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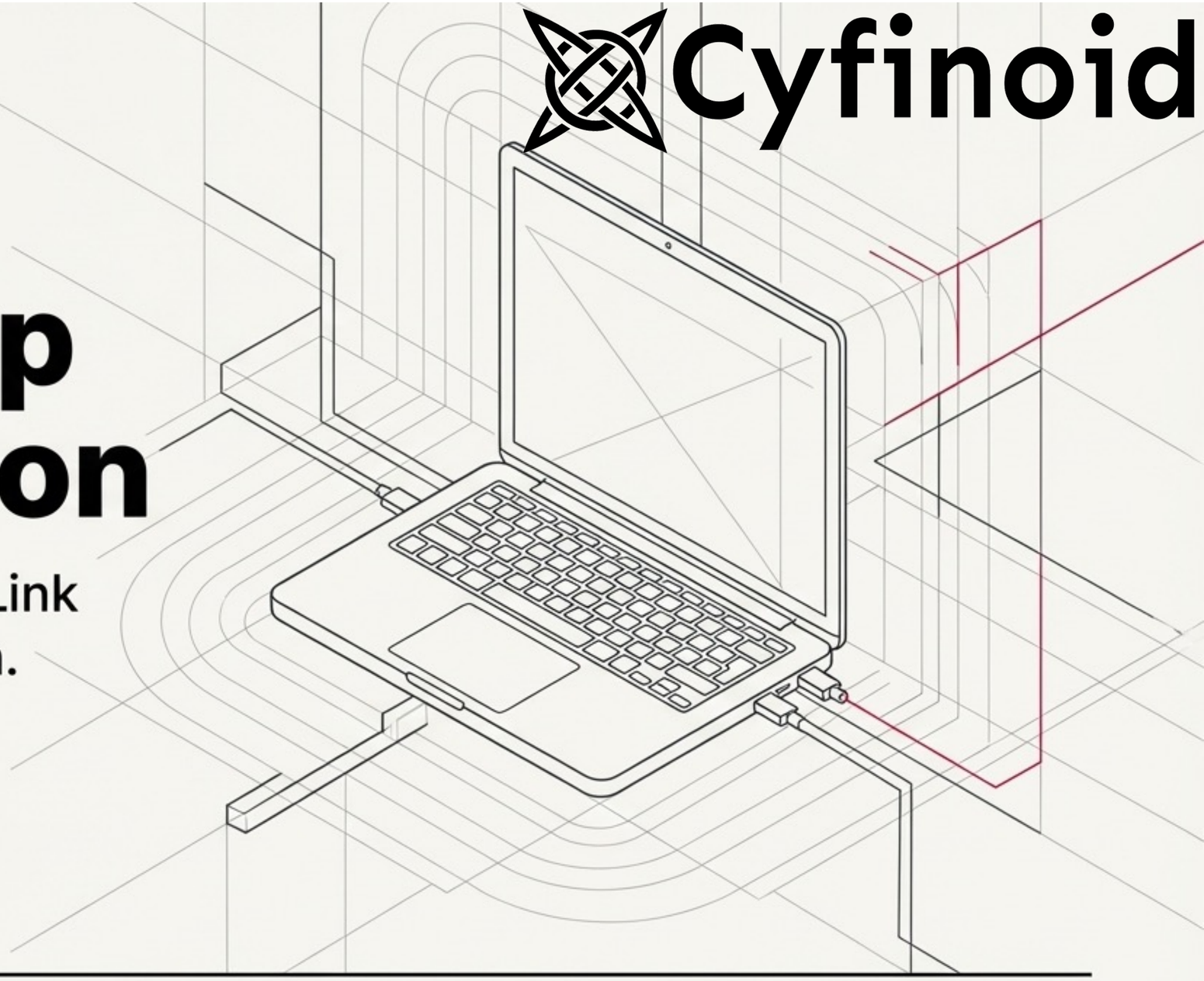
Your Laptop Is Production

Strengthening the Weakest Link in the Software Supply Chain.



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A defensive playbook for open-source maintainers and solo developers operating without a corporate safety net.

Anant Shrivastava

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15+ Years

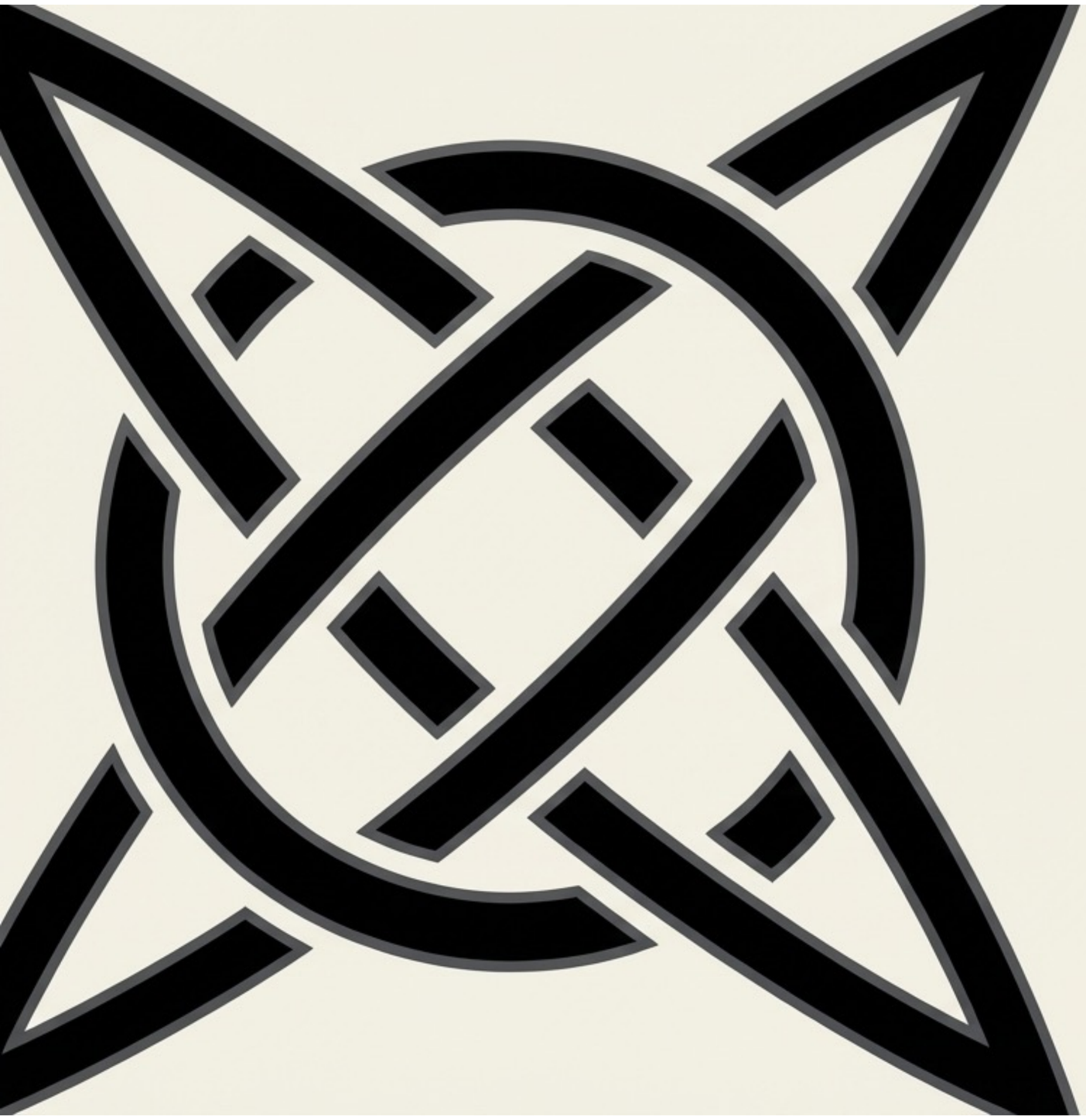
Corporate Exposure

Speaker & Trainer

BlackHat / Defcon / c0c0n / nullcon

Initiatives

Code Vigilant (Code Review) &
Hacking Archives of India



A NOTE ON CRAFT

Co-Authored by Intelligence.

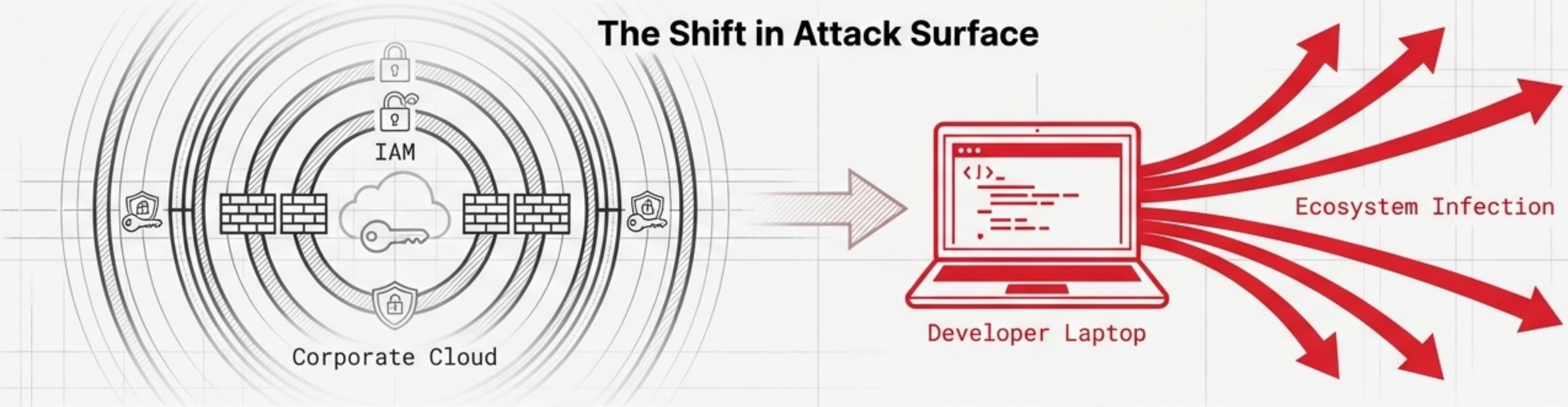
The insights within this presentation are the result of deliberate human curation amplified by state-of-the-art cognitive models.

Cognitive Stack Matrix

	HUMAN	Strategic Intent & Final Curation
	NOTEBOOKLM	Source Ingestion & Data Grounding
	CLAUDE	Synthesis & Linguistic Precision
	CHATGPT	Structural Architecture & Ideation

Attackers bypass the enterprise and target the maintainer

The Shift in Attack Surface



877,522

Malicious packages catalogued since 2019 (156% YoY increase).

The XZ Utils Backdoor

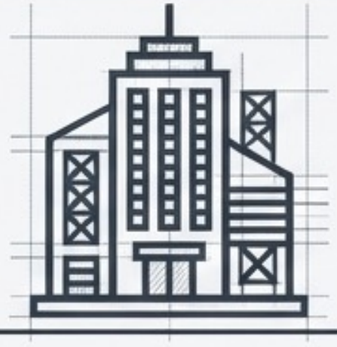
A 2.6-year social engineering campaign targeting a solo maintainer to inject an SSH backdoor reaching global Linux distributions.

The Shai-Hulud Worm

Phishing a single npm maintainer's 2FA token led to a self-replicating worm compromising 700+ packages with 132M monthly downloads.

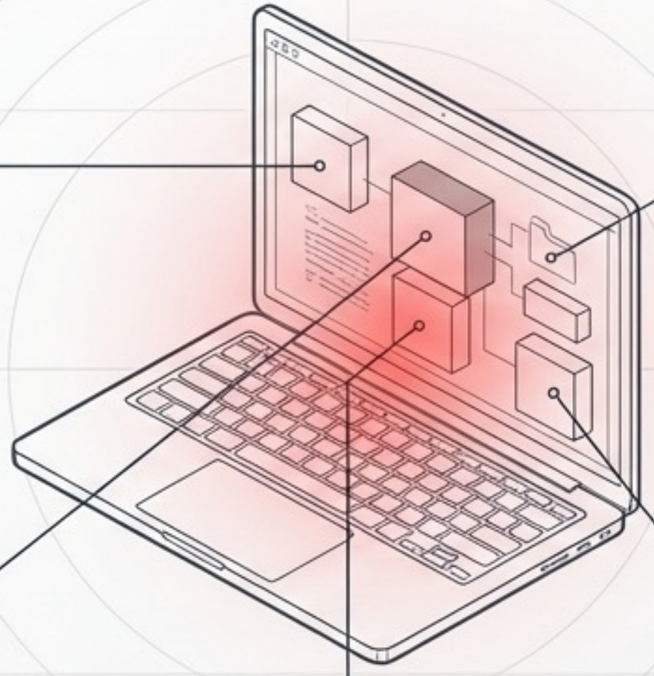
Takeaway: The critical move is no longer an elaborate perimeter breach; it is seizing a workstation already trusted to touch production.

Enterprise frameworks are an unfunded mandate for solo developers

	The Unfunded Mandate Matrix	
	 **Enterprise Assumption**	 **Solo Reality**
1. Infrastructure	Dedicated CI/CD, hardened build farms, artifact repositories (NIST SSDF).	**A single personal laptop and terminal**
2. Staffing & Process	Security champions, multiple PR reviewers, separation of duties.	**60% of maintainers are unpaid; 61% work entirely alone.**
3. Compliance	SLSA Level 2 (mandates isolated build platform, prohibits individual workstation builds).	**npm publish run directly from the local machine**

The frameworks systematically exclude their most vulnerable participants.

The developer workstation is a high-value software factory



Source Code
Private repositories and unreleased patches.

Repository Credentials
Long-lived SSH keys and GitHub Personal Access Tokens (PATs).

Publishing Authority
Package registry tokens (npm, PyPI) with unrestricted publish permissions.

Cloud Access
AWS/GCP CLI profiles and active SSO session cookies.

Cryptographic Identity
Commit signing and release artifact signing keys.

Takeaway: A single compromise yields the ability to inject code, steal cloud infrastructure, and push backdoored releases.

The Paradigm Shift

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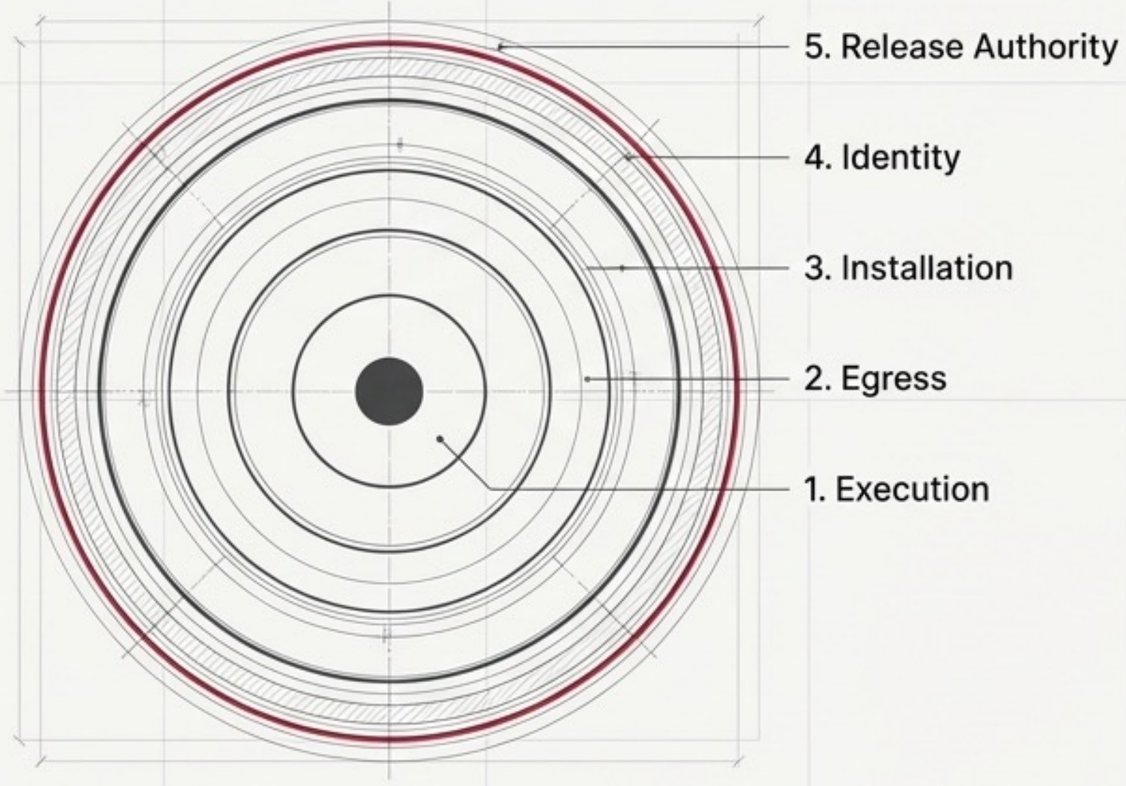
“A developer laptop becomes production the moment it can fetch code, hold credentials, and ship releases. Protect it like a workstation, a signing station, and incident scene at the same time.”

Designing for survivability, not perfect prevention

Goal: Break the monolithic “everything on one laptop” model into constrained trust zones to reduce the blast radius.

The Five Planes of Survivability



The Blueprint

1. Execution
Shrink what can run freely.

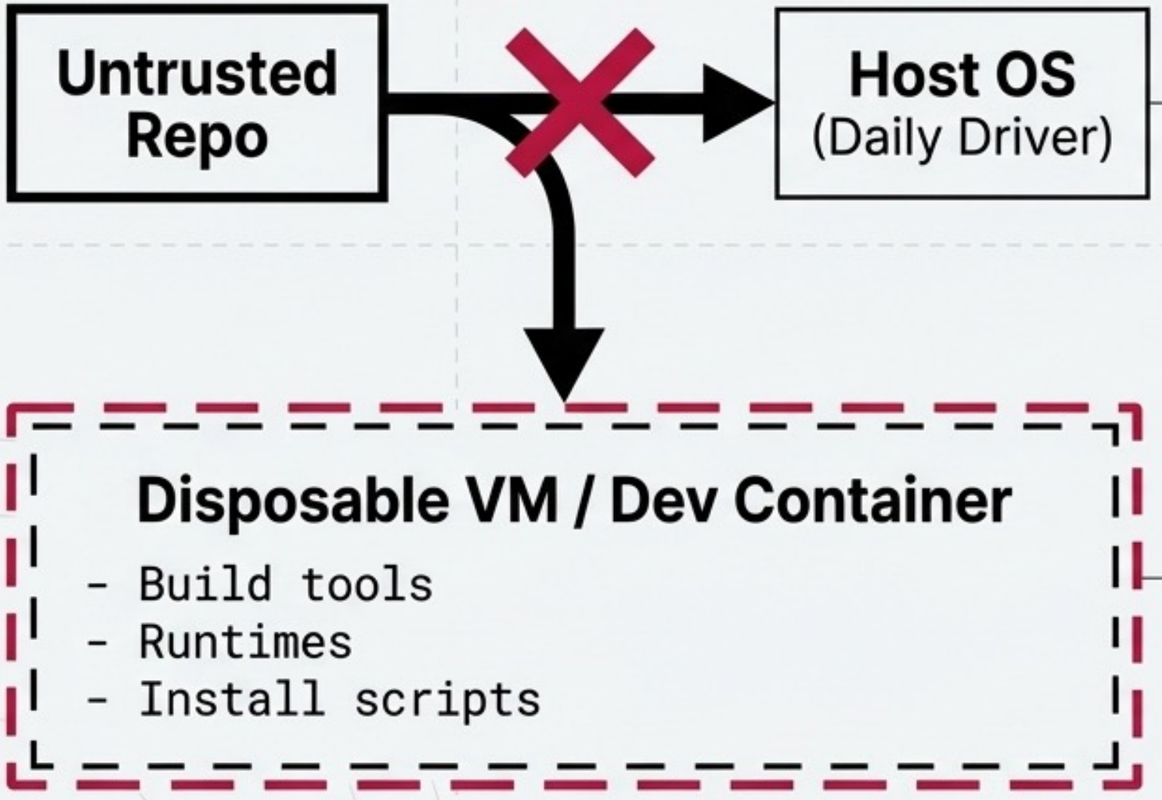
2. Egress
Shrink what can call home.

3. Installation
Gate untrusted dependencies.

4. Identity
Eliminate long-lived, ambient credentials.

5. Release Authority
Remove the laptop from the critical path.

Plane 1 & 2: Base Hardening and Execution Boundaries



Base (Table Stakes)

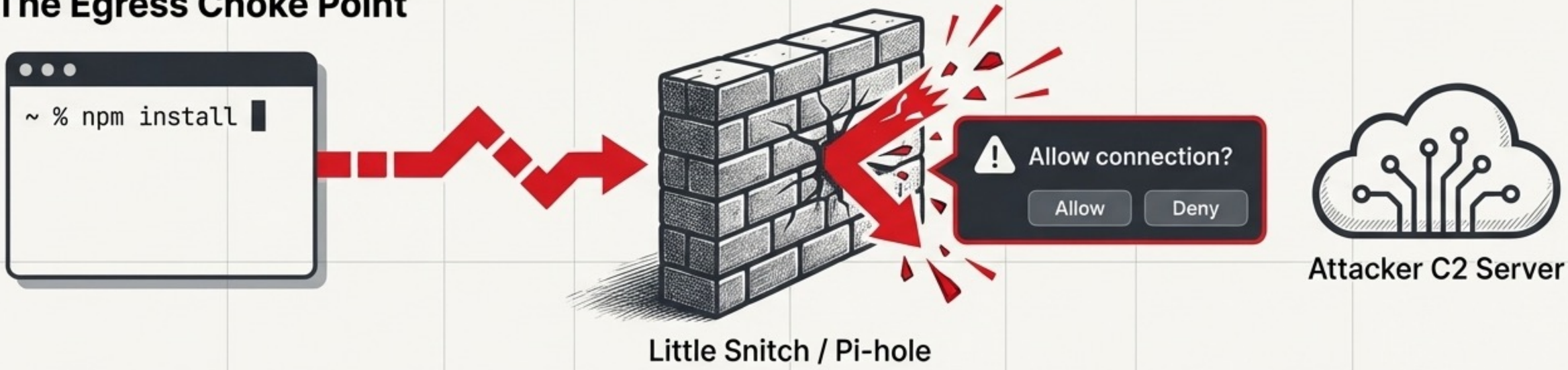
- Use OS-native full disk encryption from day one (`FileVault, BitLocker, Ubuntu FDE`).
- Loss of the physical device must not equal loss of the codebase.

Execution (Intentional Friction)

- Stop treating the host OS as a free-execution zone for every repo.
- Open unfamiliar projects inside Dev Containers or disposable VMs.
- Result: Build tools, runtimes, and install scripts land in a disposable sandbox, not your daily driver.

Plane 3: The Egress Boundary

The Egress Choke Point



The Threat

94% of malicious npm packages use install scripts.

Shai-Hulud and infostealers rely on silent outbound connections to call home.

The Control

Put a hard boundary on outbound traffic.

The Tools

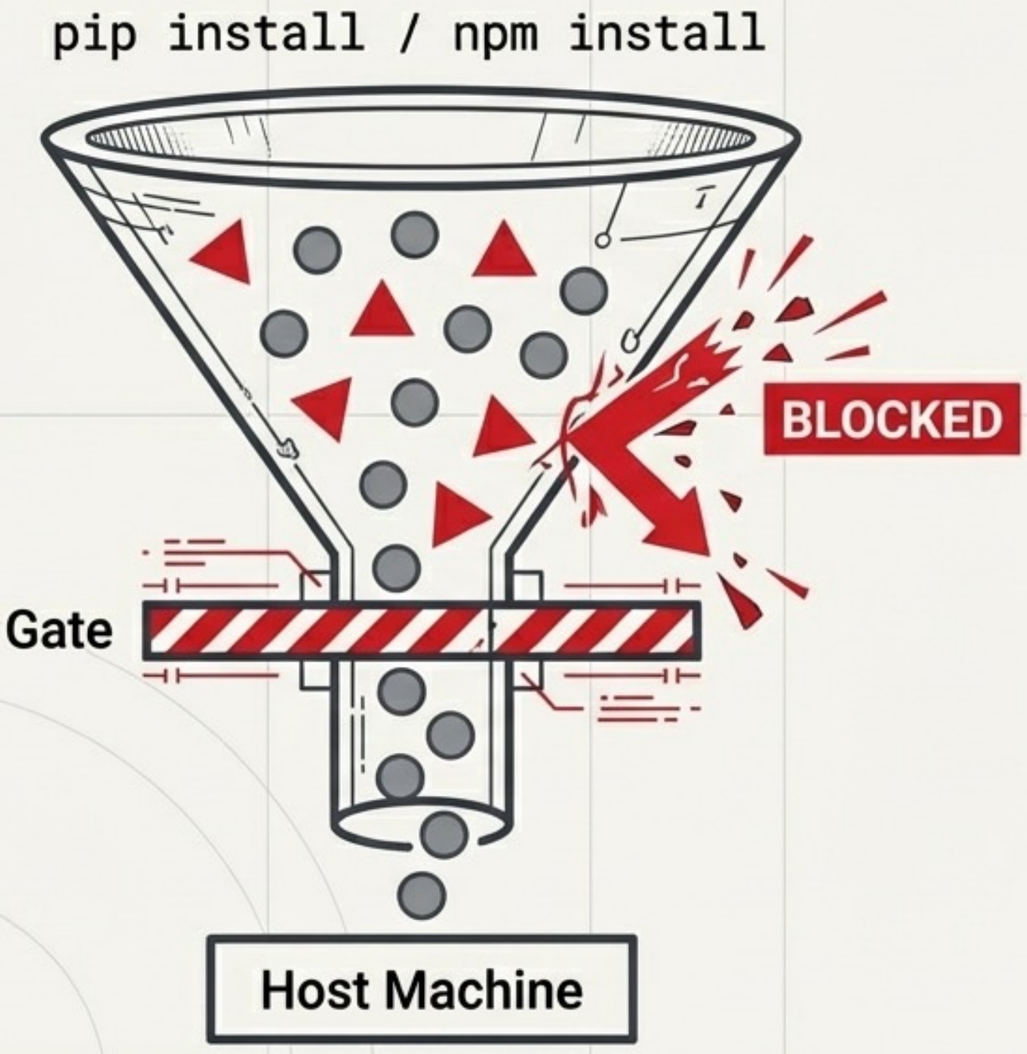
Little Snitch (macOS) / OpenSnitch (Linux) for per-application outbound control.

Pi-hole for DNS monitoring and malware domain blocking.

The Shift

Turn silent exfiltration into a loud, visible event that requires your explicit consent.

Plane 4: The Installation Boundary



The Threat:

Laptop compromises routinely begin at the package manager level via typosquatting, dependency confusion, or compromised upstream maintainers.

The Control:

Wrap package managers in an inspection layer.

The Tools & Tactics:

- **PMG / Socket.dev**: Wraps npm, pnpm, pip, and others to block malicious packages at install time.
- **Configuration defaults**: Run `npm install --ignore-scripts` to prevent post-install hooks from executing automatically.

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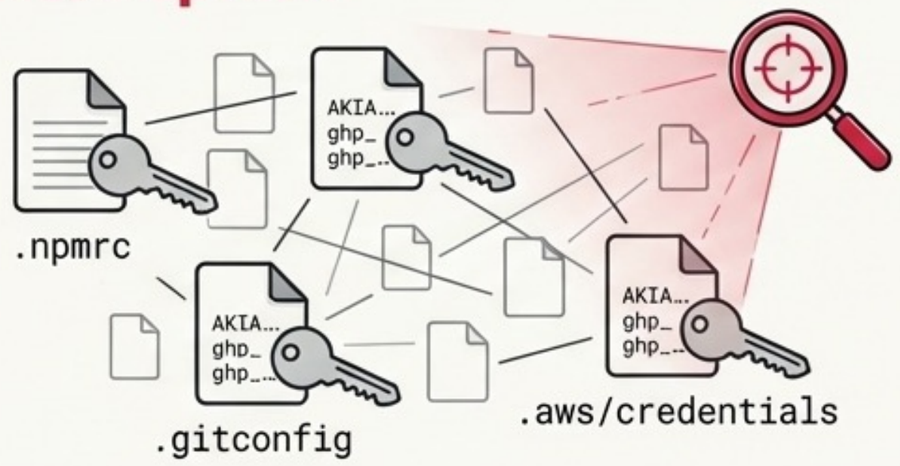
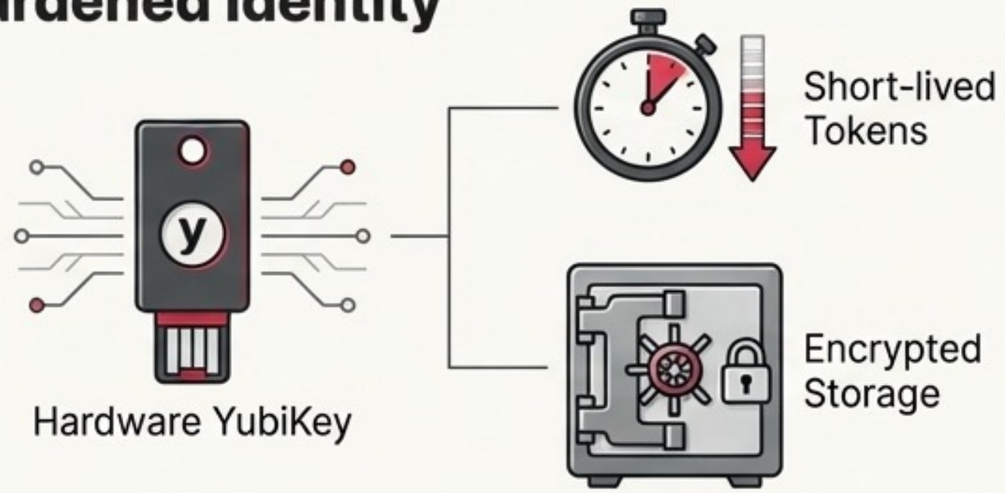
Plane 5: Hardening the Identity Boundary

The Threat: Malware hunts for long-lived credentials in predictable, plaintext dotfiles.

Ambient Sprawl



Hardened Identity



The Controls

- **Hardware-Backed Access:** Use YubiKeys for WebAuthn MFA, GPG signing, and FIDO2-backed SSH keys. Private keys never touch the disk.
- **Ephemeral Tokens:** Swap classic tokens for fine-grained, short-lived session tokens (e.g., npm's 2-hour session tokens).
- **Encrypted Secrets:** Keep local configuration secrets encrypted at rest using tools like SOPS with `age`.

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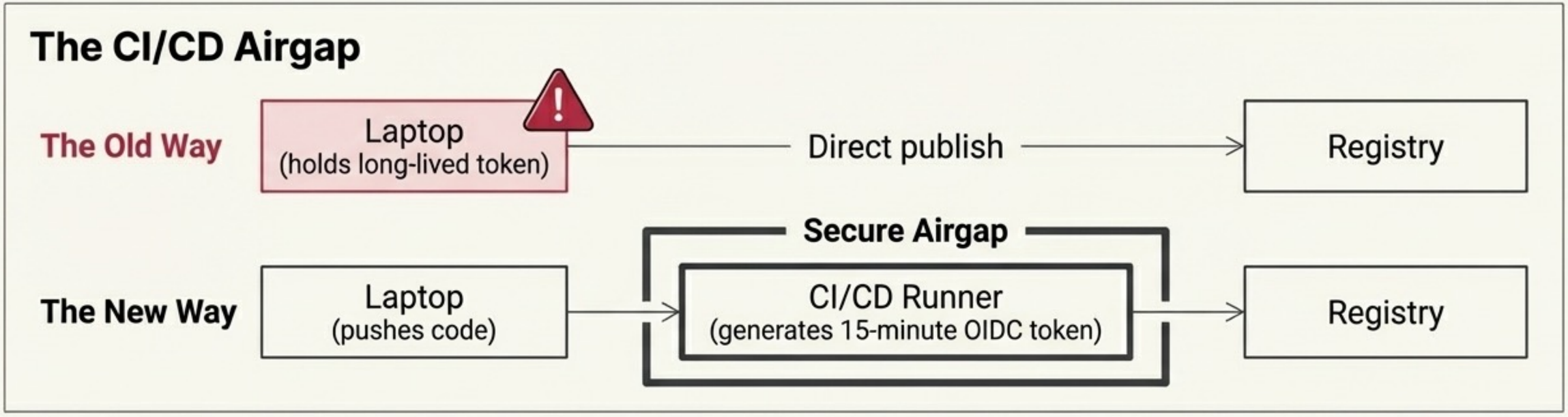
Redesigning Release Authority

The Core Principle: No human should touch the final release.



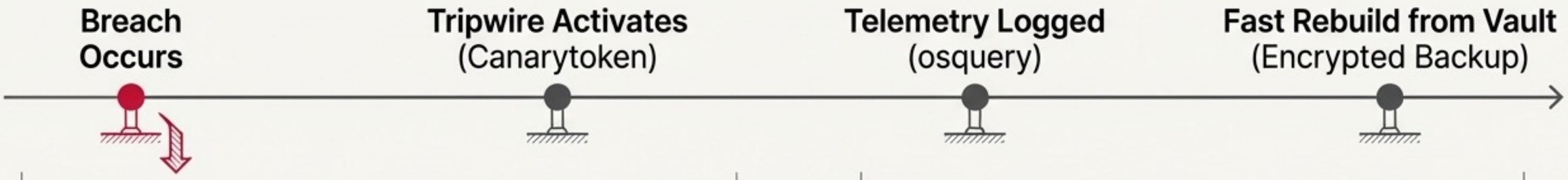
The Workflow

- Keep development on the laptop. Move deployment and publishing to CI/CD.
- Use **OIDC** (Trusted Publishing) for `npm` and `PyPI`.
- Exchange `GitHub Actions` identity for a 15-minute publishing token.

The Result

The laptop turns from a high-risk production issuer into a standard upstream contributor. Stolen laptop credentials can **no longer** publish packages.

Designing for Hindsight and Fast Recovery



Evidence Boundary

- osquery: File integrity monitoring for critical paths (~/.ssh, ˚.npmrc).
- Canarytokens: Place fake AWS keys or GitHub tokens in sensitive folders as motion sensors for directory-browsing malware.
- Gryph: Audit AI coding agents (log file reads/writes to local SQLite) to ensure the agent hasn't been poisoned.

Recovery Boundary

- Use Restic or Borg for encrypted, deduplicated, versioned backups.
- A maintainer's credibility depends on the ability to reimage, rotate keys, and re-release fast.

The Solo Developer's Survivability Playbook

The Survivability Control Matrix			
Threat	**Boundary**	**Tool Option**	**Operational Cost**
Untrusted Execution	Execution	Dev Containers / VMs	Low (Workflow shift)
Silent Exfiltration	Egress	Little Snitch / Pi-hole	Medium (Prompt tuning)
Malicious Install Scripts	Install	PMG / `ignore-scripts`	Low (One-time config)
Credential Theft	Identity	YubiKey / SOPS	Medium (Hardware cost)
Unauthorized Publish	Release	CI/CD + OIDC	High (Initial setup)
Undetected Breach	Evidence	**osquery / Canarytokens**	Low (Set and forget)

Incremental Adoption Roadmap

Immediate (Next Week)

- Enable hardware **MFA** on all **code hosting** and registries.
- Inventory local secrets and delete stale, long-lived PATs.
- Configure `npm install --ignore-scripts`.

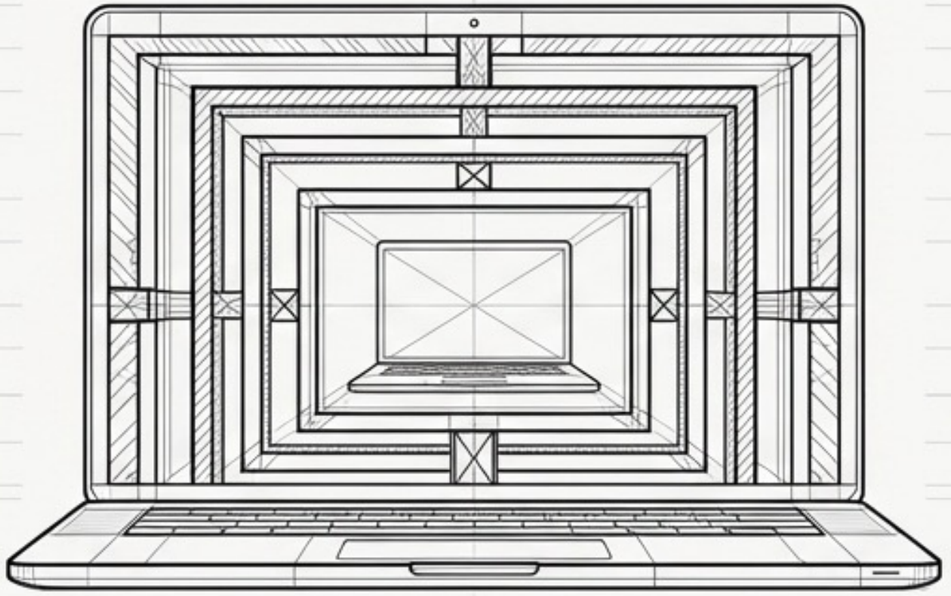
Medium-Term (Next Few Months)

- Install `Little Snitch` / `OpenSnitch` to monitor **outbound build traffic**.
- Migrate `npm`/PyPI publishing to **CI/CD** via **OIDC** Trusted Publishing.
- Deploy **Canarytokens** in your `~/.ssh` directory.

Long-Term (Mindset Shift)

- Fully separate daily **browsing** from the **release environment**.
- Maintain a pre-written **credential revocation** and **incident response** playbook.

The laptop is a supply chain tier.



Synthesis Statement: **We spent five years building enterprise security frameworks, while attackers went after the one node those frameworks ignored: the individual maintainer.**

The Final Imperative: **You cannot replicate a corporate security team, but by layering intentional friction, shrinking what can execute, and `airgapping` your `release` authority, you turn an unmanaged liability into a highly resilient software factory.**

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Open to Questions?

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