# Building NextDocs: The Blueprint to Production

An architectural and product deep-dive by Kiyanof, Lead Full-Stack Developer.

```
user@nextdocs-dev-env:~$ npm run start:dev -- --verbose

> nextdocs-core@1.4.2 start:dev
> nest start --watch --debug

[Nest] 14852 - 05/23/2024, 10:09:32 AM LOG [NestFactory] Starting Nest application...
[Nest] 14852 - 05/23/2024, 10:09:32 AM LOG [InstanceLoader] DatabaseModule dependencies initialized +18ms
[Nest] 14852 - 05/23/2024, 10:09:32 AM LOG [InstanceLoader] AuthModule dependencies initialized +22ms
[Nest] 14852 - 05/23/2024, 10:09:32 AM LOG [InstanceLoader] DocumentModule dependencies initialized +15ms
[Nest] 14852 - 05/23/2024, 10:09:32 AM LOG [InstanceLoader] AIModule dependencies initialized +28ms
[Nest] 14852 - 05/23/2024, 10:09:33 AM LOG [RoutesResolver] AppController {/api}: +7ms
[Nest] 14852 - 05/23/2024, 10:09:33 AM LOG [RouterExplorer] Mapped {/api/health, GET} route +3ms
[Nest] 14852 - 05/23/2024, 10:09:33 AM LOG [RouterExplorer] Mapped {/api/docs, GET} route +2ms
[Nest] 14852 - 05/23/2024, 10:09:33 AM LOG [NestApplication] Nest application successfully started +5ms

user@nextdocs-dev-env:~$ docker compose up -d --build
[+] Running 6/6
 - Network nextdocs-net                                                    Created 0.1s
 - Container nextdocs-postgres-1                                           Started 1.2s
 - Container nextdocs-redis-1                                              Started 1.1s
 - Container nextdocs-backend-1                                            Started 2.5s
 - Container nextdocs-frontend-1                                           Started 2.8s
 - Container nextdocs-proxy-1                                              Started 1.8s

user@nextdocs-dev-env:~$ kubectl apply -f k8s/ --namespace nextdocs-prod
deployment.apps/nextdocs-api created
service/nextdocs-api created
ingress.networking.k8s.io/nextdocs-ingress created

user@nextdocs-dev-env:~$ vercel deploy --prod
... Deploying to Vercel...

> Finalizing NextDocs Production Stack...

[React, NestJS, PostgreSQL, Kubernetes, Vercel AI]
```

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# The Developer

**Role:** Lead Full-Stack Developer

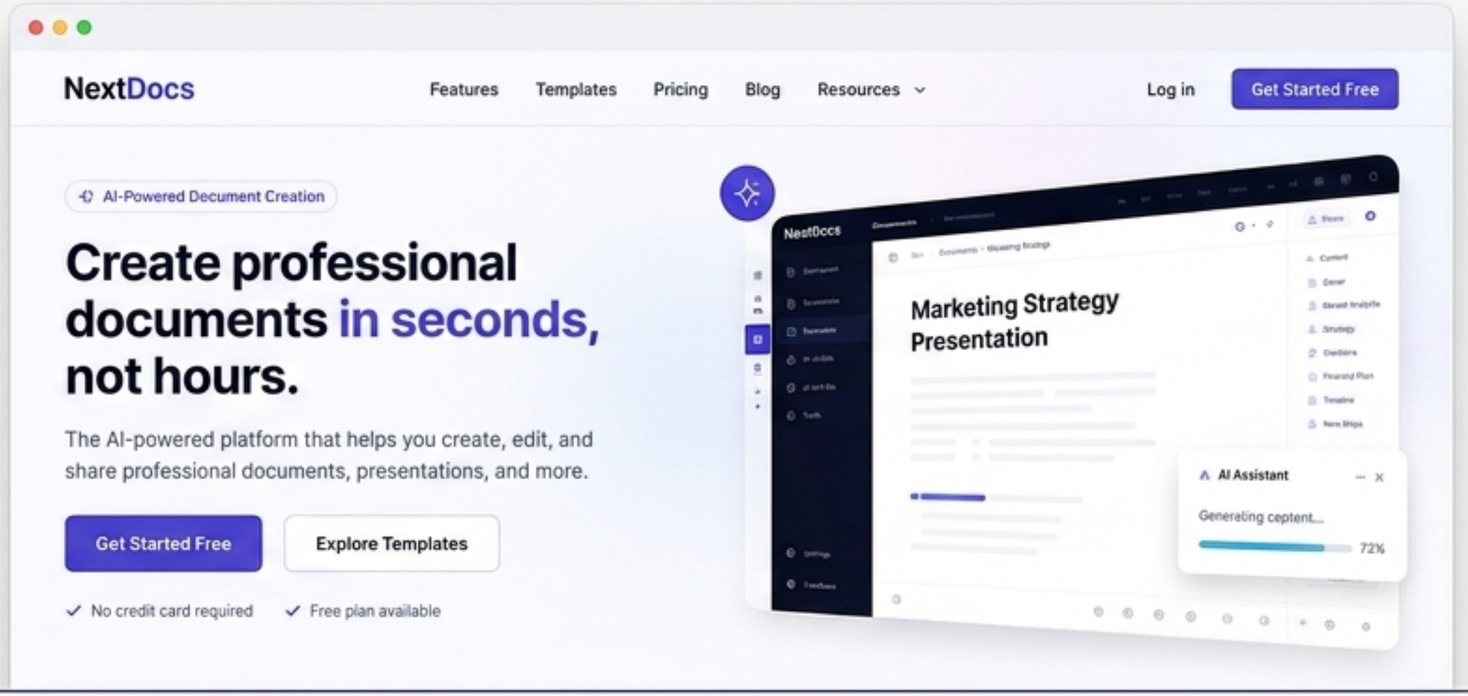
**Focus:** Product Architecture, AI Integration, DevOps Operations

**Value Proposition:** End-to-end ownership from frontend pixel-perfection to backend cluster debugging.

# The Flagship Platform

**Project:** NextDocs

**Description:** An enterprise-grade AI SaaS platform generating professional documents, presentations, and visual content from natural-language prompts in seconds.



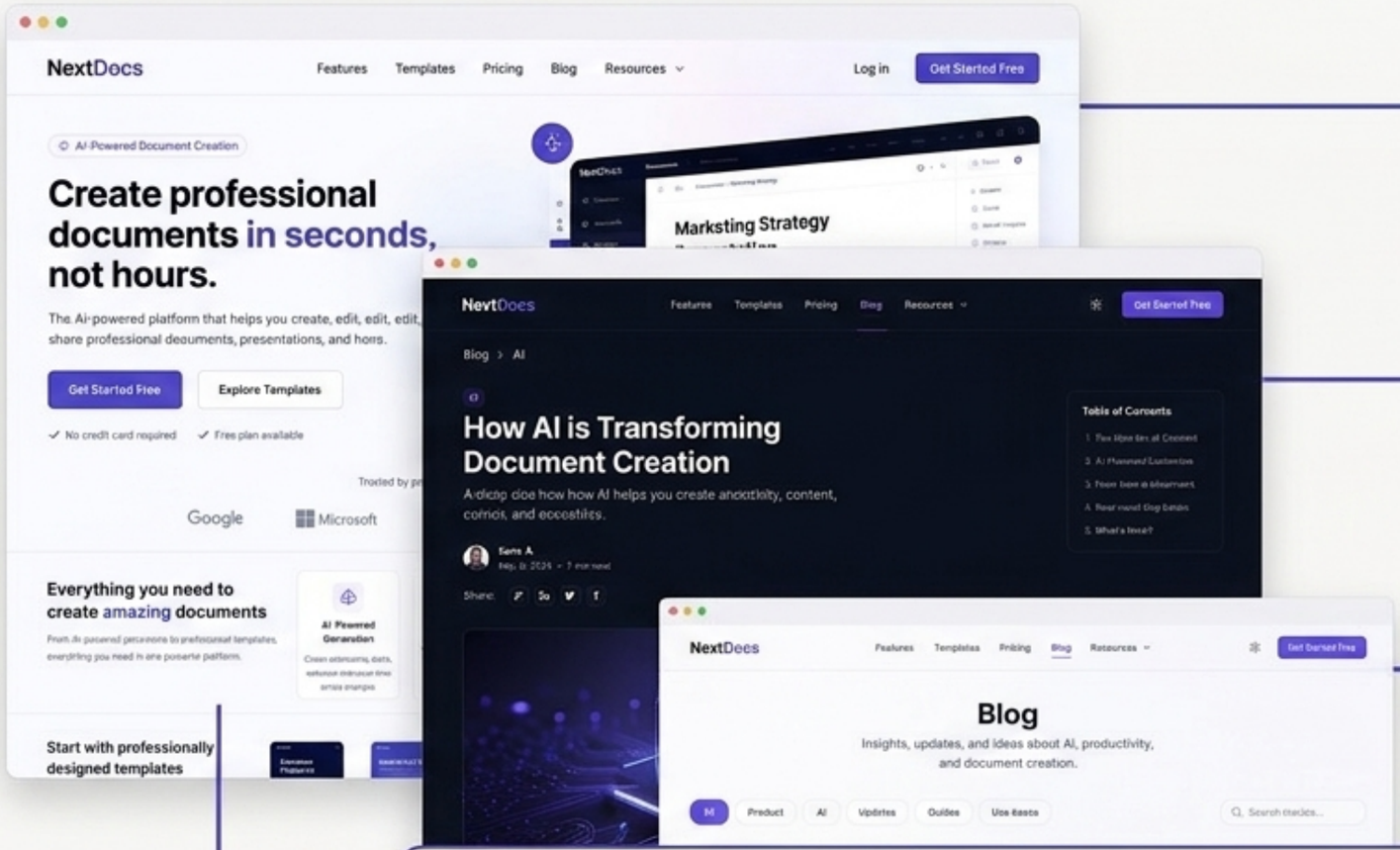

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# Redefining Full-Stack: Scope vs. Skill

| Standard Full-Stack Developer | Lead Product Engineer (Kiyanof on NextDocs) |
| --- | --- |
| **Implementation:** Executes isolated feature tickets. | **Architecture:** Connects product requirements directly to full-stack architecture. |
| **UI/UX:** Relies entirely on external design handoffs. | **UI/UX:** Owns responsive, accessible, conversion-focused canvas editor and design systems. |
| **AI:** Uses basic API wrapper calls. | **AI Integration:** Builds complex prompt-based workflows using Vercel AI SDK and Hocuspocus real-time sync. |
| **Delivery:** Relies on dedicated DevOps for deployment. | **Operations**: Maintains developer containers, debugs Kubernetes clusters, and optimizes CI/CD pipelines. |

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# Product Breadth: The Surface Area




**Conversion-Focused UI:** Fully responsive layout built with Next.js, shadcn/ui, and TailwindCSS.

**Content Ecosystem:** Modern, SEO-optimized blog platform with i18n (English/Arabic) and LTR/RTL support.

**Template Engine:** Discovery system for hundreds of categorized professional templates (pitch decks, proposals, contracts).

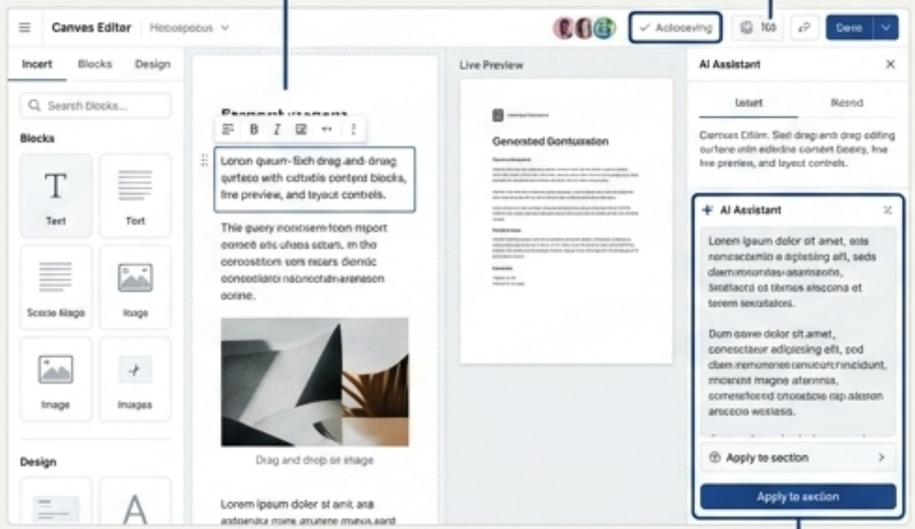
Building the top of the funnel requires consumer-grade polish and strict SEO/performance standards.

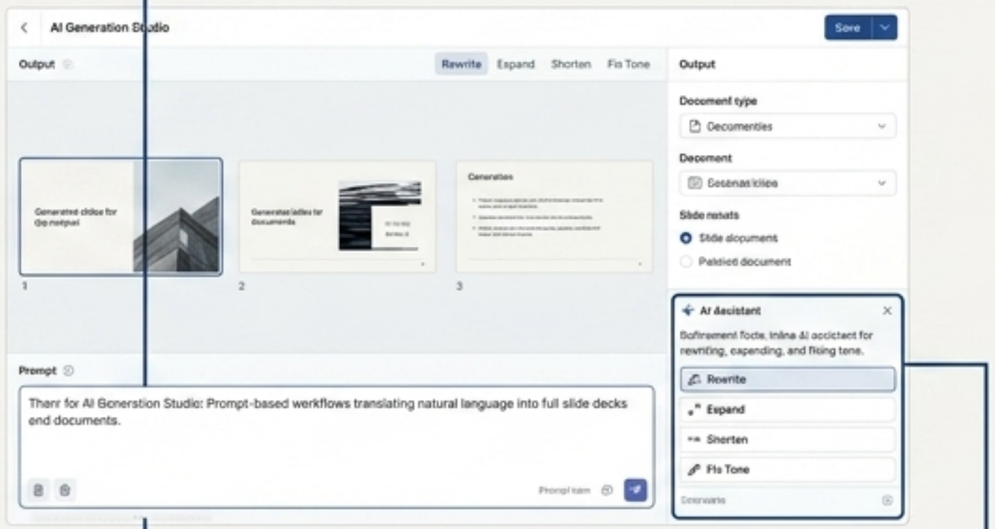
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# Engineering Depth: Anatomy of an Editor

**Canvas Editor:** Rich drag-and-drop editing surface with editable content blocks, live preview, and layout controls.

**AI Generation Studio:** Prompt-based workflows translating natural language into full slide decks and documents.




**Real-Time State:** Autosave and live editing powered by `Hocuspocus`.

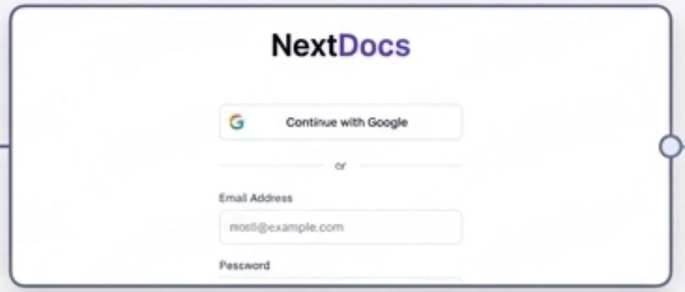
**Refinement Tools:** Inline AI assistant for rewriting, expanding, and fixing tone.

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# Enterprise-Grade Infrastructure: Beyond the Canvas

## Access & Identity

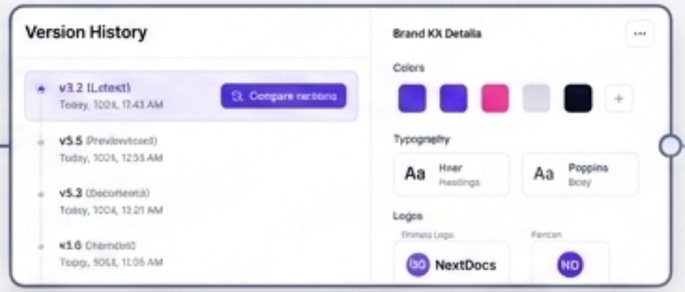
Clerk-based authentication, Google OAuth, role-based access control, and protected application routes.




Clerk tRPC

## Version Control & State

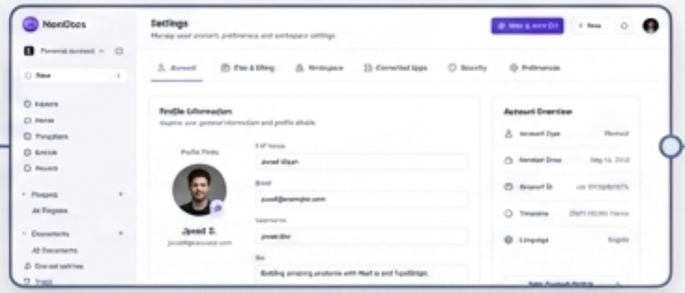
Full version history, side-by-side visual comparison, and brand kit application (colors, fonts, logos).




Prisma

## Account Infrastructure

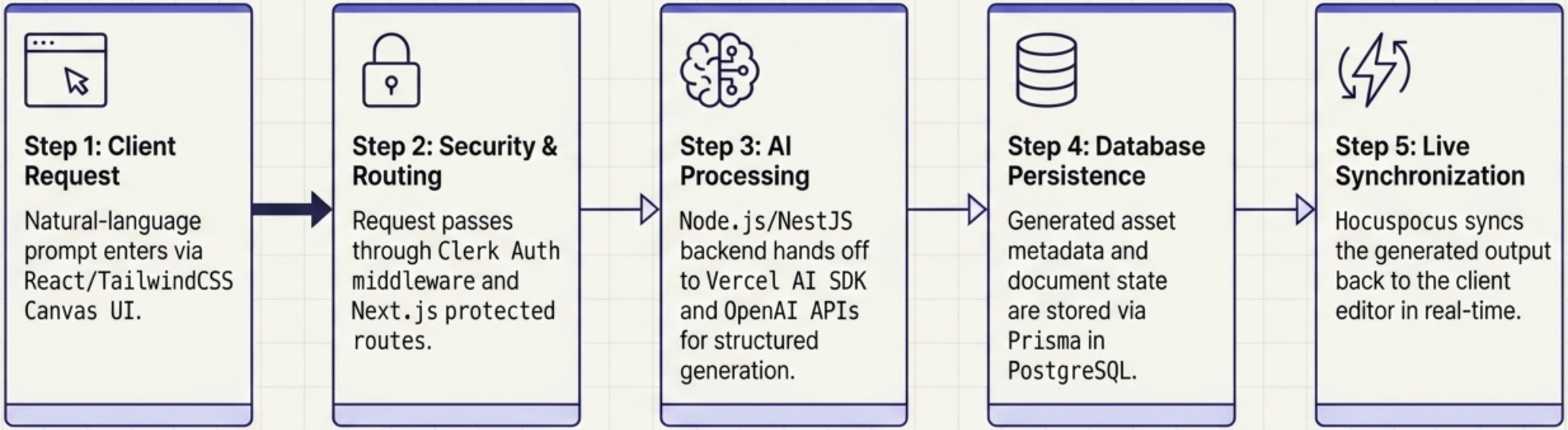
User settings, billing plans, usage statistics, connected apps, and enterprise-grade security privacy controls.




PostgreSQL

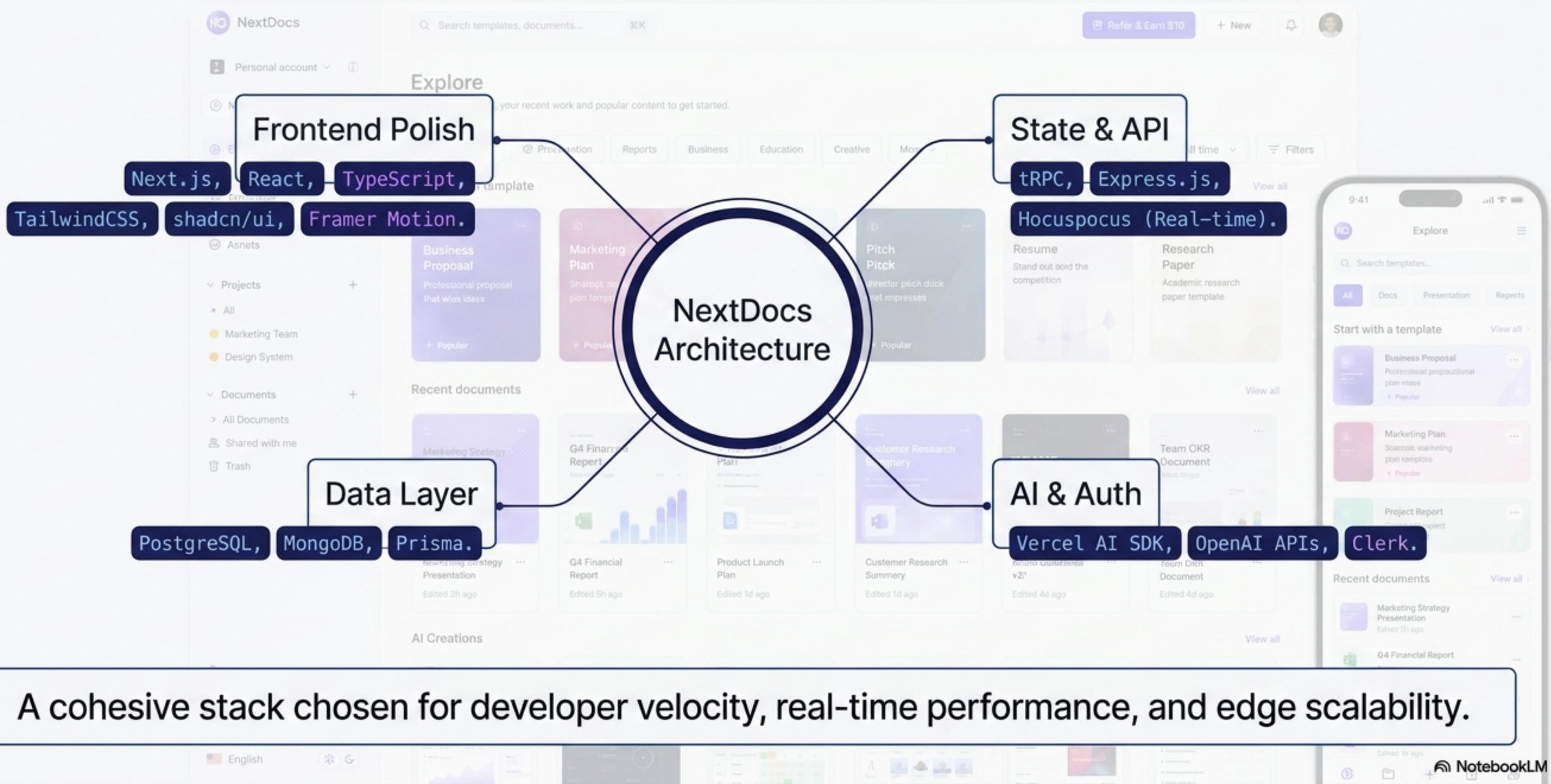
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# The AI Data-Flow Architecture




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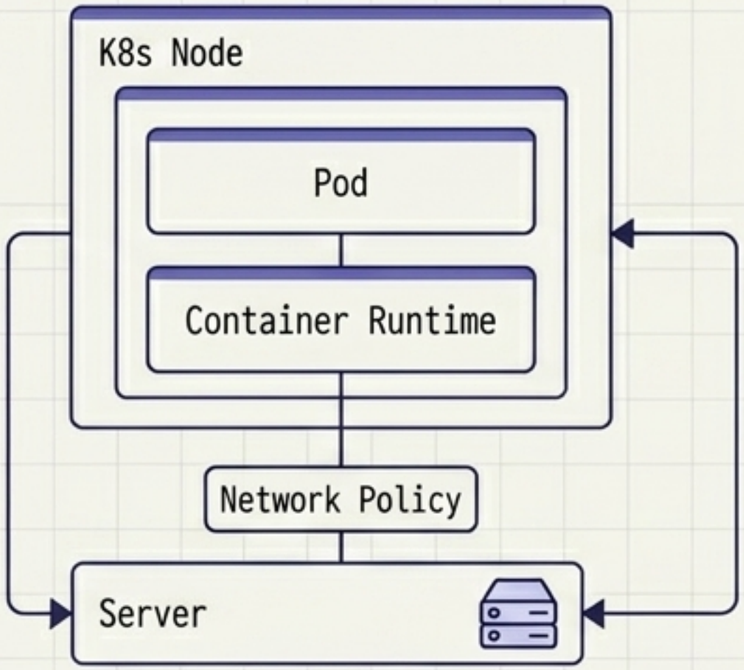
# Synthesis: The Full-Stack Ecosystem




A cohesive stack chosen for developer velocity, real-time performance, and edge scalability.

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# Operational Leadership: Beyond the Code




Cloud Infrastructure Diagram

**Environment Consistency**

> Built and maintained `Docker` developer containers to eliminate local onboarding friction and ensure service reliability.

**CI/CD & Build Pipelines**

> Managed `GitHub Actions`. Improved engineering reliability by investigating failed builds, tuning deployment configs, and creating faster feedback loops.

**Cluster Operations**

> Debugged container, `Kubernetes` cluster, networking, and runtime issues across development and production-like Vercel/cloud environments.

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# Business Impact & Platform Scale



**20,000+**

Active Users



**500,000+**

Documents Created



**1,000,000+**

AI Generations



**99.9%**

Uptime achieved through cluster stabilization



**Hours to Minutes**

Reduced local dev setup time via containerization

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# Kiyanof | Lead Full-Stack Product Engineer

## Core Competencies

AI SaaS Architecture | End-to-End Product Engineering | UI/UX Polish | DevOps & Deployment Operations

## Technical Arsenal

- **Frontend:** React, TypeScript, TailwindCSS, shadcn/ui
- **Backend:** Node.js, NestJS, PostgreSQL, REST/GraphQL
- **Infra/AI:** Docker, Kubernetes, CI/CD, OpenAI APIs, Vercel AI SDK, Clerk.

## The NextDocs Impact

Architected an AI document automation platform from the ground up, delivering complex prompt-based canvas editors while ensuring 99.9% uptime through rigorous CI/CD and cluster management.

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