SimpliTaught Micro-Services Architecture

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Token

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Cloud SQL

Cloud Build

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Google Cloud
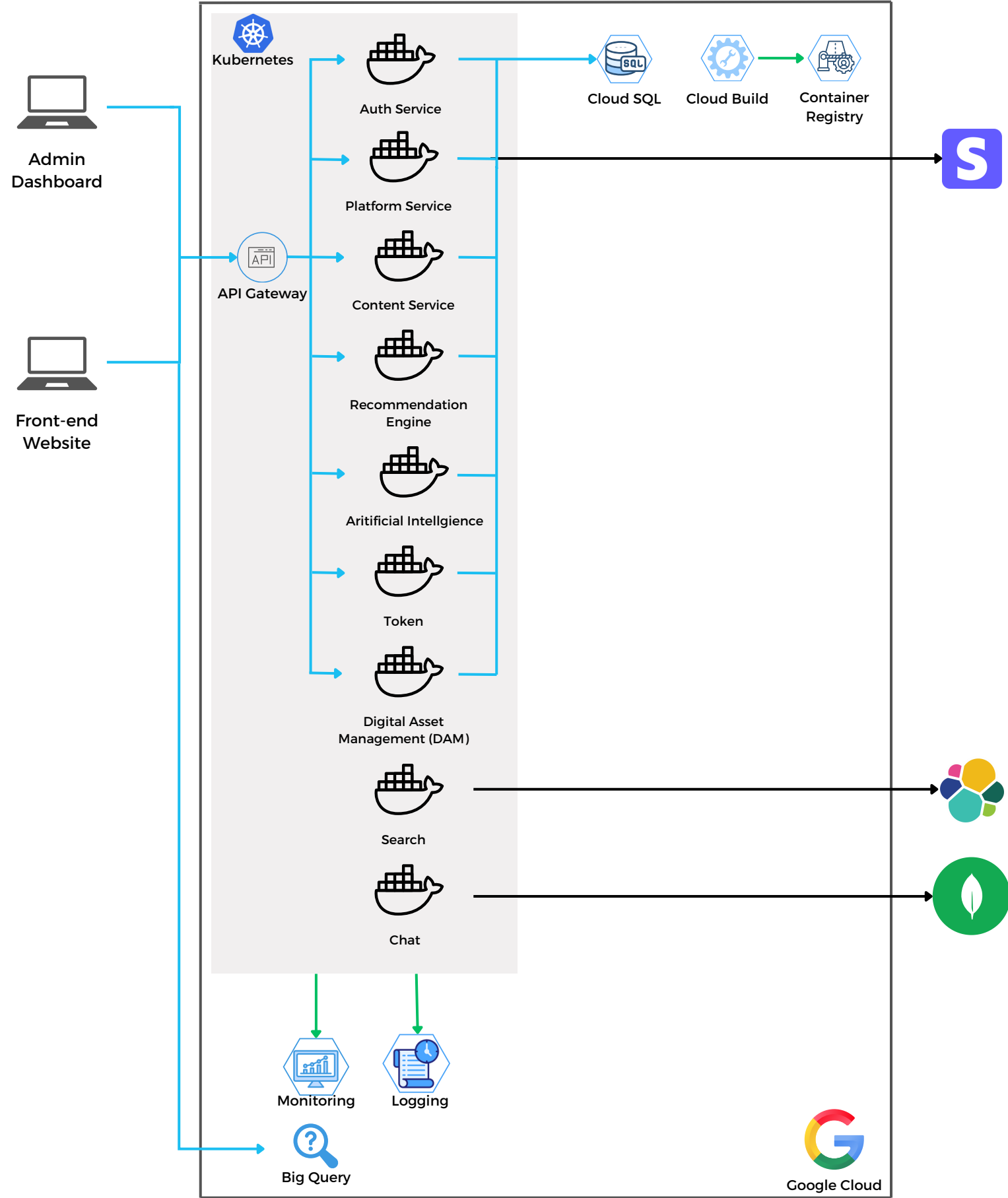
SIMPLITAUGHT TECH ARCHITECTURE

1. Platform Overview

SimpliTaught is a next-generation AI-powered edtech platform built for performance, scalability, and automation. It integrates cutting-edge AI, real-time processing, and intelligent automation to provide a seamless learning experience. The platform consists of:

- **Frontend:** Built with React.js and Next.js for a fast, interactive, and SEO-friendly UI. Server-side rendering (SSR) and static site generation (SSG) improve performance and user experience.

- **Backend:** It uses Node.js, a non-blocking, event-driven runtime that ensures high concurrency, low latency, and scalability. APIs efficiently handle thousands of simultaneous requests.

- **AI Components:** Developed using Python and Flask, integrating AI-powered automation for content curation, video generation, quizzes, translations, chat interactions, and recommendations.

2. Blockchain Integration

SimpliTaught integrates blockchain technology to enhance transaction security, transparency, and efficiency. The platform uses SimpliTaught token (TAWT), a native cryptocurrency built on the Solana blockchain, to facilitate various financial interactions.

Solana was chosen for its high-speed processing, scalability, and low transaction fees, making it an ideal blockchain for handling large-scale educational transactions. Its Proof-of-History (PoH) and Proof-of-Stake (PoS) mechanisms enable fast transaction finality, reducing latency while maintaining decentralization.

3. Token Functionality

TAWT is used across the SimpliTaught ecosystem for:

- **Purchases:** Users can buy courses, books, and premium content using TAWT. This creates a decentralized marketplace where learners and educators can transact efficiently.

- **Staking & Incentives:** Users can stake TAWT to access exclusive educational resources, premium features, and higher reward tiers. Educators can stake tokens to boost content visibility and earn passive rewards.

- **User Rewards:** Students earn TAWT for completing courses, passing quizzes, and engaging with platform activities. This incentivizes learning and fosters engagement.

- **Smart Contract Automation:** All transactions are secured through Solana-based smart contracts, ensuring tamper-proof, automated, and trustless execution of payments, rewards, and staking mechanisms.

Expansion Through Multi-token Integration

To enhance liquidity and utility, SimpliTaught is also exploring the integration of other tokens, such as SIMF. This will:

- Increase liquidity, allowing seamless conversion between TAWT and SIMF for users.

- Expand payment options, offering more flexibility for purchases and transactions.

- Enhance ecosystem utility, enabling cross-platform use of digital assets within different educational and blockchain-based environments.

4. Security

Security is a top priority for SimpliTaught, ensuring that users' data, transactions, and digital assets remain safe from unauthorized access, fraud, and cyber threats. The platform implements multiple layers of security measures to protect both users and the overall system.

Key Security Measures

- **Two-Factor Authentication (2FA):** Users must verify their identity through a secondary authentication method (such as SMS, email, or an authenticator app) in addition to their password. This significantly reduces the risk of unauthorized access.

- **Data Encryption:** All sensitive user data, including personal information and wallet credentials, is encrypted using advanced cryptographic algorithms to prevent data breaches and unauthorized data access.

- **Blockchain Security:** Transactions involving SimpliTaught Coin (TAWT) and other integrated tokens are recorded on the Solana blockchain, ensuring immutability, transparency, and fraud prevention through smart contract automation.

- **Regular Security Audits:** The platform undergoes continuous security audits and penetration testing to identify and mitigate vulnerabilities. Independent third-party audits are also planned to maintain platform integrity.

- **Access Control & Role-Based Permissions:** SimpliTaught enforces strict access controls for user roles, ensuring that only authorized personnel can access critical system components.

- **DDoS Protection:** Advanced Distributed Denial-of-Service (DDoS) mitigation mechanisms are in place to protect the platform from attacks that could disrupt services.

- **Real-Time Threat Monitoring:** AI-powered security tools continuously monitor user activity, transactions, and system behavior to detect and respond to suspicious activities in real time.

By implementing multi-layered security measures, continuous monitoring, and regular audits, SimpliTaught ensures a safe and trusted learning environment for all users, protecting both their data and blockchain-based financial transactions.

5. Hosting & Infrastructure

SimpliTaught is hosted on Google Cloud Platform (GCP), leveraging its high-performance, scalable, and secure cloud infrastructure to support the platform's growing user base and AI-driven functionalities.

Key Infrastructure Features

- **Microservices Architecture:** The platform follows a microservices-based architecture, breaking down services into independent components for scalability, modularity, and faster deployments. This ensures that updates, bug fixes, and new features can be rolled out efficiently without disrupting the entire system.

- **Scalability & Load Balancing:** GCP's auto-scaling and load-balancing features enable the platform to handle high-traffic loads, ensuring smooth performance during peak usage periods.

- **Containerization with Kubernetes:** SimpliTaught uses Kubernetes (GKE) for container orchestration, allowing seamless deployment, scaling, and management of applications across distributed environments.

- **Data Storage & Security:** The platform utilizes Cloud SQL, BigQuery, and encrypted cloud storage to securely manage and process large volumes of educational content, AI-generated data, and blockchain transactions.

- **Disaster Recovery & Uptime:** GCP's redundant architecture, automated backups, and disaster recovery solutions ensure high availability and minimal downtime.

By leveraging Google Cloud's robust infrastructure, SimpliTaught achieves high reliability, security, and scalability, providing a seamless and efficient learning experience for users worldwide.

6. Microservices at SimpliTaught Platform

SimpliTaught follows a microservices architecture, ensuring scalability, modularity, and independent service management. Each microservice is responsible for a specific function, allowing seamless development, deployment, and scaling of individual components.

AI Microservice:

The AI Microservice is responsible for all AI-driven functionalities within the platform, enabling automation and personalized learning. It includes Auto Curation, where AI extracts and structures course content from books, PDFs, PPTs, and videos. Quiz Generation allows AI to create adaptive quizzes based on key concepts, ensuring an engaging learning experience. The Video Translation feature enables multilingual subtitles, dubbing, and voice translations, making content accessible to a global audience. The Recommendation Engine analyzes user behavior, learning patterns, and quiz performance to suggest relevant courses and study materials. Additionally, the AI Assistant provides context-aware responses to assist users with learning and platform navigation, while Message Translation ensures seamless communication across different languages.

Content Microservice:

The Content Microservice manages all learning materials and user interactions with courses and books. It facilitates CRUD (Create, Read, Update, Delete) operations for Books and Course Collections, allowing educators to upload, modify, and manage content. The User Course History feature tracks user engagement with different courses, ensuring a personalized learning journey. Furthermore, AI Video Generation converts text-based content into AI-generated videos with animations and voiceovers, enhancing the learning experience.

Digital Asset Management (DAM) Microservice:

The Digital Asset Management (DAM) Microservice is responsible for securely storing and managing all digital assets within the platform. It handles images, videos, documents, and other learning materials while ensuring metadata handling, efficient retrieval, and secure access to digital content.

Profile Microservice:

The Profile Microservice focuses on managing user profile data and subscription services. It allows users to edit and update their profiles, manage subscriptions, and purchase additional quotas for storage, courses, or services beyond standard limits. This microservice ensures a smooth user experience and seamless access to premium features.

Search Microservice:

The Search Microservice leverages Elastic Search to power fast and efficient searches across the platform. Users can search for profiles, courses, and books with advanced filtering options. This ensures that learners and educators can quickly find relevant content based on categories, difficulty levels, and keywords.

Token Microservice:

The Token Microservice handles all blockchain-related functionalities for SimpliTaught Coin (TAWT) and other integrated tokens such as SIMF. It stores token data, manages transactions, and supports investment-related activities like the White Paper, Tokenomics, and Investor Data Room. This ensures seamless blockchain integration and decentralized financial operations within the platform.

Sternguard Microservice:

The Sternguard Microservice is responsible for user authentication, transactions, and other essential platform services. It includes secure login, Two-Factor Authentication (2FA), and role-based access control to ensure data security. The Add to Cart and Bulk Purchase feature enables users to buy books in bulk, while the Grant Program Management handles scholarships, funding, and token reward distribution. Additionally, this microservice manages TAWT coin information, book licensing, and purchase history, ensuring proper tracking of digital assets. It also automates email notifications for sign-ups, purchases, subscription renewals, and quota upgrades.

Chat Microservice:

The Chat Microservice supports real-time messaging and communication across the platform. Users can engage in one-on-one chats or participate in global discussions within community forums, course discussions, and collaborative learning spaces. This enhances interactivity and knowledge sharing among learners and educators.
By adopting a microservices architecture, SimpliTaught ensures efficient scaling, independent service updates, and high fault tolerance. This modular structure makes the platform highly flexible, AI-driven, and seamlessly integrated with blockchain technology, providing an optimized and secure learning experience for all users.

7. GitHub Repository

The SimpliTaught platform's codebase is currently private to maintain security, intellectual property protection, and development integrity. Access to the repository is restricted and is only available to investors, strategic partners, and authorized stakeholders upon request.
For transparency and collaboration, potential investors or partners who require access can submit a formal request. Upon approval, they may be granted read-only or contributor-level access, depending on their level of involvement in the project. This ensures that only trusted individuals or organizations can review or contribute to the platform's development while maintaining a secure and controlled code management process.
SimpliTaught follows best practices in version control, with structured branching, code reviews, and CI/CD pipelines to ensure a seamless development workflow. The repository hosts all microservices, AI models, smart contracts, and platform infrastructure, ensuring a well-organized and efficient development environment.