

AZ-CLCE v2.0 WHITE PAPER

Cross-Layer Consistency Engine (CLCE)

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Abstract

The Cross-Layer Consistency Engine (CLCE) formalizes mismatch detection across representation, description, and reality layers. It transforms intuitive analysis into a structured, repeatable system applicable across engineering, intelligence, and system validation.

Core Principle

All systems operate across three layers:

R — Representation (visuals/diagrams)

D — Description (text/claims)

P — Reality (actual function)

Alignment across all three indicates system integrity.

Mathematical Model

$$\text{CLCE Score} = (R \cap D \cap P) / (R \cup D \cup P)$$

Score Interpretation:

1.0 = perfect alignment

≥ 0.7 = acceptable

< 0.7 = structural inconsistency

Operational Process

1. Extract Layers (R, D, P)
2. Define expected alignment
3. Run mismatch scan ($R \leftrightarrow D$, $D \leftrightarrow P$, $R \leftrightarrow P$)
4. Classify result

Mismatch Classification

Type A — Surface Error
Type B — Functional Error
Type C — Structural Gap
Type D — Intentional Obfuscation

Negative Space Extension

Introduce N (missing expected elements):
$$\text{CLCE+} = (R \cap D \cap P) / (R \cup D \cup P + N)$$

Higher N indicates hidden or suppressed structure.

Applications

Engineering validation
Cybersecurity analysis
Documentation QA
System debugging
Intelligence analysis

Conclusion

CLCE enables consistent detection of structural misalignment across systems, converting intuitive pattern recognition into a scalable analytical framework.