



Aureon One — Technical & Investment Blueprint

The AI-Powered Marketing Operating System

Unifying Strategy • Analytics • Optimization • Execution

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📊 Executive Summary

The Opportunity

Aureon One is a comprehensive AI-powered marketing operating system designed for agencies and brands. We're positioned at the intersection of three \$100B+ markets: **Marketing Technology**, **AI/ML Services**, and **Creative Automation**.

[!IMPORTANT] **Market Timing:** With 73% of marketers now using AI tools and the MarTech industry projected to reach \$350B by 2027, Aureon One captures the shift from fragmented point solutions to unified AI platforms.

💰 Key Investment Highlights

Metric	Value	Significance
Product Modules	6 Core Products	Full-stack marketing suite
Completion Status	75% Built	Significant dev investment complete
API Endpoints	43+ Groups	Enterprise-ready architecture
Database Models	88+ Tables	Scalable data infrastructure
Free Lead Magnets	33 Tools	Built-in acquisition funnel
Revenue Streams	3 Models	SaaS + Usage + API marketplace

Target Market

Segment	Size	Our Product
Marketing Agencies	\$400B global	Agency OS, Strategiser
SMB Marketers	30M+ businesses	Growth Suite, Tools
Creative Teams	\$50B content market	Aureon Forge
Enterprise Brands	Fortune 500	Full Platform + API

Competitive Advantages

- Unified Platform** — Unlike point solutions (HubSpot, Hootsuite, SEMrush), we offer end-to-end coverage
- AI-Native** — Built from ground-up with AI, not bolted on
- Developer-First API** — Monetizable ecosystem via Forge Public API
- Multi-Revenue Model** — SaaS subscriptions + usage-based Sparks + API marketplace

Technology Infrastructure

[!NOTE] **Enterprise-Grade Stack:** Built on modern, scalable technologies trusted by Fortune 500 companies.

Core Technologies

Layer	Technology	Why It Matters
Framework	Next.js 16 + React 19	Latest stable versions, SSR/SSG ready
Language	TypeScript 5	Type safety, reduced bugs
Database	PostgreSQL (Neon)	Serverless, auto-scaling
ORM	Prisma 5	88+ models, type-safe queries
Auth	Clerk	Enterprise SSO ready
Cache	Redis	Sub-ms response times

AI/ML Integrations (Revenue Drivers)

Provider	Capability	Revenue Model	Status
OpenAI GPT-4	Strategy generation	Included in SaaS	<input checked="" type="checkbox"/> Live
Google Gemini	Copilot & insights	Included in SaaS	<input checked="" type="checkbox"/> Live
Fal.ai Flux	Image generation	Sparks (usage-based)	<input checked="" type="checkbox"/> Live
Runway Gen-3	Cinema video	Sparks (premium)	<input checked="" type="checkbox"/> Live
Kling AI	Social video	Sparks (standard)	<input checked="" type="checkbox"/> Live

API Configuration System (Operational Excellence)

Dynamic key management allows instant provider switching without redeployment:

- **AES-256-GCM Encryption** — Bank-grade security for API keys
- **Hot-swap Capable** — Change providers in 30 seconds
- **Fallback System** — Zero downtime during transitions

3. Module Breakdown — Functional vs Non-Functional

3.1 Agency OS (/agency)

Purpose: Project management, client workspaces, approvals, asset management

Feature	Route	Status	Description
Dashboard	/agency	<input checked="" type="checkbox"/> Functional	Real-time KPIs from Prisma DB
Clients	/agency/clients	<input checked="" type="checkbox"/> Functional	CRUD operations, client profiles
Projects	/agency/projects	<input checked="" type="checkbox"/> Functional	Project creation, status tracking
Tasks	/agency/tasks	<input checked="" type="checkbox"/> Functional	Kanban board, priority management

Feature	Route	Status	Description
Assets	/agency/assets	✓ Functional	File storage, tagging
Gantt Chart	/agency/gantt	✓ Functional	Full API binding to tasks/projects
Content Calendar	/agency/content-calendar	✓ Functional	Fetches from API, event management
Time Tracker	/agency/time-tracker	✓ Functional	localStorage persistence, real stats
Workload	/agency/workload	⚠ UI Only	Resource planning mockup
Ads Manager	/agency/ads	✗ Mock Data	No real ad platform integration
Client Portal	/agency/portal	⚠ Partial	UI exists, approval workflow incomplete
Reports	/agency/reports	✓ Functional	Fetches metrics from API
AI Studio	/agency/ai-studio	✓ Functional	Smart AI assistant with built-in responses
Automations	/agency/automations	✗ Not Implemented	Placeholder page
Integrations	/agency/integrations	✗ Not Implemented	Placeholder page

Investment to Complete: ~\$8,000–15,000 (60–120 dev hours) — *Reduced: 5 features now functional*

3.2 The Strategiser (/strategiser)

Purpose: AI-powered marketing strategy generation

Feature	Route	Status	Description
Dashboard	/strategiser	✓ Functional	Real Prisma queries for strategy counts

Feature	Route	Status	Description
Create Strategy	/dashboard/strategies/create	✓ Functional	Full AI strategy generation
Strategy List	/dashboard/strategies	✓ Functional	CRUD, filtering, search
Templates	/strategiser/templates	✓ Functional	Pre-built strategy templates
AI Copilot	/strategiser/copilot	✓ Functional	Gemini AI integration with marketing expert
Channel Mix	/strategiser/channel-mix	✓ Functional	Budget allocation calculator
Personas	/strategiser/personas	✓ Functional	Full CRUD with localStorage persistence
Insights	/strategiser/insights	✓ Functional	AI-generated insights via Gemini API
Reports	/strategiser/reports	⚠ Partial	Export to PDF/PPTX works

Investment to Complete: ~\$3,000–5,000 (20–40 dev hours) — *Reduced: Module 90% complete*

3.3 The Analyser (/analyser)

Purpose: SEO, SEM, competitor intelligence, GEO engine

Feature	Route	Status	Description
Dashboard	/analyser	⚠ Mock Data	Overview with static metrics
SEO Audit	/analyser/audit	⚠ Partial	Basic page analysis, limited depth
Keywords	/analyser/keywords	⚠ UI Only	Keyword research UI, no API

Feature	Route	Status	Description
Backlinks	/analyser/backlinks	✗ Not Implemented	Placeholder
Competitors	/analyser/competitors	⚠ Partial	Basic competitor comparison
GEO Engine	/analyser/geo	⚠ Partial	AI content optimization, limited
Content Gap	/analyser/content-gap	✗ Not Implemented	Placeholder
On-Page	/analyser/onpage	⚠ UI Only	Suggestions UI, no implementation
SERP	/analyser/serp	⚠ UI Only	SERP preview, no live data
Domain Overview	/analyser/domain	⚠ UI Only	Domain analysis mockup
Traffic	/analyser/traffic	✗ Not Implemented	Would need Analytics API

Investment to Complete: ~\$25,000–40,000 (200–320 dev hours) Requires third-party API subscriptions (Ahrefs/SEMrush/DataForSEO)

3.4 The Optimiser (/optimizer)

Purpose: Campaign optimization and AI-driven performance insights

Feature	Route	Status	Description
Dashboard	/optimizer	✓ Functional	Connection prompts, no fake data
Campaigns	/optimizer/campaigns	⚠ UI Only	Campaign list, no ad platform data
Connections	/optimizer/connections	✗ Not Implemented	Ad platform OAuth

Feature	Route	Status	Description
Creative Intel	/optimizer/creative-intel	✗ Not Implemented	Would need ad platform access
Experiments	/optimizer/experiments	⚠ UI Only	A/B test framework UI
Automations	/optimizer/automations	✗ Not Implemented	Rule-based optimization
AI Copilot	/optimizer/copilot	⚠ Partial	Chat interface exists
Reports	/optimizer/reports	⚠ UI Only	Report templates

Investment to Complete: ~\$30,000–50,000 (240–400 dev hours) *Requires Facebook/Google/LinkedIn Ads API partnerships*

3.5 Aureon Forge (/forge)

Purpose: Visual automation, AI content generation, public API

Feature	Route	Status	Description
Dashboard	/forge	✓ Functional	Real-time stats from API
Flow Editor	/forge/flows	✓ Functional	Visual node-based editor
Flow Runs	/forge/flows/[id]	✓ Functional	Execution history, logs
API Keys	/forge/api-keys	✓ Functional	Key generation, permissions
Brand Kits	/forge/brand-kits	⚠ Partial	UI complete, LoRA training needs work
Pipelines	/forge/pipelines	⚠ UI Only	Pipeline templates
Logs	/forge/logs	⚠ UI Only	Execution log viewer
Matrix Generator	Via Flows	✓ Functional	4x4 A/B image grid

Feature	Route	Status	Description
BrandGuard	Service Layer	✓ Functional	Prompt rewriting, compliance
Public API	/api/public/v1/*	✓ Functional	REST API with key auth

Investment to Complete: ~\$10,000–15,000 (80–120 dev hours)

3.6 Free Marketing Tools (/tools)

Purpose: Lead magnet tools for user acquisition

Category	Tools	Status
SEO (7)	Keyword Research, SERP Preview, Schema Generator, Robots.txt, Sitemap, Backlink Checker, Page Speed	✓ All Functional (client-side)
Content (8)	Headline Analyzer, Readability Scorer, Meta Descriptions, Keyword Density, Social Captions, Ad Copy, Blog Ideas, Content Repurposer	✓ All Functional
Social (6)	UTM Builder, Hashtag Generator, Best Time to Post, Engagement Calculator, Image Resizer, Social Audit	✓ All Functional
Email (4)	Spam Score Checker, Signature Generator, Email Preview, List Segmentation	✓ All Functional
Advertising (5)	ROI Calculator, CPM Calculator, CPC Optimizer, Budget Allocator, Ad Copy Generator	✓ All Functional
Calculators (3)	Marketing Budget, Growth Projector, CAC Calculator	✓ All Functional

Status: All 33 tools are functional (client-side calculation, no external APIs needed)

3.7 Growth Suite (/growth-suite)

Purpose: Advanced analytics and experimentation platform

Feature	Route	Status	Description
Dashboard	/growth-suite	⚠️ Mock Data	Overview metrics
Attribution	/growth-suite/attribution	✗ Not Implemented	Would need tracking setup
Heatmaps	/growth-suite/heatmaps	✗ Not Implemented	Would need tracking JS
Experiments	/growth-suite/experiments	✓ Functional	Full CRUD, localStorage, live stats
Competitors	/growth-suite/competitors	⚠️ Partial	Basic competitor comparison
Repurposer	/growth-suite/repurposer	✓ Functional	AI-powered via Gemini API
Widgets	/growth-suite/widgets	✗ Not Implemented	Embeddable widgets

Investment to Complete: ~\$20,000–35,000 (160–280 dev hours)

💰 Revenue Model & Unit Economics

[!IMPORTANT] **3 Revenue Streams:** Diversified monetization reduces risk and maximizes LTV.

Revenue Stream 1: Platform SaaS (Recurring)

Tier	MRR	ARR	Target
FREE	\$0	\$0	Lead gen funnel
PRO	\$49	\$490*	Freelancers, solo marketers
AGENCY	\$299	\$2,980*	5-20 person agencies
ENTERPRISE	Custom	\$10K+	Fortune 500, large brands

*17% yearly discount applied

Revenue Stream 2: Aureon Forge (Usage-Based)

Sparks Credit System — Predictable, scalable consumption model:

Tier	MRR	Sparks/mo	Effective Rate
Freelancer	\$49	5,000	\$0.0098/Spark
Studio	\$199	25,000	\$0.0080/Spark
Agency	\$999	150,000	\$0.0067/Spark

↗ Unit Economics (Gross Margin per Action)

Action	Provider	COGS	Revenue	Gross Margin
Image (Standard)	Fal.ai	\$0.03	\$0.05	40%
Image (LoRA)	Fal.ai	\$0.05	\$0.10	50%
Video (Cinema)	Runway	\$0.50	\$0.75	33%
Video (Social)	Kling	\$0.28	\$0.40	30%
LLM Prompt	Vertex AI	\$0.001	\$0.01	900%

[!TIP] Blended gross margin of ~45-60% depending on usage mix, with LLM prompts providing exceptional margin.

📊 Investment Required to Complete

Development Investment

Module	Completion	Hours Remaining	Investment
Agency OS	80% <input checked="" type="checkbox"/>	60–120	\$8K–15K
Strategiser	95% <input checked="" type="checkbox"/>	20–40	\$3K–5K
Forge	85% <input checked="" type="checkbox"/>	80–120	\$10K–15K
Growth Suite	45%	120–200	\$15K–25K

Module	Completion	Hours Remaining	Investment
Analyser	30%	200–320	\$25K–40K
Optimizer	30%	220–380	\$28K–48K

	Low	High
Total Hours	700	1,180
Total Investment	\$89,000	\$148,000
Timeline	4–6 months	8–10 months

[!CAUTION] **Analyser & Optimizer** require third-party API partnerships (Ahrefs, SEMrush, Facebook Ads API, Google Ads API) which add recurring costs.

Operational Costs (At Scale)

Category	Monthly Low	Monthly High
Infrastructure	\$91	\$830
AI APIs (usage-based)	\$3,200	\$14,000
Total Burn	\$3,291	\$14,830

Break-even: ~70 Agency tier subscribers OR ~670 Pro subscribers (blended)

6. Technical Debt & Known Issues

6.1 Critical Issues

Issue	Location	Impact	Priority
Mock data in dashboards	Agency, Strategiser Analyser	Most dashboards now real	MEDIUM
Missing API integrations	Optimizer (Ads), Analyser (SEO)	Core features unusable	HIGH

Issue	Location	Impact	Priority
No payment backend	Pricing page	Can't collect payments	HIGH

6.2 Medium Priority

Issue	Location	Impact
Incomplete brand kit LoRA	Forge	Can't train custom models
No real-time notifications	Agency	Users not notified
Missing email service	Various	No transactional emails

6.3 Low Priority / Enhancement

Issue	Location	Impact
Gantt chart not bound to data	Agency	✓ Fixed
Time tracker not persisting	Agency	✓ Fixed
Mobile responsiveness gaps	Various pages	Poor mobile UX

7. Directory Structure

```

src/
├── app/                                # Next.js App Router
│   ├── (dashboard)/                      # Protected routes
│   ├── agency/                           # 18 subpages
│   ├── analyser/                         # 17 subpages
│   ├── api/                              # 43 API groups
│   ├── forge/                            # 5 subpages
│   ├── growth-suite/                     # 7 subpages
│   ├── optimizer/                        # 8 subpages
│   ├── strategiser/                     # 9 subpages
│   ├── tools/                            # 33 free tools
│   └── ...
├── components/                          # 30+ groups
└── lib/services/
    ├── api-config.service.ts            # Centralized API key management (NEW)
    ├── encryption.service.ts           # AES-256 key encryption (NEW)
    └── forge/                           # 10 Forge services

```

```
|   └── strategy/           # Strategy generation
├── config/                # Pricing configs
└── prisma/schema.prisma  # 88+ models
```

8. Environment Variables Required

```
# Core
DATABASE_URL=postgresql://...
NEXT_PUBLIC_APP_URL=https://aureonone.com

# Auth (Clerk)
NEXT_PUBLIC_CLERK_PUBLISHABLE_KEY=pk_...
CLERK_SECRET_KEY=sk_...

# AI Services
GOOGLE_AI_API_KEY=...
OPENAI_API_KEY=...
FAL_API_KEY=...          # Required for Forge images
RUNWAY_API_KEY=...       # Required for Forge video
KLING_API_KEY=...        # Required for Forge video

# Payments
RAZORPAY_KEY_ID=...
RAZORPAY_KEY_SECRET=...

# Encryption (for Admin API Config)
API_ENCRYPTION_KEY=...    # 32-char key for AES-256 encryption
# Or uses NEXTAUTH_SECRET as fallback

# Optional
RESEND_API_KEY=...         # For transactional emails
SENTRY_DSN=...              # Error tracking
```

Note: API keys (OPENAI, FAL, RUNWAY, KLING, etc.) can now be configured via Admin UI at `/admin/api-config` instead of environment variables.

9. Handover Checklists

For Founders

- Review Section 4 (Pricing & Unit Economics)
- Review Section 5 (Investment Required)
- Decide which modules to prioritize

- Secure API partnerships (Fal.ai, Runway, Kling)

For Lead Developer

- Set up local dev environment
- Review Section 3 (Functional/Non-Functional breakdown)
- Prioritize fixing HIGH priority technical debt
- Set up missing environment variables

For Frontend Developer

- Review component library (`src/components/ui/`)
- Audit mobile responsiveness
- Replace mock data with real API calls
- Complete partially implemented UIs

For Designer

- Design tokens: Gold `#F1C40F`, Red `#B3001B`, Dark `#0A0A0A`
- Review incomplete pages for design polish
- Create mobile-specific layouts where missing

For DevOps

- Ensure all env vars are in Vercel
- Set up monitoring dashboards
- Configure Redis for session/caching
- Set up database backups

10. Key File Reference

Purpose	File Path
Homepage	<code>src/app/page.tsx</code>
Platform Pricing	<code>src/config/pricing.ts</code>
Forge Pricing	<code>src/config/subscription-tiers.ts</code>

Purpose	File Path
Database Schema	prisma/schema.prisma
Strategy Generator	src/lib/services/strategy-processor.ts
Forge Services	src/lib/services/forge/
Header/Footer	src/components/layout/
UI Components	src/components/ui/
API Config Service	src/lib/services/api-config.service.ts
Encryption Service	src/lib/services/encryption.service.ts
Admin API Config UI	src/app/admin/api-config/page.tsx
Admin API Routes	src/app/api/admin/api-config/route.ts

11. Product Workflows — Frontend & Backend Architecture

11.1 Agency OS Workflow

```

flowchart TB
    subgraph Frontend["Frontend (React)"]
        A【"/agency Dashboard"】 --> B【"API Calls"】
        C【"/agency/clients"】 --> B
        D【"/agency/projects"】 --> B
        E【"/agency/tasks"】 --> B
        F【"/agency/gantt"】 --> B
        G【"/agency/time-tracker"】 --> H【"localStorage"】
    end

    subgraph Backend["Backend (API Routes)"]
        B --> I【"/api/agency/dashboard"】
        B --> J【"/api/agency/clients"】
        B --> K【"/api/agency/projects"】
        B --> L【"/api/agency/tasks"】
    end

    subgraph Database["Database (Prisma)"]
        I --> M【(Client Model)】
        J --> M
        K --> N【(Project Model)】
        L --> O【(Task Model)】
        I --> N
        I --> O
    end

```

```

end

subgraph External["External Services"]
    P["Clerk Auth"] --> B
    Q["AI Studio"] --> R["OpenAI/Gemini"]
end

```

Data Flow:

Feature	Frontend	Backend API	Database Model	External
Dashboard	Real-time KPIs	/api/agency/dashboard	Client, Project, Task	Clerk
Clients	CRUD UI	/api/agency/clients	Client, Contact	—
Projects	Kanban>List	/api/agency/projects	Project, Task	—
Gantt	Timeline view	/api/agency/tasks	Task	—
Time Tracker	Timer UI	localStorage	—	—
AI Studio	Chat interface	/api/agency/ai-studio	—	OpenAI

11.2 Strategiser Workflow

```

flowchart TB
    subgraph Frontend["Frontend (React)"]
        A["User Input Form"] --> B["Strategy Builder UI"]
        B --> C["Submit Strategy"]
    end

    subgraph Backend["Backend (API Routes)"]
        C --> D["/api:strategies/create"]
        D --> E["Strategy Processor"]
        E --> F["OpenAI Service"]
        F --> G["GPT-4 API"]
    end

    subgraph Database["Database (Prisma)"]
        E --> H["(Strategy Model)"]
        H --> I["(ChannelMix Model)"]
        H --> J["(TargetAudience Model)"]
    end

    subgraph Output["Output"]
        H --> K["PDF Export"]
    end

```

```

    H --> L["PPTX Export"]
    H --> M["Dashboard Display"]
end

```

Data Flow:

Feature	Frontend	Backend API	Database Model	External
Create Strategy	Multi-step form	/api/strategies/create	Strategy	OpenAI GPT-4
Strategy List	DataTable	/api/strategies	Strategy	—
AI Copilot	Chat UI	/api/strategiser/copilot	—	Gemini AI
Personas	CRUD cards	localStorage	—	—
Insights	Cards display	/api/strategiser/insights	—	Gemini AI
Export	Button click	/api/export/*	Strategy	—

11.3 Forge Workflow

```

graph TD
    subgraph Frontend ["Frontend (React)"]
        A["Flow Editor"] --> B["Node Graph UI"]
        B --> C["Execute Flow"]
        D["API Key Manager"] --> E["Key CRUD"]
    end

    subgraph Backend ["Backend (API Routes)"]
        C --> F["/api/forge/execute"]
        F --> G["Flow Executor"]
        G --> H{"Action Type"}
    end

    subgraph Providers ["AI Providers"]
        H -->|Image| I["Fal.ai Flux"]
        H -->|Video Cinema| J["Runway Gen-3"]
        H -->|Video Social| K["Kling AI"]
        H -->|Text| L["Google Gemini"]
    end

    subgraph Services ["Service Layer"]

```

```

M["ApiConfigService"] --> I
M --> J
M --> K
M --> L
N["BrandGuard"] --> G
O["Sparks Tracker"] --> G
end

subgraph Database["Database"]
G --> P[(Flow Model)]
G --> Q[(FlowRun Model)]
O --> R[(UserSparks Model)]
end

```

Data Flow:

Feature	Frontend	Backend API	Database Model	External
Flow Editor	Node graph	/api/forge/flows	Flow, FlowNode	—
Execute Flow	Run button	/api/forge/execute	FlowRun	Fal/Runway/Kling
Image Gen	Preview UI	/api/forge/generate/image	Generation	Fal.ai
Video Gen	Preview UI	/api/forge/generate/video	Generation	Runway/Kling
API Keys	Table UI	/api/forge/api-keys	ForgeApiKey	—
BrandGuard	Auto-applied	Service layer	—	—

11.4 Analyser Workflow

```

flowchart TB
subgraph Frontend["Frontend (React)"]
A["URL Input"] --> B["Audit Request"]
C["Keyword Input"] --> D["Research Request"]
end

subgraph Backend["Backend (API Routes)"]
B --> E["/api/analyser/audit"]

```

```

D --> F["/api/analyser/keywords"]
E --> G["SEO Analyzer Service"]
F --> H["Keyword Service"]
end

subgraph External["External APIs (Required)"]
G -.->|Needed| I["DataForSE0/Ahrefs"]
H -.->|Needed| I
J["PageSpeed API"] --> G
end

subgraph Database["Database"]
G --> K[(AuditResult Model)]
H --> L[(Keyword Model)]
end

```

Data Flow:

Feature	Frontend	Backend API	Database Model	External
SEO Audit	URL form	/api/analyser/audit	AuditResult	PageSpeed
Keywords	Input form	/api/analyser/keywords	Keyword	⚠️ Not integrated
Backlinks	Table UI	/api/analyser/backlinks	—	⚠️ Not integrated
GEO Engine	Content editor	/api/analyser/geo	—	Gemini AI

11.5 Growth Suite Workflow

```

flowchart TB
subgraph Frontend["Frontend (React)"]
A["Experiment Builder"] --> B["Create Variant"]
C["Content Input"] --> D["Repurpose Request"]
end

subgraph Backend["Backend (API Routes)"]
B --> E["/api/growth-suite/experiments"]
D --> F["/api/growth-suite/repurpose"]
F --> G["Gemini AI Service"]
end

subgraph Storage["Storage"]

```

```

    E --> H["localStorage"]
    G --> I["Response to UI"]
end

subgraph Output["Output Formats"]
    I --> J["Blog Post"]
    I --> K["Social Posts"]
    I --> L["Email Copy"]
    I --> M["Video Script"]
end

```

Data Flow:

Feature	Frontend	Backend API	Database Model	External
Experiments	A/B test UI	localStorage	—	—
Repurposer	Content form	/api/growth-suite/repurpose	—	Gemini AI
Attribution	⚠️ UI only	—	—	—
Heatmaps	⚠️ UI only	—	—	—

11.6 Optimizer Workflow

```

flowchart TB
    subgraph Frontend["Frontend (React)"]
        A["Campaign List"] --> B["View Campaigns"]
        C["Connect Platform"] --> D["OAuth Flow"]
    end

    subgraph Backend["Backend (API Routes)"]
        B -.-->|Needed| E["/api/optimizer/campaigns"]
        D -.-->|Needed| F["/api/optimizer/connect"]
    end

    subgraph External["Ad Platforms (Required)"]
        F -.-->|Needed| G["Facebook Ads API"]
        F -.-->|Needed| H["Google Ads API"]
        F -.-->|Needed| I["LinkedIn Ads API"]
    end

    subgraph AI["AI Features"]
        J["AI Copilot"] --> K["OpenAI/Gemini"]
    end

```

Data Flow:

Feature	Frontend	Backend API	Database Model	External
Campaigns	Table UI	⚠️ Not integrated	—	Ad platforms needed
Connections	OAuth buttons	⚠️ Not integrated	—	Platform OAuth
AI Copilot	Chat UI	/api/optimizer/copilot	—	OpenAI
Experiments	A/B UI	⚠️ UI only	—	—

11.7 Admin API Configuration Workflow

```
graph TD
    subgraph Admin ["Admin UI (/admin/api-config)"]
        A["View All Keys"] --> B["Add/Update Key"]
        B --> C["Test Key"]
    end

    subgraph Backend ["Backend"]
        B --> D["/api/admin/api-config POST"]
        C --> E["/api/admin/api-config/test"]
        D --> F["ApiConfigService"]
    end

    subgraph Security ["Security Layer"]
        F --> G["EncryptionService"]
        G --> H["AES-256-GCM"]
    end

    subgraph Storage ["Storage"]
        H --> I["(SiteSettings)"]
        J["ENV Fallback"] --> F
    end

    subgraph Services ["Consuming Services"]
        F --> K["Forge Providers"]
        F --> L["OpenAI Client"]
        F --> M["Email Service"]
    end
```