How TSP℠ Implementation Has Evolved at AV-8B

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Personal Software Process, PSP, Team Software Process, and TSP are service marks of Carnegie Mellon University
Presentation Objectives

- Background of AV-8B JSSA
- Evolution of Launch Processes
- Evolution of Periodic Team Meeting Processes
- Performing Coordinator/Manager Roles
- Evolution of Postmortem Processes
AV-8B JSSA Background

• Overview
  – Provide AV-8B life-cycle systems development, operation and maintenance support to the United States Marine Corps, Italian Navy and Spanish Navy
  – Located at China Lake, California
  – Weapon System Support Activity (WSSA) established in 1985
  – Joint System Support Activity (JSSA) established in 1992 upon partnership with the Spanish and Italian Governments
  – 70-80 personnel; 10-15 s/w engineers

• Goal
  – Release Operational Flight Program (OFP) and Mission Planning Maintenance Releases when needed by the fleet
TSP Milestones at AV-8B

- Start PSP/TSP Training (10/2000)
- 1st TSP Launch (12/2000)
- JSSA receives CMM Level 2 (Spring 2001)
- TSP becomes org standard s/w process (6/2002)
- JSSA receives CMM Level 4 (Fall 2002)
- 1st Non-SW Launch (4/2006)
- Start TPI Pilot (9/2006)
Launch Process Evolution

• Launch Preparation
  – **Past:** little to no preparation
  – **Problems:**
    • frustration from estimating without enough time
    • less confidence in ability to execute plan
  – **Present:** components estimated by individuals & team lead beforehand
    • more insightful discussions on extent of work to be performed
    • deeper understanding of the team’s undertaking
    • fewer surprises during the launch
HAE ROM
(1,149 SLOCS TOTAL)
Engr 1 assumed to work unless otherwise stated

PR 2847 – Implement DTED Capability in the AV-8B (400 SLOCS) - Component
“PR2847 – Add HAE Table” – Rate 5 SLOC/Hr – Classic Lifecycle
Engr 2

The design will be integrated with HAE to create a Façade to handle all Altitude requests and interface with calls to getting DTED data. The Façade estimates were based on looking at existing Facades for QV_VSTOLREST and EVPPointFacade. The Estimate for .cpp is 300 SLOCS (GetMSL, GetHAE, ComputeMSL, ComputeHAE and Interpolation routines).
Estimate for .h is 100 SLOCS for definitions.
Estimate for DTED Table will be provided and is assumed Plug and Play.

STR 6800 – JDAM Transition to HAE for Target Altitude Reference (10 SLOCS) - Component “STR6800_STR7571 – Enter and Send HAE to JDAM” – Total 185 SLOC
Rate 5 SLOC/Hr – Lite Lifecycle – Med (Engr 4 to work)

Engr 3

The design on this is an Interface change to set a bit indicating that the elevation value is either MSL or HAE.

STR 7571 – Allow for HAE Elevation Entry for JDAM (175 SLOCS) - Combined with Component “STR6800_STR7571 – Enter and Send HAE to JDAM” (Engr 4 to work)

Engr 3

This design requires addition of HAE button (25 SLOCS) changes on the TFD.
Launch Process Evolution

• Estimating S/W Maintenance Efforts
  – **Past**: used LOC as size measure
  – **Problems**:
    • actual A&M LOC counts had no correlation to actual effort
  – **Present**: using problem type categories as size measure
    • overall time estimates are within 7% of actuals
Launch Process Evolution

Object Category Size table for C++ (in LOCs/method)

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Problem Category Size table for AV-8B OFPs (in Hours/STR)

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<th>Med</th>
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<td>STR</td>
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<td>17</td>
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<td>60</td>
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</table>

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Launch Process Evolution

Size Bin Counts of Actual Efforts for STRs in H2.0

NAVAIR Software/Systems Support Center (NSSC)
Launch Process Evolution

AV-8B H2.0 STR Proxy Errors

-60% (underestimated)
-40%
-20%
0%
20%
40%
60%

STR Size Categories

AV-8B H4.0 Cycle 1 STR Proxy Errors

60%
40%
20%
0%
-20%
-40%
-60%

AV-8B H4.0 Cycle 3 STR Proxy Errors

61 7 4 0 7 5 overall

STR Size Categories

AV-8B STR Category Distribution

% of STRs in Category

NAVAIR Software/Systems Support Center (NSSC)
Launch Process Evolution

• S/W Maintenance Life-cycle Process
  – Past: used “classic” TSP life-cycle
  – Problems:
    • no problem identification phase
    • did not fit iterative nature of finding the root cause
  – Present: using “Lite” life-cycle
    • simple life-cycle good for small STRs
    • natural for iterative nature of finding the root cause
Launch Process Evolution

- **IDENT**
  - high-level problem analysis

- **INWRK**
  - design, code, and unit test activities

- **INSP**
  - inspection of design and code products

- **IT**
  - lab test/verification performed by developer

- **RA**
  - determination of need for re-work

- **ST**
  - re-work triggered by failure during final testing
Meeting Process Evolution

• Preparation of Data Before the Meeting
  – **Past:** little to no collection or review
  – **Problems:**
    • wasted time analyzing incomplete/corrupt data
    • longer time relaying status ("Ummm…")
    • longer time looking for data ("Where is that file?")
  – **Present:** reports generated and compiled
    • coordinators generate reports in common folder on server
    • status documented in common set of PowerPoint slides
PROJECT X Software
Status Meeting
01/06/2003

• Meeting Roles
  – Recorder: EngrA
  – Chair: EngrB
Agenda

- Team Leader’s Time (5 Min)
- Team & Individual Status (30 Min)
- Roles (15 Min)
- Goals, Risks, & Action Items (15 Min)
- Meeting Wrap-up (5 Min)
Team Leader’s Time (5 Min)

- UPC Day at Eglin AFB 01/08-09
  - latest JMPS schedule to be announced then
  - XXX will be at the meeting
- When should we plan for the next Build 3 be made?
Team & Individual Status
(30 mins)

• Team Status
  – Earned Value
  – Time on Task
  – Weekly View

• Individual Status’ (each team member)
  – How things went last week
  – Problems they are encountering
  – Plans for next week
Planning Coordinator

• All workbooks need to be submitted the last working day of the week in order for rollups, slides and analysis to be done before the weekly meetings. Any workbooks that are not received by 8 AM each Monday, the assumption will be that last week’s data is the most current and include it for the rollup and analysis. Keep in mind that if this occurs, Earned Value and schedule will be affected.

• Please send all workbooks and slides at the end of the week not only to me but also to XXX (XXX@abc.com) and YYY (YYY@abc.com).
Current Status

The team is currently 3 weeks behind.
## Current Status

<table>
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<tr>
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<th>Direct Hours</th>
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<th>Earned Value</th>
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<td>Actual/Plan</td>
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<tr>
<td>This Week</td>
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<td>72:04</td>
<td>1.72</td>
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<td>To Date</td>
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<td>Average per Week To Date</td>
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<tr>
<td>Completed tasks to date</td>
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<td>124:24</td>
<td>1.4</td>
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- Our Earned Value to date is lower than we planned.
- The team is spending more hours than planned on tasks that are completed.
- The team has 136 hrs (3.2 team weeks) invested in uncompleted tasks.
Quality Coordinator Report

- Defect ratios:
  - DLD Review/Unit test Planned 1.6, Actual 0.26
  - Code Review/Compile Planned 1.9, Actual 0.89
Process Coordinator Report

• Introduced PIP Tracker
  – J:\Project Notebook\PIPs\PROJECT X PIP Tracker.xls
• New PIPs (#)
• Newly Assigned PIPs (#)
• Newly Closed PIPs (#)
• PIP Board will/will not meet today
  – PIPs that will be covered
• Still have EV PIPs open.
## Support Coordinator Report

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<tr>
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<th>Engr 2</th>
<th>Engr 3</th>
<th>Engr 4</th>
<th>Engr 5</th>
<th>Engr 6</th>
<th>DII COE notebook</th>
<th>Lab computer (NT 4.0)</th>
<th>Lab computer (2k) for 3.0</th>
<th>Lab computer (2k) for 3.1</th>
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### Patches

- Rational Rose 2000e (Prof C++) w/ 3 COM patches
- Rational Test Foundation
- Rational Purify 2001.03.00
- Rational Purify 6.50
- ACAT
- Nuance DevPartner for VC++ 6.0
- MS Visual Source Safe 6.0
- Telos Tools Measure
- MS XML SDK
- DOORS 4.1.3.0
- Orbus COMet or Rogue Wave Nuveau SourceForge HTML (SourceForge.net)
- PVCS Client 2.5.1
- CodeGen Database 6.18 (or later)
- WARP
- Borland C++ Builder 5.0 + 3.0 for WARP
- Windows 2000 Service Pack 2
- Microsoft Office 2000 Professional SR 1 Service Pack 2
- Microsoft Visual Studio 6.0 (Professional)
- JMP (Beta 5)
- JMP (Beta 5.2)
- COE 4.2.05

### As of

12/11/02
**Test Coordinator Report 06 Jan 2003**

### Build 2-3

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### Totals

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<th>% Passed</th>
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**Totals**

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</table>
Goals, Risks, & Action Items

Goals Status: See Goals spreadsheet

Risks Status: See Risks spreadsheet

Action Items Status: See Action Item spreadsheet
Meeting Wrap-up (5 min)

- Read new Action Items
- Risk and Goal reminders for next meeting
Meeting Process Evolution

• Documenting the Meetings
  – Past: used weekly meeting form
  – Problems:
    • meeting data spread across files
    • additional effort to collect and track Action Items
  – Present: uses custom meeting log spreadsheet
    • tracks meeting attendance, decisions, action items, risks, and goals
    • “one stop shopping” with all the data together
### Software Team

<table>
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<th>Team Members</th>
<th>Date</th>
<th>Start Time</th>
<th>End Time</th>
<th>Delta Time</th>
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<td>08/01/06</td>
<td>14:00</td>
<td>15:30</td>
<td>1:30</td>
</tr>
<tr>
<td></td>
<td>08/08/06</td>
<td>14:00</td>
<td>16:00</td>
<td>2:00</td>
</tr>
<tr>
<td></td>
<td>08/15/06</td>
<td>14:00</td>
<td>15:15</td>
<td>1:15</td>
</tr>
<tr>
<td></td>
<td>08/22/06</td>
<td>14:00</td>
<td>16:00</td>
<td>2:00</td>
</tr>
</tbody>
</table>

<p>| Engineer 1   | 1          | 1          | 1        | 1          |
| Engineer 2   | 1          | 1          | 1        | 1          |
| Engineer 3   | 1          | 1          | 1        | 1          |
| Engineer 4   | 1          | 1          | 1        | 1          |
| Engineer 5   | 1          | 1          | 1        | 1          |
| Engineer 6   | 1          | 1          | 1        | 1          |
| Engineer 7   | 1          | 1          | 1        | 1          |
| Engineer 8   | 1          | 1          | 1        | 1          |
| Engineer 9   | 1          | 1          | 1        | 1          |
| Engineer 10  | 1          | 1          | 1        | 1          |
| Engineer 11  | 1          | 1          | 1        | 1          |
| Engineer 12  | 1          | 1          | 1        | 1          |
| Engineer 13  | 1          | 1          | 1        | 1          |</p>
<table>
<thead>
<tr>
<th>#</th>
<th>Date Created</th>
<th>Decision Item</th>
<th>Reason / Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>8/1/2006</td>
<td>Quality Coordinator will attend the PCRB</td>
<td>Because they have to report PR status anyway.</td>
</tr>
<tr>
<td>2</td>
<td>8/2/2006</td>
<td>Integration testing will not be signed off for new messages. A table indicating the messages to be tested will be created by the interface developer. As other software components are completed and ready for test, the interface developer will take the table and verify which messages were exercised by the other components that use the interface. Any changes that need to be made to the interface will be done as a defect under the integration test section of the interface developers plan. Integration testing cannot be signed off for interface changes until the messages in the table have all been tested and signed off by the interface developer.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8/3/2006</td>
<td>For Inspections, the author will get full time and each inspector will get 50% of the author's time.</td>
<td>This is what was done in H4.00.</td>
</tr>
<tr>
<td>7</td>
<td>8/3/2006</td>
<td>Design coordinator will determine Lifecycle to be used on new components added to plans and report to Team Leader before creating them in Dashboard.</td>
<td>The classic lifecycle may add too much overhead for scope of work to be done.</td>
</tr>
<tr>
<td>8</td>
<td>8/3/2006</td>
<td>Planning Coordinator will report any newly added/deleted/changed components at the weekly meeting.</td>
<td>To keep the team and team lead informed.</td>
</tr>
<tr>
<td>9</td>
<td>8/3/2006</td>
<td>ASTRO testing will use the Lite Lifecycle</td>
<td>Because they require no architecture.</td>
</tr>
<tr>
<td>10</td>
<td>8/4/2006</td>
<td>Move XX to WMC DMLGB when DTE tasking os completd. Move YY to MSC DMLGB after his current tasking is completed</td>
<td>XX and YY are under tasked</td>
</tr>
<tr>
<td>11</td>
<td>8/4/2006</td>
<td>in WMC project, Integration test phases were removed from the &quot;JDAM to DMLGB Conversion&quot; components</td>
<td>Integration testing is not possible at this time in development</td>
</tr>
<tr>
<td>12</td>
<td>8/4/2006</td>
<td>for tasks giving to Heath and Stephanie, we are halving the rates for the phases of the components</td>
<td>if the component has a small sloc size, then the percentages used in the lifecycle often do not allocate enough time for inspections.</td>
</tr>
<tr>
<td>10</td>
<td>8/4/2006</td>
<td>HLD Inspection 1 hr for author 0.5 for inspector</td>
<td>HLD Inspection 1 hr for author 0.5 for inspector</td>
</tr>
</tbody>
</table>
# Software Team Action Items

<table>
<thead>
<tr>
<th>#</th>
<th>Date Created</th>
<th>Action Item</th>
<th>Assigned To</th>
<th>Target Date</th>
<th>Status</th>
<th>Date Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/1/2006</td>
<td>Confirm that XX is OK with us not planning Build 3.1 or 4 because of lack of knowledge on FLE &amp; Blue-on-Blue. We will get a ROM by 8/14/06</td>
<td>Engr 1</td>
<td>8/1/2006</td>
<td>8/1/2006 - XX is OK with just planning through Build 3 and getting him the ROM by 8/14/06</td>
<td>8/1/2006</td>
</tr>
<tr>
<td>2</td>
<td>8/1/2006</td>
<td>Ask XX when is PDR &amp; DDR for Blue-on-Blue</td>
<td>Engr 1</td>
<td>8/1/2006</td>
<td>The Blue-on-Blue CDP and FLE will have a combined PDR/DDR in December 2006 with the other DDR items.</td>
<td>8/1/2006</td>
</tr>
<tr>
<td>4</td>
<td>8/1/2006</td>
<td>Create and Maintain list showing engineers exposure to various developed products.</td>
<td>Engr 1</td>
<td>8/14/2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>8/1/2006</td>
<td>How to track PRs that are Defects found by getting to previously untested code?</td>
<td>Engr 2</td>
<td>9/1/2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8/1/2006</td>
<td>Correct plan hours for MSC ROMS in personal Dashboards. Tell XX what the corrected hours are so he can change in the team Dashboard.</td>
<td>Engr 3, Engr 4, Engr 5</td>
<td>8/2/2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>8/1/2006</td>
<td>Remove all H5.0 MSC\Dev\Baseline 1851\Config Page tasks except for design and code inspections from XX Dashboard.</td>
<td>Engr 2</td>
<td>8/2/2006</td>
<td>XX 2Aug06 - removed from team Dashboard. XX, removed from hierarchy.</td>
<td>8/2/2006</td>
</tr>
<tr>
<td>8</td>
<td>8/2/2006</td>
<td>Contact XX to determine how new IDT changes are tested when new hardware is unavailable.</td>
<td>Engr 3</td>
<td>8/7/2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>8/2/2006</td>
<td>Check with XX on how we can test the MSC interface with DMLGB tail kit.</td>
<td>Engr 4</td>
<td>8/10/2006</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Inspections, need to check the Inspection times. The producer always has more time than the reviewer. We need to determine how to set this up for further changes. Is the...
### Meeting Process Evolution

**Slide 31**

<table>
<thead>
<tr>
<th>Likely Impact Area</th>
<th>Risk</th>
<th>Mitigation Plan</th>
<th>Who</th>
<th>Action Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>H</td>
<td>Availability of working LAR model vs DHost will impact development schedule</td>
<td>Put JDAM LAR from MSC into PCHost for testing.</td>
<td>Engr 1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>XX leaving will impact FLE development due to availability of YY</td>
<td>Adjust schedules to move FLE development to the beginning</td>
<td>Engr 2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>L</td>
<td>Requirements changed during development invalidates initial estimations</td>
<td>Will report changes involving requirements volatility to block lead.</td>
<td>Engr 3</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>M</td>
<td>AVCSB will be forced to upgrade the SW Engineering Environment to the latest FAM list (i.e. Developer Studio, Net, Rose, and PVCS) and will cause incompatibility issues which will slow or delay new development</td>
<td>Communicate with CRG, FAMs, and other interested parties</td>
<td>Engr 4</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>M</td>
<td>Loss of SW personnel will reduce resources performing new development</td>
<td>Make management aware of resource constraints</td>
<td>Engr 5</td>
<td></td>
</tr>
</tbody>
</table>

**DEFINITIONS**

- **Area**
  - S - Schedule
  - T - Technical

- **Impact**
  - H - High: 4 team-week delay or unable to implement 50% of reqts
  - M - Medium: 2 team-week delay or unable to implement 25% of reqts
  - L - Low: 1 team-week delay or unable to implement

- **Likelihood**
  - H - High chance of being realized now: 100%
  - M - Medium chance of being realized later: 66% - 99%
  - L - Low chance of being realized later: 1% - 33%
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<tbody>
<tr>
<td>2</td>
<td>Stakeholders</td>
<td>Goal</td>
<td>Measures</td>
<td></td>
<td>Tracking</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>MSC &amp; WMC: 2.5 PRs in ST phase per KLOC N&amp;C code</td>
<td></td>
<td>Goal</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>DTE: 2.5 PRs in AT phase per KLOC N&amp;C code</td>
<td></td>
<td>Actual</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UPC: 2.5 PRs in ST phase per KLOC N&amp;C</td>
<td></td>
<td>Who</td>
</tr>
<tr>
<td>46</td>
<td>Team Goals</td>
<td>Quality: For new dev, have reasonable defect density in ST phase (not including defects injected by having inadequate reqts)</td>
<td>Engr 1</td>
<td></td>
<td>When</td>
</tr>
<tr>
<td>47</td>
<td></td>
<td>Quality: For new dev, have 90% Yield before Unit Test Phase (not including defects injected by having inadequate reqts)</td>
<td>Engr 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td>Schedule: Stay close to the planned schedule</td>
<td>Engr 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 49  |                                | Technical: Improve exposure of Software Engineers to various products supported by software team. | Engr 3
Create and Maintain list showing engineers exposure to various developed products. Have at least 2 deep in all product areas
Every 2 Months (8/14/06) |    |         |
### Software Team Roles

<table>
<thead>
<tr>
<th>Role</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
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<tr>
<td>Engr 1</td>
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<td>P</td>
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<td>Engr 2</td>
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<td>P</td>
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<td></td>
<td></td>
<td></td>
<td>P</td>
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<td>Engr 3</td>
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<td>P</td>
<td>B</td>
<td>P</td>
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<td>Engr 4</td>
<td></td>
<td>P</td>
<td>P</td>
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<td></td>
<td>P</td>
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<td>Engr 5</td>
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<td>P</td>
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<td>Engr 6</td>
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<td></td>
<td>B</td>
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<td>Engr 7</td>
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<td>Engr 8</td>
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<td>P</td>
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<td>Engr 9</td>
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<td></td>
<td>P</td>
<td></td>
<td></td>
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<tr>
<td>Engr 10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- P: Primary
- B: Back-up
Manager Roles

- **Past:** spotty execution of roles (at best)

- **Problems:**
  - roles were perceived as a distraction from “real work”
  - planning manager performed out of necessity

- **Present:** use of coordinator scripts
  - use coordinators (instead of managers) to remind them they are coordinating efforts to address issues
  - scripts are defined to assist execution
  - scripts remind how to perform the steps
  - role reports are part of the meeting agenda
HOW TO PERFORM ACTIVITIES

Defect Log
- Is every defect injected in an earlier phase than where it is removed?
- Does each defect have a fix time?
- Is there a clear description of the cause for each defect?
  - Team Dashboard -> select proper project -> Project Summary (under script button) -> select Dev -> Defect Reports -> View Defect Log -> Export to Excel -> AutoFilter -> filter for defects entered since last week
- Are total defect fix times for a phase consistent with the total time in the phase on the planning summary? Generally, fix time must be < total time in phase, and for testing, fix time + time to run tests should be roughly equal to total time in phase.
  - Team Dashboard -> Task & Schedule -> Report -> export to Excel -> AutoFilter -> filter for defect removal phases signed off since last week
  - For each phase of each component signed off. Add up fix times for defects removed during that phase and compare sum to actual time spent in that phase

Reviews and Inspections
- Are defects discovered during inspection recorded in the author's workbook?
- Are review/inspection rates about 200 LOC/hour?
- Do all the engineers have design and code review checklists?
- Are all the engineers using their design and code review checklists?

General
- Is component quality profile indicator being reviewed before integration test? (spider chart)
  - Team Dashboard -> Task & Schedule -> Report -> export to Excel -> AutoFilter -> filter for Unit Tests signed off since last week
Postmortem Process Evolution

- **Past**: no analysis or preparation prior to meeting
- **Problems**:
  - team watching a few figuring out how to analyze data
  - only obvious trends were found
  - focus on time-in-phase % and average productivity rate
- **Present**: serious preparation for meeting
  - Lite life-cycle data is evaluated for possible problem type category changes
  - individuals evaluate own data to identify work rates (and report what they find)
  - team learns to use statistical methods
<table>
<thead>
<tr>
<th>Step</th>
<th>Activities</th>
<th>Description</th>
<th>Who can prep</th>
</tr>
</thead>
</table>
| 1    | Meeting Roles            | Select the meeting roles (specification ROLE).  
- The launch coach leads the meeting (script MTG).  
- The timekeeper tracks time and keeps the meeting on schedule.  
- The recorder notes meeting decisions and actions and writes the meeting report (form MTG). | No prep needed |
| 2    | Baseline Evaluation      | The support manager leads the team in evaluating  
- the adequacy of the configuration management process  
  - Did team members work around it? (go ask)  
  - Did anyone have trouble with it (lost changes, waiting for others to check a file back in, etc)?  
- the adequacy of the system baseline  
  - Did the team have one?  
  - Did everyone know what it consisted of?  
  - How many baselines were established during the period being PMed?  
- the adequacy of the development environment. | Support coordinator get answers to questions |
| 3    | Plan Evaluation          | The planning manager leads the evaluation of team performance.  
- compare actual versus plan schedule (i.e., hours per week)  
- for each product type, compare actual versus plan for  
  - Size of product  
  - Resource (i.e., hours to perform the completed tasks)  
  - Productivity (size measure per hour)  
  - % Time in Phase for each process used  
- How many LOE hours were logged? What topics were they spent on (training, launch, etc)? | Planning coordinator looks at overall team numbers and ensures that all individual team members analyze their own numbers |
| 4    | Quality Performance      | The quality manager leads the evaluation of team performance.  
- quality of the products produced  
- team performance versus the goals and quality plan  
- for each product type, complete a PM Quality Factors spreadsheet | Quality coordinator |
| 5    | Planning Data            | Provide updated planning data. | No prep needed, the |
Postmortem Process Evolution

- Example: Rouge STRs
  - Early PMs identified STRs with high actual hours as outliers
  - Later PMs discovered trend across projects of 5-8% rouge STRs
  - Current plans estimate 1 in 10-20 STRs will be rouge (>60 hrs)

![AV-8B STRs needing Significant Labor](chart.png)

- H2.0: 8 out of 101 (8%)
- H4.0 Cycle 1: 2 out of 35 (5.7%)
- H4.0 Cycle 3: 3 out of 39 (7.7%)
Summary

• What AV-8B S/W Team is learning:
  – Launch preparation means smoother launches
  – S/W maintenance needs a difference life-cycle
    • (you don’t have to be right the first time with a new process)
  – Meeting preparation means smoother meetings
  – Data analysis leads to process improvement
    • (all team members need to be involved)
Contact Information

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  – e-mail: chris.rickets@navy.mil

• Brad Hodgins (NAVAIR TSP Coach supporting AV-8B)
  – phone: (760) 939-0666/4446
  – e-mail: bradley.hodgins@navy.mil

Questions?
Abbreviations

- CMM – Capability Maturity Model (Software)
- CMMI – Capability Maturity Model Integration
- JSSA – Joint Systems/Software Support Activity
- NAVAIR – Naval Air Systems Command
- NSSC – NAVAIR Systems/Software Support Center
- OFP – Operational Flight Program
- PSP – Personal Software Process
- SEI – Software Engineering Institute
- STR – System Trouble Report
- TPI – Team Process Integration
- TSP – Team Software Process