A Process Performance Models Case Study

Based on sample (from) 450 project feasibility checks

and

Presented with practical usage and implementation tips
Agenda and Topics

- Opening
- Organizational Background and Process ROI
  - Project Idea and Proposal Preposition Development
  - Quality Audits and Progress Check Calibration
  - Call and Incident Center Performance
- Case Studies and High Level Process
  - Project Idea and Proposal Preposition Development
  - Quality Audits and Progress Check Calibration
  - Call and Incident Center Performance
- Main Questions for High Maturity Process Improvement
- Pilot Lessoned Learned
Definition of Process

- A set of interrelated activities, which transform inputs into outputs, to achieve a given purpose.
Process Control
Measuring Process Performance

Key Questions

• What is the current performance?
• Is this value "good"?
• Is it changing?
• How can I make the value “better”?

Candidate Attributes

• Definition (completeness, compatibility)
• Usage (compliance, consistency)
• Stability (repeatability, variability)
• Effectiveness (capability)
• Efficiency (productivity, affordability)
• Predictive Ability (accuracy, effects of tailoring and improvements)
Some Examples

<table>
<thead>
<tr>
<th>Goal</th>
<th>Measure</th>
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<tbody>
<tr>
<td>Completeness</td>
<td>The number of process elements added, changed, and deleted during tailoring.</td>
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<tr>
<td>Compliance</td>
<td>Number of discrepancy reports generated by Quality Assurance audits</td>
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<tr>
<td>Stability (volatility)</td>
<td>The number of process elements changed within a specified time interval.</td>
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<tr>
<td>Effectiveness</td>
<td>Product quality</td>
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<tr>
<td>Effectiveness</td>
<td>Defect leakage to subsequent phases</td>
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<tr>
<td>Efficiency</td>
<td>Productivity (or production coefficient)</td>
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<tr>
<td>Efficiency</td>
<td>Rework as a fraction of total effort</td>
</tr>
<tr>
<td>Predictability</td>
<td>Probability distribution for an estimated quantity or related population statistics</td>
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</table>
Typically when one read the CMMI-SVC he may think on the classic service provider organization.

The model provides guidance for the application of CMMI best practices by the service provider organization.

Best practices in the model focus on activities for providing quality services to the customer and end users.

In this presentation the ‘services’ is a project feasibility checks provided by a dedicated group.
Organizational Background and Process ROI

Project Idea and Proposal Preposition Development

- If an average developer day cost is ~7000
- The total Program effort was 10220 day (100%)
- The testing phase was 1480 day (14.5%)
- Defect that are the result of documentation are 69% of all defects

- If we will assume the to correct 69% of all defects will take around 40% of the testing duration; means that:
  - that will be 740 day
  - With the overall cost of 518000

- However to add 100 review days in the static tests and another 20 of code inspection will end with the cost of 2100000

- And still we have saved at least 3080000 (440 days)
- Means that we ware able to reduce 4.5% of the project time
Organizational Background and Process ROI

Quality Audits and Progress Check Calibration

- As for today, most of major industries which runs and manages large and complex programs need to comply with more than just one quality standards in many disciplines (e.g. HW, optics, software) use large groups of internal and external assessors that perform implementation checks, progress checks, readiness reviews and formal appraisals.
- These communities are typically composed from groups of very experienced and professional individuals that have the best knowledge in their professional domain but not necessarily on how to conduct an efficient and effective appraisal which provide meaningful results.
- The combination of the effort and expected resources increase the risks on qualification of auditors, domain knowledge, and calibration of results and findings effectiveness.
Organizational Background and Process ROI

Quality Audits and Progress Check Calibration

- By measuring the following attributes, we were able to increase usability of the progress checks by 47%, and quality of deliverables by 37%:
  - Role based profile and criteria
  - Calibration mechanism and criteria
  - Evaluation mechanism and criteria
  - Leveling the different quality engineers and ‘auditors’
  - Flowing specific trainings (on different levels) as personal development and qualification criteria
  - Listing specific performances as indicators for leveling justifications
  - Structuring the different audits and reporting guidelines in a single mandatory to follow process,
Main Steps for High Maturity Process Improvement

During our analysis and planning, we were able to identify improvement targets in main lifecycle areas such as:

- operations,
- information,
- governance,
- people,
- organizational structure,
- portfolios,
- project execution,
- finance.

And as in core process that are critical to the system success such as stakeholder management, technical interfaces and integration.
Main Steps for High Maturity Process Improvement

As the result of this observation we have built an action plan,

- Then in the **second step** we have built a **services roadmap** using the CMMI-SVC, that allow companies to begin the improvement journey, and manage the transformation to maturity by building on each successive step, and ultimately delivering the **benefits expected**:
  - service reuse,
  - improved perception
  - response time,
  - interoperability,
  - business agility.

- **Service performance** and its impact on the organization governance is a significant part of that journey
Organizational Background and Call and Incident Center Performance

- The service provider provides a large number of services to its customers, which are mainly departments from a sibling organization.
- To manage the communication with customers regarding those services, the department has implemented helpdesk management and problem management processes.
- The implementation of these processes has been based on the CMMI-SVC with elements of other CMMIs (for the organization maturity) and ITIL (for the individuals’ education).
Program Management Office is used to guarantee the continuity of services, while Analysts Management Team is used to improve the level of service in the future. So, PMO deals with requests, whereas Requirements Management Team is concerned with solving the challenges that cause these requests.

The goal of this case study was to assess the quality and performance of the feasibility checks Management process.
Process
Project Idea and Proposal Preposition Development

- The Need Statement
- Project Office Preposition
- Project Team
- Project Feasibility Check
- System Development and Acquisition
- System Validation
Managed Process for Innovation

**Strategize**
- Define Program Strategy
- Prioritize Program Strategy

**Capture**
- Capture Idea
- Enterprise Search
- Publish Idea to Portal

**Formulate**
- Develop Feasibility Case
  - Strategic Impact
  - System Potential
  - Financials
  - SWOT
- Publish Operational Case

**Evaluate**
- PMO Reviews Idea
- Run Portfolio Analysis
- Approval

**Define**
- Build Project Team
- Execute Project
  - Design
  - Operational Potential
  - Legal Evaluation
- Customer Feedback
- Finalize Design Document

**Select**
- Approval

**Deliver**
- Community Ratings and Reviews
## Case Study

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Case Study

Name: OpenTicket

Scenario: (default)
Work Time: 2 hours
Randomize duration using: Normal Distribution (StDev=(none))

Resources

Name | Value | Unit | Cost per unit | Threshold
--- | --- | --- | --- | ---

[Modify...] [Reset]
The Normal Distribution should be used when observations tend to accumulate around a particular value rather than spread evenly across a range of values.
Case Study

Name: OpenTicket

Scenario:
Work Time:
Randomize data:

Distribution of Probability

Type: Exponential

The Exponential distribution should be used when the probability of observations decreases in time.
Defects by Type

- Cancelled: 9%
- Testing: 18%
- Documents: 28%
- STD: 42%
- External Data: 3%
Process
Quality Audits and Progress Check Calibration

Plan Assessment

Prepare for Assessment

Gather Data

Consolidate Data
- Organize and Combine Data
- Determine Data Sufficiency

Make Rating Judgments

Report Results

Review and Revise Data Gathering Plans
Process
Quality Audits and Progress Check Calibration
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Questions ?
Contact

Kobi Vider
K.V.P Consulting

Kobi.Vider@hotmail.com
KobiVP@aol.com

Phone: +972522946676