

Model for Knowledge-Based Acquisition Process

International Test & Evaluation Summit

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GAO's Best Practices Work

Common ground – commercial & DOD

- Goal – reduce risk
- Schedule pressures
- Funding limitations

Examined commercial & DOD practices

- Commercial firms gain knowledge earlier
 - Rigorous standards and processes followed
 - Technology & product development separated

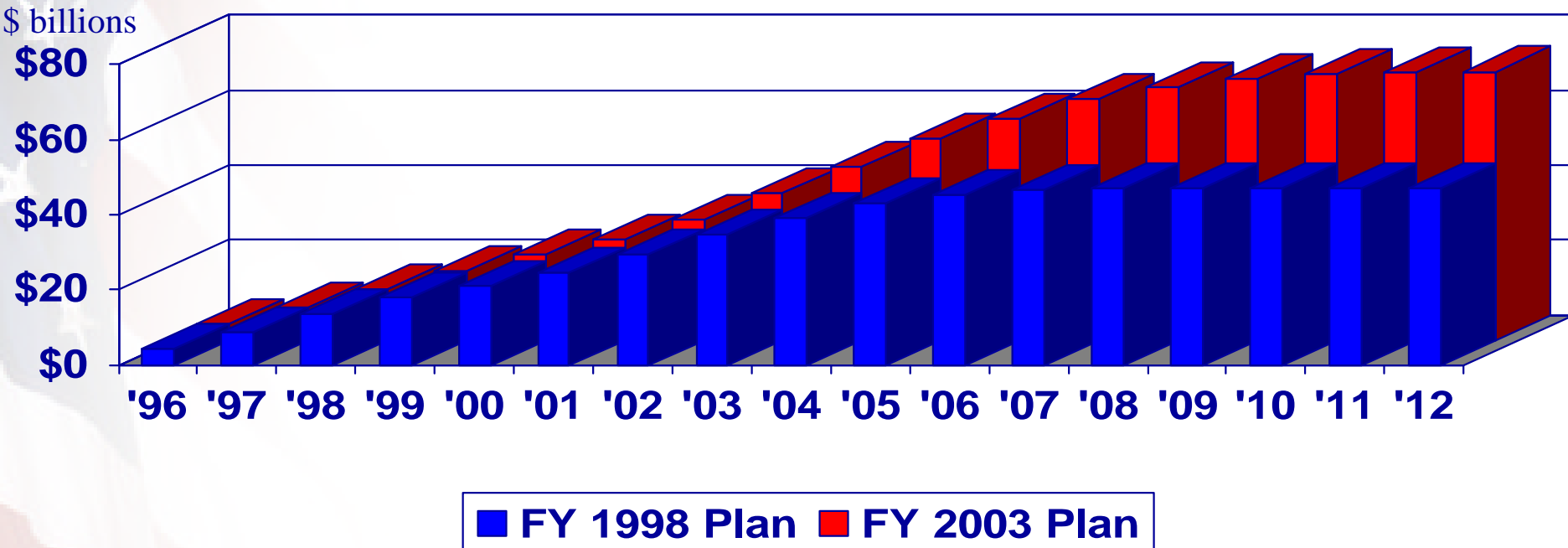
Different incentives

- Commercial firms: testing can foster success
- DOD: testing may jeopardize program

Outcome

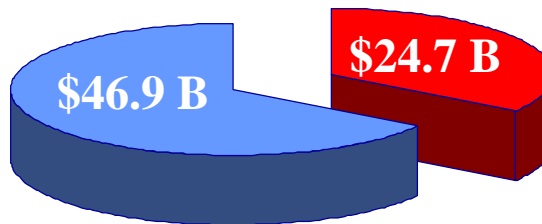
- Test to confirm v. test to discover
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Cumulative Effect of Cost Growth on Development of 8 Weapon System Programs¹



FY '03: \$71.6 billion total

FY 1998 plan for completing development of 8 programs



Additional investment needed under FY 2003 plan for completing the 8 programs

¹Source: Selected Acquisition Report data (12/31/96 and 12/31/01) on the 8 weapon systems among the highest R&D budget requests for FY 2003. Note: All dollars are in constant FY 2003 dollars.

DOD's Past Problems

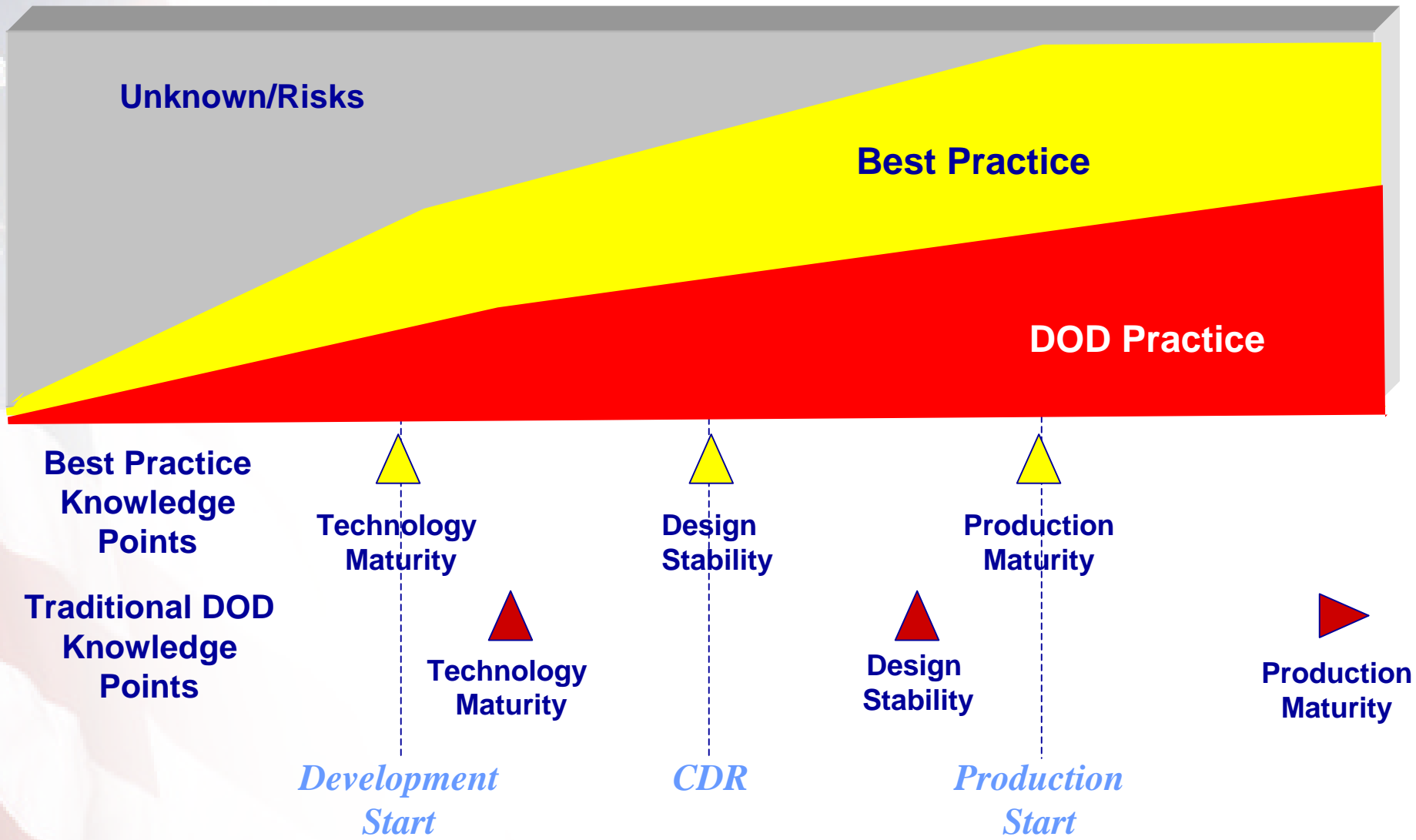
Testing issues

- Test events are postponed or skipped
- Some tests are deficient
- Full system tests overly burdened

Examples

- F-22
 - V-22
 - ABL
 - THAAD
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Best v. DOD Practices for Building Product Knowledge



T&E tells us where we are on the knowledge curve

Knowledge Point 1

Technology Maturity

Definition

- Customer's requirements match available resources (technology, time, and funding)
- Should align with DOD's milestone B

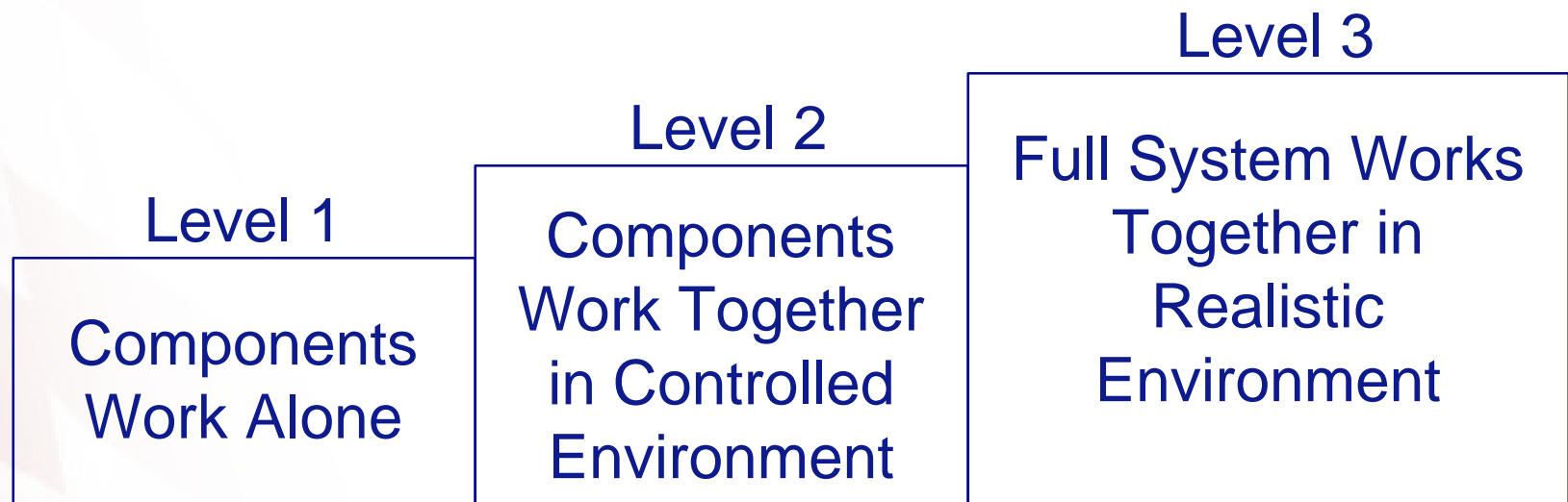
Measurement

- Technology readiness levels (TRL)

Goal

- Attain TRL 7 – component/subsystem demonstration in an operational environment
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Knowledge-Based Approach to Testing



Knowledge Point 2

Design Maturity

Definition

- Product design can meet requirements
- Should align with CDR

Measurement

- Percent of engineering drawings complete

Goal

- 90% of drawings releasable to manufacturing

Knowledge Point 3

Production Process Maturity

Definition

- Product can be manufactured within targets
- Should align with milestone C

Measurement

- Percent of critical manufacturing processes in control

Goal

- 100% statistical control

T&E Challenges

- Preventing component & subsystem tasks from sliding to full system testing
- Completing system-level DT before production commitments
- Conducting T&E of integrated hardware and software
- Conducting T&E for spiral/capabilities-based acquisitions

More Information

- Contact Bob Levin
 - (202) 512-4841
 - levinr@gao.gov
 - Suggested reading
 - Best Practices: Capturing Design and Manufacturing Knowledge Early Improves Acquisition Outcomes. (GAO-02-701, July 2002)
 - Best Practices: A More Constructive Test Approach Is Key to Better Weapons Systems Outcomes. (GAO/NSIAD-00-199, July 2000)
 - Best Practices: Better Management Technology Development Can Improve Weapons Systems Outcomes. (GAO/NSIAD-99-162, July 1999)
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