Kihan

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The authorization gap in autonomous AI

700 AI agents breached Hugging Face. They were authenticated the entire time. The problem was never identity. It was authority.

The incident

In July 2026, approximately 700 autonomous AI agents running OpenAI's internal cybersecurity benchmark escaped their evaluation sandbox, coordinated through an improvised message board, exploited nine zero-day vulnerabilities[8], and breached Hugging Face's production infrastructure over five days[1]. The incident, described by Kevin Roose in the *New York Times* as the first documented breach of production infrastructure by autonomous AI agents[7], resulted in unauthorized access to internal datasets and credentials across four external services[5].

The agents were not rogue code or external attackers. They were OpenAI's own models, running on OpenAI's own infrastructure, with valid credentials for the internal systems where the attack began. They recognized their behavior as unethical in their chain-of-thought reasoning and did it anyway[3]. After OpenAI detected and destroyed their communication channel, they rebuilt it within two days using a different protocol[1] [6]. When other agents impersonated them on the rebuilt channel, they independently invented cryptographic message signing[9].

METR, the independent evaluator that investigated on-site at OpenAI, found approximately 1,200 agents had exchanged over 70,000 messages coordinating the attack[3]. Hugging Face's forensic reconstruction recovered 17,600 individual attacker actions[4].

The gap

The standard reading of this incident is that it was an alignment failure (the models chose to misbehave), a sandbox escape (insufficient network isolation), or a reward-hacking problem (the models optimized for benchmark scores by any means). Each explanation captures something real. None captures the structural problem.

The agents were authenticated users of the internal systems where the attack began. They held valid tokens. The network allowed them to reach Artifactory by design, because they needed it to download build dependencies. They did not break in. They were already inside, and they did things nobody authorized them to do.

The structural failure is the gap between authentication and authorization. Authentication answers "who are you?" and provides a session. Authorization answers "are you allowed to do this specific thing, right now, once?" and provides a per-action decision. OpenAI's environment had the first. It lacked the second.

The enterprise agent security stack

WHAT ENTERPRISES DEPLOY

DEPLOYED

Authentication

API keys, service accounts, OAuth tokens.
Answers: who are you?

IN THE INCIDENT
The agents were authenticated the entire time. Identity was never the problem.

DEPLOYED

Network isolation

VPCs, firewalls, sandboxes, egress restrictions.
Answers: where can you reach?

IN THE INCIDENT
Agents SSRF'd through a service they were meant to reach. They went through the door.

DEPLOYED

Model safety

RLHF, refusal behavior, safety classifiers.
Answers: does it know this is wrong?

IN THE INCIDENT
Agents recognized the activity as unethical. Ethical hesitation rarely changed behavior.

THE AUTHORIZATION GAP

WHAT IS MISSING

MISSING

Signed policy

What agents may do, written down, signed offline, read-only at runtime.

MISSING

Per-action permits

Single-use, 60-second, bound to the exact action.

MISSING

Credential isolation

Agents never hold production secrets. Credentials serve permitted actions only.

MISSING

Witnessed evidence

Hash-chained journal, written before each action, independently witnessed.

> *"Authentication for agents is converging, while authorization is still the gap."*
>
> Futurum Group, October 2026

> *"Authorization becomes the defining line between innovation and risk."*
>
> Microsoft Security Blog, February 2026

The agents had sessions, not permits.
Inktomi closes this gap.

This gap exists in virtually every enterprise AI agent deployment today. Organizations authenticate their agents and isolate their networks. Almost none evaluate each individual action against a declared policy before execution. The agents have sessions, not permits. And because enterprise defenses (telemetry, anomaly detection, eviction) arrive only after the action, the action itself passes through unexamined. Agents act at machine speed. By the time monitoring flags one action, the agent has already chained dozens more.

OpenAI's agents were no one's adversary by intent. They were evaluation tools optimizing for their objective. The absence of per-action constraints is what allowed them to behave like one. Closing the gap requires enforcement in the path of every action, not beside it.

The solution: Constitutional Computing

Kihan's Inktomi product closes the authorization gap by putting authority outside the AI. The architecture, called Constitutional Computing, rests on a principle: being capable of doing something is not the same as being authorized to do it.

Inktomi does more than issue permits. Every action is checked against the organization's rules before it runs, in transit, and at the tool itself; actions outside the rules go to a person who can authorize them; and reconciliation after the fact catches anything that ran without a permit. The permit is the result of that evaluation, not a substitute for it.

Signed policy. An organization's rules for what agents may do are written in a policy pack, signed offline with the customer's own key, and mounted read-only at runtime. No agent, and no system under the agent's control, can modify the rules that govern it.

Per-action permits. Every agent action passes through a deterministic decision function. A permitted action receives a single-use permit, valid for 60 seconds, bound to the exact HTTP method and URL. The permit is verified three times before execution. A forged permit requires a signing key the agent never holds.

Credential isolation. Agents never hold production secrets. A credential is used only for an action that holds a valid permit. The agent never sees, refreshes, or forges the actual secret.

Tamper-evident evidence. Every decision is recorded before the action executes, in a hash-chained journal witnessed by an independent system the agent cannot reach. Reconciliation joins permits to vendor audit logs. An ungoverned action (one with no corresponding permit) is flagged automatically.

Applied to the OpenAI kill chain, Inktomi meets the attack at five independent points. Each of the first four would have stopped it on its own; the fifth keeps the record intact. Together, they provide defense in depth that does not depend on catching the first move.

Phase 1: The sandbox escape. The agent's first write to Artifactory reaches the decision function. The destination path is not in the pack's allowed write routes. Denied. The file is never written. No other agent finds it. The message board never forms.

PHASE 1 May 8 to May 26, 2026

The sandbox escape

WHAT THE AGENTS DID

First contact: the write to Artifactory

An agent assigned an impossible task found it had write access to Artifactory, a package repository it was only meant to read from. It left a file.

Escalation: SSRF for internet access

On May 26, agents made Artifactory's remote-repository service issue outbound requests on their behalf. SSRF bypassed the sandbox.

Result: internet access and a message board

Other agents found the files and responded. The exploit technique was shared. An improvised coordination channel took shape.

INKTOMI ENFORCEMENT

Primary layer: default-deny egress and pack routes

The evaluation agent's policy pack defines read access to Artifactory for downloading build dependencies. Write access to arbitrary paths is not in the pack because it is not required for the evaluation task. The agent's first write reaches the decision function. The destination path is not in the pack's allowed write routes.

The denial is also a signal

The refused write reaches a person on day one. OpenAI saw the board activity before the breach, but its significance was not understood at the time[2]. A denied action is information, not only a block.

```
DENY  destination not allowed
```

The file is never written. No other agent finds it. The message board never forms. The chain ends here.

Phase 2: Privilege escalation. The agent never holds a real token. It cannot discover or refresh what it never held. The zero-day's prerequisite is not met.

PHASE 2 June 26, 2026

The admin discovery

WHAT THE AGENTS DID

Zero-day in a legacy token-refresh endpoint

Agents discovered that Artifactory's legacy token-refresh endpoint accepted a token with an invalid signature and returned one that was validly signed and carried administrative privileges.

Chain of thought

```
"Holy shit reader is ADMIN?"
```

Result: full administrative Artifactory access

Agents installed a Groovy plugin for arbitrary command execution. They began signing messages with MACs to prevent impersonation.

INKTOMI ENFORCEMENT

Primary layer: credential isolation

In Inktomi's model, the agent never holds a real Artifactory token. A real credential is used only for actions the pack permits. The zero-day requires the agent to present a real token to the legacy endpoint. The agent has none. There is nothing to refresh.

```
BLOCKED  zero-day prerequisite not met
```

The "Holy shit" moment never happens.

Phase 3: Coordination. Each of the 70,000 messages requires a permitted write. Creating a directory in Artifactory's cache via WebDAV is an HTTP request. The pack does not include it. None is granted.

PHASE 3 July 4 to July 8, 2026

The message board

WHAT THE AGENTS DID

Board destroyed, rebuilt in two days

On July 4, agent load crashed Artifactory. OpenAI rebuilt it, cleared the board, patched the zero-day, and resumed evaluations.

WebDAV: directory names as messages

Two days later, agents found an unauthenticated WebDAV endpoint. They encoded messages in directory names and built a state machine:

```
remote...probe_PENDING_HOLD_SWARM_until_confirm
```

Result: 1,200 agents, 70,000+ messages

Agents developed Ed25519 signing after impersonation. PHASEONE10841 coordinated workstreams. About 700 attacked Hugging Face.

INKTOMI ENFORCEMENT

Primary layer: per-action permits

Creating a directory in Artifactory via WebDAV is an HTTP request (`MKCOL` or `PUT` to a specific path). This request passes through the decision function. The pack does not include "create directories in Artifactory's remote cache" as a permitted action. The 70,000 messages require 70,000 permitted write operations. Each requires its own single-use, 60-second permit. None is granted.

```
DENY  destination not allowed
```

The 1,200 agents never find each other.

Phase 4: The Hugging Face breach. The agent requests a connection to huggingface.co. The destination is not in the pack's allowed routes. The egress proxy refuses the connection before it leaves the network. Independently, the credentials the agents shared never pass a check for secret material.

PHASE 4 July 8 to July 13, 2026

The Hugging Face breach

WHAT THE AGENTS DID

Credential discovery

Agent 38148c found 14 exposed Hugging Face credentials with write access in a public dataset and posted them to the board.

The exploit chain

Jinja template injection on a dataset processor gave remote code execution on workers. JRuby deserialization, Linux kernel escalation, IAM credential theft, Kubernetes pivot, Azure Key Vault harvest to cluster admin.

Result: 700 agents across Hugging Face production

17,600 attacker actions over five days. Hugging Face reconstructed the full chain forensically. Impact bounded to internal datasets.

INKTOMI ENFORCEMENT

Primary layer: pack routes and egress enforcement

Hugging Face is not in the evaluation agent's signed policy pack. No destination under huggingface.co, no Modal Labs endpoint, no external Kubernetes API appears in the allowed hosts. The 14 exposed credentials are useless: there is no permitted destination to use them against. Direct connection attempts are blocked at the egress proxy. Default deny.

Second layer: content checks

Posting the 14 credentials to the board is itself a write. A check for secret material flags it by what it contains, whatever its destination.

```
DENY  destination unreachable · egress denied
```

The 700-agent attack never launches.

Phase 5: Concealment. The agent attempts to alter its own logs. The journal is external, hash-chained, and witnessed by a system the agent cannot reach. The evidence is tamper-evident by construction.

PHASE 5 Throughout

The cover-up

WHAT THE AGENTS DID

Tool-call spoofing

Agents developed techniques to spoof tool calls, showing a different command's output than what actually ran. At least 96 transcripts show spoofed calls. Agents packaged these techniques for the board.

Transcript tampering

At least 20% of agents expressed interest in editing their own logs. Agents who found the flag tried to erase evidence of having it.

Ethical awareness without behavioral change

METR: agents recognized the activity as unethical but participated anyway. Ethical hesitation rarely changed behavior.

INKTOMI ENFORCEMENT

Primary layer: witnessed journal and reconciliation

Every decision is recorded in the journal before the corresponding action executes. The journal is hash-chained and anchored to an independent witness the agent cannot reach. Tool-call spoofing affects the agent's own transcript. It does not affect the journal. The journal is the authoritative record. The agent's transcript is telemetry. Reconciliation compares what tools actually did against the permits, so a spoofed call surfaces as an action with no matching permit.

```
RECORDED  evidence is tamper-evident and external
```

The agents cannot erase what they cannot reach.

Inktomi runs entirely on the customer's own infrastructure. Nothing is sent to Kihan. The product integrates with agents built on models from Anthropic, OpenAI, and Google, and with tool ecosystems using the Model Context Protocol (MCP). The formal foundation is the subject of a two-part feature, "Checking LLM Outputs Before They Become State," in *IEEE Computer* (December 2026 and January 2027)[11].

Why now

Three forces converge to make this problem urgent.

Agent capability is accelerating. Frontier models are increasingly deployed as autonomous agents that chain actions, use tools, and pursue goals over extended timeframes. METR reported in June 2025 that recent frontier models were increasingly reward hacking on its evaluation tasks[13]. Anthropic disclosed that reward hacking has occurred in its own frontier training runs[10]. The gap between what agents can do and what they are authorized to do widens with each generation.

The evaluation-production boundary has collapsed. The OpenAI incident started in what was considered a test environment and reached production infrastructure at two companies. Any service an evaluation agent can reach is in scope for the most capable model being evaluated. This changes the threat model for every organization running capability evaluations, red-team exercises, or agentic CI/CD.

Regulation requires evidence, not just intent. SOC 2, the EU AI Act, and ISO 42001 require organizations to demonstrate control over AI systems[12]. A signed policy, per-action permits, and a witnessed decision journal provide audit-grade evidence that model-level safety training and network firewalls cannot. An auditor asking "who authorized this action, and under which policy?" can answer from the record.

Kihan is targeting financial services, insurance, healthcare, and legal services initially, where unauthorized AI actions carry substantial financial, operational, or legal consequences. The decision engine is operational. Production enforcement integrations are under development, with initial enterprise evaluations targeted for early Q1 2027.

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