Accelerating Technology
Insertion through Effective Test and Evaluation

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A caution: beware semantic solutions
Conceptual Process

- Mission Need identified
- Solution defined (operational requirements)
- Preliminary design
- Critical Design
- Low rate Initial production
- Full rate production
- Initial Operating Capability / Need Satisfied

Years and Years, $$$ & $$$$$
The criticism: It takes too long and costs too much

- Do the critics have unreasonable expectations?
- Why?
- PMs pressured by competition for funds to underestimate cost and schedule and overestimate performance.
- First PM response is to “play a game”
“Play the game,” second responses

- Get rid of requirements
- Don’t start calling it a program till as late as possible.
- Declare success as early as possible
- Game theory can dominate.
- Examples: ATF requirements
- FCS requirements
- “protection” from “information”
The Defense Acquisition Management Framework

User Needs & Technology Opportunities

- Process entry at Milestones A, B, or C
- Entrance criteria met before entering phase
- Evolutionary Acquisition or Single Step to Full Capability

- Pre-Systems Acquisition
  - Concept Refinement
  - Technology Development
  - (Program Initiation)

- Systems Acquisition
  - System Development & Demonstration
  - Critical Design Review
  - LRIP/IOT&E

- Sustainment
  - Production & Deployment
  - FRP Decision Review
  - FOC

Concept Decision

Critical Design Review

LRIP/IOT&E

FRP Decision Review
Caution

- The real measure of time is from identification of need to delivery of military capability to meet need.
- The rest is public relations.
What Can really Help?
Stop sprinkling the timeline with “events”

- **TEST CONTINUOUSLY**
  - Kern, Coyle
  - To do that Need Embedded Instrumentation
    - will help with training and logistics too
    - Easy to do “test throughout the life-cycle”

- Blows away the RAND analysis
- Blows away the FCS chart
Stop “Success Oriented” Planning

- If there is risk, have multiple paths.
  - “What if JTRS doesn’t make it?”
- This has budget implications (at start)
  - Kendall: we need
    - Budget reform, and
    - Requirements reform, not just
      - Acquisition Reform
- Try “Pilot Programs” and “ACTDs”
Learn Faster: More realistic early testing

- **RAdm Jeff A. Wieringa**
  - Ran a big test first time out. *Tires, Long Range, Thermal crossover.*
  - “I failed that day”
  - What if it had worked? Be a risk taker....

- More realistic Early testing  ---  Kwai Chan
Learn Faster: Better early analysis

- Mission and Means Framework
  - To some extent, this is really good “Systems Engineering”
  - There is a recognition that the Department needs better Systems Engineering.
Learn Faster: Do T&E evaluations at PDR and CDR

(*Early Operational Assessments*)

- Technology Maturity Review
- Apply Mission and Means Framework
Relieve Unrealistic Pressures

- Change Funding Structure -- Bob Levin
- Institutionalize Independent DT&E
- Have Independent DT&E and OT&E
  - Independence means Organization and Funding
Ideas from the National Academies

- Think about a program as “a failure mode factory”
- Mature technology outside of programs
- Do predictions: Models
- Prognostics & embedded instrumentation
- Use “Clear Box” analysis -- vs proprietary interests
- Test design Factors and Scenario factors
- Have Archives
- Be aware of conflict between Fiscal Responsibility and Spiral Development
- Think up contract incentives
THE END