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

感谢您接受我们的邀请，与 5 名外部 ATM 和 1 个内部 ATM 和您的认证注册翻译一起领导我们公司的高成熟度范围评估。由您提议的 5 个外部 ATM 从外部角度为我们公司提出了改进机会。在这次高成熟度评估中，我们进行了多次访谈和文件审查。通过利用贵公司丰富的经验和专业技能，我们对我公司的 CMMI 高级成熟度实施状况有了全面的了解。在本次评估结束后，我们获得了一系列宝贵的建议和改进意见，以进一步提升我们的运营和管理能力。本次评估总共发现了 36 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 9 条，项目管理 8 条，支持 8 条，过程管理 11 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，一致认为主发现改进项与公司的实际情况高度符合，符合度为 95%。

二、经验教训

我们从工程管理、项目管理、支持、过程管理四个方面为切入点分别进行详细总结。

工程管理

在项目开发过程中，发现有死代码，及时删除死代码是必要的。删除死代码可以使代码看着更整洁，我们也会使用自动化工具，培养团队成员删除无用的代码。并在代码中对关键部分和使用外部服务部分增加详细的注释内容，对于后期的维护工作是有利的，使代码更易于维护和扩展，利于项目组中新成员的加入对代码的理解效率，提高工作效率。

在项目设计中，详细设计说明书中增加对组件内容的描述，避免一些需求上的误解，减少调试和修改的工作量，提高代码的可维护性，减少了后期维护的工作量。项目中使用了不同的数据库，也需要明确接口使用的是哪种数据库，在接口完整性检查单中应该针对每种数据库单独列出连接检查项，还需要加入可能的认证授权、安全性、网络连接等方面的检查，以确保系统的可靠性和稳定性。

在集成测试中，也要加入明确的退出准则，设定合适的集成测试用例覆盖率目标，设定合适的缺陷修复率，确保缺陷能够得到及时的解决。

项目管理

回顾项目中的估算过程，我们只在项目初期进行了两次估算，前期的估算和项目过程中的实际结果可能偏差较大，随着项目的进行和获取信息量的增加，建议增加估算次数，优化初期估算结果。在后续的项目估算中，增加估算的频率，例如在项目的不同阶段或关键里程碑上进行估算，以更准确地预测项目的成本、时间和资源需求等。并在项目过程中持续监控实际结果和估算的差异，并及时调整项目计划和估算。更好地应对变化和风险，避免偏差进一步扩大。对估算的偏差进行分析和反馈，不断学习和改进估算方法和过程。通过积累经验和反馈，逐渐提高估算的准确性和可靠性。

分析项目执行过程中的偏差情况，如果只考虑实际估算的结果，没有将冗余偏差

分配到各个阶段，就无法在生命周期阶段中有效地进行工作量的监控和控制。在估算过程中，除了考虑实际估算结果，还要考虑冗余偏差，即额外的工作量用于应对不确定性和风险；将冗余偏差分配到各个阶段，根据项目的特点和风险分布，合理分配额外的工作量，持续性的监控工作量的实际情况，并与估算结果进行比较，确保偏差不超过所设定的限制。

审查项目中的需求变更情况，包括变更的频率、影响范围和处理方式。识别需求变更对干系人和项目交付的影响，如进度延迟、成本增加等。基于经验教训，加强需求管理和变更控制，确保变更经过适当的评估和批准，以减少对项目的不利影响。具体措施如下：于受影响的干系人进行积极的沟通和协调，确保他们了解变更的原因、影响和计划。解释变更的背景和目标，并与干系人共同讨论和指定解决方案。根据变更的性质和干系人的需求，重新规划干系人的参与。确保干系人的参与得到充分确认，并与他们协商达成共识。在变更实施过程中，持续监控干系人的反馈和参与情况。根据干系人的反馈和变更的实际效果，及时调整干系人的计划和参与方式，确保项目的成功实施。

支持

在质量保证过程中，我们对项目的审计内容应包含各个过程和工作产品的关键内容，后续我们将对项目的过程和工作产品进行梳理，补充一些关键的检查项，更加关注一些深层次的内容，比如数据的准确性和合理性等，进一步提升项目和产品质量。同时，我们也会将这些作为改进建议提交 EPG，促进标准过程的持续优化和改进。

在配置管理中，我们要加强对配置活动的分析，尤其是对项目变更活动，需要加强对频繁变动的配置项的审计和监控，确定配置项的完整性、准确性和合规性，并

对相关过程和规程进行改进和优化。

在培训方面，战略培训计划和短期培训计划之间的映射关系不明确，不能更好地评估培训活动的有效性，应明确短期计划来建立和提高培训能力，以实现战略培训计划的目标。

员工知识技能矩阵数据收集的过程中，技术分数不合理，存在数据失真的情况，应加大对该数据的采集和监控力度，保障获取到的原始数据的准备性。

过程管理

在制定 QPPO 时，组织识别客户满意度作为远景商业目标时，应该使用过程因素和非过程因素两种管控方式，并进行加以区分，因为非过程因素虽然无法进行量化但对目标达成也是有帮助的。并且在使用控制图进行建模时，应对数据进行裁剪只保留项目干系人，以保障过程的稳定性，预测的准备性。然而，分解过程中应该估算选择的各个过程对商业目标的贡献，这样可以确定关键的过程及子过程。推广执行报告使用了一些统计方法，但对商业目标的影响未明确，不利于高层管理者进行决策。

建立项目级 QPPO 时，在数据采集方面，对于员工知识技能矩阵中的能力指标，应该与项目强相关，并且在对技能矩阵进行裁剪的过程中应该只包含本项目中的人员，避免使用其他数据，造成预测偏差。

对于组织过程资产库对购买规程的定义，明确购买范围、方式、时机、流程等；组织度量库中的《度量与性能管理计划》需要确定缺陷数据的来源，比如：测试阶段、用户反馈、问题跟踪，方便数据的采集分析。

在 CAR 的原因分析报告中，应该详细估算明确的成本，包含：时间成本、高层支持、难易程度和其他资源。并且在原因分析报告的措施方案中，应该详细估算不

同方案的投入成本系数，便于评估最优方案。

三、现实意义

在质量、成本、风险控制以及客户满意度方面，组织有了显著的提升。帮助组织加强了过程能力，质量得到了明显改善，成本控制得到了优化，风险管理也变得更加有效，客户满意度得到了显著提升。这些成绩的取得表明组织在向高质量、高效率的目标迈进迈出了坚实的一步。

也对公司内部的绩效管理起到了促进作用。通过对过程和绩效的量化评估，使部门绩效和员工绩效更加公开透明，有据可依。这为激励员工参与过程改进和推动整个组织不断提升提供了有效手段。

1. 提高过程质量和效率：CMMI5再次评估实施后，组织的过程成熟度得到提升，过程质量和效率显著提高，产品和服务交付更加高效和可靠。

2. 提供改进方向：评估结果能够为组织指出过程改进的方向和优先级，帮助组织制定有针对性的改进计划。

3. 增强客户信心：组织能向客户展示其在软件和系统工程方面达到了最高水平的成熟度，增强客户对组织的信心。

4. 促进组织文化和学习：评估过程中全员参与，促进了改进的文化和学习氛围。

5. 持续改进的动力：评估是持续改进的过程，组织保持持续改进的动力，并逐步实现更高的成熟度。

6. 降低风险和成本：有助于降低项目和业务风险，减少资源浪费，提高效率，从而降低成本。

四、改进措施

我们的过程和项目经历了全面评估。评审结果显示，在工程、项目管理、支持、过程管理方面仍存在一些弱点和改进空间。为了持续提升组织的绩效和客户满意度，我们将积极进行过程改进，特别注重降低遗漏缺陷密度，提升产品质量，以满足客户的高质量需求。

在这次评审中，EPG 小组将所有发现的弱项、问题和建议汇总到《过程改进建议与跟踪表》中，并组织相关方进行深入讨论。我们将采集多个维度的数据，包括改进难易程度、重要性、影响范围和弱项类型等，通过综合评估的形式选择合适的改进措施，并制定详细的改进实施计划。重要的改进项将记录到《组织性能改革计划》表中，并由 EPG 小组进行跟踪、监测和分析。我们将首先在小范围试点，待改进方案经验证有效后，再推广到更多的项目中。具体针对不同的弱项，我们有以下计划：

度量项采集问题：加强评审和数据质量监察，并考虑引入自动化收集工具，以从源头避免数据失真的情况发生。部分指标将纳入员工考核中，进一步推动数据质量的提升。

组织资产库：在遇到相关场景时，员工缺乏相关制度参考可能导致困惑和工作效率下降。我们将组织内部讨论，结合行业经验，制定和完善相关模板和规章制度，例如购买规程，以优先解决这类问题。

培训问题：针对 EPG 和相关利益相关者必须接受充分培训的弱项，我们将购买相关书籍，并邀请外部专家进行定期培训。EPG 小组内将制定学习计划，定期进行学习和提升，并定期向项目组成员进行宣讲，以确保培训效果。

其他问题：针对其他发现的问题，我们将进行深入讨论分析，并由 EPG 小组进行监督和执行，确保改进措施得到有效实施。

我们相信，通过持续的过程改进，我们将不断提升产品质量和管理能力。我们感谢本次评估老师的辛勤付出和专业指导，这为我们进一步完善组织过程和提升绩效提供了宝贵的参考和指引。我们将继续努力，更加积极应用 CMMI5 模型，不断的对过程进行改进，为客户提供更优质的产品和服务。

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。

郑州迪维勒普科技有限公司

发起人：

2023 年 08 月 08 日

EXECUTIVE SESSION BRIEFING - SPONSOR FEEDBACK

RAGHAV S. NANDYAL
SITARA TECHNOLOGIES PVT. LTD.

Dear Raghav Nandyal:

Overall findings

Thank you for accepting our invitation to lead the high maturity scoped appraisal for our company along with 5 external ATMs and 1 internal ATM and your certified registered interpreter. Using 5 external ATMs proposed by you has offered a good external perspective to the nature of our company's improvement opportunities. In this high maturity appraisal, multiple interviews and document reviews were conducted. A comprehensive understanding of our CMMI high maturity implementation status was obtained, leveraging your company's rich experience and expertise. Following the conclusion of this appraisal, a series of valuable recommendations and improvement suggestions were obtained to further enhance our operational and management capabilities. A total of 36 improvement suggestions were identified in this appraisal, categorized into Engineering Management (9), Project Management (8), Support Management (8), and Process Management (11). After thorough deliberation and discussion among key stakeholders, including company executives, EPG process improvement team, project managers, QA, CM, and OT, it was unanimously agreed that the primary improvement suggestions are highly aligned with the company's actual situation, with a compliance rate of 95%.

Lessons Learned

A detailed summary was conducted from four perspectives: Engineering Management, Project Management, Support, and Process Management.

Engineering management

In the project development process, it has been found that there are dead codes, and timely removal of dead codes is necessary. The removal of dead codes allows the code to appear more organized. Automated tools are also used to train team members in deleting unused code. Additionally, detailed comments are added to critical and externally used parts of the code, which facilitates future maintenance work, making the code more maintainable and extensible, and improving the understanding efficiency of new team members in the project group, thus enhancing work efficiency.

In the project design phase, descriptions of component contents are added to the detailed design specification to avoid misunderstandings in requirements, reduce debugging and modification efforts, improve code maintainability, and reduce post-maintenance workload. Different databases are used in the project, and it is necessary to clarify which database the interface uses. The interface integrity check form should list specific connection check items for each database, and include possible checks for authentication, authorization, security, and network connectivity to ensure system reliability and stability.

During integration testing, clear exit criteria should also be included, and appropriate integration test case coverage goals and defect fixing rates should be set to ensure that defects are promptly addressed.

Project management

Looking back at the estimation process in the project, only two estimations were conducted in the early stages of the project. The actual results may deviate significantly from the initial estimations. With the progress of the project and the increase in information availability, it is suggested to increase the frequency of estimations and optimize the initial estimation results. In subsequent project estimations, the frequency of estimations should be increased, for example, at different project stages or key milestones, to predict project costs, time, resource requirements, etc., more accurately. Continuous monitoring of actual results and estimation variances during the project process is necessary, and project plans and estimations should be adjusted promptly to better respond to changes and risks and avoid further deviation expansion. Analysis and feedback on estimation variances should be conducted, continuously learning, and improving estimation methods and processes. By accumulating experience and feedback, the accuracy and reliability of estimations can gradually improve.

The deviation in the project execution process needs to be analyzed. If only the actual estimation results are considered and redundant deviations are not allocated to each stage, effective workload monitoring and control cannot be achieved throughout the project lifecycle. In the estimation process, in addition to considering the actual estimation results, redundant deviations, i.e., additional workload to deal with uncertainties and risks, should also be taken into account. Allocate the redundant deviations to each stage, reasonably distribute the additional workload based on project characteristics and risk distribution, continuously monitor the actual workload situation, and compare it with the estimation results, ensuring that the deviation does not exceed the set limit.

Review the requirements change situation in the project, including the frequency of changes, impact scope, and handling methods. Identify the impact of requirements changes on stakeholders and project deliverables, such as schedule delays and cost increases. Based on lessons learned, strengthen requirements management and change control to ensure that changes undergo appropriate evaluation and approval, reducing adverse effects on the project. Specific measures include actively communicating and coordinating with affected stakeholders to ensure their understanding of the reasons, impacts, and plans for changes. Explain the background and objectives of the changes and engage stakeholders in discussions and solution development. Replan stakeholders' involvement based on the nature of changes and their needs. Ensure stakeholder involvement is fully acknowledged and reach consensus through consultation with them. Continuously monitor stakeholder feedback and involvement during the change implementation process. Based on stakeholder feedback and the actual effects of changes, adjust stakeholder plans and involvement promptly to ensure the successful implementation of the project.

Support

In the quality assurance process, the audit content of the project should include key aspects of each process and work product. Subsequently, the project processes and work products will be reviewed, and some critical inspection items will be supplemented. Greater attention will be given to deeper aspects, such as data accuracy and rationality, to further enhance project and product quality. At the same time, these suggestions will be submitted to the EPG as improvement proposals to promote continuous optimization and enhancement of standard processes.

In configuration management, the analysis of configuration activities, especially project change activities, should be strengthened. It is necessary to enhance the audit and monitoring of frequently changing configuration items, determine the completeness, accuracy, and compliance of configuration items, and improve and optimize related processes and procedures.

Regarding training, the mapping relationship between the strategic training plan and the short-term training plan is not clear, which hinders the effective evaluation of training activities. It is important to clarify the short-term plan to establish and improve training capabilities to achieve the objectives of the strategic training plan.

In the process of collecting data for the employee knowledge and skill matrix, the technical scores are unreasonable, and there are cases of data distortion. Greater efforts should be made to collect and monitor this data to ensure the preparatory nature of the obtained raw data.

Process Management

When formulating the QPPO, customer satisfaction is identified as a visionary business goal by the organization. Two control approaches, process factors, and non-process factors, should be used and distinguished because non-process factors, although not quantifiable, are also helpful in achieving the objectives. When using control charts for modeling, data should be trimmed to retain only project stakeholders, ensuring process stability and predictive readiness. However, during process decomposition, the contribution of each selected process to the business objectives should be estimated to identify key processes and subprocesses. The use of statistical methods in the dissemination and implementation report is not explicitly linked to the business objectives, which hinders decision-making for senior management.

When establishing project-level QPPO, in terms of data collection, the capability indicators in the employee knowledge and skill matrix should be strongly correlated with the project, and the matrix should only include personnel within the project to avoid using other data, leading to predictive deviations.

For the definition of purchasing regulations in the organizational process assets repository, the scope, methods, timing, and processes for purchasing should be clearly specified.

The "Metrics and Performance Management Plan" in the organizational measurement repository needs to determine the sources of defect data, such as testing stages, user feedback, and issue tracking, to facilitate data collection and analysis.

In the cause analysis report of CAR, detailed estimates of explicit costs should be included, encompassing time costs, top-level support, difficulty levels, and other resources. Additionally, in the action plan of the cause analysis report, detailed estimates of cost coefficients for different options should be provided to facilitate the evaluation of the optimal solution.

Relevance

Significant improvements have been achieved in quality, cost, risk control, and customer satisfaction. The organization's process capability has been strengthened, resulting in noticeable improvements in quality, optimized cost control, more effective risk management, and a significant increase in customer satisfaction. These achievements demonstrate a solid step towards the organization's goals of high quality and efficiency.

It has also played a promoting role in internal performance management within the company. Through quantified appraisals of processes and performance, departmental and employee performances become more transparent and evidence-based, providing effective means to motivate employee engagement in process improvement and driving continuous organizational enhancement.

Improved Process Quality and Efficiency: The sustained implementation of CMMI HM practices has elevated the organization's process maturity, leading to significantly improved process quality and efficiency, resulting in more efficient and reliable product and service delivery.

Providing Improvement Direction: The appraisal results provide the organization with directions and priorities for process improvement, assisting in the development of targeted improvement plans.

Enhancing Customer Confidence: The organization can demonstrate its highest level of maturity in software and systems engineering to customers, thereby enhancing customer confidence in the organization.

Promoting Organizational Culture and Learning: The full participation of all members during the appraisal promotes a culture of improvement and a learning environment.

Driving Continuous Improvement: The appraisal is part of a continuous improvement process, providing the organization with the drive to achieve higher levels of maturity gradually.

Reducing Risks and Costs: It helps to mitigate project and business risks, reduce resource waste, improve efficiency, and thus lower costs.

Improvement measures

Our processes and projects have undergone a comprehensive appraisal. The review results indicate that there are still some weaknesses and areas for improvement in engineering, project management, support, and process management. To continuously enhance the organization's performance and customer satisfaction, process improvement will be actively pursued, with particular emphasis on reducing defect density, enhancing product quality, and meeting high-quality customer demands.

In this review, the EPG team will compile all identified weaknesses, issues, and suggestions into the "Process Improvement Recommendations and Tracking Table" and organize in-depth discussions with relevant stakeholders. We will collect data from multiple dimensions, including the difficulty of improvement, importance, scope of impact, and types of weaknesses. Through comprehensive evaluations, suitable improvement measures will be selected, and detailed improvement implementation plans will be formulated. Significant improvement items will be recorded in the "Organizational Performance Improvement Plan" and tracked, monitored, and analyzed by the EPG team. We will initially pilot the improvements on a small scale and, once the effectiveness of the improvement measures is validated, extend them to more projects. For different weaknesses, we have the following plans:

Issues with metric data collection: Strengthen reviews and data quality monitoring and consider introducing automated collection tools to prevent data distortion from the source. Some indicators will be incorporated into employee appraisals to further promote data quality improvement.

Organization assets repository: In situations where employees lack relevant policy references, confusion and reduced work efficiency may occur. We will hold internal discussions within the organization, combining industry experience to develop and refine relevant templates and regulations, such as procurement procedures, to address these issues as a priority.

Training issues: For weaknesses identified in EPG and related stakeholders requiring comprehensive training, we will purchase relevant books and invite external experts for regular training. The EPG team will develop a learning plan, engage in periodic learning and improvement, and regularly present to project team members to ensure the effectiveness of training.

Other issues: For other identified issues, in-depth discussions and analysis will be conducted, with supervision and implementation by the EPG team to ensure effective execution of improvement measures.

We believe that through continuous process improvement, we will continuously enhance product quality and management capabilities. We extend our gratitude to the HMLA and ATMs for their hard work and professional guidance, which provides valuable reference and guidance for further refining organizational processes and enhancing performance. We will continue to exert more effort in applying the CMMI5 model, continuously improving processes, and providing customers with higher quality products and services.

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.

ZhengZhou Develop Technology Co., Ltd.

郑州迪维勒普科技有限公司

Sponsor: Yue Xin

August 8th, 2023