



# 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

在这次 CMMI5 评估中，对公司的工程管理、项目管理、支持和过程管理等方面进行全面的访谈和文件审查。评估师以专业技能和经验，协助我们对公司的 CMMI 实施状况有了全面的了解。在这次评估过程中，在评估师和 ATM 的专业指导下，我们发现了一些改进建议，包括加强对代码规范的培训和管理、完善缺陷管理机制、建立完善的项目管理机制等方面。经过公司管理层和相关关键角色的研究讨论，一致认为本次评估发现改进项与公司的实际情况高度符合，符合度为 95%。我们将积极采纳评估师提出的建议和改进意见，制定详细的改进计划，并组织相关团队共同推动改进措施的实施。我们相信，通过这些改进措施的落实，我们将进一步提升我们的工程能力和质量管理水平，实现持续改进和组织发展的目标。我们相信，通过这些改进措施的实施，公司将进一步提高工程能力和质量管理水平，提高项目管理的效率和成功率，优化资源利用和成本控制，提升竞争力和赢得市场认可，实现持续改进和组织发展。

## 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

以往在编写代码时，没有遵循一些最佳实践来避免不必要的注释和多余语句，并且未对代码的风格、质量进行检查，系统中存在很多废弃代码和不规范的注释说明。这说明我们需要加强对代码规范的培训和管理，制定合理的编码规范，确保代码的质量和可维护性。我们应该改进代码质量，删除多余不用的代码，更加规范，精简好代码，提升可读性也同时提升性能。同时，我们计划使用 SonarQube（静态代码审查工具）进行代码审查，SonarQube 提供了各种代码质量度量指标，如代码复杂度、代码覆盖率、重复代码、代码注释率等。这些度量指标可以帮助团队了解代码的质量状况，并识别需要改进的领域。

需要纠正涉及总结结果的评估步骤的没有正式纪录问题，这将会导致开发方向不明确，从而导致开发方向出现偏差。我们需要建立起完善的评估步骤和记录机制，确保评估结果的准确性和可追溯性。

还发现项目和测试人员不了解项目中每个功能点的代码行数，这说明我们需要加强对项目和测试人员的培训和管理，让他们了解项目的具体情况，提高工作效率和质量。我们可以根据过去的统计数据计算出每个功能点对应的平均代码行数。收集历史项目的数据，包括功能点和相应的代码行数，然后计算平均值。

此外，在代码开发和测试过程中，没有将 BUG 或缺陷的详细分类。评审结束后，我们会立即定义一套适合我们项目的缺陷分类。这些分类应该能够帮助各组织更好地理解 and 处理缺陷，并提供有关其类型、严重性和影响范围的信息。



目前在各类测试活动中，所有测试用例描述都是按照正常逻辑去测试的，没有进行一些非正常逻辑去进行测试，这表明我们需要加强对测试用例的设计和管理，确保测试的全面性和准确性。尤其是增加负向测试场景这样能更好更全面的测试场景，发现更多的潜在问题，也能够帮助我们测试人员更好的去理解系统行为。这样做可以提高软件使用质量，从而提升客户满意度。

## 项目管理

评审过程中发现在以往的项目估算时，我们无法确保专家评估依据是否准确和全面。这表明我们需要建立起完善的项目管理机制，确保项目估算的准确性和可靠性。在估算时找寻有经验的专家；充分准备估算资料，确保专家能够全面地了解项目情况；建立有效的沟通机制，确保专家之间的信息交流畅通。同时记录每个参与规模功能点估算的专家对于每个估算值的依据，并作为组织经验进行收集，可以促进知识共享、提高估算准确性和可信度、增强团队协作和沟通、支持决策制定以及改进未来项目估算。

在后续问题的原因分析过程中，我们会增加问题发生背景的描述，以提高对问题结果的可理解性，例如事情本身最开始的规划和设计。可以提高对问题结果的可理解性，更好地理解问题背景、提高问题分析的准确性、增强沟通效果、提高解决问题的效率以及增强对解决问题的信心。

为风险和机会制定参数时，需要制定不同的参数，这样更好地理解风险和机会的性质，这有助于我们项目团队更好地评估和管理它们。通过为风险和机会制定不同的参数，项目团队可以更好地管理风险和机会。项目团队可以更好地应对风险并

抓住机会，从而提高项目的成功率。通过为风险和机会制定不同的参数，组织可以了解其现有的流程和能力。通过这种反馈，组织可以改进其流程并提高其能力，以更好地应对风险和抓住机会。

在项目计划修订时，要始终明确记录更新的内容，包括修订的日期、责任人、修改的章节或部分以及具体变更的说明。确保项目参与者明确了解计划书的变更，并保持变更的可追溯性和一致性。将项目计划中对于客户介入的时间、活动和角色也纳入其中，包括明确列出客户需要参与的决策、审批和提供的输入，确保项目团队和客户之间的沟通和期望管理得到良好的支持和协调。

公司团队在发现有些数据不是很合理的时候，要重新收集数据项进行校验对比，或者更改数据项进行分析，并与结果进行对比，以确保数据的准确性。

此外还需加强培训 QA 以理解和学习更好的采样技术，特别是代码模块和统计分析（SPC 技术）是一项值得考虑的投资。

## 支持

之前的审计中收集到的数据分类只有严重程度一种。需要将收集的数据进行更详细的分类：通过结果的类型、项目的类型和团队经验级别更详细的分类，我们可以更好地理解审计结果的种类和项目类型，从而更好地了解项目的整体表现和审计结果；通过了解不同类型的项目和团队经验级别，我们可以识别可能出现的问题和挑战，从而提前采取措施解决；更详细的数据分类可以帮助我们更好地理解数据，从而做出更明智的决策；通过了解问题和挑战，我们可以更有效地分配资源，从而提高审计的效率和效果。



配置审计效率不够高，没有及时发现和解决配置问题。我们需要加强对配置管理的重视，建立起高效的配置审计机制，确保配置的准确性和一致性。

检查表没有定期更新，导致无法获取最新的经验和教训。我们需要建立起定期更新检查表的机制，确保检查的全面性和准确性。

针对需求、开发、测试和设计方面的技术培训较少，导致团队成员在相关领域的知识和技能水平有限。我们需要加强对团队成员的技术培训，提高他们的专业能力和工作效率。我们也意识到使用录制培训视频是一个很好的方法。我们将会把制度培训、各组织标准化流程和 CMMI 知识培训等通用性重复性培训和需求、开发、测试等技术培训等内容录制成视频，让参与培训的同事可以根据自己的时间安排学习时间，并且录制的培训视频可以反复观看，需要学习的同事可以根据自己的学习进度和理解程度，多次观看视频内容，加深对知识点的理解和掌握。录制培训视频可以节约培训成本，尤其是对于重复性培训需求。接下去我们还将会建立起长期跟踪反馈和效果评估机制，持续跟踪员工的培训历程和成长，为员工的职业发展提供支持和指导。

QA 检查单没有定期更新，导致无法及时发现和解决质量问题。我们需要建立起定期更新 QA 检查单的机制，确保质量的可控性和改进的持续性。

组织级资产库长时间没有更新，导致无法及时获取最新的资产信息。我们需要加强对资产库的管理，定期更新和维护资产信息，确保资产的可用性和有效性。要明确更新组织级资产库的方法和频率，包括制定更新资产库的标准流程，明确指定谁负责更新、何时更新、如何更新以及如何进行审核和验证。并确保所有团队成员

知晓和遵守这些规定，提高信息一致性、加强协作和知识管理。对于那些及时、准确地更新资产库的员工或团队，给予适当的激励。

## 过程管理

当前资产的更新频率很低，有些材料已经很陈旧。我们需要后续在公司的 PMS 中建立知识管理系统，存储和共享最新的资产和材料，同时通过培训确保每个组织成员意识到资产更新的重要性，以确保他们能够有效地更新和维护资产，并建立监督机制，定期评估资产的更新情况。

我们急需建立一个明确的问题解决流程，包括问题的记录、分析、解决和验证。这样可以确保每个问题都得到适当的处理和跟踪。记录问题解决的方法和步骤，以便日后参考和复用。这可以包括问题描述、根本原因分析、解决方案的选择和实施等。在问题解决后，记录解决方案的实施情况和效果。这可以包括解决方案的成功率、成本效益、时间节约等。

评审过程中还发现公司中大部分人员都不清楚商业目标这一弱项，这一弱项将对公司带来一些负面影响，比如员工缺乏明确的方向、资源浪费效率低下、影响产品质量、项目失败风险增加、人才流失等问题。我们将加强培训、会议等沟通方式让员工充分了解公司的目标，确保每个人都可以围着一个目标共同努力。

接下去我们将会建立起各项培训的长期跟踪反馈和效果评估机制。包括培训后的实际应用跟踪，了解他们在工作中是否能够应用培训所学的知识技能；通过定期组织复习和巩固培训内容的活动，帮助员工巩固所学的知识技能；按照不同培训内容，定期进行培训效果评估；建立员工培训档案并定期更新等工作。



### 三、现实意义

作为杭州慧政软件开发有限公司的发起人，我非常高兴地看到我们公司成功参与了 CMMI5 评审，参与 CMMI5 评审和培训对我们的意义是非常重大的。

首先，CMMI5 评审是对我们公司工程能力、各组织管理能力和协调支持水平的一次全面检验。通过这次评估和一系列改进措施的提出，让我们在工程管理能力、项目管理能力、支持能力和过程管理能力等方面取得了巨大的进步。

其次，CMMI5 评审是对我们公司竞争力和市场认可的一次重要证明。CMMI5 评级是全球范围内对组织工程能力的最高认证，具有很高的信誉和影响力。通过参与评审并获得 CMMI5 认证，将会增强了客户对我们的信任和选择我们的意愿。这将有助于我们在竞争激烈的市场中脱颖而出，赢得更多的商机和合作机会。

最后，CMMI5 评审是推动我们公司持续改进和组织发展的重要机制。评审结果中的建议和改进意见为我们提供了宝贵的指导和方向，帮助我们更好地识别和解决问题，不断提升我们的工程能力和质量管理水平。通过实施这些改进措施，我们将进一步提高项目管理的效率和成功率，优化资源利用和成本控制，增强我们的竞争力和市场认可度。同时，评审过程中的经验和教训也将成为我们组织学习和成长的重要资产，为我们未来的发展提供宝贵的借鉴和经验。

总之，CMMI5 评审对我们公司具有重要的意义。它不仅是对我们过去工作的肯定和认可，也是推动我们持续改进和提升的有力驱动。我相信，通过不断地改进和创新，我们将进一步提升我们的工程能力和质量管理水平，实现公司的长期发展和成功。

## 四、改进措施

在本次 CMMI5 评审后，我们将采取以下详细的改进措施来进一步提升我们的工程能力和质量管理水平，并确保所有改进措施的落地：

**过程改进建议与跟踪表：**EPG 小组将建立一个《过程改进建议与跟踪表》，该表将记录评审中发现的弱项、问题和建议，并对其进行分类和优先级排序。EPG 小组将定期更新和维护该表，并确保每一项建议都得到适当的跟踪和处理。

**差距分析报告：**EPG 小组和相关人员将针对《过程改进建议与跟踪表》中的建议逐项进行识别和讨论。他们将分析每一项建议的原因和影响，并制定《差距分析报告》。该报告将详细描述每一项建议的改进目标、计划和措施，并提供相应的时间表 and 责任人。

**改进措施的试点验证：**EPG 小组将对《差距分析报告》中的改进措施进行试点验证。他们将选择一些具有代表性和重要性的项目或部门，对改进措施进行实施和监控。通过试点验证，我们可以评估改进措施的效果和可行性，并及时调整和优化。

**持续改进和监控：**EPG 小组将定期评估和监控改进措施的执行情况和效果。他们将收集和分析相关数据和指标，评估改进措施的有效性和可持续性。EPG 小组还将定期组织和推动内部的经验分享和培训学习活动，以促进知识和经验的传递和共享。

通过以上的改进措施，我们将确保评审中发现的弱项和问题得到有效的解决和改进。同时，我们也将建立一个持续改进的机制和文化，以确保我们的工程能力和质量管理水平不断提升。我们将密切关注改进措施的执行情况，并不断优化和调整这些措施，以实现我们的改进目标并取得持续的成功。同时，我们也将借鉴和学习其他优秀企业的经验和做法，持续遵循 CMMI 的标准和要求，不断创新和改进，推动公司的持续发展和成功。





慧政软件  
Wit Software

杭州慧政软件开发有限公司

最后再次真诚感谢本次 CMMI5 评审小组所有参与人员的付出。

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。

杭州慧政软件开发有限公司

发起人:

2023 年 10 月 14 日





慧政软件

Wit Software

杭州慧政软件开发有限公司

## EXECUTIVE SESSION BRIEFING - SPONSOR FEEDBACK

**RAGHAV S. NANDYAL**

**SITARA TECHNOLOGIES PVT. LTD.**

Dear Raghav Nandyal:



## Overall findings

In this CMMI HM appraisal, comprehensive interviews and document reviews were conducted on various aspects of the company, including engineering management, project management, support, and process management. With the assistance of professional skills and experience, the HM LA provided us with a comprehensive understanding of the company's CMMI implementation status. During this appraisal process, guided by the HM LA and the ATM (Appraisal Team Member), we identified several improvement proposals, such as strengthening training and management related to code standards, enhancing defect management mechanisms, and establishing robust project management procedures.

Following research and discussions involving the company's management team and key stakeholders, it was unanimously agreed that **the improvement findings from this appraisal align closely with the company's actual situation, with a conformance rate of 95%**. We are committed to actively embracing the LA's proposals and improvement suggestions. We will formulate detailed improvement plans and organize relevant teams to collaboratively drive the implementation of these measures. We believe that through the implementation of these improvement measures, we will further enhance our engineering capabilities and quality management, thereby achieving our goals of continuous improvement and organizational development. By putting these improvements into action, we are confident that the company will elevate its engineering capabilities, improve project management efficiency and success rates, optimize resource utilization and cost control, enhance competitiveness, gain market recognition, and achieve ongoing improvement and organizational growth.

## Lessons Learned

Detailed summaries were conducted from four perspectives: engineering management, project management, support, and process management.

## Engineering management

Code style and quality were not routinely checked, resulting in the presence of deprecated code and non-standard comments. There is a need to strengthen code standard training and management, establish reasonable coding guidelines, and ensure code quality and maintainability. Code quality should be improved by removing excess code, standardizing, simplifying, enhancing readability, and improving performance. SonarQube, a static code analysis tool, will be utilized to review the code. Various code quality metrics such as code complexity, coverage, duplicate code, and comment rates are provided by SonarQube. These metrics help the team understand code quality and areas for improvement.

The absence of formal records for summarizing appraisal steps has been identified, potentially leading to unclear development directions. A comprehensive appraisal process and documentation mechanism will be established to ensure the accuracy and traceability of appraisal results.

Teams were found to lack knowledge of line counts for each function point within projects. Enhancing training and management for project and testing teams to improve their understanding of project specifics will increase efficiency and quality. Historical project data, including function points and corresponding line counts, will be collected to calculate average line counts.

Detailed defect categorization during code development and testing phases is not consistently practiced. After the review, a comprehensive defect categorization system tailored to our project's needs will be defined.

Testing practices: Testing cases have typically followed normal logical paths. The need to strengthen test case design and management to ensure comprehensiveness and accuracy has been recognized. Adding negative test scenarios will better uncover potential issues and enhance testers' understanding of system behavior, thus improving software quality and customer satisfaction.

## Project management

Issues in past project estimations have been identified. A robust project management mechanism will ensure the accuracy and reliability of project estimates. Expertise in estimation, comprehensive estimation data preparation, and effective communication mechanisms among experts will be emphasized. The basis for each expert's estimation will be documented and collected as organizational knowledge to enhance estimation accuracy and credibility.

Root cause analysis: Enhancing problem descriptions to include the problem's background will improve problem analysis, understanding, communication, efficiency, and confidence in issue resolution.

Risk and opportunity parameters: Different parameters will be established to better understand the nature of risks and opportunities. This approach will lead to more effective risk mitigation and opportunity utilization, ultimately increasing project success rates.

Project plan revisions: Clear records of updates will be maintained, including update dates, responsible parties, modified sections, and specific change explanations. Customer involvement times, activities, and roles in the project plan will be specified.

Data validation: When data appears unreasonable, it will be revalidated and compared to ensure data accuracy. Training in quality assurance, especially in sampling techniques and statistical process control (SPC), will be considered.

## Support

Previously, data collected during audits was categorized based on severity alone. It's essential to introduce more detailed categorization, considering aspects like the type of outcomes, project types, and the experience level of the teams. This finer classification provides a better understanding of the types of audit results and project scenarios, which, in turn, helps us gain deeper insights into overall project performance. By recognizing potential issues and challenges associated with different project types and team experience levels, we can proactively take measures to address them. This more detailed data classification empowers us to make wiser decisions. Understanding the challenges allows us to allocate resources more effectively, thereby improving the efficiency and effectiveness of audits.

Configuration audits have not been as efficient as desired, resulting in delayed detection and resolution of configuration issues. We need to intensify our focus on configuration management and establish an efficient mechanism for configuration audits. This will ensure the accuracy and consistency of configurations.

The infrequent updates of our inspection checklist have made it challenging to capture the latest experiences and lessons learned. We should establish a routine for updating the checklist to ensure comprehensiveness and accuracy.

Insufficient technical training in areas like requirements, development, testing, and design has left team members with limited knowledge and skills in these domains. We need to bolster technical training for team members to enhance their expertise and work efficiency. We recognize that recording training videos is a valuable approach. We will create recorded training videos for recurring, generic training needs, such as institutional training, standardized processes, and CMMI knowledge training. We'll also address specific technical training needs for requirements, development, testing, and more. These videos offer flexibility in learning, allowing colleagues to study at their own pace and review content multiple times as needed, deepening their understanding and mastery of key concepts. This approach also yields cost savings, particularly for recurring training requirements. Furthermore, we plan to establish a long-term feedback and effectiveness evaluation system to continually monitor employees' training progress and development, providing support and guidance for their career growth.

The QA checklist has not been receiving regular updates, which has hindered the timely detection and resolution of quality issues. We must establish a mechanism for routinely updating the QA checklist to ensure quality control and continuous improvement.

The organization-level asset repository has remained unattended for a significant period, making it challenging to access the latest asset information. We need to enhance asset repository management by regularly updating and maintaining asset information. This ensures the availability and effectiveness of these assets. The process should include clearly defined methods and frequencies for updating the asset repository, with the development of standardized procedures that specify who is responsible for updates, when updates should occur, the update process itself, and how audits and validations will be conducted. To ensure compliance, all team members should be made aware of and adhere to these guidelines, which enhances information consistency, strengthens collaboration, and promotes knowledge management. Incentives should be offered to employees or teams who promptly and accurately update the asset repository.

## Process Management

The current asset update frequency is quite low, with some materials becoming quite outdated. We need to establish a knowledge management system within the company's Project Management System (PMS) to store and share the latest assets and materials. Simultaneously, through training, we must ensure that every organizational member is aware of the importance of asset updates. This will ensure that they can effectively update and maintain assets. Additionally, we should establish a monitoring mechanism for regularly assessing the status of asset updates.

We have an urgent need to establish a well-defined issue resolution process, encompassing issue recording, analysis, resolution, and validation. This ensures that every issue receives appropriate handling and tracking. Documenting the methods and steps for issue resolution is essential for future reference and reuse. This documentation can include issue descriptions, root cause analysis, solution selection, and implementation details. Following issue resolution, it's crucial to record the implementation status and its effectiveness. This can involve tracking success rates, cost-effectiveness, time savings, and more.

During the appraisal process, a significant number of employees were found to be unclear about the company's business objectives. This knowledge gap constitutes a weakness that could lead to several negative impacts, such as resource wastage, reduced efficiency, compromised product quality, increased project failure risks, and talent attrition. To address this, we will enhance communication methods, such as training and meetings, to ensure that all employees have a comprehensive understanding of the company's objectives. This way, everyone can align their efforts toward a common goal.

Moving forward, we will establish a long-term feedback and effectiveness evaluation mechanism for all training initiatives. This will include tracking the practical application of training in the workplace to gauge whether employees can apply their newly acquired knowledge and skills. Regular review and reinforcement activities will be organized to help employees solidify their learning. Periodic evaluations of training effectiveness will be conducted based on different training content. Additionally, we will create and maintain employee training records.

## Relevance

As the sponsor of Hangzhou Wit Software Development Co., Ltd., I am thrilled to see our company's successful participation in the CMMI5 appraisal. Engaging in the CMMI5 appraisal and training holds immense significance for us.

Firstly, the CMMI5 appraisal represents a comprehensive examination of our company's engineering capabilities, organizational management abilities, and coordinated support levels. Through this appraisal and the implementation of a series of improvement measures, we have made significant progress in areas like engineering management, project management, support capabilities, and process management.

Secondly, the HM appraisal serves as a critical validation of our company's competitiveness and market recognition. CMMI5 rating is the highest global certification for an organization's engineering capabilities, known for its high credibility and influence. By participating in the review and achieving CMMI5 certification, we enhance customer trust in us, increasing their willingness to choose our services. This will help us stand out in the highly competitive market, securing more business opportunities and collaborations.

Lastly, the HM appraisal acts as a vital mechanism to drive continuous improvement and organizational development. The proposals and improvement suggestions in the review results provide us with invaluable guidance and direction. They help us better identify and address issues, and continually enhance our engineering capabilities and quality management. By implementing these improvement measures, we will further enhance project management efficiency and success rates, optimize resource utilization, and cost control, and strengthen our competitiveness and market recognition. Moreover, the experiences and lessons learned during the review process will become important assets for our organization's learning and growth, providing valuable insights and experiences for our future development.

In conclusion, the HM appraisal carries significant importance for our company. It not only recognizes and acknowledges our past efforts but also serves as a powerful driver for continuous improvement and enhancement. I believe that through ongoing improvement and innovation, we will further elevate our engineering capabilities and quality management, ultimately achieving the long-term success and development of our company.

## Improvement measures

Following the HM appraisal, our company will implement the following detailed improvement measures to further enhance our engineering capabilities and quality management and ensure the successful implementation of these improvements:

**Process Improvement Proposals & Tracking Table:** The EPG team will establish a "Process Improvement Proposals & Tracking Table." This table will record weaknesses, issues, and suggestions identified during the review, categorize and prioritize them. The EPG team will regularly update and maintain this table, ensuring that each recommendation receives appropriate tracking and attention.

**Gap Analysis Report:** The EPG team and relevant personnel will identify and discuss proposals from the "Process Improvement Proposals & Tracking Table" one by one. They will analyze the reasons and

impacts of each recommendation and create a "Gap Analysis Report." This report will provide a detailed description of improvement objectives, plans, and measures for each recommendation, along with corresponding timelines and responsible individuals.

**Pilot Validation of Improvement Measures:** The EPG team will conduct pilot validations of the improvement measures outlined in the "Gap Analysis Report." They will select representative and critical projects or departments and implement and monitor these measures. Through pilot validation, we can assess the effectiveness and feasibility of the improvement measures and make timely adjustments and optimizations.

**Continuous Improvement and Monitoring:** The EPG team will regularly evaluate and monitor the implementation and effectiveness of improvement measures. They will collect and analyze relevant data and metrics to assess the sustainability and effectiveness of these measures. The EPG team will also organize and promote internal knowledge sharing and training activities regularly to facilitate the transfer and sharing of knowledge and experience.

Through these improvement measures, we will ensure the effective resolution and enhancement of weaknesses and issues identified during the review. Additionally, we will establish a culture of continuous improvement to ensure a continuous elevation of our engineering capabilities and quality management. We will closely monitor the implementation of improvement measures, continuously optimize and adjust them to achieve our improvement objectives and sustain success. Furthermore, we will draw inspiration from and learn from the experiences and practices of other outstanding companies, continuously adhere to CMMI standards and requirements, innovate, and improve, thereby driving the company's sustained development and success.

Lastly, I want to express my sincere gratitude to all the participants of the HM appraisal team for their contributions.

Hangzhou Wit Software Development Co., Ltd.



Sponsor: Ye Hui

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