

Using Team Process Integration (TPI) with Non-Software Teams (An Integrated Product Team's Experience)



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Outline

- AV-8B Joint Systems Support Activity (JSSA) Overview
- AV-8B TSP Experience
- Why The Interest In TPI?
- AV-8B TPI Experience
- AV-8B Future Plans with TPI



Joint Systems Support Activity (JSSA)

- Overview

- Provide AV-8B life-cycle systems development and maintenance support
- Located at China Lake, California
- Established in 1985
- Earned Value Mgmt. Sys. (EVMS) since 1998
- PSP/TSP since 2000
- SW CMM Level 4 Rating 09/2002
- TPI since 2006

- Goal

- Develop and deliver priority warfighting capabilities when needed by the fleet



The Work We Do

Interim and Fleet Products



Requirements

Executability Assessments
Draft FRD with SOR, Op Intent, Funding

Design

Design Documents
Test Plans/Procedures
Draft FRD Update w/ SOF

Development

Test Plans/Procedures/Flight Profiles
FRD Update
Verification Block Update
Code
Developmental Block Update (Builds)

Verification

Test Plans/Procedures/Flight Profiles
FRD Update
Validation Block Update

Validation

FRD Final
Operational Block Update
Operator/Maintainer Manual Redlines

Op Test

Support operational testers as required

Fleet Use

Block Upgrade Release

Fleet Briefs, etc.
Fleet Problem Analysis



Personnel

Test Pilots
Office Manager
Electrical / Electronics Engineers
Aerospace Engineers
Physicists
Mathematicians
Mechanical Engineers
Avionics Technicians
Financial Managers
Project Leaders/Managers
Information Technologists
Software Engineers
Flight Test Engineers
System/Software Test Engineers
Quality Assurance
Logistician
Configuration Managers
Technical Writers
Librarian

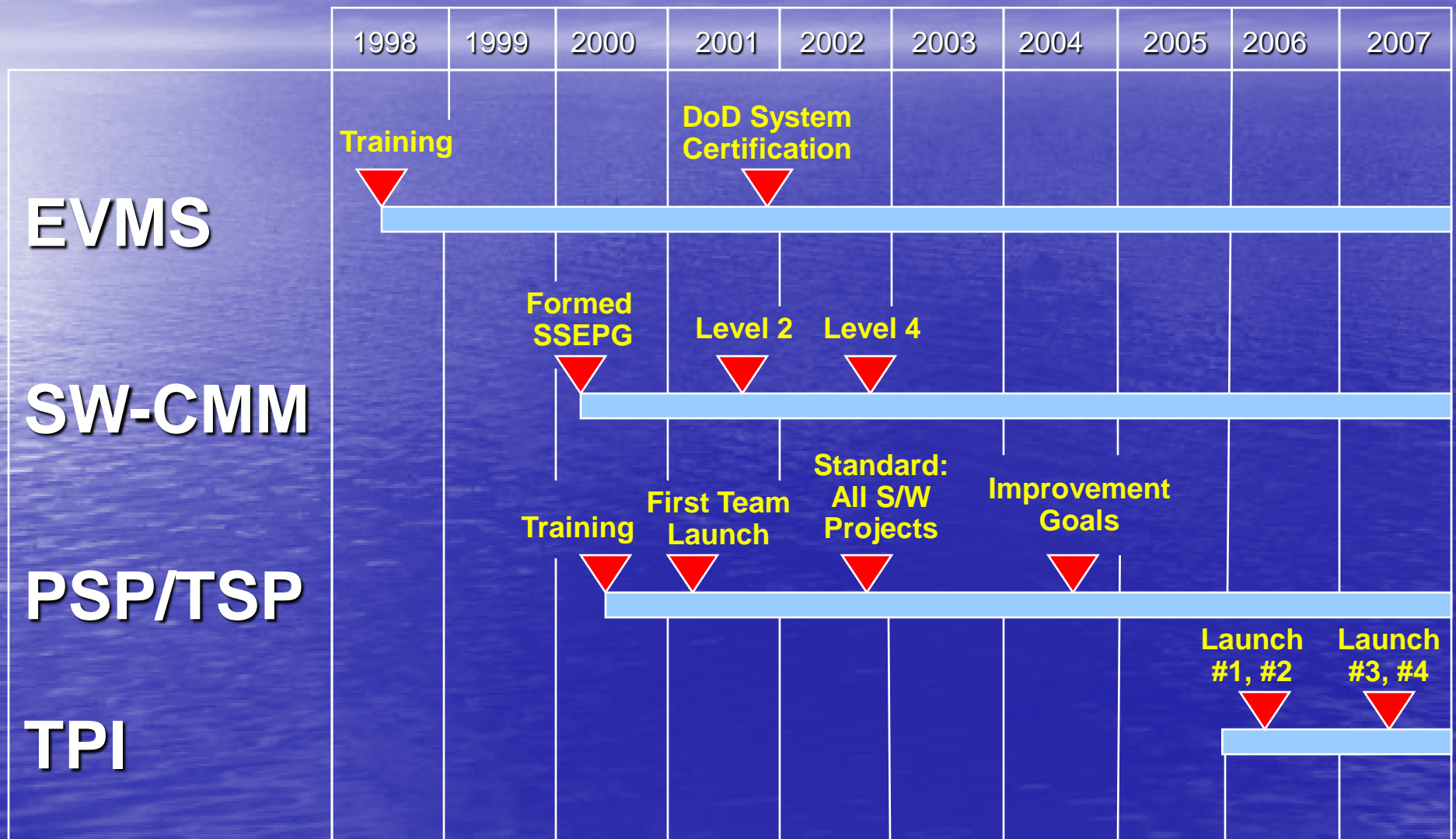


Personnel Requirement

	2004	2005	2006	2007	2008
JSSA Personnel	80	73	71.2	70	76

Boeing St. Louis FY06: Approx. 11 WY

AV-8B JSSA Improvement Timeline



How Do We Define And Measure Our Success?

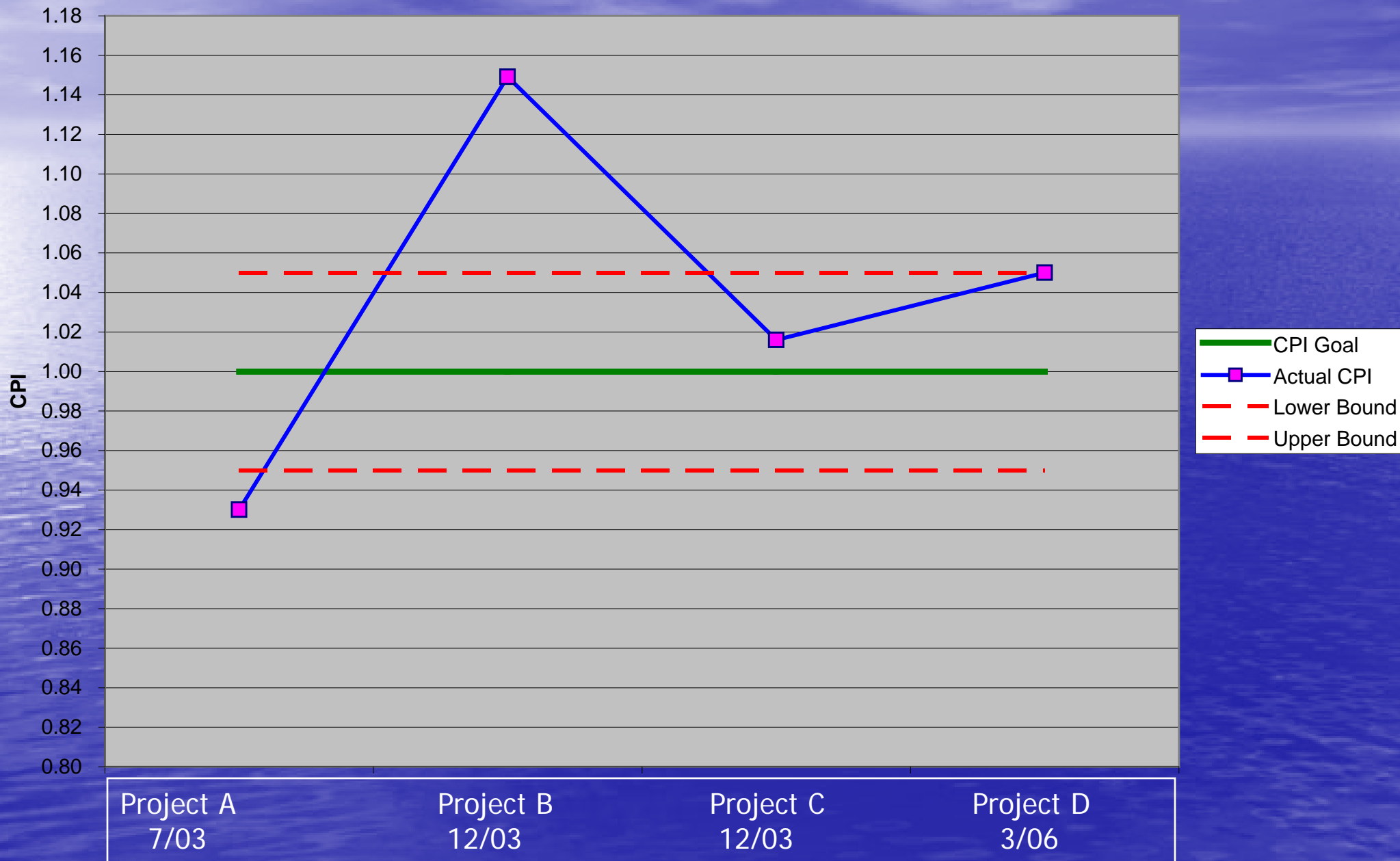
- AV-8B JSSA Vision: To be the "Go-To" (best value) organization for AV-8B systems/software integration work for our Customer
- What's Valued (Important) to our Customer?
 - Cost Performance – On Cost
 - Schedule Performance – On Time
 - Quality – No Priority 1, 2 or 3 Defects
 - Productivity – Increased Efficiency, Lower Cost



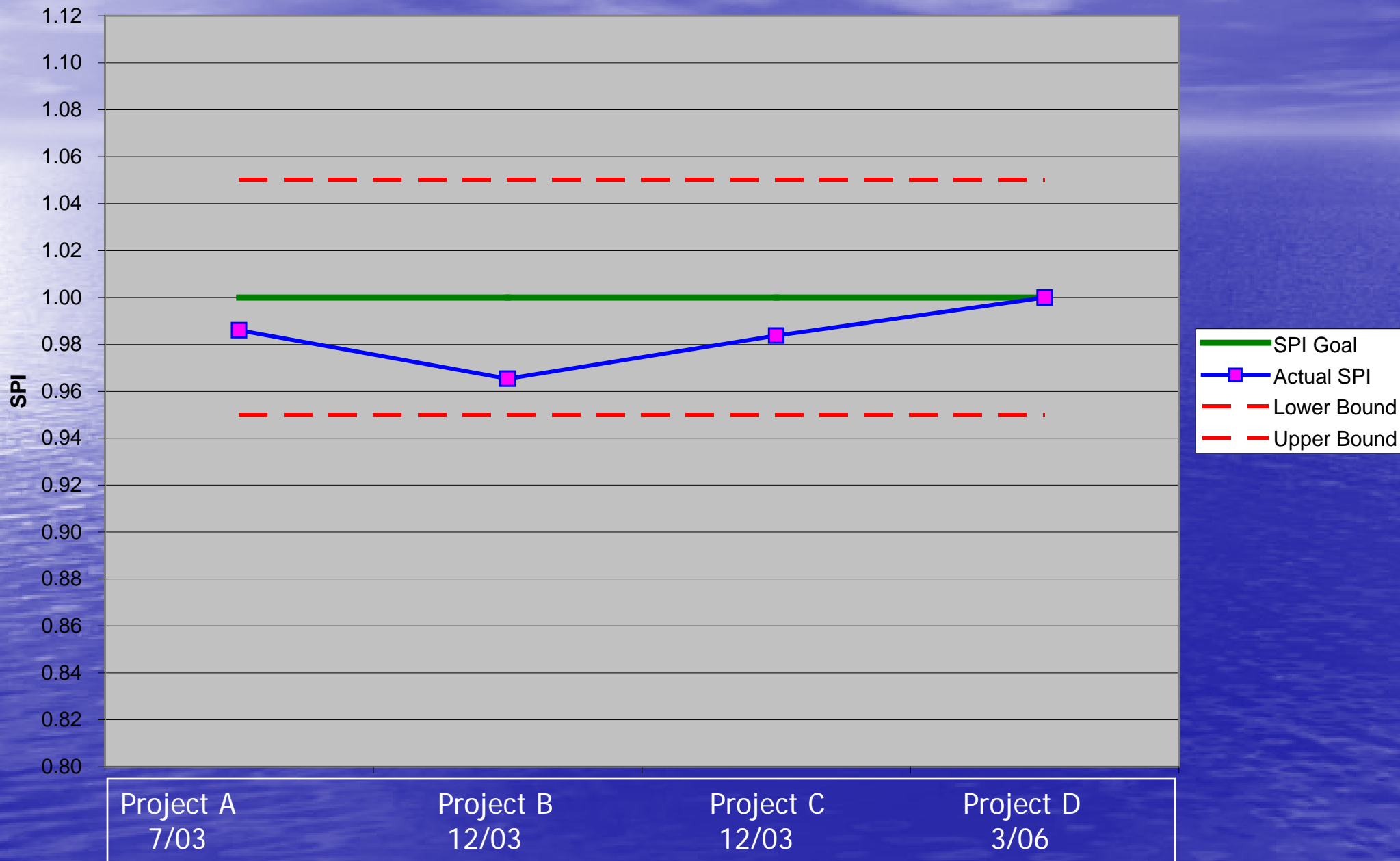
AV-8B JSSA Organizational Performance Baseline Metrics

- Cost Variation from Plan
 - Cost Performance Index (CPI) at completion for each project
 - Goal: 1.0
- Schedule Variation from Plan
 - Schedule Performance Index (SPI) at completion for each project
 - Goal: 1.0
- Quality – Defects
 - Number of STRs per KSLOC delivered
 - Goal: 5% Reduction on each successive release
- Productivity
 - Manhours per SLOC for Development Work
 - Manhours per STR (Average) for Maintenance Work
 - Goal: 5% Increase on each successive release

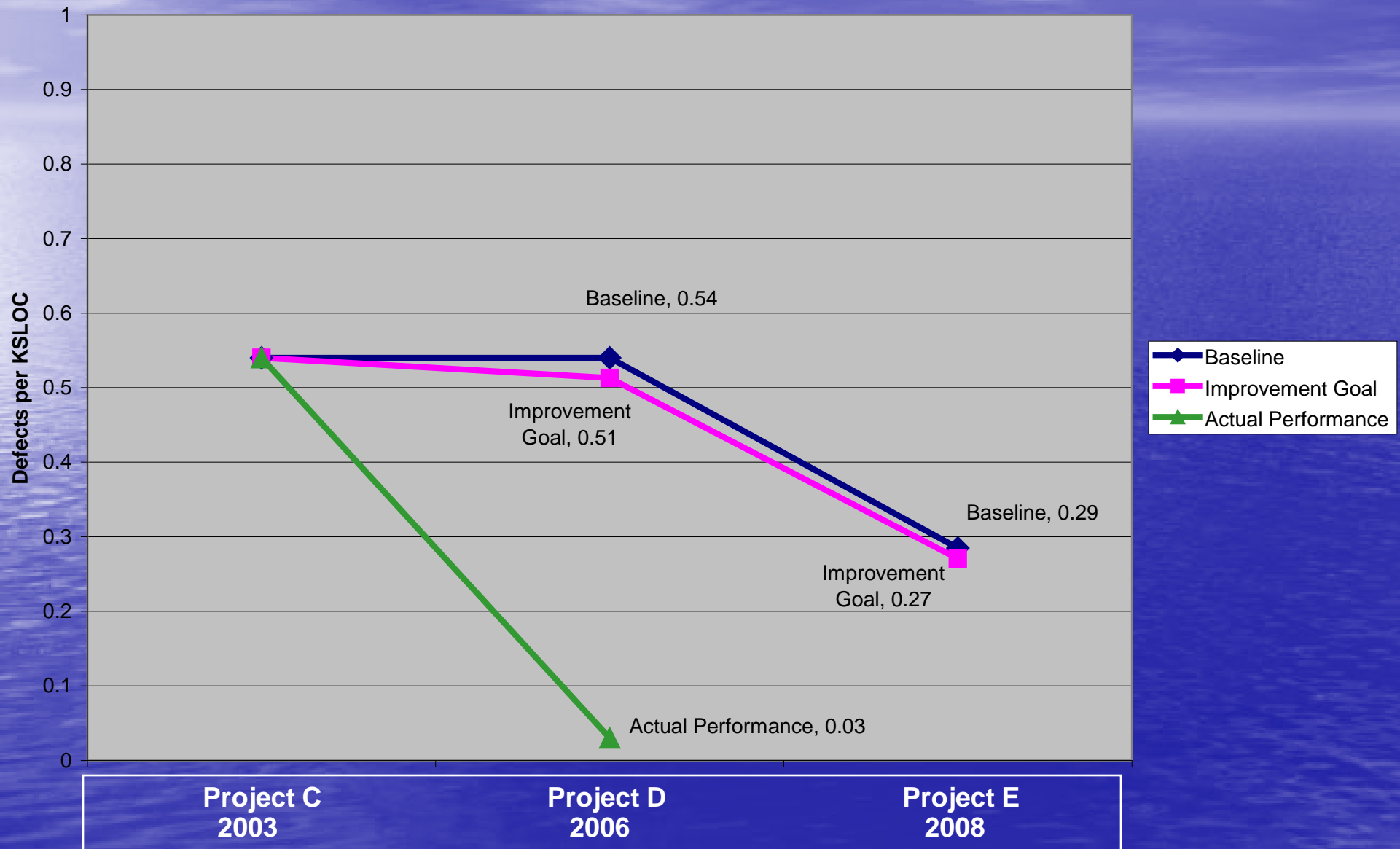
Cost Performance Index (CPI) Trends



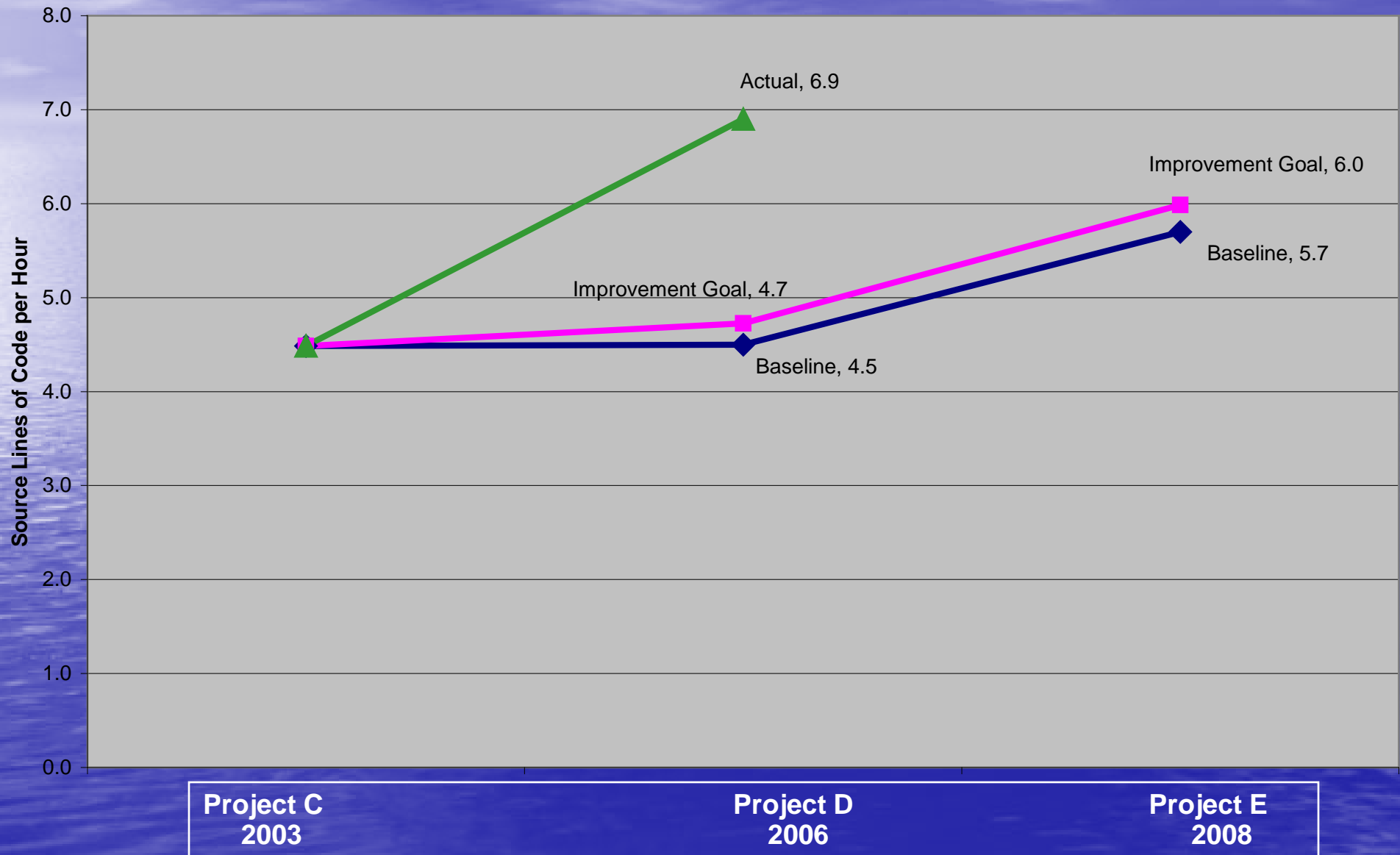
Schedule Performance Index (SPI) Trends



Mission Support Systems Defect Trends



Mission Support Systems Coding Performance Trends



The Software Team is Doing Well With
PSP/TSP
But What Can The Other Teams Use?

Enter TPI

What We Want From TPI:

- Same/Similar Results the Software Team Had w/TSP
 - Established Productivity and Quality Baselines
 - Established Productivity and Quality Improvement Goals
 - Credible Estimates Based on Team Performance

Using TPI at AV-8B

- **Our Philosophy:**
 - Don't Impose TPI as a Standard
 - Using TPI is a Learning Experience
 - Give Teams Opportunity to "Buy-In" and See the Value for Themselves
 - It's "OK" if it Doesn't Work for All/Any Teams - Encourage Teams to Try
- **AV-8B Performs Detailed Planning Events 3 Times A Year**
 - Take the IPT "Off-Line" for 6 Days on Each of the Detailed Planning Events
 - Require Each Team to Perform Team Planning During the 6 Days
 - Require Each Team to Brief Their Plan
 - Require Each Team to Deliver Planning Artifacts
- **Don't Force any Team To Use TPI**
 - Earned Value Management Planning Process is the AV-8B Standard Process at this Time
 - Reward Risk Taking and Learning

AV-8B JSSA IPT



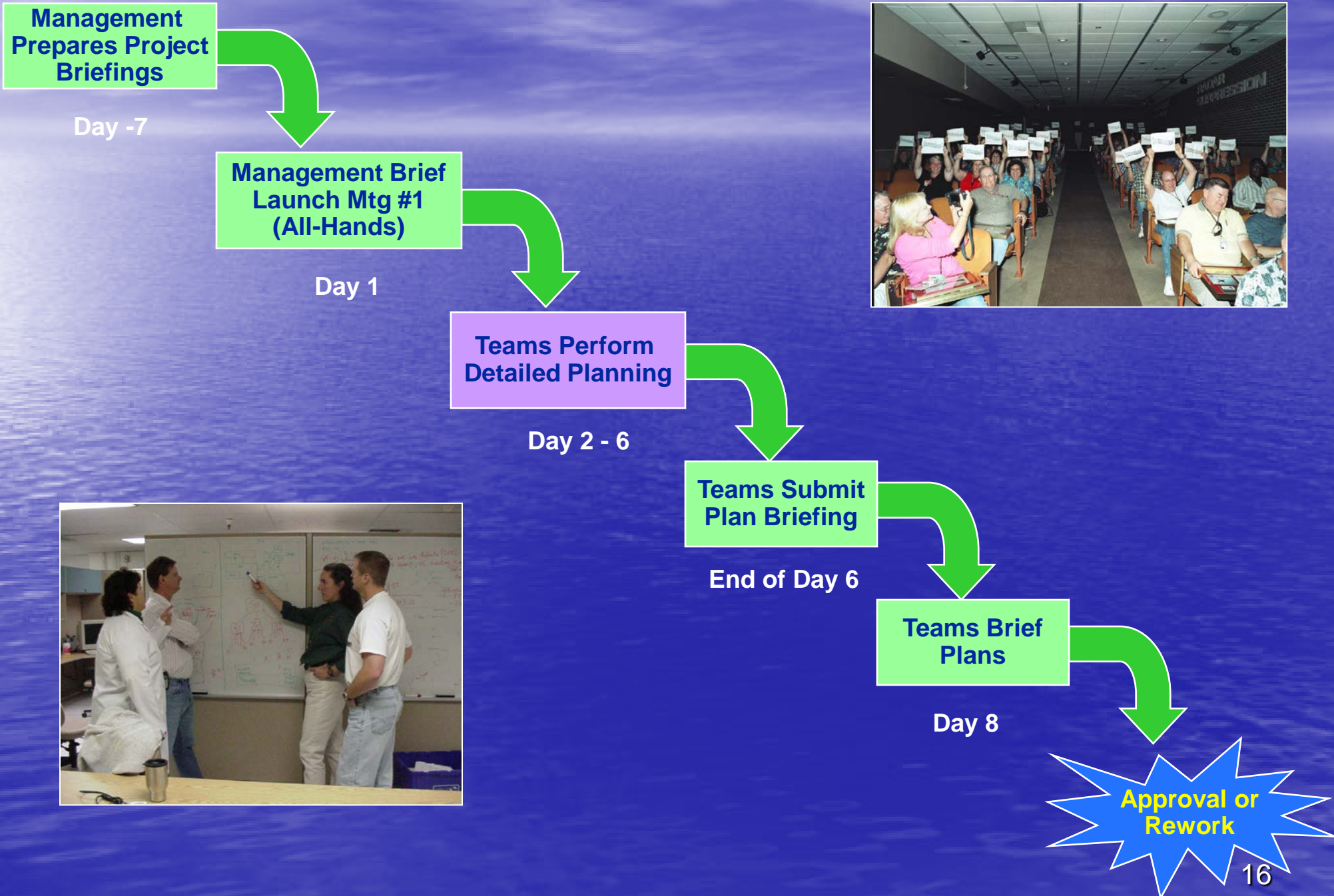
Task Teams



ACQUISITION PRODUCTS



The Planning Process



What Have We Learned?

What Can We Improve?

- How did inter-team coordination work? How much was done? Was it useful?
- How was Coaching support?
- How was Project Management support?
- Was there sufficient time allowed for planning?
- Were goals, deliverables, due dates, and expectations clear?
- How was the overall planning process? Tools and applications such as MS project, MS Excel, etc.)?

Team Learning and Corrective Actions

- Learning #1: Some teams produced plans that did not meet schedule constraints and alternate plans were not developed/briefed.
- Corrective Action: During the planning week, teams will meet with the Project Leads when/if they determine they will not meet the schedule and receive additional guidance on options such as task shuffling and prioritization. Coaches will also remind the team and ensure this meeting takes place when needed.
- Learning #2: Developing Team Plans that support multiple Project Leads is challenging because prioritization across projects is not well defined.
- Corrective Action: The Project Leads need to agree on prioritization of work across projects. This agreed upon prioritization should be included in the Management Briefs at the beginning of the planning week. If additional clarification is needed, Teams will meet with affected Project leads (at the same time) to resolve priorities during the planning week.

Team Learning and Corrective Actions - 2

- Learning #3: Not all the coaches supporting the TPI teams were experienced in the process, the tools. Some coaches provided great support and experience.
- Corrective Action: Feedback was provided to the TPI/TSP Coaches regarding coaching support. They have provided recommended actions.
- Learning #4: The ground rules regarding "TBD" planning were unclear.
- Corrective Action: Ground rules will be documented in the Management Brief given on the first day of the planning week. "TBD" planning is allowed. However, associated risk with filling vacancies and training/productivity of new team members must be identified and tracked.

Team Learning and Corrective Actions - 3

- Learning #5: Although team coordination happened between the TPI teams, it did not occur with the non-TPI teams. It is helpful to know all teams are planning at the same time and when coordination meetings are occurring.
- Corrective Action: Conduct detailed planning week at the JSSA and ensure teams are sequestered to allow uninterrupted planning during the week. Have regularly scheduled coordination meetings with the team leads during the planning week. Have a 30 minute check-in time at the end of each planning day with the team leads and project leads.
- Learning #6: Non-TPI teams found detailed planning challenging without the assistance of a facilitator/coach. Some teams did not have MS Project "experts" to develop schedule plans.
- Corrective Action: Provide coaching/facilitation for all teams during planning week, if desired.

Team Learning and Corrective Actions - 4

- Learning #7: Conducting multi-team launches during a 4-day week was not enough time to do adequate alternate planning and coordination.
- Corrective Action: Teams will be allowed 5 full days for detailed planning and one full additional day for outbriefing their team plans.
- Learning #8: Most team members agree that detailed planning is worthwhile and should occur 3 times a year
- Action: Get agreement on when the next 3 planning events will occur

Team Learning and Corrective Actions - 5

- Learning #9: Not all team members understood the detailed planning week objectives, importance, or their role in it.
- Corrective Action: Include all-hands at the Management Brief. Include discussion of team member role in the planning process. Have team members attend the brief of their team plan at the conclusion of the planning week.
- Observation: Only one team out of 6 received plan approval at the team briefing (Meeting #9) – the Software Team. The other 5 team plans required re-work.

The Engineering Perspective on TPI

- "My Productivity is Actually a Little Worse Using TPI"
 - Overhead with logging time/tasks, team meetings, planning weeks
- "I Like Hearing From Management (Directly) on What's Expected at Meeting #1."
 - Reduces chance of filtering by the Task Team Lead
- "Resolving Prioritization Conflicts is Easier Now than Before Integrated Planning with the TPI Teams"
- Overall, Team Members Like Planning as an IPT Together vs. as Separate Stand-Alone Teams

The Management Perspective on TPI

- "It's Been Good Doing Planning Together"
 - Everyone sees what our team is doing
 - We like having access to other teams during planning week (i.e., everyone's planning)
- "We're Still Experiencing Growing Pains"
 - Team Frustration with Support and Tools
- "The TPI Process Has Helped Build a Teaming Atmosphere"
 - Members feel more aware of what each other is doing
- "The Situational Awareness is Better Now Than Before TPI"
 - Fewer surprises
- "I Have Better Insight Into What the Team is Doing and Their Process Now Than Before TPI"

What's Next For TPI At The JSSA?

- Continue The Learning
 - What's Working Well?
 - What's Not Working?
 - Is It Helping The Engineers? The Managers?
 - Feedback to SEI on Access Tool Performance
- Next JSSA Detailed Planning Events (Launches)
 - September 2007
 - January 2008
 - May 2008





Questions?