WORKING PAPER · SOFTWARE QUALITY GOVERNANCE

The RIG & ATL Frameworks

Governance Structures for Regulated Healthcare Software Delivery

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Abstract

This working paper introduces two complementary governance frameworks developed from practitioner experience in regulated healthcare software delivery: the **Regulatory Interpretation Gap (RIG)** and the **Acceptance Translation Layer (ATL)**. RIG characterizes the structural distance between regulatory mandate and technical specification; ATL defines the mediation mechanisms that close it. Together, they provide quality governance practitioners with a diagnostic and operational vocabulary for managing compliance risk across multi-vendor, multi-release healthcare IT programs. Related manuscripts are currently under peer review and conference consideration.

Keywords: acceptance governance, regulatory interpretation, UAT governance, healthcare IT, software quality, release assurance, ACA/HIX systems, multi-vendor testing

1. The Regulatory Interpretation Gap (RIG)

1.1 Definition

The Regulatory Interpretation Gap describes the accumulated distance between the intent of a regulatory mandate and the technical behavior of the system built to satisfy it. This gap is not a single point of failure — it is a layered erosion across the translation chain from policy text to acceptance criteria to deployed system behavior.

1.2 The RIG Translation Chain

FIGURE 1 · THE RIG TRANSLATION CHAIN

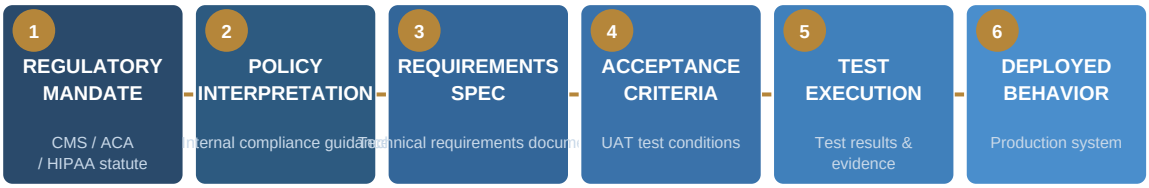

Figure 1. The six-layer RIG translation chain. Regulatory intent erodes at each handoff. The dashed line represents the cumulative gap.

← REGULATORY INTERPRETATION GAP: accumulated erosion across this chain →

1.3 Four Dimensions of the RIG

— **Mandate Ambiguity:** Regulatory text is inherently imprecise. Different readers derive different operational obligations from identical source language.

— **Specification Fidelity:** Requirements documents may accurately reflect organizational interpretation of regulation while diverging from actual regulatory intent.

— **Vendor Interpretation Variance:** In multi-vendor programs, each vendor interprets acceptance criteria through their own architectural and contractual lens.

— **Regulatory Traceability:** Without explicit traceability from regulation to test condition, gap detection becomes reactive rather than systematic.

1.4 Practitioner Implications

Quality governance teams operating in regulated healthcare environments must treat the RIG not as an edge case but as a structural feature of every delivery program. The practical question is not whether a gap exists, but where it is largest and how it can be measured, monitored, and closed before release.

2. The Acceptance Translation Layer (ATL)

2.1 Definition

The Acceptance Translation Layer is a structured governance mechanism that mediates between regulatory intent and executable acceptance criteria. It formalizes the processes by which quality governance teams translate policy requirements into verifiable test conditions — preserving compliance intent across multi-vendor and multi-release delivery environments.

2.2 ATL Core Components

Criteria Formalization	Convert regulatory obligations into structured, testable acceptance conditions	Formal acceptance criteria library
Cross-Vendor Normalization	Align vendor-specific interpretations to a common compliance baseline	Vendor acceptance alignment matrix
Acceptance Chain Traceability	Maintain bidirectional links from regulation to test evidence	Compliance traceability register
Release-Gate Protocols	Define evidence standards required for release authorization	Release readiness checklist

2.3 The ATL Governance Lifecycle

FIGURE 2 · THE ATL GOVERNANCE LIFECYCLE

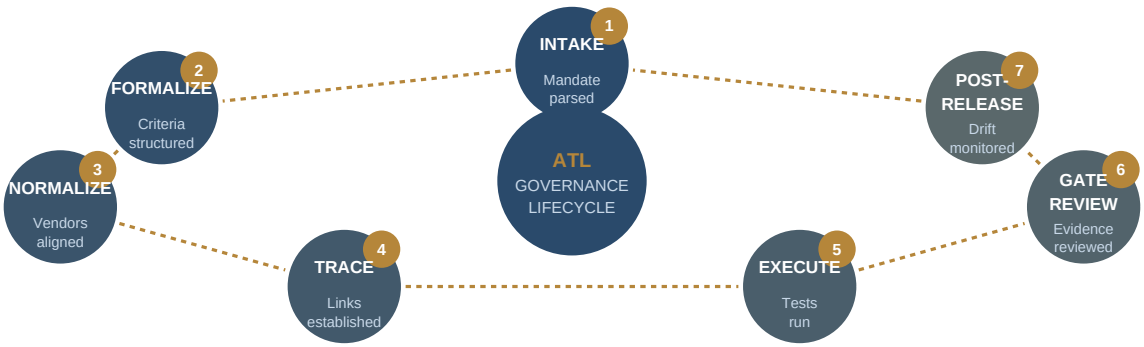

Figure 2. The seven-phase ATL governance lifecycle. Each phase closes a layer of the RIG. The cycle repeats across release iterations.

3. RIG and ATL as Complementary Instruments

The RIG framework provides the diagnostic vocabulary — it tells governance practitioners where compliance intent erodes and why. The ATL framework provides the operational response — it defines how that erosion is prevented, detected, and remediated through structured governance processes.

Together, they constitute a practitioner-level governance architecture for regulated software delivery: RIG surfaces the problem space; ATL provides the structural solution.

Application Context

— ACA/HIX platform testing and multi-cycle release governance

— Multi-vendor UAT programs where acceptance criteria must be normalized across supplier interpretations

— CMS and HIPAA-regulated system delivery with traceability requirements

— Release gate governance where evidence standards must be formally defined and auditable

— Infrastructure automation pipelines in healthcare environments requiring compliance-aware QA

4. Current Status

The RIG and ATL frameworks are grounded in over a decade of enterprise quality governance practice in regulated healthcare IT environments. Related manuscripts are currently under peer review and conference consideration. This document is a working draft shared for professional and scholarly discussion.

— **Working Paper (RIG):** "The Regulatory Interpretation Gap: Characterizing Compliance Erosion Across Multi-Vendor Healthcare Software Delivery" — under review

— **Working Paper (ATL):** "Formalizing the Acceptance Translation Layer: A Framework for Bridging Regulatory Intent and Software Acceptance Criteria in Healthcare IT" — under review

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