VALORANT PRO-COACH ANALYTICS POWERED BY GRID TELEMETRY

Turn Raw Esports Telemetry Into a 60-Second Timeout Edge.

StratPulse unifies GRID Central Data & Series State feeds with calibrated Win-Probability Added (WPA), exact VALORANT 2-round Economy EV math, utility-to-trade diagnostics, and an interactive 2D minimap console.

DATA ENGINE
GRID GraphQL
Live `allSeries` + `seriesState` adapter with 24-round Ascent/Haven demo fallback.

IMPACT MODEL
Calibrated WPA
Logistic round win-prob with exact 7.0s/3.5s defuse cutoffs, First-Blood & 1vN Clutch swings.

CREDIT MATH
2-Round Eco EV
Exact 1900/2400/2900 loss ladder, $3,900 rifle floor, R12/match-point & break-point EV.

VERIFICATION
51/51 Vitest PASS
Zero TS strict errors, zero Chrome console errors, built with JetBrains AI + HTTP Client.

LIVE CONSOLE: alphonshhhomenicmtu.github.io/stratpulse-cloud9-jetbrains/

REPO (MIT): github.com/alphonshhhomenicmtu/stratpulse-cloud9-jetbrains

01 · PROBLEM STATEMENT

60s TIMEOUT CONSTRAINT

The 60-Second VALORANT Coaching Decision Gap

During a live tactical timeout, scoreboards show K/D/A — not why rounds swung, whether a force buy wins EV, or which utility is getting burned dry.

1. Tempo & Swing Blindness — MOMENTUM

- Raw kills weight an exit frag the same as a 1v2 post-plant clutch or a 5v5 opening pick.
- Coaches lack an instant timeline view linking player positioning, spike plant timing, and exact win-probability inflection points.
- Between halves, scrubbing VODs to find repeating mid-round collapses takes minutes coaches do not have.

2. Economy Intuition Traps — CREDITS

- Teams routinely eyeball 2nd-loss force buys without computing the exact `$3,900` rifle floor under the `1900/2400/2900` loss ladder.
- Fragile opponent economies (0-loss streak, <$4,400 bank) create high-EV gun-break opportunities that naive rules miss.
- Half-end (R12) and match-point resets wipe carry-over equity, requiring instant spend-max overrides.

3. Unmeasured Utility Burn — UTILITY

- Dry smokes, flashes, and recon cast in the opening 25 seconds without follow-up pressure starve the 0:45 site hit.
- Box scores never track whether an initiator cast actually produced a kill or a ≤4s traded duel nearby.
- Post-plant denial (mollies, smoke stalls) is invisible until retakes are already lost.

STRATPULSE ANSWER

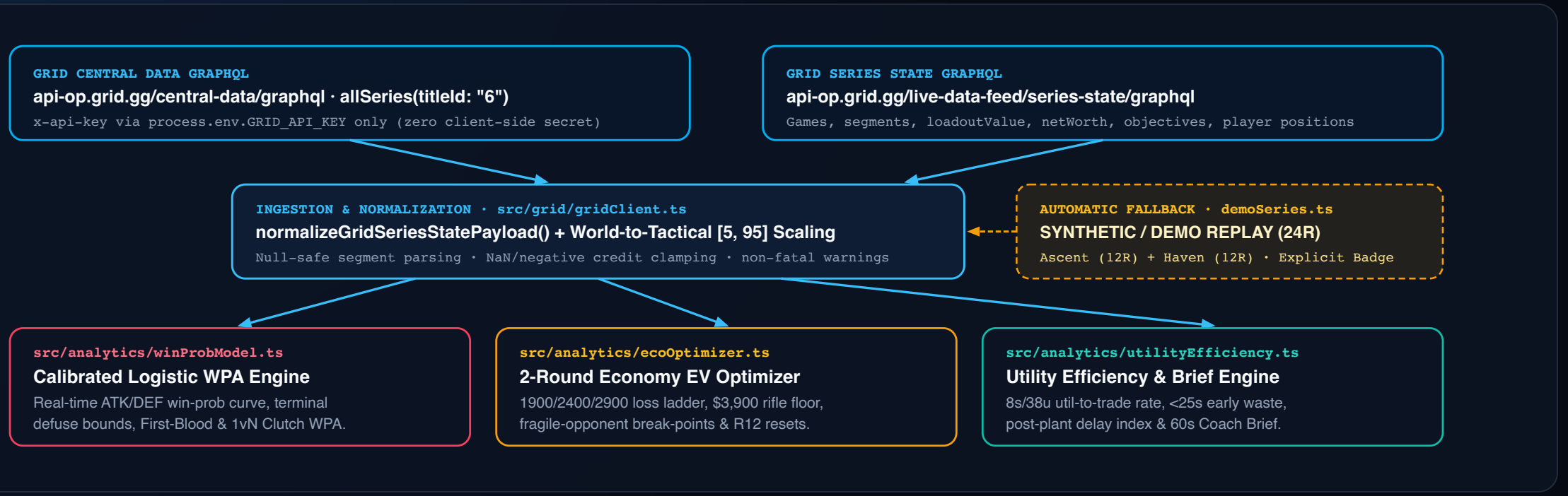
One deterministic console unifying 2D spatial replay, logistic WPA, 2-round Eco EV, and a 1-click Coach Timeout Brief.

Zero Spreadsheet Lag | Actionable in <10s

PURE TS CORE · ZERO BROWSER GLOBALS

GRID Central Data & Series State Pipeline

Resilient GraphQL ingestion with strict secret isolation, world-coordinate scaling, and deterministic 24-round demo fallback.



RESILIENT BY DESIGN

Handles HTTP 401/500, null segments, stringified NaN timestamps, and out-of-range coordinates with zero crashes.

HONEST DATA PROVENANCE

Live telemetry and synthetic demo replays carry distinct top-bar provenance badges — never conflating mock data with live feeds.

STATIC & SELF-CONTAINED

React 19 + Vite (`--base=./`) ships as pure static assets with inline SVG favicon and zero third-party CDN dependencies.

src/analytics/winProbModel.ts

Calibrated Logistic WPA & Clutch-Swing Model

Strictly bounded, monotonic round win probability with exact terminal rules and event-level player attribution.

Active-Combat Log-Odds Equation

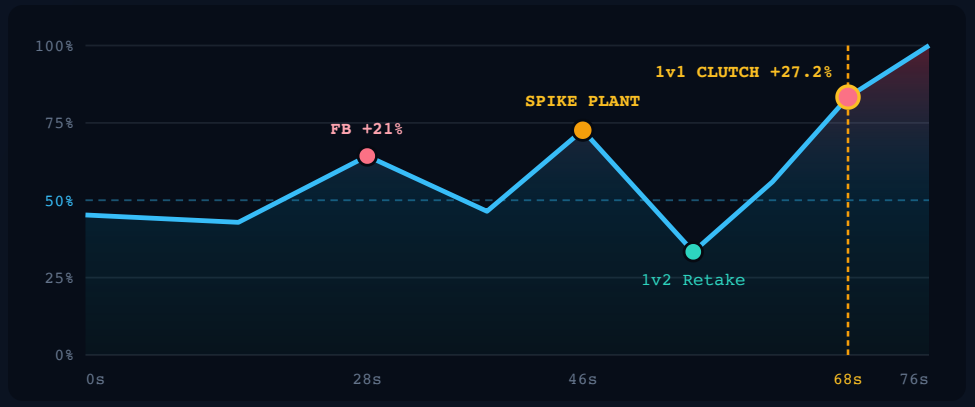
```
z = −0.18 (defense bias)
  + 0.85·(A − D) + 1.15·(A − D)/(A + D) (man-adv)
  + f_clock(spikePlanted, t_rem, defuseHalfDone)
  + 0.52·tanh(Δloadout / 9000) + 0.48·siteControl
P(ATK) = clamp(sigmoid(z), 0.0001, 0.9999)
```

Exact Terminal & Attribution Rules

- **Hard Defuse Cutoffs:** With 0 attackers alive post-plant, `< 7.0s` (or `< 3.5s` if half-defused) enforces exact `P(ATK)=1.0`; otherwise `0.0`.
- **Asymmetric Clock Pressure:** Pre-plant clock below 20s penalizes ATK (`−0.85` ramp); post-plant bomb timer below 12s boosts ATK (`+2.10` ramp) minus `−0.58` for half-defuse.
- **Event-Level Attribution:** Every kill, Spike plant, defuse, and detonation assigns exact ΔP to Net WPA, First-Blood Swing, and 1vN Clutch WPA.

Illustrative WPA Trajectory (Ascent R6 · 9-Kill Clutch)

PEAK +27.2% @ 68s



Observed Demo Series Leaders (24 Rounds)

ASCENT MVP · VEX (JETT)

+81.8% Net WPA

+64.1% Clutch WPA · 6 First Bloods

HAVEN MVP · SORA (SOVA)

+155.5% Net WPA

+84.9% Clutch WPA · R8 -67.0% 1v2 Defuse

04 · ECONOMY EXPECTED VALUE MODEL

src/analytics/ecoOptimizer.ts

Exact 1900 / 2400 / 2900 Loss-Bonus Eco EV Optimizer

2-round horizon credit solver weighing immediate upset odds, next-round rifle floor protection, ultimates, and fragile enemy banks.

1900 / 2400 / 2900
VALORANT Loss Ladder
0, 1, and 2+ consecutive loss credits

$3,900 / $4,350
Rifle Floor / Ideal Buy
-0.14 EV penalty if floor breaks

$3,000 + $300
Win & Plant Rewards
Modeled across win/loss branches

Carry-Over = 0
R12 & Match Point
Eliminates irrational half-end saves

$$EV_{2R}(action) = P_{now} + c_{carry} \cdot [\, P_{now} \cdot P_{next|Win} + (1 - P_{now}) \cdot (P_{next|Lose} - 0.14 \cdot I_{brokenFloor}) + B_{oppBreak} \,] + B_{bonus}$$

Evaluates FULL_ECO, HALF_BUY, FORCE_BUY, and FULL_BUY simultaneously; adds break-point bonus when opponent has 0-loss streak & <$4,400 avg bank.

Verified Engine Outputs Across 4 Pro Coaching Scenarios

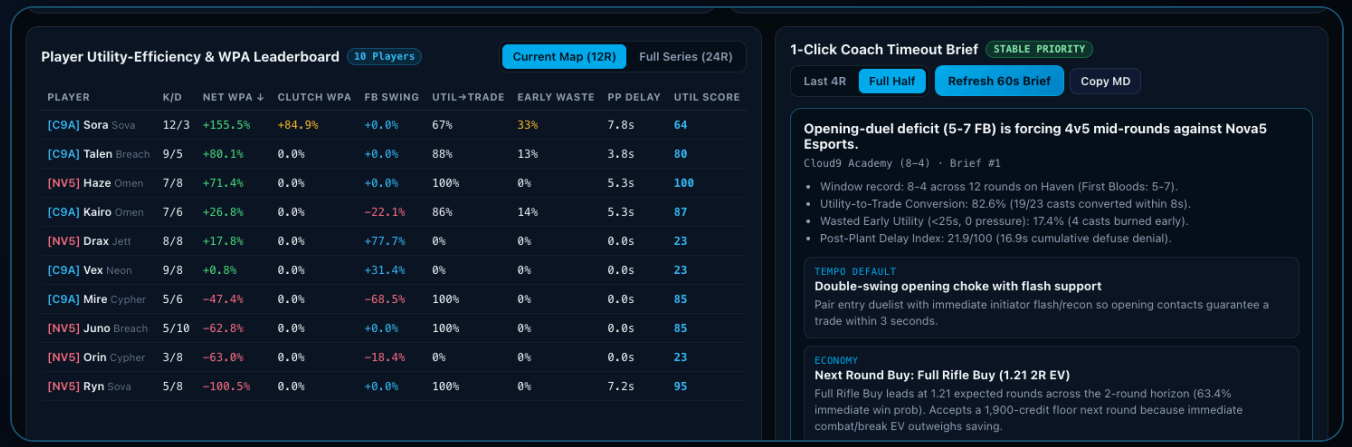
COACHING SCENARIO	TEAM BANK / LOSS BONUS	OPPONENT STATE	RECOMMENDED CALL	2-ROUND EV COMPARISON
2-Loss Force vs Fragile	$3,150 avg · +2900 (3 Ults)	$3,900 · 0-loss (Fragile)	FORCE BUY	1.08 vs Half 1.04 · Eco 0.97
Standard Mid-Half Buy	$4,650 avg · +1900 (2 Ults)	$4,400 · 1-loss	FULL BUY	1.14 vs Half 0.91 · Force 0.88
1-Loss Low Bank Save	$2,300 avg · +2400 (1 Ult)	$5,400 · Rich	FULL ECO	0.83 vs Force 0.58 (protects $3,900+)
Round 12 Half-End Reset	$3,200 avg · R12 (c=0)	$5,200 · Full Rifle	FORCE BUY	0.37 vs Half 0.22 · Eco 0.21

LIVE STATIC UI · ZERO CDN DEPS

Interactive 2D Minimap Scrubber & Timeout Brief

Real-time playback across Ascent & Haven paired with Utility-to-Trade diagnostics and 1-click Markdown timeout briefs.





2D Tactical Replay Controls

- **Smooth Scrubbing:** Play/pause (1x/2x), keyframe chips, and click-to-scrub directly on the WPA curve.
- **Spatial Overlays:** Interpolated player tokens, active utility radii (smoke, recon, flash, molly, trap), kill tracers, and planted Spike state.
- **Dual-Map Telemetry:** Instant toggle between 2-site **Ascent (12R)** and 3-site **Haven (12R)**.

Utility-Efficiency Metrics

- **Util-to-Trade Conversion:** Cast followed by teammate kill or ≤4s traded duel within `8.0s` & 38u (`81.1%` Ascent / `82.6%` Haven).
- **Wasted Early Utility (<25s):** Dry opening casts with zero follow-up pressure in 12s.
- **Post-Plant Delay Index (0–100):** Weighted denial time against the 45s Spike timer.

1-Click 60-Second Timeout Brief

Switch `Last 4R` vs `Full Half` to synthesize Tempo/Default, Next-Round Economy, Post-Plant Retake, MVP Spotlight, and Primary Fix — copyable as clean Markdown in one click.

06 · BEST AI WORKFLOW BONUS ($1,000 CATEGORY)

JETBRAINS_AI_WORKFLOW.md

Reproducible JetBrains WebStorm + AI Workflow

Schema-first GraphQL probing, strict compiler contracts, and property-driven TDD with JetBrains HTTP Client, AI Assistant & Junie.

01 Schema-First Probing via Native HTTP Client

Opened `requests/grid-esports.http` + `http-client.env.json` in WebStorm with gitignored `http-client.private.env.json`. Executed live `allSeries` & `seriesState` queries from IDE gutter icons before coding normalizers.

02 Strict TypeScript & Secret Inspections

Kept WebStorm's `strict: true`, `noUnusedLocals`, possibly-undefined checks, and **Hardcoded Secret Inspection** active during AI edits — catching missing `spikeClockSec` null guards and enforcing env-only `GRID_API_KEY` access.

03 Property-Driven TDD with Junie + Vitest Gutter

Scoped Junie tasks around falsifiable math invariants (WPA monotonicity, `7.0s/3.5s` defuse cutoffs, `1900/2400/2900` loss ladder, R12 carry-over reset, malformed GraphQL fixtures) verified via WebStorm Vitest gutter runs & coverage.

04 Single-Command WebStorm Release Gate

Chained `npm run typecheck && npm test && npm run build` followed by headless Chrome verification on `web/dist`. Companion PyCharm used for offline logistic coefficient sanity checks.

requests/grid-esports.http — WEBSTORM / PYCHARM

```
### 1. Recent VALORANT Series (GRID Central Data)
POST {{centralDataUrl}}
Content-Type: application/json
x-api-key: {{GRID_API_KEY}}

{
  "query": "query StratPulseRecentValorantSeries
    ($titleId: ID!, $first: Int!) {
      allSeries(filter: { titleId: $titleId },
        first: $first, orderDirection: DESC) {
        edges { node { id tournament { name }
          teams { baseInfo { id name } } } }
      }
    }",
  "variables": { "titleId": "6", "first": 5 }
}

### 2. Fetch Live Series State (GRID Series State)
POST {{seriesStateUrl}}
Content-Type: application/json
x-api-key: {{GRID_API_KEY}}
```

Why It Wins for Esports Tools: Pairing JetBrains' live `.http` schema checks, strict TS diagnostics, and property-tested Vitest loops keeps AI generation anchored in verifiable VALORANT math — zero silent NaNs, zero leaked keys.

07 · ENGINEERING QUALITY & DELIVERY

ALL GATES PASSING

Verification Metrics & Live Production Deployment

Every analytics rule, malformed GRID edge case, and live GitHub Pages interaction verified end-to-end.

51 / 51
Vitest Tests PASS
4 test suites · ~0.7s deterministic execution

0
TypeScript Strict Errors
`tsc --noEmit` with strict + unused checks

0
Chrome Runtime Errors
0 console, 0 page, 0 failed network requests

0
Secret Leaks (Gitleaks)
Env-only GRID key · gitignored private env

Automated Vitest Suite Breakdown

TEST SUITE	TESTS	VERIFIED PROPERTIES & EDGE CASES	STATUS
`tests/winProbModel.test.ts`	**14**	Strict [0,1] bounds, man-advantage/clock/loadout monotonicity, 7.0s/3.5s defuse cutoffs, WPA & 1vN clutch attribution	14/14 PASS
`tests/ecoOptimizer.test.ts`	**13**	1900/2400/2900 loss ladder, $3,900 rifle floor, R12 half-end & match-point resets, fragile opponent break-point EV	13/13 PASS
`tests/utilityEfficiency.test.ts`	**12**	8.0s/38u util-to-trade window, <25s dry early waste detection, post-plant delay index, 60s Coach Timeout Brief	12/12 PASS
`tests/gridClient.test.ts`	**12**	Central/Series State GraphQL queries, malformed/null payload survival, [5,95] coord clamping, HTTP 401 fallback	12/12 PASS

LIVE INTERACTIVE CONSOLE
`alphonshhhomenicmtu.github.io/stratpulse-cloud9-jetbrains/`

PUBLIC MIT REPOSITORY
`github.com/alphonshhhomenicmtu/stratpulse-cloud9-jetbrains`

DIRECT 8-SLIDE DECK PDF
`.../stratpulse-cloud9-jetbrains/stratpulse-deck.pdf`