

## 发起人高层会议总结报告

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Dear Raghav Nandyal:

### 一、总体发现

通过 CMMI Level 5 范围界定的评估，我们对软件开发和项目管理流程进行了全面而细致的审查，采用了 CMMI V3.0（开发领域）标准。在此期间，进行了文档审查和面谈，并且 HMLA 和 ATM 在日常开发过程和管理中准确地识别了已知和潜在的问题。

在评估期间，HMLA 结合他丰富的经验，给我们提出了很多有价值的建议。同时，在基准评估中，评估团队除了软件流程外，还对我们的业务流程进行了全面审查，并在可选的参与者会议中使用 SPRUM-Systemic Process Review Using Measurements®（Raghavan S. Nandyal 的注册商标），提供了对“如何进行有效的后续绩效改进计划”的更深入见解。。通过与 HMLA 的深入讨论，我们获得了宝贵的建议和指导，这为公司未来的发展指明了方向。评估过程让我们进一步的深入审视了公司现行的 CMMI 高成熟度的实施现状。公司在项目管理、流程规范化和技术研发等方面展现了较高的成熟度，具备较强的竞争力。然而，评估也指出了一些需要改进的领域，特别是在风险管控、跨部门沟通和流程持续改进方面，我们应进一步优化管理机制，提升项目的整体效率和成功率。

### 二、经验教训与改进措施

我们从工程过程、项目管理、支持过程、过程管理四个方面为切入点分别进行详细总结。

#### 工程过程

在工程过程管理控制中，重点在设计、编码和需求方面方面，各位专家老师和评估老师得到了非常详细且落地的执行方案，例如：

在需求阶段更加重视需求的详细分析描述，重视需求优先级的分析以及需求可追溯性的管理，从而确保在整个生命周期需求的完整追溯。在设计阶段，我们也会更加重视评审的有效性，确保进行高质量的评审活动。在编码阶段，不再描述形式化的进入退出等准则，做到真正明确针对不同产品、不同项目的切实可行的出入口原则。在测试阶段，用例的设计结合我们的行业背景、工作经验进行更深层次，更全面的场景覆盖。

#### 项目管理

针对估算、策划、监控等项目管理过程，评估团队也给出了很多值得思考的建议。

例如：

在估算的过程中，将更加细致我们对于用户故事的分解，并在整个项目的生命周期中，不断地估算的结果进行校准、对比，从而确保在进行有效的估算。在同行评审流程中，除了进行实际的评审外，对于过程记录也需要进行完整的记录，确保进行有效的评审。在项目监控以及风险管理中，仍需对风险进行一致的管控，关注风险与问题的转化，加强风险的识别，确保项目目标的实现。

## 支持过程

我们公司非常认可并且希望逐步明确、细化支持组等角色的工作，尤其是 QA。QA 在我们整个项目以及公司体系化的运转中都起着至关重要的角色，后期我们也会考虑内部扩展或外部招聘进行更专业的项目 QA 的设定，帮助项目的研发过程获得更精准的指导工作。针对 QA 审计结果的汇报，也将采取更多维度，更直接美观的数据展示形式进行分析会更好。与此同时增强团队对质量管理重要性的认识，培养严谨的企业文化，以支持项目的成功交付和长期可持续发展。通过这些措施，可以显著提升项目的管理水平和执行效果。

## 过程管理

根据过程管理方面提出的一些改进建议，我们也是进行了详细的讨论和分析，制定了相应的措施。针对于访谈中提到的目标，我们在实际的项目中也确实面临这样的困境，客户不断变化、新增的需求，代码的持续迭代，交付日期的限制，资源的冲突等等盘根交错，导致项目总是在不断地变更，多次出现返工的情况，而在我们设定改进目标时，对于目标的设定也过去依赖工具，有时候对于实际数据的结合以及项目实际存在的困境考虑较少，从而导致有时目标设定的不够准确。由于六西格玛的理论运用不够扎实，这使得我们整体的改进思路仍然具有局限性。评估师提出的一些建议，及访谈时的一些讨论，则给我们的 EPG 组和高层管理人员带来了很大的启发。我们在追求高级成熟度的执行过程中，需要有效结合六西格玛理论与实际业务需求，以提升运营效率和质量管理水平。六西格玛作为一套严谨的数据驱动的质量管理方法，通过减少变异和提升流程控制，能够帮助我们在降低成本的同时提高产品和服务的可靠性。我们将通过不断调优和迭代，将六西格玛的核心理念嵌入企业文化，并结合行业最佳实践和创新管理模式，也成为了我们今后新的改进方向。

## 三、现实意义

作为 CMMI 模型中的最高级别，通过优化管理流程、提升质量标准、促进创新和文化变革，帮助组织提高项目执行的成熟度和成功率，并通过更高效的管理与风险控制，增强在市场竞争中的竞争力和长期发展的可持续性。

1、卓越的过程改进能力：CMMI5 级企业能够持续优化自身的过程体系。通过对过程数据的深入分析，企业可以准确识别出过程中的薄弱环节和改进机会，并迅速采取针对性的措施进行优化。例如，在软件开发过程中，通过对代码缺陷率、开发周期等数据的长期跟踪和分析，企业可以不断改进开发流程、工具和方法，从而大幅提高开发效率和产品质量。这种持续改进的能力使企业能够在激烈的市场竞争中始终保持领先地位。

2、高度的创新能力：达到 CMMI5 级的企业鼓励创新，并且能够将创新成果快速融入到业务流程中。企业建立了完善的创新管理机制，能够有效地收集、评估和推广新的技术、方法和实践。例如，在制造业中，企业可以引入新的生产工艺、自动化设备或智能制造技术，通过对

这些创新的有效管理和应用，实现生产效率的大幅提升和产品质量的显著改进。这种创新能力不仅有助于企业满足客户不断变化的需求，还能够开拓新的市场和业务领域。

3、强大的风险管理能力：CMMI5 级企业具备高度成熟的风险管理体系，能够对潜在的风险进行全面、准确的识别、评估和应对。通过建立风险预警机制和应急预案，企业可以在风险发生之前采取有效的预防措施，降低风险的影响。例如，在项目实施过程中，企业可以通过对项目进度、成本、质量等方面的实时监控，及时发现潜在的风险因素，并采取调整计划、增加资源等措施进行应对。这种强大的风险管理能力可以有效降低企业运营中的不确定性，保障企业的稳定发展。

4、显著的成本效益提升：通过优化过程和提高效率，CMMI5 级企业能够实现成本的有效控制和效益的显著提升。一方面，企业可以通过减少过程中的浪费、提高资源利用率等方式降低生产成本；另一方面，高质量的产品和服务可以提高客户满意度，增强客户忠诚度，从而为企业带来更多的业务机会和收入增长。例如，在服务行业中，企业通过优化服务流程、提高服务质量，可以减少客户投诉和流失，提高客户的重复购买率和推荐率，进而实现经济效益的提升。

5、行业领先的品牌形象：达到 CMMI5 级是企业 在过程管理和能力成熟度方面达到国际领先水平的重要标志。这不仅能够提升企业在客户、合作伙伴和投资者心目中的形象和声誉，还能够增强企业的市场竞争力。例如，在软件外包行业中，具备 CMMI5 级资质的企业往往更容易获得国际大型客户的订单，因为客户更愿意选择具有成熟过程管理能力和高质量交付能力的供应商。这种行业领先的品牌形象可以为企业带来更多的商业机会和发展空间。

## 四、改进措施

EPG 团队将与项目人员合作，对评估中提出的建议进行深入讨论和识别，结合我们呢已经完成的大作业，结合实际项目运行情况，以及公司研发流程目前的现状，考虑结合项目管理工具等，通过会议交流和数据分析，总结差距分析材料，作为改进的核心依据，从而制定详细的改进计划，包括步骤、时间安排、参与人员和实施目标，并提前跟进的频率，公司高层除了承诺提供必要的资源支持，确保改进工作的顺利进行以外，对于公司的目标的确认和修订，也将投入更多精力进行确认和跟踪，帮助建立更明确、清晰的目标。EPG 团队将实施改进措施，并保持全面监控，记录效果，进行量化分析，选取项目试点验证改进措施，通过假设检验后推广至整个组织，通过培训、标准化流程、监控机制和沟通，不断提升组织能力和成熟度。

在后续的改进中，我们要持续将研发流程的改进与实际的工作场景相结合，注重于实施最实际、最有效的活动，例如最基础的质量检查以及代码审查、代码规范的运用，而不是将规则制定完成后，只是高高挂起。高层也将加大对目标的宣贯以及正式改进的重视程度，通过持续改进助力，坚持良好的习惯，从而实现研发水平提升，持续提高软件开发效率和质量，提高客户满意，实现可持续发展。

最后，我们衷心感谢评估师和各位 ATM 老师的辛勤付出和专业指导。感谢评估组提出的发现，我们很认同这些发现，感谢评估师和评估团队给出的宝贵意见。您们宝贵的意见为公司团队指明了前进的方向，为公司未来的发展奠定了坚实的基础。这些发现对于我们提高软件开发效率和质量，有很大帮助；后续我们会针对各项发现，认真落实改进，通过改进助力研发水平提升。持续提高软件开发效率和质量，提高客户满意度，实现可持续发展。



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中科朗智（北京）科技有限公司 负责人：陈剑

2025年2月22日



陈剑



## EXECUTIVE SESSION BRIEFING - SPONSOR FEEDBACK

### 1. Overall findings

Through the CMMI Level 5 benchmark appraisal, our company has experienced a thorough and detailed review of our software development and project management processes, following the CMMI V3.0 (Development) standard. During this period, document reviews and interviews were performed, and the HMLA and ATMs accurately identified both known and potential issues in daily development processes and management.

Throughout the appraisal, the HMLA, drawing on his extensive experience, provided us with numerous valuable recommendations. Additionally, during the benchmark appraisal, the appraisal team not only evaluated software engineering processes but also conducted a comprehensive review of our business processes. In the optional practitioner meeting, the SPRUM-Systemic Process Review Using Measurements® (a registered trademark of Raghavan S. Nandyal) was employed to deliver deeper insights into "how to effectively implement follow-up performance improvement plans." Through in-depth discussions with the HMLA, we gained invaluable advice and guidance, which has set a clear direction for the company's future development. The findings showed a 95% alignment with the company's practices.

The appraisal process enabled us to further examine the current implementation of CMMI high maturity within the company. It revealed that the company has achieved a high level of maturity in project management, process standardization, and technical research and development, demonstrating strong competitiveness. However, the appraisal also identified areas for improvement, particularly in risk management, cross-departmental communication, and continuous process improvement. We should further refine our management mechanisms to enhance overall project efficiency and success rates.

### 2. Lessons learned and improvement measures

We will summarize in detail from four aspects: engineering process, project management, support process, and process management.

#### Engineering process

In the management and control of engineering processes, the focus has been on design, coding, and requirements. The expert reviewers and appraisal team provided highly detailed and practical execution plans. For example, in the requirements phase, greater emphasis is placed on detailed analysis and description of requirements, prioritization, and traceability management to ensure complete lifecycle traceability. In the design phase, more attention is given to the effectiveness of reviews to ensure high-quality review activities. In the coding phase, formalized entry and exit criteria are replaced with clear, practical principles tailored to different products and projects. In the testing phase, test cases are designed to incorporate our industry background and work experience, enabling deeper and more comprehensive coverage of functional scenarios.

#### Project Management

Regarding project management processes such as estimation, planning, and monitoring, the appraisal team provided numerous thought-provoking recommendations. For example, in the estimation process, we will focus on more detailed decomposition of user stories and continuously calibrate and compare estimation results throughout the project lifecycle to ensure accuracy. In the peer review process, in addition to conducting actual reviews, complete documentation of the process must be maintained to ensure effectiveness. In project monitoring and risk management, consistent risk control should be emphasized, with attention to the transition between risks and issues, while strengthening risk identification to ensure the achievement of project objectives.

## Support process

Our company highly acknowledges and aims to progressively clarify and refine the roles of support groups, particularly QA. QA plays a vital role in both our projects and the company's systematic operations. Moving forward, we intend to expand internally or recruit externally to establish more specialized project QA roles, offering more accurate guidance throughout the project development lifecycle. For reporting QA audit results, we will adopt multi-dimensional and visually engaging data presentation formats to enhance analytical effectiveness. At the same time, we will strengthen the team's understanding of the importance of quality management, cultivating a culture of precision to ensure successful project delivery and long-term sustainable growth. These measures will significantly elevate our project management standards and execution outcomes.

## Process management

Based on the improvement suggestions related to process management, we have conducted in-depth discussions and analyses and developed corresponding measures. Regarding the goals highlighted during the interviews, we indeed face such challenges in actual projects: constantly changing and customer requirements, continuous code iterations, tight delivery deadlines, resource conflicts, and other intertwined factors, leading to frequent project changes and repeated rework. When setting improvement goals, we have often relied too heavily on tools, sometimes failing to integrate actual data and the real challenges faced by projects, resulting in inaccurately defined goals. Due to insufficient mastery of Six Sigma theory, our overall improvement approach remains limited. The suggestions provided by the HMLA and the discussions during the interviews have greatly inspired our EPG group and senior management. In pursuing higher maturity levels, we need to effectively integrate Six Sigma theory with actual business needs to enhance operational efficiency and quality management. As a rigorous, data-driven quality management methodology, Six Sigma can help reduce variability and improve process control, enabling us to lower costs while increasing the reliability of products and services. Through continuous optimization and iteration, we will embed the core principles of Six Sigma into our corporate culture and combine them with industry best practices and innovative management models, which will also serve as our new direction for future improvements.

## 3. Relevance

As the highest level in the CMMI model, HM (High Maturity) helps organizations enhance project execution maturity and success rates through the optimization of management processes, the elevation of quality standards, the promotion of innovation, and cultural transformation. It also strengthens an organization's competitiveness and long-term sustainability in the market by improving efficiency in management and risk control.

**Exceptional Process Improvement Capability:** HM-level organizations continuously refine their process systems. Through in-depth analysis of process data, these organizations can identify weaknesses and opportunities for improvement, and swiftly implement targeted measures for optimization. For example, in software development, by continuously tracking and analyzing data such as defect rates and development cycles, organizations can enhance development processes, tools, and methods, significantly boosting efficiency and product quality. This ability for continuous improvement ensures organizations maintain a competitive edge in a fast-paced market.

**High Innovation Capability:** Organizations at the HM level foster innovation and quickly integrate innovative solutions into their business processes. They have well-established innovation management systems that enable them to effectively collect, appraise, and apply new technologies, methods, and practices. For instance, in manufacturing, businesses can introduce cutting-edge production processes, automation technologies, or smart manufacturing solutions. By managing and applying these innovations effectively, organizations can dramatically enhance production efficiency and product quality. This innovation capability not only enables organizations to meet evolving customer demands but also allows them to enter new markets and business sectors.

**Robust Risk Management Capability:** HM-level organizations have mature risk management systems that ensure comprehensive and precise identification, assessment, and mitigation of potential risks. By establishing risk warning systems and emergency plans, they can implement preventative measures before risks materialize, minimizing their impact. For example, during project execution, organizations can continuously monitor factors such as progress, cost, and quality, enabling them to detect potential risks early and take corrective actions, like adjusting plans or reallocating resources. This robust risk management capability reduces operational uncertainty, ensuring the stability and growth of the organization.

**Significant Cost Efficiency Gains:** By optimizing processes and improving operational efficiency, HM-level organizations can control costs effectively and achieve substantial performance improvements. On one hand, they can reduce production costs by eliminating waste and enhancing resource utilization. On the other hand, high-quality products and services lead to greater customer satisfaction and loyalty, driving business opportunities and revenue growth. For example, in the service industry, optimizing service processes and improving service quality can reduce customer complaints and churn, while increasing repeat business and referrals, thereby boosting economic benefits.

**Industry-Leading Brand Image:** Attaining the HM-level is a clear indicator of an organization's international leadership in process management and maturity. This not only boosts the organization's reputation with clients, partners, and investors, but also enhances its market competitiveness. For instance, in the software outsourcing industry, organizations with HM-level certification are more likely to secure contracts with large international clients, who tend to choose vendors with proven process management capabilities and high-quality delivery. This industry-leading brand image creates more business opportunities and growth potential for the organization.

## 4. Improvement measures



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The EPG team will collaborate with project personnel to thoroughly discuss and identify the recommendations outlined in the appraisal. By combining the completed TASK-LL assignment, the actual project operation status, and the current state of our company's R&D processes, we will explore ways to integrate project management tools. Through meetings and data analysis, we will compile gap analysis materials, which will serve as the core foundation for our improvement efforts. A detailed improvement plan will then be developed, including specific steps, timelines, participants, and implementation objectives, as well as the frequency of follow-ups.

In addition to committing to provide the necessary resources to ensure the smooth execution of these improvements, senior management will also devote more effort to confirming and tracking the company's goals, ensuring clearer and more precise alignment. This will help establish well-defined objectives moving forward.

The EPG team will implement the improvement measures and maintain comprehensive monitoring, recording results, and conducting quantitative analysis. We will select pilot projects to validate the improvements, and after hypothesis testing, the measures will be rolled out across the entire organization. By utilizing training, standardized processes, monitoring mechanisms, and enhanced communication, we aim to continuously improve our organizational capabilities and maturity.

In our ongoing improvements, we will consistently align R&D process enhancements with real-world work scenarios, focusing on the most practical and effective activities. For example, we will emphasize basic quality checks, code reviews, and the application of coding standards, ensuring that these rules are not merely established but actively implemented. Senior management will also strengthen the communication and formal acknowledgment of the improvement goals. Through continuous improvement, we will instill good practices that lead to the advancement of R&D levels, increased software development efficiency and quality, improved customer satisfaction, and long-term sustainable growth.

Finally, we sincerely thank the HMLA and all ATM members for their hard work and professional guidance. We are grateful for the insights provided by the appraisal team, which we fully support. The valuable feedback from HMLA and the appraisal team has illuminated the path forward for our organization and laid a strong foundation for our future development. These insights will significantly help us enhance software development efficiency and quality. Moving forward, we will diligently implement improvements based on these findings, which will contribute to raising R&D capabilities. We will continuously strive to improve software development efficiency, quality, customer satisfaction, and ultimately, achieve sustainable growth.

**As the sponsor of this appraisal who has received the executive session briefing, 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.**

Beijing SinoWise Technology Co., Ltd.

