Use of Competency Guidelines to Address CMMI GP 2.5

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Generic Practice 2.5

- **Practice**
  - Train the people performing or supporting the process as needed.
  - As a level two generic practice, applies to all process areas

- **Issue**
  - How do you make sure each team member has the appropriate training to perform all assigned tasks?
Approach - 1

- Each department defined roles for all employees who are
  - Involved on a program
    - Configuration/data management
    - Contracts Administration
    - Engineering
    - Pricing and Parametric Estimation
    - Program Management
    - Program Controls
    - Quality
    - Security
    - Supply Chain Management
  - Performing an organizational role covered by the CMMI
    - Engineering Process Group
    - Training
Competency guidelines were created mapping skills, illustrative behaviors, and training for each role

- Tool to identify skill development opportunities for every contributor by role
  - Core competencies apply to all employees
- Development opportunities used to establish employee Individual Development Plans (IDPs) and facilitate employee career development and planning
  - Initial assessment made by employee and then discussed with supervisor in twice a year performance reviews
  - Reviewed upon new assignment
- IDPs feed into the annual Tactical Training Plan
  - Still requires business areas and departments to identify leading edge technologies or process improvements requiring training in new areas

Conducted pre-pilot trial and pilot before rollout to focus programs
Definitions

• *Roles* are organizational responsibilities requiring a combination of skills and behaviors needed for an employee to perform a given assignment. An employee may perform a combination of roles.
• *Skills* are distinguishing characteristics of successful performance within an established role.
• *Illustrative Behavior* is the action exhibited by the person performing the role.
• *Learning* is the method by which employees obtain the skills and knowledge necessary to perform a given role.
• *Opportunities* are the differences
  – between an employee’s current skill and the level required to perform a particular role
  – between an employee’s current skill and the level relative to exemplary performance in a current or future role
## Sample from the EPG Role

<table>
<thead>
<tr>
<th>Role</th>
<th>Skill</th>
<th>Illustrative Behavior</th>
<th>Suggested Source of Learning</th>
</tr>
</thead>
</table>
| Engineering Process Engineer            | Process Development/Maintenance            | • Develop and maintain local processes consistent with Raytheon requirements, SEI models, and ISO to improve organizational process performance. Track process actions to closure.  
• Maintain currency and change control/closed-loop corrective action for process documentation  
• Evaluate processes for impact on risk reduction  
• A working knowledge of the policies and procedures applicable to developing, maintaining, and deploying processes; lessons learned; PAL; program tailoring; and metrics.  
• In-depth knowledge of all Garland standard peer review processes | Engineering Processes: SW, SE, HW, PA, CM, PM, Risk, EVMS (e.g. SE Mgmt, SE Requirements, SE, Design, SE IV&V, SW GRSP, SEW100, IMP/IMS, SE Process overview, SE Analysis, SEMP Overview, Tailoring the SW Process  
• Cost and Estimation  
• Statistics  
• Modeling                                                                                                                                   |
|                                         | Process Management/Continuous improvement  | • Define and analyze process measurements  
• Continuously improve processes through new external information and internal feedback  
• Collect and analyze lessons learned to improve processes  
• Utilize process and product metrics to determine root cause as input to process improvement opportunities | Operations Research  
• Statistical Awareness and Methods                                                                                                           |
Process Flow

1. Employee Performs Skill Self-Assessment Using IDP Worksheet
2. Employee and Supervisor Discuss the IDP Worksheet (Priority and Timing)
3. Employee Creates Their Individual Development Plan (IDP)
4. Supervisor Reviews and Approves the Employee’s IDP
5. Discipline Owners Pull Employee IDPs from Personal Registrar
8. Learning Council Consolidates All Learning Plans and Provides to Finance
9. Learning Council Allocates & Distributes Annual T&E Budgets (As Determined by Finance)
10. Discipline Owners Distribute Annual T&E Budget to Managers
11. Managers Communicate Approved Courses to Employees
12. Employees Register for Approved Courses and Attend Training

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Lessons Learned

- There are lots of stakeholders!
  - Development of the guidelines was a joint effort by a diverse Process Action Team (PAT), Human Resources, and the various Functional/Department leads
    - PAT sponsor was the VP of Human Resources and a very active participant
- Provide detailed instructions to the actual guideline developers. Corporate discipline competency models lead different areas in different directions.
- Need to identify specific classes whenever possible
  - Worksheets derived from the guidelines annotated preferred classes
- Allow plenty of time for the pilot effort
- Our requirement to formally inspect the individual guidelines spread knowledge and buy-in for the formal inspection process
  - Conducted five formal inspection classes to deploy the process outside the software and systems engineering disciplines
Next steps

• Inspect the guidelines as a total product to identify & remove inconsistency across disciplines
• Roll out to all roles in all departments
  – Human resource initiative outside the CMMI effort