International Research Workshop for Process Improvement in Small Settings

Pittsburgh, PA

October 19 – 20, 2005

Two Case Studies (Journeys) in Implementing Model Based Process Improvement in Small Organizations

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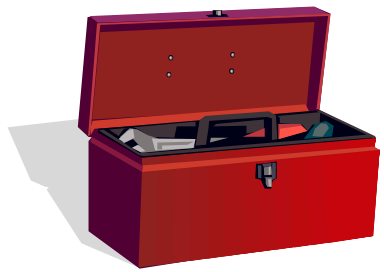
Planning the Process Improvement Journey for Small Settings

Planning Challenges….

- Getting started on the process improvement journey can be confusing as there are many choices in formal process improvement models and tools, including

  Capability Maturity Model Integration (CMMI®),
  Balanced ScoreCard (BSC),
  six sigma, ISO 9000,
  variants of Lean, .etc.



- Planning the process improvement journey involves these key tasks of understanding:
  - The up-front investment costs that include required personnel, time, and training.
  - The future value of each model, tool and technique in order to choose a process improvement implementation that is **tailored** to the budget of a small setting.

Guidance for Selecting Process Improvement Models, Tools and Techniques for Small Settings

The selection of any formal process improvement model should consider these factors:

- **All of the process improvement models, tools and techniques require an up-front investment of both time and money.**
- Take time to research the best process improvement approach to achieve the optimum investment in support of the business goals.
- All up-front investments in any of these models, tools and techniques should be planned with achievable and realistic performance goals. As with any investment, cash flow will be impacted for 4 - 8 months, depending upon the size of investment.
- While untimely disruption to projects and staff during process improvement projects constantly plagues larger organizations, these disruptions could be disastrous in small settings due to small staff size and multiple roles.
- Selection of a specific process improvement model, tool or technique does not exclude other options. For example, adopting both six sigma and CMMI models is typical in larger organizations. However, small settings may not have the staff and cash resources to consider multiple options.
- Implementing process improvements required to achieving the performance goals is via a cultural change (there is no magic wand).

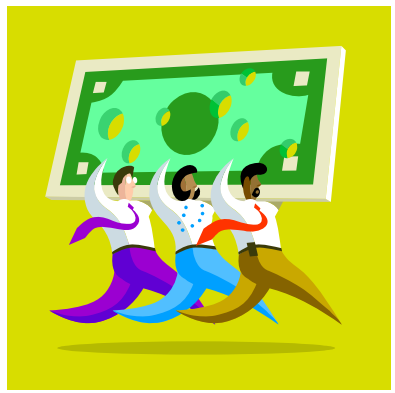
All cultural changes take time, encouragement and strong, consistent support from the CEO and key staff.

Guidance for Implementing Formal Process Improvement in Small Settings

Key Features of Small Organizations….

- Small organizations are not “miniatures” of large corporations
- Investments should be scaled down and scheduled to fit with variable cash flow
- CEOs, CFOs and other key officers may be the same person.
- Technical staff have multiple roles and responsibilities

Key Leverage Points in Small Settings….

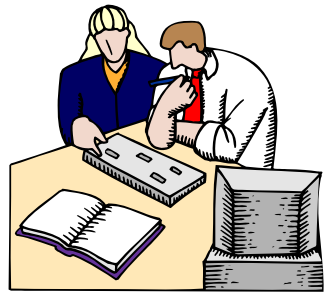


✓ Flexibility in their infrastructures to adapt readily to changing business conditions.

✓ Better lines of communications than larger organizations.

✓ **Greater staff involvement in their business investments**

Small Setting Background Information Before Implementing CMMI Model



Journey	Profit/Loss Margin	Environment	Applications
1	Low labor and overhead rates	• 7 staff • No full time process improvement “staff” • High level manager strong positive influence • Strong customer support • No formal process improvement experience	•Web based development on “live applications” •On-site with customer
2	Low labor and overhead rates	• 10 staff • No full time process improvement “staff” • High level manager provided a strong positive influence • No customer support • Inconsistent S/W CMM Maturity Level 2 “heritage”	•Web based development on “live applications” •On and off-site with customer community

Overview of Two CMMI Process Improvement Journeys in Small Settings

Journey	Starting Point	Business Case	Schedule	Costs	Key Risk
1	No formal process improvement experience or training	•Improvement of schedule estimation •Rework resulting from latent defects •Requirements volatility	36 months	Percentage of contract level of effort (LOE)	Impact to development cycles of 1 – 2 months
2	Uneven history of implementing the S/W CMM (S/W CMM Maturity Level 3)	•Improvement of schedule estimation •Rework resulting from latent defects •Requirements volatility	18 months	Fixed price investment	Defects in a “live database” used by customer communities

Overview of Two CMMI Process Improvement Journeys in Small Settings (Continued)

Journey	Class C	Class B	SCAMPI Class A
1	Capability Level (CL) 3 in Maturity Level (ML) 2 Process Areas **CL 3** (ML 2 and ML 3 PAs) **CL 4 & 5** (VER,VAL,PPQA,PP,PMC,IPM)	Capability Level (CL) 3 in Maturity Level (ML) 2 Process Areas **CL 3** (ML 2 and ML 3 PAs) **CL 4 & 5** (VER,VAL,PPQA,PP, PMC,IPM)	Capability Level (CL) 3 in Maturity Level (ML) 2 Process Areas **CL 3** (ML 2 and ML 3 PAs) **CL 4 & 5** (VER,VAL,PPQA,PP, PMC,IPM)
2	Capability Level (CL) 3 in Maturity Level (ML) 2 Process Areas **CL 3** (ML 2 and ML 3 PAs) **CL 4 & 5** (VER,PPQA,PP,PMC)	Capability Level (CL) 3 in Maturity Level (ML) 2 Process Areas **CL 3** (ML 2 and ML 3 PAs) **CL 4 & 5** (VER,PPQA,PP,PMC)	Capability Level (CL) 3 in Maturity Level (ML) 2 Process Areas **CL 3** (ML 2 and ML 3 PAs) **CL 4 & 5** (VER,PPQA,PP,PMC)

Overview of Two CMMI Process Improvement Journeys in Small Settings (Continued)

Journey	Performance Gains	Lessons Learned
1	4.5< customer satisfaction < 5.0 0< latent defects <3	1. Focus on business goals in measurement planning. 2. Continued advocacy of higher level management is crucial to maintain project continuity. 3. Keep customer involved in the CMMI activities
2	-8< scheduling accuracy < 8 days 0< latent defects < 1	1. Same as Journey 1 except for 3 2. Use “appropriate project management tools. 3. Rotating participation from staff members is important for institutionalization. 4. Measurements based upon the S/W CMM needs refocusing to business goals for the CMMI.

Conclusions

Implementation of CMMI practices can be efficient and effective in small settings

For best results,

- ✓ Focus the “leadership” of the small organizations on defining current and future business goals and process improvement investment planning as part of developing the Appraisal Input Statement.
- ✓ Use the continuous representation to maximize available resources and schedule flexibility.
- ✓ Start with a few, key Process Areas, such as Project Planning, Project Monitoring and Control and **Measurement and Analysis.**
- ✓ Consider targeting CL 3 for these Process Areas as the small settings will develop these templates.

- ✓ Do not try to fit process improvement assets, such as templates, developed for large organizations into smaller settings. Avoid comparing your process improvement progress with larger organizations.
- ✓ **Key staff should develop templates that make sense for them.**
- ✓ Do not worry that there is no full time SEPG as the staff will take ownership.
- ✓ **Leverage on the advantages of flexible processes, efficient communications, and intense levels of staff involvement of small settings.**