Implementation of Design for Demil (DFD) in the Joint Services

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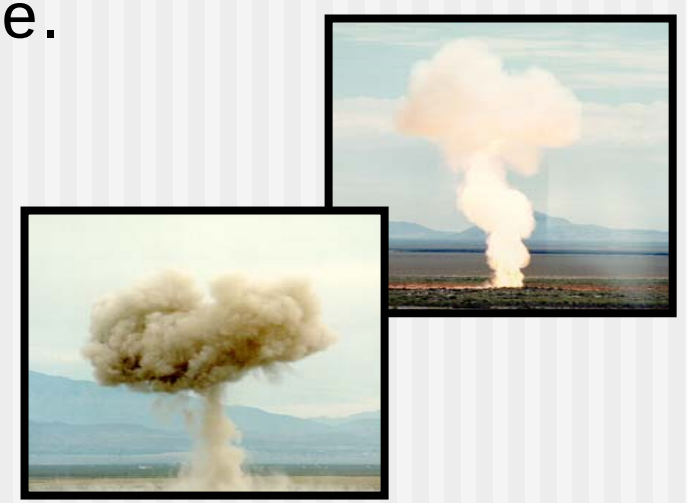
Mr. Gary Mescavage
Bldg. 321
ARDEC - Picatinny Arsenal, NJ 07806
(973) 724-3349
gary.mescavage@us.army.mil

Presentation Outline

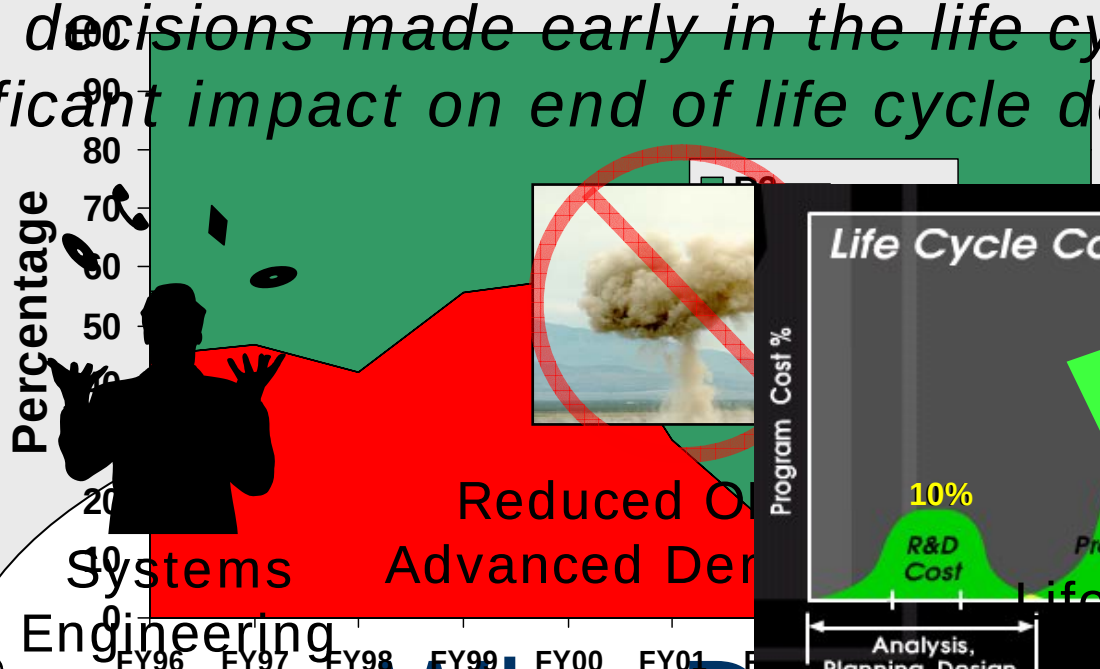
- Why DFD?
- DFD IPT
- Implementation Strategy
- Challenges
- Recent Accomplishments
- Conclusion

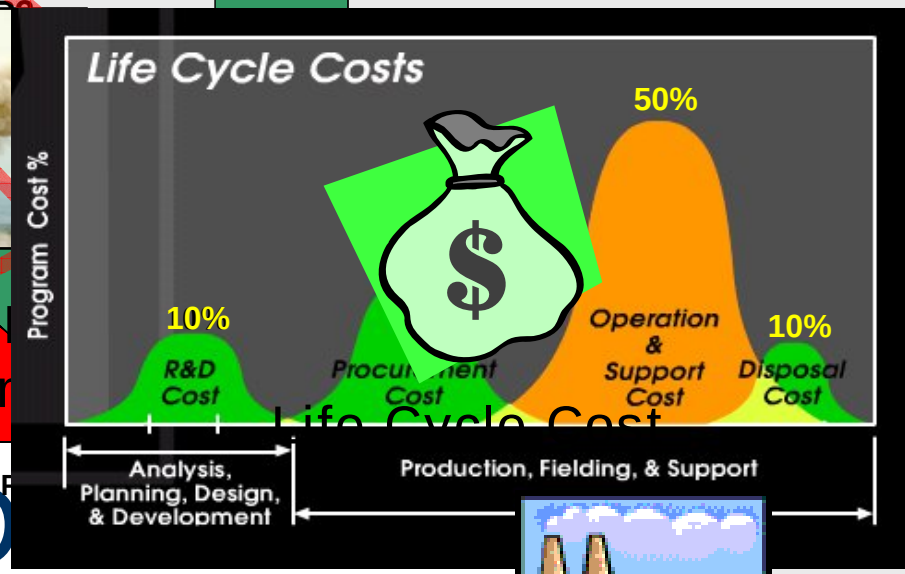
Why Design for Demil?

- Traditionally, munition designers focus on item performance & may not be aware that design decisions can lead to difficult demil problems at the end of the item's life cycle.
- In the past, OB/OD "took care of the problem".
- *Munition design historically had little impact on the ability to conduct effective and efficient demil (OB/OD).*
- But things have changed …



Design decisions made early in the life cycle now have a significant impact on end of life cycle demil operations!



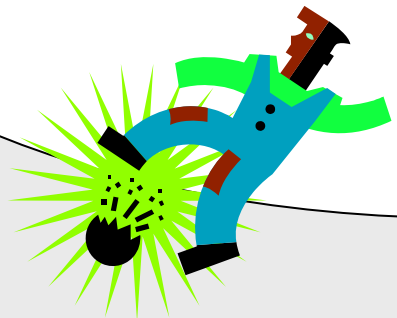


Systems Engineering

Why D

Life Cycle Cost

Readiness



Safety

Resource, Recovery, & Recycling (R3)

Environment

DFD is a proactive approach to addressing future demil challenges.

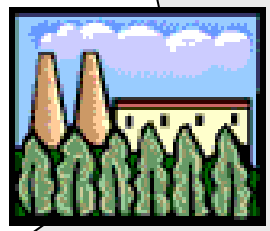
Design decisions made early in the life cycle now have a significant impact on end of life cycle demil operations!

Why DFD?

Systems Engineering

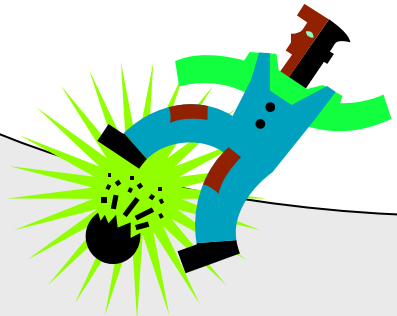
Reduced OB/OD, Advanced Demil Tech.

Life Cycle Cost



Environment

Readiness



Safety

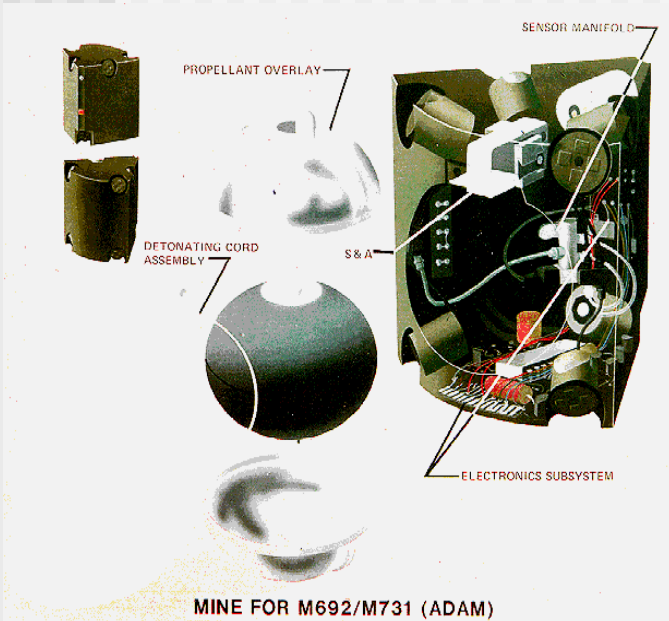
Resource, Recovery, & Recycling (R3)

DFD is a proactive approach to addressing future demil challenges.

Design Impact on Demil

ADAM MINE

A depleted uranium (DU) salt in the molding compound is requiring $700K of additional equipment for the demil process.



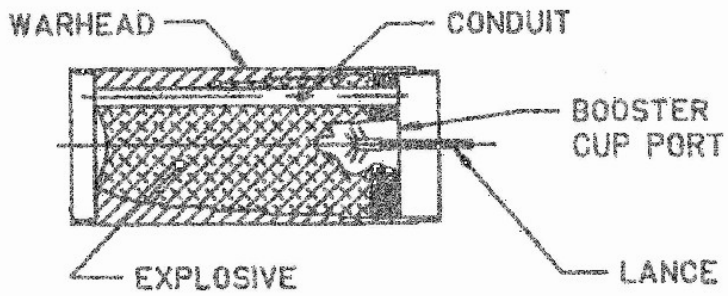
MINE FOR M692/M731 (ADAM)

SUP CHARGE

No glue … easier disassembly!

HARM WDU-21B NAVY WARHEAD

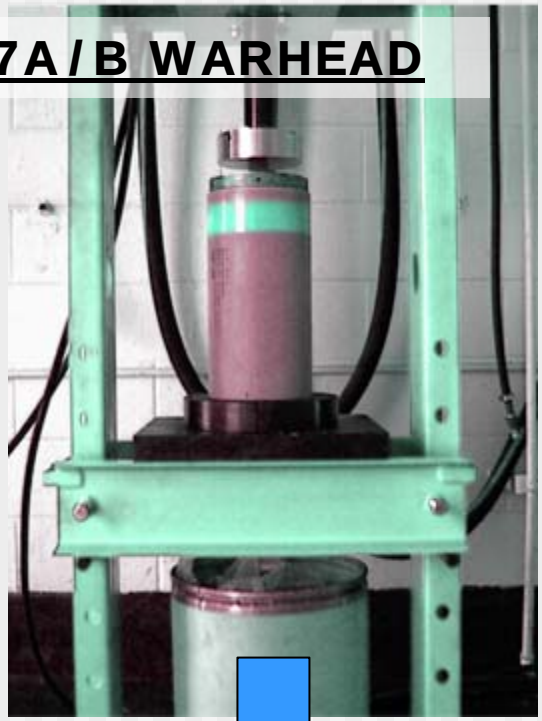
Smaller fill hole makes washout more difficult in WDU-37B Improved HARM; internal conduit traps explosives; PBXN-107 loaded binder does not melt.



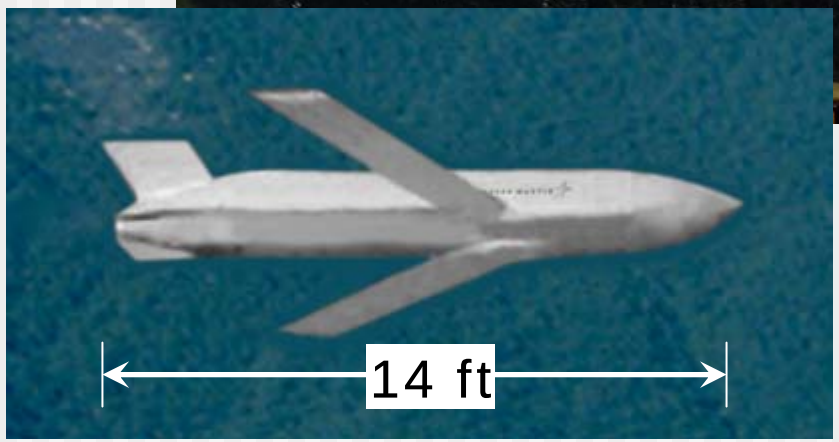
CROSS SECTION OF WARHEAD SHOWING ACTION OF WATER SPRAY

Design Impact on Demil

SPARROW 17A/B WARHEAD



JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)



Design for Demil Policy

DoDI, 5000.2

At the end of its useful life, a system shall be demilitarized and disposed in accordance with all legal and regulatory requirements and policy relating to safety (including explosives safety), security, and the environment. **During the design process**, PMs shall document hazardous materials contained in the system, and shall **estimate and plan for the system's demilitarization and safe disposal**.

AMC-R 75-2/NAVSEAINST 8027.2A/AFLCR 136-5/ MARCORSYSCOMO 8020.1

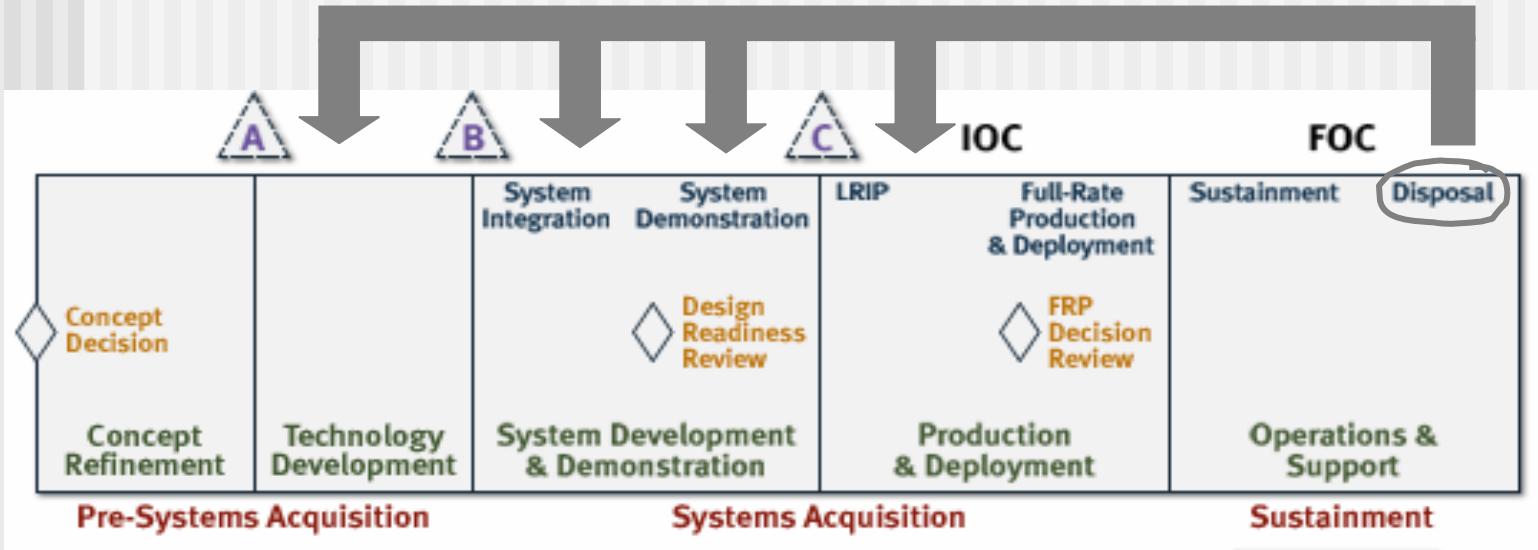
Purpose: "… to the maximum extent possible, ammunition be designed for demilitarization and also requires the development of a formal demilitarization plan …."

Design for Demil Implementation

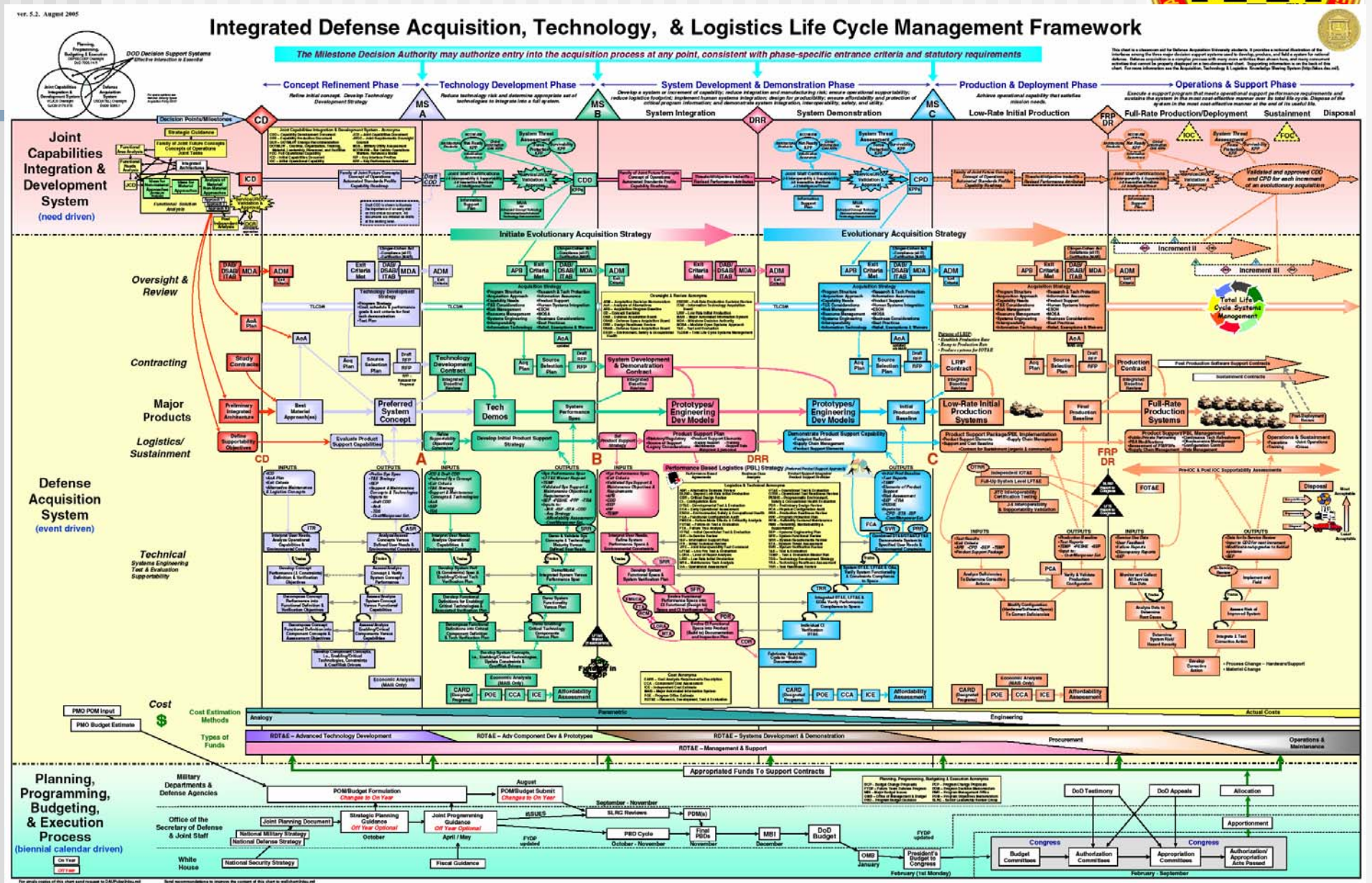
- DFD a key strategic goal of the PEO Ammo approved PM Demil Strategic Plan.
- Multi-Service DFD Integrated Process Team (IPT) chartered to establish a DFD program.
  - Acquisition and demil are represented

Design for Demil
Goal

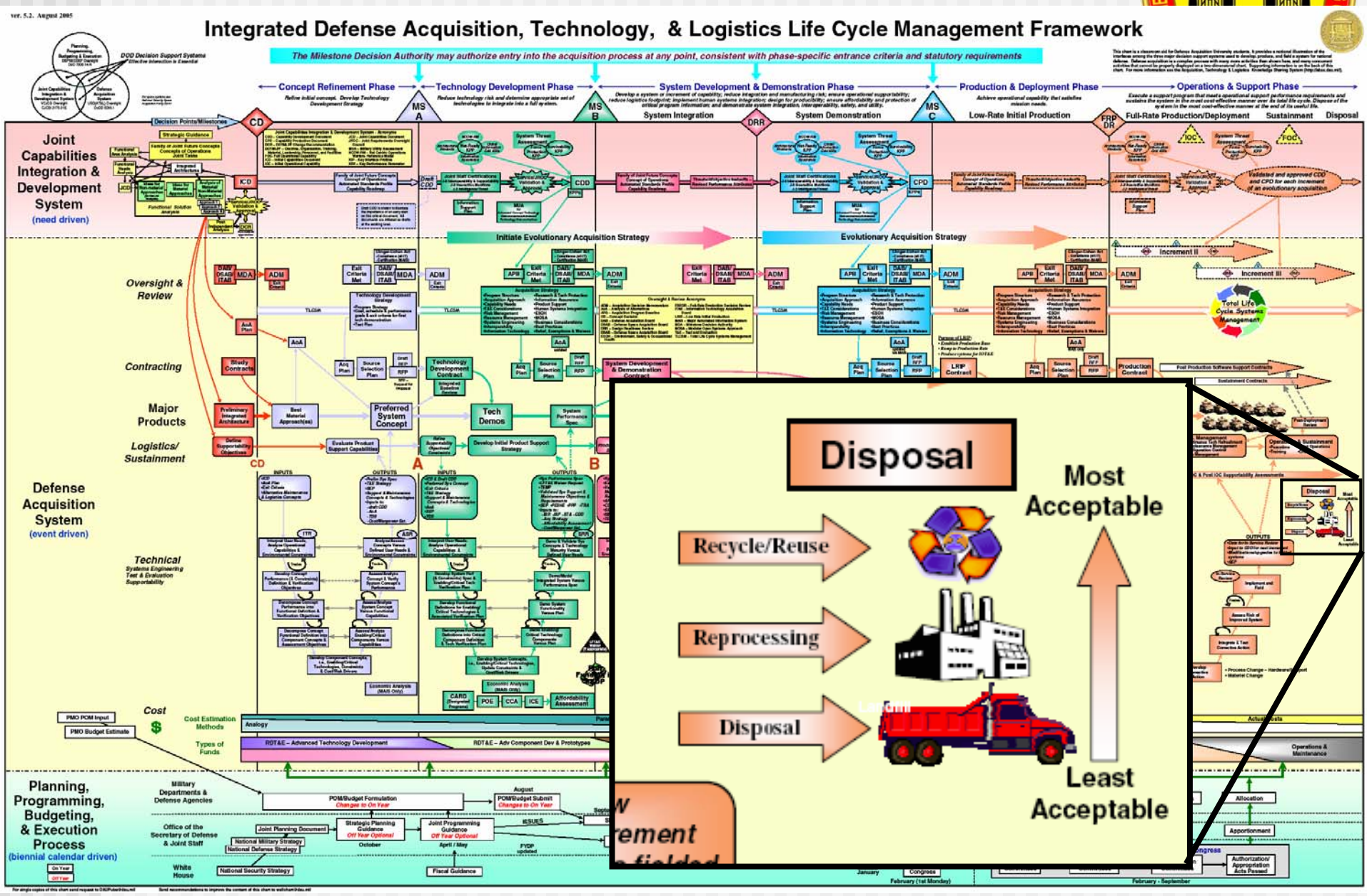
- Demil is a life cycle requirement that typically is inadequately addressed in the design phase.
- Goal: Influence munitions design early in the life cycle to incorporate demil considerations & positively impact future demil execution.



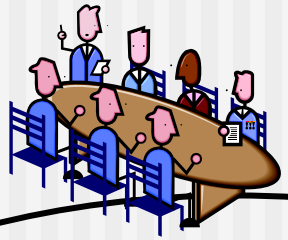
AT&L Life Cycle Mgt Framework



AT&L Life Cycle Mgt Framework

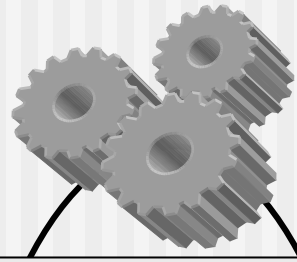


Acquisition Players

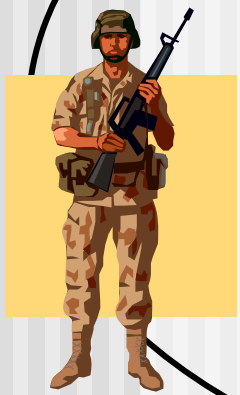


DEFENSE
ACQ'N BOARD

Government
"Defines"

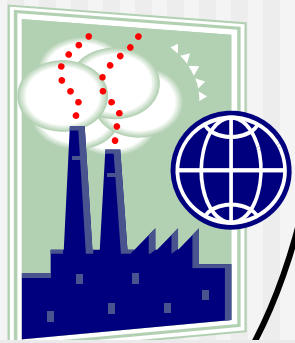


Industry
"Designs"



PROJECT
MANAGER

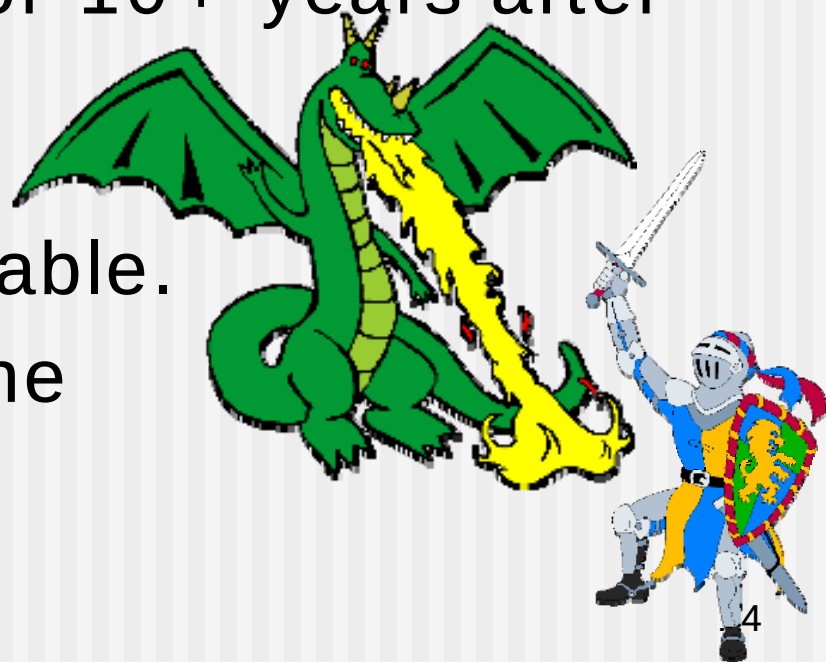
RD&E
CENTER



CONTRACTOR

DFD Challenges

- Design driven by performance, budget & schedule constraints.
- Development PM doesn't pay for demil.
- Demil doesn't occur for 10+ years after an item is fielded.
- Requirement must be measurable and verifiable.
- PMs aren't aware of the need to DFD.



Demil Plan vs Design for Demil

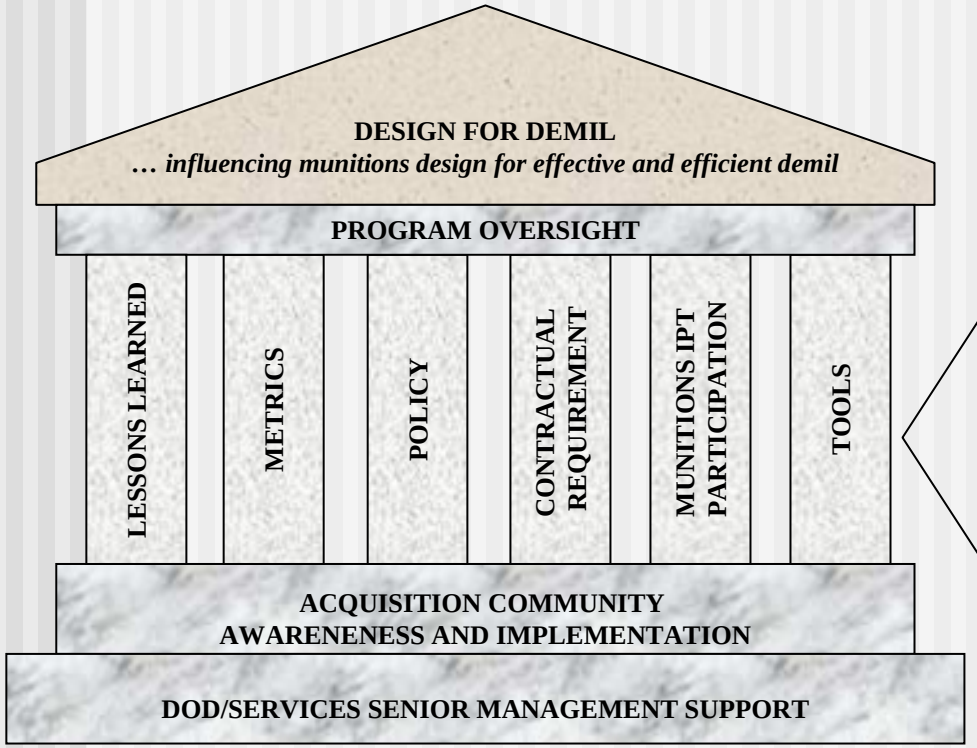
Demil Plan ≠ Design for Demil

- Typically done late in the design
- Prescribes a procedure for demil
- Afterthought
- Reactive

- Done throughout design
- Influences the design for efficient demil
- Forethought
- Proactive

Demil Plans can encourage but do not assure design for demil!

DFD Essential Program Elements



- *Lessons Learned: Design recommendations from demil execution experience*
- *Metrics: Verify accomplishment.*
- *Policy: Impose the requirement*
- *Contractual Requirement: Translate the requirement to the defense contractor.*
- *Munitions IPT Participation: Get involved "In the trenches".*
- *Tools: Provide practical help (web based handbook).*

Recent Accomplishments

NAVAIR (PEO W) Policy

Recent Accomplishments

- Lessons Learned: Reviewed Tow Missile, Sparrow Warhead, JASSM Missile
- Policy
  - DoD5000 – Requires demonstration of Life Cycle Cost impact
  - NAVAIR – Incorporating DFD into a policy memo, “Systems Requirements Review”, and Systems Engineering Process
- Metrics: Concepts under development
- Munitions IPT Participation: Involved with IMS program; others pending

DFD is Achievable!

- DFD represents a cultural change.
- Inclusion of non-performance disciplines into the acquisition process is not unprecedented.
- The Multi-Service program implemented through the DFD IPT will provide strategic influence to assure effective DFD.
- Change can be expected to occur slowly.
- Forethought during the munitions design process will positively impact the demil legacy left behind, with little cost or performance impact.