



Evidence in Whole Quality

Evidence Quality, Findings, Uncertainty, and Traceability

Foundational Article 12 — First Edition

Whole-Quality Institute

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1. Introduction

We often make decisions based on information about what has happened, what exists, or how something is working. That information may come from measurements, observations, records, photographs, tests, interviews, reports, or many other sources.

But having information is not enough. Before relying on it, we need to ask simple questions: **Do we have enough information? Can we trust it? Does it apply to what we are trying to understand?**

In Whole Quality, information used to support what we find about an actual condition is called **Evidence**. The quality of that Evidence matters because weak, incomplete, unreliable, or unsuitable Evidence can lead to conclusions that go beyond what is known.

FTA12 explains how Whole Quality examines Evidence and how Evidence supports Findings about actual condition. It also explains how limitations, conflicting Evidence, and remaining Uncertainty should stay visible rather than disappear as conclusions are formed.

The central principle is simple:

A conclusion should say no more than the Evidence can responsibly support.

Detailed definitions are provided in WQI_VOC1. This Article focuses on explaining the ideas, their relationships, and why they matter in practice.

2. Evidence in Whole Quality

2.1 Why Evidence Is Needed

Suppose we want to understand the condition of something.

It might be a bridge, a pipeline, a Management System, a Support Service, or another object we need to examine.

We cannot usually know its full condition simply from its name, purpose, design, procedures, or expected results. We need information about what is actually happening.

That information may come from observations, measurements, records, tests, photographs, interviews, operating data, or other sources.

When information is used to support what we can responsibly say about the actual condition, Whole Quality calls it Evidence.

The basic relationship is:

actual condition → information about that condition → Evidence → what we can responsibly find

This is the starting role of Evidence in Whole Quality.

Evidence does not tell us what should happen. It helps us understand what has actually happened, exists, or is occurring.

For example, a design specification may state how a component is expected to perform. An inspection or measurement may provide Evidence about its actual condition.

A service plan may state what support should be provided. Records, observations, and information from the person receiving the service may provide Evidence about what was actually provided and what resulted.

The distinction is simple:

what is expected ≠ what is actually found

Evidence helps connect the two.

2.2 Evidence and Actual Condition

Something has an actual condition whether or not we fully know that condition.

A pipeline may already contain degradation that has not yet been detected. A Management System may operate differently from its written procedures. A Support Service may produce results that are not fully shown in its records.

The actual condition therefore should not be confused with the information available about it.

actual condition $\neq$ Evidence about the condition

And:

Evidence about the condition $\neq$ what we finally conclude about the condition

Evidence is the basis for forming a Finding.

A Finding is a supported statement about what the Evidence allows us to say about the actual condition.

For example:

measurement $\rightarrow$ Evidence $\rightarrow$ Finding about the measured condition

This distinction matters because not finding a problem does not always mean that no problem exists.

A condition may not have been examined. The method used may not have been capable of detecting it. Relevant information may be missing. The information may be unreliable. Or it may concern the wrong time, place, object, or condition.

Whole Quality therefore avoids the shortcut:

Nothing adverse was found $\rightarrow$ therefore nothing adverse exists.

Instead, it asks:

What does the available Evidence actually support?

2.3 From Information to Evidence

Not every piece of information is automatically Evidence.

A photograph, record, measurement, report, interview, or dataset may exist without being used in a particular examination.

In Whole Quality, information becomes Evidence when it is used to support a Finding about an actual condition.

information $\rightarrow$ used to support a Finding $\rightarrow$ Evidence

This means that the same information may be useful for one purpose but not another.

For example, a maintenance record may show that work was performed. That record may support a Finding that the maintenance activity occurred. But by itself, it may not support a Finding that the component is now in acceptable condition.

Likewise, a service record may show that a visit took place without establishing whether the intended result of the service was achieved.

Calling something Evidence therefore does not mean that it is automatically good or sufficient Evidence.

That question comes later.

First we ask: What is this information being used to support?

Then we ask: How well can it support it?

2.4 From Evidence to a Whole Quality Determination

Only after the role of Evidence is clear do we need the broader Whole Quality structure.

Whole Quality examines a defined Quality Object - the object, system, service, management activity, or other subject whose Quality is being considered.

The object has one or more Intended Functions: what it is intended to do.

Those functions have Intended Results: what should result when the functions are realized.

Whole Quality then identifies Quality Factors, the main dimensions of Quality that matter; Quality Indicators, the aspects through which those Factors are examined; and Quality Outcome Criteria, the expected conditions or results used for interpretation.

Evidence then tells us what can responsibly be found about the actual condition.

The relationship can now be understood as:

what the object is intended to do → what should be examined → what is expected → Evidence about actual condition → Findings → interpretation → Quality State

This complete process is called a Quality Determination.

A Quality Determination therefore does not begin with a desired conclusion. It begins with the defined object and what it is intended to do, then examines the actual condition through Evidence.

Evidence Quality limits what the Findings can responsibly state. The Findings are then interpreted within the Whole Quality architecture to establish the Quality State.

3. What Becomes Evidence

Now that the role of Evidence is clear, the next question is what kinds of information can become Evidence.

3.1 Evidence Through Use

Information does not become Evidence merely because it exists, has been collected, or appears relevant.

In Whole Quality, information becomes Evidence when it is used to support a Finding about the actual condition of a defined Quality Object. Within the WQI methodology, Evidence is therefore defined by its evidentiary role in a Quality Determination. This is a methodological use of the term and is not intended to replace every ordinary, legal, scientific, or professional use of the word evidence. Use establishes its evidentiary role; it does not establish its Evidence Quality or justify the proposed Finding.

This creates a functional relationship:

Information

→ used to support a Finding

→ Evidence

The same information may therefore be Evidence in one determination and not in another.

For example, a maintenance record may provide Evidence concerning whether a particular intervention occurred. The same record may not provide Evidence that the affected component is currently in an acceptable condition.

Similarly, a Support Service record may provide Evidence that a service was scheduled or delivered. By itself, it may not establish the actual condition or result experienced by the person receiving the service.

The evidentiary role depends on the Finding being supported.

This means that Evidence should always be understood in relation to:

the defined Quality Object,

the actual condition being examined,

the Finding being supported,

and the Quality Determination in which the Finding is used.

Calling something Evidence therefore does not establish that it is sufficient, trustworthy, or applicable. Those are separate questions of Evidence Quality.

The first question is:

What is this information being used to support?

Only then can its evidentiary role and Evidence Quality be properly examined.

3.2 Sources and Forms of Evidence

Evidence can originate from many sources and can take many forms.

Depending on the Quality Object and Context, Evidence may include measurements, observations, records, documents, photographs, test results, inspection results, operating information, interviews, service records, system outputs, physical conditions, historical information, or other information capable of supporting a Finding.

Whole Quality does not establish a universal preference for one form of Evidence over another.

A measurement is not automatically better Evidence than an observation. A written record is not automatically more trustworthy than an interview. A digital record is not automatically more reliable than a physical record. An official source is not automatically applicable to every determination.

The evidentiary value of each source must be considered in relation to the Finding it is intended to support.

Different sources may also provide Evidence about different aspects of the same condition.

For example:

a record may indicate what was intended or reported,

a measurement may indicate a physical characteristic,

an observation may indicate a visible condition,

and operating information may indicate how the Quality Object actually behaved.

These forms of Evidence may complement one another without becoming interchangeable.

Where several sources address the same condition, their agreement may strengthen the evidentiary basis. Their disagreement may reveal an unresolved condition that requires further examination.

The objective is therefore not simply to accumulate sources. It is to establish an evidentiary basis capable of responsibly supporting the required Findings.

3.3 Evidence Across the Evidentiary Lifecycle

Evidence may pass through several stages before it is used in a Quality Determination.

A simplified evidentiary lifecycle may be expressed as:

condition or event

→ observation or detection

→ capture or recording

→ processing or interpretation

→ storage and retention

→ retrieval

→ use as Evidence

Quality-relevant problems may arise at any of these stages.

A condition may not be detected.

An observation may be incorrectly recorded.

A measurement may be improperly processed.

A record may be altered.

Information may lose its connection to the Quality Object, location, event, or period from which it originated.

Relevant information may be lost or unavailable when the determination is made.

Interpretation may also introduce distortion between the original condition and the Evidence ultimately used to support a Finding.

Evidence may lose Quality not only through physical or digital alteration, but also where material information is omitted, weakened, detached from its uncertainty, or otherwise distorted as it passes through human, organizational, or automated evidentiary pathways.

For this reason, Evidence Quality cannot always be examined only by looking at the final record, measurement, report, or other evidentiary item.

Where relevant, the pathway through which the Evidence was created, maintained, transformed, and made available must also be considered.

This is particularly important to Evidence Integrity, Source Reliability, Validity, Accuracy, and Applicability.

Traceability supports this examination by allowing relevant relationships to be followed through the evidentiary pathway. Traceability, however, does not by itself establish Evidence Quality. A fully traceable record may still be inaccurate, incomplete, unreliable, or inapplicable.

The evidentiary lifecycle therefore matters because Evidence used at the end of a determination may carry limitations introduced much earlier in its creation or handling.

3.4 Evidence from Different Sources

A Quality Determination should not assume that all relevant Evidence will come from a single source.

Different sources may observe different parts of the Quality Object, different periods, different operating conditions, or different consequences of the same underlying condition.

This can be particularly important for complex Quality Objects.

One source may indicate what was designed.

Another may indicate what was constructed or implemented.

Another may indicate what was recorded during operation.

Another may indicate the actual observed condition.

Another may provide Evidence concerning the results experienced by people interacting with the Quality Object.

These sources can contribute to different Findings within the same Quality Determination.

Evidence from multiple sources may also provide independent or partly independent ways of examining a condition. This can help reveal conditions that would remain hidden if only one evidentiary path were used.

However, the existence of multiple sources does not automatically establish stronger Evidence.

Several records may all originate from the same underlying source. Multiple reports may repeat the same incorrect information. Different systems may depend on the same measurement or observation. Apparent agreement may therefore reflect common dependence rather than independent confirmation.

Repetition of the same underlying information through multiple records, systems, reports, or sources does not by itself create independent evidentiary support.

For this reason, the relationship among Evidence sources may itself matter.

The relevant question is not simply:

How many sources agree?

It is also:

What does each source actually represent, and how are the sources related?

Whole Quality therefore treats multiple-source Evidence as potentially valuable without assuming that quantity or apparent agreement alone establishes Evidence Quality.

3.5 Contrary and Conflicting Evidence

Evidence does not always point in the same direction.

Different Evidence may support different interpretations of the actual condition. A measurement may conflict with a record. An observed condition may conflict with a reported condition. Two technically credible measurements may differ. Evidence from different periods or operating conditions may appear inconsistent.

Such Evidence should not be removed merely because it complicates the Quality Determination. Contrary, conflicting, or materially inconsistent Evidence relevant to a Finding must remain visible in establishing what that Finding can responsibly state.

The existence of conflict does not automatically mean that all Evidence is unusable.

The conflict itself may provide important information.

It may indicate:

a change in the actual condition,
different conditions at different times or locations,
different Methodological Resolution,
measurement or observation limitations,
problems with Source Reliability, Validity, Accuracy, or Evidence Integrity,
differences in Context Applicability,
or an unresolved condition that available Evidence cannot distinguish.

The appropriate response is therefore not to select the Evidence that best supports a preferred conclusion.

The relationship should instead be examined:

Evidence A

→ supports one interpretation

Evidence B

→ supports another interpretation

Conflict

→ requires examination of what each item can responsibly support

The resulting Finding may sometimes resolve the conflict. In other cases, the Finding must preserve the unresolved condition and associated Uncertainty.

This principle is important because a Quality Determination can become artificially certain if contrary Evidence disappears during interpretation.

Whole Quality therefore requires the evidentiary basis to remain visible enough that the resulting Finding does not state more than the Evidence, including its conflicts and limitations, can responsibly support.

4. Evidence and Function Realization

Evidence becomes meaningful only when we know what condition or result we are trying to understand.

In Whole Quality, that question is connected to what the Quality Object is intended to do. This is where Intended Functions and Intended Results enter the Evidence discussion.

4.1 Evidence and Intended Functions

Whole Quality examines Quality through the realization of the Intended Function or Intended Functions of a defined Quality Object.

Evidence therefore has meaning within a functional structure. Function Realization first serves an upstream methodological role: it connects Intended Functions and Intended Results to the derivation of Quality Factors, Quality Indicators, and Quality Outcome Criteria. Evidence-Supported Findings then provide the basis for interpreting what Function Realization is actually supported for the Quality Object being examined.

Evidence does not establish the Intended Function. The Intended Function is identified from the Applicable Basis and the defined Quality Object. Evidence supports Findings about the actual condition relevant to realization of that function.

The relationship can be expressed as:

Quality Object

- Intended Function
- Intended Result
- Function Realization
- Quality Factors
- Quality Indicators
- Quality Outcome Criteria
- Evidence
- Evidence-Supported Findings
- Quality Factor Interpretation
- Quality State

For example, Evidence concerning a particular characteristic of a Quality Object becomes relevant to Function Realization only where the relationship between that characteristic and the applicable Quality Factor, Quality Indicator, or Quality Outcome Criterion is established.

This prevents an important methodological error: collecting information simply because it is measurable or available and then treating that information as automatically relevant to Quality.

The appropriate sequence is not:

Available information

- measurement
- Quality conclusion

Instead:

Intended Function

- quality-relevant condition
- Evidence concerning that condition
- Finding
- interpretation of Function Realization

This distinction also preserves the boundary between a Quality Indicator and the Evidence used to examine it.

A Quality Indicator identifies what quality-relevant aspect of the Quality Object is examined.

Evidence provides information about the actual condition examined through that Indicator.

For example, in an infrastructure application, an invariant Quality Indicator may concern consideration of degradation, damage, and aging mechanisms. Corrosion may be a Context-specific degradation mechanism, while a wall-thickness measurement may provide Evidence concerning an actual physical condition.

Neither corrosion nor the wall-thickness measurement needs to become a new invariant Quality Indicator merely because it is important in that Context.

Evidence therefore operates within the Quality architecture rather than redefining it.

4.2 Evidence and Intended Results

An Intended Function describes what the Quality Object is intended to do or realize. An Intended Result describes the result expected from realization of that function.

Evidence may therefore concern not only the condition of the Quality Object itself but also the result associated with its functioning.

This distinction can be important.

A Quality Object may appear capable of performing an Intended Function while the Intended Result is not actually being realized.

Conversely, an Intended Result may temporarily appear favorable even though conditions necessary for continued Function Realization are deteriorating.

Evidence concerning Function Realization should therefore not automatically be reduced to Evidence of output or outcome alone.

Depending on the Quality Object and determination, relevant Evidence may concern:

the condition necessary for the function,

the actual performance of the function,

the result produced by that function,

and conditions affecting continued realization of the function and result.

These forms of Evidence may support different Findings.

For example:

Evidence about condition

→ Finding about capability or actual state

Evidence about performance

→ Finding about Function Realization

Evidence about result

→ Finding about realization of the Intended Result

The exact relationship depends on the defined Quality Object and applicable Quality architecture.

The important methodological point is that evidence of one part of this relationship should not automatically be treated as evidence of all parts.

A favorable result does not necessarily demonstrate that all conditions supporting that result are favorable.

Likewise, evidence of favorable internal conditions does not by itself establish that the Intended Result has actually been realized.

The Finding should remain bounded by what the Evidence supports.

4.3 Multiple Intended Functions and Intended Results

A Quality Object may have more than one Intended Function.

An Intended Function may also have more than one Intended Result, and an Intended Result may be associated with more than one Intended Function.

This creates an important Evidence problem.

Evidence supporting realization of one Intended Function does not automatically support realization of another.

For example:

Quality Object

└→ Intended Function A

| → Intended Result A

| → Evidence A

| → Finding A

|

└→ Intended Function B

→ Intended Result B

→ Evidence B

→ Finding B

Strong Evidence concerning Intended Function A cannot simply fill an evidentiary gap concerning Intended Function B.

The same principle applies to Intended Results.

A Quality Object may realize one result while another remains failed, uncertain, or insufficiently examined.

The Evidence architecture must preserve these differences.

This becomes especially important when the Applicable Basis establishes priorities among functions or when failure of one function cannot be compensated for by favorable realization of another.

The existence of multiple functions therefore does not mean that their Evidence should be averaged into a single evidentiary conclusion.

Instead, the determination should establish what is supported for each relevant function or result and then interpret those Findings within the applicable Whole Quality architecture.

The relationship may be expressed as:

Multiple Intended Functions / Intended Results

- Function Realization
- applicable Factors, Indicators, and QOCs
- Evidence
- Evidence-Supported Findings
- Quality Factor Interpretation
- Quality State
- one or more bounded Quality Claims

A single Quality State may ultimately be established for the defined Quality Object, but the evidentiary paths contributing to that determination may remain distinct.

Where one or more Intended Functions or Intended Results remain failed, unresolved, or not sufficiently supported by Evidence, that limitation must remain visible in any Quality Claim addressing the Quality Object as a whole.

4.4 Shared Evidence and Bounded Applicability

Although different Intended Functions and Intended Results may require different Evidence, the same Evidence may sometimes support more than one Finding.

Whole Quality does not require unnecessary duplication of Evidence.

For example, one observation, measurement, record, or other evidentiary item may provide information relevant to several aspects of the same Quality Object.

The relationship may be:

Evidence A



Finding 1 Finding 2



Function A Function B

However, shared use of Evidence must be justified for each Finding.

Evidence that is sufficient, trustworthy, and applicable for one Finding is not automatically sufficient, trustworthy, and applicable for another.

The required Coverage, Completeness, and Resolution may differ.

The same source may be reliable for one type of information but not another.

Evidence may accurately represent one characteristic without validly representing another.

Evidence concerning the correct subject may be applicable to one Context or determination but not another.

Shared Evidence therefore requires bounded use.

The appropriate question is not:

Is this good Evidence?

It is:

Is this Evidence sufficient, trustworthy, and applicable for this particular Finding?

The answer may differ when the same Evidence is used for another Finding.

This principle prevents Evidence Quality from becoming a general label attached permanently to a document, measurement, record, source, or dataset.

Evidence Quality is examined in relation to the evidentiary use being made of it.

The same Evidence may therefore support:

a strong Finding in one determination,

a narrower Finding in another,

and no responsible Finding in a third.

This does not create a contradiction. It reflects the relationship between Evidence and the particular Finding it is intended to support.

Bounded Applicability is especially important where Evidence is reused across different Quality Objects, periods, Contexts, scales, Methodological Resolutions, Intended Functions, or Intended Results.

Reuse can be appropriate, but the evidentiary relationship must be established rather than assumed.

This preserves a central Whole Quality principle:

Evidence should support only what it can responsibly support.

5. Evidence as a Quality Object

So far, Evidence has been treated as information used to understand another object.

But Evidence itself can also be examined. We may need to ask whether the Evidence is capable of doing its own job well.

5.1 Why Evidence May Be Examined as a Quality Object

Evidence normally supports Findings about another Quality Object.

However, Whole Quality also allows Evidence itself to be examined methodologically as a Quality Object.

This is necessary because Evidence has its own intended function. Evidence is expected to do something: support a Finding about the actual condition of the Quality Object being examined.

The question is therefore not only:

What does the Evidence show?

It is also:

Is the Evidence capable of supporting the Finding for which it is being used?

Treating Evidence as a Quality Object provides a structured way to answer this question.

The relationship can be expressed as:

Primary Quality Object

→ actual condition

→ Evidence

→ Evidence-Supported Finding

while, methodologically:

Evidence as Quality Object

→ Evidence Intended Function

→ Evidence Intended Result

→ Evidence Quality Factors

→ Evidence Quality Indicators

These are not two competing determinations of the same thing.

The first concerns the Quality of the primary Quality Object.

The second provides the methodological structure for examining the Quality of the Evidence used in that determination.

This distinction prevents Evidence Quality from becoming an informal judgment such as "good Evidence," "strong Evidence," or "reliable information" without explaining what makes it adequate for its intended use.

It also allows the same Whole Quality logic used for other Quality Objects to be applied consistently to Evidence.

5.2 Evidence Intended Function

When Evidence is examined as a Quality Object, its Intended Function must first be identified.

The WQI Evidence Intended Function is:

To support a Finding about the actual condition of the Quality Object being examined.

This definition establishes an important boundary.

The Intended Function of Evidence is not to prove a preferred conclusion.

It is not to establish that the Quality Object is favorable or unfavorable.

It is not to eliminate all Uncertainty.

It is not to produce a predetermined Quality Claim.

Its function is to support a Finding about actual condition.

This means that Evidence may successfully realize its Intended Function even when the Finding it supports is unfavorable.

For example:

high-quality Evidence

→ supports an unfavorable Finding

→ contributes to an unfavorable Quality State

The Evidence has not failed because the result is unfavorable. On the contrary, it may have performed its evidentiary function well.

Likewise, Evidence should not be considered successful merely because it supports a favorable conclusion.

The relevant question is whether it responsibly supports the Finding.

This distinction protects the Quality Determination from an important form of distortion:

desired conclusion

→ selection or interpretation of Evidence

→ confirmation of desired conclusion

Whole Quality instead requires:

Evidence

→ examination of what it can support

→ Evidence-Supported Finding

→ Quality interpretation

The Intended Function therefore anchors Evidence Quality to evidentiary support rather than to the desirability of the resulting conclusion.

5.3 Evidence Intended Result

The Intended Result of Evidence describes what should result when its Intended Function is realized.

The WQI Evidence Intended Result is:

A Finding supported within the scope and certainty that the Evidence can responsibly support.

The words "scope and certainty" are important.

Evidence does not need to support everything that could potentially be known about the Quality Object.

It must support the Finding actually being made.

For example, Evidence may support a narrow Finding about one component, one condition, one period, or one aspect of Function Realization without supporting a conclusion about the entire Quality Object.

The responsible result is therefore:

Evidence

→ supported Finding within evidentiary limits

not:

Evidence

→ broadest possible conclusion

A narrower Finding supported by the Evidence is methodologically stronger than a broader Finding that exceeds the Evidence.

The Intended Result also explains why Evidence Quality cannot be separated from the Finding for which the Evidence is used.

The same Evidence may responsibly support:

Finding A with high certainty,

Finding B with limited certainty,

and not support Finding C.

The Evidence itself has not physically changed. What changes is the relationship between the Evidence and the Finding being supported.

The Intended Result therefore establishes a boundary on evidentiary interpretation:

The Finding should not exceed what the Evidence can responsibly support.

This boundary later carries forward into the Quality Determination and Quality Claim.

5.4 Evidence Quality Without a Parallel Mandatory Quality State

Treating Evidence as a Quality Object raises an important methodological question:

Must every Quality Determination also contain a separate formal Quality State for its Evidence?

Whole Quality does not require this.

Evidence may be treated as a Quality Object for the purpose of deriving and applying its Evidence Quality architecture without requiring a separate Evidence Quality State in every primary Quality Determination.

The normal pathway remains:

Evidence

→ examination of Evidence Quality

→ Evidence-Supported Findings

→ Quality Factor Interpretation

→ Quality State of the primary Quality Object

Evidence Quality operates within this pathway by determining what the Evidence can responsibly support.

Requiring a second formal Quality State for Evidence in every determination would create an unnecessary parallel structure:

Primary Quality Object

→ Quality State

and

Evidence

→ separate Evidence Quality State

The second Quality State is not normally necessary for the primary determination.

What matters is whether limitations in Evidence Sufficiency, Evidence Trustworthiness, or Evidence Applicability constrain the Finding and therefore the Quality Determination.

For example:

Evidence is incomplete

→ Finding must be limited

Evidence cannot be trusted

→ Finding may not be supportable

Evidence is not applicable

→ Evidence cannot properly support that Finding

These consequences can be represented directly through Evidence Quality without creating a separate formal Evidence Quality State.

However, Evidence may itself become the primary Quality Object of another deliberate Quality Determination.

For example, an organization may specifically choose to examine the Quality of an evidentiary system, dataset, inspection record set, monitoring system output, or other body of Evidence.

In that case:

Evidence

→ deliberately defined as the primary Quality Object

→ full Quality Determination

→ Quality State of that Evidence

This is different from routinely examining Evidence Quality while determining the Quality State of another object.

The distinction is therefore:

Evidence examined within a primary Quality Determination

→ Evidence Quality constrains what Findings can be supported

→ separate Evidence Quality State is not required

Evidence deliberately selected as the primary Quality Object

→ full Quality Determination may be performed

→ Evidence may have its own determined Quality State

This keeps the methodology rigorous without making every Quality Determination unnecessarily recursive.

Evidence can be examined as a Quality Object because its Quality matters.

But examining its Quality does not require creating another complete Quality Determination inside every Quality Determination.

6. Evidence Quality

Once Evidence is being used to support a Finding, a practical question follows: how good is that Evidence for this particular use?

Whole Quality calls this Evidence Quality.

6.1 The Meaning of Evidence Quality

Evidence Quality concerns whether Evidence can support the Finding for which it is used.

This is different from asking whether Evidence exists or how much Evidence has been collected.

A determination may contain a large amount of Evidence and still have a weak evidentiary basis. Evidence may fail to cover important conditions, come from an unreliable source, inaccurately represent the condition, or be unsuitable for the particular Finding.

Conversely, a relatively limited body of Evidence may be capable of supporting a narrowly defined Finding.

Evidence Quality must therefore be considered in relation to the intended evidentiary use. It should also be distinguished from the Quality of the system or process that produced the Evidence. A strong evidence-producing system does not automatically make every evidentiary item sufficient, trustworthy, or applicable, and weakness in such a system does not by itself determine the Quality of every item it produces.

The central question is:

Can this Evidence responsibly support this Finding?

Whole Quality examines this question through three Evidence Quality Factors:

Evidence Sufficiency

→ Is there enough Evidence?

Evidence Trustworthiness

→ Can the Evidence be relied upon as representing what it says it represents?

Evidence Applicability

→ Can the Evidence properly be used here?

Together, these Factors examine different conditions necessary for Evidence to realize its Intended Function. They do not guarantee a correct Quality Determination by themselves. A responsible determination also requires an appropriate Quality architecture, applicable Quality Outcome Criteria, justified interpretation of Findings, and competent use of the methodology within the relevant field and Context.

They should not be collapsed into a single general judgment such as "good Evidence."

Evidence can be sufficient but untrustworthy.

It can be trustworthy but insufficient.

It can be sufficient and trustworthy but inapplicable to the particular Finding.

The Evidence Quality architecture preserves these differences so that the reason for an evidentiary limitation remains visible.

6.2 Evidence Sufficiency

Evidence Sufficiency is the degree to which Evidence provides enough support for the intended scope and certainty of a Finding.

Its simplest question is:

Is there enough Evidence to support this Finding?

"Enough" does not mean a universally required quantity of Evidence.

What is sufficient depends on what the Finding is intended to state.

A narrow Finding may require less Evidence than a broad Finding. A Finding concerning one component may require a different evidentiary basis from a Finding concerning an entire system. A Finding limited to one period may require different Evidence from a Finding covering an extended period.

Sufficiency therefore depends on the relationship between:

Evidence

→ intended Finding

→ scope and certainty of that Finding

Evidence Sufficiency is examined through three supporting Indicators:

Coverage

Completeness

Resolution

Coverage concerns whether Evidence extends across the relevant parts, conditions, periods, events, or aspects that must be represented.

Completeness concerns whether material Evidence needed within the applicable scope is present rather than missing.

Resolution concerns whether the Evidence provides the level of detail or discrimination required for the intended determination.

These are related but different questions.

Evidence may cover the entire Quality Object but lack important information within that coverage.

Evidence may be complete for the information collected but have insufficient Resolution to distinguish the condition that must be determined.

Evidence may have excellent Resolution at several locations but fail to cover other relevant parts of the Quality Object.

Evidence Sufficiency therefore cannot be reduced to the amount of information collected.

The question remains whether the evidentiary basis is enough for the Finding actually being made.

6.3 Evidence Trustworthiness

Evidence Trustworthiness is the degree to which Evidence can be relied upon as representing the condition that it purports to represent.

Its simplest question is:

Can this Evidence be relied upon as representing what it says it represents?

Trustworthiness does not concern whether the represented condition is favorable or unfavorable.

It concerns confidence in the evidentiary representation itself.

For example, a measurement may concern exactly the correct component and period but still be unreliable because the measurement process was defective.

A record may be complete and relevant but contain inaccurate information.

A report may correctly identify the subject but rely on a source that cannot reasonably be relied upon.

Evidence Trustworthiness is examined through four supporting Indicators:

Source Reliability

Validity

Accuracy

Evidence Integrity

Source Reliability concerns whether the source from which Evidence originates can reasonably be relied upon for the information it provides.

Validity concerns whether the Evidence actually represents the condition or characteristic it purports to represent.

Accuracy concerns whether that condition or characteristic is represented without material error.

Evidence Integrity concerns whether the Evidence remains materially intact and free from unauthorized, unexplained, or quality-relevant alteration, loss, substitution, or distortion through its evidentiary lifecycle.

These distinctions matter.

A reliable source can produce inaccurate Evidence.

An accurate value can be invalid for the characteristic that someone claims it represents.

Evidence may originally be valid and accurate but later lose Integrity through alteration, loss of context, substitution, or distortion.

Trustworthiness therefore requires examination of the evidentiary representation rather than reliance on reputation, format, or apparent authority alone.

6.4 Evidence Applicability

Evidence Applicability is the degree to which Evidence can properly be used to support a particular Finding and Quality Determination.

Its simplest question is:

Can this Evidence properly be used here?

Evidence may be sufficient in amount and highly trustworthy while still being unsuitable for the particular use being made of it.

For example, accurate Evidence may concern a different Quality Object.

It may concern the correct Quality Object but a different period or condition.

It may have been produced under circumstances that do not apply to the Context being examined.

It may accurately represent one characteristic while being used to support a Finding about another characteristic.

Evidence Applicability is examined through three supporting Indicators:

Subject Applicability

Context Applicability

Determination Applicability

Subject Applicability concerns whether the Evidence relates to the Quality Object, part, condition, event, or period that is the subject of the Finding.

Context Applicability concerns whether the Evidence remains applicable under the conditions and circumstances in which the Finding is being made.

Determination Applicability concerns whether what the Evidence represents can properly support the particular Finding and Quality Determination.

These distinctions prevent relevance from being treated too broadly.

Evidence may appear generally relevant to a subject while still being inapplicable to the particular determination.

The question is not merely:

Is this information related to the topic?

It is:

Can this Evidence properly support this particular Finding about this Quality Object under this Context and within this determination?

6.5 Independence and Non-Compensation of the Three Factors

Evidence Sufficiency, Evidence Trustworthiness, and Evidence Applicability address different dimensions of Evidence Quality.

None can automatically substitute for another. This does not require perfection in every Factor. The question is whether a weakness is material to the scope and certainty of the Finding being attempted. A non-material limitation may be acceptable for one bounded Finding while the same limitation may be material for another.

This can be shown through simple cases.

Case 1:

Evidence is trustworthy.

Evidence is applicable.

Evidence is too limited to support the intended Finding.

Result:

Trustworthiness and Applicability do not compensate for insufficient Evidence.

Case 2:

A large and apparently complete body of Evidence is available.
It concerns the correct subject and determination.
The information cannot reasonably be relied upon.

Result:

Sufficiency and Applicability do not compensate for untrustworthy Evidence.

Case 3:

Evidence is extensive.

Evidence is highly reliable and accurate.

It concerns a different object, condition, Context, or determination.

Result:

Sufficiency and Trustworthiness do not compensate for inapplicable Evidence.

The relationship can therefore be expressed as:

Evidence Sufficiency

+

Evidence Trustworthiness

+

Evidence Applicability

↓

Evidence capable of responsibly supporting the intended Finding

This does not mean that every Factor must always be expressed numerically or assigned a separate rating.

It means that a material weakness in one Factor cannot simply be erased by strength in another.

The three-Factor structure also helps prevent common evidentiary shortcuts.

More Evidence does not repair unreliable Evidence.

More reliable Evidence does not fill conditions that were never examined.

Highly accurate Evidence does not become applicable merely because it is technically strong.

Applicable Evidence does not become sufficient merely because it concerns the correct subject.

This non-compensation principle is important because Evidence Quality ultimately constrains what a Finding can responsibly state.

Where a material Evidence Quality limitation remains, the appropriate response is not to hide that limitation through strengths elsewhere.

The limitation should remain visible in the scope, certainty, or support of the resulting Finding.

The three Evidence Quality Factors therefore work together while retaining their independent meanings:

Sufficiency

→ enough?

Trustworthiness

→ reliable as a representation?

Applicability

→ usable here?

Together they provide the principal Whole Quality structure for examining whether Evidence can realize its Intended Function.

7. Evidence Quality Indicators

The three Evidence Quality Factors tell us the main questions to ask. The Indicators help us examine those questions in more detail.

The three Evidence Quality Factors establish the principal dimensions through which Evidence Quality is examined:

Evidence Sufficiency

Evidence Trustworthiness

Evidence Applicability

Each Factor is supported by Evidence Quality Indicators.

The Indicators make the Factors examinable without replacing them. They identify more specific characteristics through which limitations or strengths in Evidence can be recognized. They are not a catalogue of every domain-specific evidentiary method, technical parameter, procedural control, or acceptance rule. Such details may be essential in an application without becoming additional WQI Evidence Quality Indicators.

The relationship is:

Evidence Quality

→ Evidence Quality Factors

→ Evidence Quality Indicators

The Indicators do not describe the Quality of the primary Quality Object. They describe characteristics relevant to the Quality of the Evidence used to support Findings about that object.

The ten WQI Evidence Quality Indicators are organized as follows:

Evidence Sufficiency

→ Coverage

→ Completeness

→ Resolution

Evidence Trustworthiness

→ Source Reliability

→ Validity

→ Accuracy

→ Evidence Integrity

Evidence Applicability

→ Subject Applicability

→ Context Applicability

→ Determination Applicability

7.1 Indicators of Evidence Sufficiency

Evidence Sufficiency concerns whether Evidence provides enough support for the intended scope and certainty of a Finding.

Three Indicators support its examination:

Coverage

Completeness

Resolution

These Indicators address different ways in which Evidence may be insufficient.

Evidence may not extend far enough across the condition being examined.

Material Evidence may be missing.

Available Evidence may not provide enough detail to distinguish the condition that the determination requires.

These limitations correspond respectively to Coverage, Completeness, and Resolution.

7.1.1 Coverage

Coverage concerns the extent to which Evidence addresses the relevant parts, conditions, periods, events, or aspects required by the intended Finding.

The central question is:

Does the Evidence extend across what needs to be examined?

Coverage is always relative to the scope of the Finding.

For example, Evidence concerning one part of a Quality Object may provide adequate Coverage for a Finding specifically limited to that part.

The same Evidence may provide inadequate Coverage for a Finding concerning the Quality Object as a whole.

Similarly, Evidence collected during one operating condition may adequately support a Finding limited to that condition but may not support a Finding intended to cover substantially different conditions.

Coverage therefore prevents a narrow evidentiary window from being silently expanded into a broader conclusion.

A simple relationship is:

scope of intended Finding

↔

scope covered by Evidence

Where the second does not adequately support the first, the Finding should be narrowed or the evidentiary basis strengthened.

Coverage is not the same as Completeness.

Evidence may extend across all relevant areas while important information within those areas remains missing.

Coverage asks whether the evidentiary reach is adequate.

Completeness asks whether material Evidence within that reach is present.

7.1.2 Completeness

Completeness concerns whether material Evidence needed within the applicable scope is present rather than missing.

The central question is:

Is material Evidence needed for the Finding missing?

Completeness does not require every piece of information that could possibly exist.

The relevant issue is whether missing Evidence could materially affect what the Finding can responsibly state.

For example, a body of records may cover an entire period but contain a material gap during an important event.

Coverage of the period may therefore appear broad while Completeness remains limited.

Similarly, an examination may address all major parts of a Quality Object but omit information necessary to determine an important condition within one of those parts.

The existence of extensive Evidence elsewhere does not automatically compensate for the missing Evidence.

Completeness therefore concerns material evidentiary gaps, not simply the quantity of information.

A useful distinction is:

Coverage

→ Did the Evidence reach the relevant scope?

Completeness

→ Within that scope, is material Evidence missing?

Where material Evidence is unavailable, the limitation should remain visible rather than being silently treated as though the missing Evidence would have supported the same conclusion as the Evidence that is available.

7.1.3 Resolution

Resolution concerns whether Evidence provides the level of detail or discrimination required for the intended Quality Determination.

The central question is:

Can the Evidence distinguish the condition at the level needed for this determination?

Evidence may exist, cover the relevant scope, and contain no obvious material gaps while still being too coarse for the Finding being attempted.

For example, Evidence may establish that a condition changed without being capable of distinguishing the magnitude or location of that change.

A broad observation may establish the general condition of a Quality Object while being unable to distinguish conditions among its individual parts.

A periodic record may show general behavior while being unable to reveal short-duration events relevant to the determination.

Resolution therefore connects the evidentiary basis to the Methodological Resolution required by the determination.

The relationship can be expressed as:

Methodological Resolution required

↔

Resolution provided by Evidence

Evidence should not be interpreted at a finer level than it can support.

Higher Resolution is not automatically better.

The required Resolution depends on the intended determination. Evidence with very high detail may be unnecessary for a broad determination, while the same broad Evidence may be inadequate for a more discriminating determination.

Resolution therefore concerns fitness of evidentiary detail for the intended use, not maximum possible detail.

7.2 Indicators of Evidence Trustworthiness

Evidence Trustworthiness concerns whether Evidence can be relied upon as representing the condition that it purports to represent.

Four Indicators support its examination:

Source Reliability

Validity

Accuracy

Evidence Integrity

These Indicators examine different possible weaknesses in the evidentiary representation.

The source may not be reliable.

The Evidence may not actually represent what it is claimed to represent.

The representation may contain material error.

The Evidence may have been altered, lost, substituted, or distorted through its evidentiary lifecycle.

These are different problems and should remain distinguishable.

7.2.1 Source Reliability

Source Reliability concerns whether the source from which Evidence originates can reasonably be relied upon for the information it provides.

The central question is:

Can this source reasonably be relied upon for this information?

A source may be a person, instrument, system, record-producing process, organization, database, observation process, or another origin of Evidence.

Source Reliability should not be assumed solely from authority, reputation, official status, or technical appearance.

A normally reliable source may produce unreliable information under particular conditions.

Likewise, a source that is not authoritative in a general sense may still provide reliable Evidence concerning a condition it directly observed.

Source Reliability therefore concerns the source in relation to the information being relied upon. It addresses the capability or dependability of the source for that information; it does not establish that a particular evidentiary item is valid, accurate, or has retained its Integrity.

It does not by itself establish Validity, Accuracy, or Applicability.

A reliable source may still measure the wrong characteristic.

A reliable instrument may produce an inaccurate result if improperly used.

A reliable record may concern a different subject or period.

Source Reliability is therefore necessary to examine, but it does not by itself establish overall Evidence Trustworthiness.

7.2.2 Validity

Validity concerns whether Evidence represents the condition or characteristic it purports to represent.

The central question is:

Does this Evidence actually represent what we say it represents?

This question is different from whether the Evidence is accurate.

A value may be accurately measured while being invalid for the conclusion being drawn from it.

For example, a measurement may accurately represent one physical characteristic but be used as though it directly represented another condition that it does not actually establish.

Likewise, a service record may accurately show that an activity occurred without validly representing the result of that activity.

The distinction is:

Validity

→ Are we representing the right thing?

Accuracy

→ Are we representing that thing without material error?

Validity therefore protects against a common evidentiary error: using an accurate observation, measurement, or record as a substitute for a different condition that was not actually evidenced.

7.2.3 Accuracy

Accuracy concerns whether the condition or characteristic represented by Evidence is represented without material error.

The central question is:

How correctly does the Evidence represent the condition it is intended to represent?

Evidence may be valid in principle but inaccurate in practice.

For example, a measurement method may be appropriate for the characteristic being measured, but the resulting value may contain material error.

A record may concern the correct event but record the event incorrectly.

An observation may address the correct condition but describe it inaccurately.

Accuracy therefore concerns error in the representation.

The significance of an error depends on the Finding being supported.

A small error may have little effect on one Finding but materially change another, particularly where the condition is close to an applicable Quality Outcome Criterion.

Accuracy should therefore be considered in relation to the precision required for the intended evidentiary use.

The goal is not necessarily perfect representation.

It is representation without error material to what the Finding is intended to state.

7.2.4 Evidence Integrity

Evidence Integrity concerns whether Evidence remains materially intact and free from unauthorized, unexplained, or quality-relevant alteration, loss, substitution, or distortion through its evidentiary lifecycle.

The central question is:

Has the Evidence remained materially intact from its origin to its use?

Evidence may originally be valid and accurate but become less trustworthy through later handling.

For example, information may be altered during processing.

Records may be incomplete because portions were lost.

A sample may be substituted.

Data may become separated from information identifying its source, time, location, or condition.

A report may change the meaning of an original observation during summarization.

Evidence Integrity therefore extends across the evidentiary lifecycle:

origin

- capture
- processing
- storage
- transfer
- retrieval
- use

Not every change to Evidence is an Integrity failure.

Legitimate processing, correction, transformation, or summarization may be appropriate where it is controlled and its effect remains understandable.

The concern is material alteration, loss, substitution, or distortion that affects what the Evidence can responsibly support.

Traceability can help reveal whether Evidence Integrity has been preserved, but Traceability is not itself proof of Integrity.

A fully traceable evidentiary path can still reveal that the Evidence was materially altered or distorted.

7.3 Indicators of Evidence Applicability

Evidence Applicability concerns whether Evidence can properly be used to support the particular Finding and Quality Determination.

Three Indicators support its examination:

Subject Applicability

Context Applicability

Determination Applicability

These Indicators progressively ask:

Is this Evidence about the correct subject?

Does it apply under the relevant conditions?

Can what it represents properly support this particular determination?

Evidence may pass one of these tests and fail another.

7.3.1 Subject Applicability

Subject Applicability concerns whether Evidence relates to the Quality Object, part, condition, event, or period that is the subject of the Finding.

The central question is:

Is this Evidence about the subject we are actually examining?

This question may appear simple, but complex Quality Objects can create substantial ambiguity.

Evidence concerning a similar component is not automatically Evidence concerning the component being determined.

Evidence concerning one facility is not automatically Evidence concerning another.

Evidence concerning an earlier condition is not automatically Evidence of the present condition.

Evidence concerning an organization is not automatically Evidence concerning every activity performed by that organization.

Subject Applicability therefore preserves the connection between Evidence and the defined subject of the Finding.

Evidence from another subject may still be useful for comparison, prediction, Context, or other purposes.

But such usefulness should not be confused with direct Evidence about the actual condition of the subject being determined.

7.3.2 Context Applicability

Context Applicability concerns whether Evidence remains applicable under the conditions and circumstances in which the Finding is made.

The central question is:

Does this Evidence apply under the relevant Context?

Evidence may concern the correct subject while having been produced under conditions substantially different from those relevant to the Finding.

Operating conditions may differ.

Environmental conditions may differ.

Human or organizational conditions may differ.

Service circumstances may differ.

Time, location, configuration, loading, population, or other contextual conditions may affect what the Evidence can support.

Context Applicability therefore prevents Evidence from being transferred between conditions without examining whether the transfer is justified.

This does not mean that Evidence obtained under different conditions is automatically unusable.

It means that the relationship between those conditions and the Context of the intended Finding must be understood well enough to establish what the Evidence can responsibly support.

7.3.3 Determination Applicability

Determination Applicability concerns whether what the Evidence represents can properly support the particular Finding and Quality Determination.

The central question is:

Can what this Evidence actually represents support the conclusion we are asking it to support?

This is the final applicability boundary.

Evidence may concern the correct subject.

It may apply under the relevant Context.

It may also be trustworthy.

Yet the characteristic it represents may still be insufficiently connected to the particular Finding being attempted.

For example:

Evidence that an activity occurred
does not automatically establish
that the activity achieved its Intended Result.

Evidence that a procedure exists
does not automatically establish
that the procedure is followed.

Evidence that a condition was inspected
does not automatically establish
that the condition was acceptable.

Evidence of one Quality Indicator
does not automatically establish
the condition of another Quality Indicator.

Determination Applicability therefore protects the logical connection between Evidence and the Finding. Validity asks whether the Evidence represents the condition or characteristic it purports to represent; Determination Applicability asks whether what is validly represented can properly support the particular Finding being attempted.

It asks whether the evidentiary representation can properly perform the role assigned to it in the Quality Determination.

Together, the ten Evidence Quality Indicators provide a structured way to examine why Evidence can or cannot support a Finding.

They can be summarized through ten practical questions:

Coverage

→ Did we examine enough of the relevant scope?

Completeness

→ Is material Evidence missing?

Resolution

→ Is the Evidence detailed enough for the determination?

Source Reliability

→ Can the source reasonably be relied upon?

Validity

→ Does the Evidence represent what it claims to represent?

Accuracy

→ Is that condition represented without material error?

Evidence Integrity

→ Has the Evidence remained materially intact?

Subject Applicability

→ Is the Evidence about the correct subject?

Context Applicability

→ Does it apply under the relevant conditions?

Determination Applicability

→ Can it properly support this particular Finding?

The Indicators do not replace professional or domain-specific judgment.

They provide a common Whole Quality structure within which that judgment can be made visible, bounded, and traceable.

8. From Evidence to Evidence-Supported Findings

After Evidence has been examined, it must be turned into something usable in the determination: a Finding.

A Finding states what the Evidence responsibly allows us to say about the actual condition.

8.1 Evidence Quality and the Finding

Evidence becomes useful to a Quality Determination through the Finding it supports.

A Finding is not simply a repetition of available Evidence. It is a statement about the actual condition of the Quality Object that is supported by Evidence.

The relationship is:

Evidence

→ examination of Evidence Quality

→ Evidence-Supported Finding

Evidence Quality therefore constrains what a Finding can responsibly state.

Evidence that is sufficient, trustworthy, and applicable may support a Finding with the scope and certainty required by the determination.

Where Evidence Quality is limited, the Finding must reflect that limitation.

For example:

limited Coverage

→ Finding may need narrower scope

materially incomplete Evidence

→ Finding may remain unresolved or qualified

insufficient Resolution

→ Finding cannot responsibly distinguish conditions beyond that Resolution

untrustworthy Evidence

→ Finding may lack adequate support

inapplicable Evidence

→ Evidence cannot properly support the intended Finding

This is why Evidence Quality should be examined before a Finding is carried forward into Quality Factor Interpretation.

Otherwise, an evidentiary limitation can disappear during interpretation and produce a stronger conclusion than the Evidence supports.

The basic principle is:

The Finding must not exceed the Evidence.

8.2 Scope and Certainty of a Finding

Every Evidence-Supported Finding has a scope. In FTA12, the phrase "responsibly support" does not mean absolute proof or elimination of all Uncertainty. It means that the stated Finding remains within the scope and certainty justified by the Evidence, its Quality, the applicable basis, and the conditions of the determination.

The scope identifies what the Finding actually addresses.

It may concern:

- the whole Quality Object,
- a defined part of the Quality Object,
- a particular condition,
- a particular Quality Indicator,
- a particular Intended Function or Intended Result,
- a particular location,
- a particular period,
- a particular operating or service condition,
- or another bounded aspect of the determination.

A Finding should not silently extend beyond that scope.

For example, Evidence from one part of an infrastructure system may support a Finding about that part without supporting the same Finding about the entire system.

Evidence from one period may support a Finding about that period without establishing the condition during earlier or later periods.

Evidence concerning one Support Service result may support a Finding about that result without establishing the overall Quality of the Support Service.

A Finding also has a degree of certainty.

Certainty concerns how strongly the available Evidence supports what the Finding states.

Scope and certainty are related but different.

Evidence may support:

- a broad Finding with limited certainty,
- a narrow Finding with stronger certainty,
- or no responsible Finding on a particular condition.

Where appropriate, narrowing the Finding may allow the Evidence to support it more responsibly.

The relationship can therefore be expressed as:

Evidence Quality

→ supported scope

+

supported certainty

→ Evidence-Supported Finding

This is consistent with the Intended Result of Evidence:

A Finding supported within the scope and certainty that the Evidence can responsibly support.

The purpose is not to maximize the breadth or certainty of the Finding.

The purpose is to state what the Evidence actually supports.

8.3 Contrary, Conflicting, and Materially Inconsistent Evidence

A Finding should reflect the relevant evidentiary basis, including Evidence that does not support the preferred or initially expected interpretation.

Contrary, conflicting, or materially inconsistent Evidence should therefore remain visible when establishing what a Finding can responsibly state.

For example:

Evidence A

→ indicates condition X

Evidence B

→ indicates condition Y

The determination should not automatically select Evidence A and disregard Evidence B merely because Evidence A supports a simpler or more favorable conclusion.

The conflict should first be examined.

Possible explanations may include:

different periods,

different locations,

different operating conditions,

different Methodological Resolution,

differences in Source Reliability,

Validity or Accuracy limitations,

Evidence Integrity problems,

different Context Applicability,

or an actual change or variation in the Quality Object.

Where the conflict can be responsibly resolved, the resulting Finding may state the resolved condition.

Where it cannot be resolved, the Finding should preserve the unresolved condition.

For example:

Available Evidence supports different representations of the condition, and the present evidentiary basis is insufficient to determine which representation applies.

Such a Finding may be less decisive, but it is methodologically stronger than an unsupported resolution of the conflict.

Contrary Evidence is therefore not merely an inconvenience.

It may reveal a limitation in Evidence Quality, an important variation in actual condition, or an unresolved part of the Quality Determination.

8.4 Missing Evidence and Unresolved Conditions

Missing Evidence creates a different problem from Evidence showing that a condition does not exist.

The distinction is fundamental:

No Evidence of condition X

≠

Evidence that condition X is absent

This is the difference between absence of Evidence and Evidence of absence.

A related failure can occur when material relevant Evidence exists but is selectively omitted from the evidentiary basis. Evidence Quality cannot be established only from the evidentiary items selected for use where contrary, adverse, incomplete, or otherwise material Evidence was available but excluded.

Depending on the circumstances, selective presentation may affect Completeness, Evidence Integrity, Source Reliability, or the scope and certainty of the resulting Finding.

For example, if a relevant part of a Quality Object was not examined, the lack of a detected problem does not establish that the problem is absent.

Likewise, if a record does not contain information about an event, this does not automatically establish that the event did not occur.

The evidentiary question is:

Was the available Evidence capable of establishing absence?

Sometimes it may be.

For example, an appropriate observation or measurement with sufficient Coverage, Completeness, Resolution, Trustworthiness, and Applicability may support a Finding that a specified condition was not present within the examined scope.

In other cases, the Evidence may simply be insufficient to determine whether the condition was present or absent.

The resulting Finding should then preserve the unresolved condition.

The appropriate relationship is:

missing or insufficient Evidence

→ condition cannot be responsibly determined

→ unresolved Finding

not:

missing Evidence

→ favorable assumption

and not:

missing Evidence

→ unfavorable assumption

This distinction is particularly important where the unresolved condition concerns a critical Intended Function, Intended Result, Quality Factor, Quality Indicator, or Quality Outcome Criterion.

An unresolved condition should remain visible as the determination proceeds.

It should not disappear merely because other parts of the Quality Object are well evidenced.

8.5 Evidence Supporting More Than One Finding

The same Evidence may sometimes support more than one Finding.

For example, one measurement may provide Evidence relevant to more than one condition. One operating record may contribute to Findings concerning several periods or functions. One observation may be relevant to more than one Quality Indicator.

Whole Quality does not require separate Evidence to be created merely because several Findings are being established.

However, applicability must be established for each use.

The relationship may be:

Evidence A



Finding 1 Finding 2 Finding 3

Each evidentiary path must be supportable.

Evidence sufficient for Finding 1 may be insufficient for Finding 2.

Evidence valid for one Finding may not validly represent the condition addressed by another.

Evidence applicable to one Intended Function may not be applicable to another.

The same Evidence may therefore support several Findings with different scopes and levels of certainty.

This is especially important for complex Quality Objects with multiple Intended Functions and Intended Results.

Shared Evidence should not create an artificial assumption that all Findings are equally supported. Each Finding remains bounded by the Evidence Quality applicable to that particular evidentiary use. This also preserves Traceability.

It should be possible, where material to the determination, to follow the relationship:

Evidence

- Finding or Findings supported
- applicable Quality Indicator
- Quality Factor Interpretation
- Quality State
- Quality Claim

This does not require every Quality Determination to become unnecessarily complex.

It requires the important relationships to remain understandable and recoverable.

The transition from Evidence to Finding is therefore one of the principal control points in Whole Quality.

Before a Finding is used to interpret the Quality of the primary Quality Object, the determination must answer a basic question:

What does the Evidence responsibly allow us to find?

Only the answer to that question should proceed into Quality Factor Interpretation.

9. Evidence in the Quality Determination

A Finding is not yet the final Quality conclusion.

The next step is to understand what that Finding means for the Quality of the object being examined.

9.1 Evidence-Supported Findings

Evidence-Supported Findings provide the connection between Evidence and interpretation of the Quality of the defined Quality Object.

Evidence should not normally be carried directly into a Quality State without first establishing what the Evidence supports about actual condition.

The relationship is:

Evidence

- Evidence Quality
- Evidence-Supported Findings
- Quality Factor Interpretation
- Quality State

This separation is important because Evidence and Findings perform different functions.

Evidence provides the evidentiary basis.

A Finding states what can responsibly be established from that basis about the actual condition being examined.

For example, a measurement is Evidence. A Finding may state what condition that measurement, together with other applicable Evidence, supports.

A service record is Evidence. A Finding may state what the record supports about the actual delivery or result of the service.

An inspection record is Evidence. A Finding may state what can be established about the inspected condition.

The Evidence should therefore remain distinguishable from the conclusion drawn from it.

This distinction also makes limitations visible.

If Evidence is insufficient, untrustworthy, or inapplicable, the limitation should constrain the Finding before that Finding is used in Quality Factor Interpretation.

The Quality Determination should therefore proceed from Evidence-Supported Findings rather than from unsupported impressions about the Quality Object.

9.2 Quality Factor Interpretation

Evidence Quality constrains what Findings can state, but it does not eliminate the need to justify how those Findings are interpreted. Quality Factor Interpretation can itself introduce limitations or Uncertainty where relationships among Findings, criteria, assumptions, or Context are not sufficiently established.

Evidence-Supported Findings do not become the Quality State automatically.

They must be interpreted within the applicable Quality architecture.

Quality Factors identify the principal quality-relevant dimensions associated with Function Realization.

Quality Indicators identify the aspects through which those Factors are examined.

Quality Outcome Criteria establish the expected condition or result applicable to those Indicators.

Evidence-Supported Findings establish what can responsibly be stated about the actual condition.

The relationship is:

Quality Factor

→ Quality Indicator

→ Quality Outcome Criterion

compared with:

Evidence

→ Evidence-Supported Finding about actual condition

leading to:

Quality Factor Interpretation

Quality Factor Interpretation therefore connects what is expected with what is actually supported by Evidence.

This prevents Evidence from being interpreted without a declared quality reference.

For example, an accurately measured technical value does not by itself state whether the Quality of the Quality Object is favorable or unfavorable.

Its meaning depends on the applicable Quality Indicator, Quality Outcome Criterion, Context, and other relevant parts of the determination.

Likewise, a favorable Finding concerning one Indicator does not automatically establish favorable realization of the entire Quality Factor.

The interpretation must consider the Findings relevant to that Factor and the relationships among the conditions being examined.

Evidence Quality continues to matter at this stage because interpretation cannot responsibly exceed the Findings on which it depends.

9.3 From Findings to Quality State

The Quality State expresses the determined Quality of the defined Quality Object.

It is established through interpretation of Evidence-Supported Findings within the applicable Whole Quality architecture.

A simplified relationship is:

Evidence-Supported Findings

→ Quality Factor Interpretation

→ Function Realization

→ Quality State

The Quality State is therefore not a summary of how much favorable or unfavorable Evidence exists. Nor is it simply an average of individual Findings.

The determination must consider what the Findings mean for realization of the Intended Function or Intended Functions and Intended Results of the Quality Object.

This distinction becomes important where Findings differ.

Some Findings may support favorable conditions.

Others may identify unfavorable conditions.

Still others may remain unresolved because the available Evidence cannot support a sufficiently certain conclusion.

The resulting Quality State must preserve the significance of those differences.

For example:

Finding A

→ favorable condition

Finding B

→ unfavorable condition

Finding C

→ unresolved condition

These should not automatically be converted into:

two favorable or neutral findings versus one unfavorable finding

→ generally favorable Quality State

Such counting would ignore the different significance of the conditions represented by the Findings.

Instead, the determination must interpret each material Finding in relation to Function Realization, the applicable Quality Factor, Quality Indicator, Quality Outcome Criterion, and any critical conditions established by the Applicable Basis.

The Quality State therefore represents an interpreted determination of Quality, not a numerical vote among pieces of Evidence or Findings.

9.4 Evidence and Critical Conditions

Not all conditions necessarily have the same significance for Function Realization.

The Applicable Basis may establish that certain conditions are critical because failure to satisfy them can prevent realization of an Intended Function or Intended Result regardless of favorable conditions elsewhere.

Evidence concerning such conditions has particular importance in the Quality Determination.

For example:

many favorable Findings

+

one Evidence-Supported Finding showing failure of a critical condition

may establish a materially unfavorable limitation on Function Realization.

The favorable Findings do not erase the critical failure.

Similarly, if the Evidence concerning a critical condition is insufficient, untrustworthy, or inapplicable, the determination should not automatically assume that the condition is satisfied.

The appropriate result may instead be an unresolved condition that materially limits what can be determined or claimed.

This can be expressed as:

critical condition

+

insufficient evidentiary support

→ unresolved critical condition

rather than:

critical condition

+

absence of adverse Evidence

→ condition assumed acceptable

This principle is especially important where the consequences of incorrectly assuming satisfactory Function Realization are substantial.

However, Whole Quality does not classify every unfavorable Finding as critical.

Criticality must arise from the relationship between the condition, the Intended Function or Intended Result, and the Applicable Basis.

Evidence establishes what can responsibly be found about the condition.

The applicable Quality architecture establishes what that condition means for Quality.

9.5 Non-Compensability and Evidence Limitations

Some conditions affecting Quality cannot responsibly be compensated for by favorable conditions elsewhere.

This is the principle of non-compensability.

It applies to the interpretation of the primary Quality Object and should be distinguished from the non-compensation among the three Evidence Quality Factors discussed earlier.

At the Evidence Quality level:

Sufficiency

cannot automatically compensate for lack of Trustworthiness or Applicability.

At the primary Quality Object level:

favorable realization of one condition or function

cannot automatically compensate for

failure of another condition or function where that failure is non-compensable.

These are related methodological principles, but they operate at different levels.

Evidence limitations also interact with non-compensability.

Suppose a Quality Object has two important Intended Functions:

Intended Function A

→ strongly supported as realized

Intended Function B

→ Evidence insufficient to determine realization

The strong Evidence concerning Function A does not fill the evidentiary gap concerning Function B.

Similarly:

many well-supported favorable Findings

→ cannot substitute for

missing or inadequate Evidence concerning a critical condition

The determination must preserve the unresolved condition.

This is particularly important when producing an overall Quality State or a Quality Claim addressing the Quality Object as a whole.

Otherwise, strong Evidence concerning well-observed parts of the Quality Object may conceal uncertainty concerning poorly observed but important parts.

The correct relationship is:

favorable supported conditions

+

unfavorable or unresolved material conditions

→ interpreted together according to their significance for Function Realization

not:

quantity of favorable Evidence

→ compensation for unfavorable or unresolved conditions

Evidence therefore contributes to Quality Determination through bounded Findings, not through accumulation alone.

The purpose of Quality Factor Interpretation is to preserve the meaning and significance of those Findings as they are brought together.

This maintains the principal Whole Quality pathway:

Quality Object

→ Intended Function(s) and Intended Result(s)

→ Function Realization

→ Quality Factors

→ Quality Indicators

→ Quality Outcome Criteria

→ Evidence

→ Evidence-Supported Findings

→ Quality Factor Interpretation

→ Quality State

Evidence Quality constrains what may responsibly enter this interpretive pathway.

The Quality architecture establishes what those supported Findings mean for the Quality of the defined Quality Object.

10. Evidence, Quality State, and Quality Claims

After the Findings have been interpreted, Whole Quality can state what has been determined about the Quality of the object. This is the Quality State.

What is later communicated about that Quality State is a Quality Claim.

10.1 Evidence Does Not Establish Quality by Itself

Evidence provides the basis for establishing Findings about the actual condition of a Quality Object. It does not, by itself, establish the Quality State.

This distinction follows from the Whole Quality determination pathway:

Evidence

→ Evidence-Supported Findings

→ Quality Factor Interpretation

→ Quality State

→ Quality Claim(s)

Each step has a different function.

Evidence supports what can responsibly be found about actual condition.

Findings express what the Evidence supports.

Quality Factor Interpretation establishes what those Findings mean within the applicable Quality architecture.

The Quality State expresses the resulting determination of Quality.

A Quality Claim communicates that determination within its supported scope and certainty.

Skipping these distinctions can produce a common methodological error:

Evidence

→ direct Quality conclusion

For example, an inspection result, measurement, service record, observation, or Management System record may provide strong Evidence about a particular condition. It does not automatically establish the Quality of the entire Quality Object.

Even technically strong Evidence must be interpreted in relation to the applicable Intended Functions, Intended Results, Quality Factors, Quality Indicators, and Quality Outcome Criteria.

The opposite error should also be avoided.

Weak Evidence does not automatically establish poor Quality.

For example:

poor Evidence Quality

≠

poor Quality of the primary Quality Object

Instead:

poor Evidence Quality

→ limitation on what can responsibly be found

→ limitation on the Quality Determination

The actual condition may be favorable, unfavorable, mixed, or otherwise unresolved. If the Evidence cannot establish that condition, the Quality Determination should preserve the limitation rather than convert evidentiary weakness into a Quality conclusion.

High-quality Evidence and favorable Quality are therefore different concepts.

High-quality Evidence may support an unfavorable Quality State.

Poor-quality Evidence may prevent a responsible determination of either a favorable or unfavorable Quality State.

10.2 One Quality State and Bounded Quality Claims

The Quality State belongs to the defined Quality Object.

A Quality Claim communicates what the Quality Determination supports about that Quality State.

The two should not be treated as identical.

The Quality State is the determined Quality of the Quality Object.

A Quality Claim is a bounded statement communicating that determination.

The relationship is:

Quality Determination

→ Quality State

→ Quality Claim(s)

A determination may support one Claim addressing the Quality Object broadly.

It may also support several Claims addressing different bounded aspects of the determined Quality State.

This does not require creation of several Quality States merely because several Claims are made.

For example:

Quality State

- Claim A concerning one supported aspect
- Claim B concerning another supported aspect
- Claim C concerning a stated limitation

The Claims may communicate different parts of the same determination.

Each Claim, however, must remain within the scope and certainty actually supported by the Quality Determination and its Evidence-Supported Findings.

A broad Claim therefore requires a correspondingly broad evidentiary and interpretive basis.

Evidence supporting only a narrow condition should not be transformed into a Claim about the entire Quality Object.

The principle is:

scope of Evidence-Supported Findings

- bounds scope of Quality Determination
- bounds scope of Quality Claim

A Claim may be narrower than the available determination.

It should not be broader than the determination can responsibly support.

10.3 Multiple Intended Functions and Quality Claims

A Quality Object may have multiple Intended Functions and Intended Results.

The Evidence supporting their realization may differ.

For example:

Quality Object

- └→ Intended Function A
 - | → Evidence
 - | → Finding A
- |
- └→ Intended Function B
 - | → Evidence
 - | → Finding B
- |
- └→ Intended Function C
 - Evidence
 - Finding C

The resulting Findings are interpreted together in determining the Quality State of the defined Quality Object.

However, the existence of several Intended Functions does not automatically require a separate Quality Claim for each function.

The determination may support one whole-object Claim, several bounded Claims, or a combination of broader and narrower Claims.

The appropriate structure depends on what the determination can responsibly communicate.

For example:

Claim A

→ Function A is supported as realized within the stated scope.

Claim B

→ Function B remains unresolved because available Evidence is insufficient.

Claim C

→ Function C is supported as not fully realized.

These bounded Claims may communicate the determination more responsibly than a single statement that the Quality Object is simply "good" or "poor."

A whole-object Claim may still be appropriate where the Quality Determination supports it.

However, favorable realization of one Intended Function should not conceal failure or unresolved realization of another.

This is particularly important where the functions are non-compensable or where the Applicable Basis establishes different priorities among them.

The relationship is therefore not:

strong Evidence for Function A

→ strong Claim about the whole Quality Object

Instead:

Evidence and Findings for all material functions

→ interpretation of Function Realization

→ Quality State

→ appropriately bounded Quality Claim(s)

This preserves the relationship between what has actually been determined and what is communicated.

10.4 Limits on Claim Scope and Certainty

A Quality Claim should not communicate more than the Quality Determination supports.

This limitation applies to both scope and certainty.

Claim scope concerns what the Claim addresses.

Claim certainty concerns how strongly the determination supports what the Claim states.

Both ultimately depend on the evidentiary and interpretive pathway:

Evidence Quality

→ Evidence-Supported Findings

→ Quality Factor Interpretation

→ Quality State

→ Quality Claim

A limitation introduced earlier in this pathway cannot simply disappear at the Claim stage.

For example:

limited Evidence Coverage

→ bounded Finding

→ bounded determination

→ bounded Claim

unresolved conflicting Evidence

→ qualified Finding

→ remaining Uncertainty

→ Claim reflecting that limitation

insufficient Evidence concerning one material Intended Function

- unresolved Function Realization
- limitation on a whole-object Claim

This leads to an important safeguard.

Where one or more Intended Functions or Intended Results remain failed, unresolved, or not sufficiently supported by Evidence, a Quality Claim addressing the Quality Object as a whole must reflect that limitation.

A whole-object Claim should therefore not create an appearance of certainty or completeness that the underlying determination does not possess.

For example, if one critical function is unresolved, a Claim should not imply that all functions of the Quality Object have been demonstrated as satisfactorily realized.

Likewise, a Claim concerning one period should not silently become a Claim about another period.

A Claim concerning one Context should not automatically extend to another Context.

A Claim based on Evidence at one Methodological Resolution should not imply knowledge at a finer Resolution than the determination supports.

A useful test is:

What exactly was determined?

How certain is that determination?

Does the Quality Claim say more than that?

If the answer to the third question is yes, the Claim exceeds its support.

Quality Claims therefore provide the final boundary between the internal Quality Determination and what is communicated about the Quality Object.

The objective is not to make the strongest possible Claim.

It is to make the strongest Claim that the Quality Determination can responsibly support.

This preserves the full evidentiary chain:

Evidence

- what can responsibly be found

Evidence-Supported Findings

- what can responsibly be interpreted

Quality State

- what can responsibly be determined

Quality Claim

- what can responsibly be communicated

11. Evidence, Uncertainty, and Traceability

Even a careful determination may leave some things unknown.

Evidence may be strong and still not remove every uncertainty. Whole Quality keeps those remaining limits visible rather than treating them as certainty.

11.1 Evidence Quality and Uncertainty

Evidence Quality and Uncertainty are closely related, but they are not the same concept.

Evidence Quality concerns whether Evidence is sufficient, trustworthy, and applicable for the Finding it is intended to support.

Uncertainty concerns limitations in what can be known, determined, or stated with confidence about the Quality Object and its condition.

Limitations in Evidence Quality may contribute to Uncertainty.

For example:

limited Coverage

→ uncertainty about conditions outside the examined scope

incomplete Evidence

→ uncertainty about conditions for which material Evidence is missing

insufficient Resolution

→ uncertainty between conditions that the Evidence cannot distinguish

limited Source Reliability

→ uncertainty about whether the Evidence can be relied upon

limited Accuracy

→ uncertainty about the represented value or condition

limited Applicability

→ uncertainty about whether the Evidence supports the particular Finding

The relationship may therefore be:

Evidence Quality limitation

→ increased or unresolved Uncertainty

→ limitation on Finding

→ limitation on Quality Determination

However, Uncertainty should not automatically be treated as proof of poor Evidence Quality.

Uncertainty may remain even where the available Evidence is of high Quality.

The two concepts must therefore remain distinct.

11.2 High-Quality Evidence and Remaining Uncertainty

High-quality Evidence does not necessarily eliminate Uncertainty.

Evidence may be sufficient, trustworthy, and applicable for the intended Finding while some aspects of the actual condition remain uncertain.

This may occur because the Quality Object itself is variable, complex, changing, partly observable, or affected by conditions that cannot be completely determined.

Measurement processes may also have inherent uncertainty even when they are properly designed and performed.

For example, a technically valid and accurately performed measurement may produce a value with a known uncertainty range.

That uncertainty does not automatically make the measurement poor-quality Evidence.

Instead, the Finding should remain within what the measurement and its uncertainty can responsibly support.

The relationship may be:

high-quality Evidence

+

remaining Uncertainty

→ appropriately bounded Finding

This distinction is important because an unrealistic requirement for complete certainty could make responsible Quality Determination impossible.

Whole Quality does not require the elimination of all Uncertainty.

It requires that material Uncertainty be recognized and that Findings, Quality States, and Quality Claims do not imply greater certainty than the determination supports.

The appropriate question is therefore not:

Has all Uncertainty been eliminated?

It is:

Is the remaining Uncertainty understood sufficiently to establish what can responsibly be determined and claimed?

11.3 Absence of Evidence and Evidence of Absence

One of the most important relationships between Evidence and Uncertainty is the distinction between absence of Evidence and Evidence of absence.

They are not equivalent.

Absence of Evidence means that the available evidentiary basis does not establish the condition being considered.

Evidence of absence means that available Evidence supports a Finding that the specified condition is not present within the applicable scope.

The distinction can be expressed as:

No Evidence that condition X exists

≠

Evidence that condition X does not exist

For example, if a condition was not examined, failure to detect it cannot establish its absence.

If records are missing, the absence of a recorded event does not automatically establish that the event did not occur.

If a monitoring system lacks sufficient Resolution to detect a condition, the absence of a recorded indication does not establish absence of that condition.

Evidence of absence requires an evidentiary basis capable of supporting the negative Finding.

This may require adequate:

Coverage,

Completeness,

Resolution,

Trustworthiness,

and Applicability.

Where that basis exists, a Finding of absence may be responsible.

Where it does not, the condition should remain unresolved.

The correct distinction is therefore:

adequate Evidence supporting absence

→ Finding that the condition is absent within the supported scope

insufficient Evidence concerning presence or absence

→ unresolved condition

This prevents lack of information from being converted into an unsupported favorable or unfavorable conclusion.

11.4 Traceability Across the Determination

Traceability is the ability to follow relevant relationships through the Quality Determination.

Within Whole Quality, Traceability may extend from the Applicable Basis and Evidence through Findings, interpretations, Quality State, and Quality Claims.

A simplified relationship is:

Applicable Basis

→ Intended Function / Intended Result

- Quality Factors
- Quality Indicators
- Quality Outcome Criteria
- Evidence
- Evidence-Supported Findings
- Quality Factor Interpretation
- Quality State
- Quality Claim

Traceability helps make these relationships understandable and recoverable.

For example, it should be possible, where material to the determination, to understand:

which Evidence supports a Finding,

which Quality Indicator the Finding concerns,

which Quality Outcome Criterion applies,

how the Finding contributed to Quality Factor Interpretation,

and how the resulting interpretation contributed to the Quality State and Quality Claim.

Traceability is particularly important where Evidence is reused for several Findings, where several Evidence sources support the same Finding, or where contrary Evidence exists.

It can help reveal where a conclusion has become disconnected from its evidentiary basis.

However, Traceability is not itself an Evidence Quality Indicator.

A fully traceable evidentiary chain may contain poor Evidence.

For example:

a source may be fully identified but unreliable,

a measurement may be completely traceable but inaccurate,

a record may have a clear history but be inapplicable to the Finding,

or a Finding may be traceable to Evidence that is insufficient.

Traceability therefore supports examination of Evidence Quality and the Quality Determination, but it does not prove that either is sound.

Its function is to preserve the relationships needed to understand how the determination was reached.

11.5 Assumptions and Assumption Drift

A further risk is circular evidentiary dependence. A prior Finding, acceptance statement, or conclusion may itself be recorded and later treated as though it were independent Evidence of the condition that originally produced it. Where the later use depends on the same underlying Evidence or Assumption, repetition of the conclusion does not create new support. Traceability should preserve the relationship to the original evidentiary basis so that a conclusion does not become apparent confirmation of itself.

Quality Determinations sometimes require assumptions.

An assumption may be necessary where direct knowledge is incomplete, where a model is used, where conditions must be inferred, or where some part of the determination cannot be directly observed.

The existence of an assumption does not automatically make a determination invalid.

The problem arises when an assumption is no longer visible or when it gradually becomes treated as though it were an Evidence-Supported Finding.

This may be called assumption drift.

A simplified pathway is:

Assumption

- used in interpretation

- repeated in later analysis
- treated as established condition

At the end of this pathway, the distinction between what was assumed and what was supported by Evidence may disappear.

This can create false certainty.

For example:

an unverified condition is assumed for an initial analysis,
the analysis is later used as input to another determination,
the original assumption is no longer identified,
and the later determination treats the assumed condition as established fact.

Traceability should help prevent this loss of distinction.

Where assumptions materially affect a Finding or Quality Determination, their role should remain visible.

The determination should distinguish among:

what is directly supported by Evidence,
what is inferred from Evidence,
what is assumed,
and what remains unresolved.

Assumptions should also remain bounded by their intended use.

An assumption acceptable for one limited determination should not automatically be carried into another determination with a different scope, Context, or Methodological Resolution.

The same principle applies when models, estimates, professional judgments, or other interpretive methods are used.

Their outputs may contribute to Findings where their evidentiary role is established, but the pathway from underlying Evidence through assumptions and interpretation should not disappear.

This gives Traceability an important protective role:

Evidence

- visible

Inference

- visible

Assumption

- visible

Uncertainty

- visible

Finding

- bounded accordingly

The objective is not to eliminate every assumption.

It is to prevent assumptions from silently becoming Evidence and to prevent unresolved Uncertainty from silently becoming certainty.

Together, Evidence Quality, Uncertainty, and Traceability therefore protect different parts of the Quality Determination.

Evidence Quality asks:

Can the Evidence responsibly support the Finding?

Uncertainty asks:

What remains not fully known or determinable?

Traceability asks:

Can the important relationships through which the determination was reached be followed?

Keeping these concepts distinct allows them to work together without one being used as a substitute for another.

12. Evidence Across Whole Quality Applications

The kinds of Evidence used in practice can be very different. A pipeline, a Management System, and a Support Service do not produce the same records, observations, measurements, or results.

But the basic questions about Evidence remain the same.

12.1 Invariant Evidence Architecture

Whole Quality is intended to be applicable across different kinds of Quality Objects.

The particular Evidence used in different applications may vary substantially. Infrastructure, Management Systems, Support Services, and other Quality Objects do not necessarily produce or require the same forms of Evidence.

The underlying Evidence architecture, however, remains invariant.

Across Whole Quality applications:

Evidence

→ supports a Finding about actual condition

Evidence Quality

→ concerns whether that Evidence can responsibly support the Finding

Evidence Sufficiency

→ asks whether there is enough Evidence

Evidence Trustworthiness

→ asks whether the Evidence can be relied upon as representing what it purports to represent

Evidence Applicability

→ asks whether the Evidence can properly be used for the particular Finding and Quality Determination

The supporting Evidence Quality Indicators also retain their meanings:

Coverage

Completeness

Resolution

Source Reliability

Validity

Accuracy

Evidence Integrity

Subject Applicability

Context Applicability

Determination Applicability

What changes across applications is not this architecture but its application.

Different Quality Objects have different Intended Functions, Intended Results, Quality Factors, Quality Indicators, Quality Outcome Criteria, Contexts, and forms of available Evidence.

The common WQI architecture provides a stable methodological structure within which these differences can be addressed.

This distinction is important to the relationship between WQI and its applied platforms.

The WQI concepts remain common.

The applied platform determines how those concepts operate for its particular class of Quality Objects.

12.2 Infrastructure Quality

Infrastructure Quality provides a useful example of how the common Evidence architecture becomes application-specific.

An infrastructure Quality Determination may use Evidence such as:

design and construction information,

material and equipment records,

inspection and testing results,

measurements,

monitoring information,

operating records,

maintenance and repair records,

observations of physical condition,

and other Evidence concerning the infrastructure Quality Object.

The particular Evidence depends on the infrastructure, its lifecycle condition, the applicable Context, and the Finding being supported.

The distinction between Quality Indicators and Evidence is especially important.

An invariant infrastructure Quality Indicator identifies a quality-relevant aspect of infrastructure condition.

A technical characteristic, measurement, test result, or domain-specific mechanism may provide Context-specific Evidence used to examine that Indicator.

For example:

Infrastructure Quality Indicator

→ Consideration of Degradation, Damage, and Aging Mechanisms

Context-specific mechanism

→ corrosion

Context-specific Evidence

→ wall-thickness measurement

The wall-thickness measurement does not become the invariant Quality Indicator.

Corrosion does not need to become a new invariant Indicator merely because it is an important degradation mechanism in a particular infrastructure Context.

Instead:

invariant Quality Indicator

→ Context-specific condition or mechanism

→ Context-specific Evidence

→ Evidence-Supported Finding

This preserves the methodological level of the IQI Core while allowing Context Guides and individual determinations to use the technical Evidence required by the actual infrastructure.

The same WQI Evidence Quality questions then apply:

Does the Evidence adequately cover the relevant infrastructure condition?

Is material Evidence missing?

Does it have sufficient Resolution?

Can its source be relied upon?

Does it validly and accurately represent the condition?
Has its Integrity been preserved?
Does it concern the correct infrastructure subject and Context?
Can it properly support the particular Finding?
The technical answers may be infrastructure-specific.
The Evidence Quality architecture remains common.

12.3 Management System Quality

A Management System can also be examined as a Quality Object.

In this application, the object being examined is the actual management used by an organization to realize the applicable product or service.

Evidence may include:

management records,
procedures and instructions,
decisions,
responsibility and authority arrangements,
competence information,
communications,
records of implementation,
observations of actual practices,
monitoring and review information,
corrective actions,
and other information concerning how management actually operates.

An important distinction again applies.

Documentation describing how management is intended to operate is not automatically Evidence that management actually operates that way.

For example:

documented procedure

→ Evidence that a procedure exists

does not automatically mean:

documented procedure

→ Evidence that the procedure is followed

Likewise:

assigned responsibility

does not automatically establish

effective exercise of that responsibility.

The Finding must remain within what the Evidence supports.

Evidence from actual implementation may therefore be necessary where the determination concerns the functioning of the Management System rather than merely the existence of documented arrangements.

The same Evidence Quality architecture applies:

Sufficiency

→ Is there enough Evidence of the management condition being examined?

Trustworthiness

→ Can the Evidence be relied upon as representing how management actually operates?

Applicability

→ Can the Evidence properly support this particular Management System Finding?

This allows Management System Quality to be examined through the same WQI Evidence architecture without treating documents, procedures, or records as automatic proof of actual management performance.

12.4 Support Service Quality

Support Services may require forms of Evidence substantially different from those used for infrastructure or Management Systems.

Evidence may include:

service records,
direct observations,
information from the person receiving support,
information from support personnel,
records of activities or interventions,
service results,
participation information,
changes in conditions,
and other Evidence concerning actual service realization.

The human and contextual character of Support Services can make Evidence relationships particularly important.

For example:

record that support was scheduled

≠

Evidence that support was actually delivered

record that support was delivered

≠

Evidence that it was delivered as intended

Evidence that an activity occurred

≠

Evidence that the Intended Result was realized

These may require different Evidence and different Findings.

Evidence from the person receiving support may also provide information about conditions or results that are not represented in administrative records.

Conversely, personal reports may not provide all Evidence required for every aspect of the determination.

Different Evidence sources may therefore need to be interpreted together without assuming that one source automatically represents the whole Support Service Quality Object.

The same WQI Evidence Quality questions apply:

Is the Evidence sufficient for the Finding?

Can it be trusted as representing what it purports to represent?

Is it applicable to this person, service, Context, period, and determination?

The forms of Evidence change.

The underlying Evidence Quality architecture does not.

12.5 Context-Specific Evidence Without Redefining the WQI Concepts

WQI Evidence Quality is methodological; it does not replace legal rules of admissibility, regulatory evidentiary requirements, scientific validation conventions, professional standards, or other domain-specific rules governing whether particular information may or must be used.

Whole Quality must accommodate substantial differences among domains without allowing its common concepts to fragment into separate meanings.

This requires a distinction between:

WQI-controlled concepts

and

Context-specific application.

WQI establishes the common methodological architecture.

Applied platforms establish invariant platform concepts where needed.

Context Guides and individual determinations identify the technical, clinical, service, organizational, or other characteristics needed to apply that architecture in a particular Context.

The relationship may be expressed as:

WQI common architecture

→ applied-platform Core

→ Context-specific application

→ actual Evidence and Findings

Context-specific Evidence should therefore not redefine the WQI Evidence Quality Factors or Indicators.

For example, a particular measurement method may be important for examining Accuracy.

A specific inspection technique may provide required Resolution.

A service interview may contribute to Coverage or Subject Applicability.

A chain-of-custody procedure may support examination of Evidence Integrity.

These methods and characteristics can be essential to the determination.

The same principle applies to automated or AI-produced information. An automated output may become Evidence when it is used to support a Finding, but its automated origin does not establish its Evidence Quality. The same invariant questions remain: whether the relevant inputs and conditions are adequately covered, whether material information is missing, whether the output has sufficient Resolution, whether the source and process can be relied upon, whether the output validly and accurately represents the condition, whether its Integrity has been preserved, and whether it is applicable to the subject, Context, and determination. No separate AI-specific Evidence Quality Factor or Indicator is required merely because the evidentiary process is automated.

They do not need to become new universal Evidence Quality Indicators.

This distinction prevents the common WQI architecture from expanding into a catalogue of every possible evidentiary method, parameter, record, test, or domain-specific characteristic.

It also prevents the opposite problem: making the WQI architecture so abstract that it cannot accommodate the Evidence actually needed in applied determinations.

The intended structure is:

common concept

→ Context-specific realization

not:

every Context-specific characteristic

→ new common concept

This principle also protects consistency across WQI applications.

Coverage should retain the same methodological meaning whether the Evidence concerns infrastructure, a Management System, a Support Service, or another Quality Object.

The Evidence required to establish adequate Coverage may differ substantially.

The meaning of Coverage should not.

The same applies to Completeness, Resolution, Source Reliability, Validity, Accuracy, Evidence Integrity, Subject Applicability, Context Applicability, and Determination Applicability.

Whole Quality therefore separates invariance from application.

The invariant Evidence architecture establishes the questions that must remain conceptually stable.

The applied platform and Context establish what Evidence is needed to answer those questions responsibly.

This allows different Whole Quality applications to remain technically and contextually specific while still belonging to one coherent methodology.

13. Conclusion

It does not define the Intended Function or Intended Result. It does not establish the expected condition represented by Quality Outcome Criteria. It does not become the Quality State simply because it exists.

Its role is specific:

Evidence

→ supports Findings about actual condition.

This role creates a necessary boundary between the Quality Object as it actually exists and what a Quality Determination can responsibly establish about it.

The actual condition may be more complex than the available Evidence reveals. Some conditions may be directly observed. Others may be incompletely represented, indirectly evidenced, conflicting, or unresolved.

Whole Quality therefore does not ask only:

What Evidence is available?

It also asks:

What can this Evidence responsibly support?

That question leads to Evidence Quality.

Evidence may itself be examined methodologically as a Quality Object because it has an Intended Function:

To support a Finding about the actual condition of the Quality Object being examined.

Its Intended Result is:

A Finding supported within the scope and certainty that the Evidence can responsibly support.

Evidence Quality examines the capability of Evidence to realize this function and result.

The WQI Evidence Quality architecture is:

Evidence Quality

→ Evidence Sufficiency

→ Evidence Trustworthiness

→ Evidence Applicability

These three Quality Factors answer three different questions:

Sufficiency

→ Is there enough Evidence?

Trustworthiness

→ Can the Evidence be relied upon as representing what it purports to represent?

Applicability

→ Can the Evidence properly be used here?

The Factors are supported by ten Evidence Quality Indicators:

Evidence Sufficiency

→ Coverage

→ Completeness

→ Resolution

Evidence Trustworthiness

→ Source Reliability

→ Validity

→ Accuracy

→ Evidence Integrity

Evidence Applicability

→ Subject Applicability

→ Context Applicability

→ Determination Applicability

The distinction among these concepts is important because evidentiary strengths do not automatically compensate for evidentiary weaknesses.

More Evidence cannot make unreliable Evidence trustworthy.

Trustworthy Evidence cannot fill material evidentiary gaps.

Accurate Evidence cannot support a Finding to which it does not apply.

Evidence Quality therefore constrains the transition from Evidence to Finding. It does not make the entire determination self-validating: the Applicable Basis, Quality architecture, interpretation, assumptions, competence, Context, and remaining Uncertainty must also be appropriate and visible.

The Finding must remain within the scope and certainty that the Evidence can responsibly support.

This principle also applies where Evidence is contrary, conflicting, or materially inconsistent. Such Evidence should remain visible rather than being removed to produce a simpler conclusion.

Where Evidence cannot resolve a material condition, the condition should remain unresolved.

The same principle explains the distinction between:

absence of Evidence

and

Evidence of absence.

A condition that has not been adequately evidenced should not automatically be treated as either present or absent.

The resulting Whole Quality pathway is:

Quality Object

→ Intended Function(s) and Intended Result(s)

→ Function Realization

→ Quality Factors

→ Quality Indicators

→ Quality Outcome Criteria

→ Evidence

→ Evidence-Supported Findings

→ Quality Factor Interpretation

- Quality State
- Quality Claim(s)

Evidence Quality constrains what can responsibly enter the interpretive part of this pathway.

Quality Factor Interpretation then establishes what the supported Findings mean for Function Realization and the Quality State of the defined Quality Object.

This distinction is especially important where a Quality Object has multiple Intended Functions or Intended Results.

Evidence supporting one function does not automatically support another.

Favorable realization of one function does not automatically compensate for failure or unresolved realization of another.

The same Evidence may support several Findings, but its Sufficiency, Trustworthiness, and Applicability must remain appropriate to each evidentiary use.

These limitations carry forward into Quality Claims.

A Quality Claim should not communicate more than the Quality Determination supports.

Where an Intended Function or Intended Result remains failed, unresolved, or not sufficiently supported by Evidence, a Claim addressing the Quality Object as a whole must reflect that limitation.

Evidence Quality also does not eliminate Uncertainty.

High-quality Evidence may coexist with remaining Uncertainty. The important requirement is that material Uncertainty remains visible and that the Finding, Quality State, and Quality Claim do not imply greater certainty than the determination supports.

Traceability provides another protection.

It allows important relationships to be followed from the Applicable Basis and Quality architecture through Evidence, Findings, interpretation, Quality State, and Quality Claims.

Traceability also helps preserve the distinction among:

Evidence,
inference,
assumption,
Uncertainty,
and Finding.

It does not prove that Evidence is sufficient, trustworthy, or applicable. It helps make the basis and limitations of the determination visible.

Finally, the Evidence architecture is intended to remain stable across Whole Quality applications.

Infrastructure may use measurements, inspections, operating records, and physical observations.

Management System Quality may use records, decisions, procedures, communications, and Evidence of actual implementation.

Support Service Quality may use service records, observations, information from people receiving support, service results, and other forms of Evidence.

Future Whole Quality applications may require still other forms of Evidence.

The forms and methods may change.

The underlying questions remain:

Is the Evidence sufficient?

Is it trustworthy?

Is it applicable?

What Finding can it responsibly support?

What does that Finding mean for the Quality of the defined Quality Object?

This separation between invariant WQI concepts and Context-specific Evidence allows Whole Quality to remain methodologically consistent without imposing the same evidentiary methods on fundamentally different Quality Objects.

The central principle of Evidence in Whole Quality can therefore be stated simply:

Evidence should support only what it can responsibly support.

Everything that follows — the Finding, Quality Factor Interpretation, Quality State, and Quality Claim — should preserve that boundary.

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