Core Emotion Framework (CEF): TS 18 Appendix D — Validation Rules (TS 2 Integration)

Canonical Validation Logic for the CEF Computational Ontology
Version 1.0 — Phase 4

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Status: Canonical Appendix (TS-18)

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0. Purpose and Canonical Position

Appendix D defines the **validation rules** for the CEF Computational Ontology (TS-18), integrating the structural logic of **TS-2** into the machine-readable ecosystem.

This appendix ensures that:

- JSON-LD instances (Appendix A)

- RDF/OWL classes (Appendix B)

- Knowledge Graph nodes/edges (Appendix C)

all conform to the **canonical constraints** of the CEF architecture.

This appendix is a **shared Phase-4 artifact**, used by:

- ontology validators

- reasoning engines

- schema checkers

- KG integrity scanners

- synthetic affect systems (TS-9)

- mapping engines (TS-6)

- dynamic stability models (TS-12)

It introduces **no new emotional constructs**.

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1. Validation Architecture Overview

Validation occurs across **four layers**:

1. **Identity Validation**
2. **Structural Validation**
3. **Dynamic Validation**
4. **Constraint Validation**

Each layer corresponds to a subset of TS-2 rules.

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2. Identity Validation Rules

These rules ensure that the ontology preserves the **core identity constraints** of the CEF.

2.1 Operator Identity

- Every operator must have exactly one operatorId.
- Every operator must belong to exactly one center.
- No operator may share an ID with another operator.

Rule:

operatorId MUST be unique.

belongsToCenter MUST have cardinality = 1.

2.2 Facet Identity

- Every facet must belong to exactly one operator.
- Facets must not migrate across operators.
- Facet IDs must be unique.

Rule:

facetId MUST be unique.

belongsToOperator MUST have cardinality = 1.

2.3 Center Identity

- Centers must be exactly: Head, Heart, Gut.

- No new centers may be introduced.

Rule:

centerId MUST ∈ {Head, Heart, Gut}.

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3. Structural Validation Rules

These rules ensure that the ontology preserves the **architecture** defined in TS-1 → TS-11.

3.1 Transition Directionality (TS-1)

- All transitions must follow canonical successor rules.

- No reversed transitions allowed.

- No cross-center transitions unless explicitly canonical.

Rule:

canonicalSuccessor(from) MUST = to.

transitionFrom MUST precede transitionTo.

3.2 Facet Ordering (TS-11)

- Facets must appear in canonical order (1 → 5).

- No facet inversion allowed.

Rule:

facetPrecedes(Fi, Fj) MUST hold if i < j.

3.3 Center Membership (TS-1)

- Operators must remain in their canonical centers.

- No operator may be reassigned.

Rule:

belongsToCenter(operator) MUST match TS-1.

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4. Dynamic Validation Rules

These rules ensure that the ontology preserves **dynamic behavior** defined in TS-3, TS-12, TS-13, TS-15, TS-16, TS-17.

4.1 Modulation Validity (TS-3)

- Modulation must follow canonical pathways.

- No modulation inversion.

- No chronic modulation loops.

Rule:

modulates(A, B) MUST be canonical.

modulates(B, A) MUST NOT exist unless defined in TS-3.

4.2 Stability Constraints (TS-12)

- Activation must remain within capacity limits.

- Thresholds must remain predictable.

Rule:

activationLevel ≤ capacityLimit.

thresholdSensitivity MUST be stable across time.

4.3 Predictive Integrity (TS-13)

- Predictive indicators must map to valid patterns.

- No predictive contradictions allowed.

Rule:

predicts(indicator, pattern) MUST match TS-13.

4.4 Plasticity Constraints (TS-16)

- Micro-adjustments must preserve identity.

- Facet reordering must remain within canonical bounds.

Rule:

facetReorderingDelta MUST NOT invert canonical order.

4.5 Autonomous Governance (TS-17)

- Self-correction must not violate coherence.

- Self-balancing must not override center identity.

Rule:

selfCorrectionGain MUST NOT destabilize coherence.

5. Constraint Validation Rules

These rules enforce **global canonical constraints** across the entire ontology.

5.1 No New Entities

- No new operators, facets, or centers may be introduced.

Rule:

entity.type MUST ∈ {Operator, Facet, Center, Transition, Modulation, Capacity, Threshold, DysregulationPattern, PredictiveIndicator, PlasticityParameter, GovernanceSignal}.

5.2 No Illegal Edges

- All edges must belong to the canonical edge families defined in Appendix C.

Rule:

edge.type MUST ∈ {Identity, Structural, Dynamic, Predictive, Plasticity, Governance}.

5.3 No Contamination

- No facet may migrate.

- No operator may merge.

- No center may blend.

Rule:

∀ facet: belongsToOperator MUST remain constant.

5.4 Coherence Preservation

- The system must remain unified across all states.

Rule:

coherenceProtectionFactor MUST ≥ minimum threshold defined in TS-17.

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6. Validation Workflow

Validation occurs in **three passes**:

Pass 1 — Schema Validation

- JSON-LD structure

- RDF/OWL class membership

- Node/edge type correctness

Pass 2 — Canonical Validation

- Identity rules

- Structural rules

- Dynamic rules

Pass 3 — Constraint Validation

- No contamination

- No illegal transitions

- No illegal modulation

- No new entities

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7. Canonical Status

Appendix D is the authoritative validation rule set for TS-18.
It must be applied to:

- all JSON-LD instances
- all RDF/OWL graphs
- all Knowledge Graph implementations
- all synthetic affect systems
- all semantic-web integrations

It is subordinate only to:

- Core Essence Document
- TS-1 → TS-18