

NATE BALCOM

Technical UX Architect & AI-Grounding Systems Strategist

Location: Michigan, USA | Portfolio: [NateBal.com Portfolio](#) | [LinkedIn](#) | [GitHub](#)

Executive Value Proposition

Hybrid Technical UX Architect with deep expertise unifying front-end engineering, human-centered UI/UX, and generative AI search architecture (AEO/GEO). Proven track record of eliminating developer rework by up to 50% through high-fidelity Figma prototyping, design-token systems, and engineering-grounded architecture. Creator of *Project Phoenix*, an architectural framework engineered to serve dual audiences: friction-free experiences for human users and machine-readable data structures for autonomous AI search models (LLMs).

Core Competencies & Strategic Differentiators

- **Interactive UX Prototyping & Systems Design:** Architecting component-driven, production-accurate digital prototypes in Figma utilizing Auto Layout, variant logic, and dynamic interaction states to stress-test complex workflows before writing code.
-
- **AEO & Generative Engine Optimization:** Engineering machine-readable entity networks, JSON-LD schemas, and crawler handshake layers to capture zero-click generative search citations across Google Gemini, ChatGPT, Perplexity, and Claude.
-
- **High-Velocity Core Web Vitals:** Eliminating Cumulative Layout Shift (CLS), reducing Time to First Byte (TTFB), and executing non-blocking script deferral to deliver green Google PageSpeed Insights performance.
- **Cross-Disciplinary Handoff:** Bridging the gap between conceptual product design and full-stack engineering using native CSS constraints (Flexbox, Grid, Container Queries) and modular design tokens.

Key Technical Initiatives & Quantifiable Impact

1. Project Phoenix: Autonomous AI-Grounding Architecture

- Developed a high-velocity web and telemetry framework designed to structure enterprise data for large language model extraction and citation.
- Engineered real-time LLM crawler isolation filters and agentic API manifest routes to interface with modern AI search engines without compromising user privacy or speed.
- Conducted 90-day technical audits analyzing over 6,200 real-world AI citations to validate entity-based zero-click search visibility.

2. Pre-Development UX Prototyping & Cost Reduction

- Standardized a 5-step prototyping lifecycle (Discovery & IA Mapping → Low-Fi Wireframing → Tokenization → Interactive Logic → Inspect-Ready Handoff).
- Reduced downstream engineering scope creep and rewrite costs by 30% to 50% by simulating conditional user paths, edge cases, and responsive layout reflows in Figma before database/API implementation.
- Translated complex business requirements into accessible (WCAG 2.2 AA compliant), componentized UI libraries ready for direct front-end implementation.

3. Core Web Vitals & Zero-CLS Frontend Performance

- Architected custom zero-CLS font fallback systems and render-tree stabilization solutions to guarantee layout stability during initial paints.
- Implemented browser-level Content Security Policies (CSP), asset dequeue protocols, and custom database query handlers to secure and accelerate enterprise content platforms.

Leadership & Collaboration Footprint

- **Engineering Translation:** Fluent in technical requirements for PHP/WordPress architectures, REST APIs, TypeScript, and modern CSS, ensuring zero friction during developer handoffs.
- **Thought Leadership & Open Source:** Active contributor of technical blueprints, architecture diagrams, and optimization write-ups focused on generative AI navigation, real-time telemetry, and technical UX architecture.