging Fleets, $ Constraints**
  - **Scheduled Maintenance Impacts Aircraft Availability**
    - **Inefficient Depot Maintenance Processes**
      - **Low velocity compared to Industry**
        - » **Airline burn rate 500-900 hours/day**
        - » **ALC PDM 145-220 hours/day**
    - **Field and Depot not synchronized**
      - **Function as two independent systems**
    - **A/C condition not well known**



Vision

Increase Aircraft Availability using AFSO21 tools to establish a synchronized, integrated, end-to-end process such that maintenance does not impact mission requirements.



No Surprises…No Wasted Motion…No Waiting

Attributes

Current State

- Limited Knowledge of A/C Condition
  - Two Mx systems; creates knowledge barriers
- 5+ Year PDM cycle (C-130)
  - Damage accumulates
  - Promotes a "must fix now" mentality
- Job Shop Environment
  - Mechanic gets own tools; searches for parts; accomplishes own set up
- Inadequate Planning – req'ts, Mx work, parts, materiel, equipment
  - Lacks information – complete BOM, planned work, support
- Stove-piped Processes and Execution
  - Unsynchronized, inefficient, encourages work arounds (non-compliance)

Future State

- Known Aircraft/End Item Condition
  - Lead Time Ahead of Induction – Parts, Training, Infrastructure, Equipment, Data, etc
- Mechanic-Centric Focus (Surgeon)
  - Parts, Tools, Data, Equipment ***Pre-Positioned*** at Point of Use
  - Maximum Use of Kitting
- Expand Standard Work & Processes
- Choreograph Repair Operations
- Synchronize work
- Single Maintenance Concept
- Integrated Planning, Decision-making, & Data Collection

Pilot Program

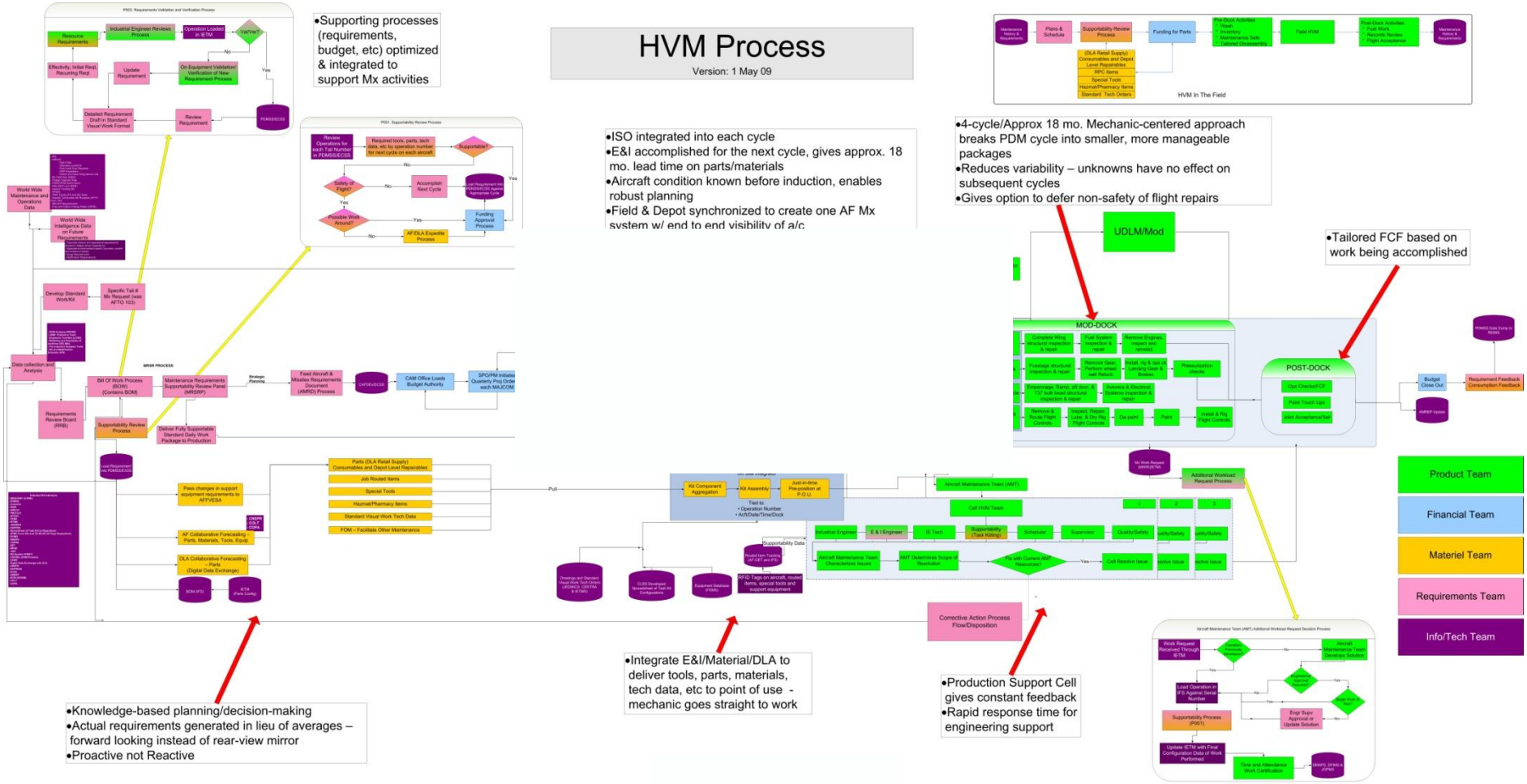
- C-130 selected for Pilot Program
- Urgent need to improve Aircraft Availability
- Follow-on: Make process scalable and transportable to other Weapon Systems

External Benchmarking

HON, American Airline, Cascade, Delta, United Airlines, Timco

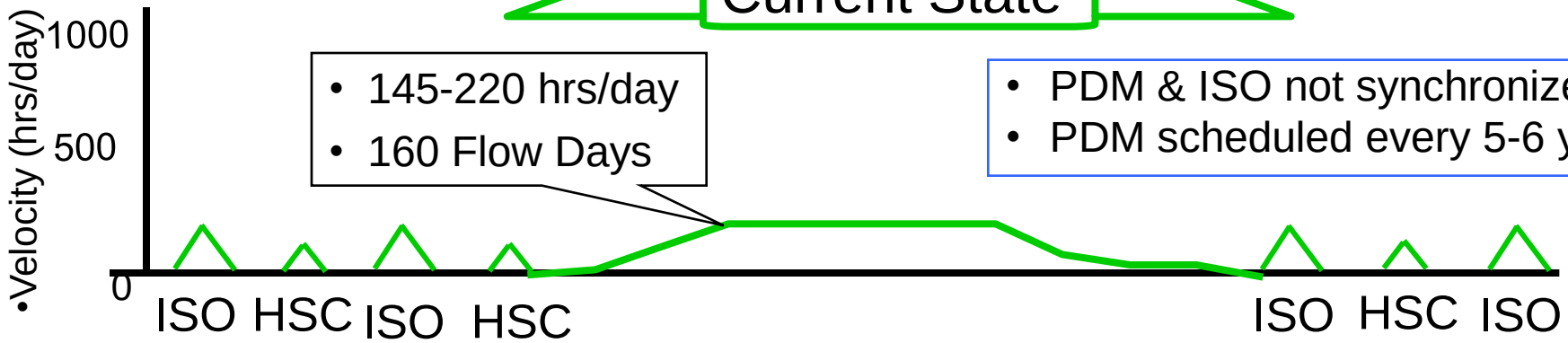
- **Able to reach velocities far exceeding those in AF depot. AF 70-250, commercial 500-900 hrs/day**
- **Higher frequency of inspections in commercial heavy maintenance facilities reduces variability and broadens opportunities to improve parts supportability**
- **Detailed work plans that maximize manpower on aircraft enabling for disciplined execution**
- **Parts, tools, etc brought to mechanic at the work station. Mechanics stay on task.**
- **Synchronized "continuous planning", support, equipment, parts, tech data → daily updates, changes**
- **Industry not "paperless" or reliant on advanced technology**
- **Maintenance & support co-located**
  - Andon usage
  - Rapid response

HVM Future State Process



High Velocity Maintenance Life Cycle Comparison

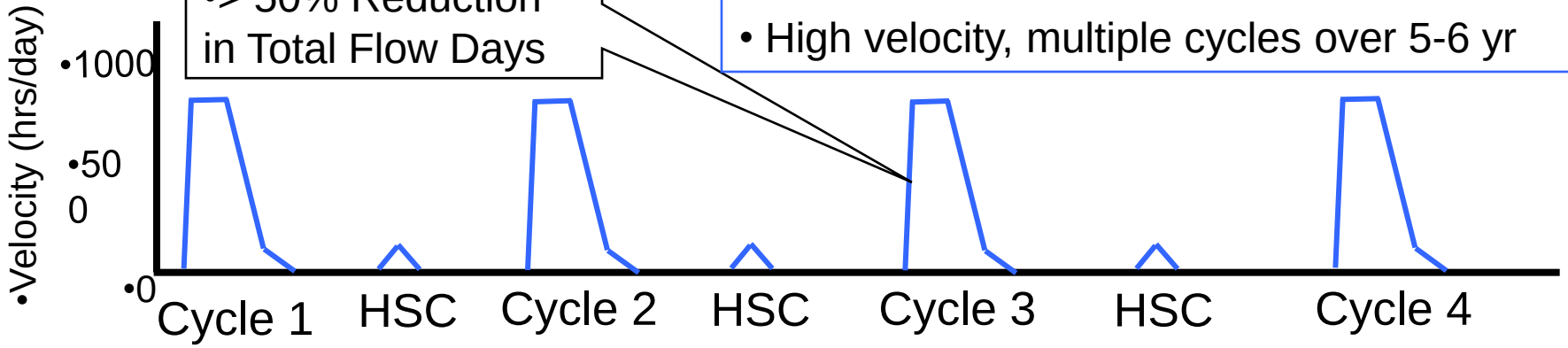
Current State



- 145-220 hrs/day
- 160 Flow Days

- PDM & ISO not synchronized
- PDM scheduled every 5-6 yrs

HVM State



- 500-1000 hrs/day
- > 50% Reduction in Total Flow Days

- Integrated Scheduled MX (PDM/ISO)
- High velocity, multiple cycles over 5-6 yr

C-130 PDM/HVM Transition

FY09 48 PDM
2 HVM (C-1) Validation(1 AMC/1 AFSOC)

FY10 5 PDM (AFSOC)
9 PDM-T(AFSOC)
1 HVM (C-1) Validation(AFSOC)
8 HVM (C-1) Prototype(AFSOC)

FY11 39 PDM (multiple commands)
10 PDM-T
22 HVM (C-1) Non-AFSOC begins August 2011

FY12 7 PDM
23 PDM-T
70 HVM (C-1, C-2, C-4)

DRAFT

Operational Level Impacts

-Increased Aircraft Availability in the Field

-18 Month HVM Cycle Frequency

--Scheduling for 18 Month Cycles
--Pre-Induction Inspections for Subsequent Cycle
--Maintenance Expectations Upon Return to Operational Wing
--Revision of OIs, Checklists, and Local Supplements

WARNER ROBINS ALC