2.4.5 Rules and Validation

Return to 2.4 Existing Functional Capabilities in Reporting Systems

Reporting systems commonly incorporate rule-based logic to assess, derive, and validate information. This logic may include:

* Consistency checks * Threshold tests * Classification rules * Calculations * Conditional evaluations * Procedural evaluations * Conformance assessments

Implementations realise these rules through a range of techniques, from declarative rule expressions to embedded application logic.

In current practice, rule definitions, semantic assumptions, and execution behaviour are frequently tightly coupled. Rules may encode meaning implicitly, depend on undocumented contextual assumptions, or produce derived facts without explicit linkage to the definitions, versions, parameters, or interpretive context that governed the evaluation.

As rules evolve in response to regulatory change, policy updates, or analytical refinement, this coupling undermines comparability, auditability, reproducibility, and long-term consistency across systems and reporting periods.

From a Reference Architecture perspective, rule-based interpretation and validation constitute a distinct functional capability: the ability to apply defined, executable logic to reported or observed facts in order to produce:

- Interpreted facts
- Derived facts
- Validation outcomes
- Conformance assessments
- Classification results
- Calculated values

This capability depends on semantic representation but remains architecturally distinct from it. Semantic representations provide the vocabulary, concepts, relationships, and definitions that establish meaning. Rules provide the executable logic that applies those meanings under declared conditions.

The Reference Architecture therefore separates semantic intent from rule execution. In an architecturally coordinated environment, rules are:

- Associated with identifiable semantic definitions
- Governed by explicit authority
- Versioned independently
- Linked to declared parameters and contextual assumptions
- Traceable to the facts they consume
- Traceable to the results they produce

Validation and conformance outcomes remain traceable not only to the underlying reported or observed facts, but also to the specific rules, semantic definitions, versions, parameters, and interpretive context applied during evaluation.

Without this architectural separation and traceability, rule-based validation logic becomes opaque and brittle. Changes in rules or definitions may alter system behaviour without adequate visibility, making it difficult to:

- Explain outcomes
- Reassess historical results
- Compare results across systems
- Distinguish rule changes from semantic changes
- Demonstrate consistent interpretation over time

Treating rules and validation as a governed architectural capability is therefore essential to preserving semantic integrity, auditability, reproducibility, and controlled evolution in regulated reporting environments.
