

Core Emotion Framework (CEF):TS

18 Appendix B — RDF/OWL Class Definitions

Canonical Semantic-Web Ontology for the CEF Computational Architecture
Version 1.0 — Phase 4

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Status: Canonical Appendix (TS-18)

0. Purpose and Canonical Position

Appendix B defines the **RDF/OWL ontology** for the CEF Computational Ontology (TS-18).

It provides the semantic-web class hierarchy, object properties, data properties, and canonical constraints required for:

- knowledge graph construction
- semantic reasoning
- machine validation
- cross-system interoperability
- EL-Series integration
- INTIMA (TS-9) synthetic affect modeling
- schema.org / Wikidata alignment

This appendix is a **shared Phase-4 technical artifact** and is not tied exclusively to TS-18.

It is used across all computational, semantic, and mapping layers of the CEF.

1. Namespace Declarations

@prefix cef: <https://cef.schema.org/> .

@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .

@prefix owl: <http://www.w3.org/2002/07/owl#> .

@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

2. Ontology Header

cef:CEF-Ontology a owl:Ontology ;

 rdfs:label "Core Emotion Framework Computational Ontology" ;

 rdfs:comment "Canonical OWL ontology for TS-18, defining operators, facets, centers, transitions, modulation, capacity, thresholds, dysregulation patterns, predictive indicators, plasticity parameters, and governance signals." .

3. Class Hierarchy

3.1 Core Classes

cef:Operator a owl:Class .

cef:Facet a owl:Class .

cef:Center a owl:Class .

cef:Transition a owl:Class .

cef:Modulation a owl:Class .

cef:Capacity a owl:Class .

cef:Threshold a owl:Class .

cef:DysregulationPattern a owl:Class .

cef:PredictiveIndicator a owl:Class .

cef:PlasticityParameter a owl:Class .

cef:GovernanceSignal a owl:Class .

4. Object Properties

4.1 Structural Relations

cef:belongsToCenter a owl:ObjectProperty ;

 rdfs:domain cef:Operator ;

 rdfs:range cef:Center .

cef:hasFacet a owl:ObjectProperty ;

 rdfs:domain cef:Operator ;

 rdfs:range cef:Facet .

cef:canonicalSuccessor a owl:ObjectProperty ;

 rdfs:domain cef:Operator ;

 rdfs:range cef:Operator .

cef:modulates a owl:ObjectProperty ;

 rdfs:domain cef:Operator ;

 rdfs:range cef:Operator .

4.2 Dynamic Relations

cef:transitionFrom a owl:ObjectProperty ;

 rdfs:domain cef:Transition ;

 rdfs:range cef:Operator .

cef:transitionTo a owl:ObjectProperty ;

 rdfs:domain cef:Transition ;

 rdfs:range cef:Operator .

cef:modulationFrom a owl:ObjectProperty ;

rdfs:domain cef:Modulation ;
rdfs:range cef:Operator .

cef:modulationTo a owl:ObjectProperty ;
rdfs:domain cef:Modulation ;
rdfs:range cef:Operator .

4.3 Predictive & Governance Relations

cef:predicts a owl:ObjectProperty ;
rdfs:domain cef:PredictiveIndicator ;
rdfs:range cef:DysregulationPattern .

cef:selfCorrects a owl:ObjectProperty ;
rdfs:domain cef:GovernanceSignal ;
rdfs:range cef:Operator .

cef:selfBalances a owl:ObjectProperty ;
rdfs:domain cef:GovernanceSignal ;
rdfs:range cef:Center .

5. Data Properties

5.1 Activation Parameters

cef:activationLevel a owl:DatatypeProperty ;
rdfs:domain cef:Operator ;
rdfs:range xsd:float .

cef:activationThreshold a owl:DatatypeProperty ;
rdfs:domain cef:Operator ;

rdfs:range xsd:float .

cef:activationRange a owl:DatatypeProperty ;

rdfs:domain cef:Operator ;

rdfs:range xsd:float .

5.2 Modulation Parameters

cef:modulationStrength a owl:DatatypeProperty ;

rdfs:domain cef:Modulation ;

rdfs:range xsd:float .

cef:modulationElasticity a owl:DatatypeProperty ;

rdfs:domain cef:Modulation ;

rdfs:range xsd:float .

cef:modulationLatency a owl:DatatypeProperty ;

rdfs:domain cef:Modulation ;

rdfs:range xsd:float .

5.3 Transition Parameters

cef:transitionSmoothness a owl:DatatypeProperty ;

rdfs:domain cef:Transition ;

rdfs:range xsd:float .

cef:transitionLag a owl:DatatypeProperty ;

rdfs:domain cef:Transition ;

rdfs:range xsd:float .

cef:transitionResistance a owl:DatatypeProperty ;
 rdfs:domain cef:Transition ;
 rdfs:range xsd:float .

5.4 Capacity & Threshold Parameters

cef:capacityLimit a owl:DatatypeProperty ;
 rdfs:domain cef:Capacity ;
 rdfs:range xsd:float .

cef:thresholdSensitivity a owl:DatatypeProperty ;
 rdfs:domain cef:Threshold ;
 rdfs:range xsd:float .

cef:thresholdSpacing a owl:DatatypeProperty ;
 rdfs:domain cef:Threshold ;
 rdfs:range xsd:float .

5.5 Predictive Parameters

cef:driftVelocity a owl:DatatypeProperty ;
 rdfs:domain cef:PredictiveIndicator ;
 rdfs:range xsd:float .

cef:loadAccumulationRate a owl:DatatypeProperty ;
 rdfs:domain cef:PredictiveIndicator ;
 rdfs:range xsd:float .

cef:modulationDecayRate a owl:DatatypeProperty ;
 rdfs:domain cef:PredictiveIndicator ;

rdfs:range xsd:float .

5.6 Plasticity Parameters

cef:microAdjustmentStep a owl:DatatypeProperty ;

rdfs:domain cef:PlasticityParameter ;

rdfs:range xsd:float .

cef:facetReorderingDelta a owl:DatatypeProperty ;

rdfs:domain cef:PlasticityParameter ;

rdfs:range xsd:float .

cef:centerMicroShift a owl:DatatypeProperty ;

rdfs:domain cef:PlasticityParameter ;

rdfs:range xsd:float .

5.7 Governance Parameters

cef:selfCorrectionGain a owl:DatatypeProperty ;

rdfs:domain cef:GovernanceSignal ;

rdfs:range xsd:float .

cef:coherenceProtectionFactor a owl:DatatypeProperty ;

rdfs:domain cef:GovernanceSignal ;

rdfs:range xsd:float .

6. Canonical Constraints (OWL Restrictions)

6.1 Identity Preservation

cef:Facet owl:disjointWith cef:Operator, cef:Center .

cef:Center owl:disjointWith cef:Operator .

6.2 No Facet Migration

```
cef:Facet rdfs:subClassOf [  
  a owl:Restriction ;  
  owl:onProperty cef:belongsToOperator ;  
  owl:cardinality "1"^^xsd:nonNegativeInteger  
] .
```

6.3 Directionality Integrity

```
cef:Transition rdfs:subClassOf [  
  a owl:Restriction ;  
  owl:onProperty cef:transitionFrom ;  
  owl:someValuesFrom cef:Operator  
] ;  
rdfs:subClassOf [  
  a owl:Restriction ;  
  owl:onProperty cef:transitionTo ;  
  owl:someValuesFrom cef:Operator  
] .
```

6.4 Modulation Reciprocity

```
cef:Modulation rdfs:subClassOf [  
  a owl:Restriction ;  
  owl:onProperty cef:modulationFrom ;  
  owl:someValuesFrom cef:Operator  
] ;  
rdfs:subClassOf [  
  a owl:Restriction ;  
  owl:onProperty cef:modulationTo ;  
  owl:someValuesFrom cef:Operator  
] .
```

7. Canonical Status

Appendix B is the authoritative RDF/OWL class definition for TS-18.

It is a shared Phase-4 semantic-web artifact and must be used for all:

- knowledge graph implementations
- semantic reasoning engines
- ontology-driven simulations
- EL-Series mappings
- INTIMA synthetic affect systems

It is subordinate only to:

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