Re-Forming the DoD Acquisition Process

A Systems Engineering Approach

MR. STEVE WARD
MR. CHRIS PERKINS
DEPARTMENT OF THE AIR FORCE
AERONAUTICAL SYSTEMS CENTER
WRIGHT-PATTERSON AFB, OH
22 OCT 2007

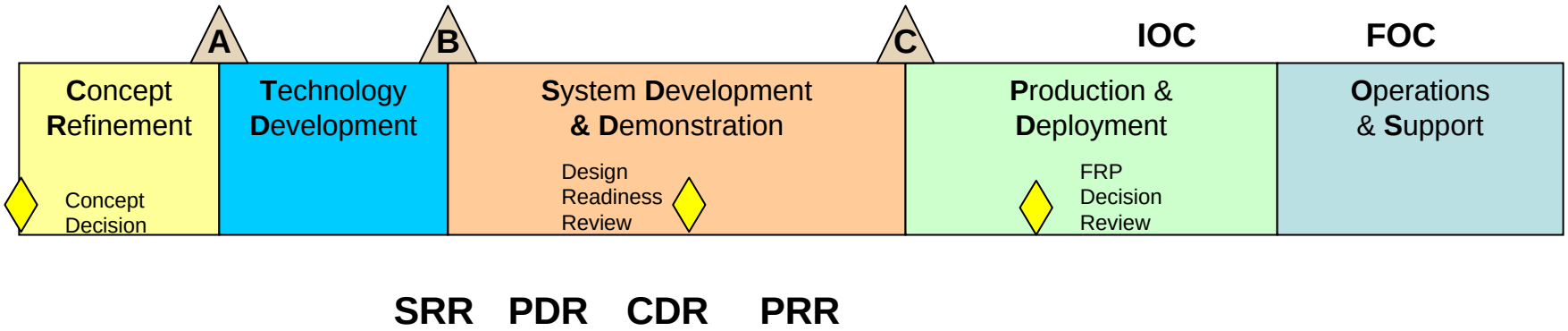
DISCLAIMER

THE VIEWS EXPRESSED IN THIS PRESENTATION ARE THE VIEWS OF THE AUTHORS ONLY AND DO NOT NECESSARILY REFLECT THE VIEWS OF THE DEPARTMENT OF DEFENSE, THE DEPARTMENT OF THE AIR FORCE, AIR FORCE MATERIEL COMMAND, OR THE AERONAUTICAL SYSTEMS CENTER.

OVERVIEW

- **CURRENT DoD 5000 MODEL**
- **FAA CERTIFICATION PROCESS MODEL**
- **PROPOSED AIRCRAFT ACQUISITION MODEL**

Current DoD 5000 Model
All Systems



Current DoD 5000 Model
All Systems

- **ADVANTAGES**
  - Framework allows flexibility
  - Easily tailored for specific program requirements
  - Allows for Technology Development prior to SDD phase
- **DISADVANTAGES**
  - Most risk is on acquisition agency for development
  - Capability and certification requirements are not integrated
  - Certifications can have significant impact on program cost and schedule

Commercial Development Process

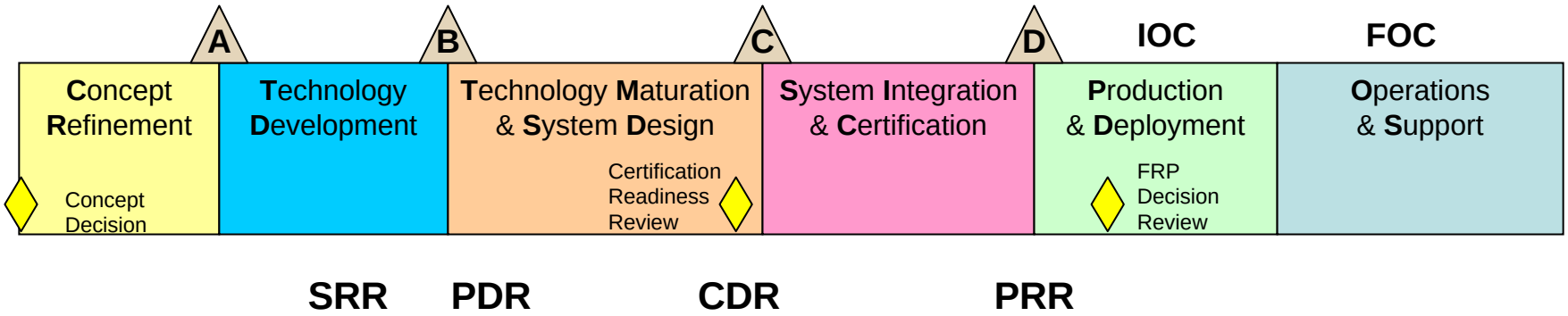
FAA Certification Process

- FAA process is regulatory - Type certification requirements are must dos
  - In DOD airworthiness requirements are not even Key Performance Parameters
- Customers involved in creating requirements - Notice of Proposed Rulemaking
  - No buy-in by customers on DoD airworthiness criteria
- Type cert board establishes criteria up-front
  - Includes compliance method
  - Done prior to design and test phase
- Cost/schedule of compliance is better known up-front
  - DoD criteria are not fully agreed to until after cost established
- Type certification drives significant cost to a commercial program
  - AF 516B drives cost but those costs are unknown at contract award
- There is a known process in place to certify components - Technical Standards Orders Database
- Independent organization verifies compliance

FAA Certification Process

- **ADVANTAGES**
  - Proven safety track record
  - Well understood cost and schedule
  - Total requirements set known at program approval
  - Early planning for validation minimizes risk
- **DISADVANTAGES**
  - Little consideration for cost of ownership
  - All development risk is on the airframe developer
    - Design influenced by available, mature technology

Proposed Model
Aircraft Systems



Proposed Model
Aircraft Systems

- Milestone A - Technology Development
  - Entry criteria
    - Technology Development Strategy
    - Initial Capabilities Document
  - Contract type – Cost Plus/Award Fee
  - Timeline/Schedule
  - Integrated Risk Assessment

Proposed Model
Aircraft Systems

- Milestone B - Technology Maturation and System Design
  - Entry criteria
    - SRR
    - Capabilities Description Document
    - Certification Plan
  - Contract type – Cost Plus/Incentive or Award Fee
  - Timeline/Schedule
  - Integrated Risk Assessment

Proposed Model
Aircraft Systems

- Milestone C - System Integration and Certification
  - Entry criteria
    - CDR
    - Capabilities Production Document
  - Contract type – Fixed Price/Incentive Fee
  - Fixed Timeline/Schedule
  - Integrated Risk Assessment

Proposed Model
Aircraft Systems

- Milestone D - Production
  - Entry criteria
    - PRR
    - System Certification
    - Successful Initial Operational Test & Evaluation
  - Contract type – Fixed Price/Incentive Fee
  - Timeline/Schedule
  - Integrated Risk Assessment

Proposed Model
Aircraft Systems

- **ADVANTAGES**
  - Integrates systems engineering events with acquisition milestones
  - Integrates capability and certification requirements
  - Utilizes a known development/certification process
  - Allows risk-based management of resources
  - Provides Time Certain certification – similar to FAA
  - Similarity to FAA cert encourages broader business base
- **DISADVANTAGES**
  - Increases the number of Defense Acquisition Boards

Summary

- Current acquisition process has room for improvement
- Requirements and acquisition processes need to be better integrated
- Program risk can be reduced through better alignment of acquisition milestones and systems engineering events