Core Emotion Framework (CEF): Technical Specification 21 (TS 21)

Knowledge Graph Population & Integration Specification

Canonical Architecture-Level Technical Document — Version 1.0

Author: Jamel Bulgaria
ORCID: 0009-0007-5269-5739
Affiliation: OptimizeYourCapabilities.com
Contact: admin@optimizeyourcapabilities.com

Status: Canonical Technical Specification (Phase 4)

---

0. Purpose and Canonical Position

TS-21 is the twenty-first Technical Specification in the CEF canon.

Where:

- **TS-18** defines the computational ontology
- **TS-19** defines the reasoning engine
- **TS-20** defines the knowledge graph architecture

TS-21 defines how the Knowledge Graph is populated, updated, validated, and integrated across the entire CEF ecosystem.

It specifies:

- population rules
- ingestion pipelines
- update protocols
- integration with the EL-Series
- integration with reasoning engines
- integration with semantic-web systems
- integration with simulation and predictive engines

TS-21 introduces **no new emotional constructs**.
It defines the **operational lifecycle** of the CEF-KG.

---

1. Definition of Knowledge Graph Population

Knowledge Graph Population is:

The canonical process of instantiating, enriching, and maintaining the CEF-KG using TS-18 entities, TS-19 inferences, and TS-20 graph structures.

Population includes:

- initial graph construction
- incremental updates
- parameter updates
- inference-driven enrichment
- semantic-web ingestion
- EL-Series lexical integration

Population must always preserve:

- identity
- directionality
- modulation legality
- facet boundaries
- center architecture
- canonical constraints

---

2. Population Pipeline Overview

The population pipeline consists of **five canonical stages**:

1. **Extraction**
2. **Normalization**
3. **Instantiation**
4. **Inference Enrichment**

5. **Constraint Enforcement**

Each stage is defined below.

---

3. Stage 1 — Extraction

Extraction retrieves CEF entities from:

- TS-18 ontology files
- JSON-LD instances
- RDF/OWL graphs
- EL-Series lexical entries
- simulation outputs
- validated practitioner inputs
- semantic-web sources (Wikidata, schema.org)

Rule E-1: Canonical Source Restriction

Only sources that conform to TS-18 and TS-20 may be ingested.

Rule E-2: No External Emotional Constructs

No external emotional categories may be imported.

---

4. Stage 2 — Normalization

Normalization converts extracted data into:

- operator vector
- facet vector
- center vector
- modulation matrix
- transition graph
- coherence scalar

Rule N-1: Identity Preservation

Normalization must not alter operator, facet, or center identity.

Rule N-2: Canonical Ordering

Facet ordering must follow TS-11.

---

5. Stage 3 — Instantiation

Instantiation creates graph nodes and edges.

Rule I-1: Node Instantiation

Each extracted entity becomes a node of the correct type.

Rule I-2: Edge Instantiation

Edges must match canonical edge families:

- identity
- structural
- dynamic
- predictive
- plasticity
- governance

Rule I-3: No New Entities

Instantiation must not create new operators, facets, or centers.

---

6. Stage 4 — Inference Enrichment

The TS-19 Reasoning Engine enriches the graph by:

- adding inferred transitions
- adding inferred modulation pathways
- adding stability assessments
- adding predictive indicators
- adding plasticity projections
- adding governance actions

Rule IE-1: Inference Validity

All inferences must follow TS-19 Appendix A.

Rule IE-2: No Inference Drift

Inferences must not introduce new emotional constructs.

---

7. Stage 5 — Constraint Enforcement

Constraint enforcement ensures the graph remains canonical.

Rule C-1: Identity Constraints

- no facet migration
- no operator merging
- no center blending

Rule C-2: Directionality Constraints

- transitions must follow TS-1
- no reversed transitions

Rule C-3: Modulation Constraints

- modulation must follow TS-3
- no illegal pathways

Rule C-4: Predictive Constraints

- predictive edges must match TS-13

Rule C-5: Plasticity Constraints

- no facet inversion

Rule C-6: Governance Constraints

- no coherence violations

---

8. Update Protocols

Updates occur in three categories:

8.1 Parameter Updates

Allowed for:

- activation parameters
- stability parameters
- predictive parameters

- plasticity parameters
- governance parameters

8.2 Structural Updates

Not allowed.
No new operators, facets, centers, transitions, or modulation pathways may be added.

8.3 Inference Updates

Allowed only through TS-19 reasoning.

---

9. Integration with the EL-Series

The CEF-KG integrates with the EL-Series by:

- mapping lexical entries to facets
- mapping expressions to operators
- mapping cultural variants to centers
- mapping synonyms to predictive indicators

Rule EL-1: Lexical Mapping Validity

Lexical entries must map to existing CEF constructs.

Rule EL-2: No Lexical Drift

Lexical variation must not introduce new emotional constructs.

---

10. Integration with Semantic-Web Systems

The CEF-KG must support:

- RDF/OWL export
- JSON-LD export
- schema.org alignment
- Wikidata alignment

Rule SW-1: Namespace Integrity

All URIs must remain canonical.

Rule SW-2: No External Overrides

External ontologies may not override CEF definitions.

---

11. Integration with Simulation & Predictive Engines

Simulation engines may:

- update activation parameters
- update stability parameters
- generate predictive indicators

They may **not**:

- alter identity
- alter structure
- alter canonical transitions
- alter modulation pathways

---

12. Canonical Constraints of TS-21

The population and integration process must:

- preserve identity
- preserve facet boundaries
- preserve center architecture
- preserve directionality
- preserve modulation legality
- preserve stability
- preserve predictive logic
- preserve plasticity limits
- preserve governance rules

It must never:

- introduce new operators
- introduce new facets

- introduce new centers
- violate TS-1 → TS-21

---

13. Canonical Status

TS-21 is the authoritative specification for CEF-KG population and integration.
It defines the operational lifecycle of the Knowledge Graph and ensures that all computational, semantic, and lexical systems remain unified.

It is subordinate only to:

- Core Essence Document
- TS-1 → TS-21
