

## 评估总结报告

2017年7月12日-19日, SEI主任评估师 RAGHAVAN S. NANDYAL 来我公司对我公司进行 CMMI5 级的评估。本次评估, 公司 EPG 成员和项目组人员总计近 30 人参与访谈。通过访谈, 主任评估师 RAGHAVAN S. NANDYAL 给我们提出了不少意见, 让我们对 CMMI 有了新的认识。现将本次评估发现的问题及改进点总结如下:

### 一、公司自有产品推广

1、推广本公司自主研发产品 COBOT。COBOT 在 211 所项目管理平台进行了试用, EPG 从代码检测效率、发现缺陷密度等方面对其进行审查、评价, 根据审查和评价结果决定是否将其作为组织最佳实践纳入组织过程资产, 以及是否制定详细的推广计划, 在全公司进行推广。2、推广公司研发的软件项目管理平台。基于 GJB5000A 软工平台具有以下优势: 可以在线进行功能分解、任务分解、规模估算、工作量估算、拟制计划、日志汇报、数据自动采集、度量分析、问题管理及跟踪、实时监控等, 大大减轻项目监控工作量, 并提高度量的准确度。可根据 CMMI 模型进行本地化定制, 以规范工作流程、减轻项目监控工作量, 提高度量的准确度。

### 二、存在的问题及改进

1、项目估算模板中用到的德尔菲法, 在各专家估计数据相差大时估计结果不准确的问题。

改进措施: EPG 组充分分析和论证项目经理提出的三点估算法: 均值 = (乐观值 + 4 × 最可能值 + 悲观值) / 6, 认为其可以作为组织估算的方法。故后续会调整估算模板, 改进估算方法。2、由于本组织项目都使用瀑布模型, 所以 Crystal Ball 对工作量进行的预测无意义。改进措施: 结合项目实际灵活运用工具, 如果项目选型为瀑布模型, 则可以直接将编码过程定义为关键子过程进行监控。3、公司现有组织级方针、过程定义和指南都过于繁琐。

改进措施: EPG 组讨论制定新的组织级方针, 使之尽量简化并与组织标准过程库对应。过程定义和指南根据实际情况, 将指南和模板进行整合, 减少重复过程。4、组织级 QPPO 中, 对成本的分解是间接目标, 不能直接降低研发成本。改进措施: 对商业目标的分解进一步细化, 将成本降低分解到相应的子过程。质量改进过程中质量成本短期内会呈上升态势, 但是长期来讲成本的降低是必然的, 短期内要降低成本主要是增加预防成本, 降低返工成本。可以通过人员培训提升编码人员能力, 减少缺陷注入, 加强代码评审, 减少返工。5、根据评估师意见引入 COCOMO 模型理论, EPG 将组织学习 COCOMO 模型理论并对公司项目经理进行培训, 制定项目试点计划验证其效果, 根据试点效果调整组织模板, 并部署推广。6、目前使用的度量方法不是很完善, 例如需求文档的规模, 只用页码度量比较片面; 返工、单元测试、培训等活动的成本并未作为度量项进行量化管理。

#### 改进措施:

- 根据项目度量的难易程度, 对度量项的度量进行细化, 如增加度量指标、尝试新的度量方法。
- 按照类别尽可能将与组织商业目标和质量过程性能目标相关的项进行量化管理, 并不断优化量化管理过程。

7、项目执行过程中风险识别不足。改进措施: 增强项目经理和项目成员的风险意识, 在项目不同阶段制定不同的风险分析和应对策略, 并对识别出的风险进行跟踪, 监控, 维护风险登记册。8、完善决策分析方法, 决策分析要与量化管理相结合。改进措施: 首先确定决策分类, 根据决策分类, 引进多种决策方法。多方决策主要的方法就是加权平均、头脑风暴、德尔菲法、决策树、多因素分析矩阵等, 单方决策最常用的是 SWOT 分析和投入产出分析。

建立评估备选方案准则时, 要考虑 DAR 的时间、成本及收益, 对各准则的优先级和重要性进行评估后排序; 选择评估备选方案的方法可以通过调查、模拟、测试等多种方法来收集数据定量分析。通过本次评估我们认识到, 过程改进不能完全迷信 CMMI, 要汲取其中的管理思想, 根据公司实际情况进行裁剪和合并, 找到最适合自己的方法。另外, 过程改进是一个持续的过程, 我们将继续按照 5 级要求进行过程改进和创新, 从进度、成本、质量的三驾马车之外去挖掘更多的潜力与隐形资源, 不断提升企业的过程能力和竞争力。

相松林 Songlin Xiang, 副总经理 Deputy GM

北京北大软件股份有限公司 2017 年 7 月 18 日

During July 12 to July 19, 2017, the CMMI Institute Certified High Maturity Lead Appraiser Mr. RAGHAVAN S. NANDYAL comes to our company to conduct CMMI5 appraisal. There are 30 people are involved in interview, including EPG team and project team members. Mr. RAGHAVAN S. NANDYAL provided us with a lot of useful suggestions during interviews, helping us to have a new understanding of CMMI. Here is a summary of those identified point during appraisal: **Company own product promotion:** *To promote the self-developing tool COBOT.* COBOT is piloted in 211 project management .EPG evaluates this tool based on its code review efficiency and identification of defects. Based on evaluation results, EPG decides whether to include this into organizational asset as best practice and whether to make a detailed plan to promote in the whole organization. **Identified issues and improvement:**

- 1. Delphi is used to do estimation, but the estimated data may not be accurate.**  
**Improvement action:** EPG should analyze the Three Point Estimation proposed by appraisal team, namely Mean value= (Opt. value +4\*Most likely value+ Pessimistic Value)/6 and consider its usefulness after pilots. Three point estimation, may be used as organizational estimation. EPG will modify template and improve estimation methods.
- 2. Owing that our projects are all waterfall, it is unnecessary to use Crystal Ball to do predict.**  
**Improvement action:** It should be practical when using tools. If the project is waterfall, coding can be defined as key sub-process directly.
- 3. The current organizational policy and process definition are too complicated.**  
**Improvement Action:** EPG team will discuss and makes new set of organizational policy, making it more integrated and simple. The process definition and template will be also simplified to reduce the rework process.
- 4. In organizational QPPO, the factors we monitor only indirectly affect objective rather than reducing RD cost.**  
**Improvement Action:** To further specify business objective to sub-process .Maybe quality cost will increase in short time, but from a long term, the cost will reduce definitely. In short term, in order to reduce cost, we may increase prevention cost and reduce rework cost. We can improve coding capability to decrease defect injection and strengthen code review to decrease rework.
- 5. As lead appraiser recommended, we may consider introducing COCOMO.**  
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**Improvement Action:** To specify measurement items according to project difficulty, for example, we may add measurement parameters and introduce new measurement method. To include items which affect business objectives and quality process performance into quantitative management. To continuously optimize quantitative management process.
- 7. The identification of risks in project execution is not adequate.**  
**Improvement Action:** To strengthen risk awareness of project manager and project team members, make different risk analysis and handing strategy at different phases, track the identified risks and maintain risk table.
- 8. Combine DAR with Quantitative Management.**  
**Improvement Action:** To determine decision classification and introduce decision methods accordingly. The major multiple participants decision methods are: weighted average, brainstorm, Delphi, decision tree, multiple factors analysis metrics. The major single participant when establishing evaluation criteria, time, cost and benefit of DAR should be considered to prioritize these. The methods for selecting solutions are survey, simulation and test. Decision is based on SWOT which is used to analyze invest and decide the output. In conclusion, by this appraisal, the most important thing we learned is that we should use CMMI practically, using CMMI according to our company actual situation and business needs. Besides, process improvement is a continuous process. We will continue to follow CMMI 5 to do process improvement and creation, to elicit more potential and hidden resources except schedule, cost and quality so as to constantly improve our process capability and competitiveness.

相松林 Songlin Xiang, 副总经理 Deputy GM Beida Software Engineering Corp., Ltd. July 19, 2017