## Matrix A – problem statement / data sheet

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| --- | --- | --- | --- | --- |
| Systematic Axioms | **Guiding** | **Applying** | **Judging** | **Reflecting** |
| **Normative Level** | Values | Actions | Benchmarks | Feedback |
| **Operational Level** | Principles | Methods | Standards | Adaptation |
| **Evaluative Level** | Goals | Coordination | Evaluation | Consolidation |

## Matrix B - problem statement / data sheet

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| Epistemic  Axioms | **Essentiality** | **Sufficiency** | **Completeness** | **Feasibility** |
| **Data** | Necessary | Sufficient | Complete | Probability |
| **Information** | Contingent | Insufficient | Incomplete | Possibility |
| **Knowledge** | Fundamental | Appropriate | Holistic | Feasibility |
| **Wisdom** | Best Practices | Limits of | Justification for | Practicality |

## Matrix C – Standard Procedure

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| Principles | **Guiding** | **Applying** | **Judging** | **Reflecting** |
| **Normative Level** | Value-driven Engineering Fundamentals | Principle-Guided Method Adaptation | Goal-Oriented Coordination Evaluation | Value-Based Feasibility |
| **Operational Level** | Principle-Guided Adaptive Standardization | Coordinated Evaluation and Sufficiency | Holistic Evaluation and Adaptation | Holistic Engineering Approach |
| **Evaluative Level** | Comprehensive Goal-oriented Coordination | Practical Evaluation and Coordination | Holistic Engineering Optimization | Goal Coordination Feasibility Analysis |

A\*B=C

## Matrix D – Guidance Document

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| Objectives | **Normative Level** | **Operational Level** | **Evaluative Level** |
| **Guiding** | "Technical specifications and safety codes that establish foundational requirements for project execution, providing regulatory boundaries and industry standards that guide design and construction toward compliance and quality." | "Construction methodologies and technical workflows that create implementable execution plans, directing the sequenced implementation of project phases through practical schedules adaptable to site conditions." | "Project success metrics that establish structured criteria for construction validation, providing measurable performance indicators and commissioning frameworks for determining technical compliance." |
| **Applying** | "Implementation of code-compliant methodologies that translate engineering standards into concrete construction practices, ensuring project deliverables adhere to quality assurance thresholds and regulatory requirements." | "Executable construction techniques that operationalize design documents through systematic field procedures, providing actionable processes for producing reliable installations and assemblies." | "Coordinated quality control systems that implement organized inspection frameworks, applying systematic approaches to determine whether installations meet specified tolerances and performance requirements." |
| **Judging** | "Performance criteria and acceptance standards that provide an integrated framework for inspecting deliverables, establishing regulatory checkpoints that maintain safety, sustainability, and technical integrity throughout approval processes." | "Field engineering judgments that implement comprehensive testing procedures, enabling contextually appropriate validation of installations through systematic quality control methodologies." | "Comprehensive commissioning methodologies that enable holistic evaluation of integrated systems, organizing multiple testing criteria into coherent certification frameworks for project acceptance." |
| **Reflecting** | "Compliance verification mechanisms that ensure construction development maintains structural integrity and code adherence, enabling post-implementation assessment that aligns completed work with contractual specifications." | "Change management procedures that enable systematic refinement of construction outcomes, implementing practical revision processes that maintain design intent while adapting to field conditions." | "Systematic punch-list processes that enhance construction quality through organized deficiency assessment, applying contractual and technical frameworks to iteratively improve installation compliance." |

A+B\*C=D

## Matrix X – Checklist 1

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| Verification | **Essentiality** | **Sufficiency** | **Completeness** | **Consistency** |
| **Guiding** | "Foundational technical standards that establish clear project boundaries, key regulatory frameworks that determine applicable compliance processes, and essential project objectives that define minimum success criteria" | "Foundational technical standards that establish clear project boundaries, key regulatory frameworks that determine applicable compliance processes, and essential project objectives that define minimum success criteria" | "Comprehensive technical requirements covering all project aspects, adaptable standards responsive to varying conditions, and systematic management frameworks ensuring thorough quality approaches" | "Harmonized design principles maintaining integrity across documentation, compatible technical specifications aligning with execution methods, and integrated standards ensuring coherence between project phases" |
| **Applying** | "Essential execution methods defining necessary implementation sequences, standard procurement protocols determining appropriate resource acquisition, and fundamental scheduling frameworks structuring workflow priorities" | "Adequate implementation techniques meeting minimal technical requirements, functional procurement methods enabling efficient resource acquisition, and practical resource frameworks supporting execution without unnecessary excess" | "Comprehensive execution methodologies addressing all project activities, adaptive resource specifications responsive to external constraints, and thorough coordination frameworks ensuring proper integration across disciplines" | "Coherent execution processes maintaining logical sequence across phases, aligned procurement activities harmonizing with implementation timelines, and compatible operational procedures ensuring non-contradictory workflows" |
| **Judging** | "Critical verification criteria defining necessary quality checkpoints, standard assessment protocols determining appropriate validation approaches, and essential performance frameworks structuring key acceptance parameters" | "Adequate verification methods meeting regulatory compliance requirements, practical quality procedures enabling efficient validation, and appropriate performance frameworks supporting system acceptance" | "Comprehensive inspection protocols addressing all quality aspects, adaptive testing methodologies responsive to varying systems, and thorough validation frameworks ensuring structured verification across all components" | "Integrated quality processes maintaining logical integrity across components, aligned validation methodologies harmonizing with industry standards, and coherent performance requirements ensuring compatibility between interconnected systems" |
| **Reflecting** | "Essential completion procedures defining necessary project closure requirements, standard remediation protocols determining appropriate corrective approaches, and basic transition frameworks structuring knowledge transfer" | "Adequate closeout procedures meeting stakeholder acceptance criteria, viable corrective approaches enabling effective deficiency resolution, and practical transition processes supporting operational handover" | "Comprehensive evaluation mechanisms addressing all delivery aspects, adaptive corrective measures responsive to identified issues, and thorough documentation frameworks ensuring complete knowledge transfer" | "Coherent evaluation processes maintaining logical relationships across deliverables, aligned operational procedures harmonizing with maintenance requirements, and integrated knowledge documentation ensuring systematic improvement" |

## Matrix Z – Checklist 2

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| Validation | **Essentiality** | **Sufficiency** | **Completeness** | **Consistency** |
| **Guiding** | Establish unambiguous project requirements and specifications that clearly define success criteria. Ensure all design standards, regulatory guidelines, and performance metrics are precisely defined, measurable, and traceable to project objectives. | Provide technical specifications with optimal detail—comprehensive enough to ensure quality, safety, and compliance while allowing appropriate flexibility for efficient construction methodologies and innovation. Avoid both over-specification and under-specification. | Develop project documentation that addresses all engineering disciplines, regulatory requirements, site conditions, and project phases. Ensure specifications cover every critical system and component without omissions, from foundation to finishes. | Maintain logical coherence across all design documents, ensuring architectural, structural, mechanical, and electrical specifications integrate seamlessly. Eliminate contradictions between specifications, drawings, and requirements across all project documentation. |
| **Applying** | Implement construction and procurement methodologies that demonstrably deliver design intent. Utilize installation techniques, quality control procedures, and project management approaches that reliably translate specifications into physical reality within required tolerances. | Deploy construction workflows and resource allocation strategies that achieve project requirements efficiently. Optimize material procurement, staffing, and building techniques to deliver quality outcomes without waste, redundancy, or excessive resource utilization. | Execute construction plans that address all project deliverables, building systems, and site conditions. Ensure material procurement, installation sequencing, quality protocols, and commissioning procedures collectively cover all aspects of physical implementation. | Maintain methodological coherence across all project phases, trades, and site conditions. Ensure installation techniques remain compatible across interconnected systems, procurement aligns with construction sequencing, and quality control measures apply uniformly. |
| **Judging** | Establish definitive acceptance criteria and testing protocols that clearly differentiate between compliant and non-compliant outcomes. Implement inspection methods that produce unambiguous evaluations of whether construction meets requirements. | Implement quality assurance measures that efficiently validate construction outcomes without excessive testing or redundant procedures. Design approval workflows that ensure quality while maintaining project momentum and resource efficiency. | Develop quality control systems that address all critical aspects of construction deliverables. Ensure inspection protocols, performance testing, and commissioning procedures collectively evaluate everything from finish quality to system performance. | Apply uniform acceptance standards across all building components while appropriately accounting for unique system requirements. Ensure testing protocols and approval procedures maintain logical coherence across different construction elements and project phases. |
| **Reflecting** | Implement clear, actionable feedback mechanisms including punch lists, commissioning reports, and post-construction evaluations. Ensure all feedback definitively identifies specific opportunities for improvement with measurable remediation targets. | Conduct project close-out procedures and performance evaluations that enhance outcomes without creating excessive administrative burden. Balance thoroughness with efficiency in punch list management, lessons-learned documentation, and warranty procedures. | Develop evaluation systems that address all dimensions of project success including technical compliance, schedule performance, cost management, and stakeholder satisfaction. Ensure no critical aspect of project delivery escapes evaluation. | Implement improvement protocols that maintain logical coherence across project phases and building systems. Ensure remedial actions, quality improvements, and process enhancements form a coordinated approach that benefits both current projects and future delivery methods. |