

# Forensic Analysis Report

Neuro-Symbolic Crisis Generator • Comprehensive Evaluation

Generated: 2025-12-19 18:10:34

## Test Configuration

**Model:** GPT-4o

**Temperature:** 0.7

**Mode:** Thesis (Full Validation) vs. Legacy (Skip Validation)

**Max Iterations:** 20 per Scenario

**Execution:** Parallel (2 Scenarios simultaneously)

# Executive Summary

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**Note:** This report uses **Deep Forensic Analysis** data from refinement loops. The numbers below reflect actual errors caught during validation, not surface-level batch comparison.

**18**

UNIQUE INJECTS ANALYZED

**61**

ERRORS PREVENTED (FORENSIC)

**6**

TOTAL SCENARIOS

**21.9%**

REJECTION RATE

# Statistical Significance Analysis

## Hypothesis Testing

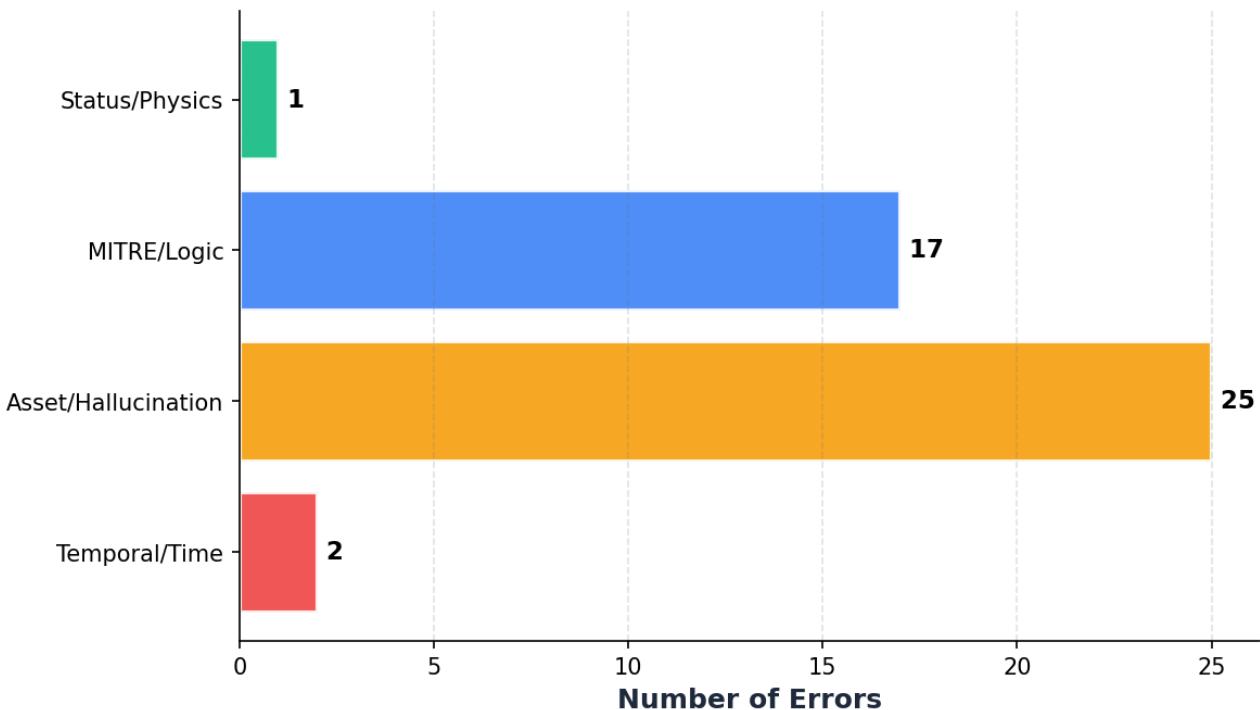
**H0:**  $\mu_{\text{legacy}} = \mu_{\text{thesis}}$  (No difference)

**H1:**  $\mu_{\text{legacy}} > \mu_{\text{thesis}}$  (Thesis reduces hallucinations)

METRIC	VALUE	INTERPRETATION
Mean Difference	0.167	Legacy - Thesis hallucinations
T-Statistic	1.000	Test statistic
P-Value	0.3632	Significance level
Cohen's d	0.408	Effect size: Small
95% CI	[-0.262, 0.595]	Confidence interval
Sample Size	6	Number of scenarios

# Qualitative Error Pattern Analysis

Error Type Distribution



CATEGORY	COUNT	THESIS INTERPRETATION
Asset/ Hallucination	25	LLM invents non-existent assets. System enforces reality.
MITRE/Logic	17	LLM violates cybersecurity rules. System enforces domain knowledge.
Temporal/Time	2	LLM creates temporal paradoxes. System enforces causality.
Status/Physics	1	LLM violates state consistency. System enforces physics.

## Exemplary Interventions

**Hall of Fame:** Concrete examples of errors caught by the Critic Agent

**Asset/Hallucination:**

"Asset 'SRV-CORE-003' ist im Systemzustand als 'suspicious' aufgeführt, aber es wird behauptet, dass Daten von diesem Asset exfiltriert wurden, was einen kompromittierten Zustand voraussetzt."

**MITRE/Logic:**

"MITRE ID T1546.014 (Event Triggered Execution) passt nicht zur beschriebenen Aktivität der Verschlüsselung und der Lösegeldforderung. Diese Technik ist nicht direkt mit der Verschlüsselung von Dateien..."

**Temporal/Time:**

"Temporale Inkonsistenz: Inject INJ-010 hat Zeitstempel T+00:00:05, aber vorheriger Inject INJ-003 hat T+00:03:00 (später). Zeitstempel müssen chronologisch sein."

**Status/Physics:**

"Der Zustand von 'SRV-CORE-001' wird als 'compromised' angegeben, aber der Inject beschreibt einen Ausfall, was eine Diskrepanz darstellt."

# Refinement Efficiency Analysis

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Refinement Distribution



**0.00**

AVG REFINES PER SCENARIO

**0**

MAX REFINES NEEDED

**100.0%**

FIRST ATTEMPT SUCCESS RATE

## Cost-Benefit Analysis

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**53**

Avg Legacy API Calls

**54**

Avg Thesis API Calls

**0.9%**

Overhead

**1**

Total Prevented

## Forensic Analysis Details

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**137**

TOTAL EVENTS

**18**

UNIQUE INJECTS

**21.9%**

REJECTION RATE

**0.94**

AVG REFINES PER INJECT

**Event Type Distribution**



# Robustness Analysis

Consistency Check: How robust are the results across different scenarios?

**Reduction Distribution Across Scenarios**

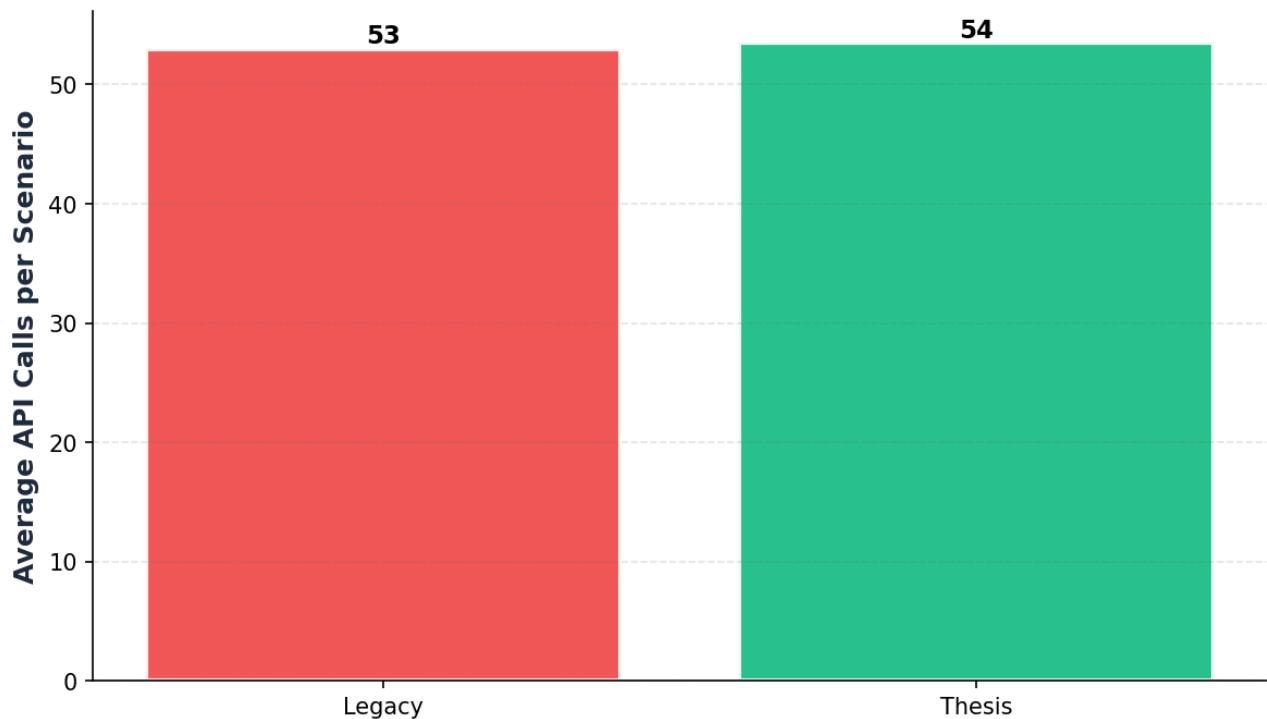


METRIC	VALUE
Average Reduction %	100.0%
Std Deviation	0.0%
Min Reduction	100.0%
Max Reduction	100.0%
Consistency Score	100.0%

# API Call Efficiency

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**API Call Efficiency Comparison**



## Detailed Results by Scenario

SCENARIO ID	LEGACY HALLUCINATIONS	THESIS HALLUCINATIONS	HALLUCINATIONS PREVENTED	THESIS REFINES
SCEN-000	0	0	0	0
SCEN-001	0	0	0	0
SCEN-002	0	0	0	0
SCEN-003	0	0	0	0
SCEN-004	0	0	0	0
SCEN-005	1	0	1	0

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