发起人高层会议总结报告

RAGHAV S. NANDYAL

SITARA TECHNOLOGIES PVT. LTD.

Dear Raghav Nandyal:

一、总体发现

本次高成熟度评估中，我们进行了多次访谈和文件审查。通过评估团队深入而细致的工作，使我们对公司的 CMMI5 级成熟度实施状况有了更全面、深入的了解。评估结束后，我们会使用获得的一系列宝贵的建议和改进意见，来进一步提升我们的运营和管理能力。本次评估总共发现了 37 项改进建议。改进建议分为工程管理、项目管理、支持管理、过程管理 4 类，其中，工程管理 15 条，项目管理 9 条，支持 10 条，过程管理 13 条。经过公司高层经理、EPG 过程改进小组、项目经理、QA、CM、OT 等过程改进中的重要角色研究讨论，一致认为发现的改进项与公司的实际情况高度符合，符合度达到 95%以上。

二、经验总结

我们从工程管理、项目管理、支持、过程管理四个方面分别进行详细的经验总结。

2.1 工程管理

需求开发方面

建议用户需求说明书中的非功能性需求描述更详细一些，能够有效指导设计、开发、测试的工作的进行，避免产生更多与需求不一致的歧义或理解错误；及时更新需求跟踪矩阵，考虑需求变更的频率；运用有效的需求变更及跟踪机制，来及时更新需求跟踪矩阵，确保需求与设计、开发、测试之间的完整性和一致性。

编码实现方面

编码过程存在一些细节上的不足，在源代码审查中，发现基线代码中存在一些可删除的代码段，代码复用过程中没有足够的注释来描述具体功能，代码编写要注意可读性及可维护性的提高。后续要定期进行代码审查、重构部分代码、使用代码质量分析工具，遵循注释规范等去规避这类问题，从而提高编码质量。

系统测试方面

部分测试用例中前置条件记录不清楚，应将业务之间的关联,以及测试环境,系统版本,网络等条件描述清楚,公司可以提高系统测试的质量，减少缺陷的数量，提高软件交付的可靠性和用户满意度。

产品运维方面

建议将现场运维计划纳入研发项目的主计划当中，作为研发工作任务的一部分；为现场运维人员工作指定负责人，由运维负责人对现场资源进行统一的管控；现场运维工作中发现的各种问题应该及时反馈给研发团队，使问题得到及时解决。通过实践这些策略，产品运维团队可以更好地管理和维护系统，确保产品在长期内持续稳定运行，并能够迅速适应变化和挑战。

2.2 项目管理

项目估算方面

由于 Dephi 估算具有太大的主观性，后续会尝试运用估算更准确的 PERT、功能点估算方法，项目目标值的制定应优先使用基线模型数据进行预测后设定，这样设定的结果往往比主观的项目估算结果更准确、可靠；基于预测值来提升项目估算的准确度；项目估算结果作为确定项目目标值的备选方案。

项目计划和监控方面

建议将运维活动中投入各种人力、设备、工具等资源纳入到研发项目的统一的管控之中；制定详细的沟通计划，并确保产品移交的相关干系人了解和遵循；定期监控和审查产品移交过程，以应对任何延误或变更。

同行评审方面

建议进一步加强同行评审和问题分析，考虑项目类型、开发语言和项目组的差异，制定更合理的评审程序，并重点加强关键领域的评审，以提高发现缺陷的效果。

2.3 支持

质量控制方面

在质量控制工作中，产品过程检查列表中的检查项不能太多太杂，抽取重要检查项，每个过程建议设置 5-10 个检查项，并定期进行更新和迭代，提高执行效率和质量。通过对产品过程检查单和分析，确保其与实际情况和最新标准保持一致。

根因分析方面

在项目发现一些问题是，我们采用了在项目中比较常见的一些分析方法和项目特性，具有一定的主观因素。采用更多的基线数据、更准确的估算方法来提高估算结果的准确性。

2.4 过程管理

过程资产管理方面

我们已经建立了完善的组织资产库，但员工获取这些资产的方式尚不健全，这不利于我们节省工作时间和提高工作效率。建议在组织内部发布获取这些资产的方式，以便员工能够更加便捷地获取他们所需的资产。

设计并实施有效的绩效评估体系；加强人员能力培养；深度参与组织和项目的工作，提高对项目进行管控效率。

三、现实作用

通过本次 CMMI5 的认证评估及改进，组织在管理方面具有了高度的成熟度和过程能力。项目实施达到了量化管理的水平，可以利用各种统计工具，对采集的数据进行分析，得到非常有价值的结论和模型。为管理及决策提供了可靠的依据。在质量、成本、风险控制、客户满意度方面有较大提升。进一步促进了公司内部的绩效管理，使部门绩效、员工绩效更加的公开透明，有据可依。

1. 提升产品质量和客户满意度：建立有效的质量管理过程，并通过持续的过程改进和优化，提高产品质量和客户满意度。通过规范的质量管理过程，组织能够提供更高质量的产品和服务，满足客户的需求和期望，提升客户满意度。

2. 提高工程管理能力和效率：建立统一的组织级过程管理框架，并通过持续的过程改进和优化，提高工程管理的能力和效率。通过规范的工程管理过程，组织能够更好地规划、执行和控制项目，提高工程管理的效率和质量。

3. 优化资源利用和成本控制：建立统一的过程管理框架，并通过持续的过程改进和优化，提高资源利用效率和控制成本。通过规范的过程管理和优化，组织能够更好地规划和分配资源，降低资源浪费和成本，提高组织的经济效益和竞争力。

4. 综上所述，本次评估帮助组织提高软件开发和维护的质量，降低成本，促进组织合作沟通，提升组织管理能力，提高组织的信誉度和竞争力，并改善客户满意度和信赖度，具有非常实际的意义。

四、后续改进措施

　　EPG 小组会将本次评估中发现的弱项、问题、建议等全部纳入《过程改进建议与跟踪表》，EPG 团队和相关人员针对《过程改进建议与跟踪表》中的建议逐项识别与讨论，并以此制定《差距分析报告》作为现阶段组织过程改进的依据，并在下一阶段对此组织过程改进的效果进行验证。确定改进的优先级及责任人，制定和跟进执行具体的《过程改进计划》。此外，涉及到需要调整的标准过程文件和模板，我们会在下次 EPG 会议上进行评审并发布，同步配置更新到相应的过程资产库中。

　　EPG 小组会对整个改进过程进行全流程监控，帮助组织专注于关键的改进项目，对改进效果进行度量和量化分析，建立预测模型和趋势分析，预测软件开发过程和产品的质量。同时，有力支撑软件开发过程，及时发现和纠正偏差，确保项目按计划进行，并达到预期的质量目标。

　　此次评估和日常实践使我们进一步加深了对 CMMI5 的理解，实施 CMMI5 是一个持续改进，不断优化的过程。虽然没有完美的流程制度，也没有完美的企业，但对极致的追求，仍然是我们要坚持的。加强过程管理、加强项目管理、加强质量管理、加强组织文化和沟通以及持续改进和学习等方面入手，通过培训、教育、规范、标准化、度量、监控、沟通、协作、改进和学习等手段，不断提升组织的能力和成熟度。随着时代的发展，软件发展和维护环境也在不断变化。对软件质量也提出了更高的要求，提升软件质量对于提高客户满意度、减少缺陷和故障、提高开发效

率、降低维护成本以及提升竞争力和品牌形象具有重要意义。因此，我们会以 CMMI5 作为重要的工具，不断提升产品质量和管理能力。再次感谢本次评估老师的辛苦付出及专业指导。

我在此授权并同意您本人和 SITARA Technologies 在 SITARA 的出版渠道上分享我们的评估成果，在 SITARA Technologies 认为合适的情况下宣传我们的评估成果。

安徽云轨信息科技有限公司

发起人：张靖之

2023 年 11 月 16 日

EXECUTIVE SESSION BRIEFING - SPONSOR FEEDBACK

RAGHAV S. NANDYAL
SITARA TECHNOLOGIES PVT. LTD.

Dear Raghav Nandyal:

OVERALL FINDINGS

In this HM appraisal, we experienced multiple interviews and document reviews. The in-depth and meticulous work of the appraisal team provided a comprehensive and profound understanding of the implementation status of HM practices within our company. Following the appraisal, we will leverage a series of valuable suggestions and improvement recommendations to further enhance our operational and managerial capabilities. A total of 37 improvement suggestions were identified, categorized into four groups: Engineering Management (15), Project Management (9), Support Management (10), and Process Management (13). Through discussions among company executives, EPG Process Improvement Team, project managers, QA, CM, OT, and other key roles in process improvement, it was unanimously agreed that the identified improvements align highly with the company's actual situation, with a compliance rate exceeding 95%.

LESSONS LEARNED

We have compiled detailed lessons learned from four aspects: Engineering Management, Project Management, Support, and Process Management.

ENGINEERING MANAGEMENT

REQUIREMENTS DEVELOPMENT: Suggest providing more detailed descriptions of non-functional requirements in user requirement specifications to effectively guide the work of design, development, and testing, avoiding ambiguity or misunderstanding. Regularly update the requirements traceability matrix to consider the frequency of requirement changes. Utilize effective change and tracking mechanisms to promptly update the requirements traceability matrix, ensuring integrity and consistency between requirements and design, development, and testing.

CODING IMPLEMENTATION: There are some deficiencies in the coding process, such as redundant code segments identified during source code reviews and insufficient comments to describe specific functionalities during code reuse. Ensure code readability and maintainability by conducting regular code reviews, refactoring code, using code quality analysis tools, and adhering to commenting standards.

SYSTEM TESTING: Some test cases lack clear documentation of prerequisites. Clearly describe the relationship between business areas, as well as conditions such as test environment, system version, and network, to improve the quality of system testing. This approach can reduce the number of defects and enhance the reliability and user satisfaction of software delivery.

PRODUCT OPERATIONS AND MAINTENANCE: Suggest incorporating on-site maintenance plans into the main plan of research and development projects as part of development tasks. Designate a responsible person for on-site operations and ensure that issues discovered during on-site operations are promptly communicated to the development team for timely resolution. Implementing these strategies can better manage and maintain the system, ensuring stable long-term operation and

adaptability to changes and challenges.

PROJECT MANAGEMENT

PROJECT ESTIMATION:

Due to the subjective nature of Delphi estimation, exploring more accurate estimation methods such as PERT and function point estimation is recommended. Prioritize the use of baseline model data for setting project target values, as results based on predictive values often prove more accurate and reliable. Project estimation results should be considered as alternative plans for determining project target values.

PROJECT PLANNING AND MONITORING:

Suggest integrating various resources invested in operations such as personnel, equipment, and tools into the unified control of research and development projects. Develop detailed communication plans, ensuring that relevant stakeholders involved in product handover understand and follow them. Regularly monitor and review the product handover process to address any delays or changes.

PEER REVIEWS:

Recommend further strengthening peer reviews and issue analysis. Consider project types, development languages, and project team differences when establishing more reasonable review procedures. Emphasize reviews in critical areas to improve the effectiveness of defect discovery. Support

QUALITY CONTROL:

In quality control work, the checklist for product process inspections should not be too extensive. Select 5-10 important items for each process, and periodically update and iterate to improve execution efficiency and quality. Ensure that the product process inspection sheet remains consistent with actual conditions and the latest standards through periodic reviews and analyses.

ROOT CAUSE ANALYSIS:

When encountering problems in projects, commonly used analysis methods and project characteristics may introduce some subjectivity. Improve the accuracy of estimation results by using more baseline data and more accurate estimation methods.

PROCESS MANAGEMENT

PROCESS ASSET MANAGEMENT:

Although we have established a comprehensive organizational asset repository, the method for employees to access these assets is not well-established. It is suggested to publish the ways to obtain these assets within the organization to allow employees to access them more conveniently.

SENIOR GOVERNANCE:

Design and implement an effective performance evaluation system; strengthen personnel capability development; actively participate in organizational and project work to improve project control efficiency.

Relevance

Through this HM Practices appraisal and improvement, the organization has achieved a high level of maturity and process capability in management. The project implementation has reached the level of quantitative management, enabling the use of various statistical tools to analyze collected data, providing valuable conclusions and models. Significant improvements have been observed in quality, cost, risk control, and customer satisfaction. This further promotes internal performance management within the company, making departmental and employee performance more transparent and evidence-based.

ENHANCING PRODUCT QUALITY AND CUSTOMER SATISFACTION:

Establish effective quality management processes and continuously improve and optimize them to enhance product quality and customer satisfaction. Through standardized quality management processes, the organization can provide higher quality products and services, meet customer needs and expectations, and improve customer satisfaction.

IMPROVING ENGINEERING MANAGEMENT CAPABILITIES AND EFFICIENCY:

Establish a unified organizational process management framework and continuously improve and optimize it to enhance engineering management capabilities and efficiency. Through standardized engineering management processes, the organization can better plan, execute, and control projects, improving engineering management efficiency and quality.

OPTIMIZING RESOURCE UTILIZATION AND COST CONTROL:

Establish a unified process management framework and continuously improve and optimize it to improve resource utilization efficiency and cost control. Through standardized process management and optimization, the organization can better plan and allocate resources, reduce waste and costs, and improve economic efficiency and competitiveness.

In summary, this appraisal helps the organization improve software development and maintenance quality, reduce costs, enhance cooperation and communication within the organization, improve management capabilities, boost organizational credibility and competitiveness, and improve customer satisfaction and trust. It holds significant practical significance.

Improvement measures

The EPG team will incorporate all identified weaknesses, issues, and suggestions from this appraisal into the "Process Improvement Suggestions and Tracking Table." The EPG team and relevant personnel will systematically identify and discuss each suggestion in the "Process Improvement Suggestions and Tracking Table." Using this as a basis, we will formulate a "Gap Analysis Report" as the current stage's basis for organizational process improvement. In the next phase, we will verify the effectiveness of this organizational process improvement. We will determine improvement priorities and responsible parties, formulate and follow up on specific "Process Improvement Plans." Additionally, standard process documents and templates that require adjustments will be reviewed and published during the

next EPG meeting, synchronously updating the corresponding process asset repository.

The EPG team will monitor the entire improvement process, helping the organization focus on key improvement projects. We will measure and quantitatively analyze the effectiveness of improvements, establish predictive models and trend analyses to forecast software development processes and product quality. Simultaneously, the EPG team will support the software development process, promptly identifying and correcting deviations to ensure projects proceed as planned and achieve expected quality goals.

This appraisal and daily practices have deepened our understanding of HM Practices. Implementing HM Practices is a continuous improvement and optimization process. While there is no perfect process or organization, the pursuit of excellence remains our commitment. Strengthening process management, project management, quality management, organizational culture, communication, and continuous improvement and learning will be our focus. Through training, education, standardization, measurement, monitoring, communication, collaboration, improvement, and learning, we will continually enhance the organization's capability and HM Practices. As the era evolves, the software development and maintenance environment continues to change. Higher demands for software quality have been placed on us. Improving software quality is of great significance for enhancing customer satisfaction, reducing defects and failures, improving development efficiency, lowering maintenance costs, and enhancing competitiveness and brand image. Therefore, we will use HM Practices as an important tool to continuously improve product quality and management capabilities. Once again, I appreciate the hard work and professional guidance of the HM LA in this appraisal.

I hereby authorize and give consent to you and SITARA Technologies to share our appraisal accomplishments on SITARA's publishing channels, giving publicity to our appraisal accomplishment as SITARA Technologies deems it fit.

Anhui Cloud Track Information Technology Co., LTD.

Sponsor: Zhang Jingzhi

November 16th, 2023