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# Frequently **Misunderstood CMMI** Appraisal **Findings**







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### **Topics**

- ABB Overview
- Typical Appraisal Background
- Post-Appraisal Misunderstandings
  - by ML2 Process Area
- Analysis
- Summary: Lessons Learned
- Contact Information





#### **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 Overview – 2**



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

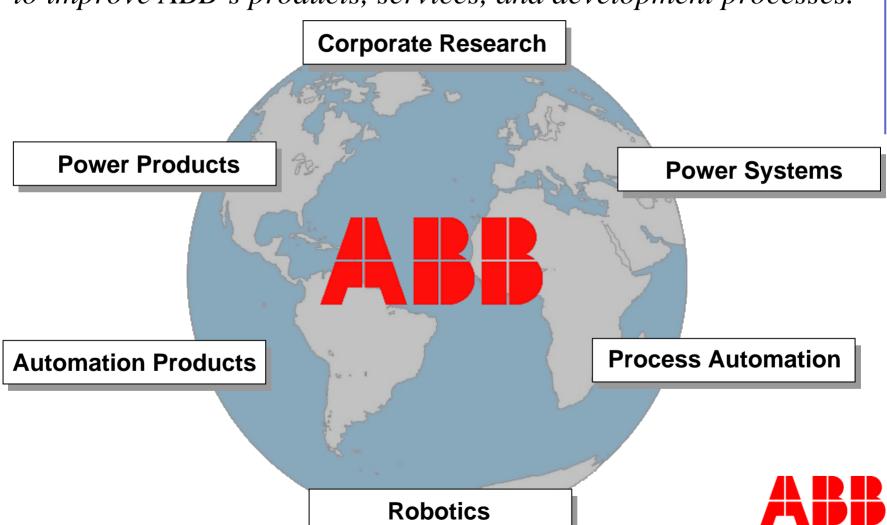


ABB USCRC -

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



# Typical Appraisal Background – 2



#### Characteristics of BU organization:

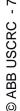
- Geographically distributed
  - different time zones
  - sometimes different languages/cultures
- Some processes shared, some site-unique
- Different types of products, projects, and services
  - often executed somewhat differently at each site
- Small groups at each site, with "multi-hat" people
- ISO-9001 literate and certified
- Varying degrees of prior CMMI experience





#### 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





#### 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 postappraisal improvement planning period:

- 1. Translating appraisal findings into action plans seems "easier" than what it is in reality
- 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 postappraisal 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
- Misperception that simple solutions are never enough (complex solutions are required)
- 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:

- 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



# ABB USCRC - 15

# **Summary: Lessons Learned – 1**



#### Raise EPG awareness prior to the appraisal 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

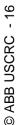


## **Summary: Lessons Learned – 2**



#### **Include in post-appraisal 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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