The Cognitive Equilibrium Framework™

Technical Scoring Specification v0.1

Foundational Behavioral Interpretation Model

Bruno Horta Soares

University Professor and Executive Advisor in Digital Governance, AI and Cybersecurity

1. PURPOSE OF THE MODEL

The Cognitive Equilibrium Scoring Model™ is an interpretative behavioral framework designed to observe patterns of interaction between human reasoning and AI-assisted delegation in professional environments.

The model does not evaluate:
• intelligence
• cognitive ability
• personality
• professional competence
• psychological condition
• neurological state

The framework evaluates:

observable interaction orientation.

Its purpose is to identify whether AI interaction patterns appear to:
• preserve independent reasoning,
• sustain reflective validation,
• reinforce cognitive elasticity,
or
• progressively externalize critical cognitive functions.

The framework is governance-oriented rather than clinical.

2. CONCEPTUAL FOUNDATIONS

The scoring model is based on four conceptual assumptions:

2.1 AI delegation exists on a continuum

Professional interaction with AI systems is not binary.
Individuals may simultaneously:
• augment reasoning,
• externalize reasoning,
• preserve oversight,
• reduce verification effort.

2.2 Cognitive equilibrium is dynamic

The framework assumes equilibrium is not permanent.
Interaction patterns may shift according to:
• workload,
• organizational culture,
• incentives,
• time pressure,
• AI capability evolution.

2.3 Productive augmentation and cognitive atrophy can coexist

High productivity does not necessarily imply sustained reasoning resilience.

The framework assumes that optimization behaviors may gradually reduce:
• reasoning persistence,
• validation discipline,
• framing independence,
• accountability visibility.

2.4 The framework is interpretative

The model generates directional observations, not deterministic conclusions.

Scores should be interpreted as:
• indicative,

• exploratory,
• reflective,
rather than diagnostic.

3. SCORING ARCHITECTURE

The framework consists of:

12 assessment items

Each item contains:

4 ordered behavioral response options.

Each response contributes to:
• one primary dimension,
• one directional vector.

4. CORE DIMENSIONS

The model evaluates four behavioral dimensions.

4.1 Framing Independence

Definition:
The extent to which an individual preserves independent problem framing prior to AI engagement.

Observed behaviors:
• independent synthesis,
• pre-model reasoning,
• ambiguity tolerance,
• original structuring capability.

Risk signal:
Premature cognitive anchoring on AI-generated framing.

4.2 Validation Discipline

Definition:
The extent to which AI outputs are critically validated before operational adoption.

Observed behaviors:
• verification effort,
• adversarial checking,
• source validation,
• challenge persistence.

Risk signal:
Passive acceptance of plausible outputs.

4.3 Cognitive Persistence

Definition:
The extent to which individuals continue exercising cognitive effort despite automation availability.

Observed behaviors:
• reconstruction effort,
• delayed automation,
• manual synthesis,
• reflective comparison.

Risk signal:
Skill degradation through convenience normalization.

4.4 Accountability Orientation

Definition:
The extent to which responsibility for AI-assisted decisions remains explicitly human-centered.

Observed behaviors:
• reasoning traceability,
• decision ownership,
• oversight visibility,
• explicit validation checkpoints.

Risk signal:
Diffusion of responsibility through AI mediation.

5. RESPONSE SCORING MODEL

Each response option contributes:

directional behavioral weighting.

The framework uses:

symmetric weighted scoring.

5.1 Point Allocation

Response Orientation	Score
Strong Atrophy Orientation	-2
Moderate Atrophy Orientation	-1
Moderate Elasticity Orientation	+1
Strong Elasticity Orientation	+2

The model intentionally avoids neutral scoring.

Rationale:
The framework measures directional interaction tendencies rather than passive neutrality.

6. RAW SCORE CALCULATION

With:
• 12 questions
• maximum ±2 per item

Theoretical range:

State	Raw Score
Maximum Atrophy Orientation	-24
Perfect Equilibrium	0
Maximum Elasticity Orientation	+24

7. NORMALIZED SCORE MODEL

To improve interpretability and executive readability, raw scores are normalized to:

a continuous -50 to +50 scale.

7.1 Normalization Formula

Normalized Score = (Raw Score / 24) × 50

7.2 Interpretation Logic

Range	Interpretation
-50 to -35	Critical Atrophy Orientation
-34 to -15	Emerging Delegation Dependence
-14 to +14	Reflective Equilibrium
+15 to +34	Elastic Cognitive Partnership
+35 to +50	Advanced Cognitive Elasticity

8. DIMENSIONAL SUB-SCORES

Each dimension contains:

3 assessment items.

Dimension ranges:

Dimension	Min	Max
Framing Independence	-6	+6
Validation Discipline	-6	+6
Cognitive Persistence	-6	+6
Accountability Orientation	-6	+6

These are independently normalized for visualization purposes.

9. DIMENSION WEIGHTING

The current version uses weighted dimensional contribution.

Dimension	Weight
Framing Independence	30%
Validation Discipline	30%
Cognitive Persistence	20%
Accountability Orientation	20%

Rationale:
The framework assumes:
• independent framing
and
• validation discipline
represent the strongest protective mechanisms against cognitive atrophy.

10. ARCHETYPAL INTERPRETATION LAYER

Archetypes are:

narrative interpretative overlays.

They are not:
• personality classifications,
• professional rankings,
• psychological profiles.

Archetypes exist to:
• improve interpretability,
• reinforce reflection,
• support executive engagement.

Examples:
• Reflective Augmenter
• Structured Validator
• Delegation Optimizer
• Adaptive Elasticity Profile

11. LIMITATIONS OF THE MODEL

The framework has several important limitations.

11.1 Self-report limitation

Responses reflect:
• perceived behavior
rather than independently verified behavior.

11.2 Context dependency

Behavior may vary according to:
• profession,
• organizational incentives,
• time pressure,
• regulatory environment,
• AI maturity.

11.3 Non-clinical framework

The model does not measure:
• neurological change,
• cognitive decline,
• psychological impairment.

11.4 Conceptual maturity stage

The framework remains:

exploratory and conceptual.

It should not be interpreted as:
• validated psychometrics,
• medical evaluation,
• formal professional certification.

12. GOVERNANCE POSITIONING

The framework positions cognitive equilibrium as:

an emerging governance concern.

The central premise is that:
the sustainability of independent reasoning, validation discipline and accountable oversight may become increasingly important in AI-assisted professional environments.

The framework therefore studies:
• human-AI interaction balance,
rather than:
• human capability in isolation.

13. VERSIONING

Current Version

Technical Scoring Specification v0.1

Classification

Conceptual MVP Specification

Status

Exploratory governance-oriented framework

Intended Usage

- executive reflection
- educational environments
- conceptual research
- governance discussions
- framework prototyping

Not intended for:
- hiring decisions
- psychological evaluation
- medical interpretation
- employee ranking
- competency certification