

# SCIENCE-NAVIGATOR

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THE TRUST LAYER FOR GLOBAL R&D

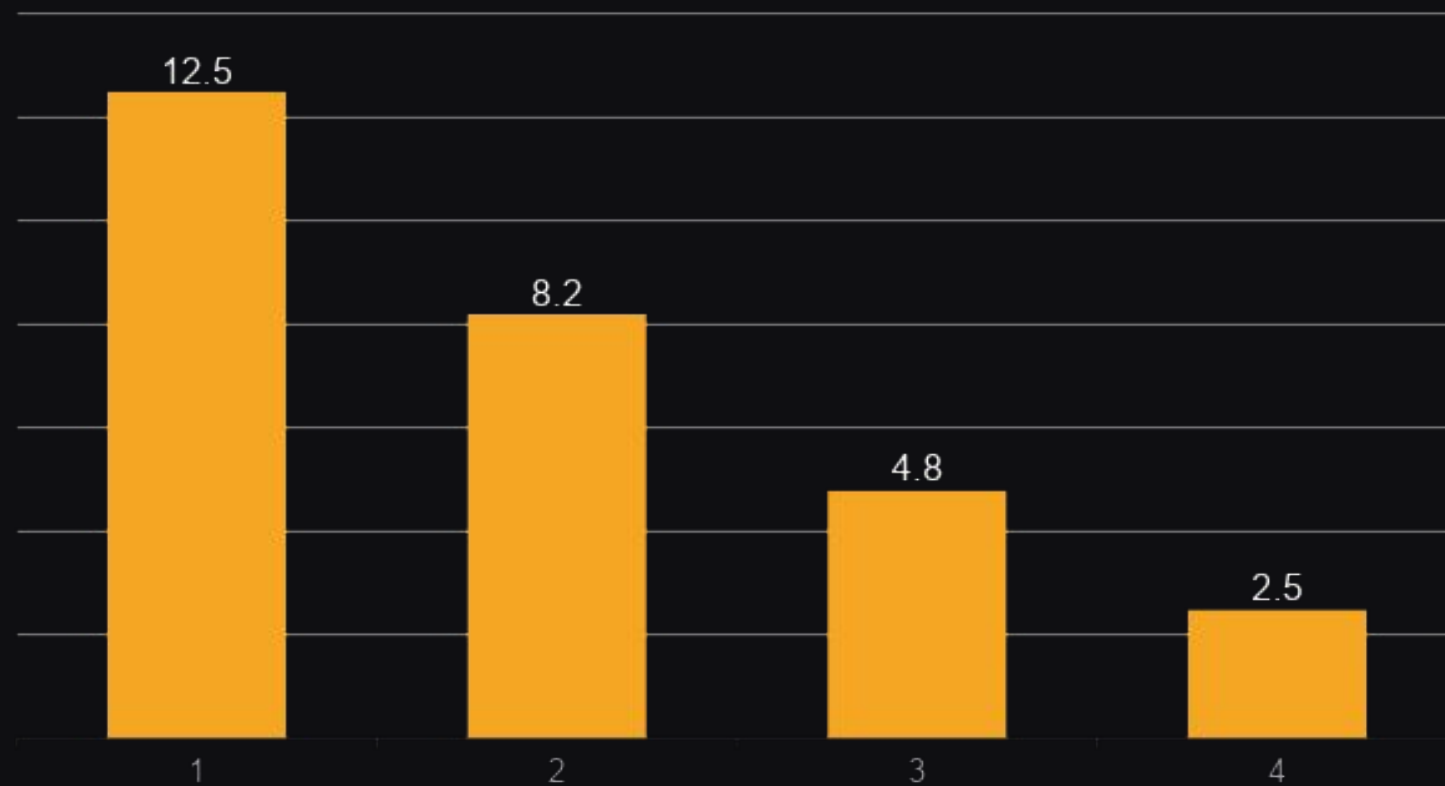
Agentic Research Architecture — Next.js 15 · Browserbase · Turso

Global Hack Nation 2026

# THE \$28B CRISIS: REPRODUCIBILITY IS BROKEN

# \$28B

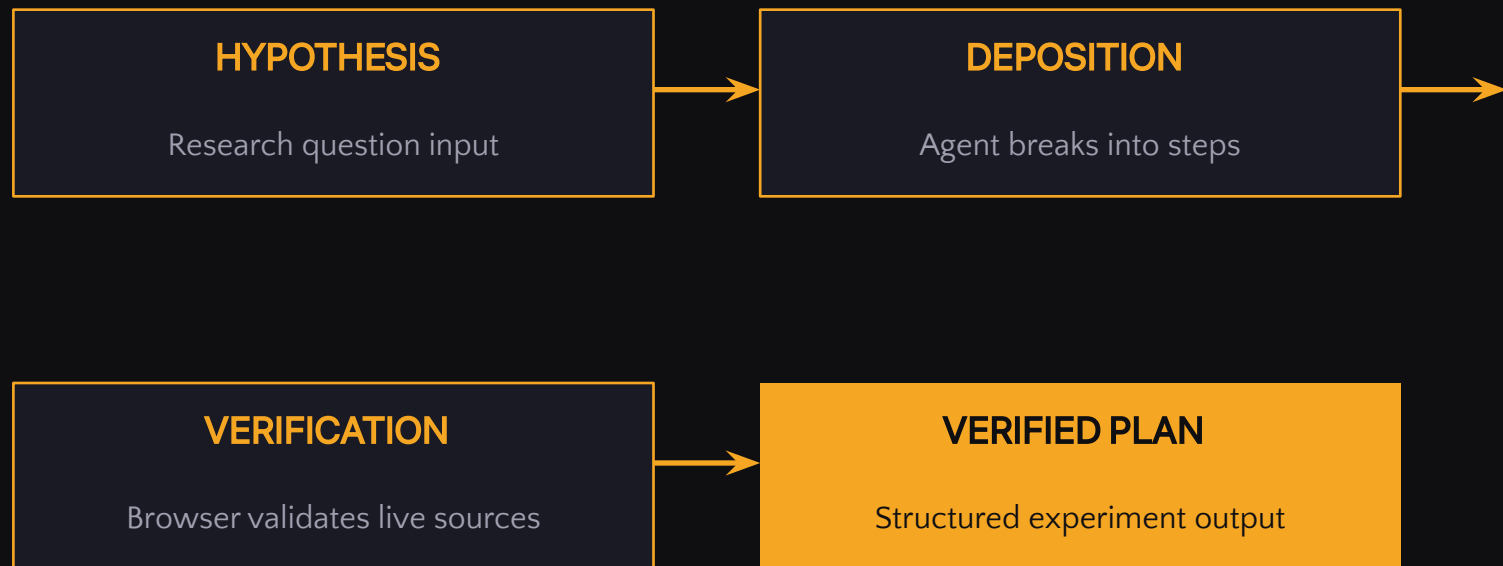
## ANNUAL BIOMEDICAL WASTE



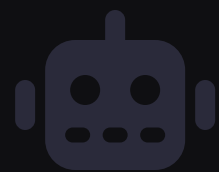
- | **\$28B wasted annually** on irreproducible biomedical research – published experiments that fail when replicated
- | **70% of researchers** have failed to reproduce another scientist's experiments (Nature, 2016)
- | **The reproducibility gap** is not a knowledge problem – it's a **verification infrastructure problem**

*The reproducibility crisis is a \$28B infrastructure gap, not a knowledge gap – and Science-Navigator closes it with agentic verification.*

# THE AGENTIC SOLUTION: HYPOTHESIS TO VERIFIED PLAN



AGENTIC PIPELINE — SECONDS, NOT WEEKS



**Autonomous research agents** decompose hypotheses into structured, step-by-step experimental plans

**Real-time browser verification** validates reagent availability, protocol accuracy, and citation integrity

**SSE streaming** delivers live agent reasoning to the user — **full transparency, zero black-box**

*Science-Navigator replaces weeks of manual literature review with agentic verification in seconds.*

# THE TECH MOAT: LIVE VERIFICATION + SSE STREAMING

browserbase.com/session/live-verification

- ▶ **Agent browsing:** pubmed.ncbi.nlm.nih.gov/...
  - ✓ Reagent "TRIzol Reagent" — verified in stock at Thermo Fisher
  - ✓ Protocol "RNA extraction" — 2,847 citations, last updated 2024
- ▶ **Agent browsing:** protocols.io/view/...
  - ✓ Step 3 incubation time — cross-referenced with 3 sources
  - ⚠ Step 7 pH buffer — discrepancy found, flagging for review

**SSE STREAMING** • Live reasoning stream to UI — 0.3s latency

**ZOD VALIDATED** Runtime type-safe schema enforcement

**Browserbase integration** enables real-time web browsing — agents verify protocols against live sources, not stale databases

**Server-Sent Events (SSE)** stream every agent reasoning step to the UI, building trust through transparency

**Zod schema validation** ensures every output is type-safe, structured, and machine-readable

*Browserbase live verification and SSE streaming create a technical moat no static database can match.*

# THE FEEDBACK LOOP: SELF-IMPROVING DATA ASSET



## STEP 01 — CAPTURE

### Expert Correction

Every expert correction is captured in **Turso** via Drizzle ORM — not lost, but persisted as structured training data.

Corrections become labeled training examples for agent refinement.

Turso SQLite · Drizzle ORM · Type-safe schema



## STEP 02 — LEARN

### Correction Graph

The correction graph creates a **compounding data asset**: more usage → more feedback → better agents.

Network effects accelerate with every experiment plan generated.

Graph relationships · Embedding vectors · RAG pipeline



## STEP 03 — IMPROVE

### Self-Improving Agent

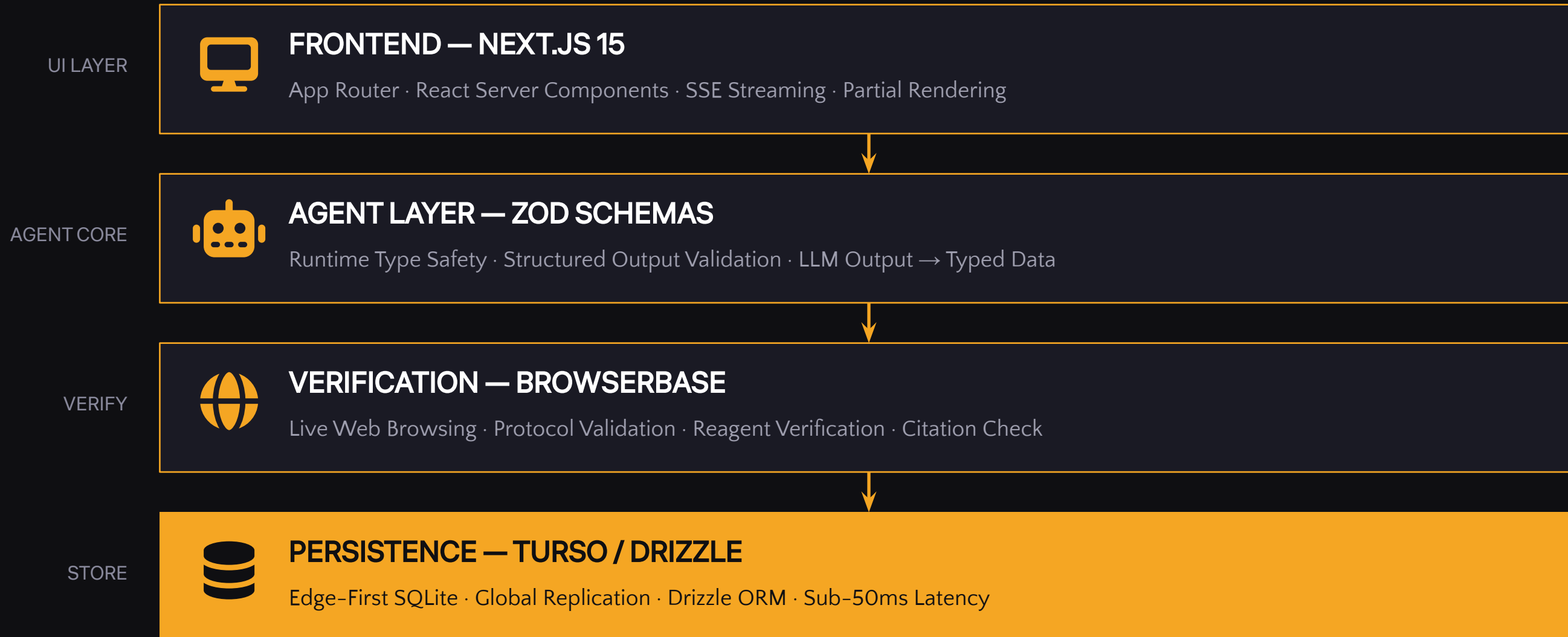
**Edge-first persistence** with Turso ensures sub-50ms global query latency, scaling with the user base.

The system gets faster and smarter as it grows.

Edge replication · Sub-50ms latency · Auto-scaling

*Expert feedback doesn't just fix one plan — it trains the entire agent network via Turso's edge-native persistence.*

# PRODUCTION-GRADE ARCHITECTURE



*Every layer of the stack is optimized for speed, type safety, and edge-native global delivery.*

# THE VISION: FROM RESEARCH TOOL TO GLOBAL LAB OS

## PHASE 01

### Research Tool

Individual scientists verify experiments in seconds.

Agent-assisted protocol validation for single researchers and small labs.

**Target: 10K researchers**

## PHASE 02

### Lab Network

Shared protocol libraries with verified, version-controlled experiment plans.

Collaborative correction graphs across institutions.

**Target: 500 institutions**

## PHASE 03

### Global Lab OS

The default infrastructure layer for reproducible science worldwide.

Every experiment on Earth verified, versioned, and reproducible.

**Target: Global R&D default**

*Science-Navigator starts as a research accelerator and scales to become the operating system for global R&D.*