Appraisal Preparation Lessons Learned

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Agenda

- **Introduction**
- **Organization Preparation**
- **Data Collection and Verification**
- **Interview Preparation**
- **Appraisal Support Team**
- **Appraisal Results**

Introduction

- **Raytheon Space and Airborne Systems (SAS)**
  - 12930 employees
  - Achieved CMMI Level 3, Systems Engineering, Dec. 2003 and CMMI Level 5, Software Engineering, Sept. 2003, PSAS
    - ~ 400 employees
  - Achieved CMMI Level 3 for Software & Systems Engineering, Nov. 2003, El Segundo & Goleta
    - ~ 6500 employees
    - 6 Appraisal Programs
    - Over 7800 artifacts collected
    - Appraisals Conducted
      - 3 - Internal mini-appraisals (Summer 2003)
      - 1 - Class C (Sept 2002)
      - 3 - Class B (Dec 2002, Mar 2003, Aug 2003)
      - 1 - SCAMPI (Nov 2003)

Appraisal Preparation Process

- **Plan the appraisal preparation effort**
- **Identify Appraisal Team (including external support personnel)**
- **Determine number and scope of the appraisals leading to the SCAMPI**
- **Identify appraisal programs and obtain their agreement**
- **Define artifact collection and verification methods**
- **Deploy (monitoring the artifact collection status)**
- **Prepare for FAR interviews**
- **Disposition appraisal results**

Appraisal preparation is more than just gathering evidence.

Organization Preparation (1)

- **For a successful appraisal preparation effort the organizational inputs include:**
  - **Supportive senior management with clear goals and direction.**
  - **A group (commonly called the EPG) with :**
    - Adequate budget
    - Authority to establish organization-wide processes
    - Responsibility to prepare for the upcoming appraisals
    - Two way communication with senior management
    - Knowledge of the CMMI, the appraisal method, and what constitutes objective evidence
    - Process action teams tasked with specific process improvements

Appraisal preparation starts with senior mgmt.

Organization Preparation (2)

- **Sufficiently deploy an Organizational Standard Process (OSP) (including program tailoring)**

- **Define the organization's process goals**

- **Select an Appraisal Team Lead that:**

  – Understands your organization and programs

  – Has had practical as well as process experience

  – Able to work effectively in a teaming environment (which also includes any associates of the lead)

  – Does not follow a rigid agenda

  – Understands the CMMI, its application, and the appraisal methodology

  – Works with your schedule, and has availability for consulting

As the org prepares, the OSP and Team Lead must be established.

Organization Preparation (3)

- **Define the appraisal scope**
  - **Select Appraisal Programs that:**
    - sufficiently cover all PAs for targeted Level
    - provide a good example of your business.
    - Provide a good example of implementing your OSP
  - **Select the Appraisal Team that has:**
    - a good mixture of external and internal members
    - experience and knowledge of the product development process and extensive knowledge of at least 2 processes covered in the CMMI PA(s)
    - practical experience and knowledge of the intent, and common implementation, of at least 2 CMMI PAs
    - good teaming abilities with no established agendas
    - availability for all scheduled appraisals

Selection of the appraisal programs and Appraisal Team should be performed to defined criteria.

Organization Preparation (4)

– Determine the tool or method the Appraisal Team will use during the appraisal. This will affect the tools and methods for collecting and cataloging data.

Selection of the appraisal programs and Appraisal Team should be performed to defined criteria.

Lessons Learned – Org Prep (1)

- **Appraisal Team Lead selection is critical since the Lead approves all selections (programs, team members, FARs, etc.).**
  - Rigidity in CMMI interpretation, appraisal logistics (limiting the number of days for the appraisal, number of people in a FAR, etc.), and availability can create problems that will impact the outcome.

- **Stabilize the program selection early.**
  - Changing programs can be disruptive and destabilizing for the programs and people involved.

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Select the Appraisal Team Lead and appraisal programs carefully.

Lessons Learned – Org Prep (2)

- **Maintain a stable Appraisal Team for multiple appraisals. Revolving team members impact the:**
  - consistency of PA interpretations (which can result in inconsistent findings).
  - need to continually bring new members up to speed on the org processes, structure, and implementations.
  - team dynamics.
- **Take care in choosing the Appraisal Tool. Avoid Team Lead proprietary tools.**

Establish a stable Appraisal Team.

Data Collection and Verification (1)

- **Plan the Data Preparation activity and document**
  - Define the use of the Appraisal Tool in collecting and verifying the data.
  - Define the method for gathering and verifying the data
  - Determine the roles needed and the people to staff those roles
  - Determine the milestones and schedules leading up to the start of the appraisal. Include time for tool testing and data checking (links, descriptions, etc.) in the schedule.
  - Document the planning in the appraisal plan and individual program appraisal plans.
  - Communicate the plans to the EPG, Appraisal Preparation Team, and the Programs.

To succeed in data preparation, plan, document, and communicate.

Data Collection and Verification (2)

- **To be successful at collecting the right data and providing it to the Appraisal Team:**

    – <u>The right people must gather the data</u>: Need to be familiar with the program, CMMI PAs, and the organizations process. Any two of the three will result in a longer data gathering effort. If only one of the criteria is applicable then a steep learning curve will be needed to succeed. The best candidate for this role is the program process engineers.

    – <u>The right people must verify the data to the PA</u>: Need to be subject matter experts in a discipline (software, systems, CM, QA, etc.), understand the intent of the CMMI PAs, and have experience in understanding what constitutes acceptable evidence. If any of the criteria isn't met, the org runs a risk of not providing adequate data for the appraisal. The best candidates for these roles are from the EPG.

Personnel involved in the Data Preparation activity must have program and process experience.

Data Collection and Verification (3)

- – <u>The right people must monitor the activity:</u>
  - Lead responsible for the data collection activity on the program: The interface between the program personnel and the data collectors/verifiers. The best candidate for this role is a program process engineer or IPT Lead.
  - Lead responsible for the overall Data Preparation activity: This person must have an understanding of the CMMI, appraisal process, and project management. They will need to:
    - establish the data collection process details.
    - communicate with the collectors, validators, programs, EPG, and senior management.
    - Monitor the activity using metrics, analyze them, and make corrections when progress doesn't match the plan.
  - EPG and Senior Management. Must understand and agree to the appraisal preparation plan, monitor for any deviations, and provide support.

Personnel involved in the Data Preparation activity must have program and process experience.

Lessons Learned - Data Collection & Verification

- **If the Data Preparation activity is not properly:**
  - **planned**,
    - ▪ it will be difficult to be adequately prepared for the appraisals.
    - ▪ programs and supporting personnel won't know what to do.
    - ▪ it will be difficult to monitor progress.
  - **staffed**,
    - ▪ the data preparation effort will be more costly than expected.
    - ▪ the right evidence will not be collected in time for the appraisals.
    - ▪ the appraisal will turn into a costly data gathering session as appraisers are forced to issue many document requests in an attempt to get the data needed.
    - ▪ the Class B and C appraisals will have limited use in helping the organization understand what needs to be improved.
    - ▪ Senior Management will only understand the true status of the organizations unpreparedness by the number of document requests and from the findings at the out-brief.

The experience and knowledge of the people involved in the data preparation activity is critical.

Interview Preparation

- **Prior to the appraisal, FAR candidates are identified. These candidates will likely have little to no experience with the CMMI and appraisals.**

- **To better prepare them, the organization should:**
  - Conduct pre-interviews with:
    - a brief overview of the appraisal process.
    - the intent of the PA(s) they will be interviewed for
    - sample questions, they answer that will help orient them to the language the FAR questioner may use (Note: under no circumstances should the interviewees be coached in their answers)
  - After the pre-interview, the FAR candidates should be evaluated for:
    - ability to communicate and get their message across
    - any hidden agendas
    - appropriateness to the PA
  - Final FAR interviewees are then selected

Pre-Interviews help FAR candidates understand the CMMI language and FAR process.

Lessons Learned - Interview Preparation

- **Without pre-interviews, interviewees:**
  - are thrown into interviews without understanding the intent of the CMMI
  - Become intimidated, nervous or do not participate in the interview
  - don't understand the intent of the questions so go off on tangents, wasting time
  - decide to take the opportunity to air dirty laundry or work their agenda. Remember the organization is putting them forward as its best representatives on from program.

Pre-Interviews help interviewees feel confident in communicating our processes and implementation.

Appraisal Support Team

- **A smooth, successful appraisal has an effective Appraisal Support Team responsible for:**
  - Logistics:
    - Arranging for conference and team rooms with the proper equipment
    - Scheduling and documenting interviews and briefings
    - Arranging for additional support during the appraisal
    - Meals
  - Distributing, tracking, and providing completed document requests
  - Ensuring that the tools are ready and maintained throughout the appraisal
  - Supporting the external Appraisal Team members

An Appraisal Support Team is needed prior to, and during any appraisal.

Appraisal Results

- After the completion of the appraisal, the Document Requests, Findings and Observations (if supplied) are analyzed.

- Findings are allocated to teams to work on.

- Status of resolving the findings is monitored by senior management.

- Data to satisfy them are supplied for the next appraisal.

Appraisal results are analyzed and used to prepare for the next appraisal.

Lessons Learned - Appraisal Results

- **Since the purpose of appraisals is to identify improvement areas, it is critical to take any indicators from the Appraisal Team and resolve them.**

- **The metrics on resolution of findings is another valuable indicator on the progress of appraisal preparation.**

- **If the completed Document Requests from an appraisal are not immediately entered into the appraisal tool, it will be forgotten in the next appraisal, forcing the Appraisal Team to request it again.**

Appraisal results from one appraisal must be resolved during preparation for the next appraisal.

Summary

- **A successful appraisal includes the following preparation activities:**
  - Planned preparation process
  - Clear scope with defined programs
  - Adequate selection of the Appraisal Team Lead, Appraisal Team members, and Appraisal Support Team
  - Defined, communicated, staffed, and monitored Data Preparation activity
  - Knowledgeable people in all appraisal roles (including interviewees)
  - Appraisal results from previous appraisals have been resolved

Fulfill the CMMI requirements and sufficiently prepare for an appraisal and success will result.