

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 6 名外部 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 为我们公司的改进机会提供了一个很好的外部视角。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 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 32 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 7 条，项目管理 12 条，支持 10 条，过程管理 3 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

需求方面《需求跟踪矩阵》中对需求虽然有优先级的划分，但没有明确如果需求无法实现或延迟会造成什么影响。需要对不同优先级需求未能在规定时间内完成造成的影响做进一步明确，从而更好地平衡需求和约束。明确项目交付的时间，与客户沟通各需求的优先级及需求未在规定时间内完成的影响；在《需求跟踪矩阵》增加影响列，明确各优先级需求无法在规定时间内完成造成的影响。另外编码路径能快速识别和定位需求，我们需要在文档中明确需求的编码路径，实现从需求、设计、开发、测试完整的追溯，确保符合客户对产品的要求。

我们在 UI 界面设计过程中灵活性较高。但是我们也意识到，制定关于 UI 界面等设计的标准是很重要的，可以为后续工作带来不少好处，可以确保整个项目或组织中，用户界面的外观、交互和行为保持一致。有了 UI 设计标准，设计师和开发人员能更快的进行工作，并保证界面的一致性和稳定性。通过制定 UI 设计标准，可以确保界面的美观、专业。后面会在设计标准方面持续优化。

另外编码过程还存在一些细节上的不足，在源代码审查中，变量命名不规范。规范命名，并且命名要准确，这样有助于后期维护，也能更好的了解代码逻辑。

项目管理

项目与 EPG 的协同拉通，需要更加的顺畅高效，一些项目没有标注组织测量库中用于估算的相关数据。，需要在历史数据采集中明确标识出历史生产率，以便为项目经理的估算和计划提供更好的帮助。在历史数据中明确表示出历史生产效率的来源，即从 EPG 所统计的出的历史生产率中得来，来自于组织度量库。同时项目经理后

续在估算过程中与需求、开发主管、开发成员、测试等角色进行加强拉通，多征询各方意见。最终在各方意见参考和多因素综合考虑的情况下结合自身的经验和专业知识进行估算。

在项目估算时，优秀的人员和新人的产能不同，易造成估算的偏差，建议分级细化，让项目经理有更准确的参考和依据，缩小因人员不同给估算带来的偏差。在后续项目估算过程中，更加充分强化人员效率差异的分析，同时在项目进行的后续，由一名资深开发作为开发技术总负责和把控，由其针对人员评估情况安排不同的开发人员进行各自的开发任务，同时我们所做的开发内容和规范在概设、详设、接口设计等进行规范，使大家了解一致。

项目过程监控对关键依赖缺少有效监控，建议在项目的管理例会中审查和关注关键依赖，并在无法满足依赖关系时，提前通知所有受影响的干系人。注重项目成员的拉通。在项目计划阶段，关键依赖是项目成功的重要因素之一。为了有效地监控和管理项目的关键依赖，将会采取几个措施，包含：确定关键依赖、制定计划和时间表、监控进展、风险管理、沟通和合作加强、变更管理、控制和报告等。有效地监控和管理项目的关键依赖项，确保项目按计划顺利进行，并最大程度地降低项目失败的风险。同时在关键依赖无法满足时，项目团队灵活应对，并与相关方进行沟通和协调，以寻找替代方案、重新评估计划，并采取适当的风险管理措施。

支持

在质量控制工作中，我们需要对常见的不符合项进行概括和量化分析，总结这些不符合项目之间的共同问题。我们需要深入分析这些问题的根本原因和严重程度，并根据不同的根本原因提出相应的改进措施。最后，我们将向 EPG 和高层经理提出针

对流程改进的建议。

另外目前项目目标聚焦于项目及时交付和项目上线成功率等这些结果性目标，这是不足的。后续管理将内部质量保证过程和产品质量作为公司目标的基础。更加关注质量保证过程的目标达成，例如将不符合项关闭率、测试缺陷关闭率、测试用例覆盖率也作为项目目标，进一步加强 QA 审计结果的分析应用，将高频问题转化为检查项，持续优化过程和产品检查单，加强审计结果的纵向跟踪和跨项目分析。进一步加强同行评审，遵循同行评审 123 准则，同行评审准备时间等于(或大于)开会时间，同行评审期间发现的缺陷数量应该是同行评审准备期间发现的缺陷数量 2 倍以上，同行评审发现缺陷的效率是测试发现缺陷的 3 倍。

过程管理

进一步提升组织资产库复用方法，有效地提高工作效率、减少重复劳动，并确保产品和服务的一致性和质量。同时，还可以促进知识的共享和团队之间的合作，提升组织的整体能力和竞争力。将组织内常用的文档、模板、流程等标准化，并存储在资产库中。团队成员可以根据需要从资产库中获取这些标准化的资产，避免重复编写和设计，节省时间和精力。例如，可以建立项目计划、需求文档、测试用例等的标准模板，供团队成员参考和使用。

将组织内使用的工具和技术存储在资产库中，供其他项目和团队共享和使用。提高工作效率和一致性，并推动技术的传承和发展。进一步引入新的开发工具和测试工具，供开发人员和测试人员使用。提升开发测试的智能化水平，降本增效。

三、现实意义

通过本次 CMMI5 的再次认证评估及改进，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。进一步也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. 提高项目成功率：建立有效的项目管理过程，并通过持续的过程改进和优化，提高项目管理的能力和效率。这将帮助组织更好地管理项目风险，做出明智的决策，并及时纠正和改进项目过程，从而提高项目的成功率。
2. 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。
3. 提高工程管理能力 and 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，提高工程管理的效率和能力。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。
4. 增强组织竞争力：CMMI5 认证是国际上广泛认可的工程管理能力认证，具有较高的信誉度。获得认证可以证明组织在工程管理方面具有高度的成熟度和能力，提高了组织在市场竞争中的地位和竞争力。这将有助于组织吸引更多的客户和合作伙伴，获取更多的商机和项目。
5. 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。
6. 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、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。

《过程改进计划》制定我们详细的的活动步骤、试点计划、推广方案等，高层经理、EPG 成员进行研讨改进实施注意事项及潜在障碍和可能风险，公司高层经理对过程改进资金、培训等资源给予了强大的支持。改进实施过程中，相关人员也积极配合，选择恰当的项目做改进试点，试点反馈有效后逐步扩大推广范围。

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。


杭州天宽科技有限公司
发起人：徐宏
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330198013606

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 6 external ATMs 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. Multiple interviews and document reviews were conducted during this high maturity appraisal. By leveraging your rich experience and professional skills, we have gained comprehensive insights into our company's CMMI maturity implementation status. At the conclusion of this appraisal, we have a set of valuable recommendations and improvement suggestions with which to further enhance our operational and management capabilities.

A summary and evaluation of the organization's strengths and weaknesses in process improvement were conducted, and a next-step action plan was formulated. This has further emphasized the importance and urgency of process improvement, laying the foundation for driving the organization's continuous development and improving competitiveness. A total of 32 improvement suggestions were identified in this appraisal. These suggestions were categorized into four areas: Engineering Management (7), Project Management (12), Support Management (10), and Process Management (3).

Through discussions and studies involving key roles in process improvement, such as senior managers, the EPG process improvement team, project managers, QA, CM, and OT, it was unanimously agreed that the identified improvement items closely align with the company's actual situation, with a compliance rate of 95%.

Lessons Learned

We conducted a comprehensive summary from four focal points: engineering management, project management, support management, and process management.

Engineering management

In the aspect of requirements, although the "Requirements Traceability Matrix" prioritizes the requirements, it doesn't clearly define the impacts if a requirement cannot be implemented or is delayed. It is necessary to further clarify the impacts of unfulfilled requirements within the specified time frame for different priority levels, to better balance requirements and constraints. This can be achieved by specifying the project delivery time and communicating with the client about the priority of each requirement and the impact of not meeting the specified time frame. Additionally, adding an "Impact" column to the "Requirements Traceability Matrix" can explicitly state the impacts of unfulfilled requirements within the specified time frame for each priority level. Moreover, a coding path that can quickly identify and trace requirements is important. It is necessary to explicitly define the coding path for requirements in the documentation, enabling a complete traceability from requirements to design, development, and testing, ensuring compliance with customer expectations.

In the UI interface design process, we have a high degree of flexibility. However, we also recognize the importance of establishing standards for UI interface and design, as it brings many benefits to subsequent work. It ensures consistency in the appearance, interaction, and behavior of the user interface throughout the entire project or organization. With UI design standards in place, designers and developers can work more efficiently while maintaining consistency and stability in the interface. By establishing UI design standards, we can ensure aesthetic appeal and professionalism. Continuous optimization will be carried out in the aspect of design standards.

Furthermore, there are some shortcomings in the coding process, particularly in variable naming during source code reviews. It is important to follow standard naming conventions and ensure accurate naming, as it aids in maintenance and better understanding of the code logic.

Project management

To enhance the collaboration and coordination between projects and the EPG, it is important to ensure smoother and more efficient communication. Some projects did not mark the relevant data used from the organizational measurement repository for estimation. It is recommended to clearly identify historical productivity in data collection, providing better assistance for project managers' estimation and planning. The source of historical productivity should be explicitly indicated in historical data, specifying that it comes from the historical productivity statistics collected by the EPG from the organizational measurement repository. In the estimation process, project managers should strengthen communication and consultation with stakeholders such as requirements, development supervisors, development team members, and testing. Ultimately, estimation should be based on a comprehensive consideration of various factors, considering stakeholders' opinions, and combining it with their own experience and expertise.

During project estimation, the different productivity levels between experienced and junior team members can lead to estimation deviations. It is recommended to refine the classification to provide project managers with more accurate references and bases, narrowing the deviation caused by personnel differences. In subsequent project estimation processes, it is important to reinforce the analysis of personnel efficiency differences. Additionally, a senior developer can be appointed as the overall technical lead and coordinator, assigning development tasks to different team members based on their assessed capabilities. Furthermore, the development content and standards should be consistently communicated and documented in conceptual design, detailed design, and interface design, ensuring a shared understanding among team members.

Project process monitoring lacks effective control over critical dependencies. It is recommended to review and pay attention to critical dependencies in project management meetings and notify all affected stakeholders in advance if dependencies cannot be met. Emphasizing communication among project team members is essential. During the project planning phase, critical dependencies are one of the key factors for project success. To effectively monitor and manage critical dependencies, several measures will be taken, including identifying critical dependencies, developing plans and schedules, monitoring progress, risk management, strengthening communication and collaboration, change management, control, and reporting. Effectively monitoring and managing critical dependencies ensures that the project progresses smoothly according to plan and minimizes the risk of project failure. In case of unmet critical dependencies, the project team should be flexible in response, engaging in communication and coordination with relevant stakeholders to explore alternative solutions, reassess plans, and implement appropriate risk management measures.

Support

In quality control work, it is important to summarize and quantitatively analyze common non-compliances and identify the shared issues across projects. It is crucial to conduct a thorough analysis of the root causes and severity of these issues and propose corresponding improvement measures based on different root causes. Ultimately, recommendations for process improvement will be presented to the EPG and senior managers.

Furthermore, the current project goals primarily focus on outcome-oriented objectives such as timely delivery and project success rate upon deployment, which is insufficient. Moving forward, internal quality assurance processes and product quality will serve as the foundation for company goals. Greater emphasis will be placed on achieving goals related to quality assurance processes. For instance, closure rate of non-compliances, closure rate of test defects, and test case coverage will be included as project goals. Additionally, QA audit results will be more effectively analyzed and applied, with high-frequency issues converted into checklist items. Continuous optimization of process and product checklists will be conducted, along with enhanced longitudinal tracking and cross-project analysis of audit results. Peer reviews will also be strengthened, following the "Peer Review 1-2-3" principle, where the preparation time for peer reviews is equal to or greater than the meeting time, the number of defects discovered during peer reviews should be at least double the number discovered during the preparation period, and the efficiency of defect discovery during peer reviews is three times higher than that of testing.

Process Management

To further enhance the organization's asset reuse approach, it is essential to improve work efficiency, reduce repetitive tasks, and ensure consistency and quality of products and services. Additionally, it promotes knowledge sharing and collaboration among teams, thereby enhancing the overall capability and competitiveness of the organization. Standardizing commonly used documents, templates, and processes within the organization and storing them in an asset repository is crucial. Team members can access these standardized assets from the repository as needed, eliminating the need for redundant writing and designing, thus saving time and effort. For instance, standard templates for project plans, requirement documents, and test cases can be established for team members to reference and utilize.

Storing tools and technologies used within the organization in the asset repository enables their sharing and utilization by other projects and teams. This not only improves work efficiency and consistency but also facilitates the transfer and development of technical expertise. Introducing new development and testing tools for use by developers and testers is also recommended to enhance the intelligence level of development and testing processes, resulting in cost savings and increased effectiveness.

Relevance

Through the re-appraisal of HM appraisal, the organization has achieved a high level of maturity and process capability in management. Project implementation has reached a level of quantitative management, utilizing various statistical tools to analyze collected data and derive valuable insights and models. This provides a reliable basis for management and decision-making. There has been significant improvement in quality, cost, risk control, and customer satisfaction. Furthermore, it has also promoted performance management within the company, making departmental and employee performance more transparent and accountable.

Improving project success rate: Establishing effective project management processes and continuously improving and optimizing them to enhance project management capabilities and efficiency. This will help the organization better manage project risks, make informed decisions, and promptly correct and improve project processes, thus increasing the success rate of projects.

Enhancing product quality and customer satisfaction: Establishing effective quality management processes and continuously improving and optimizing them to improve product quality and customer satisfaction. Through standardized quality management processes, the organization can deliver higher quality products and services, meet customer needs and expectations, and enhance customer satisfaction.

Enhancing engineering management capabilities and efficiency: Establishing a unified organizational-level process management framework and continuously improving and optimizing it to improve engineering management capabilities and efficiency. Through standardized engineering management processes, the organization can better plan, execute, and control projects, thereby improving engineering management efficiency and quality.

Strengthening organizational competitiveness: CMMI Level 5 appraisal is widely recognized internationally to evaluate engineering and management capabilities, with high credibility. Obtaining the HM scope demonstrates the organization's high level of maturity and capability in engineering management, enhancing its position and competitiveness in the market. This will help the organization attract more customers and partners, obtain more business opportunities and projects.

Optimizing resource utilization and cost control: Establishing a unified process management framework and continuously improving and optimizing it to enhance resource utilization efficiency and cost control. Through standardized process management and optimization, the organization can better plan and allocate resources, reduce resource waste and costs, and improve its economic efficiency and competitiveness.

In conclusion, this evaluation has helped our organization improve software development and maintenance quality, reduce costs, promote organizational collaboration and communication, enhance management capabilities, and improve its reputation and competitiveness. It also leads to improved customer satisfaction and trust, making it highly valuable and practical.

Improvement measures

The EPG team will incorporate all identified weaknesses, issues, and suggestions from this appraisal into the "Process Improvement Recommendations and Tracking Sheet." The EPG team and relevant personnel will systematically identify and discuss the recommendations from the sheet, using it as a basis for developing a "Gap Analysis Report" to guide the current phase of organizational process improvement. The effectiveness of these process improvements will be validated in the subsequent phase. Priorities and responsible individuals for the improvements will be determined, and a specific "Process Improvement Plan" will be developed and monitored for execution. Additionally, any necessary adjustments to standard process documents and templates will be reviewed and released during the next EPG meeting, with updates synchronized in the corresponding process asset repository.

The "Process Improvement Plan" will outline detailed activities, pilot plans, and promotion strategies. Senior managers and EPG members will engage in discussions regarding implementation considerations, potential obstacles, and risks. The organization's top management has provided strong support in terms of resources such as funding and training for process improvement initiatives. During the implementation process, relevant personnel will actively cooperate, selecting suitable projects for pilot improvements and gradually expanding their scope after receiving effective feedback.

The EPG team will monitor the entire improvement process, enabling the organization to focus on key improvement projects. The effects of the improvements will be measured and quantitatively analyzed, establishing predictive models and trend analysis to forecast the quality of software development processes and products. This support will ensure timely identification and correction of deviations, ensuring projects proceed as planned and achieve the expected quality objectives.

This appraisal and ongoing practices have deepened our understanding of HM practices. Implementing HM practices is an ongoing process of continuous improvement and optimization. While there are no perfect process systems or organizations, we remain committed to the pursuit of excellence. By strengthening process management, project management, quality management, organizational culture, communication, and continuous improvement and learning, we continuously enhance the organization's capabilities and maturity. As software development and maintenance environments evolve over time, the demand for higher software quality has increased. Enhancing software quality is essential for improving customer satisfaction, reducing defects and failures, increasing development efficiency, reducing maintenance costs, and enhancing competitiveness and brand reputation. Therefore, we will continue to leverage HM practices as a critical tool to continually improve product quality and management capabilities. Once again, we sincerely appreciate the hard work and professional guidance of the appraisal team.



杭州天宽科技有限公司

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.

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Sponsor: Xu Hong



July 18th, 2023