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

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Overview

- 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

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Why assessments?

q   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)

...

q   Use of assessments has proved to be a valuable tool to assist in acquiring software-intensive systems

q   But assessments must be carefully conducted to achieve maximum utility

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Why TAI process was selected

q **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?")*

q **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

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Purpose of assessments

q **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

q **Three separate organizations are represented among these systems (NAVSEA, NAVAIR, and SPAWAR)**

q **Four of the five programs were assessed**

q *(Subsequently, an additional six programs have been assessed within the PEO)*

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What we learned...

q **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,

q **Unless carefully performed, these benefits may be difficult to achieve**

q **There exist several pitfalls that can derail ability to derive value from assessments**

q **Team had to adapt to maximize effectiveness**

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Pitfalls

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

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1 – "Slow roll" in scheduling interviews and site visits

q **Being the subject of an assessment is never fun**

Like going to the dentist

q **Tendency is to delay it as long as possible**

Blaming it on coordinating schedules

q **Tasks that are important, however, seem to always get done**

q **Need to ensure that everyone has same sense of priority**

q *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

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2 – Site visits causing disruption

q **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

q **Disrupting the progress of the program by performing the assessment is counterproductive**

   Often create more problems than those solved

q **Need to ensure a ripple-free process**

   and to set their minds at ease <u>in advance</u>

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2 – Site visits causing disruption (cont'd)

q **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

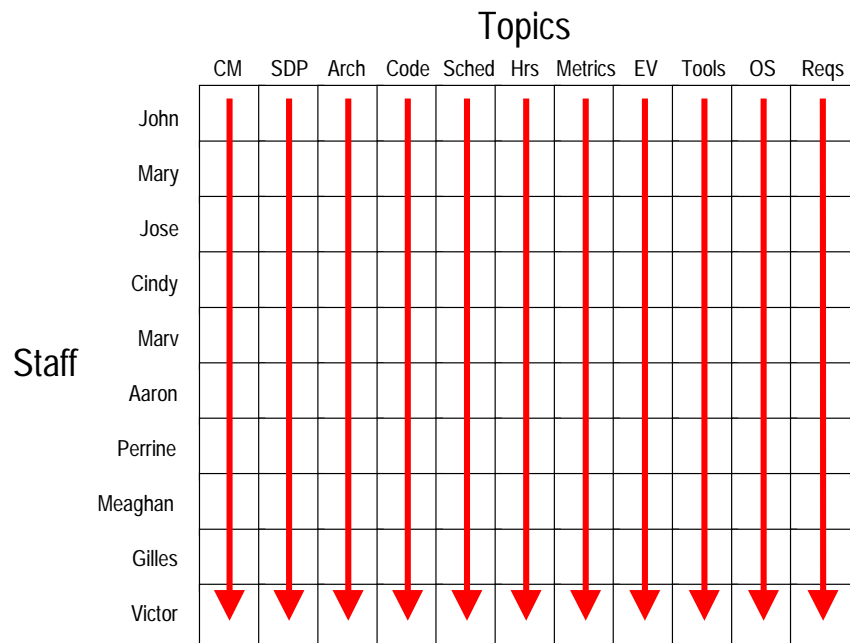Use this approach to assess communications across organization

» A key problem in many programs

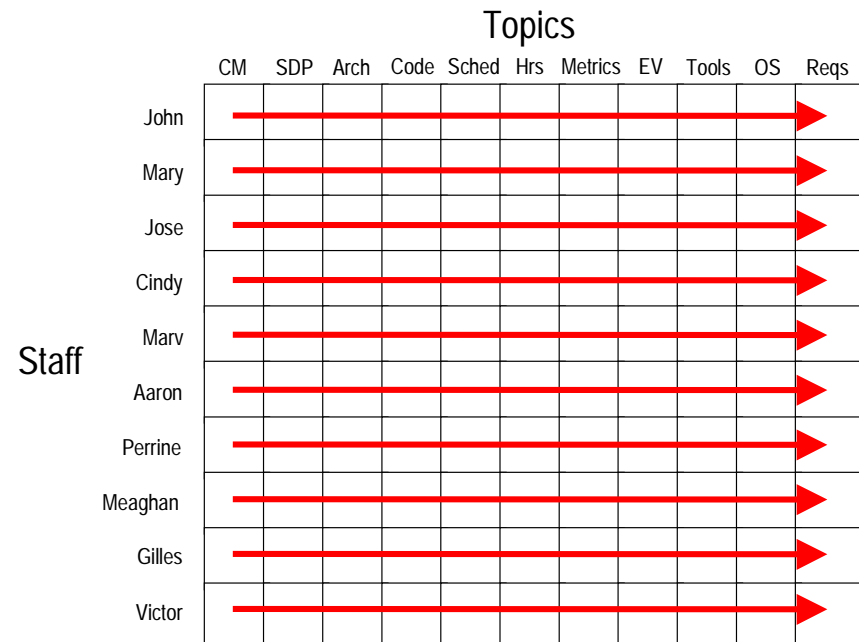Request that no special materials/briefings/etc. be prepared for the site visits

» Ensure fidelity of snapshot - minimize Heisenberg effect

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Recommended interview schedule approach

Easier for interviewers

Easier for interviewees

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3 – Ankle biter reputation

q **Typically, programs react with fear that an assessment is coming**

"Not more help!"

q **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

q *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

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4 – "Fire hose" site visits

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

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5 – Missing important topics

q **Assessments that do not touch all important topics may miss critical issues and may fail to reinforce good practice**

q **Too much time spent on ensuring total coverage will skim over key topics and not permit sufficient depth**

q ***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

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6 – "SW only" assessment

q **If advertised as a "SW only" assessment, the results may be ignored as being irrelevant**

> "It doesn't affect me - I do systems."

q **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

q *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

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7 – Extended assessment schedule

q **An extended assessment schedule will**

  Dilute findings

  Likely to be inaccurate as program evolves

  Have reduced impact

q **Often this is a big challenge**

  Blending schedules is often very hard

  Unwillingness to prioritize assessment may be a finding itself

q *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

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8 – High-level and process-only

q **Assessment reports that are high-level and focus solely on process are likely to be viewed as being impractical**

   and may very well be

q **Ignoring the details can blur understanding the big picture**

q **Hand-waving level not likely to result in real change**

   Too far removed from worker-level

q **Yet often high-level recommendations have the most lasting impact**

q *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

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9 – "Dump and run" syndrome

q **Characterized by team's delivering final report to PM and then disappearing**

q **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

q ***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

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10 – Multiple, unrelated issues

q **Reporting multiple, unrelated issues will**

   Present a confused picture of the state of the program

   Delay being able to identify root causes

q **Need cohesive views to see totality of program**

q **"In the weeds" perspective can miss important lessons**

q ***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

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11 – Timely final reports

q   Once a program is convinced that an assessment is a good idea, they become anxious to get results

q   For optimum benefit, final reports are needed promptly so that recommendations can be put into place

q   Delayed reports are likely to be ignored, and may have little practical impact

q   *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

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11 – Timely final reports (cont'd)

q   *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

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12 – Unclear presentation of findings

q A lack of a clear presentation of findings may result in a compromised message and excessive defensiveness

q Can occur if report is too long and detailed

q Risk that recommendations will be misunderstood and ignored

q Indication that issues may not be fully understood by assessment team *(worst case situation)*

q *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"

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13 – Criticism causing defensiveness

q   Reports filled with criticisms likely to result in a defensive posture by the program being assessed

> Yet, criticisms are unavoidable

q   Briefing such reports will degrade into arguments and sides being taken

q   Impact is loss of audience and failure of assessment

q   *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

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Sample foil to calibrate reception of results

Interpretation of Results

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

Shoddy process	Most common	Best practice
Very few		Very few

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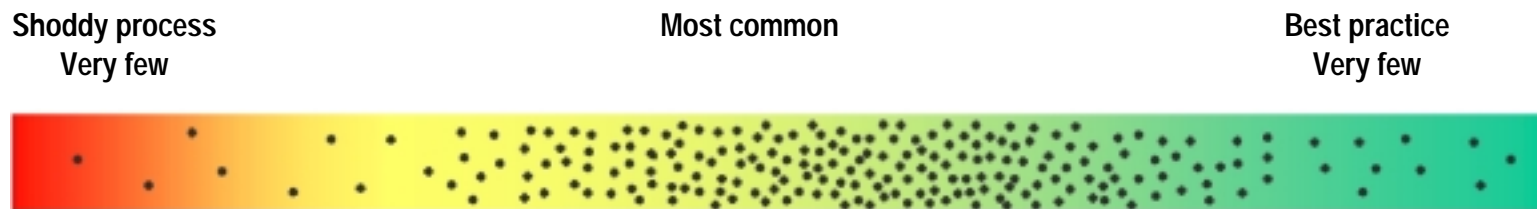
14 – Recommendations requiring excessive time

- Sometimes, obvious and important recommendations require time to implement
  - Long-term investment and payback
- However, needs of programs often have shorter time-lines
- Platitudes and generic fixes often are moot
  - May be correct but irrelevant
  - May be of little utility
- Often tied to root causes
- *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

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Conclusions

q Use of assessments can be a valuable and cost-effective management strategy

q 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

q To gain maximum benefit, they must be conducted carefully and with proper planning

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