How Mature is Your Appraisal Team?

Dr. Rick Hefner, TRW

**National Defense Industrial Association
2nd Annual CMMI Technology Conference
and User Group**

November 11-14, 2002

What are Mature Appraisal Practices?

- **Formal appraisals (e.g., CBA IPI, SCAMPI) are expensive and time consuming**
  - To reduce cost and increase efficiency, industry should identify appraisal best practices – but how?

- **CMMI model describes a "capable process" as one that can satisfy its specified product quality, service quality, and process performance objectives**

- **If Appraisal was a CMMI process area, what would it look like? How would "appraisal capability" be measured?**

- **What are the implications:**
  - Selecting an appraiser?
  - Running an in-house appraisal program?

Hefner - Experiences with Indicator-Based Appraisals: TRW

TRW

Applying Maturity Concepts to Appraisals

Continuous representation
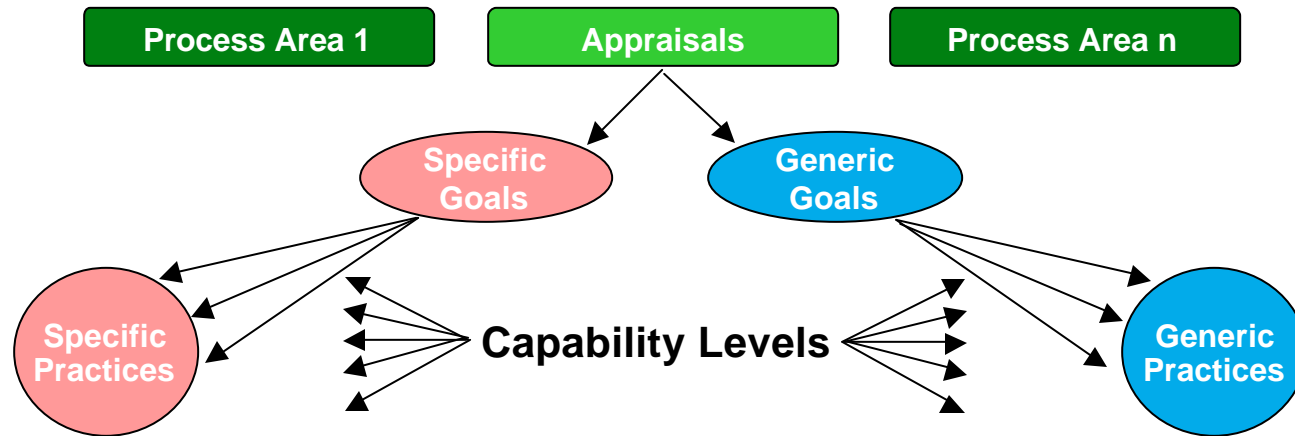
Method Description Document:

1.1 Analyze Requirements
1.2 Develop Appraisal Plan
1.3 Select and Prepare Team
1.4 Obtain and Analyze Initial Objective Evidence
1.5 Prepare for Collection of Objective Evidence
2.1 Examine Objective Evidence
2.2 Verify and Validate Objective Evidence
2.3 Document Objective Evidence
2.4 Generate Appraisal Results
3.1 Deliver Appraisal Results
3.2 Package and Archive Appraisal Assets

GG 1 Achieve Specific Goals
  GP 1.1 Perform Base Practices
GG 2 Institutionalize a Managed Process
  GP 2.1 Establish an Organizational Policy
  GP 2.2 Plan the Process
  GP 2.3 Provide Resources
  GP 2.4 Assign Responsibility
  GP 2.5 Train People
  GP 2.6 Manage Configurations
  GP 2.7 Identify and Involve Relevant Stakeholders
  GP 2.8 Monitor and Control the Process
  GP 2.9 Objectively Evaluate Adherence
  GP 2.10 Review Status with Higher Level Management
GG 3 Institutionalize a Defined Process
  GP 3.1 Establish a Defined Process
  GP 3.2 Collect Improvement Information
GG 4 Institutionalize a Quantitatively Managed Process
  GP 4.1 Establish Quantitative Objectives for the Process
  GP 4.2 Stabilize Subprocess Performance
GG 5 Institutionalize an Optimizing Process
  GP 5.1 Ensure Continuous Process Improvement
  GP 5.2 Correct Root Causes of Problems

Hefner - Experiences with Indicator-Based Appraisals: TRW

TRW

Capability Level 0: Incomplete

- **Either not performed or partially performed.**
  - One or more of the specific goals of the process area are not satisfied.

- **The SCAMPI Method Description Document is not followed – not all required activities are performed**

Hefner - Experiences with Indicator-Based Appraisals: TRW

TRW

Capability Level 1: Performed

- **Satisfies the specific goals of the process area. Supports and enables the work needed to produce identified outputs using identified inputs.**

- **GP 1.1 Perform Base Practices –** *Perform all required activities in the Method Description Document*

1.1 Analyze Requirements
1.1.1 Determine Appraisal Objectives
1.1.2 Determine Appraisal Constraints
1.1.3 Determine Appraisal Scope
1.1.4 Determine Outputs
1.2 Develop Appraisal Plan
1.2.1 Tailor Method
1.2.2 Identify Needed Resources
1.2.3 Determine Cost and Schedule
1.2.4 Plan and Manage Logistics
1.2.5 Document and Manage Risks
1.2.6 Obtain Commitment to Appraisal Plan
1.3 Select and Prepare Team
1.3.1 Identify Team Leader
1.3.2 Select Team Members
1.3.3 Prepare Team
1.4 Obtain and Analyze Initial Objective Evidence
1.4.1 Prepare Participants
1.4.2 Administer Instruments
1.4.3 Obtain Initial Objective Evidence
1.4.4 Inventory Objective Evidence
1.5 Prepare for Collection of Objective Evidence
1.5.1 Perform Readiness Review
1.5.2 Prepare Data Collection Plan
1.5.3 Replan Data Collection

2.1 Examine Objective Evidence
2.1.1 Examine Objective Evidence from Instruments
2.1.2 Examine Objective Evidence from Presentations
2.1.3 Examine Objective Evidence from Documents
2.1.4 Examine Objective Evidence from Interviews
2.2 Verify and Validate Objective Evidence
2.2.1 Verify Objective Evidence
2.2.2 Characterize Implementation of Model Practices
2.2.3 Validate Practice Implementation Gaps
2.3 Document Objective Evidence
2.3.1 Take/Review/Tag Notes
2.3.2 Record Presence/Absence of Objective Evidence
2.3.3 Document Practice Implementation Gaps
2.3.4 Review and Update the Data Collection Plan
2.4 Generate Appraisal Results
2.4.1 Derive Findings and Rate Goals
2.4.2a Determine Process Area Capability Level
2.4.2b Determine Satisfaction of Process Areas
2.4.3a Determine Capability Profile
2.4.3b Determine Maturity Level
2.4.4 Document Appraisal Results

3.1 Deliver Appraisal Results
3.1.1 Present Final Findings
3.1.2 Conduct Executive Session(s)
3.1.3 Plan for Next Steps
3.2 Package and Archive Appraisal Assets
3.2.1 Collect Lessons Learned
3.2.2 Generate Appraisal Record
3.2.3 Provide Appraisal Feedback to CMMI Steward
3.2.4 Archive and/or Dispose of Key Artifacts

Hefner - Experiences with Indicator-Based Appraisals: TRW

TRW

Capability Level 2: Managed

- **Management of the process is concerned with the institutionalization of the process area and the achievement of other specific objectives established for the process, such as cost, schedule, and quality objectives.**

- **Making the analogy between engineering and appraisal:**
  - Project: An individual appraisal
  - Organization: The group conducting appraisals (internal or vendor)

- **GP 2.1 Establish an Organizational Policy –** *rules for all appraisals*
- ✓ **GP 2.2 Plan the Process –** *Required by the MDD*
- ✓ **GP 2.3 Provide Resources –** *Implied by the MDD*
- ✓ **GP 2.4 Assign Responsibility –** *Required by the MDD, can expand on roles*
- ✓ **GP 2.5 Train People –** *Minimum required by the MDD, can expand*
- ✓ **GP 2.6 Manage Configurations –** *Minimum required by the MDD, can expand*
- ✓ **GP 2.7 Identify and Involve Relevant Stakeholders –** *Required by the MDD*
- ✓ **GP 2.8 Monitor and Control the Process –** *Implicit Lead Appraiser responsibility*
- **GP 2.9 Objectively Evaluate Adherence –** *Appraisals process and product audits*
- **GP 2.10 Review Status with Higher Level Management –** *Periodic reporting*

Hefner - Experiences with Indicator-Based Appraisals: TRW **TRW**

Capability Level 3: Defined

- **Tailored from the organization's set of standard processes according to the organization's tailoring guidelines, and contributes work products, measures, and other process-improvement information to the organizational process assets.**

- **GP 3.1 Establish a Defined Process –** *Organizationally defined process for conducting appraisals, tailored for each appraisal according to established guidelines*

- **GP 3.2 Collect Improvement Information –** *Collect work products and measures to continuously improve the appraisal process*

Hefner - Experiences with Indicator-Based Appraisals: TRW **TRW**

Capability Level 4: Quantitatively Managed

- **Controlled using statistical and other quantitative techniques.**
  - Quantitative objectives for quality and process performance are established and used as criteria in managing the process.
  - Quality and process performance are understood in statistical terms and are managed throughout the life of the process.

- **GP 4.1 Establish Quantitative Objectives for the Process –** *Established quality and process performance objectives for each appraisal*

- **GP 4.2 Stabilize Subprocess Performance –** *Stabilized subprocesses within the overall appraisal process (e.g., planning, consolidation)*

Capability Level 5: Optimizing

- **Changed and adapted to meet relevant current and projected business objectives.**
  - Focuses on continually improving the process performance through both incremental and innovative technological improvements.
  - Process improvements that would address root causes of process variation and measurably improve the organization's processes are identified, evaluated, and deployed as appropriate.
  - Improvements are selected based on a quantitative understanding of their expected contribution to achieving the organization's process-improvement objectives versus the cost and impact to the organization.
  - Performance of the organization's processes is continually improved.

- **GP 5.1 Ensure Continuous Process Improvement –** *Continuously improving appraisal process*

- **GP 5.2 Correct Root Causes of Problems –** *Identification and correction of root causes of appraisal defects (e.g., inaccurate results, late nights)*

Hefner - Experiences with Indicator-Based Appraisals: TRW   **TRW**

Rating TRW's Appraisal Process - 1

GG 1 Achieve Specific Goals

✓ **GP 1.1 Perform Base Practices –** *All TRW SCAMPI appraisals follow the MDD*

GG 2 Institutionalize a Managed Process

✓ **Organizational Policy –** *TRW Appraisal Description Document (ADD) created to guide all TRW appraisals*

✓ **GP 2.2 Plan the Process –** *Appraisal Plan*

✓ **GP 2.3 Provide Resources –** *In Appraisal Plan*

✓ **GP 2.4 Assign Responsibility –** *In Appraisal Plan, plus defined responsibilities in TRW ADD for site coordinator, etc.*

✓ **GP 2.5 Train People –** *MDD-required course, plus standard TRW on-site training*

✓ **GP 2.6 Manage Configurations –** *Described in TRW ADD*

✓ **GP 2.7 Identify and Involve Relevant Stakeholders –** *In Appraisal Plan*

✓ **GP 2.8 Monitor and Control the Process –** *Specific Lead Appraiser responsibilities described in TRW ADD*

✓ **GP 2.9 Objectively Evaluate Adherence –** *Process and product audits of appraisals conducted by independent QA*

✓ **GP 2.10 Review Status with Higher Level Management –** *Monthly reporting of appraisal conduct and results to Vice President*

Hefner - Experiences with Indicator-Based Appraisals: TRW

TRW

Rating TRW's Appraisal Process - 1

GG 3 Institutionalize a Defined Process

✓ **GP 3.1 Establish a Defined Process –** *TRW defined process (ADD) for conducting appraisals, tailored for each appraisal according to established guidelines*

✓ **GP 3.2 Collect Improvement Information –** *Collect work products and measures from each appraisal to continuously improve the appraisal process*

Initiated a Six Sigma project to address the Level 4 and 5 practices

GG 4 Institutionalize a Quantitatively Managed Process

- **GP 4.1 Establish Quantitative Objectives for the Process**
- **GP 4.2 Stabilize Subprocess Performance**

GG 5 Institutionalize a Optimizing Process

- **GP 5.1 Ensure Continuous Process Improvement**
- **GP 5.2 Correct Root Causes of Problems**

Hefner - Experiences with Indicator-Based Appraisals: TRW

TRW

Summary

- **The CMMI continuous structure provides a useful way to assess the maturity of your appraisal process**

- **Industry should continue to expand the discussion of what constitutes "mature" appraisal practices**

Hefner - Experiences with Indicator-Based Appraisals: TRW   **TRW**