



Rad Link: AWS Serverless URL Shortener

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Dr Zunnurain Hussain | Semester Project | Dec 2025

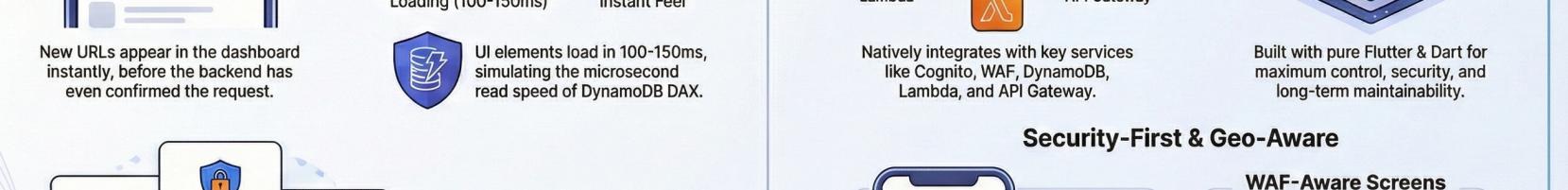
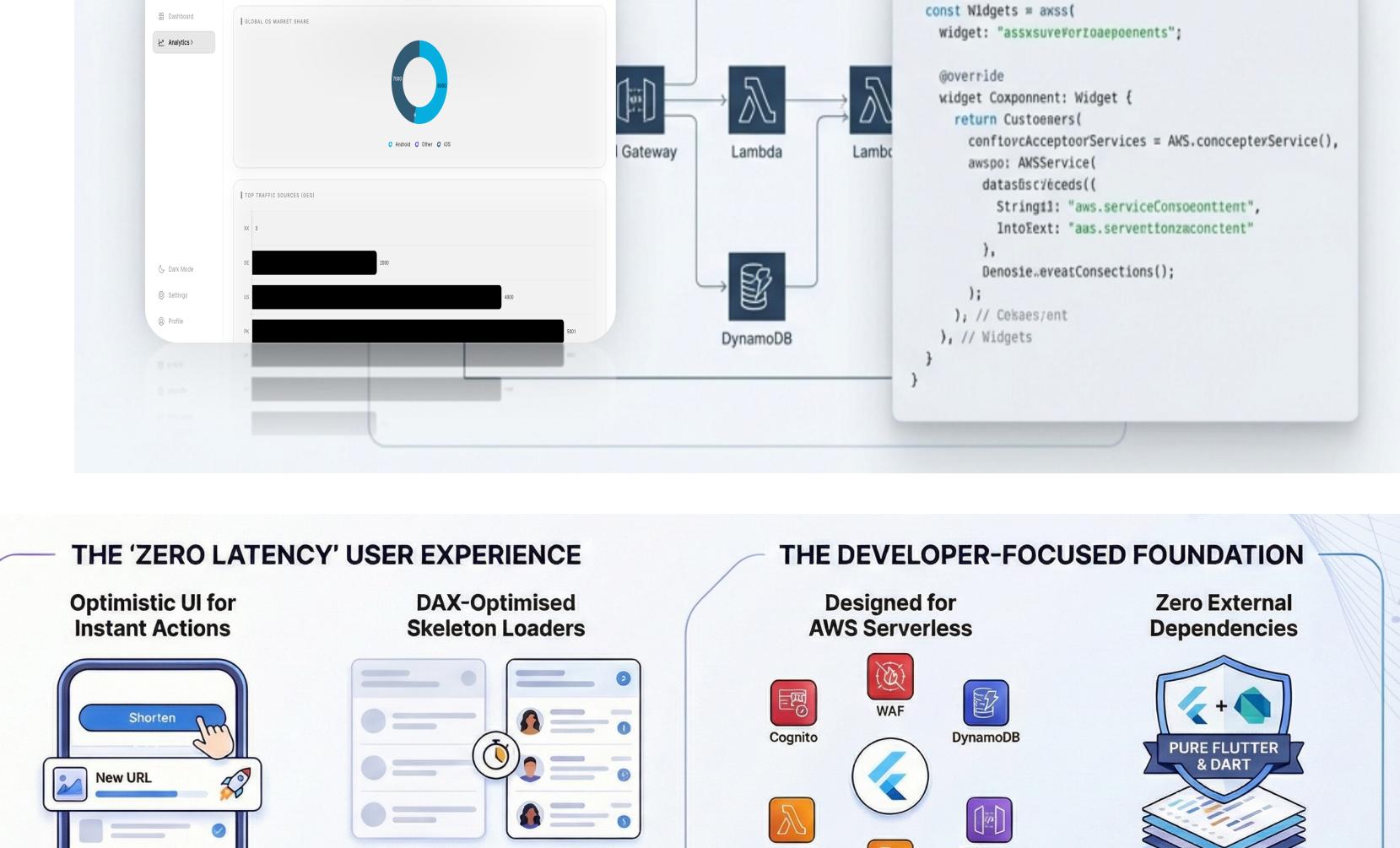
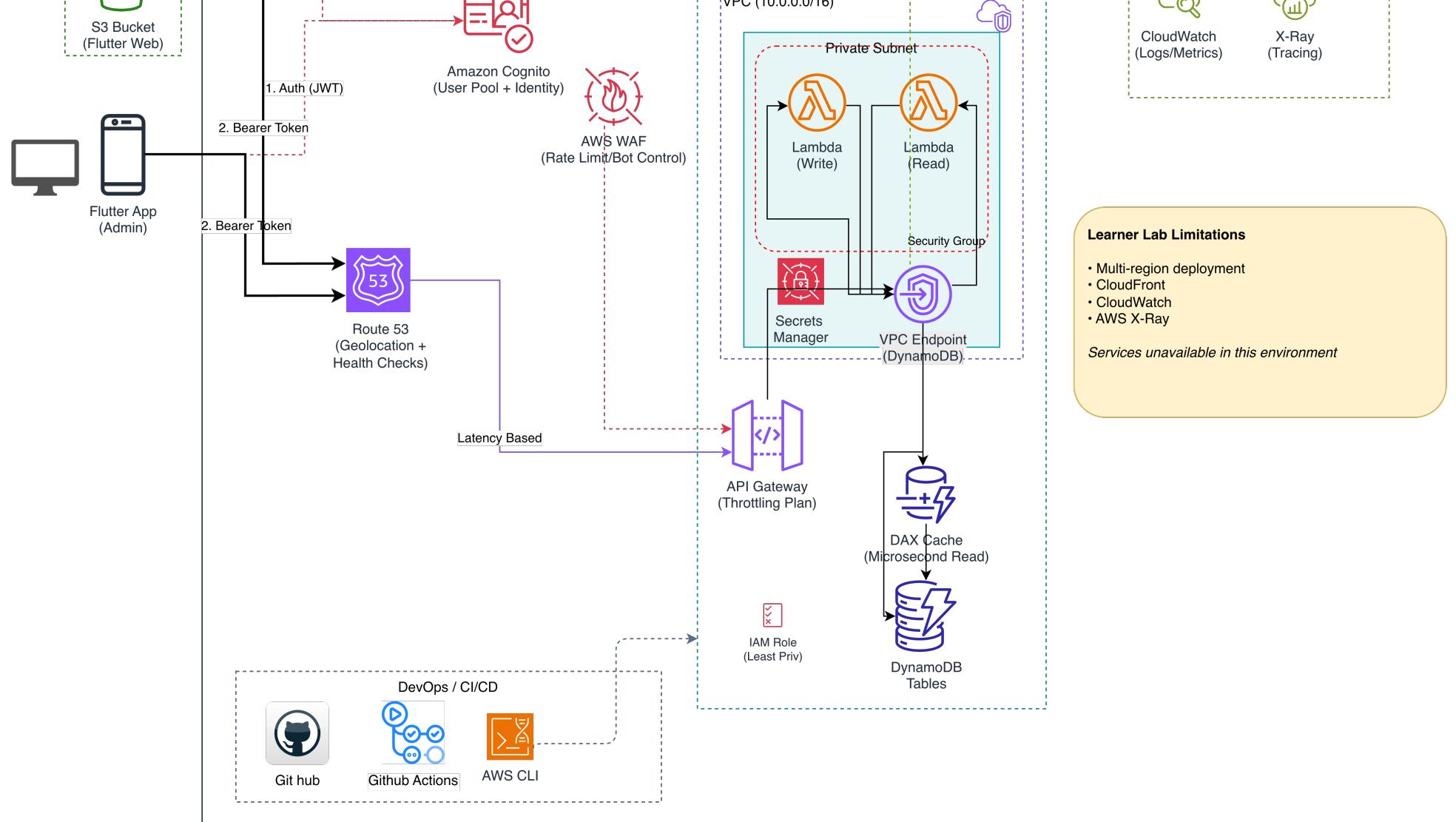


Introduction

Rad Link is not just a URL shortener; it is a high-performance traffic intelligence engine. While competitors hide data behind paywalls, Rad Link is built on the philosophy of **Radical Transparency**.

Key Innovations:

- A unique, **system-wide visualization** engine that aggregates global metrics in real-time.
- Live tracking** of Android vs. iOS usage across the entire platform.
- Geo-spatial data aggregation** to identify high-density traffic zones instantly.



Deployment and Setup

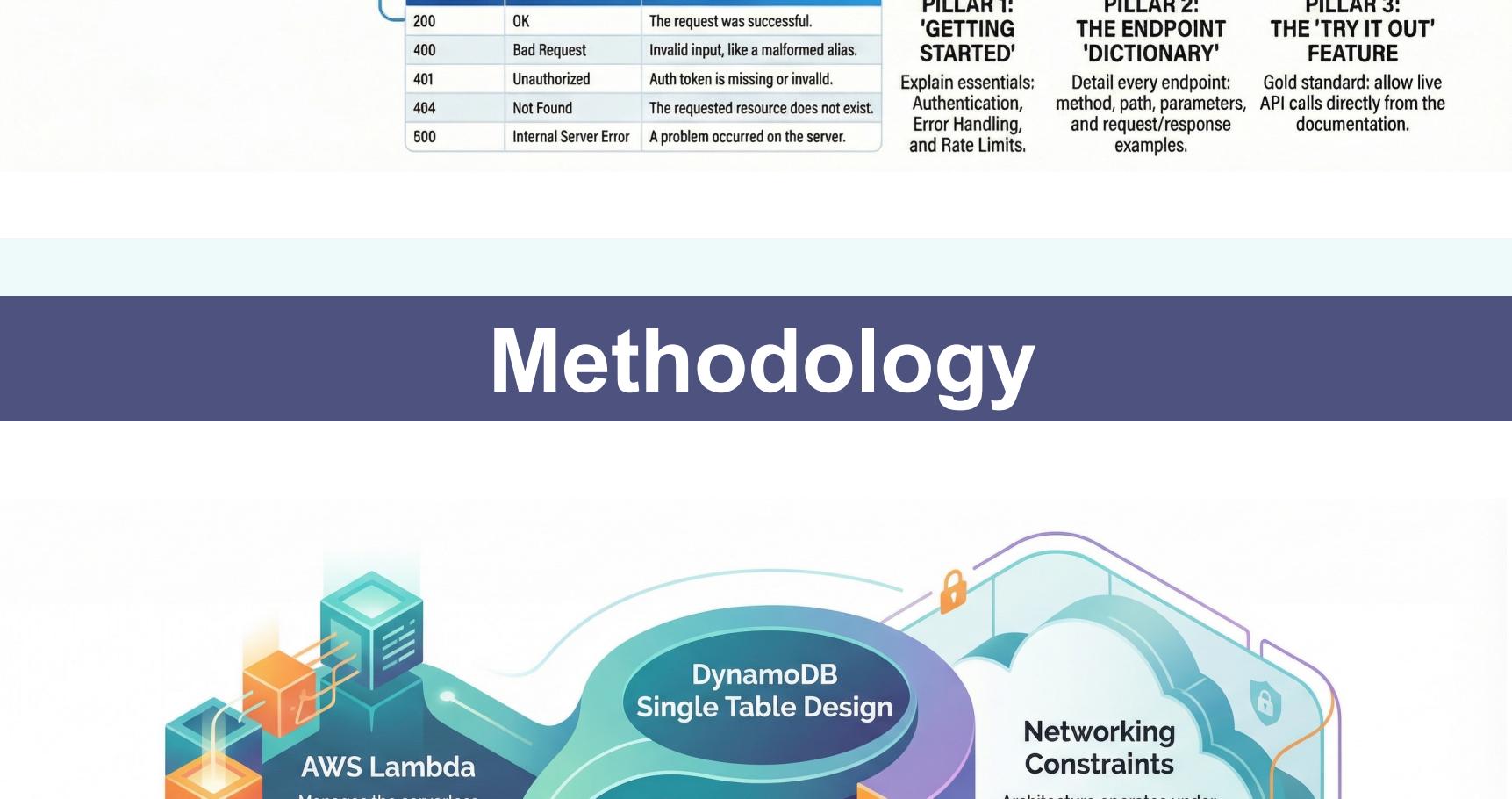
The successful deployment of premium digital real estate. We didn't just build an app; we launched a brand.

The Production Domain:
razasoft.tech

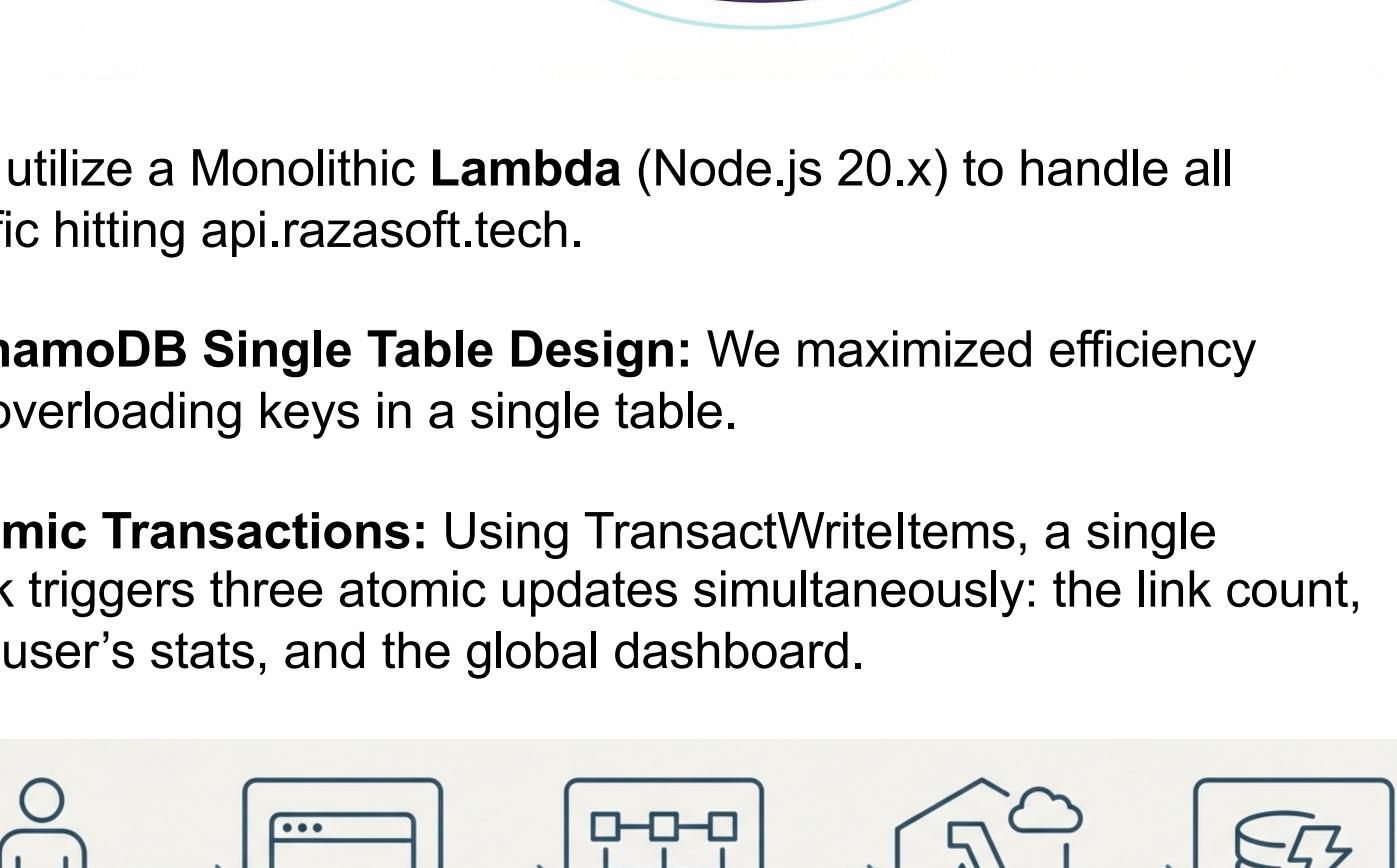
A fully optimized Flutter Web Application delivered via custom DNS.

The Backbone API:
api.rayasoft.tech

This endpoint represents a triumph over AWS Academy constraints. By routing traffic through a **custom EC2 SSL termination layer**, we achieved a secure, verified HTTPS handshake for our custom API domain something typically impossible in student environments.



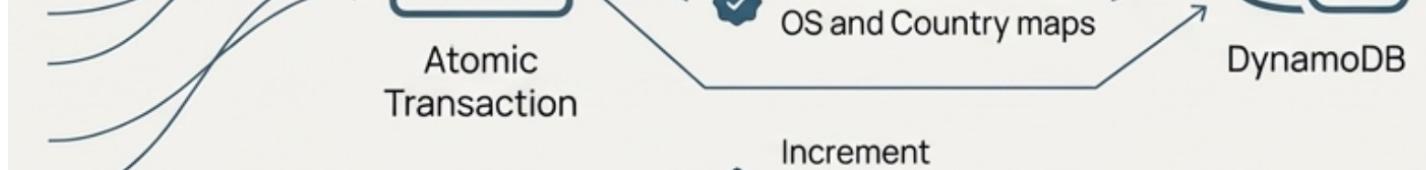
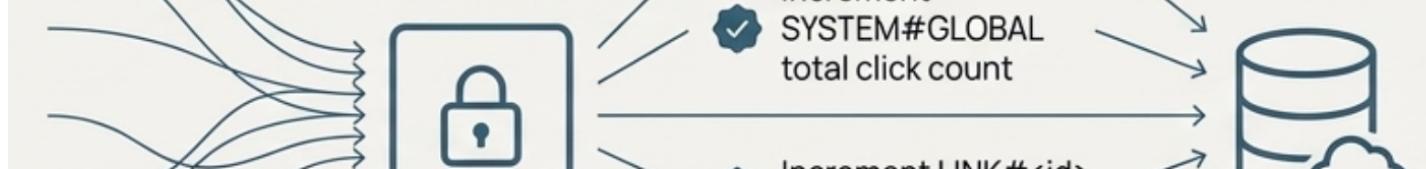
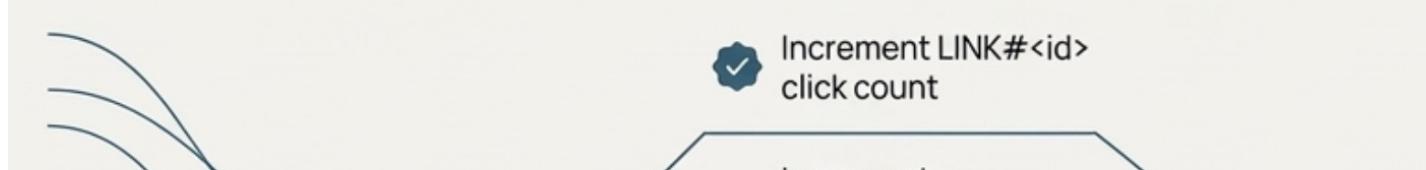
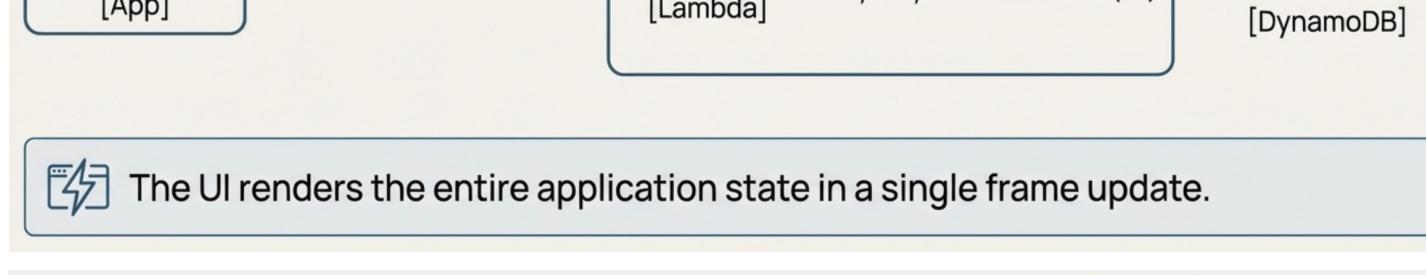
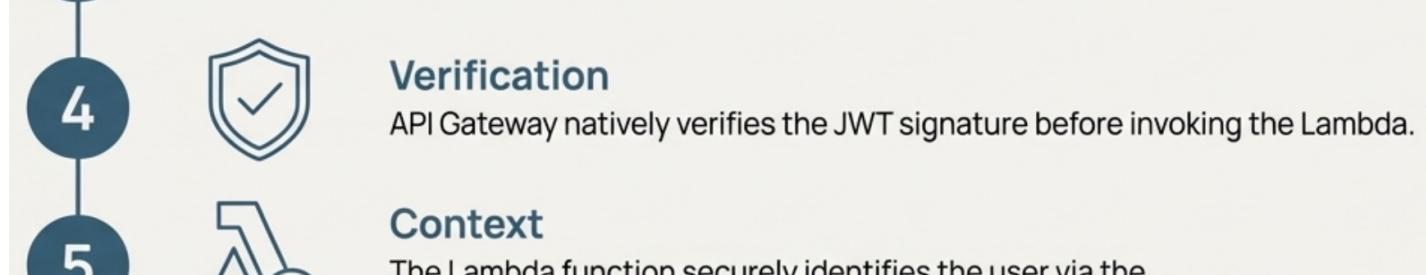
Methodology



We utilize a Monolithic **Lambda** (Node.js 20.x) to handle all traffic hitting api.rayasoft.tech.

DynamoDB Single Table Design: We maximized efficiency by overloading keys in a single table.

Atomic Transactions: Using TransactWriteItems, a single click triggers three atomic updates simultaneously: the link count, the user's stats, and the global dashboard.

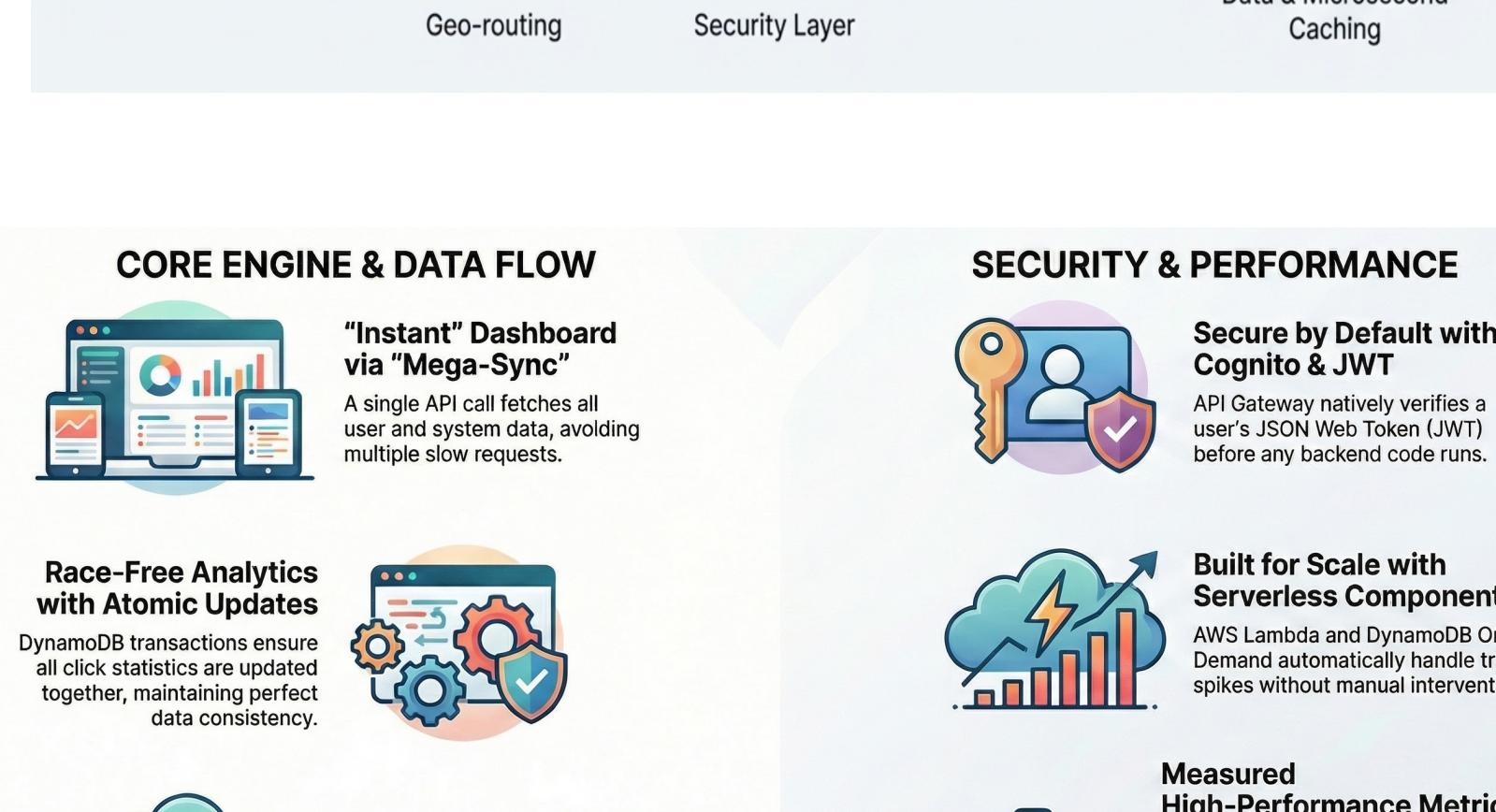


Implementation and Discussion

The frontend is built with Flutter 3.x. It implements an Optimistic UI pattern to eliminate perceived network latency.

The "Cyber-Glass" Experience:

- Instant Feedback:** When a user interacts with the domain, the UI updates instantly while the API synchronizes in the background.
- Mega-Sync Engine:** A single call to the API hydrates the entire dashboard state in one frame.



The ability to secure and deploy custom domains transforms this from a coding project into a marketable SaaS product.

Key Deliverables:

- Full control over **DNS** allows for professional branding via rayasoft.tech.
- DynamoDB** On-Demand capacity handles viral traffic spikes hitting the domain without manual sharding.
- By **decoupling SSL** from managed services, we reduced infrastructure overhead significantly.

