

# 1DreamUniversity (AI University) - Comprehensive Project Analysis

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**Document Purpose:** Full analysis of all uploaded specification documents to guide full-stack implementation including Qt6 desktop app, web app, and backend infrastructure.

**Analysis Date:** February 20, 2026

**Source Files Analyzed:** 4 documents

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## 1. Project Overview

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### What is 1DreamUniversity (AI University)?

**AI University** is a self-contained, AI-driven learning platform designed to teach students how to **USE AI tools** — not programming theory or math foundations. It's built on a **"tool-first, outcome-driven"** philosophy where students learn by doing, creating real deliverables in every session.

## Core Philosophy

Principle	Description
<b>Tool-first</b>	Every lesson centers on a specific AI application or workflow
<b>Outcome-driven</b>	Students create real deliverables in every session
<b>Adaptive AI</b>	Built-in AI tutor adjusts difficulty and pacing per student
<b>Offline-capable</b>	Core content cached locally within 12GB constraint
<b>No prerequisites</b>	Anyone can start from absolute zero

## Target Audience

### 1. Students (Primary)

- Complete beginners who have never used AI tools
- Casual AI users wanting structured workflows
- Power users building AI pipelines for teams/clients
- Professionals who create, teach, and consult on AI

### 2. Businesses (Secondary)

- Small-to-medium businesses needing websites, branding, social media
- Startups needing AI-built deliverables at low/no cost
- Companies seeking CRM/automation setup

## Mission & Goals

- Democratize AI tool literacy through practical, hands-on education
- Create a bridge between skilled students and real-world business projects
- Build a sustainable platform that monetizes services, not tuition
- Deliver all content on affordable 12GB tablet hardware

## 2. Platform Requirements

### Platform Systems Overview

The platform consists of **THREE tightly integrated systems** sharing a single authentication layer, database, and real-time communication backbone:

System	Primary Users	Core Purpose
<b>Student IDE Portal</b>	Enrolled students	AI-powered workspace for building course projects
<b>Business Registry</b>	Registered businesses	Post project briefs, browse portfolios, receive deliverables
<b>Collaboration Hub</b>	Students + Businesses	Real-time chat, asset review, style approvals
<b>Admin Dashboard</b>	AI University staff	Course management, matching oversight, billing, analytics
<b>Qt6 Tablet App</b>	Students (tablet)	Offline-first learning, syncs progress to web platform

## User Roles & Access Levels

Feature	Student (Enrolled)	Student (Trial)	Business	Admin
AI Chat panel	Full access	3 msgs/day	Read-only portfolio	Full
Image gen panel	Unlimited (course-gated)	5 images/day	None	Full
Code editor	Full	Full	None	Full
Asset library	Own assets	Own assets	Assigned project assets	Full
Business project files	Assigned only	None	Own projects	Full
Collaboration Hub	All channels	None	Own project channels	Full

## Core Functional Requirements

### Student Features

- Course enrollment and progress tracking
- AI-powered workspace with Monaco code editor
- Embedded AI tools (ChatGPT, Midjourney, RunwayML, etc.)
- Portfolio creation and export (PDF, shareable web link)
- Certificate generation with QR verification

- Real-time sync between tablet and web
- AI tutor interaction for hints and quiz generation
- Badge and XP reward system

### **Business Features**

- Project brief submission with AI parsing
- Student matching (algorithmic + AI-assisted)
- Real-time collaboration hub
- Style board for visual direction
- Deliverable review and approval
- Hosting plan management
- Domain migration services

### **Platform Features**

- Multi-language support potential
  - Offline-capable architecture
  - Cross-platform sync (tablet ↔ web)
  - Real-time notifications
  - Analytics and reporting dashboard
-

### 3. Technical Specifications

#### Technology Stack - Qt6 Tablet App

Layer	Technology	Purpose
<b>UI Framework</b>	Qt6 / QML	Cross-platform tablet UI, offline-first
<b>AI Tutor Engine</b>	Local LLM (Ollama/llama.cpp)	Adaptive hints, quiz generation, feedback
<b>Web Embeds</b>	Qt WebEngine	Podcast players, YouTube tutorials, live tools
<b>Quiz System</b>	Custom Qt6 component	Multiple choice, drag-drop, short answer
<b>CMS/Content</b>	SQLite + JSON	Lightweight, fits in 12GB budget
<b>Media Playback</b>	Qt Multimedia	Video lessons, AI audio guides
<b>Progress Tracking</b>	Local SQLite DB	Student profiles, badges, completion %
<b>Remote Sync</b>	Optional REST API	Instructor dashboard, analytics

## Technology Stack - Web Platform

Layer	Technology	Reason
<b>Frontend Framework</b>	React 18 + Vite	Component reuse, fast HMR, best ecosystem for IDE-style UIs
<b>State Management</b>	Zustand + React Query	Lightweight global state + server state caching
<b>Code Editor</b>	Monaco Editor (VS Code engine)	Industry standard, supports 50+ languages
<b>Real-Time</b>	Socket.io + Redis Pub/Sub	Scalable WebSocket layer for chat, live cursors, notifications
<b>Backend</b>	Node.js + Express	Non-blocking I/O ideal for real-time + file operations
<b>Database</b>	PostgreSQL (primary)	Relational integrity for users, projects, billing
<b>Cache/Sessions</b>	Redis	Fast session storage, real-time pub/sub, rate limiting
<b>File Storage</b>	AWS S3 + CloudFront CDN	Student assets, project files, deliverable archives
<b>Auth</b>	Auth0 / Supabase Auth	JWT + OAuth, role-based (student/business/admin)
<b>Payments</b>	Stripe	Subscriptions (hosting), one-time (migration), invoicing
<b>AI Tool Proxies</b>	Node.js API gateway	Routes student AI tool calls, enforces rate limits & auth
<b>Deployment</b>	Vercel (frontend) + Railway (backend)	Zero-config deploys, auto-scaling, preview URLs
<b>Qt6 Sync</b>	REST API + WebSocket bridge	Tablet progress syncs to web, assets transfer bidirectionally

## AI Instructor Model Configuration

```
{
  "base_lm": "llama3-8b-q4",           // Primary on-device teaching LLM (offline)
  "quiz_gen": "mistral-7b-q4",       // Quiz question generator
  "eval_lm": "phi3-mini",           // Fast deliverable rubric evaluator
  "fallback_api": "claude-3-haiku",  // Cloud fallback when local model insufficient
  "voice_tts": "kokoro-82m"         // Text-to-speech for audio lessons (local)
}
```

## Storage Budget (12GB Tablet)

Content Category	Allocation	Strategy
Qt6 App + Local LLM	3.5 GB	Quantized 7B model (Q4), ~3GB; app ~500MB
Core Video Lessons (compressed)	4.0 GB	480p H.265, ~200 hours of content
Course Text, Quizzes, JSON	0.5 GB	All 42 courses structured data
Student Data & Progress	0.2 GB	Local profiles, certificates, badges
Cached Web Embeds	1.5 GB	Offline podcast/YouTube snapshots
OS + System Reserve	2.3 GB	Android/Linux tablet OS
<b>TOTAL</b>	<b>12.0 GB</b>	Fully self-contained, no internet required

## 4. Course & Content Structure






### Course Catalog Overview

Track	Name	Courses	Focus Areas
<b>Track A</b>	AI Fundamentals & Tool Literacy	8	Prompt engineering, AI workflows, strategy, research
<b>Track B</b>	AI Writing, Content & Marketing	7	Blogs, copywriting, SEO, podcasts, marketing automation
<b>Track C</b>	AI Images, Video & 3D Creation	9	Image generation, video creation, 3D objects, motion graphics
<b>Track D</b>	AI Web Design, CRM, CMS & Automation	10	Website building, UI/UX, CMS, CRM, e-commerce
<b>Track E</b>	AI Audio, Music, Voice & Emerging Tools	6	Voice AI, music creation, podcasts, presentations
<b>TOTAL</b>		<b>42 Courses</b>	






### Duration Structure

Sprint Type	Duration	Estimated Hours
Novice (🌱)	1 Week	8-10 hours
Beginner/Intermediate (📖)	2 Weeks	16-20 hours
Advanced (🔴)	4 Weeks	28-35 hours
Expert/Capstone (🏆)	8 Weeks	50-60 hours
<b>Full 42-Course Program</b>		<b>320-360 hours</b> (~8 months at 10 hrs/week)

## Standard Lesson Structure (5-Part Format)

Step	Time	Activity	Description
1	5 min	 Podcast/Video Hook	Embedded clip from top AI podcasts to spark curiosity
2	15 min	 AI Concept Demo	Screencast or live tool demo, click-by-click walkthrough
3	20 min	 Hands-On Practice	Student completes structured task with AI tutor hints
4	10 min	 Knowledge Check	5-10 AI-generated multiple choice questions
5	10 min	 Project Deliverable	Student creates and saves real output to AI Portfolio

## Skill Level Progression

Level	Duration	Student Profile	Sample Deliverable
 Novice	1 Week/Course	Never used AI tools	5 AI social posts, 3 AI images, 1 chatbot flow
 Beginner	1-2 Weeks	Used AI a few times	AI-written blog post with images and SEO copy
 Intermediate	2-4 Weeks	Regular AI user	AI-built landing page with CRM and video
 Advanced	4 Weeks	Power user	5-page AI website with automation and chatbot
 Expert	8 Weeks	Professional	Complete AI-powered business package

## Interchangeable Tool System

Every lesson carries **Tool Flags** showing primary tool + 2-4 equivalents:

PRIMARY: Midjourney v6  
 EQUIVALENT TOOLS: DALL-E 3, Adobe Firefly, Stable Diffusion  
 USE CASE: Midjourney = photorealism, Firefly = commercial-safe, SD = full local control, DALL-E = ChatGPT integration

## Version Tagging & Auto-Archive

Status	Trigger	Action	Student Impact
✓ Current	Tool version matches lesson tag	Lesson delivered normally	No change
⚠ Needs Review	Major tool update detected	AI drafts patch; instructor reviews	Yellow badge shown
↻ Updating	Patch in review queue	Old version still delivered	Banner: 'Updated version coming soon'
📦 Archived	New version approved & live	Old lesson moves to Legacy Vault	Students can access legacy
🚫 Deprecated	Tool shut down	Lesson retired; equivalent promoted	Auto-redirect to best equivalent

## 5. Key Features

### 5.1 Authentication & Access Control

- **JWT + OAuth** based authentication via Auth0/Supabase Auth
- **Role-based access control:** Student (enrolled/trial), Business, Admin
- **Device linking:** `qt6_device_id` field links tablet to web account
- **Session management:** Redis-backed for fast access

### 5.2 Progress Tracking




- **Per-lesson progress:** completion checkmarks, module progress
- **Overall course ring:** visual progress indicator
- **XP and streak tracking:** gamification elements
- **Cross-platform sync:** Qt6 tablet ↔ Web platform (bidirectional)
- **Sync protocol:**
  - Direction: Bidirectional
  - Conflict resolution: Last-write-wins with 5-minute debounce
  - Offline mode: Qt6 queues sync events in SQLite, flushes when connected
  - Indicators: Green (synced), Amber (pending), Red (conflict)

## 5.3 Content Delivery

### Student IDE Portal (4-Panel Workspace)

Panel	Position	Contents
<b>Navigator</b>	Left sidebar (220px)	Course tree, lesson progress, file manager, asset library
<b>AI Workspace</b>	Top-right (primary)	Monaco code editor OR AI tool iframe
<b>AI Toolbox</b>	Bottom panel (300px)	AI chat, image gen, voice gen, automation builder
<b>Preview/Output</b>	Right panel (380px)	Live preview, rendered images, video player, 3D viewer

### AI Toolbox Tabs

Tab	Tool(s) Embedded	Interaction Mode
 AI Chat	Claude, ChatGPT, Gemini	Iframe proxy with session auth
 Image Gen	Midjourney, DALL-E 3, Firefly	Direct API calls via Node.js proxy
 Voice/Audio	ElevenLabs, Murf	API-driven: paste script → generate
 Music	Suno AI, Udio	Iframe embed with auth pass-through
 Automation	Zapier AI, Make.com	Iframe with OAuth connected accounts
 Video	RunwayML, HeyGen	Iframe with session bridging
 3D	Meshy AI, Spline AI	Iframe embed, export triggers auto-save
 Research	Perplexity AI, NotebookLM	Iframe proxy






## 5.4 Assessments

### Quiz Types by Level

- **Novice:** Multiple choice (4 options), image identification, true/false
- **Beginner:** Multiple choice + short fill-in, tool identification from screenshots
- **Intermediate:** Scenario-based multiple choice, workflow ordering drag-and-drop

- **Advanced:** Case study analysis, multi-step workflow design questions
- **Expert:** Peer review rubrics, portfolio project evaluations, AI critique sessions

## Certifications

Certificate	Tracks Required	Courses Completed	Badge
AI Literacy Certificate	Track A (all)	4 courses	 Green Badge
AI Creator Certificate	Tracks B + C	8+ courses	 Blue Badge
AI Web Pro Certificate	Track D	6+ courses	 Purple Badge
AI Media Certificate	Track E	4+ courses	 Gold Badge
<b>AI University Diploma</b>	All 5 Tracks	20+ courses	 Platinum Badge

## 5.5 Portfolio & Export

- Auto-save every course deliverable to student's AI Portfolio
- Export as PDF or shareable web link
- Certificate generator with signed PDF and QR verification code
- LinkedIn badge integration for completed certificates

## 5.6 AI University Bot (Collaboration Hub)

Bot Command	What the Bot Does
<code>/brief</code>	Reposts the project brief as a formatted message
<code>/checklist</code>	Generates project-specific task checklist
<code>/review [link]</code>	Evaluates deliverable against brief, posts scored feedback
<code>/suggest-tools</code>	Recommends AI tools for current project stage
<code>/timeline</code>	Estimates days remaining based on progress
<code>/close</code>	Generates completion summary, triggers portfolio save + XP award

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## 6. Business Model

### Revenue Streams

Revenue Stream	Price Point	Volume Assump- tion (Yr 1)	Annual Revenue Est.
Business Hosting — Starter	\$0	200 businesses	\$0 (acquisition fun- nel)
Business Hosting — Growth	\$49/mo	80 businesses	\$47,040
Business Hosting — Pro	\$149/mo	30 businesses	\$53,640
Business Hosting — Enterprise	\$499/mo	5 businesses	\$29,940
Domain Migration (one-time)	\$299-\$999 avg \$499	60 migrations	\$29,940
Integration Service (one-time)	\$299-\$1,499 avg \$699	30 projects	\$20,970
Student Platform Fee (optional)	\$19/mo or \$149/yr	500 students	\$74,500
<b>TOTAL YEAR 1 ES- TIMATE</b>			<b>~\$256,030</b>

## Business Tier Plans

Plan	Price	What They Get	Limits
<b>Starter (Free)</b>	\$0	1 active project, student-hosted subdomain, standard match	1 project/quarter
<b>Growth</b>	\$49/mo	3 active projects, custom domain hosting, priority matching	3 concurrent, 1 custom domain
<b>Pro</b>	\$149/mo	10 projects, white-label delivery, dedicated student team	10 concurrent, 3 domains
<b>Enterprise</b>	\$499/mo	Unlimited projects, SLA, dedicated account manager, API access	Unlimited, custom SLA
<b>Migration</b>	\$299-\$999	Move completed site to client's own hosting/domain	Per project complexity

## Project Types

Project Type	What Students Build	Typical Course	Timeline
Website/Landing Page	1-5 page responsive site	D-101, D-201, D-301	2-4 weeks
Logo & Brand Identity	Logo, color palette, typography guide	C-101, C-102, B-101	1-2 weeks
Social Media Package	30-day calendar, 30 posts, scheduling setup	B-101, B-202, C-101	1-2 weeks
Automation & CRM Setup	HubSpot/Zapier configured, email sequence	D-203, D-204, A-202	2-3 weeks
Full Brand Package	Website + Logo + Social (combined)	D-301, B-301	4-6 weeks
Podcast/Video Package	3 episodes produced, show notes, cover art	B-203, E-201	2-3 weeks

## AI Matching System

### Matching Criteria – Scored Signals

Signal	Weight	How Measured
Course completion relevance	30%	Has student completed corresponding course?
Portfolio quality score	25%	AI rubric score average (0-100)
Active project load	20%	Students with 0 active projects get +20% boost
Student tier / XP level	15%	Higher XP = more complex projects unlocked
Past business rating	10%	Average rating from previous projects

**Match Tiers**

<b>Tier</b>	<b>Business Plan</b>	<b>Match Process</b>	<b>Time to Match</b>
Standard	Starter (free)	Algorithm only — top 1 scored student	24-48 hours
Priority	Growth (\$49)	Algorithm shortlists top 3 → AI ranks	12-24 hours
Curated	Pro (\$149)	Algorithm + AI + staff review top 5	4-12 hours
Dedicated	Enterprise (\$499)	Assigned student team	Immediate

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## 7. Database Schema Needs

### Core Tables

Table	Key Fields	Relationships
<b>users</b>	id, email, role, plan_tier, qt6_device_id, created_at	Has many: enrollments, portfolio_items, messages
<b>businesses</b>	id, user_id, company_name, verified, plan_tier, rating	Has many: projects, reviews
<b>projects</b>	id, business_id, title, brief, type, status, budget_tier, assigned_to	Belongs to: business. Has many: deliverables, messages
<b>enrollments</b>	id, user_id, course_id, progress_json, started_at, completed_at	Belongs to: user, course
<b>portfolio_items</b>	id, user_id, course_id, project_id, title, files_json, published	Belongs to: user. May link to project
<b>deliverables</b>	id, project_id, student_id, version, files_json, status, reviewed_at	Belongs to: project, student
<b>channels</b>	id, project_id, type (project/dm/review), name	Has many: messages, members
<b>messages</b>	id, channel_id, user_id, body, attachments_json, type, created_at	Belongs to: channel, user
<b>subscriptions</b>	id, user_id OR business_id, stripe_sub_id, plan, status, renews_at	Belongs to: user or business
<b>tool_sessions</b>	id, user_id, tool_slug, started_at, usage_json, course_id	Tracks AI tool usage per student per course

## Extended Tables Needed

Table	Key Fields	Purpose
<b>courses</b>	id, code, title, track, level, duration_weeks, status	Master course catalog
<b>lessons</b>	id, course_id, day, title, primary_tool, equivalent_tools[], status, version	Individual lesson data
<b>quizzes</b>	id, lesson_id, questions_json, generated_by, difficulty	AI-generated quiz storage
<b>quiz_attempts</b>	id, user_id, quiz_id, answers_json, score, completed_at	Student quiz results
<b>badges</b>	id, name, icon, description, criteria	Badge definitions
<b>user_badges</b>	id, user_id, badge_id, earned_at	Earned badges
<b>certificates</b>	id, user_id, certificate_type, issued_at, qr_code	Issued certificates
<b>assets</b>	id, user_id, name, type, size, s3_key, created_at	Student-generated assets
<b>style_boards</b>	id, project_id, pins_json, approved_palette, approved_at	Visual collaboration
<b>notifications</b>	id, user_id, type, content, read_at, created_at	User notifications
<b>sync_events</b>	id, user_id, device_id, event_type, payload, synced_at	Tablet-web sync queue

## JSON Schema Examples

### Lesson JSON Structure

```
{
  "lesson_id": "A101-D03",
  "version": "2.1.0-midjourney-v6",
  "status": "current",
  "primary_tool": "Midjourney v6",
  "equivalent_tools": [
    {"name": "DALL-E 3", "flavor": "tightest ChatGPT integration"},
    {"name": "Adobe Firefly", "flavor": "commercial-safe"}
  ],
  "tool_embed_url": "https://cdn.mos.cms.futurecdn.net/jQrQArVRFfS3VVPg6oameg.png",
  "offline_fallback": "/cache/midjourney-sim/",
  "podcast_hook": {"url": "...", "timestamp": "12:34"},
  "quiz_prompt": "Generate 5 questions about image prompting...",
  "deliverable_rubric": {...},
  "archive_date": null,
  "replacement_lesson": null
}
```

### Progress JSON Structure

```
{
  "lessons": {
    "A101-D01": {"completed": true, "score": 85, "completed_at": "..."},
    "A101-D02": {"completed": true, "score": 92, "completed_at": "..."},
    "A101-D03": {"completed": false, "started": true}
  },
  "overall_percent": 40,
  "xp_earned": 350,
  "time_spent_minutes": 120
}
```

---

## 8. Security Requirements

### Data Protection

Requirement	Implementation
AI Tool API Keys	Stored server-side only — never exposed to client
Student Files in S3	Private by default — pre-signed URLs for access, expire in 1 hour
Business Briefs	Private until student assigned — never publicly searchable
GDPR Compliance	Data deletion endpoints for both student and business accounts
Rate Limiting	On all AI proxy endpoints — prevents abuse and cost overruns
CSP Headers	On IDE iframe embeds — sandboxed tool panels cannot access parent app

### Authentication Security

- JWT tokens with short expiration
- OAuth 2.0 for third-party integrations
- Role-based access control enforcement at API level
- Device verification for tablet sync
- Session management via Redis with automatic expiration

### Content Security

- Input sanitization for all user-generated content
- XSS protection on collaboration hub messages
- CORS configuration for API endpoints
- Webhook signature verification for Stripe

## 9. Deployment Target

### Primary Target: 12GB Tablet

#### Hardware Specifications

- **Storage:** 12GB total capacity
- **OS:** Android/Linux tablet OS (~2.3GB reserved)
- **Display:** Tablet-optimized, touch-first interface
- **Connectivity:** Offline-capable with optional sync

## Qt6 Application Features

Feature	Specification
<b>Home Dashboard</b>	Student profile with XP bar, streak tracker, current course card
<b>Quick-access tiles</b>	My Courses, AI Tutor Chat, Portfolio, Leaderboard
<b>Daily AI tip widget</b>	Generated by local LLM each morning
<b>Podcast auto-queue</b>	Today's episode based on current course
<b>Course Player UI</b>	Split view: Video/podcast left, interactive tool right
<b>Web Embeds</b>	Qt WebEngine iframes for live AI tools
<b>AI Tutor Overlay</b>	Context-aware help accessible anytime
<b>Progress Tracking</b>	Per lesson, per module, overall course ring
<b>Bookmarking</b>	Note-taking panel syncs to student profile

## On-Device AI (Local LLM)

- **Model:** Quantized Llama 3 / Mistral 7B via llama.cpp
- **Size:** ~3GB (Q4 quantization)
- **Capabilities:**
  - Knows full course curriculum
  - Gives hints, not answers
  - Generates quiz questions from lesson transcripts in real-time
  - Tracks confusion patterns, suggests review lessons
  - Encouraging, non-condescending tone calibrated per level

## Offline Fallback System

- Whitelisted AI tool domains loaded in sandboxed WebEngine views
  - Cached tool screenshots with step-by-step overlay when no internet
  - Podcast episodes: embedded players with offline cache
  - Auto-sync completed exercises when connection restored
-

## 10. Development Roadmap

### Qt6 Tablet App Development (12 Months)

Phase	Timeline	Deliverables	Resources
<b>Phase 1</b>	Months 1-2	Qt6 app shell, SQLite DB, course player, web embed system, local LLM integration	1 Qt6 dev, 1 UI/UX designer
<b>Phase 2</b>	Months 3-4	Track A courses (8), AI tutor quiz system, student profiles, basic assessment	2 instructional designers, 1 AI prompt engineer
<b>Phase 3</b>	Months 5-6	Tracks B & C (14 courses), image/video tool embeds, portfolio system, podcast integrations	Content team, video editor
<b>Phase 4</b>	Months 7-8	Tracks D & E (11 courses), CRM/CMS embeds, SASS lessons, automation workflows	Web expert, automation specialist
<b>Phase 5</b>	Months 9-10	All expert-level courses (8-week), certification system, badge/QR generator, offline caching	Full team
<b>Phase 6</b>	Month 11	Tablet imaging, storage optimization, beta test with 50 students, bug fixes	QA engineer, students
<b>Launch</b>	Month 12	Public release, instructor dashboard, analytics, content update pipeline	Full team + marketing

## **Web Platform Development (8 Months)**

Phase	Timeline	Deliverables	Team
<b>Phase 1: Foundation</b>	Months 1-2	Auth system, user roles, PostgreSQL schema, basic React shell, Monaco editor, S3 file storage	2 full-stack devs
<b>Phase 2: IDE Core</b>	Months 2-3	4-panel IDE layout, AI Chat tab (Claude proxy), Image Gen tab (DALL-E proxy), live HTML preview, asset library, Qt6 sync API	2 devs + 1 designer
<b>Phase 3: Business Registry</b>	Months 3-4	Business landing page, registration flow, project brief form + AI parser, basic matching algorithm, project status dashboard	1 dev + 1 copywriter
<b>Phase 4: Collab Hub</b>	Months 4-5	Socket.io chat, project channels, file sharing, Style Board (pinboard + color picker), AI University Bot (Claude-powered)	1 backend + 1 frontend dev
<b>Phase 5: Full Toolbox</b>	Months 5-6	Remaining IDE tabs (Voice, Video, 3D, Automation, Research), deliverable submission flow, business review interface	2 devs
<b>Phase 6: Billing &amp; Revenue</b>	Month 6	Stripe integration, hosting plan management, migration service workflow, invoicing, student optional plan	1 dev
<b>Phase 7: Polish &amp; Launch</b>	Month 7	Mobile-responsive IDE, performance op-	Full team + QA

Phase	Timeline	Deliverables	Team
		timization, SEO for business landing page, beta with 20 businesses + 50 students	
<b>Phase 8: Scale</b>	Month 8+	Analytics dashboard, A/B testing, referral program, Discord integration bridge, API for enterprise businesses	Full team

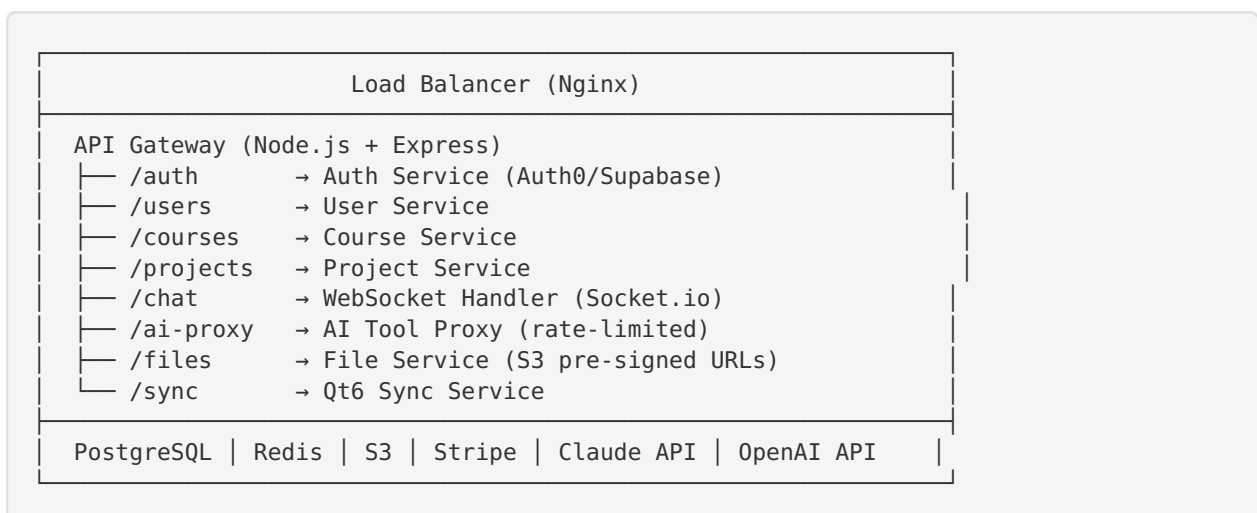
## Critical Path Items

1. **Auth0/Supabase Auth** must be configured BEFORE any other feature
2. **S3 storage architecture** must be scoped before Phase 2
3. **Socket.io architecture** must be designed for scale from Phase 4
4. **Stripe webhooks** must be tested exhaustively before Phase 6 go-live
5. **Qt6 sync API** must be co-designed with tablet team — breaking changes are costly late

# 11. Implementation Recommendations

## Architecture Recommendations

### Backend Services



## Recommended Folder Structure (Web)

```

/src
├── /api           # Express routes
├── /services      # Business logic
├── /models        # Database models (Sequelize/Prisma)
├── /middleware    # Auth, rate limiting, validation
├── /websocket     # Socket.io handlers
├── /workers       # Background jobs (matching, AI parsing)
├── /utils         # Helpers
└── /config        # Environment config
/client
├── /components    # React components
├── /pages         # Route pages
├── /hooks         # Custom hooks
├── /store         # Zustand stores
├── /services      # API clients
└── /styles       # CSS/Styled components

```

## Priority Implementation Order

### 1. MVP Phase 1 (Core Learning)

- User authentication & profiles
- Course catalog & enrollment
- Basic lesson player
- Progress tracking
- Local storage sync

### 2. MVP Phase 2 (AI Integration)

- AI Chat integration (Claude proxy)
- Quiz generation system
- Basic portfolio saving

### 3. MVP Phase 3 (Business Features)

- Business registration
- Project brief submission
- Basic matching algorithm
- Simple collaboration (no real-time)

### 4. Full Platform (Post-MVP)

- Full real-time collaboration hub
- All AI tool integrations
- Advanced matching with AI
- Stripe billing
- Mobile responsiveness
- Analytics dashboard

## Key Technical Decisions to Make

Decision	Options	Recommendation
<b>ORM</b>	Sequelize, Prisma, TypeORM	Prisma (type-safe, great DX)
<b>Frontend State</b>	Redux, Zustand, Jotai	Zustand (lightweight, simple)
<b>Real-time</b>	Socket.io, Pusher, Ably	Socket.io (self-hosted, full control)
<b>File Storage</b>	S3, Cloudflare R2, Backblaze	S3 + CloudFront (industry standard)
<b>Auth</b>	Auth0, Supabase, Custom	Supabase Auth (free tier, easy setup)
<b>Deployment</b>	Vercel/Railway, AWS, DigitalOcean	Vercel (frontend) + Railway (backend)
<b>Qt6 Build</b>	CMake, QMake, Meson	CMake (modern, well-supported)

## Estimated Team Requirements

Role	Count	Responsibility
Full-Stack Developer	2-3	Core platform development
Qt6/C++ Developer	1-2	Tablet app development
UI/UX Designer	1	Design system, user flows
DevOps/Infrastructure	1	Deployment, scaling, monitoring
AI/ML Engineer	1	LLM integration, model optimization
Content/Instructional Designer	2	Course content creation
QA Engineer	1	Testing, quality assurance
Project Manager	1	Coordination, timeline management

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## Summary

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**AI University (1DreamUniversity)** is an ambitious but well-architected educational platform that combines:

- **Offline-first tablet learning** with local AI tutoring
- **Web-based IDE** for project work and AI tool access
- **Business marketplace** connecting students with real projects
- **Real-time collaboration** for client-student communication
- **Service-based revenue model** (hosting, migration, not tuition)

The technical stack is modern and appropriate:

- **Qt6 + SQLite + llama.cpp** for tablet
- **React + Node.js + PostgreSQL + Socket.io** for web
- **S3 + CloudFront** for media delivery
- **Stripe** for payments

The phased development approach over 8-12 months is realistic given proper resourcing. Key risks include:

- LLM storage/performance constraints on 12GB tablets
- Real-time sync complexity between tablet and web
- AI tool API costs and rate limiting
- Content maintenance as AI tools evolve rapidly

**Recommendation:** Start with web platform MVP focused on the Student IDE and basic courses, then add Business Registry and tablet app in parallel phases.

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Document prepared for 1DreamUniversity planning and implementation team.