



# Experience and Lessons-learned in Applying the Tri-Service Assessment Initiative Process

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# Report Documentation Page

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# Overview

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- Description of the experience and lessons-learned as a result of applying the Tri Service Assessment process to an acquisition organization within NAVSEA (PEO IWS née PEO TSC)
  - IWS = Integrated Warfare Systems
- Focus on the specific challenges encountered
  - and the process adaptations made to ensure the assessments were successful
- These recommendations are pragmatic
  - Tips to make things better
- This briefing does not summarize the technical findings
  - but rather focuses on how they were achieved

## Why assessments?

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- At certain times, for certain programs, assessments are necessary to
  - Check for latent surprises
  - Accelerate process improvement planning
  - Identify problems and root causes
  - Facilitate budget and resource planning
  - Assess risk for upcoming events (e.g., OPEVAL)
  - ...
- Use of assessments has proved to be a valuable tool to assist in acquiring software-intensive systems
- But assessments must be carefully conducted to achieve maximum utility

# Why TAI process was selected

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- Key features
  - Pre-defined, well-used process
  - Network of independent experts available to serving on assessment teams
  - Cross-service perspective (*"How did they solve it?"*)
- Overall goal for conducting assessments:
  - Evaluation and improvement of the software processes used by programs within the PEO
  - Identification of weaknesses and strengths
  - Determination of risk and risk mitigation strategies
  - Establishment of software guidance to raise level of development quality



## Purpose of assessments

- Prepare for CEC OPEVAL by ensuring no unpleasant surprises were lurking – assess the five core systems that use CEC as a means for track sharing
  - » **CEC** - Cooperative Engagement Capability
  - » E2C - NAVAIR program
  - » **ACDS** - Carrier Self Defense System
  - » **Aegis 6 Phase 1**
  - » **C2P** - Command Control Processor - SPAWAR - PMW 159
- Three separate organizations are represented among these systems (NAVSEA, NAVAIR, and SPAWAR)
- Four of the five programs were assessed
- *(Subsequently, an additional six programs have been assessed within the PEO)*



## What we learned...

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- The benefits to performing assessments are substantial
  - Clear and timely snapshot of current state of program
  - Roll-up of lessons-learned
  - Direct assistance to the programs

*But,*

- Unless carefully performed, these benefits may be difficult to achieve
- There exist several pitfalls that can derail ability to derive value from assessments
- Team had to adapt to maximize effectiveness

# Pitfalls

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- 1 "Slow roll" in scheduling interviews and site visits
- 2 Site visits causing disruption
- 3 Ankle biter reputation
- 4 "Fire hose" site visits
- 5 Missing important topics
- 6 "SW only" assessment
- 7 Extended assessment schedule
- 8 High-level and process-only
- 9 "Dump and run" syndrome
- 10 Multiple, unrelated issues
- 11 Late final reports
- 12 Unclear presentation of findings
- 13 Criticism causing defensiveness
- 14 Recommendations requiring excessive time

# 1 – “Slow roll” in scheduling interviews and site visits

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- Being the subject of an assessment is never fun
  - Like going to the dentist
- Tendency is to delay it as long as possible
  - Blaming it on coordinating schedules
- Tasks that are important, however, seem to always get done
- Need to ensure that everyone has same sense of priority
- *Recommendations:*
  - Secure assurances from PM that assessment is of high-priority
  - Ensure that PM makes this clear to organizations being assessed
  - Assessment team members need to be flexible to accommodate reasonable schedule changes
  - Emphasize that very little staff time is really needed (see #2)
  - Define a schedule and follow it

## 2 – Site visits causing disruption

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- In all cases, encountered significant push-back from organizations being assessed – fear of disruption and delays
  - For a program in trouble, impact could be serious
- Disrupting the progress of the program by performing the assessment is counterproductive
  - Often create more problems than those solved
- Need to ensure a ripple-free process and to set their minds at ease in advance

## 2 – Site visits causing disruption (cont'd)

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### □ Recommendations:

Schedule each person for no more than 1 hour for entire visit

- » Some individuals may require longer times
  - > POC, guides, etc...
  - > Keep to a minimum

Plan interviews based on organization chart – functions and people

- » Rather than by topic

Use this approach to assess communications across organization

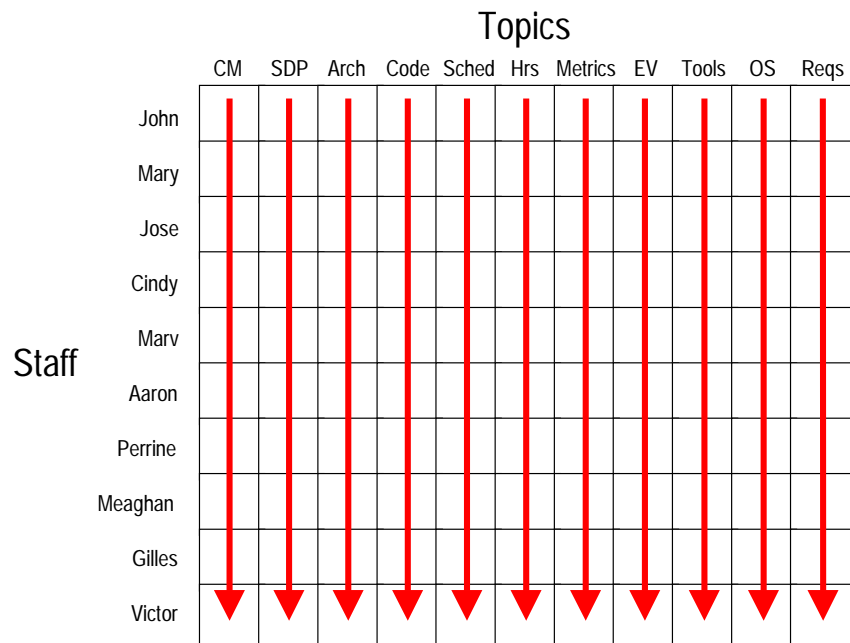
- » A key problem in many programs

Request that no special materials/briefings/etc. be prepared for the site visits

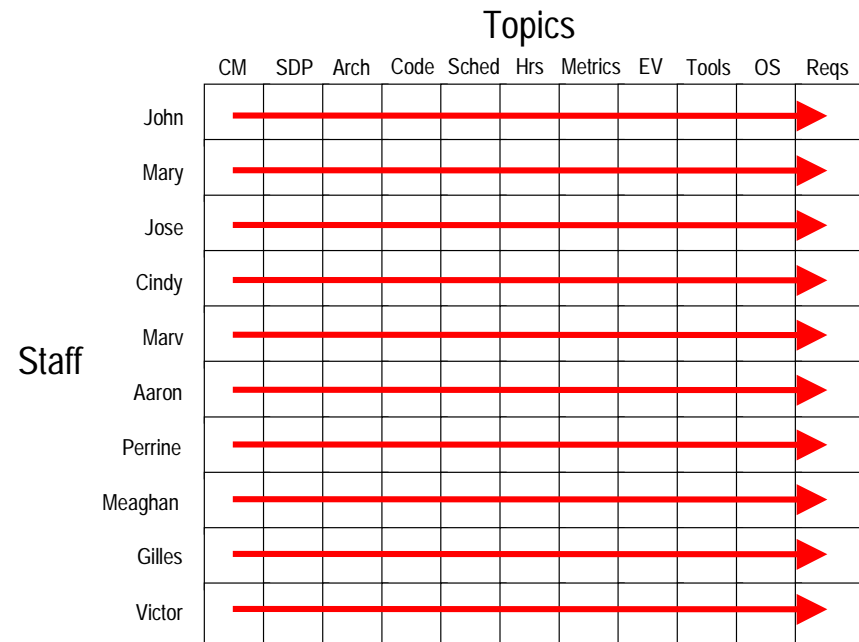
- » Ensure fidelity of snapshot - minimize Heisenberg effect

# Recommended interview schedule approach

## Easier for interviewers



## Easier for interviewees



## 3 – Ankle biter reputation

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- Typically, programs react with fear that an assessment is coming
  - “Not more help!”
- If the assessors leave the impression that they are there just to criticize, the staff will be uncooperative
  - Crucial information will not be forthcoming
  - and the word will spread
- *Recommendations:*
  - During interviews
    - » Always be supportive
    - » Just collect information, make no judgments
    - » Encourage dialog, let them talk
  - During briefouts
    - » Ensure balance of findings (favorable and unfavorable)
    - » Emphasize that all programs have room for improvement

## 4 – "Fire hose" site visits

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- q Lots of data is presented during interviews
- q The data is not organized according to topic (see # 2)
- q Much is repetitive
- q This "fire hose" situation may result in information being lost
  - Need to organize and assimilate
- q *Recommendations:*
  - Each team member should take note of findings and tentative conclusions as interviews progress
    - » Don't wait until later
  - Leave 15 min or so between witnesses to allow for soak-in time and discussion
  - Teams should caucus privately at least once per day to collect thoughts and compare findings

## 5 – Missing important topics

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- Assessments that do not touch all important topics may miss critical issues and may fail to reinforce good practice
- Too much time spent on ensuring total coverage will skim over key topics and not permit sufficient depth
- *Recommendations:*
  - Use the TAI information model to help structure topics
  - Make a list beforehand that includes relevant topic areas
    - » Assign team members to ensure topics are covered
  - Rely on team experience to determine topics to cover and skip
  - Ask interviewees what their view of important topics is
    - » Often those closest to the fire know where the heat is
    - » Be willing to stroll down unexpected paths

## 6 – "SW only" assessment

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- If advertised as a "SW only" assessment, the results may be ignored as being irrelevant
  - "It doesn't affect me - I do systems."
- If limited to a "SW only" assessment, the results may actually be irrelevant
  - Rarely is SW the prime cause of problems, although a common perception is that SW is where the problems reside
- *Recommendations:*
  - Be clear about the assessment's focus on software
    - » "...plus all factors that affect the ability of the SW developers to do their job"
  - Ensure that non-SW factors are considered in the assessment

## 7 – Extended assessment schedule

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- An extended assessment schedule will
  - Dilute findings
  - Likely to be inaccurate as program evolves
  - Have reduced impact
- Often this is a big challenge
  - Blending schedules is often very hard
  - Unwillingness to prioritize assessment may be a finding itself
- *Recommendations:*
  - Keep site visits to within a week max for each site
  - Emphasize importance of keeping things moving
  - Be willing to proceed with subset of assessment team
  - Be willing to be flexible about missing some key players
  - Do not let activity stretch out – place high priority on getting it done

## 8 – High-level and process-only

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- Assessment reports that are high-level and focus solely on process are likely to be viewed as being impractical and may very well be
- Ignoring the details can blur understanding the big picture
- Hand-waving level not likely to result in real change
  - Too far removed from worker-level
- Yet often high-level recommendations have the most lasting impact
- *Recommendations:*
  - Ensure low-level information is collected and appropriately reported
  - Correlate process findings with objective artifacts
  - Be specific about findings and recommendations – use details to demonstrate global issues

## 9 – "Dump and run" syndrome

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- Characterized by team's delivering final report to PM and then disappearing
- Will not have a lasting impact
  - Reports often need additional explanation
  - Recommendations often need cultivation and continued attention
  - Results need to be briefed to PO and Contractor staff
- *Recommendations:*
  - Do not disappear after presentation of final report
  - Encourage PM to allow report to be presented to developers /contractors/ labs
  - Create Transition Plan to ensure continued support:
    - » Make some subset of team available afterwards for specific guidance
    - » Transition to dedicated team for implementation

## 10 – Multiple, unrelated issues

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- Reporting multiple, unrelated issues will
  - Present a confused picture of the state of the program
  - Delay being able to identify root causes
- Need cohesive views to see totality of program
- "In the weeds" perspective can miss important lessons
- *Recommendations:*
  - Ensure team has sufficient time to mull over findings and observations
  - Look for common causes and fixes
  - Categorize findings into logical bins
  - Analyze cause-effect relationships
  - Organize according to recommendations rather than symptom
    - » Focus on proactive solutions

## 11 – Timely final reports

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- Once a program is convinced that an assessment is a good idea, they become anxious to get results
- For optimum benefit, final reports are needed promptly so that recommendations can be put into place
- Delayed reports are likely to be ignored, and may have little practical impact
- *Recommendations*
  - Brief sites on initial observations before leaving
    - » But do not brief any conclusions of recommendations
  - Prepare report as a briefing
    - » Formal narrative reports take too much time
  - Ensure all parties are briefed as soon as possible

## 11 – Timely final reports (cont'd)

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### □ *Recommendations (cont'd):*

Do not include all findings and conclusions – prioritize

Focus on high-leverage recommendations

Do not obsess about providing all details – consider the "elevator" speech

## 12 – Unclear presentation of findings

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- A lack of a clear presentation of findings may result in a compromised message and excessive defensiveness
- Can occur if report is too long and detailed
- Risk that recommendations will be misunderstood and ignored
- Indication that issues may not be fully understood by assessment team (*worst case situation*)
- *Recommendations:*
  - Provide adequate caucus time for team to review notes and observations
  - Ensure that issues are clearly stated and are appropriately grouped
    - » Provide details as clarification but as sub-bullets
  - Recommendations should be directly actionable
  - Leave time for independent review of report
  - Continue to apply the "elevator rule"

## 13 – Criticism causing defensiveness

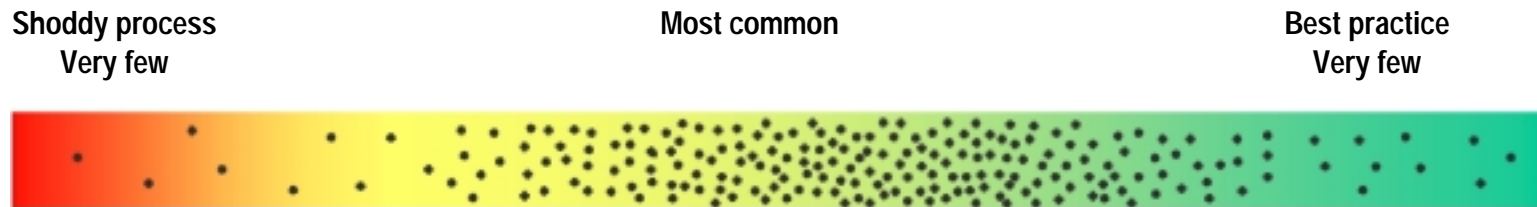
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- Reports filled with criticisms likely to result in a defensive posture by the program being assessed
  - Yet, criticisms are unavoidable
- Briefing such reports will degrade into arguments and sides being taken
- Impact is loss of audience and failure of assessment
- *Recommendations:*
  - Balance the criticisms with praise (not arbitrary but justified)
  - Emphasize that every project has room for improvement
  - State clearly that the results are just for their own use
  - Ensure reports are not personal by focusing on technical aspects
  - Sometimes, a harsh message is necessary however

Sample foil to calibrate  
reception of results

## Interpretation of Results

- Most assessments report areas for improvement
  - Nature of software practice
  - Everyone can improve
- However, most organizations do most things right
- Many problems caused by external factors out of developers' control
- All SW development organizations have room for improvement
  - Regardless of CMM level
- Goal is to raise quality level of software practice



## 14 – Recommendations requiring excessive time

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- q Sometimes, obvious and important recommendations require time to implement
  - Long-term investment and payback
- q However, needs of programs often have shorter time-lines
- q Platitudes and generic fixes often are moot
  - May be correct but irrelevant
  - May be of little utility
- q Often tied to root causes
- q *Recommendations:*
  - Include focus on actions that can be applied immediately
  - Ensure that expectations for benefits are not exaggerated
  - Admit if short-term fixes aren't enough

## Conclusions

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- Use of assessments can be a valuable and cost-effective management strategy
- Assessments help
  - to identify and mitigate risk
  - to identify areas for improvement
  - to promulgate lessons-learned so that future programs don't make the same mistake
- To gain maximum benefit, they must be conducted carefully and with proper planning