DORAHACKS #2477 · EVEN REALITIES HACKATHON · TRACK 4800 + TELEGRAM ($10K TON USDT)

TapeHUD G2

Wall Street Equities & 4-CEX Microstructure HUD for Even Realities G2 Smart Glasses — combining live US equities, Binance/OKX/Bybit/Coinbase L2 orderbooks, commit-locked 2.0s Undo Ring, zero-key 16 kHz VAD voice control, and a two-way Telegram Alert Bridge.

Track 03 · Exchanges & Stocks (4800) | Best Telegram Integration ($1,000) | Grand Prize ($2,000) | TVM Ventures VC Fast-Track

Live Web Simulator

`alphonshhhomenicmtu.github.io/tapehud-g2/`

Zero-install GitHub Pages console with live 4-CEX CORS orderbooks + paper ledger.

1080p Demo & Source

`youtube.com/watch?v=zXjNW24c8-8`

163s narrated walkthrough + open-source `github.com/alphonshhhomenicmtu/tapehud-g2`.

Even Hub Package

`tapehud-g2.ehpk (102 KB · v1.0.0)`

App ID `io.tapehud.eveng2` · SDK `0.0.16` · 12/12 simulator verified.

01 · THE CROSS-ASSET TRADER BLIND SPOT

Markets Move Across Venues While Traders Step Away From Their Desk

Desk-bound multi-monitor terminals fail active cross-asset traders during earnings, overnight crypto volatility, and margin shifts.

15m / AH

Extended-Hours US Stock Gaps

Pre-market and post-market earnings moves on NVDA, AAPL, TSLA, COIN, and MSTR happen outside regular cash hours before traders reach a screen.

4-CEX

Cross-Venue Spread Dislocations

Basis and inside-spread dislocations across Binance, OKX, Bybit, and Coinbase last seconds; phone-unlock friction misses the entry or hedge window.

75%+ Util

Silent Margin Utilization Drift

Rising margin utilization requires fast Spot-to-Margin rebalancing — but hands-free smart-glass execution is unsafe without a deterministic undo barrier.

TapeHUD G2 Solution

Glanceable 576x288 monochrome microstructure tape + commit-locked 2.0s Undo Ring + two-way Telegram risk desk.

Read + Safe Write · Zero API Keys Required

02 · EVEN G2 576X288 MONOCHROME UX ARCHITECTURE

Optical-First Dual 276x68 4-Bit Candles & L2 Microstructure

Built strictly for Even G2 transparent waveguide optics using serialized `textContainerUpgrade` and fingerprinted `updateImageRawData` tiles.

TAPEHUD G2 · US EQUITIES · LIVE · 1/12
NVDA $149.30 (-1.10%) · POST $151.22 (+1.29%)
Range $141.17-$150.37 · EARN T-18h EPS $0.89 · Mgn 77%
▲ MARGIN 76.7% HIGH - Tap: Move $500 Spot->Mgn



● Tap: Actions / Spot->Mgn ⇳ Swipe: Tape Hold: Voice ≡ Menu

01 · US Equities Tape: NVDA 15m candles, prev-close dashed line, T-18h earnings, MARGIN alert

TAPEHUD G2 · 4-CEX L2 (4/4 LIVE) · BTC/USD · 2/12
BTC/USD $60,499.7 · ARB +12.8bps (BN>CB) · OBI -83%
BN $60,520.0 · OK $60,517.9 · BY $60,518.4 · CB $60,442.6
▲ MARGIN 76.7% HIGH - Tap: Move $500 Spot->Mgn



● Tap: Actions ⇳ Swipe: Tape Hold: Voice ≡ Menu

02 · 4-Venue CEX L2 Scanner: Binance/OKX/Bybit/Coinbase arb bps + mirrored OBI bars

TAPEHUD G2 · SESSION RISK · DEMO SESSION · 3/12
Session PnL +$736.35 · Margin 72.9% · Spot $14,000
NVDA L +$225 · COIN L +$189 · BTC S +$10
★ Moved $500 Spot -> Margin



● Tap: Spot->Margin / Trim / Hedge ⇳ Swipe: Tape Hold: Voice

03 · Session Margin Gauge: Spot vs Margin split, utilization bar, IBKR Paper / DEMO SESSION

Dual-Mode Architecture: Companion Proxy + Zero-Install GitHub Pages

Live 4-Venue CEX L2 Orderbooks (Direct CORS + Proxy)

- **Venues:** Binance, OKX, Bybit, Coinbase public L2 depth (`BTC`, `ETH`, `SOL`).
- **Microstructure Metrics:** Cross-venue arb (bps), venue mid dispersion (bps), inside spread (bps), and Top-5 L2 Orderbook Imbalance (`OBI`).
- **Zero-Key Resilience:** Works live directly in browser on GitHub Pages without exposing credentials.

US Equities, Pre/Post-Market & IBKR Paper Adapter

- **Live Proxy (`:8793`):** Polls Yahoo Finance v8 (`15m` OHLC + extended hours) and Nasdaq earnings calendars.
- **Deterministic Snapshot Fallback:** `npm run snapshot` embeds live-verified market snapshots (`SNAPSHOT` badge) so static Pages never breaks.
- **Optional IBKR Paper:** Connects to Client Portal Gateway (`localhost:5000/v1/api`) with transparent `DEMO SESSION` fallback.

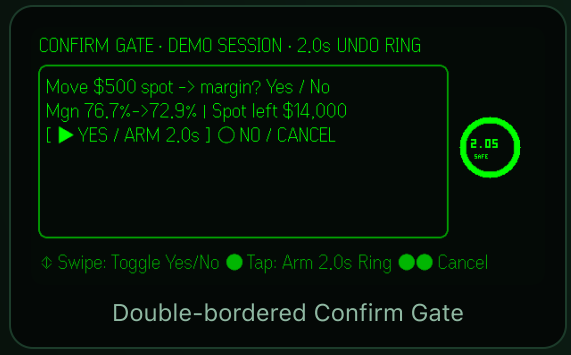
Serialized G2 Render Queue

Fingerprinted 4-bit Gray4 PNG tile caching avoids redundant BLE image pushes, keeping Even G2 frame updates crisp and responsive.

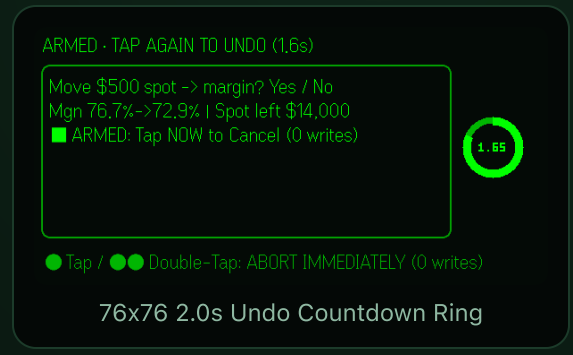
Hands-Free “Move $500 Spot → Margin?” With Zero Accidental Writes

Monotonic Commit-Locked Undo State Machine

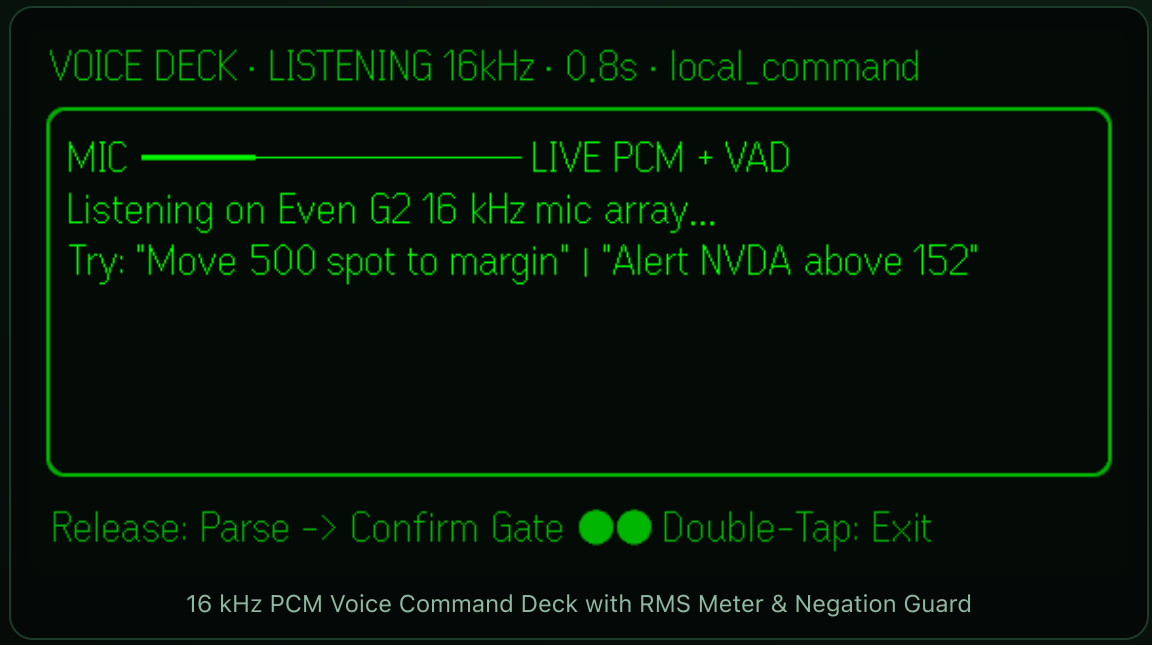
- **State Flow:** `idle → confirm_gate → armed (2.0s) → committing → done` guarded by monotonic `commitId`.
- **76x76 Draining Ring:** Visual 2.0s countdown on G2 waveguide; any tap or cancel during the window aborts with **0 writes**.
- **Zero-Key 16 kHz PCM VAD:** `LONG_PRESS` captures s16le mono audio, gates silence via RMS/ZCR, and blocks negations (*“Don’t move 500 to margin”*).



Double-bordered Confirm Gate



76x76 2.0s Undo Countdown Ring



16 kHz PCM Voice Command Deck with RMS Meter & Negation Guard

05 · BEST TELEGRAM INTEGRATION ($1,000 TRACK)

Two-Way Telegram Risk Desk & Zero-Key Local Alert Fallback

Bidirectional Risk & Digest Workflows

- **Outbound Alerts:** Pushes `+/−2%` equity price triggers, cross-venue CEX arb alerts, and full session PnL/margin digests directly from the G2 HUD.
- **Inbound Commands:** Polls `getUpdates` for desk notes and risk acknowledgements, surfacing them onto Screen 04 on the glasses.
- **Zero-Key Local Alert Desk:** Runs cleanly without a bot token in demo/Pages mode; switches to live Bot API when `TELEGRAM_BOT_TOKEN` & `TELEGRAM_CHAT_ID` are set.



Screen 04 · Live Telegram Risk Desk Messages & Armed Equity/CEX Rules

06 · ENGINEERING PROOF & VERIFIED ARTIFACTS

100% Automated Verification Across TypeScript, Vitest & Even Simulator

20 / 20
Vitest Unit & Safety Suite

Tests L2 OBI math, Undo Ring monotonic `commitId` cancellation, VAD/negation guard, and snapshot integrity. `tsc --noEmit` passes with 0 errors.

12 / 12
Even Hub Simulator 0.9.5

Automated Playwright + `evenhub-simulator@0.9.5` sweep verified all 12 screens with **0 console errors** and **0 LVGL missing glyphs**.

102 KB
Production .ehpk & 163s Demo

Packaged as `tapehud-g2.ehpk` (`v1.0.0`), deployed on GitHub Pages, and backed by a 163s 1080p YouTube walkthrough (`zXjNW24c8-8`).

Verification Commands (Reproducible Locally)

```
npm run typecheck && npm test && npm run pack && npm run build:pages && npm run verify:sim
```

Actionable SDK Feedback & Path to Institutional Wearable Trading

Developer API Feedback (`docs/API-FEEDBACK.md`)

- **Even Hub SDK 0.0.16:** Add native circular/arc progress container to eliminate BLE PNG pushes for countdown rings, plus a typed `imageReady` ack event.
- **IBKR Client Portal:** Provide CORS-friendly localhost token-free paper sandbox for browser-hosted smart-glass companions.
- **CEXs & Telegram:** Standardize CORS headers on L2 WebSockets (Binance/OKX/Bybit/Coinbase) and native webhook-less mini-poll endpoints.

TVM Ventures Commercial Roadmap

- **Phase 1 (Q1 2027):** Publish `io.tapehud.eveng2` to Even Hub Store; onboard active prop/quant traders on IBKR + 4-CEX paper desks.
- **Phase 2 (Q2 2027):** Add TON DeFi / DEX perp basis (STON.fi, Storm Trade) + Telegram Mini App one-tap risk sign-off.
- **Phase 3 (H2 2027):** Pro desk subscription ($49/mo) for multi-account margin alerts, custom risk rules, and hardware-keyed trade approvals.