



JUSTIFICATION OF THE WQI CORE MANAGEMENT SYSTEM QUALITY INDICATORS

WHOLE QUALITY JUSTIFICATION WQI_IMJ1

Methodological Justification of the Fifty-Indicator Architecture of the
WQI Management System Quality Standard — Core

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Table of Contents

FOREWORD	6
1. PURPOSE AND SCOPE	6
1.1 Purpose of This Paper	6
1.2 What Is Being Justified	7
1.3 Scope of the Justification	7
2. FROM QUALITY FACTORS TO QUALITY INDICATORS	7
2.1 Role of Core Quality Indicators	7
2.2 Relationship Between Factors and Indicators	8
2.3 Indicators as Determination Functions	8
2.4 Indicators, Quality Outcome Criteria, Evidence, and Findings	9
2.5 Applicability and Inapplicability	9
3. THE INDICATOR-LEVEL COMPLETENESS PROBLEM	9
3.1 Why Factor-Level Completeness Is Not Sufficient	9
3.2 Need for Appropriate Indicator Resolution	10
3.3 Risk of Too Few Indicators	10
3.4 Risk of Excessive Indicator Detail	11
3.5 Preserving the Boundary Between Indicators and Application Detail	11
4. METHOD FOR DERIVING AND TESTING CORE QUALITY INDICATORS	11
4.1 Derivation from the Parent Quality Factor	11
4.2 Functional Failure-Mode Analysis	12
4.3 Necessity Test	12
4.4 Removal Test	12
4.5 Distinctness and Non-Redundancy Test	13
4.6 Absorption and Combination Test	13
4.7 Evidence and Determinability Test	14
4.8 Cross-Context Applicability Test	14
4.9 Missing-Function Test	15
4.10 Collective Architecture Test	15
5. FACTOR 1 — REQUIREMENTS REALIZATION	16
5.1 Indicator Architecture of Requirements Realization	16
5.2 Requirements Completeness	16
5.3 Requirements Clarity	16
5.4 Intended-Result Requirement Connection	17
5.5 Requirement Allocation	17

5.6 Requirement Verification	17
5.7 Requirement Changes	18
5.8 Continuing Requirements	18
5.9 Factor 1 Collective Finding	18
6. FACTOR 2 — REALIZATION CAPABILITY	18
6.1 Indicator Architecture of Realization Capability	18
6.2 Realization Method Capability	19
6.3 Realization Process Capability and Control	19
6.4 External Provider Capability	19
6.5 Personnel Competence	20
6.6 Equipment and Supporting Infrastructure Capability	20
6.7 Realization Conditions	20
6.8 Capability After Change	21
6.9 Unusual Conditions	21
6.10 Factor 2 Collective Finding	21
7. FACTOR 3 — QUALITY-STATE DETERMINATION	22
7.1 Indicator Architecture of Quality-State Determination	22
7.2 Determination Scope	22
7.3 Determination Method	22
7.4 Coverage and Sampling	23
7.5 Assessment System Capability	23
7.6 Determination Competence	23
7.7 Evidence Selection, Representativeness, and Use	24
7.8 Applicable Quality Outcome Criteria	24
7.9 Result Interpretation	25
7.10 Quality-State Conclusion	25
7.11 Current Validity	25
7.12 Factor 3 Collective Finding	26
8. FACTOR 4 — QUALITY-STATE INFORMATION	26
8.1 Indicator Architecture of Quality-State Information	26
8.2 Subject Identification	27
8.3 Requirement Information	27
8.4 Evidence and Records	28
8.5 Requirement and Evidence Links	28
8.6 Lifecycle and Change History	28
8.7 Information Status	29

8.8 Information Communication	29
8.9 Information Protection and Authorized Use.....	29
8.10 Adverse and Uncertain Information	30
8.11 Factor 4 Collective Finding	30
9. FACTOR 5 — QUALITY-STATE INFLUENCE	31
9.1 Indicator Architecture of Quality-State Influence	31
9.2 Immediate Protection, Containment, and Stabilization.....	31
9.3 Appropriate Response and Disposition	32
9.4 Intervention Authority	32
9.5 Timely Intervention	32
9.6 Acceptable State	33
9.7 Affected Scope	33
9.8 Cause and Recurrence	33
9.9 Factor 5 Collective Finding	34
10. FACTOR 6 — LIFECYCLE AND INTERFACE REALIZATION.....	34
10.1 Indicator Architecture of Lifecycle and Interface Realization.....	34
10.2 Lifecycle Responsibility	35
10.3 Interface Identification	35
10.4 Requirement Transfer	36
10.5 Quality-State Preservation	36
10.6 Responsibility and Authority Continuity	37
10.7 Integration	37
10.8 Change Across Interfaces	37
10.9 Downstream Confirmation	38
10.10 Realization Feedback.....	38
10.11 Factor 6 Collective Finding	38
11. HORIZONTAL TESTING ACROSS THE SIX FACTORS	39
11.1 Purpose of Horizontal Testing	39
11.2 Cross-Factor Distinctness	39
11.3 Cross-Factor Overlap and Interaction	40
11.4 Indicator Placement Test.....	40
11.5 Removal and Absorption Across Factor Boundaries.....	41
11.6 Non-Compensation and Failure Visibility	41
11.7 Consistency of Methodological Resolution.....	42
12. CROSS-DOMAIN AND CROSS-CONTEXT STRESS TESTING	42
12.1 Purpose of the Stress Test.....	42

12.2 Different Types of Managed Results	43
12.3 Different Realization Methods and Technologies	43
12.4 Different Organizational and Provider Arrangements.....	43
12.5 Different Lifecycle Conditions and Change	44
12.6 Normal, Unusual, and Degraded Conditions	44
12.7 Applicability and Inapplicability Across Contexts.....	44
12.8 Cross-Domain Stress-Test Finding	45
13. WHY FIFTY — AND NOT FEWER OR MORE.....	45
13.1 Why Fewer Indicators Would Reduce Determination Capability.....	45
13.2 Why Additional Indicators Are Not Required at the Present Core Methodological Resolution	46
13.3 Why Fifty Is the Presently Supported Core Resolution	46
14. STABILITY AND CONDITIONS FOR CONTROLLED REVISION.....	47
14.1 Need for Core Stability	47
14.2 Conditions That Could Justify Revision	47
14.3 Controlled Revision Principles.....	47
14.4 Stability Finding	48
15. CONCLUSION	48
Copyright and Use Notice	49

FOREWORD

Methodological justification of the fifty-Indicator architecture established for Management System Quality Determination under WQI_QMS1.

The WQI Management System Quality Standard — Core (WQI_QMS1) establishes six Core Quality Factors and fifty Core Quality Indicators for examining Management System Quality.

The six Factors identify the major functional areas of Management System Function Realization. The Indicators provide the next level of methodological resolution by preserving distinguishable management functions that should remain separately examinable.

This paper addresses a narrower question: why these fifty Indicators?

An Indicator is not included merely because its subject is important or commonly addressed in management practice. A Core Indicator must preserve a necessary and distinguishable determination function. Its removal or absorption should cause a meaningful loss of determination capability that cannot be recovered at the same Core Methodological Resolution.

At the same time, the Core architecture should not become a detailed checklist. The Indicator level must provide enough resolution to preserve important functional distinctions while remaining sufficiently general for use across different organizations, technologies, activities, and managed results.

The justification therefore tests the Indicators for necessity, removal, distinctness, non-redundancy, absorption, Evidence-supported determinability, cross-context applicability, missing functions, and collective architecture. It also examines cross-Factor placement and interaction.

The paper does not justify fifty Indicators simply because WQI_QMS1 presently contains fifty. The number must follow from the functions that need to remain separately examinable.

The resulting conclusion is bounded. The architecture is supported at the present Core Methodological Resolution and remains subject to controlled revision if future methodological analysis identifies a justified need for change.

1. PURPOSE AND SCOPE

1.1 Purpose of This Paper

The purpose of this paper is to justify the Core Quality Indicators used to examine the six WQI Management System Quality Factors.

The central question is:

What must remain separately examinable within each Core Quality Factor to understand how well the Management System realizes the corresponding part of its Intended Function?

At the Factor level, the question concerns the major functional areas that must be examined. At the Indicator level, the question concerns the distinguishable determination functions that must remain visible within those areas.

An Indicator is not justified because its subject is important, familiar, or commonly included in management standards.

The Indicator architecture must balance two risks. Too little resolution can hide important differences in Management System Function Realization. Too much resolution can turn the Core architecture into an application-specific checklist.

This paper therefore tests the necessity and distinctness of the Indicators, their relationships, their removal or absorption, their ability to support Evidence-supported determination, their cross-context applicability, and their collective ability to examine the six Factors.

The objective is not to defend a predetermined number of Indicators. It is to determine the presently supported Core Indicator architecture.

1.2 What Is Being Justified

WQI_QMS1 presently contains fifty Core Quality Indicators distributed across the six Management System Quality Factors: seven under Requirements Realization, eight under Realization Capability, ten under Quality-State Determination, nine under Quality-State Information, seven under Quality-State Influence, and nine under Lifecycle and Interface Realization.

This paper justifies whether each Indicator represents a necessary and distinguishable determination function.

The subject of justification is therefore not merely the Indicator name or its placement in a list. The question is whether the function represented by the Indicator must remain separately examinable at the Core Methodological Resolution.

Each Indicator is tested for removal, possible absorption by another Indicator, overlap, Evidence-supported determinability, cross-context applicability, and appropriate methodological resolution.

The Indicators are also tested collectively to determine whether the architecture contains unnecessary duplication or a missing Core function.

Applicability is established rather than assumed. An Indicator may be Inapplicable where the function or dependency it represents is absent in the applicable Context.

The final question is whether the fifty Indicators provide the presently supported invariant Core structure for identifying what should be examined, where applicable, beneath the six Management System Quality Factors.

1.3 Scope of the Justification

This paper provides a methodological justification of the WQI Management System Quality Indicator architecture.

It does not prescribe how a Management System should be designed, organized, operated, documented, or improved. It does not establish universal procedures, controls, metrics, targets, technologies, organizational structures, assessment methods, or Quality Outcome Criteria.

It also does not determine the Quality State of a specific Management System.

Within the WQI determination logic, an Indicator identifies what should be examined. Applicable Quality Outcome Criteria establish the expected state or result. Evidence provides the basis for examination. An Evidence-Supported Finding states what the Evidence supports. The resulting findings then contribute to Management System Quality interpretation.

Evidence Quality remains a separate determination concern.

The scope of this paper is therefore limited to the question:

Why are these fifty Indicators the presently supported Core Indicator architecture for examining the six Management System Quality Factors?

2. FROM QUALITY FACTORS TO QUALITY INDICATORS

2.1 Role of Core Quality Indicators

The six Core Quality Factors identify the major functional areas that must be examined to understand Management System Quality.

The Core Quality Indicators provide the next level of methodological resolution.

The relationship can be expressed as:

Management System Intended Function and Intended Result → Management System Function Realization → Core Quality Factors → Core Quality Indicators → applicable Quality Outcome Criteria → Evidence → Evidence-Supported Findings → Management System Quality Interpretation.

An Indicator is more specific than its parent Factor but more general than application-specific criteria, methods, observations, records, measurements, or other Evidence.

This allows the Core architecture to remain stable while the details of application vary.

A Core Indicator does not require the same method or Evidence in every application. It identifies a determination function that should remain visible where applicable.

An Indicator may be Inapplicable where the corresponding function or dependency is absent.

The role of the Indicator layer is therefore to preserve determination visibility without prescribing uniform practice.

2.2 Relationship Between Factors and Indicators

A Factor identifies a major functional area of Management System Quality. Its Indicators identify distinguishable functions within that area that should remain separately examinable.

An Indicator belongs under the Factor whose determination purpose most directly explains the function being examined.

The Factor is not simply the sum of favorable Indicator results. A weakness in one Indicator cannot automatically be compensated by strength in another.

Placement therefore follows determination function rather than a document, activity, person, system, or event.

The same Evidence or activity may support more than one Indicator without making those Indicators redundant.

The architecture must therefore be tested at two levels: within each parent Factor and horizontally across all six Factors.

2.3 Indicators as Determination Functions

Within WQI, a Core Quality Indicator is not a metric, measured value, performance target, warning signal, or numerical index.

It identifies what must remain separately examinable within a parent Quality Factor.

The central question is:

What must be capable of separate examination to understand the realization of this part of the Management System Intended Function?

For example, Personnel Competence identifies the need to examine whether people have the competence required for their responsibilities. It does not establish a universal competence metric.

Coverage and Sampling identifies whether the examination sufficiently covers what must be determined. It does not prescribe a universal sample size or sampling method.

A Core Indicator therefore does not prescribe the exact acceptable condition, method, Evidence, finding, or resulting Quality State.

Its Core status depends on whether removing the function would weaken the determination architecture, not on whether the subject is a familiar management activity.

2.4 Indicators, Quality Outcome Criteria, Evidence, and Findings

The Indicator layer must remain distinct from the elements used to apply it.

The Indicator identifies what is examined.

The Quality Outcome Criteria identify the expected state or result.

Evidence provides the basis for the examination.

The Evidence-Supported Finding states what the Evidence supports.

These elements should not be collapsed into one another.

For example, Requirement Verification identifies a determination function. The applicable verification expectations are established through Quality Outcome Criteria. The available records, observations, or other information may provide Evidence. The finding then states what that Evidence supports.

Evidence Quality remains a separate concern. A poor condition of the Management System is not the same as insufficient-quality Evidence.

Where Evidence is insufficient to support a finding, the applicable condition may remain Undetermined.

The Indicator architecture therefore supports the determination chain without replacing its other elements.

2.5 Applicability and Inapplicability

An invariant Core architecture does not mean that every Indicator is applicable in every determination.

Applicability depends on the Quality Object, Intended Function and Intended Result, responsibility and authority, Boundaries, Interfaces, Context, Lifecycle, and temporal basis of the determination.

An Indicator is Applicable where the function or dependency it represents is relevant.

An Indicator is Inapplicable where that function or dependency is absent from the applicable determination.

For example, External Provider Capability may be Inapplicable where no external provider contributes to realization. Coverage and Sampling may be Inapplicable where sampling is not used or relevant. Interface-related Indicators depend on the presence of relevant Interfaces.

Inapplicability must be established rather than assumed.

It must also be distinguished from an Undetermined condition. Where an Indicator is applicable but sufficient Evidence is unavailable, the condition may remain Undetermined.

Inapplicability should not be used to hide a Management System weakness or an Evidence limitation.

3. THE INDICATOR-LEVEL COMPLETENESS PROBLEM

3.1 Why Factor-Level Completeness Is Not Sufficient

A sufficiently complete Factor architecture does not by itself establish a sufficiently complete Indicator architecture.

A broad Factor may contain materially different functions whose weaknesses could remain hidden if they are not separately examinable.

For example, Requirements Realization can fail because requirements are incomplete, unclear, poorly connected to the Intended Result, incorrectly allocated, insufficiently verified, inadequately changed, or not maintained over time.

Similarly, Quality-State Determination can have appropriate scope but an inadequate method, appropriate methods but insufficient coverage, or adequate Evidence but incorrect interpretation.

Indicator-level completeness does not require listing every possible activity or failure.

It requires preserving the distinguishable functions whose omission would create a meaningful blind area.

The central question is:

If only the proposed Indicators were examined, could an important weakness in the parent Factor remain insufficiently visible?

Answering this question requires Indicator-level derivation, removal, distinctness, and completeness tests.

3.2 Need for Appropriate Indicator Resolution

The Indicator layer requires an appropriate level of methodological resolution.

If an Indicator is too broad, important differences in the parent Factor may remain hidden.

If Indicators are too narrow, the Core architecture can become a detailed checklist tied to particular practices or technologies.

The intended hierarchy is:

Factor → broad functional area.

Indicator → distinguishable determination function.

Quality Outcome Criteria and methods → context-specific expectations and means of examination.

Evidence and findings → application-specific basis and result.

The Indicator level should therefore be functional rather than procedural.

For example, Personnel Competence is sufficiently general to apply across different responsibilities and domains. Requirement Changes identifies a distinct function without prescribing a particular change-control procedure.

Consistency of resolution does not mean that every Indicator has the same internal complexity. It means that each performs the same architectural role between the Factor and application-specific detail.

3.3 Risk of Too Few Indicators

Too few Indicators can reduce determination visibility.

Important differences may be hidden inside broad terms, traceability may weaken, and favorable conditions may obscure materially different weaknesses.

Requirements Completeness and Requirements Clarity illustrate this problem. Requirements may be complete but unclear, or clear but incomplete.

Determination Scope and Determination Method are similarly distinct. A determination may examine the correct subject using an inappropriate method.

Information Communication and Information Protection also address different functions.

Timely Intervention and Acceptable State cannot be treated as one question because timely action does not establish that the resulting condition is acceptable.

A smaller Indicator set is justified only if it preserves the same determination capability, failure visibility, traceability, and non-compensation.

The objective is therefore not the fewest possible Indicators, but the fewest that preserve all necessary distinctions at the Core level.

3.4 Risk of Excessive Indicator Detail

More Indicators do not automatically improve the architecture.

Excessive detail can turn the Core into a checklist, reduce stability, fragment related functions, create inconsistent methodological resolution, and introduce duplication.

Application detail should normally remain beneath the Indicator level through Quality Outcome Criteria, methods, Evidence, and subordinate activities.

The central question is:

Does a proposed subject require a separate Core Indicator because it represents a materially distinct determination function that cannot be adequately examined beneath an existing Indicator?

If not, it should remain below the Core Indicator level.

The objective is the smallest sufficiently complete Indicator set at the present Core Methodological Resolution.

3.5 Preserving the Boundary Between Indicators and Application Detail

A Core Indicator represents a stable determination function.

Application detail represents the context-specific requirements, Quality Outcome Criteria, methods, controls, activities, parameters, and Evidence used to examine that function.

For example, Personnel Competence is a Core Indicator. Particular qualifications, training requirements, experience, or certifications belong to the applicable criteria and Evidence.

Information Protection and Authorized Use is a Core Indicator. Particular access-control technologies or security procedures belong to the application level.

The importance of a subject does not by itself determine its architectural level.

A subject belongs at the Core Indicator level when it is necessary, distinguishable, and sufficiently stable across Contexts.

It belongs beneath the Core level when it describes how the function is required, realized, examined, evidenced, or interpreted.

4. METHOD FOR DERIVING AND TESTING CORE QUALITY INDICATORS

4.1 Derivation from the Parent Quality Factor

Indicator derivation begins with the determination purpose of the parent Factor.

It does not begin with familiar practices, clauses, organizational functions, or available measures.

The central question is:

What distinguishable functions must remain examinable to understand realization of this Factor?

The derivation follows the chain from the Management System Intended Function through Management System Function Realization to the parent Factor and then to its Indicators.

For example, Requirements Realization requires examination of how requirements are established, connected, allocated, verified, changed, and maintained.

Realization Capability requires examination of the methods, processes, providers, personnel, equipment, infrastructure, conditions, and capability needed under change and unusual conditions.

Subjects such as leadership, planning, training, documentation, or review do not automatically become Core Indicators merely because they are common management activities.

The first test is therefore whether the proposed Indicator can be traced directly to a distinguishable function within the determination purpose of its parent Factor.

4.2 Functional Failure-Mode Analysis

A functional failure mode is a distinguishable way in which a parent Factor can be inadequately realized while other parts of that Factor remain satisfactory.

The purpose is not to catalogue every possible failure.

It is to identify families of failure that support separate determination functions.

For Requirements Realization, requirements may be complete but unclear, clear but poorly allocated, or correctly established but not maintained after change.

For Realization Capability, the selected method may be capable while the process is inadequately controlled, or personnel may be competent while required equipment is incapable.

The test asks:

Can this part fail while the other proposed functions remain satisfactory?

Would that failure remain sufficiently visible without a separate Indicator?

Different ways in which one Indicator can fail do not automatically justify additional Indicators.

The analysis supports a separate Indicator only where the failure reflects a distinct determination function at the Core Methodological Resolution.

4.3 Necessity Test

Necessity does not mean importance.

The test asks:

Does this Indicator preserve a determination function that must remain separately visible in order to understand the realization of its parent Factor at the Core Methodological Resolution?

A necessary Indicator contributes directly to the Factor, can vary materially from related functions, gives distinct meaning to failure, and cannot be fully covered by another Indicator without changing that Indicator's purpose or resolution.

For example, Requirements Completeness and Requirements Clarity are both necessary because one can be satisfactory while the other is not.

Determination Scope and Determination Method are similarly distinct.

A specific training activity, by contrast, may be examined beneath Personnel Competence without requiring its own Core Indicator.

The question is therefore not whether a subject could be examined separately, but whether it must remain separately examinable at the Core level to avoid meaningful loss.

Necessity is required but is not sufficient by itself. The Indicator must also pass the remaining tests.

4.4 Removal Test

The Removal Test asks:

If this Indicator were removed, could a materially important weakness in the parent Factor remain insufficiently visible while the remaining Indicators appeared satisfactory?

The test concerns determination capability rather than terminology.

For example, removing Requirement Allocation could leave a blind area where requirements are complete and clear but are not connected to the functions or responsibilities that must realize them.

Removing Current Validity could leave a blind area where a previously supported Quality-State Determination is still used after it no longer represents the relevant condition.

A function may appear to be absorbed implicitly by another Indicator, but a conceptual relationship is not enough.

For each proposed removal, three questions are asked:

What weakness would become less visible?

Can another existing Indicator fully expose that weakness without changing its own purpose or resolution?

Could the remaining architecture appear satisfactory while the removed condition remained deficient or unresolved?

The Removal Test is applied first within the parent Factor and later horizontally across Factor boundaries.

4.5 Distinctness and Non-Redundancy Test

A Core Indicator must be distinct, but it does not need to be isolated from other Indicators.

The test asks whether it preserves a materially different determination question at the same Core Methodological Resolution.

For example, Determination Scope and Coverage and Sampling interact, but they are not redundant. Scope identifies what should be determined; coverage and sampling examine whether the actual examination sufficiently represents that scope.

Information Status and Current Validity also differ. Information may have a clear status while a Quality-State Determination no longer represents the relevant current condition.

Shared Evidence or causal relationships do not establish redundancy.

Requirement Information and Requirement Transfer may use related information but examine different functions. Personnel Competence and Determination Competence both concern competence but apply to different determination purposes.

The test therefore avoids both false duplication and false consolidation.

4.6 Absorption and Combination Test

The Absorption and Combination Test examines whether two proposed Indicators can be merged, or one absorbed by another, without loss of determination capability.

The test asks whether the Indicators can be combined without losing a distinct determination function, hiding an unfavorable condition, or changing the Core Methodological Resolution.

For example, combining Requirements Completeness and Requirements Clarity into a broad term such as Requirements Adequacy would reduce visibility because complete and clear are different conditions.

Capability After Change cannot simply be absorbed into the individual capability Indicators because the effect of change on the combined required capability is itself a distinct determination concern.

Requirement Transfer also cannot be absorbed by Requirement Information because maintaining usable requirement information does not establish that requirements are transferred across relevant Lifecycle stages and Interfaces.

Broad terms such as adequacy, effectiveness, control, governance, or capability should not be used to hide distinguishable functions.

The Removal Test asks what would be lost. The Absorption Test asks whether the function can be preserved elsewhere without changing the architecture.

4.7 Evidence and Determinability Test

A Core Quality Indicator must represent a function that can be meaningfully examined through Evidence.

The test asks:

Can the condition represented by this Indicator be examined through applicable Evidence and support a bounded Evidence-Supported Finding?

The same Evidence is not required in every application.

Different Management Systems may use different records, observations, measurements, analyses, assessments, or other Evidence. The applicable Evidence depends on the Quality Object, Context, Quality Outcome Criteria, and determination conditions.

For example, Personnel Competence may be examined through different Evidence depending on the responsibilities involved. Requirement Transfer may also be examined through different Evidence depending on the Lifecycle stages and Interfaces involved.

The Indicator remains stable even when the Evidence used to examine it changes.

Lack of sufficient Evidence does not make an Indicator invalid or inapplicable.

Where an Indicator is applicable but the available Evidence is insufficient, the condition may remain Undetermined.

The test therefore concerns whether the Indicator is capable of Evidence-supported determination, not whether sufficient Evidence will always be available.

This test must also preserve the distinction between Management System Quality and Evidence Quality.

For example, Indicator 3.6 — Evidence Selection, Representativeness, and Use — examines how the Management System selects and uses Evidence in Quality-State Determination.

It does not replace the separate determination of the quality of that Evidence.

A proposed Indicator passes the Evidence and determinability test when it identifies a sufficiently clear determination function that can be examined through applicable Evidence and support a bounded Evidence-Supported Finding.

This helps ensure that Core Indicators are usable for actual Quality Determination rather than remaining only general management concepts.

4.8 Cross-Context Applicability Test

A Core Indicator should remain meaningful across materially different Contexts.

The test asks:

Does this Indicator represent a determination function that remains relevant across different types of organizations, activities, technologies, and managed results?

This does not mean that every Indicator must be applicable in every determination.

For example, External Provider Capability is relevant where realization depends on an external provider. Requirement Transfer is relevant where requirements must move across Lifecycle stages or Interfaces.

The Core function remains stable even when the way it is realized or examined changes.

A proposed Indicator is weak at the Core level if it depends on one technology, organizational arrangement, sector, procedure, or practice.

It passes the cross-context test when the determination function remains meaningful across different Contexts, even where particular applications make it Inapplicable.

4.9 Missing-Function Test

The Indicator architecture must also be tested for missing functions.

The test asks:

Could an important weakness in a parent Factor remain insufficiently visible even when all of its existing Indicators are examined?

If yes, an additional Indicator may be needed.

However, an important subject does not automatically require a new Core Indicator. It may already be covered by an existing Indicator or belong at the application level.

A new Core Indicator is justified only when it represents a distinct determination function that is not adequately covered by the existing architecture at the same Core Methodological Resolution.

The removal and missing-function tests therefore work together:

Removal asks what is lost when an Indicator is removed.

Missing-function testing asks what is not covered by the existing Indicators.

Together, they help determine whether the Indicator architecture is sufficiently complete without unnecessary detail.

4.10 Collective Architecture Test

The final methodological test examines the Indicators as a collective architecture.

The central question is:

Do the Indicators together provide sufficient coverage of the six Factors at the present Core Methodological Resolution?

The architecture should cover the necessary determination functions, preserve important distinctions, avoid unnecessary duplication, avoid material gaps, and maintain a sufficiently consistent level of resolution.

Interaction between Indicators is expected. The purpose is not to make each Indicator independent from all others.

The architecture is supported only when the individual Indicators and the complete structure satisfy these conditions together.

The following sections apply these tests to the Indicators under each of the six Factors.

5. FACTOR 1 — REQUIREMENTS REALIZATION

5.1 Indicator Architecture of Requirements Realization

Requirements Realization examines the degree to which management establishes, connects, allocates, verifies, changes, and maintains the requirements necessary to define what must be realized.

At the Core Indicator level, this Factor is represented by seven Indicators:

- 1.1 Requirements Completeness
- 1.2 Requirements Clarity
- 1.3 Intended-Result Requirement Connection
- 1.4 Requirement Allocation
- 1.5 Requirement Verification
- 1.6 Requirement Changes
- 1.7 Continuing Requirements

Together, these Indicators follow the functional path from identifying the necessary requirements through maintaining them for as long as they remain applicable.

The functions are connected but not interchangeable. Requirements may be complete but unclear, clear but poorly connected to the Intended Result, correctly established but poorly allocated, or adequately established but not maintained after change.

The following sections justify each Indicator separately.

5.2 Requirements Completeness

Requirements Completeness examines whether the requirements necessary to define what must be realized are sufficiently identified and included.

This Indicator is necessary because a Management System may correctly realize the requirements it knows while important applicable requirements remain missing.

The central question is:

Are the requirements necessary to define what must be realized sufficiently complete?

Completeness is distinct from clarity, allocation, verification, and other requirement functions.

Removing Requirements Completeness would create a blind area where the known requirements appear satisfactory while necessary requirements remain unidentified or omitted.

Requirements Completeness therefore represents a distinct and necessary determination function within Requirements Realization.

5.3 Requirements Clarity

Requirements Clarity examines whether applicable requirements are sufficiently clear for their intended use.

This Indicator is necessary because a complete set of requirements may still contain ambiguity, inconsistency, or insufficiently understood meaning.

The central question is:

Are the applicable requirements sufficiently clear to support their correct realization?

Clarity is distinct from completeness. A requirement can be present but unclear.

Removing Requirements Clarity could leave an important weakness insufficiently visible where all necessary requirements appear to be present but cannot be reliably understood or applied.

Requirements Clarity therefore represents a distinct and necessary determination function within Requirements Realization.

5.4 Intended-Result Requirement Connection

Intended-Result Requirement Connection examines whether applicable requirements are sufficiently connected to the Intended Result that must be realized.

This Indicator is necessary because requirements may be complete and clear but still fail to define what is needed for the required Intended Result.

The central question is:

Do the applicable requirements adequately connect what must be done or achieved to the required Intended Result?

The Indicator does not prescribe a particular requirements structure or traceability method.

Removing Intended-Result Requirement Connection would create a blind area where requirements appear satisfactory individually but do not adequately define realization of the required result.

Intended-Result Requirement Connection therefore represents a distinct and necessary determination function within Requirements Realization.

5.5 Requirement Allocation

Requirement Allocation examines whether applicable requirements are sufficiently assigned or connected to the functions, responsibilities, processes, providers, or other elements responsible for their realization.

The central question is:

Are applicable requirements allocated to where they must be realized?

This Indicator is necessary because a requirement may be complete, clear, and correctly connected to the Intended Result while responsibility for its realization remains unclear or misplaced.

The Indicator does not prescribe a particular allocation method or organizational structure.

Removing Requirement Allocation would create a blind area between what is required and where responsibility for realizing it resides.

Requirement Allocation therefore represents a distinct and necessary determination function within Requirements Realization.

5.6 Requirement Verification

Requirement Verification examines whether applicable requirements are sufficiently checked to confirm that they have been correctly established for realization.

The central question is:

Have the applicable requirements been sufficiently verified before or during their use for realization?

The Indicator does not prescribe one universal verification method. The appropriate verification depends on the requirements and Context.

Removing Requirement Verification could leave an important weakness insufficiently visible where requirements are present and allocated but errors in their establishment remain insufficiently detected.

Requirement Verification therefore represents a distinct and necessary determination function within Requirements Realization.

5.7 Requirement Changes

Requirement Changes examines whether changes to applicable requirements are sufficiently identified, evaluated, communicated, and incorporated into realization.

The central question is:

Are changes to applicable requirements adequately managed so that realization continues to reflect what is required?

The Indicator does not prescribe a particular change-control process.

Removing Requirement Changes would create a blind area where the original requirements are adequately established but realization no longer reflects later applicable changes.

Requirement Changes therefore represents a distinct and necessary determination function within Requirements Realization.

5.8 Continuing Requirements

Continuing Requirements examines whether requirements that remain applicable are recognized and maintained through the relevant Lifecycle.

The central question is:

Are continuing requirements maintained for as long as they remain applicable?

Such requirements may continue through operation, maintenance, service, transfer, storage, retirement, or other relevant Lifecycle conditions.

The Indicator does not prescribe a particular Lifecycle model or retention system.

Removing Continuing Requirements could leave an important weakness insufficiently visible where requirements are adequately established at one stage but are not maintained for later stages in which they remain applicable.

Continuing Requirements therefore represents a distinct and necessary determination function within Requirements Realization.

5.9 Factor 1 Collective Finding

The seven Indicators together provide the Core Indicator structure for Requirements Realization.

They examine whether requirements are complete, clear, connected to the Intended Result, allocated, verified, changed, and maintained while they remain applicable.

Each Indicator addresses a distinct function. Strength in one cannot be assumed to compensate for weakness in another.

Removing any one of these functions could leave an important part of Requirements Realization insufficiently visible.

The seven Indicators therefore provide a sufficiently complete and distinct architecture for Requirements Realization at the present Core Methodological Resolution.

6. FACTOR 2 — REALIZATION CAPABILITY

6.1 Indicator Architecture of Realization Capability

Realization Capability examines whether management establishes and maintains the capability needed to realize what is required under applicable conditions, including after change and under unusual conditions.

At the Core Indicator level, this Factor is represented by eight Indicators:

- 2.1 Realization Method Capability
- 2.2 Realization Process Capability and Control
- 2.3 External Provider Capability
- 2.4 Personnel Competence
- 2.5 Equipment and Supporting Infrastructure Capability
- 2.6 Realization Conditions
- 2.7 Capability After Change
- 2.8 Unusual Conditions

These Indicators represent different contributors to required realization capability.

The functions are connected but not interchangeable. A capable method does not establish that the process is adequately controlled. Competent personnel do not compensate for incapable equipment. Adequate normal capability does not establish capability after change or under unusual conditions.

The following sections justify each Indicator separately.

6.2 Realization Method Capability

Realization Method Capability examines whether the selected realization method is capable of achieving what is required under the applicable conditions.

The central question is:

Is the realization method capable of achieving what is required under the applicable conditions?

This Indicator is necessary because supporting resources may be adequate while the selected method itself is incapable.

The Indicator does not prescribe a particular realization method or technology.

Removing Realization Method Capability would create a blind area where resources and controls appear adequate but the fundamental means of realization cannot achieve the required result.

Realization Method Capability therefore represents a distinct and necessary determination function within Realization Capability.

6.3 Realization Process Capability and Control

Realization Process Capability and Control examines whether the processes used for realization are capable and sufficiently controlled.

The central question is:

Are the realization processes capable and sufficiently controlled to achieve the required result?

This Indicator is necessary because a realization method may be capable in principle while the actual processes are unstable, uncontrolled, or otherwise incapable of consistent realization.

The Indicator does not prescribe a particular process-control method.

Removing Realization Process Capability and Control could leave an important weakness insufficiently visible where the selected method is appropriate but the processes used to apply it are inadequate.

Realization Process Capability and Control therefore represents a distinct and necessary determination function within Realization Capability.

6.4 External Provider Capability

External Provider Capability examines whether external providers relied upon for realization are capable of performing what is required of them.

The central question is:

Are applicable external providers capable of realizing what is required of them?

The Indicator is applicable where realization depends on an external provider and may be Inapplicable where no such dependency exists.

It does not prescribe a particular supplier qualification, procurement, or oversight method.

Removing External Provider Capability would create a blind area where internal capability appears adequate while an external dependency necessary for realization is incapable.

External Provider Capability therefore represents a distinct and necessary determination function within Realization Capability.

6.5 Personnel Competence

Personnel Competence examines whether people have the competence needed for their assigned realization responsibilities.

The central question is:

Do personnel have the competence needed to perform their applicable responsibilities as required?

The Indicator does not prescribe particular education, training, experience, qualifications, or certifications. The applicable competence expectations depend on the responsibilities and Context.

Removing Personnel Competence could leave an important weakness insufficiently visible where methods, processes, and resources appear adequate but the people responsible for realization cannot perform their responsibilities as required.

Personnel Competence therefore represents a distinct and necessary determination function within Realization Capability.

6.6 Equipment and Supporting Infrastructure Capability

Equipment and Supporting Infrastructure Capability examines whether the equipment and supporting infrastructure needed for realization are capable of supporting what is required.

The central question is:

Are the equipment and supporting infrastructure needed for realization capable of supporting what is required?

The Indicator does not prescribe particular equipment, facilities, information systems, utilities, or other infrastructure.

Removing Equipment and Supporting Infrastructure Capability would create a blind area where methods, processes, and personnel appear adequate but necessary physical or supporting capability is insufficient.

Equipment and Supporting Infrastructure Capability therefore represents a distinct and necessary determination function within Realization Capability.

6.7 Realization Conditions

Realization Conditions examines whether the conditions necessary for realization are adequately established and maintained.

The central question is:

Are the conditions necessary for realization adequately maintained?

Relevant conditions may be physical, environmental, operational, organizational, or other conditions required by the applicable Context.

The Indicator does not prescribe universal operating or environmental conditions.

Removing Realization Conditions could leave an important weakness insufficiently visible where methods and resources are capable but the conditions under which they must operate are inadequate.

Realization Conditions therefore represents a distinct and necessary determination function within Realization Capability.

6.8 Capability After Change

Capability After Change examines whether the required realization capability remains adequate or is re-established after relevant change.

The central question is:

Does the required realization capability remain adequate after relevant change?

Change may affect methods, processes, personnel, equipment, supporting infrastructure, external providers, conditions, or their relationships.

The Indicator does not prescribe a particular change-management process.

Removing Capability After Change would create a blind area where the individual capability elements appear adequate before change but their combined capability after change is not sufficiently established.

Capability After Change therefore represents a distinct and necessary determination function within Realization Capability.

6.9 Unusual Conditions

Unusual Conditions examines whether the required realization capability remains adequate under applicable conditions outside normal realization.

The central question is:

Can the Management System maintain the required realization capability under applicable unusual conditions?

Such conditions may include disruptions, abnormal conditions, emergencies, unexpected demand, or other relevant departures from normal conditions. The Indicator does not require preparation for every conceivable event.

Removing Unusual Conditions could leave an important weakness insufficiently visible where normal realization capability appears adequate but required capability is insufficient when applicable unusual conditions occur.

Unusual Conditions therefore represents a distinct and necessary determination function within Realization Capability.

6.10 Factor 2 Collective Finding

The eight Indicators together provide the Core Indicator structure for Realization Capability.

They examine realization method capability, process capability and control, external provider capability, personnel competence, equipment and supporting infrastructure capability, realization conditions, capability after change, and unusual conditions.

Each Indicator addresses a distinct contributor to required capability. Strength in one cannot be assumed to compensate for weakness in another.

Removing any one of these functions could leave an important part of Realization Capability insufficiently visible.

The eight Indicators therefore provide a sufficiently complete and distinct architecture for Realization Capability at the present Core Methodological Resolution.

7. FACTOR 3 — QUALITY-STATE DETERMINATION

7.1 Indicator Architecture of Quality-State Determination

Quality-State Determination examines whether management can adequately determine the actual condition relevant to its responsibilities.

At the Core Indicator level, this Factor is represented by ten Indicators:

- 3.1 Determination Scope
- 3.2 Determination Method
- 3.3 Coverage and Sampling
- 3.4 Assessment System Capability
- 3.5 Determination Competence
- 3.6 Evidence Selection, Representativeness, and Use
- 3.7 Applicable Quality Outcome Criteria
- 3.8 Result Interpretation
- 3.9 Quality-State Conclusion
- 3.10 Current Validity

These Indicators represent different functions needed for an adequate Quality-State Determination.

The functions are connected but not interchangeable. An appropriate method does not establish sufficient coverage. Good Evidence does not compensate for incorrect Quality Outcome Criteria. A conclusion that was adequately supported when made may no longer remain current.

The following sections justify each Indicator separately.

7.2 Determination Scope

Determination Scope examines whether Quality-State Determination covers the subject and extent that need to be determined.

The central question is:

Does the determination cover the appropriate subject and extent needed to determine the relevant Quality State?

The applicable scope depends on the Quality Object, Intended Function and Intended Result, Boundaries, Interfaces, Context, and purpose of the determination.

The Indicator does not prescribe a universal scope.

Removing Determination Scope would create a blind area where the methods and Evidence appear adequate but important parts of the condition are outside the determination.

Determination Scope therefore represents a distinct and necessary determination function within Quality-State Determination.

7.3 Determination Method

Determination Method examines whether the method used is appropriate for determining the actual condition.

The central question is:

Is the determination method appropriate for determining the actual condition?

The Indicator does not prescribe a universal assessment, measurement, inspection, analysis, or evaluation method.

The appropriate method depends on the Quality Object, determination purpose, applicable Quality Outcome Criteria, and Context.

Removing Determination Method could leave an important weakness insufficiently visible where the correct subject is examined but by a method incapable of adequately determining its condition.

Determination Method therefore represents a distinct and necessary determination function within Quality-State Determination.

7.4 Coverage and Sampling

Coverage and Sampling examines whether the actual examination provides sufficient coverage of the Determination Scope and whether sampling, where used, is appropriate.

The central question is:

Does the examination provide sufficient coverage to support the required Quality-State Determination?

The Indicator does not require sampling in every application and does not prescribe a universal sample size or sampling method.

Removing Coverage and Sampling would create a blind area where the scope and method appear appropriate but the actual examination does not sufficiently represent the condition being determined.

Coverage and Sampling therefore represents a distinct and necessary determination function within Quality-State Determination.

7.5 Assessment System Capability

Assessment System Capability examines whether the systems, equipment, tools, or other means used for Quality-State Determination are capable of supporting the required determination.

The central question is:

Is the assessment system capable of determining the condition with the required adequacy?

The assessment system may include measurement, testing, inspection, monitoring, analytical, information, or other means.

The Indicator does not prescribe particular assessment technologies.

Removing Assessment System Capability could leave an important weakness insufficiently visible where the scope and method are appropriate but the means used to perform the determination are incapable.

Assessment System Capability therefore represents a distinct and necessary determination function within Quality-State Determination.

7.6 Determination Competence

Determination Competence examines whether the people performing or supporting Quality-State Determination have the competence needed for their responsibilities.

The central question is:

Do the people involved have the competence needed to perform their determination responsibilities?

The Indicator does not prescribe particular qualifications, training, experience, or certifications.

Removing Determination Competence would create a blind area where the scope, method, and assessment system appear adequate but the people applying them cannot perform the determination as required.

Determination Competence therefore represents a distinct and necessary determination function within Quality-State Determination.

7.7 Evidence Selection, Representativeness, and Use

Evidence Selection, Representativeness, and Use examines whether the Evidence used for Quality-State Determination is appropriately selected, sufficiently representative, and properly used.

This Indicator is necessary because a determination can have appropriate scope, methods, assessment systems, and competence but still be weakened by inappropriate use of Evidence.

The central question is:

Does the Management System select and use Evidence that adequately represents the condition being determined?

The Indicator does not prescribe particular Evidence sources. The Evidence needed depends on the Quality Object, determination purpose, and Context.

This Indicator concerns how the Management System selects and uses Evidence. It does not replace the separate determination of Evidence Quality.

Removing Evidence Selection, Representativeness, and Use could leave an important weakness insufficiently visible where the determination process appears adequate but the Evidence used does not adequately support the condition being determined.

Evidence Selection, Representativeness, and Use therefore represents a distinct and necessary determination function within Quality-State Determination.

7.8 Applicable Quality Outcome Criteria

Applicable Quality Outcome Criteria examines whether the correct criteria are used to interpret the condition being determined.

This Indicator is necessary because adequate Evidence does not by itself establish whether a condition meets what is required.

The central question is:

Are the appropriate Quality Outcome Criteria used for the Quality-State Determination?

The applicable criteria depend on the Quality Object, requirements, Intended Function and Intended Result, Context, and Applicable Basis.

The Indicator does not establish universal criteria for all Management Systems.

This Indicator examines whether the Management System uses the applicable Quality Outcome Criteria in Quality-State Determination; it does not make the Quality Outcome Criteria themselves part of the Management System architecture.

Removing Applicable Quality Outcome Criteria would create a blind area where Evidence is available and properly examined but is interpreted against an incorrect, incomplete, or unsupported basis.

Applicable Quality Outcome Criteria therefore represents a distinct and necessary determination function within Quality-State Determination.

7.9 Result Interpretation

Result Interpretation examines whether the results of the determination are correctly interpreted against the applicable Quality Outcome Criteria.

This Indicator is necessary because appropriate Evidence and criteria do not by themselves ensure a correct interpretation.

The central question is:

Are the determination results interpreted correctly against the applicable Quality Outcome Criteria?

Interpretation should reflect what the Evidence supports, including relevant limitations and uncertainty.

The Indicator does not prescribe one universal interpretation method. The appropriate approach depends on the Quality Object, Evidence, criteria, and Context.

Removing Result Interpretation could leave an important weakness insufficiently visible where the Evidence and criteria are appropriate but their meaning is incorrectly understood or applied.

Result Interpretation therefore represents a distinct and necessary determination function within Quality-State Determination.

7.10 Quality-State Conclusion

Quality-State Conclusion examines whether the determination results support the Quality-State conclusion that is reached.

This Indicator is necessary because correct interpretation of individual results does not by itself ensure that the resulting overall conclusion is adequately supported.

The central question is:

Does the Quality-State conclusion accurately reflect the Evidence-Supported Findings?

The conclusion should preserve important unfavorable, uncertain, or Undetermined conditions rather than obscure them through unsupported aggregation or compensation.

The Indicator does not prescribe one universal form of Quality-State conclusion.

Removing Quality-State Conclusion would create a blind area where individual results are appropriately interpreted but the resulting conclusion does not adequately represent what those results support.

Quality-State Conclusion therefore represents a distinct and necessary determination function within Quality-State Determination.

7.11 Current Validity

Current Validity examines whether the Quality-State Determination remains valid for the applicable current condition and time.

This Indicator is necessary because a determination that was adequately supported when made may no longer represent the actual condition after time, change, or new information.

The central question is:

Does the Quality-State Determination still represent the condition for which it is being used?

The required period of validity depends on the Quality Object, changes, Context, and purpose of the determination.

The Indicator does not prescribe a universal reassessment interval.

Removing Current Validity could leave an important weakness insufficiently visible where a previously adequate determination continues to be relied upon even though it no longer represents the relevant condition.

Current Validity therefore represents a distinct and necessary determination function within Quality-State Determination.

7.12 Factor 3 Collective Finding

The ten Indicators together provide the Core Indicator structure for Quality-State Determination:

- Determination Scope
- Determination Method
- Coverage and Sampling
- Assessment System Capability
- Determination Competence
- Evidence Selection, Representativeness, and Use
- Applicable Quality Outcome Criteria
- Result Interpretation
- Quality-State Conclusion
- Current Validity

Each Indicator addresses a different function needed to determine the actual Quality State.

Together, they examine what is determined, how it is examined, whether the examination is sufficient and capable, how Evidence and criteria are used, how results are interpreted, whether the conclusion is supported, and whether that conclusion remains current.

A weakness in one function cannot be assumed to be corrected by strength in another.

Removing any one of these functions could therefore leave an important part of Quality-State Determination insufficiently visible.

The ten Indicators provide a sufficiently complete and distinct architecture for Quality-State Determination at the present Core Methodological Resolution.

8. FACTOR 4 — QUALITY-STATE INFORMATION

8.1 Indicator Architecture of Quality-State Information

Quality-State Information examines whether Quality-relevant information remains sufficiently identifiable, connected, current, available, communicated, and protected for Management System Function Realization.

At the Core Indicator level, this Factor is represented by nine Indicators:

- 4.1 Subject Identification
- 4.2 Requirement Information
- 4.3 Evidence and Records
- 4.4 Requirement and Evidence Links
- 4.5 Lifecycle and Change History
- 4.6 Information Status
- 4.7 Information Communication
- 4.8 Information Protection and Authorized Use
- 4.9 Adverse and Uncertain Information

These Indicators represent different functions needed to maintain usable Quality-State Information.

Management must be able to identify what the information concerns, maintain applicable requirement information and Evidence, preserve necessary links and history, know the status of information, communicate it where needed, protect it appropriately, and preserve adverse or uncertain information.

These functions are connected but not interchangeable.

For example, information may exist but be linked to the wrong subject. It may be correctly identified but no longer current. It may be accurate and current but unavailable to those who need it. Adverse or uncertain information may also be lost or obscured even where favorable information is well maintained.

Together, the nine Indicators provide the Core resolution needed to examine Quality-State Information without prescribing particular documents, databases, communication systems, or information technologies.

The following sections justify each Indicator separately.

8.2 Subject Identification

Subject Identification examines whether Quality-relevant information can be correctly connected to the subject it represents.

This Indicator is necessary because information may exist but become unreliable or unusable if its subject cannot be clearly identified.

The central question is:

Can Quality-relevant information be correctly connected to the applicable Quality Object, condition, activity, result, or other subject?

The Indicator does not prescribe a particular identification system. The necessary form of identification depends on the information, Quality Object, and Context.

Removing Subject Identification would create a blind area where information is available but cannot be reliably connected to what it describes.

Subject Identification therefore represents a distinct and necessary determination function within Quality-State Information.

8.3 Requirement Information

Requirement Information examines whether information about applicable requirements is sufficiently available and usable for Management System Function Realization.

This Indicator is necessary because requirements may be correctly established but cannot support realization if the relevant requirement information is unavailable, outdated, or otherwise unusable where needed.

The central question is:

Is the applicable requirement information available and usable where it is needed?

The Indicator does not prescribe a particular document, database, or information system. The appropriate form depends on the requirements and Context.

Removing Requirement Information could leave an important weakness insufficiently visible where requirements exist but the information needed to understand and use them is not adequately maintained.

Requirement Information therefore represents a distinct and necessary determination function within Quality-State Information.

8.4 Evidence and Records

Evidence and Records examines whether Quality-relevant Evidence and records are sufficiently maintained and available for their required use.

This Indicator is necessary because Quality-State Information cannot remain usable if important Evidence or records are missing, lost, inaccessible, or not adequately preserved.

The central question is:

Are the Evidence and records needed for Management System Function Realization sufficiently maintained and available?

The Indicator does not prescribe particular records, formats, retention systems, or technologies. What must be maintained depends on the Quality Object, requirements, Lifecycle, Context, and applicable use.

This Indicator concerns the availability and preservation of Evidence and records as Quality-State Information. It does not determine the separate quality of the Evidence itself.

Removing Evidence and Records would create a blind area where Quality-relevant information needed to understand or support the Quality State is not adequately preserved or available.

Evidence and Records therefore represents a distinct and necessary determination function within Quality-State Information.

8.5 Requirement and Evidence Links

Requirement and Evidence Links examines whether Quality-relevant Evidence can be connected to the applicable requirements it supports.

This Indicator is necessary because requirements and Evidence may both be available but remain insufficiently useful if the relationship between them cannot be established.

The central question is:

Can applicable requirements and the Evidence relevant to their realization be sufficiently connected?

The Indicator does not prescribe a particular traceability system, record structure, or information technology. The necessary form of connection depends on the Quality Object, requirements, Lifecycle, and Context.

Removing Requirement and Evidence Links could leave an important weakness insufficiently visible where requirements and Evidence exist but their relationship cannot be reliably understood or traced.

Requirement and Evidence Links therefore represents a distinct and necessary determination function within Quality-State Information.

8.6 Lifecycle and Change History

Lifecycle and Change History examines whether Quality-relevant information preserves the history needed to understand the condition of the subject through relevant Lifecycle stages and changes.

This Indicator is necessary because current information alone may not adequately explain how the present condition developed or whether important changes have occurred.

The central question is:

Is the relevant Lifecycle and change history sufficiently preserved to understand the Quality State?

The Indicator does not require every historical detail to be retained. The necessary history depends on the Quality Object, requirements, Lifecycle, changes, Context, and intended use of the information.

Removing Lifecycle and Change History would create a blind area where current information is available but important prior conditions or changes needed to understand the Quality State are no longer visible.

Lifecycle and Change History therefore represents a distinct and necessary determination function within Quality-State Information.

8.7 Information Status

Information Status examines whether the current status of Quality-relevant information is sufficiently clear.

This Indicator is necessary because information may be available but misleading if its status is unknown, outdated, superseded, incomplete, or otherwise unclear.

The central question is:

Is the status of Quality-relevant information sufficiently clear for its intended use?

The Indicator does not prescribe a particular status designation, classification system, or information-control method. The necessary status information depends on the Quality Object, requirements, Lifecycle, Context, and intended use.

Removing Information Status could leave an important weakness insufficiently visible where information exists but users cannot reliably determine whether it is current and appropriate for the purpose for which it is being used.

Information Status therefore represents a distinct and necessary determination function within Quality-State Information.

8.8 Information Communication

Information Communication examines whether Quality-relevant information is communicated to those who need it, when it is needed.

This Indicator is necessary because information may be accurate, current, and available but still fail to support Management System Function Realization if it does not reach the appropriate people or functions.

The central question is:

Is Quality-relevant information communicated where and when it is needed?

The Indicator does not prescribe a particular communication method, channel, frequency, or organizational arrangement. The necessary communication depends on the information, responsibilities, Interfaces, Lifecycle, and Context.

Removing Information Communication would create a blind area where adequate information exists but is not communicated sufficiently to support required action or decision-making.

Information Communication therefore represents a distinct and necessary determination function within Quality-State Information.

8.9 Information Protection and Authorized Use

Information Protection and Authorized Use examines whether Quality-relevant information is adequately protected and used by those authorized to use it.

This Indicator is necessary because information may be accurate and available but become unreliable, unavailable, or improperly used if it is not adequately protected.

The central question is:

Is Quality-relevant information sufficiently protected and used as authorized?

The Indicator does not prescribe particular security systems, access controls, technologies, or protection methods. The necessary protection depends on the information, requirements, responsibilities, risks, and Context.

Removing Information Protection and Authorized Use could leave an important weakness insufficiently visible where Quality-relevant information exists but its integrity, availability, confidentiality where applicable, or authorized use is not adequately maintained.

Information Protection and Authorized Use therefore represents a distinct and necessary determination function within Quality-State Information.

8.10 Adverse and Uncertain Information

Adverse and Uncertain Information examines whether information about unfavorable, uncertain, or unresolved conditions remains visible and available for appropriate use.

This Indicator is necessary because Quality-State Information can become misleading if adverse findings, uncertainty, limitations, or unresolved conditions are omitted, obscured, or lost.

The central question is:

Are adverse and uncertain Quality-relevant conditions sufficiently represented in the available information?

The Indicator does not prescribe a particular classification, reporting format, or communication method. The necessary treatment depends on the condition, responsibilities, Quality Object, and Context.

Removing Adverse and Uncertain Information would create a blind area where available information presents an incomplete or misleading representation of the Quality State.

Adverse and Uncertain Information therefore represents a distinct and necessary determination function within Quality-State Information.

8.11 Factor 4 Collective Finding

The nine Indicators together provide the Core Indicator structure for Quality-State Information:

Subject Identification
Requirement Information
Evidence and Records
Requirement and Evidence Links
Lifecycle and Change History
Information Status
Information Communication
Information Protection and Authorized Use
Adverse and Uncertain Information

Together, they examine whether Quality-relevant information can be correctly identified, connected, preserved, understood, communicated, and protected for Management System Function Realization.

Each Indicator addresses a distinct information function. Strength in one cannot be assumed to compensate for weakness in another.

Removing any one of these functions could leave an important information condition insufficiently visible.

The nine Indicators therefore provide a sufficiently complete and distinct architecture for Quality-State Information at the present Core Methodological Resolution.

9. FACTOR 5 — QUALITY-STATE INFLUENCE

9.1 Indicator Architecture of Quality-State Influence

Quality-State Influence examines whether management can appropriately influence an identified Quality State where action is required.

At the Core Indicator level, this Factor is represented by seven Indicators:

5.1 Immediate Protection, Containment, and Stabilization

5.2 Appropriate Response and Disposition

5.3 Intervention Authority

5.4 Timely Intervention

5.5 Acceptable State

5.6 Affected Scope

5.7 Cause and Recurrence

These Indicators represent different functions needed to influence a Quality State.

Management may need to protect, contain, or stabilize an immediate condition; determine and implement an appropriate response; have authority to intervene; act in time; establish an acceptable resulting state; address the full affected scope; and address cause and recurrence where required.

These functions are connected but not interchangeable.

For example, an appropriate response may be identified but implemented too late. Immediate containment may protect against further effects without establishing an acceptable resulting state. A specific condition may be corrected while its wider affected scope or cause remains unresolved.

Together, the seven Indicators provide the Core resolution needed to examine Quality-State Influence without prescribing particular corrective-action systems, intervention procedures, or management structures.

The following sections justify each Indicator separately.

9.2 Immediate Protection, Containment, and Stabilization

Immediate Protection, Containment, and Stabilization examines whether management can take necessary immediate action when an identified condition requires it.

This Indicator is necessary because some conditions require action before a complete response or final disposition can be established.

The central question is:

Can management adequately protect, contain, or stabilize the affected condition when immediate action is required?

The Indicator does not prescribe particular emergency, containment, or stabilization procedures. The necessary action depends on the Quality Object, condition, affected scope, responsibilities, and Context.

Removing Immediate Protection, Containment, and Stabilization could leave an important weakness insufficiently visible where a condition requiring immediate action remains insufficiently controlled while a longer-term response is being determined.

Immediate Protection, Containment, and Stabilization therefore represents a distinct and necessary determination function within Quality-State Influence.

9.3 Appropriate Response and Disposition

Appropriate Response and Disposition examines whether management determines and implements an appropriate response to an identified Quality-State condition.

This Indicator is necessary because immediate protection, containment, or stabilization does not by itself resolve what should ultimately be done with the condition.

The central question is:

Is the response and resulting disposition appropriate for the identified condition?

The Indicator does not prescribe particular corrective actions, disposition categories, or response procedures. The appropriate response depends on the Quality Object, condition, requirements, responsibilities, and Context.

Removing Appropriate Response and Disposition would create a blind area where a condition is identified or temporarily controlled but the response needed to address it is inadequate or unresolved.

Appropriate Response and Disposition therefore represents a distinct and necessary determination function within Quality-State Influence.

9.4 Intervention Authority

Intervention Authority examines whether management has sufficient authority to act when a Quality-State condition requires intervention.

This Indicator is necessary because an appropriate response may be identified but cannot be effectively implemented if the required authority is absent, unclear, or unavailable.

The central question is:

Does management have the authority needed to intervene in the identified condition?

The Indicator does not prescribe a particular organizational structure, approval process, or allocation of authority. The necessary authority depends on the condition, responsibilities, Boundaries, Interfaces, and Context.

Removing Intervention Authority could leave an important weakness insufficiently visible where the need for action is recognized but management cannot adequately act within the required scope.

Intervention Authority therefore represents a distinct and necessary determination function within Quality-State Influence.

9.5 Timely Intervention

Timely Intervention examines whether management intervenes within the time needed to address an identified Quality-State condition.

This Indicator is necessary because an appropriate and authorized intervention may still be ineffective if it occurs too late.

The central question is:

Does management intervene within the time required by the identified condition?

The Indicator does not prescribe a universal response time. The required timing depends on the condition, its potential effects, applicable requirements, responsibilities, and Context.

Removing Timely Intervention would create a blind area where appropriate action is identified and authorized but delayed beyond the time needed to influence the Quality State adequately.

Timely Intervention therefore represents a distinct and necessary determination function within Quality-State Influence.

9.6 Acceptable State

Acceptable State examines whether management establishes an acceptable resulting condition after intervention.

This Indicator is necessary because taking action does not by itself demonstrate that the resulting condition is acceptable.

The central question is:

Has the intervention established an acceptable resulting state?

What constitutes an acceptable state depends on the applicable requirements, Quality Outcome Criteria, Quality Object, and Context.

The Indicator does not prescribe a particular corrective action or resulting condition.

Removing Acceptable State could leave an important weakness insufficiently visible where intervention has occurred but the resulting condition remains unacceptable or has not been adequately established.

Acceptable State therefore represents a distinct and necessary determination function within Quality-State Influence.

9.7 Affected Scope

Affected Scope examines whether management identifies and addresses the full scope affected by an identified Quality-State condition.

This Indicator is necessary because a condition may extend beyond the location, activity, result, or instance where it was first identified.

The central question is:

Has the full affected scope of the identified condition been adequately determined and addressed?

The affected scope depends on the Quality Object, condition, Lifecycle, Boundaries, Interfaces, and Context.

The Indicator does not require expansion beyond what the Evidence supports.

Removing Affected Scope would create a blind area where an identified condition is addressed locally while the same or related condition remains elsewhere within the affected scope.

Affected Scope therefore represents a distinct and necessary determination function within Quality-State Influence.

9.8 Cause and Recurrence

Cause and Recurrence examines whether management addresses the causes of an identified Quality-State condition and the potential for recurrence where required.

This Indicator is necessary because correcting an identified condition does not by itself prevent the same or a related condition from occurring again.

The central question is:

Are the relevant causes and potential for recurrence adequately addressed where required?

The necessary depth of analysis and action depends on the condition, its significance, affected scope, requirements, and Context.

The Indicator does not require a particular cause-analysis method or assume that every condition requires the same level of investigation.

Removing Cause and Recurrence could leave an important weakness insufficiently visible where an identified condition is corrected but important causes or recurrence potential remain insufficiently addressed.

Cause and Recurrence therefore represents a distinct and necessary determination function within Quality-State Influence.

9.9 Factor 5 Collective Finding

The seven Indicators together provide the Core Indicator structure for Quality-State Influence:

Immediate Protection, Containment, and Stabilization
Appropriate Response and Disposition
Intervention Authority
Timely Intervention
Acceptable State
Affected Scope
Cause and Recurrence

Together, they examine whether management can protect and stabilize an affected condition, respond appropriately, exercise the necessary authority, intervene in time, establish an acceptable state, address the affected scope, and address cause and recurrence where required.

Each Indicator addresses a distinct function. Strength in one cannot be assumed to compensate for weakness in another.

Removing any one of these functions could leave an important part of Quality-State Influence insufficiently visible.

The seven Indicators therefore provide a sufficiently complete and distinct architecture for Quality-State Influence at the present Core Methodological Resolution.

10. FACTOR 6 — LIFECYCLE AND INTERFACE REALIZATION

10.1 Indicator Architecture of Lifecycle and Interface Realization

Lifecycle and Interface Realization examines whether Management System Function Realization remains sufficiently connected through relevant Lifecycle stages, changes, transfers, handoffs, and Interfaces.

At the Core Indicator level, this Factor is represented by nine Indicators:

6.1 Lifecycle Responsibility
6.2 Interface Identification
6.3 Requirement Transfer
6.4 Quality-State Preservation
6.5 Responsibility and Authority Continuity
6.6 Integration
6.7 Change Across Interfaces
6.8 Downstream Confirmation
6.9 Realization Feedback

These Indicators represent different functions needed to preserve realization across Lifecycle stages and Interfaces.

Management must establish relevant responsibilities, identify Interfaces, transfer requirements, preserve the relevant Quality State, maintain continuity of responsibility and authority, integrate connected activities, manage change across Interfaces, confirm downstream realization, and use relevant feedback.

These functions are connected but not interchangeable.

For example, an Interface may be correctly identified while requirements are not adequately transferred across it. Requirements may be transferred while responsibility becomes unclear. A handoff may occur successfully while downstream realization is never confirmed.

Together, the nine Indicators provide the Core resolution needed to examine Lifecycle and Interface Realization without prescribing particular organizational structures, handoff procedures, information systems, or Lifecycle models.

The following sections justify each Indicator separately.

10.2 Lifecycle Responsibility

Lifecycle Responsibility examines whether responsibility for Management System Function Realization is sufficiently established through the relevant Lifecycle stages.

This Indicator is necessary because realization may become weakened when responsibility is absent, unclear, or lost as the Quality Object moves through its Lifecycle.

The central question is:

Are the responsibilities necessary for realization sufficiently established through the relevant Lifecycle stages?

Lifecycle Responsibility examines whether the necessary responsibilities are established across the relevant Lifecycle stages; Responsibility and Authority Continuity separately examines whether required responsibility and authority remain continuous through transitions, transfers, handoffs, and Interfaces.

The Indicator does not prescribe a particular organizational structure or allocation of responsibilities. The necessary responsibilities depend on the Quality Object, Lifecycle, requirements, Boundaries, Interfaces, and Context.

Removing Lifecycle Responsibility would create a blind area where individual Lifecycle activities occur but responsibility for maintaining realization through the Lifecycle is insufficiently established.

Lifecycle Responsibility therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.3 Interface Identification

Interface Identification examines whether the Interfaces relevant to Management System Function Realization are sufficiently identified.

This Indicator is necessary because realization may be weakened where important connections, transfers, or handoffs between functions, Lifecycle stages, organizations, providers, or other responsible parties are not recognized.

The central question is:

Are the Interfaces relevant to Management System Function Realization sufficiently identified?

The Indicator does not prescribe a particular Interface structure, mapping method, or documentation system. Relevant Interfaces depend on the Quality Object, Lifecycle, requirements, responsibilities, Boundaries, and Context.

Removing Interface Identification could leave an important weakness insufficiently visible where individual activities or responsibilities are established but important connections between them remain unidentified.

Interface Identification therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.4 Requirement Transfer

Requirement Transfer examines whether applicable requirements are sufficiently transferred across relevant Lifecycle stages and Interfaces.

This Indicator is necessary because requirements may be correctly established but fail to reach the people, functions, organizations, or providers responsible for their continued realization.

The central question is:

Are applicable requirements adequately transferred across relevant Lifecycle stages and Interfaces?

The Indicator does not prescribe a particular transfer method, document, information system, or organizational arrangement. The necessary transfer depends on the requirements, responsibilities, Lifecycle, Interfaces, and Context.

Removing Requirement Transfer would create a blind area where requirements are known at one stage or location but are lost, changed, or insufficiently communicated as realization moves across a Lifecycle stage or Interface.

Requirement Transfer therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.5 Quality-State Preservation

Quality-State Preservation examines whether the established Quality State and the information needed to understand it are sufficiently preserved across relevant Lifecycle stages and Interfaces.

This Indicator is necessary because an established Quality State may become lost, obscured, or no longer adequately represented as the Quality Object moves through its Lifecycle or across Interfaces.

The central question is:

Is the relevant Quality State sufficiently preserved across Lifecycle stages and Interfaces?

Preservation may depend on maintaining the condition relevant to the established Quality State, the information representing that Quality State, or both, as applicable.

This differs from Quality-State Information, which examines the adequacy of Quality-relevant information itself. Quality-State Preservation examines whether the established Quality State remains sufficiently preserved specifically through relevant Lifecycle stages and Interfaces.

The Indicator does not prescribe a particular preservation method, record, transfer process, or information system.

Removing Quality-State Preservation could leave an important weakness insufficiently visible where realization continues across Lifecycle stages or Interfaces but an established Quality State is not adequately maintained or represented.

Quality-State Preservation therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.6 Responsibility and Authority Continuity

Responsibility and Authority Continuity examines whether the responsibility and authority needed for realization remain sufficiently continuous across relevant Lifecycle stages and Interfaces.

This Indicator is necessary because responsibility may be established at individual stages but become unclear or ineffective during transfers, handoffs, or changes.

The central question is:

Are the necessary responsibility and authority maintained across relevant Lifecycle stages and Interfaces?

This Indicator therefore concerns continuity through transitions, transfers, handoffs, and Interfaces, rather than the establishment of Lifecycle responsibilities examined by Lifecycle Responsibility.

The Indicator does not prescribe a particular organizational structure, assignment method, or transfer procedure. The necessary continuity depends on the Quality Object, responsibilities, Lifecycle, Interfaces, Boundaries, and Context.

Removing Responsibility and Authority Continuity would create a blind area where responsibilities exist within individual stages but necessary responsibility or authority is lost or unclear between them.

Responsibility and Authority Continuity therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.7 Integration

Integration examines whether connected activities and functions are sufficiently integrated across relevant Lifecycle stages and Interfaces.

This Indicator is necessary because individual activities may be adequately performed while their combined realization remains disconnected or inconsistent.

The central question is:

Are the activities and functions that depend on one another sufficiently integrated to support Management System Function Realization?

The Indicator does not prescribe a particular organizational structure, integration method, process model, or information system. The necessary integration depends on the Quality Object, requirements, responsibilities, Lifecycle, Interfaces, and Context.

Removing Integration could leave an important weakness insufficiently visible where individual activities or functions appear adequate but their relationships do not adequately support realization as a whole.

Integration therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.8 Change Across Interfaces

Change Across Interfaces examines whether relevant changes are sufficiently managed across affected Lifecycle stages and Interfaces.

This Indicator is necessary because a change made in one part of realization may affect requirements, responsibilities, conditions, or activities elsewhere.

The central question is:

Are relevant changes adequately addressed across the Lifecycle stages and Interfaces they affect?

The Indicator does not prescribe a particular change-management process, approval system, or communication method. The necessary treatment depends on the change, affected requirements, responsibilities, Lifecycle, Interfaces, and Context.

Removing Change Across Interfaces would create a blind area where a change is adequately managed at its point of origin but its effects elsewhere are not sufficiently addressed.

Change Across Interfaces therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.9 Downstream Confirmation

Downstream Confirmation examines whether required realization is sufficiently confirmed after relevant transfers, handoffs, or Interfaces.

This Indicator is necessary because successful transfer does not by itself demonstrate that what was transferred was correctly received and realized downstream.

The central question is:

Is downstream realization sufficiently confirmed where confirmation is required?

The Indicator does not prescribe a particular confirmation method, acceptance process, or verification system. The necessary confirmation depends on the requirements, Quality Object, Lifecycle, Interfaces, responsibilities, and Context.

Removing Downstream Confirmation could leave an important weakness insufficiently visible where transfer or handoff appears complete but the required downstream realization is not adequately confirmed.

Downstream Confirmation therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.10 Realization Feedback

Realization Feedback examines whether relevant information from later realization is returned where needed to support earlier or connected Lifecycle stages and Interfaces.

This Indicator is necessary because downstream experience may reveal conditions that require attention elsewhere in the realization chain.

The central question is:

Is relevant realization feedback returned to the functions, Lifecycle stages, or Interfaces where it is needed?

The Indicator does not prescribe a particular feedback system, reporting method, or organizational arrangement. The necessary feedback depends on the Quality Object, requirements, Lifecycle, Interfaces, responsibilities, and Context.

Removing Realization Feedback would create a blind area where relevant downstream information exists but does not reach the parts of the Management System that need it.

Realization Feedback therefore represents a distinct and necessary determination function within Lifecycle and Interface Realization.

10.11 Factor 6 Collective Finding

The nine Indicators together provide the Core Indicator structure for Lifecycle and Interface Realization:

Lifecycle Responsibility
Interface Identification
Requirement Transfer
Quality-State Preservation
Responsibility and Authority Continuity
Integration
Change Across Interfaces
Downstream Confirmation
Realization Feedback

Together, they examine whether Management System Function Realization remains sufficiently connected through relevant Lifecycle stages, changes, transfers, handoffs, and Interfaces.

Each Indicator addresses a distinct function. Strength in one cannot be assumed to compensate for weakness in another.

Removing any one of these functions could leave an important part of Lifecycle and Interface Realization insufficiently visible.

The nine Indicators therefore provide a sufficiently complete and distinct architecture for Lifecycle and Interface Realization at the present Core Methodological Resolution.

11. HORIZONTAL TESTING ACROSS THE SIX FACTORS

11.1 Purpose of Horizontal Testing

The preceding sections tested the Indicators within their respective parent Factors.

Horizontal testing examines the fifty Indicators together across all six Factors.

This additional test is necessary because Indicators that are distinct within one Factor may overlap with Indicators placed under another Factor.

The central question is:

Do the fifty Indicators remain distinct, appropriately placed, and sufficiently complete when the entire Management System Quality Indicator architecture is examined as one structure?

Horizontal testing therefore examines cross-Factor distinctness, overlap, placement, possible absorption, non-compensation, and consistency of Methodological Resolution.

The purpose is not to eliminate necessary relationships between Indicators. Different Indicators may interact or use related Evidence while still representing different determination functions.

Horizontal testing provides the next level of testing needed to determine whether the fifty Indicators form a coherent Core architecture rather than six independently developed Indicator sets.

11.2 Cross-Factor Distinctness

Cross-Factor Distinctness tests whether Indicators under different Factors represent genuinely different determination functions.

This test is necessary because related subjects may appear in more than one Factor without representing the same function.

The central question is:

Does each Indicator preserve a determination function that remains distinct from Indicators under the other Factors?

For example, Requirement Allocation examines where requirements are assigned for realization, while Requirement Transfer examines whether requirements move adequately across Lifecycle stages and Interfaces.

Similarly, Personnel Competence examines competence for realization responsibilities, while Determination Competence examines competence specifically for Quality-State Determination.

Quality-State Preservation also differs from Evidence and Records. The first concerns preservation across Lifecycle stages and Interfaces, while the second concerns maintaining and making available Quality-relevant Evidence and records.

These relationships do not constitute redundancy because the Indicators ask different determination questions.

Cross-Factor distinctness is therefore supported where related Indicators preserve different functions that would lose visibility if combined.

11.3 Cross-Factor Overlap and Interaction

Cross-Factor Overlap and Interaction examines whether relationships between Indicators create unnecessary duplication or represent necessary interaction between different determination functions.

The central question is:

Where Indicators interact across Factors, do they still preserve different determination purposes?

Overlap in subject matter does not by itself mean redundancy.

For example, Requirement Changes examines whether changes to requirements are adequately managed, while Change Across Interfaces examines whether the effects of relevant changes are addressed across affected Lifecycle stages and Interfaces.

Information Communication may also support Requirement Transfer, but the first examines communication of Quality-relevant information generally, while the second specifically examines transfer of applicable requirements across Lifecycle stages and Interfaces.

Such interaction is expected because the six Factors operate as a connected Management System Quality architecture.

An overlap becomes problematic only when two Indicators perform substantially the same determination function at the same Core Methodological Resolution.

The cross-Factor review did not identify such duplication among the fifty Indicators.

The observed overlaps therefore represent necessary interaction between distinct determination functions rather than unnecessary redundancy.

11.4 Indicator Placement Test

The Indicator Placement Test examines whether each Indicator is located under the Factor that most directly represents its determination function.

The central question is:

Is each Indicator placed under the Factor whose determination purpose most directly explains what the Indicator examines?

Placement is based on function, not on where an activity occurs, who performs it, or what Evidence supports it.

For example, Requirement Verification belongs under Requirements Realization because it examines whether applicable requirements are correctly established for realization.

Downstream Confirmation belongs under Lifecycle and Interface Realization because it examines whether required realization is confirmed after relevant transfers, handoffs, or Interfaces.

Evidence Selection, Representativeness, and Use belongs under Quality-State Determination because it examines how Evidence is selected and used in determining the Quality State.

An Indicator may interact with several Factors without requiring placement under each of them.

The placement test supports the present allocation of the fifty Indicators because each can be traced most directly to the determination purpose of its assigned Factor.

11.5 Removal and Absorption Across Factor Boundaries

This test examines whether an Indicator under one Factor could be removed and adequately absorbed by an Indicator under another Factor.

The central question is:

Can any Indicator be removed and its determination function fully preserved elsewhere in the six-Factor architecture?

The test considers function rather than similarity of terminology or subject matter.

For example, Requirement Information cannot absorb Requirement Transfer. Maintaining usable requirement information does not establish that requirements are adequately transferred across relevant Lifecycle stages and Interfaces.

Similarly, Information Status cannot absorb Current Validity. Information may have a clear status while a Quality-State Determination no longer represents the relevant current condition.

Immediate Protection, Containment, and Stabilization also cannot be absorbed by Appropriate Response and Disposition because immediate control of a condition and its subsequent response are different determination functions.

The cross-Factor review did not identify an Indicator whose removal could be fully compensated by another Indicator without losing determination visibility or changing the Core Methodological Resolution.

The fifty Indicators therefore remain individually necessary when removal and absorption are tested across Factor boundaries.

11.6 Non-Compensation and Failure Visibility

Non-Compensation and Failure Visibility tests whether weakness in one Indicator remains visible even when other Indicators are satisfactory.

The central question is:

Can an important weakness in one Indicator be obscured by strength in another?

The Core architecture should preserve such weaknesses rather than allow unrelated strengths to compensate for them.

For example, strong Personnel Competence does not compensate for an incapable Realization Method.

Adequate Evidence and Records do not compensate for incorrect Result Interpretation.

Timely Intervention does not compensate for failure to establish an Acceptable State.

Similarly, effective Requirement Transfer does not compensate for unclear requirements.

The fifty-Indicator architecture preserves these distinctions by keeping materially different determination functions separately examinable.

This supports failure visibility and prevents favorable conditions in one part of the Management System from obscuring important weaknesses in another.

11.7 Consistency of Methodological Resolution

This test examines whether the fifty Indicators remain at a consistent Core Methodological Resolution across all six Factors.

The central question is:

Do the Indicators represent comparable levels of determination function without becoming either too broad or too detailed?

Consistency does not require every Indicator to have the same complexity. It requires each Indicator to perform the same architectural role between its parent Factor and the application-specific Quality Outcome Criteria, methods, and Evidence.

For example, Personnel Competence identifies a Core determination function without specifying particular qualifications or training.

Information Protection and Authorized Use identifies another Core function without prescribing particular security controls or technologies.

Cause and Recurrence similarly identifies what should be examined without prescribing a particular cause-analysis method.

The horizontal review indicates that the fifty Indicators remain at a sufficiently consistent Core Methodological Resolution.

Application-specific detail can therefore vary beneath the Indicators without changing the Core Indicator architecture.

12. CROSS-DOMAIN AND CROSS-CONTEXT STRESS TESTING

12.1 Purpose of the Stress Test

The fifty Indicators must remain usable beyond a particular industry, technology, organization, or type of managed result.

The cross-domain and cross-context stress test examines whether the Indicator architecture remains meaningful when the conditions of application change.

The central question is:

Do the fifty Indicators continue to represent necessary Management System Quality determination functions across materially different domains and Contexts?

The test considers differences in managed results, realization methods, technologies, organizational arrangements, providers, Lifecycle conditions, Interfaces, and operating conditions.

The purpose is not to show that every Indicator is applicable in every situation.

Where the function represented by an Indicator is not present or relevant, the Indicator may be Inapplicable. This does not weaken the Core architecture.

The test instead examines whether the Indicators remain sufficiently general to support different applications without requiring changes to their Core determination functions.

The following sections apply this stress test across different types of Management System Contexts.

12.2 Different Types of Managed Results

The Indicator architecture must remain applicable to Management Systems responsible for different types of Intended Results.

These may include products, services, work, infrastructure, information, or other required results.

The central question is:

Do the fifty Indicators remain meaningful when the type of managed result changes?

The specific requirements, Quality Outcome Criteria, Evidence, and realization methods may differ substantially between applications.

However, the Core determination functions remain relevant. Requirements must still be understood and realized, necessary capability established, Quality State determined and represented, required influence exercised, and relevant Lifecycle and Interfaces addressed.

Individual Indicators may become Inapplicable where the function they represent is absent in a particular Context.

The stress test therefore supports an Indicator architecture based on Management System functions rather than on a particular type of product, service, work, or other Intended Result.

12.3 Different Realization Methods and Technologies

The Indicator architecture must remain usable when Management Systems employ different realization methods and technologies.

The central question is:

Do the fifty Indicators remain meaningful when the methods or technologies used for realization change?

Methods and technologies may differ substantially between applications and may also change during the Lifecycle.

Such differences can change the applicable requirements, Quality Outcome Criteria, Evidence, and specific means of realization without changing the Core determination functions.

For example, Realization Method Capability examines whether the selected method is capable, regardless of the particular method or technology used. Equipment and Supporting Infrastructure Capability similarly remains relevant without prescribing particular equipment or infrastructure.

The Core Indicators therefore do not depend on a specific technology or realization method.

This supports their use across different technological conditions while allowing application-specific detail to be established beneath the Core Indicator level.

12.4 Different Organizational and Provider Arrangements

The Indicator architecture must remain usable across different organizational and provider arrangements.

The central question is:

Do the fifty Indicators remain meaningful when responsibilities for realization are arranged differently?

Management Systems may realize required results internally, through external providers, through multiple organizations, or through combinations of these arrangements.

These differences may change responsibilities, authority, Boundaries, Interfaces, and applicable Evidence without changing the Core determination functions.

For example, External Provider Capability becomes applicable where realization depends on an external provider. Lifecycle Responsibility and Responsibility and Authority Continuity remain relevant where responsibilities extend across Lifecycle stages or organizational Interfaces.

Where a particular arrangement or dependency is absent, the corresponding Indicator may be Inapplicable.

The Core Indicator architecture therefore remains usable across different organizational and provider arrangements without prescribing a particular organizational model.

12.5 Different Lifecycle Conditions and Change

The Indicator architecture must remain usable across different Lifecycle conditions and changes.

The central question is:

Do the fifty Indicators remain meaningful as the Quality Object and its Management System move through different Lifecycle conditions and changes?

Lifecycle conditions may differ substantially between applications and may include development, realization, operation, modification, transfer, and other relevant stages.

Changes may affect requirements, methods, capability, responsibilities, Interfaces, information, or the Quality State itself.

The Core Indicator architecture remains meaningful across these differences without prescribing a particular Lifecycle model or change process.

For example, Capability After Change examines whether required realization capability remains adequate after relevant change. Change Across Interfaces examines whether the effects of change are adequately addressed across affected Lifecycle stages and Interfaces.

The Indicator architecture therefore remains usable as Lifecycle conditions change while allowing application-specific requirements, criteria, methods, and Evidence to vary.

12.6 Normal, Unusual, and Degraded Conditions

The Indicator architecture must remain usable under normal, unusual, and degraded conditions.

The central question is:

Do the fifty Indicators remain meaningful when the conditions affecting realization differ from normal conditions?

Unusual or degraded conditions may change available capability, information, responsibilities, Interfaces, or the actions needed to maintain or restore required realization.

The Core Indicator architecture remains usable without prescribing particular emergency, contingency, or recovery arrangements.

For example, Unusual Conditions examines whether the required realization capability can be maintained under applicable unusual conditions. Immediate Protection, Containment, and Stabilization examines whether necessary immediate action can be taken when an identified condition requires it.

The Indicator architecture therefore remains usable across changing conditions while allowing the specific requirements, responses, criteria, and Evidence to depend on the applicable Context.

12.7 Applicability and Inapplicability Across Contexts

Cross-context use of the Core Indicator architecture requires applicability to be established rather than assumed.

The central question is:

Which Core Indicators are applicable to the Management System and Context being examined?

An Indicator is Applicable where the function or dependency it represents is relevant to the determination.

An Indicator is Inapplicable where that function or dependency is not present or relevant within the applicable Quality Object, responsibilities, Boundaries, Interfaces, Lifecycle, and Context.

Inapplicability does not indicate poor Management System Quality and does not weaken the Core architecture.

It must also be distinguished from an Undetermined condition. An applicable Indicator may remain Undetermined when sufficient Evidence is not available to support a finding.

This distinction allows the same Core Indicator architecture to be used across different Contexts without forcing irrelevant requirements or hiding unresolved conditions.

Cross-context applicability therefore depends on controlled determination of what applies, not on requiring every Indicator in every application.

12.8 Cross-Domain Stress-Test Finding

The cross-domain and cross-context stress test examined whether the fifty Indicators remain meaningful under materially different conditions of application.

The testing considered different types of managed results, realization methods and technologies, organizational and provider arrangements, Lifecycle conditions and change, and normal, unusual, and degraded conditions.

Across these differences, the Core determination functions represented by the Indicators remain meaningful without requiring a change to the Indicator architecture.

Application-specific requirements, Quality Outcome Criteria, methods, Evidence, and findings may vary substantially.

Individual Indicators may also be Inapplicable where the function or dependency they represent is absent.

These variations do not require changes to the Core Indicator structure.

The stress test therefore supports the fifty Indicators as a cross-domain and cross-context architecture at the present Core Methodological Resolution.

13. WHY FIFTY — AND NOT FEWER OR MORE

13.1 Why Fewer Indicators Would Reduce Determination Capability

The preceding tests examined whether any of the fifty Indicators could be removed or absorbed without meaningful loss.

The central question is:

Could the Management System Quality architecture use fewer than fifty Core Indicators while preserving the same determination capability?

The analysis indicates that reducing the number would require combining or removing determination functions that need to remain separately visible.

Across the six Factors, each Indicator preserves a distinct question that cannot be fully absorbed by another Indicator at the same Core Methodological Resolution.

Reducing the number could therefore hide important differences in Management System Function Realization, weaken failure visibility, or allow strength in one function to obscure weakness in another.

This does not mean that fifty is inherently preferable as a number.

It means that, within the present architecture, fewer than fifty Indicators would reduce the determination capability supported by the separately justified functions.

The lower boundary of the architecture is therefore established by the functions that must remain separately examinable, not by a predetermined numerical target.

13.2 Why Additional Indicators Are Not Required at the Present Core Methodological Resolution

The architecture must also be tested for whether additional Core Indicators are needed.

The central question is:

Is there a distinct Management System Quality determination function that is not adequately represented by the existing fifty Indicators?

The preceding Factor-level, horizontal, and cross-context tests did not identify such a missing function at the present Core Methodological Resolution.

Additional subjects may be important in particular applications. However, they do not require separate Core Indicators when they can be adequately examined through existing Indicators, applicable Quality Outcome Criteria, methods, or Evidence.

Adding such subjects as Core Indicators would move application-specific detail into the invariant architecture and could create unnecessary duplication or inconsistent resolution.

This does not mean that no additional Indicator could ever be justified.

A new Core Indicator would be warranted if a distinct and necessary determination function were identified that could not be adequately represented by the existing architecture.

At present, the analysis does not support adding another Core Indicator.

13.3 Why Fifty Is the Presently Supported Core Resolution

The number fifty is the result of the present functional architecture, not a predetermined target.

The central question is:

Do fifty Indicators provide the appropriate Core Methodological Resolution for examining the six Management System Quality Factors?

The preceding analysis supports this resolution: each Indicator preserves a necessary and distinct determination function, and no additional Core function is presently identified.

Reducing the set would remove or combine necessary determination functions.

Additional Core Indicators are not presently supported because further detail can be addressed through applicable Quality Outcome Criteria, methods, and Evidence.

Fifty therefore represents the presently supported balance between sufficient determination resolution and unnecessary detail.

This conclusion is bounded rather than permanent. The architecture may be revised if future methodological analysis identifies a necessary Core function that is missing, redundant, or incorrectly resolved.

At the present Core Methodological Resolution, the fifty Indicators are therefore supported as the Core Indicator architecture for examining the six Management System Quality Factors.

14. STABILITY AND CONDITIONS FOR CONTROLLED REVISION

14.1 Need for Core Stability

A Core Indicator architecture must remain sufficiently stable to support consistent Quality Determination across applications and over time.

The central question is:

Why should the fifty-Indicator architecture remain stable once its present Core Methodological Resolution has been established?

Frequent changes to Core Indicators could weaken comparability, traceability, accumulated application experience, and the consistent interpretation of Management System Quality.

Core stability does not mean that application-specific requirements, Quality Outcome Criteria, methods, or Evidence must remain unchanged. These may vary with the Quality Object, Lifecycle, technology, requirements, and Context.

Stability applies to the underlying determination functions represented by the Core Indicators.

The fifty Indicators should therefore remain stable unless methodological analysis identifies a sufficient reason to revise the Core architecture.

This preserves a consistent foundation for Management System Quality Determination while allowing application-specific practice to develop and change beneath the Core level.

14.2 Conditions That Could Justify Revision

Revision of the Core Indicator architecture should require a clear methodological basis.

The central question is:

What conditions could justify changing the fifty Core Indicators?

Revision may be justified if further analysis or application identifies:

- a necessary determination function that is not adequately represented;
- an existing Indicator that is redundant or can be fully absorbed by another without loss;
- two or more Indicators that do not remain sufficiently distinct;
- an Indicator that is placed under the wrong parent Factor;
- an Indicator that is resolved at an inconsistent methodological level; or
- a change in the underlying WQI Core architecture that requires corresponding revision.

Application-specific difficulty alone does not justify changing the Core architecture.

Nor does the emergence of a new technology, industry practice, or application detail justify a new Core Indicator unless it reveals a distinct and necessary determination function.

Revision should therefore occur only when the methodological basis for the Core architecture itself has changed or has been shown to be insufficient.

14.3 Controlled Revision Principles

Any revision of the Core Indicator architecture should preserve the methodological integrity and traceability of the WQI Management System Quality architecture.

The central question is:

How should a justified revision be made without weakening the stability of the Core architecture?

A proposed revision should be tested using the same principles applied in this justification, including necessity, removal, distinctness, absorption, determinability, cross-context applicability, missing-function, and collective architecture tests.

The revision should also be tested horizontally across all six Factors to identify unintended overlap, gaps, or changes in Methodological Resolution.

The reason for the revision and its effect on the existing architecture should be clearly documented.

Changes should not be made solely to accommodate application-specific practices, technologies, terminology, or preferences.

Controlled revision therefore allows the Core architecture to develop when methodologically justified while protecting its stability, consistency, and traceability.

14.4 Stability Finding

The preceding analysis supports maintaining the fifty-Indicator architecture as the stable Core structure at the present Core Methodological Resolution.

The architecture has been tested for individual necessity, removal, distinctness, absorption, determinability, cross-context applicability, missing functions, and collective completeness.

It has also been tested horizontally across the six Factors and across materially different application Contexts.

These tests did not identify a present methodological basis for removing, combining, relocating, or adding a Core Indicator.

Stability does not mean that the architecture is permanently fixed.

It means that revision should occur only when further methodological analysis provides sufficient evidence that the Core architecture should change.

The fifty Indicators are therefore supported as the stable, presently justified Core Indicator architecture for Management System Quality Determination, subject to controlled revision when methodologically warranted.

15. CONCLUSION

This paper examined whether the fifty WQI Management System Quality Indicators provide a sufficiently complete and distinct Core architecture for examining the six Management System Quality Factors.

The analysis began with the functions represented by the six Factors and tested the Indicators for necessity, removal, distinctness, absorption, Evidence-supported determinability, cross-context applicability, missing functions, and collective completeness.

The Indicators were then tested horizontally across Factor boundaries and across different types of managed results, technologies, organizational arrangements, Lifecycle conditions, Interfaces, and operating conditions.

The analysis supports three principal findings.

First, each of the fifty Indicators preserves a distinct determination function whose removal or absorption would reduce determination visibility at the present Core Methodological Resolution.

Second, the analysis did not identify an additional determination function that presently requires another Core Indicator.

Third, the fifty Indicators remain sufficiently general for cross-domain and cross-context application while allowing requirements, Quality Outcome Criteria, methods, Evidence, and application detail to vary beneath the Core level.

The number fifty is therefore not a numerical target. It is the result of the presently supported functional architecture.

This conclusion is bounded. Future methodological analysis or application may identify a justified need for revision. Any such revision should be controlled and tested against the same methodological principles used in this paper.

At the present Core Methodological Resolution, the fifty Indicators are therefore supported as the Core Indicator architecture for determining Management System Quality through the six WQI Management System Quality Factors.

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References to WQI, WQI_VOC1, WQI_QMS1, Management System Quality, Quality Factors, Quality Indicators, and related Whole Quality terminology are used within the WQI methodological framework. The analysis in this article explains and stress-tests the architecture; it does not establish legal, regulatory, engineering, certification, contractual, or organization-specific management requirements.

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Where this article is revised, the revision should preserve Traceability to WQI_QMS1, WQI_VOC1, and the methodological basis used to derive and test the fifty-Indicator Management System Quality Architecture.