

PROTOTYPE LIVE - Documentation & Architecture

Status: Alpha/Beta

Type: AI-Native, Mobile Friendly, Creative-Focused IDE

Core: React 19 + Multi-Agent AI

Prototype Live is a **zero-setup**, browser-based Integrated Development Environment (IDE) designed to democratize software creation. Unlike traditional editors that require local configuration, Prototype Live runs entirely in the cloud or locally on the user's device. It leverages a Multi-Agent AI System where specific AI personas (Coder, QA, Creative) collaborate to build, secure, and deploy full-stack applications to the Web, iOS, Android, and on the blockchain.

The application follows a Serverless, Client-Heavy Architecture.

Most logic runs in the browser (Client-Side) to ensure speed and privacy, utilizing Cloud Functions for heavy lifting.

The Three Pillar System

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User[Developer] --> Frontend[Client: React 19 + Vite]

subgraph "Pillar 1: The Workspace"
  Frontend --> Editor[Monaco Editor Engine]
  Frontend --> FileSys[Virtual File System]
  Frontend --> Preview[Live Code Preview]
end

subgraph "Pillar 2: The Agent Hive (AI)"
  Frontend --> Router[Model Router]
  Router --> Codey[Codey: Generation]
  Router --> Matilda[Matilda: 3D/Media Engine]
end

subgraph "Pillar 3: Integration & Deployment"
  Frontend -- OAuth 2.0 --> GCloudAuth[Google Cloud Identity]
  Frontend -- Read/Write --> GCloudStore[Google Cloud Storage/Drive]
  Frontend -- Bug Reporting--> FireStore[Firebase Firestore]
  Frontend -- Mailing List--> FireStore[Firebase Firestore]
  Frontend --> DeployNet[Netlify API (Web Deploy)]
  Frontend --> DeployGit[GitHub API (Repo Sync)]
  Frontend --> Launch IPO [ETH/BASE/SOL]
end

End
subgraph "User Sovereignty (The Project)"
```

- **Framework:** React 19 + TypeScript. Utilizing the latest concurrent features for a smooth UI.
 - **Build Tool:** Vite. Ensures near-instant hot-module replacement (HMR) during development.
 - **Styling:** TailwindCSS. Utility-first styling for rapid UI iteration.
 - **State Management:** Context API + Custom Hooks.
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Codey isn't just a coding agent; it uses Specialized Roles.

- 🤖 **Codey (The Builder):** The primary coding assistant. Connects to Gemini/Anthropic/OpenAI via services/ adapters.
 - 🎨 **Matilda (The Creative):** A specialized engine for 3D (Creator3D), Audio (SoundGenerator), and Video generation. Handles complex media tasks usually impossible in web IDEs.
 - 🐛 **Ladybug (The Feedback Loop):** A dedicated system for users to report platform bugs directly to the admin team (Source: services/ladybugService.ts).
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Prototype Live solves the "it works on my machine" problem by removing the machine.

- **Web:** One-click drag-and-drop deployment to Netlify.
- **Source Control:** Deep integration with GitHub to sync repositories automatically.

A self-contained issue tracking system built into the IDE.

- **User Side:** Users report bugs anonymously or via login.
- **Admin Side:** A secured dashboard (AdminBugPanel.tsx) where the team can review, status-track, and resolve platform issues in real-time.

A sub-system found in matilda-main/. **This is what separates Prototype Live from standard text editors.**

- **3D Capabilities**
- **Audio Engineering**
- **Video:** FilmGenerator, TimelineTool.
- **Why this matters:** It positions the IDE as a tool for Creative Coders and Game Developers, not just enterprise SaaS builders.
- **PWA Support:** The app includes Service Workers (dist/sw.js) allowing it to be installed and run offline, preserving the developer's work even without the internet.

- **The Problem:** Setting up a dev environment takes hours. Deploying to mobile takes days. Managing AI keys is hard.
 - **The Solution:** Prototype Live. Open the URL, and you are shipping code faster than you can order a pizza.
 - **The Secret Sauce: Prototype Live** doesn't just generate code; the application hosts specialized agents that audit, debug, educate, and create assets, effectively doing the heavy lifting of a junior development team.
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Web3 Authentication & Crypto Sign-In (Launching April 2026)

- **Web3 Sovereign Login Layer:** Users can now authenticate pseudonymously using crypto wallets instead of (or in addition to) Google OAuth, preserving full user sovereignty and eliminating the need to share traditional identifiers.
- **Supported Chains & Wallets:** Seamless sign-in via signature verification for **Solana (SOL)**, **Ethereum (ETH + BASE)**.
 - Soon to include the **XRP Ledger**, and **Bitcoin (BTC)**.
- **Integration Method:** Powered by **Web3Auth**.
- **User Experience:** Single unified login modal allowing users to choose "Continue with Google" (legacy) or "Connect Wallet" (crypto). Accounts can be linked later so the same user profile works across both methods seamlessly.
- **Privacy & Sovereignty Focus:** Crypto sign-in requires only a wallet signature (no email, no personal data shared). Users retain full control of their keys; Prototype Live never holds private keys.
- **Technical Implementation:**
 - Client-side integration in React 19 using @web3auth/modal SDK (added to the auth flow in the login component).
 - Multi-chain support configured via Web3Auth dashboard (EVM + Solana + XRP + BTC adapters).
 - Firebase ID token compatibility for unified user sessions across the entire app (Firestore, Cloud Storage, deployment features, etc.).
 - State managed via existing Context API + custom hooks.
- **Benefits for Users & Platform:**
 - Crypto-native developers and creators can onboard instantly without a Google account.
 - Enables future on-chain features (e.g., decentralized payments, NFT-based access, or crypto-gated deployments) while keeping the IDE fully browser-based and zero-setup.

