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Frequently Misunderstood CMMI Appraisal Findings

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ABB

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ABB Overview – 1

- Leader in power and automation technologies

- Enable utility and industry customers to improve performance while lowering environmental impact

- The ABB Group of companies operates in more than 120 countries and employs approximately 110,000 people

- ABB became the first company in the world to sell 100,000 robots

- Most ABB products have both software and hardware components

ABB Corporate Research partners with business units worldwide to improve ABB's products, services, and development processes.

Corporate Research

Power Products

Power Systems

Automation Products

Process Automation

Robotics

Illustration created by Andrew Cordes of ABB in 2006.

Typical Appraisal Background – 1

Customer: an ABB business unit (BU)

Provider: ABB Corporate Research (CR)

BU improvement goals:

- Improve BU capability for meeting business goals related to product development
- Formal demonstration of CMMI Maturity Level 2 has usually been secondary

Appraisal purposes:

- Objectively evaluate progress of the US organization relative to CMMI ML2

Class B/C appraisal teams:

- 1-3 BU participants
- 1-5 CR software researcher/consultants

Characteristics of BU organization:

- Geographically distributed
  - different time zones
  - sometimes different languages/cultures

- Some processes shared, some site-unique

- Different types of products, projects, and services
  - often executed somewhat differently at each site

- Small groups at each site, with "multi-hat" people

- ISO-9001 literate and certified

- Varying degrees of prior CMMI experience

Post-Appraisal Misunderstandings – 1

1. Project Planning

- **PP SP 1.1** *(WBS used for estimating scope)*
  - mere WBS existence does not prove it was used as the basis for estimating scope

- **PP SP 2.5 and GP 2.5** *(training)*
  - planning by line managers may be insufficient; project coordination is needed

- **PP SP 3.1, 3.2** *(reviewing commitments/reconciling resources)*
  - periodic project reviews do not satisfy the need for specific planning-time reviews

- **PP GP 2.2** *(planning the PP process)*
  - how to plan the project-planning process and why it's important

Post-Appraisal Misunderstandings – 2

2. **Project Monitoring and Control**-related

- **PMC GP 2.8** *(monitoring & controlling PMC process vs. its plan)*
  Why PPQA audits are not the answer:
    - Too-low frequency for monitoring
    - Inadequate for control

- **GP 2.8 (all PA's):** *(monitoring & controlling processes)*

  Difference between 'having documentation that X occurs' and true monitoring & control of the process against process plan

3. **Process and Product Quality Assurance**

- **PPQA SP 1.2** *(objective evaluation of work products)*
    - why improving PPQA Evaluations of work products is NOT sufficient to satisfy VER/VAL (or vice versa)

- **PPQA GP 2.10** *(upper mgmt oversight of PPQA process)*
    - why it does NOT just mean management must review PPQA audit findings

4. **Requirements Management**
    (RFP environment)

- REQM SP 1.2 *(obtaining participant commitment)*
  - why participant commitment can also be multi-phase
  - how it is related to stakeholder involvement (GP 2.7)
- REQM SP 1.4 *(bi-directional traceability)*
  - what level of traceability is really needed
- REQM GP 2.8 *(monitoring and controlling REQM process)*
  - why timing matters in whether the overall PMC process can help here

5. **Supplier Agreement Management**

- SAM SP 2.1 *(monitoring supplier progress and performance)*
  What to monitor:
  - Deliveries and milestones are not enough
  - Effort, cost, technical performance, risk needed too

6. Configuration Management

- **CM SP 1.3** *(create or release baselines)*

  - Term 'baseline' is overloaded, for historical reasons, in many BU's

- **CM SP 3.2** *(perform configuration audits)*

  - why a PPQA audit is not the same as doing a CM baseline audit

- **CM GP 2.1, 2.2, 2.7** *(policy, plan, stakeholders)*
  need for CM to span project boundaries:

  - Products

  - Product lines

7. Measurement and Analysis

- **General**
  - why project-level data gathering, measure definition, analysis, and reporting are insufficient *(even if all of your identified measures are derived from project data)*

- **MA GP 2.2, 2.8** *(plan the MA process, monitor & control MA process)*
  - why having PMs plan and M&C project-based measurement activities is insufficient

- **MA GP 2.7** *(stakeholders)*
  - why it's important to provide feedback to the people who gather/enter the data

Analysis – 1

Aggravating factors observed during the post-appraisal improvement planning period:

1. Translating appraisal findings into action plans seems "easier" than what it is in reality

2. Risk of demoralization of the EPG, after analyzing the appraisal findings

3. Underestimation of <u>action planning work</u> itself, and the relevance of the change agent during this period

4. Not involving development and test in action planning

Analysis – 2

Aggravating factors observed during the post-appraisal improvement planning period:

5. "Half-life" of findings comprehension
   - Rapid degradation in the understanding on the appraisal findings over time

6. Underestimation of effort and time needed to properly address weaknesses

7. Misperception that simple solutions are never enough (complex solutions are required)

8. Engineering mindset/bias towards looking for better tools as 'the answer' to process improvement

Analysis – 3

General aggravating factors which contribute to misunderstandings of appraisal findings:

1. Impact of "ISO bias"
   - Everything is an audit
   - Emphasis on documentation

2. Need for high priority of the PI project
   - Schedule delays contribute to 'findings decay' from half-life effect

3. 'Snowball effect' of a key weakness
   - e.g., hard to monitor and control against a plan if there is no plan

Summary: Lessons Learned – 1

Raise EPG awareness <u>prior to the appraisal</u> on:

- ISO vs. CMMI; auditing vs. monitoring, controlling, management oversight

  - ➢ Looking at SEI PrIME initiative **

- PPQA vs. VER+VAL

- Planning and managing a process vs. a project

- Covering the full product/project lifecycle

- Documentation (artifacts) vs. actual usage of a process

** PrIME (Process Improvement in Multimodel Environments):
http://www.sei.cmu.edu/prime/primedesc.html

Summary: Lessons Learned – 2

Include in <u>post-appraisal</u> plans:

- Urgent follow-up; pre-empt half-life decay of findings

- Guidance on first 'doing the simplest thing that could possibly work'
  - Avoid 'analysis paralysis'
  - Try iterative improvement planning and project execution

- Active work to keep EPG morale up

- Emphasize need for Sponsor's active, visible support

- Reinforce the Change Agent's role in moving forward and being the bridge between the organization and the Sponsor

- Explicit re-valuation of SPI ROI

Questions?

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