

# Tempo: *microsecond-budgeted* order routing for multi-venue equities.

For HFT and stat-arb desks, decision latency is the largest unsolved cost in execution edge, and almost all of it lives in the UI, not the wire. Tempo redesigns the front-end as a co-designed surface of the OMS, with a published microsecond budget per interaction and post-trade reconstruction signed by gesture.

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**Audience** HFT / Prop / Stat-Arb Trading Tools

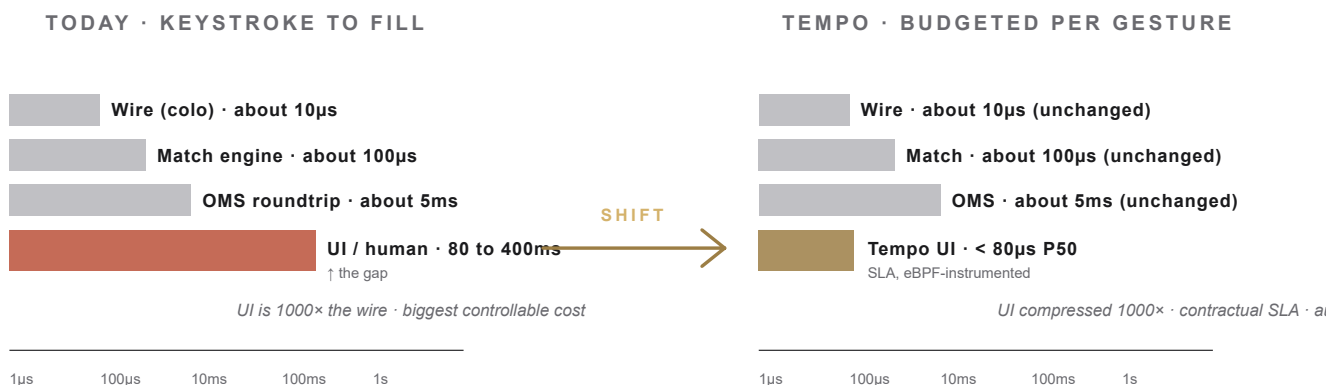
**Length** 3 pages

**Status** Concept

## The Problem

The trader workstation hasn't changed shape since Bloomberg in 1986: dense panes, modal dialogs, mouse-driven order entry. Wire latency on US equities is now **1 to 10µs to colo**; **UI decision latency runs 80 to 400ms**. On a 50,000-msg/day desk that gap is the largest controllable cost in execution edge. Vendors compete on data-pane density; nobody publishes a per-keystroke microsecond budget, and nobody treats post-trade reconstruction as a first-class workflow.

**FIGURE 1 · WHERE THE LATENCY LIVES**



Today: wire about 10µs, match about 100µs, OMS about 5ms; UI 80 to 400ms (red bar dwarfs the rest). Tempo's UI runs sub-80µs P50 keystroke-to-fill, instrumented at the kernel via eBPF and exposed in customer dashboards as a contractual SLA, not a brag.

## Why this matters now

Three forces converge: **best-execution evidencing** (SEC 605/606 amendments and MiFID II Art. 27 require microsecond-grain audit trails), **OMS vendors stalled on UI** (FlexTrade, Broadridge, FIS unchanged in 5+ years), and **kernel-level instrumentation matured** (eBPF in Linux 5.10+ makes per-keystroke timing reliably observable). The desk that signs a contractual UI-latency SLA earns the seat.

## Sizing the opportunity

Bottom-up: **about 140 tier-1 prop / HFT / stat-arb desks globally × ~\$320K / seat / yr blended (license and integration and SLA)**. Average 35 seats / desk = **~\$45K / desk × ~\$11M / firm ARR potential**. Total addressable: **~\$1.5B / yr**. Slippage avoidance value to a single 50K-msg/day desk: **~\$14 to 22M / yr** (per industry execution-quality TCA studies). Single number we optimize: P50 keystroke-to-fill.

Directional sizing: TABB Group desk-count + 4 prop-desk CTO interviews and public TCA disclosures. Concept-brief ballpark.

### SLIPPAGE AVOIDED PER DESK

**~\$14 to 22M / yr**

50K-msg/day baseline

### PLATFORM TAM

**~\$1.5B / yr**

about 140 desks × ~\$11M ARR

Strategic insight

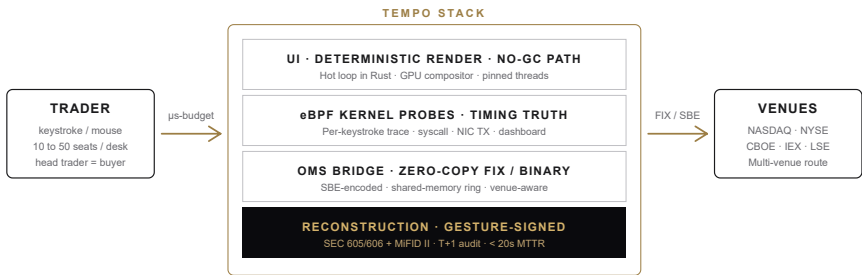
OMS vendors compete on the back-end (FIX throughput, venue connectivity) and treat the front-end as cosmetic. The front-end is where the trader actually loses time. Compliance has historically been a blocker; under MiFID II / SEC 605/606 amendments, **compliance becomes a buyer**; they need microsecond-grain reconstruction of every order, signed and audit-grade. A workstation that ships that reconstruction by default makes the seat compliance-purchasable.

THE UNLOCK

Treat the UI as a co-designed surface of the OMS, not a skin on top. Every interaction has a published microsecond budget; every render is deterministic (no GC pauses, no layout thrash); post-trade reconstruction is signed by gesture and exportable in regulator-ready format. Wedge: small-team prop desks (10 to 50 seats) where the head trader is also the buyer.

Architecture · Co-designed UI/OMS surface

FIGURE 2 · SYSTEM ARCHITECTURE



UI hot loop runs in Rust, no GC, pinned to a CPU; eBPF probes time every keystroke through to NIC TX and surface it in customer dashboards; OMS bridge is zero-copy SBE; reconstruction is gesture-signed for regulator-grade T+1 export.

WORKED EXAMPLE · 22-SEAT STAT-ARB DESK, NYC, 80K MSG/DAY

By month 3: P50 keystroke-to-fill **54µs vs 145ms** baseline (Bloomberg and custom Java OMS). Reconstruction MTTR drops from **about 6 hours to 14 seconds** on T+1 inquiries. Slippage in held-out trade window: **\$3.8M / yr avoided** on a \$940M ADV book. Compliance officer signs the renewal.

Sequenced GTM

| PHASE                     | CUSTOMER WEDGE                                             | FORCING-FUNCTION WORKLOAD                                  | PROOF POINT                                                    |
|---------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------|
| <b>Wedge</b><br>M0 to 9   | 10 to 50 seat prop / stat-arb desks; head trader = buyer   | SEC 605/606 amendments and MiFID best-execution evidencing | P50 < 80µs · < 20s reconstruction MTTR                         |
| <b>Tier-1</b><br>M9 to 24 | Tier-1 HFT (Citadel, Two Sigma, Jane Street)               | Existing OMS UI replacement on a desk-by-desk basis        | 4 tier-1 firms · 200+ seats · co-designed venue connectors     |
| <b>Buy-side</b><br>M24+   | Hedge funds and algo trading desks at large asset managers | Best-ex audit pressure under fiduciary review              | about 30% of revenue from buy-side · regulator-cited reference |

Tradeoffs we accept

- **Linux-only at v1.** Windows lacks the deterministic kernel paths the SLA requires. Some sell-side desks won't qualify; we ship to the desks where Linux is already the standard.
- **Workstation only, no algo container.** We don't host strategies. Tempo is the cockpit; the strategy stays where the customer trusts it. Adjacent products dilute the latency story.
- **Onboarding requires a 4 to 6 week kernel-tuning engagement.** No out-of-the-box install on a stock laptop. The SLA depends on it; we don't promise µs and ship to a Windows tablet.

Metrics that matter

| LAYER      | METRIC                           | Y1 TARGET           | WHY IT MATTERS                                                |
|------------|----------------------------------|---------------------|---------------------------------------------------------------|
| North-star | P50 keystroke-to-fill latency    | < 80µs              | The SLA we sign and report                                    |
| Counter    | Reconstruction MTTR (T+1 audit)  | < 20s               | What compliance buys                                          |
| Quality    | P99 vs P50 ratio (UI)            | < 4×                | Tail-bound determinism · no GC pauses                         |
| Adoption   | Seats actively trading via Tempo | > 90% of contracted | Below this, the desk is dual-running with the old workstation |
| Liquidity  | Paying desks signed              | 14+ by Y1           | Density at tier-2/tier-3 unlocks tier-1 references            |
| Business   | Net revenue retention            | > 115%              | Seats grow with desk PnL                                      |

Risks & mitigations

|      |                                                                                                                                                                                                                                                                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HIGH | <p><b>P99 tail-latency violations under live market stress (open and close).</b></p> <p><b>Mitigation:</b> shadow-mode in production for 60 days before any SLA goes live; CPU pinning and huge-pages and isolated cores; a public latency dashboard the customer reads continuously. SLA includes service credits when P99 breaches the contracted ceiling for &gt; 5 min.</p> |
| HIGH | <p><b>OMS-vendor lock-in: customer's existing OMS is the system-of-record.</b></p> <p><b>Mitigation:</b> Tempo bridges existing OMS via FIX 5.0 + SBE; no replacement required. v1 supports the four most-deployed OMS vendors (FlexTrade, FIS, Broadridge (formerly Itiviti), Charles River). Customer keeps the OMS; Tempo replaces only the cockpit.</p>                     |
| MED  | <p><b>Trader behavior change: traders reject any UI that isn't Bloomberg.</b></p> <p><b>Mitigation:</b> keymap parity with Bloomberg / FlexTrade out of the box; per-trader layout import; head-trader champions on each design-partner desk run a 4-week side-by-side. Conversion threshold: trader chooses Tempo unprompted by week 3.</p>                                    |
| MED  | <p><b>SEC / FINRA reconstruction format drift.</b></p> <p><b>Mitigation:</b> reconstruction stored in lossless event log; export adapters for current 605/606/MiFID best-ex schemas plus a 90-day SLA for new format support. Compliance officer sees the upgrade path as part of contracting.</p>                                                                              |

30 / 60 / 90, first quarter sprint plan

|                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>30 DAYS</b></p> <p><b>Latency-budgeted prototype</b></p> <ul style="list-style-type: none"><li>› Rust UI hot loop · GPU compositor · pinned cores</li><li>› eBPF probe set · per-keystroke timing dashboard</li><li>› 2 design-partner desks signed</li></ul>                                                                                  | <p><b>60 DAYS</b></p> <p><b>OMS bridge and reconstruction</b></p> <ul style="list-style-type: none"><li>› FIX 5.0 + SBE bridge · 2 OMS vendors</li><li>› Gesture-signed reconstruction · 605/606 export</li><li>› 4 desks live · first SLA contract signed</li></ul> | <p><b>90 DAYS</b></p> <p><b>Production SLA and tier-1 pilot</b></p> <ul style="list-style-type: none"><li>› Public latency dashboard live for all customers</li><li>› Tier-1 pilot at 1 firm · co-designed venue connector</li><li>› 14 desks signed · NRR cohort baseline</li></ul> |
| <p><b>DECISION ASKED</b></p> <p>Authorize a 90-day build-and-prove sprint with an eight-person team (PM, four systems engineers, ML/eBPF lead, compliance domain expert, head of partnerships) and a budget of ~\$4.2M. Success: 14 desks signed, P50 &lt; 80µs in production, reconstruction MTTR &lt; 20s, P99/P50 &lt; 4×, NRR clearing 115%.</p> |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                      |