发起人高层会议总结报告

RAGHAV S. NANDYAL
SITARA TECHNOLOGIES PVT. LTD.

一、总体发现

通过 CMMI Level 5 范围界定的评估，对软件开发、项目管理、定量管理及过程治理体系进行了全面细致的审查，本次评估采用 CMMI V3.0（开发领域）标准，并结合文档审查、人员访谈与 SPRUM- Systemic Process Review Using Measurements® 方法开展。评估团队准确识别了组织在定量模型、过程资产、数据领域、治理监督、AI 战略适配、纠正措施、决策分析、估算计划、风险管理、需求管理、同行评审及技术复用等方面的问题与改进空间，并给出了针对性、可落地的改进建议。

通过与 Raghav 的深入交流，我们获得了宝贵的指导意见，为公司高成熟度落地与长期发展奠定了坚实基础。公司高层、EPG 过程改进小组、项目经理、质量保证、数据及配置管理等核心成员对评估发现进行了充分追溯与研讨，达成高度共识。本次评估结果贴合实际、实用性强，将有效推动高成熟度实践在更多项目中推广应用，同时进一步提升团队对标准化、定量化、规范化流程的认识与执行能力。

我们将认真消化吸收本次评估结果，结合公司实际制定具体可行的改进计划，确保每一项建议有效落实。本次 CMMI 5 评估不仅是对公司研发能力与管理水平的全面检验，更是一次重要的学习提升机会。公司将以此为契机，持续总结经验、优化流程、强化能力，在追求卓越、持续发展的道路上迈出更加坚实的步伐。

二、经验教训

接下来，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

在定量分析与工程实践方面，组织在回归模型中对生产率与缺陷密度开展分析具备合理性，但对真正干预并影响这两项指标的可控因素与诱因关注不足，预测模型的受控力度有待加强。同时，生产率提升对缺陷密度存在反向影响，盲目追求效率可能损害产品与过程质量，现有生产率模型未将返工相关度量纳入考量，易造成效率与质量目标相互背离。在项目估算方面，目前仅在项目启动阶段建立估算，缺乏根据实际情况进行动态调整的机制，在分析阶段结束后未对成本、进度及整体执行生命周期进行二次校准，增加了工程生命周期执行风险。在需求管理方面，需求变更率尚未作为关键因素纳入项目决策，尤其在涉及数据管理、数据加载、数据可视化及外部信息提供方的场景下，对外部影响的识别与规划不够清晰。在质量管理与同行评审方面，返工场景下的专项同行评审策划与执行尚不明确，重大偏差判定依赖主观判断，缺乏组织统一的客观标准，影响评审有效性。同时，当前构建的解决方案在同类领域具备较高可重用价值，数据渲染与图形化逻辑具备良好的复用潜力。

项目管理

在项目管理方面，风险评估多为项目初期一次性活动，未形成常态化、周期性机制，风险策略过度依赖复杂度与功能点评估，维度相对单一。生产率与缺陷密度基线作为工作量分布、预算及子计划制定的重要依据，但未根据项目领域特性进行定期修订，未能充分考虑数据管理、数据加载、数据可视化等场景带来的特殊原因波动，影响基线的适用性与准确性。

支持过程

在支持过程方面，实施基础设施建设未充分同步考虑组织所需的定量管理能力建设，覆盖各层级的定量能力提升计划与培训及发展实践融合度不足。现有过程资产定义主要满足通用 CMMI 开发领域实施需求，但试点项目已涉及数据管理、数据加载及数据可视化等领域特性需求，必须引入 CMMI V3.0 的数据领域，并扩展其他领域以提升实施深度与广度。

过程管理

在过程管理与高层治理方面，基于统计与定量分析的治理流程中，高层监管视野局限于项目管理数据，未能全面覆盖工程生命周期各环节，也未充分结合 AI 前瞻趋势支撑组织未来竞争力建设。针对重构资产定义、采纳 CMMI V3.0 其他领域的过程变更管理研究不足、资源投入不够，当前过程能力尚不足以支撑 AI 转型，可能影响长期实施成效。CAR 实践虽已采用鱼骨图、根因识别与定量分析等标准方法，但未能将原因修复与经验库改进有效关联，缺乏充分证据表明 CAR 已通过经验教训转化为组织能力。DAR 实践未与 CAR 改进机会有效结合，范围相对局限，未能通过 POC 试点充分挖掘实用价值，核心价值未能完全释放。

三、现实意义

实施 CMMI5 高成熟能力模型带来的现实意义非常显著。1、CMMI5 的实施推动企业对软件开发过程的持续改进和量化管理，从指标监控转向影响因子管控，提升开发效率与质量稳定性，为决策提供更科学的数据支撑。2、推动建立覆盖工程全生命周期的治理体系，强化高层监督与数据驱动决策，促进跨团队协作与知识共享，提升组织整体协同能力与市场地位。3、助力组织补齐数据领域过程能力，引入 CMMI V3.0 数据领域，更好适配数据管理、数据加载、数据可视化等业务需求。4、构建自上而下的定量管理能力，完善 CAR- DAR 改进闭环，推动改进成果沉淀为组织资产，提升持续改进能力。5、实现估算、计划、风险、需求的全生命周期精细化管理，降低交付风险，提升项目可控性与稳定性。6、强化解决方案可重用性，提升交付效率、降低成本、稳定质量。7、使过程体系提前适配 AI 战略布局，为组织构建未来竞争力提供过程支撑，增强长期发展潜力。

实施 CMMI5 高成熟能力模型对我司具有深远意义，将全面提升软件研发与管理水平，增强市场竞争力与商业效益。我们将积极拥抱 CMMI5，持续推动自身改进与高质量发展。

四、改进措施

在本次评估后，EPG 团队将与项目人员精诚合作，一起对评估中提出的建议进行深入讨论与识别，通过会议交流和数据分析总结差距分析材料，作为现阶段组织过程改进的核心依据，并据此制定《过程改进建议表》和《过程改进计划表》，明确改进步骤、时间安排、参与人员与实施目标。

我们将重点优化定量分析模型，强化对生产率与缺陷密度影响因素的管控，深入研究效率与质量之间的负相关关系，将返工度量纳入模型，建立以质量目标驱动效率目标的管理机制。同步完善项目估算动态调整与基线定期修订机制，在分析阶段结束后对成本、进度开展二次校准，结合领域特性更新生产率与缺陷密度基线，提升计划合理性与执行可控性。

在项目管理层面，建立常态化、周期性风险评估机制，丰富风险研判维度，避免单一依赖复杂度与功能点评估。将需求变更率纳入项目决策与监控体系，强化对外部依赖及数据相关场景的需求影响识别与管理，提升需求稳定性与项目可控性。规范返工场景下的同行评审流程，建立组织统一的客观偏差判定标准，替代主观判断，提升评审一致性与有效性。同时开展解决方案可重用性分析，提炼数据渲染等通用能力，形成可复用资产，提升整体交付效率。

在支持与过程管理层面，构建覆盖全员的定量管理能力体系，将能力提升与培训发展深度融合，同步完善配套实施基础设施。正式引入 CMMI V3.0 数据领域，升级过程资产，满足数据管理、数据加载、数据可视化等领域需求。进一步完善高层治理与监督范围，将监管覆盖工程全生命周期，并结合 AI 战略规划过程改进路线，加强过程变更管理研究与资源投入，提升对未来转型的支撑能力。

我们将强化 CAR 与经验库、过程资产的联动，确保改进成果有效转化为组织能力，推动 DAR 与 CAR 深度衔接，通过 POC 试点验证改进机会，扩展决策分析应用范围。公司高层承诺提供充足的人、财、物及工具资源，保障改进工作顺利推进。EPG 团队将全程监控改进实施，选取试点项目验证效果，通过量化分析后在全组织推广。

此次评估让我们对 CMMI5 有了更为深刻的理解，也清晰认识到自身不足。我们衷心感谢评估师和 ATM 团队的专业指导与辛勤付出，后续将认真落实各项改进，持续提升软件开发效率与产品质量，提高客户满意度，实现可持续发展。

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。

山东胜软科技股份有限公司

发起人 [signature]

2026 年 3 月 13 日

EXECUTIVE SESSION BRIEFING: SPONSOR FEEDBACK

Overall findings

Through the CMMI Level 5 scoped appraisal, a comprehensive and detailed examination is conducted on the organization's software development, project management, quantitative management, and process governance systems. This appraisal is performed based on the CMMI V3.0 for Development model and is carried out through a combination of document reviews, personnel interviews, and the SPRUM Systemic Process Review Using Measurements® method.

The appraisal team accurately identifies issues and opportunities for improvement in areas such as quantitative models, process assets, data management, governance oversight, AI strategy alignment, corrective actions, decision analysis, estimation and planning, risk management, requirements management, peer reviews, and technical reuse. Targeted and practical improvement recommendations are provided accordingly.

Through in-depth discussions with Raghav, valuable guidance is obtained, laying a solid foundation for the organization's high maturity implementation and long-term development. Senior management, the EPG process improvement group, project managers, quality assurance personnel, and key members responsible for data and configuration management conduct thorough traceability and discussions on the appraisal findings, reaching a high level of consensus. The appraisal results closely reflect the organization's actual practices and demonstrate strong practicality. They will effectively promote the wider adoption of high maturity practices across more projects while further strengthening the team's understanding and execution of standardized, quantitative, and well-governed processes.

The organization will carefully study and internalize the results of this appraisal and develop concrete and feasible improvement plans in alignment with its operational context to ensure that each recommendation is effectively implemented. This CMMI Level 5 appraisal not only serves as a comprehensive evaluation of the organization's R&D capabilities and management maturity, but also represents an important opportunity for learning and advancement. Taking this as a new starting point, the organization will continue to summarize experience, optimize processes, and strengthen capabilities, moving forward with more solid steps on the path toward excellence and sustainable development.

Lessons Learned

Next, a detailed summary is provided from four perspectives: engineering processes, project management, support processes, and process management.

Engineering Processes

In terms of quantitative analysis and engineering practices, it is reasonable that productivity and defect density are analyzed through regression models; however, insufficient attention is given to the controllable factors and triggers that actually intervene in and influence these two indicators, and the degree of control over the predictive model needs to be strengthened. At the same time, improvements in productivity may exert an inverse impact on defect density. Blindly pursuing efficiency may therefore compromise product and process quality. The current productivity model does not include rework-related measures, which may cause efficiency and quality objectives to diverge.

With regard to project estimation, estimates are currently established only at the project initiation stage, and a mechanism for dynamic adjustment based on actual conditions is lacking. After the completion of the analysis phase, cost, schedule, and the overall execution lifecycle are not recalibrated, thereby increasing risks throughout the engineering lifecycle.

In requirements management, the rate of requirement changes has not yet been incorporated as a key factor in project decision-making. In particular, in scenarios involving data management, data loading, data visualization, and external information providers, the identification and planning of external influences remain insufficiently clear.

In quality management and peer reviews, the planning and execution of dedicated peer reviews in rework scenarios are not clearly defined. The determination of major deviations relies largely on subjective judgment, and a unified organizational standard based on objective criteria is lacking, which affects the effectiveness of the review process. At the same time, the solutions currently developed demonstrate high reuse value within similar domains, and the logic related to data rendering and visualization shows strong potential for reuse.

Project Management

In project management, risk assessment is often treated as a one-time activity conducted at the early stage of the project, and a normalized, periodic mechanism has not yet been established. Risk strategies rely excessively on complexity and function point evaluation, resulting in relatively limited evaluation dimensions.

Productivity and defect density baselines serve as key references for workload distribution, budgeting, and the formulation of subplans. However, these baselines are not periodically updated according to the characteristics of different project domains. Special variations arising from scenarios such as data management, data loading, and data visualization are not fully considered, which affects the applicability and accuracy of the baselines.

Support Processes

Regarding support processes, the implementation of infrastructure construction has not been fully aligned with the development of the quantitative management capabilities required by the organization. The integration between quantitative capability improvement plans covering different organizational levels and the associated training and development practices remains insufficient.

Existing process asset definitions mainly satisfy the general implementation requirements of the CMMI Development domain. However, pilot projects have already involved domain-specific requirements such as data management, data loading, and data visualization. Therefore, the CMMI V3.0 Data domain needs to be introduced, and additional domains should be expanded to further enhance the depth and breadth of implementation.

Process Management

In process management and executive governance, within governance practices based on statistical and quantitative analysis, the scope of executive oversight is primarily limited to project management data. It does not yet comprehensively cover all stages of the engineering lifecycle, nor does it sufficiently integrate forward-looking AI trends to support the organization's future competitiveness.

Furthermore, limited research and insufficient resource investment have been devoted to redefining process assets and managing process changes related to the adoption of additional CMMI V3.0 domains. The current process capability is therefore not yet sufficient to support AI-driven transformation, which may affect the long-term effectiveness of implementation.

Although CAR practices have adopted standard methods such as fishbone diagrams, root cause identification, and quantitative analysis, the correction of causes has not been effectively linked with improvements to the organizational knowledge repository. Sufficient evidence demonstrating that CAR practices have been transformed into organizational capabilities through lessons learned is still lacking.

In addition, DAR practices have not been effectively integrated with CAR improvement opportunities. Their scope remains relatively limited, and the practical value has not been fully explored through POC pilot activities, resulting in the core value of DAR not being fully realized.

Relevance

The implementation of the CMMI Level 5 high maturity capability model brings significant practical value. 1. The implementation of CMMI Level 5 promotes continuous improvement and quantitative management of the software development process. Management focus shifts from simple metric monitoring to the control of influencing factors, thereby improving development efficiency and stabilizing product quality while providing more scientific data support for decision-making. 2. It drives the establishment of a governance system covering the entire engineering lifecycle, strengthens executive oversight and data-driven decision-making, and promotes cross-team collaboration and knowledge sharing, thereby enhancing the organization's overall coordination capability and market position. 3. It supports the organization in strengthening process capabilities in the data domain by introducing the CMMI V3.0 Data domain, enabling better alignment with business scenarios such as data management, data loading, and data visualization. 4. It facilitates the development of a top-down quantitative management capability, improves the CAR–DAR closed-loop improvement mechanism, and promotes the institutionalization of improvement results as organizational assets, thereby strengthening continuous improvement capability. 5. It enables refined lifecycle management of estimation, planning, risk, and requirements, thereby reducing delivery risks and improving project controllability and stability. 6. It strengthens solution reusability, improving delivery efficiency, reducing costs, and stabilizing product quality. 7. It enables the process system to align in advance with the organization's AI strategic planning, providing process support for building future competitiveness and enhancing long-term development potential. The implementation of the CMMI Level 5 high maturity capability model therefore holds profound significance for our organization. It will comprehensively enhance our software development and management capabilities, strengthen market competitiveness, and improve business performance. We will actively embrace CMMI Level 5 and continue to promote continuous improvement and high-quality development.

Actions to be taken

After this appraisal, the EPG team will work closely with project personnel to conduct in-depth discussions and analysis of the recommendations identified during the appraisal. Through meetings, exchanges, and data analysis, gap analysis materials will be summarized as the core basis for the organization's current process improvement efforts. Based on these findings, a Process Improvement Recommendation List and a Process Improvement Plan will be developed to clearly define improvement steps, timelines, responsible participants, and implementation objectives.

Priority will be given to optimizing the quantitative analysis model by strengthening control over the factors influencing productivity and defect density. The negative correlation between efficiency and quality will be studied in greater depth, rework-related measures will be incorporated into the model, and a management mechanism will be established in which efficiency objectives are driven by quality goals. At the same time, mechanisms for dynamic adjustment of project estimation and periodic revision of baselines will be improved. After the completion of the analysis phase, secondary calibration of cost and schedule will be performed, and productivity and defect density baselines will be updated based on domain characteristics, thereby enhancing the rationality of planning and the controllability of execution.

At the project management level, a normalized and periodic risk assessment mechanism will be established, and the dimensions used for risk evaluation will be expanded to avoid excessive reliance on complexity and function point analysis. The requirement change rate will be incorporated into the project decision-making and monitoring system to strengthen the identification and management of requirement impacts related to external dependencies and data-related scenarios, thereby improving requirement stability and project controllability. The peer review process for rework scenarios will also be standardized, and unified organizational criteria for objective deviation determination will be established to replace subjective judgment and improve the consistency and effectiveness of reviews. In addition, solution reusability analysis will be conducted to extract common capabilities, such as data rendering, and transform them into reusable assets in order to improve overall delivery efficiency.

At the support and process management level, a quantitative management capability system covering all staff will be established, integrating capability development closely with training and professional development while simultaneously improving supporting infrastructure. The CMMI V3.0 Data domain will be formally introduced, and process assets will be upgraded to meet the needs of domains such as data management, data loading, and data visualization. The scope of executive governance and oversight will be further expanded to cover the entire engineering lifecycle. At the same time, the process improvement roadmap will be aligned with the organization's AI strategic planning, strengthening research and investment in process change management to enhance support for future transformation.

Greater linkage will be established between CAR practices, the organizational knowledge repository, and process assets to ensure that improvement outcomes are effectively transformed into organizational capabilities. The integration between DAR and CAR will also be strengthened, with improvement opportunities validated through POC pilot activities and the scope of decision analysis expanded. Senior management has committed to providing sufficient human, financial, material, and tool resources to ensure the smooth advancement of improvement initiatives. The EPG team will monitor the implementation of improvements throughout the process, select pilot projects to verify effectiveness, and promote successful practices across the organization after quantitative validation.

This appraisal has enabled us to gain a deeper understanding of CMMI Level 5 while also clearly recognizing our current gaps and areas for improvement. We sincerely thank the appraiser and the ATM team for their professional guidance and dedicated efforts. Moving forward, we will carefully implement the recommended improvements, continuously enhance software development efficiency and product quality, improve customer satisfaction, and achieve sustainable development.

I hereby authorize and agree that you and SITARA Technologies may share our evaluation results on SITARA's publishing channels and promote them as deemed appropriate by SITARA Technologies.

ShanDong Victorysoft Co., Ltd
Sponsor: zhang hao
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