ANVIL

Anti-Spoofing Network Via Integrity Layer

Cryptographic Proof of Prescriber Presence for DEA Telehealth Compliance

Team XORD

Roman — Founder & Creative Vision

BanderaSH-A256 — CTO & IT Security Architect

Elhadj Hocine, PhD — Lead Backend Engineer

Arash Mahin — Strategic Advisor (CEO, Aero HygenX; former Dir. Application Development, Air Canada)

Contact: roman@xord.io | (+1) 859-710-9944

Entity: XORD Systems LLC (Wyoming)

Web: xord.io

ANVIL is a hardened continuous biometric verification protocol extracted from our production IDVerify stack, created by our Chief Scientist, Dr. Hocine. Internal competitive analysis confirmed that the standalone identity verification is a blood sport dominated by billion-dollar incumbents with data moats no startup can replicate. IDVerify as a generalist platform faces insurmountable distribution economics.

ANVIL is therefore the surgical repurposing of that same production codebase toward a narrow, high-value aperture: cryptographic proof of prescriber presence for telehealth platforms facing the December 2026 DEA compliance cliff. The technical risk is retired. ArcFace and MediaPipe are validated on Hetzner infrastructure.

The Ask: $500,000 seed (single tranche) for SOC 2 Type I + iBeta ISO 30107-3 PAD certification + pilot integrations with 3–5 mid-market telehealth platforms before the regulatory deadline.

The Return: SAFE on ANVIL Integrity, LLC, a wholly-owned subsidiary of XORD Systems LLC — $2.5M valuation cap. $500,000 converts to equity at the next priced round.

Proof-of-Work: Proof-of-Work: Production-validated ArcFace + MediaPipe integration. IDVerify platform — the technical basis of ANVIL — is production-ready with 99.8% accuracy and sub-3-second verification speed.

1. Executive Summary

ANVIL is a continuous biometric verification daemon that plugs silently into any telehealth video stack and produces cryptographically signed proof that a licensed physician — not a staff member, not a recording, not a credential — was physically present for every telehealth prescription it authorized. The technical core is not theoretical: ArcFace and MediaPipe are validated on live infrastructure, and the codebase exists — built by Elhadj Hocine, PhD, XORD Systems Chief Scientist and Lead Developer. ANVIL is the surgical hardening of that production stack toward a single high-value target.

The target is defined by a hard deadline: December 31, 2026, when Ryan Haight Act flexibilities expire and cryptographic proof of continuous prescriber presence becomes a legal requirement for every telehealth platform authorizing controlled substance prescriptions — 7+ million annually. The opportunity is proven by enforcement.

The Cost of Non-Compliance

Done Global's criminal indictment ($100M+ revenue, CEO convicted, 20-year maximum sentence) and Cerebral's $10.65M in combined FTC and DOJ settlements demonstrate that existential regulatory risk is not hypothetical. It is already being prosecuted.

Contingency Defense

Even if the DEA grants a fifth extension to the Ryan Haight Act flexibilities, that changes nothing material. The DOJ has already proven it will prosecute without waiting for a final rule. Every day a platform operates without cryptographic prescriber verification is a day of documented liability.

We are raising $500,000 to certify ANVIL, build the channel, and deploy it before the window closes.

2. The Regulatory Cliff

December 31, 2026. The DEA's Fourth Temporary Extension expires. The proposed permanent rules under 21 CFR Part 1306.44 (Docket DEA-407, published January 17, 2025) mandate identity verification of prescribers, audio-video technology with integrity attestation, data reporting to the DEA, and tamper-evident record retention.

The pattern across both prosecutions is identical: no continuous verification, no cryptographic audit trail, no way to prove the licensed physician was actually present. The DOJ secured convictions anyway. With 21 CFR Part 1306.44 mandating exactly that proof, the next prosecution will be easier.

Market context: $42.61B US telehealth sector (2024). 7M+ controlled substance prescriptions issued without prior in-person visit (HHS.gov, January 2026) — 38.9% of all stimulant prescriptions now originate from telehealth visits (BMC Health Services Research, Q3 2023). Every platform prescribing Schedule II–V substances becomes a mandatory buyer.

This regulatory arbitrage window is narrow, non-recurring, and enforced by criminal prosecution.

3. The Solution

ANVIL deploys as a silent daemon within existing telehealth video stacks (Zoom, Twilio, WebRTC, Doxy.me). Zero workflow disruption. Zero patient-facing friction. Zero hardware procurement.

Core function: Continuous biometric verification producing DEA-formatted, cryptographically signed audit logs.

Three-Phase Operation

/enroll — ArcFace embedding match + liveness detection. Session token issued. <500ms latency.

/verify/session — MediaPipe FaceLandmarker polls 468-point 3D facial geometry every 5 seconds. Auto-terminates session if prescriber absence detected.

/audit/export — HMAC-SHA256 signed logs. Tamper-evident PDF/A. DEA registration number binding. Session ID correlation.

Output: *Licensed Physician [X] maintained continuous biometric presence during authorization of controlled substance [Y] at timestamp [Z].*

$$ANVIL(physician\_id,\ session,\ t) \rightarrow A\text{^}signed[X, Y, Z]$$

4. Technical Architecture

4.1 Production Stack

- **Face Matching:** ArcFace (deep metric learning, 512-dimensional embeddings)
- **Liveness:** MediaPipe FaceLandmarker (468-point 3D facial geometry)
- **Polling:** 5-second intervals (configurable)
- **Cryptography:** HMAC-SHA256 webhook infrastructure
- **Deployment:** Containerized API (Docker/Kubernetes). Production deployment on US-based HIPAA-compliant cloud infrastructure (AWS/Azure) with Business Associate Agreement (BAA) signing capability. Current development on Hetzner; production migrates to US-based hosting to pass automated procurement scans (Vanta/Drata) required by enterprise healthcare clients.

4.2 Attack Vectors Addressed

Credential Sharing: Dr. Smith verifies on Day 1. Unlicensed staff uses Dr. Smith's credentials on Day 90. ANVIL's continuous biometric polling binds the physical prescriber to the session token. Presence is verified every 5 seconds, not just at login.

Ghost Prescribers: Licensed prescriber logs in, then walks away while unlicensed staff conducts the consultation. ANVIL auto-terminates on absence detection. Compliance officer dashboard flags sessions with <90% presence confidence.

Auto-Refill Fraud: Prescriptions renewed without clinical interaction. ANVIL requires cryptographic attestation for every controlled substance authorization. No attestation, no prescription.

4.3 Resilience Engineering

False Positive Management

Network blips or temporary occlusion (prescriber looking down at notes) must not terminate legitimate sessions:

- **Grace windows:** 3 consecutive failed polls (15 seconds) before alert
- **Confidence thresholds:** 0.85 similarity score minimum for ArcFace matching
- **Manual override:** Compliance officer dashboard allows session annotation (e.g., "Physician retrieved chart from adjacent room")

Cross-Device Binding

Credential sharing (Dr. Smith verifies on Phone A but "Dr. Smith" conducts session on Laptop B) addressed via:

- **Hardware fingerprinting:** Session token binds to enrollment device biometric + platform device ID
- **Continuous re-verification:** Face match must persist on the active video stream device; switching devices triggers re-enrollment

4.4 Security Roadmap

Deepfake Resistance

Current ISO 30107-3 PAD testing covers presentation attacks (printed photos, replay videos). ANVIL requires upgrade to detect real-time synthetic media injection (deepfakes) before certification. Integration of synthetic detection layer (e.g., Intel FakeCatcher or similar) post-initial deployment.

Privacy Architecture

Biometric data retention triggers BIPA (Illinois), CCPA, and emerging state laws:

- **Zero-knowledge storage:** Facial embeddings stored as irreversible hashes; raw video never persists

- **Auto-destruction:** Logs retained per DEA requirements (typically 2–7 years); biometric templates destroyed upon contract termination

5. Market Opportunity

Target universe: 100–200 active telehealth platforms prescribing controlled substances in the United States.

Segmentation

- **Distressed/High-Urgency:** Done Global successors, Cerebral-type platforms under DOJ settlement (immediate buyers)
- **Mid-Market:** 50–500 prescribers each (Bicycle Health, Workit Health, Talkiatry, Ahead/Crisp)
- **Enterprise:** Teladoc, Amwell (2,000+ prescribers; requires HITRUST, 12–18 month sales cycle)

TAM / SAM / SOM

	Definition	Value
TAM	100% penetration at $500/provider across 65–95 platforms	**$60M–$72M/year**
SAM	Year 1 accessible with SOC 2 Type I (15–25% of market)	**$7M–$18M/year**
SOM	Realistic Year 1: 4–5 mid-market platforms, 100–200 providers each	**$400K–$600K**

6. Business Model & Unit Economics

Pricing: $500 per prescriber/month | $5,000 platform minimum.

Pricing Justification

Alternative to ANVIL	Cost	ANVIL Equivalent
In-house build (2–3 engineers, 12–18 months)	**$600K–$900K Year 1**	$6K/provider/year
DOJ investigation (legal fees + settlement)	**$2M–$5M+**	$6K/provider/year
DEA license revocation	**Total revenue loss**	$6K/provider/year
Done Global settlement precedent	**$100M+**	$6K/provider/year

Malpractice premium increase	**$10K–$50K/provider/year**	$6K/provider/year

Unit Economics

- **Mid-market client (200 prescribers):** $120,000 ARR
- **Gross margin:** 85%+ (software-only, containerized)
- **CAC:** $25,000–$50,000 (law firm channel)
- **LTV (5-year):** $300,000+
- **LTV/CAC:** 10:1

Go-to-Market Channels

- **Compliance law firms:** Epstein Becker Green, Foley & Lardner, McDermott Will & Emery, Holland & Knight. These firms advise telehealth platforms on DEA Special Registration. When they recommend compliance technology, clients buy.
- **Direct outreach:** Compliance officers and General Counsel at platforms under DOJ scrutiny or approaching regulatory deadlines.
- **Healthcare-focused investors:** Portfolio companies in telehealth have direct relationships with platform leadership.
- **Conferences:** ATA (American Telemedicine Association) is the highest-priority venue. HIMSS secondary. ASAM for opioid treatment segment.

7. Competitive Landscape & Defensibility

ANVIL does not compete directly with generic identity verification vendors. Legacy IDV companies verify users at onboarding. ANVIL verifies that a DEA-registered prescriber remains continuously present during a regulated telehealth prescribing session and produces a cryptographic audit trail. Existing vendors may provide components — face matching, liveness/PAD, KYC, passwordless access — but none appear positioned around DEA-specific continuous prescriber presence attestation.

Legacy IDV/KYC vendors like Socure, Veriff, ID.me, 1Kosmos, Jumio/Onfido-style players are mostly focused on onboarding, identity proofing, fraud scoring, or workforce authentication — not continuous DEA prescriber presence.

A separate ANVIL Freedom to Operate analysis supports the IP and design-around assessment.

	Legacy KYC (Socure, Sumsub, Jumio, Onfido)	ANVIL
Optimized for	Day 1 onboarding (conversion velocity)	Continuous session defense (compliance)
Verification timing	Point-in-time, single interaction	Background polling throughout session
Output	Pass/Fail boolean	HMAC-SHA256 signed session log
DEA audit readiness	Does not address 21 CFR 1306.44	Purpose-built for DEA protocols
Buyer	Growth/marketing team	Compliance officer / General Counsel

Defensibility

- **First to market** in a category not yet served by incumbent IDV vendors: continuous biometric presence attestation for DEA-regulated telehealth sessions.
- **Certification lock-in:** First to SOC 2 Type II in continuous biometric verification owns the compliance layer for 2027 enforcement.
- **Non-portable audit trails:** Signed with ANVIL keys. Ripping out ANVIL means a platform loses its immutable history of compliance—every audit log, every session attestation, every signed record. That is a barrier no competitor can overcome with a better feature set.
- **Regulatory specificity:** DEA audit log formatting is niche expertise; generalist IDV vendors lack incentive to specialize until market is captured.

Vulnerability: If Jumio/Onfido launch continuous verification by Q4 2026, price compression to $200–$300/provider is likely. ANVIL must achieve certification and 3+ reference clients by Q3 2026 to survive incumbent pivot.

Sam Altman's World/Orb (TechCrunch, April 2025) is a strategic identity-adjacent threat, not a direct near-term competitor. TechCrunch reported in April 2025 that World unveiled the Orb Mini, a portable device with front-facing sensors designed to scan users' eyes and issue proof-of-human verification. That model is hardware-based proof-of-personhood, not continuous DEA-regulated prescriber presence, telehealth session monitoring, or cryptographic audit logging

8. Risk Factors & Mitigation

Risk	Prob.	Impact	Mitigation

Certification Delay	40%	Critical	Budget allocated for expedited SOC 2 (6–8 weeks) + parallel iBeta testing
Incumbent Pivot	35%	High	First-mover speed; specialize in DEA audit formatting (non-generic)
False Positive Disruption	25%	High	15-second grace window + compliance officer override dashboard
Regulatory Extension	30%	Medium	Diversify into EPCS compliance as secondary market; sell on liability fear (enforcement happens regardless of extensions)
Biometric Privacy Litigation	15%	Existential	Strict BIPA compliance; zero raw image storage; hashed embeddings only
Integration Friction	20%	Medium	Pre-built SDKs for Zoom Video SDK, Twilio, WebRTC; dedicated pilot support engineer; sandbox environment for self-service testing

9. The Ask: $500,000

Eliminates the structurally unsound multi-tranche approach that would create a certification funding cliff.

Single-tranche seed financing eliminates the certification funding cliff and aligns capital directly to certification, pilot integration, channel activation, privacy readiness, and nine-month team runway.

Allocation	Purpose	Amount	Source
19%	Team runway — 9 months	$96,700	Internal
18%	SOC 2 Type I all-in	$90,000	BrightDefense / Secureframe / Drata / Vanta / Scrut cost ranges; budgeted conservatively for healthcare readiness, tooling, audit, and remediation
8%	iBeta PAD testing	$40,000	Quote required — estimate only; no public iBeta price found
16%	Deepfake / PAD layer integration	$80,000	Internal estimate
15%	Channel development	$75,000	Internal estimate
11%	Legal + BAA + privacy counsel	$55,000	Internal estimate
13%	Contingency	$63,300	Reserved for certification overruns, remediation, procurement blockers, and pilot support
100%	**Total**	**$500,000**	

Execution Milestones

- **Month 3:** SOC 2 Type I complete. Pilot LOI with 2 mid-market platforms.
- **Month 6:** iBeta certification complete. Production revenue from 3 platforms ($150K ARR run rate).
- **Month 12:** SOC 2 Type II complete; 8–12 platforms deployed; $800K ARR run rate.

Future Certification (Not Part of This Ask)

SOC 2 Type II and HITRUST are Month 12–18 milestones funded from operating revenue or a subsequent raise. This $500,000 seed round funds the immediate certification and go-to-market work required before the December 2026 DEA compliance window.

10. Conclusion

The question is not whether telehealth platforms need continuous prescriber verification—it is whether they will have it deployed before the December 2026 enforcement cliff. ANVIL provides the cryptographic infrastructure to answer that question.

The $500,000 seed financing secures the head start necessary to establish ANVIL as the standard for DEA Special Registration compliance infrastructure before the window closes.

XORD Systems LLC

Roman — Founder

May 16, 2026