

# Smart Search Platform

Case Study



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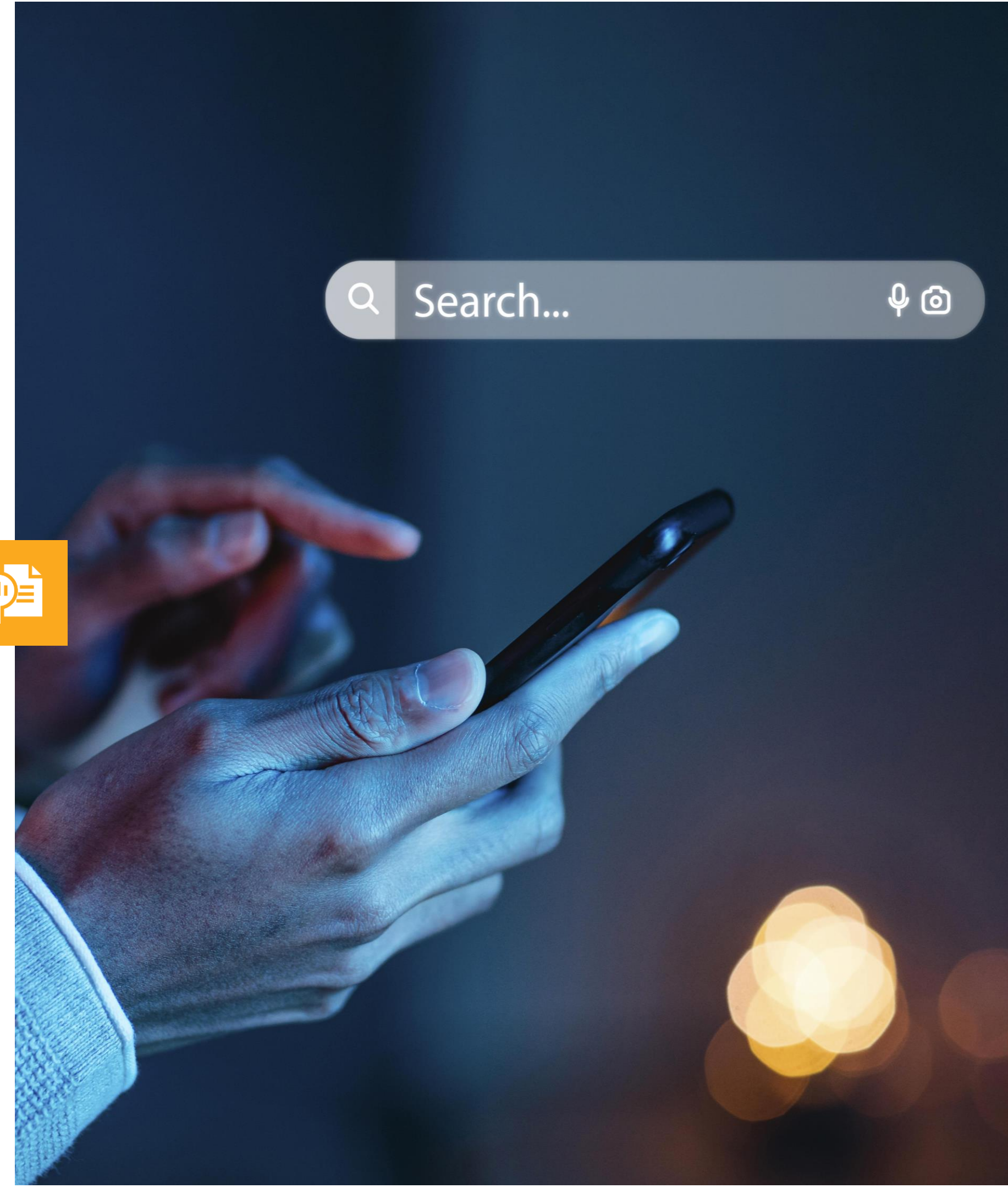


# Project Overview

Smart Search Platform is the ultimate solution for organizations seeking to revolutionize their search capabilities. Offering a sophisticated, high-performance search application, Smart Search Platform not only delivers near real-time results but also provides unmatched speed and flexibility across a wide array of use cases.

With Smart Search Platform, businesses can effortlessly add search functionalities to their applications and websites, enhancing productivity and the user experience. From storing and analyzing logs, metrics, and security event data to utilizing machine learning for real-time data behavior modeling, Smart Search Platform caters to diverse organizational needs.

Smart Search Platform is the go-to solution for fast, efficient, and flexible data searching and analysis, offering organizations unparalleled insights and productivity.





# About Customer

It was established in 2012 to provide expert-level Elasticsearch customized software solutions to small, midsize, and large businesses. Weblink has its operations base in Chicago, IL.

The company provides state-of-the-art solutions in areas like product search APIs, custom Elasticsearch solutions, enterprise-level Elasticsearch clusters, and Elasticsearch cluster management and support.

They provide effective and reliable Elasticsearch solutions that support operational efficiency, productivity gains, and cost savings for their clients.

Their work has helped clients integrate design into their strategic thinking, realize their business goals, develop memorable brands, and create value.



## Purpose

The purpose of Smart Search is to provide an efficient and flexible search intelligence platform that allows customers to create and use search engines and query the data without the need for buying the search engine or extensive custom development, outside of their expertise.

## Vision

The vision of Smart Search is to become the leading search intelligence platform provider, which provides a platform that is easy to create search engines and query in multiple search engines altogether and provide analytics report and also productivity gain.

## Mission

The mission of Smart Search is to simplify search integration for businesses through its SaaS solution that offers easy-to-use web APIs for developers, shortens the installation process, and seamlessly integrates with business applications.

# Business Challenges

Choosing the Right Search Engine: Selecting a suitable search engine among numerous providers can be daunting. Scalability, maintenance, performance, and operational costs, as well as analysis and deep dive capabilities, must all be taken into consideration.

- **Switching Between Search Engines :**

Each search engine has its own unique features and methods for finding information. As a result, transitioning between search engines can be cumbersome and time-consuming. It takes time and effort to switch, and it may disrupt our workflow.

- **Keeping Things Safe :**

Securing our search engine data is crucial. We need to protect it from unauthorized access while ensuring that legitimate users can still access it easily. Finding the right balance between security and accessibility is tough. It's a constant challenge to keep our data safe from cyber threats while allowing users to use it effectively.



# Our Solutions

To address these issues, we offered our query language to the customer. This lets users consistently ask questions, regardless of their chosen search engine. Our system then translates the question into the specific language that the engine understands. This flexibility allows users to switch search engines or versions anytime, while built-in security with Elasticsearch ensures only authorized people see specific information.

- **Project Management :**

Smart Search Platform streamlines project creation for smart search functionalities. Users can define single projects for individual data sources or create meta-projects that combine multiple projects into a single, searchable entity. This flexible approach allows for granular control and efficient management of search experiences.

- **User Management :**

Smart Search Platform safeguards sensitive information by implementing user roles. Administrators hold the power to create and manage user accounts, assigning specific permissions based on those roles. This allows for granular control over what information each user can access (active/inactive status) and their level of authority within the system.

- **Use Case :**

Smart Search Platform allows creating "use cases" within projects. These act like customized versions of the project, allowing admins to adjust search parameters and queries for specific needs.

- **Query optimization :**

Smart Search Platform refines your search results with "boosting" and "weights." You can prioritize specific results (like Apple products) or ensure a minimum number of results are returned. This fine-tuning helps you find exactly what you're looking for, even with broad searches.

- **Curations :**

A powerful feature that lets you fine-tune search results for specific projects. Imagine searching for products – with Curations, you can promote relevant items or hide outdated ones based on search terms. This way, users always see the most helpful information, enhancing their search experience.

# Key Challenges Faced

- **Multiple Search Engine Compatibility:**

The existence of multiple search engines with distinct applications poses a challenge in applying consistent customization across platforms. Elasticsearch excels with dynamic data, while Apache Solr performs better with static data. This discrepancy complicates the task of implementing uniform customization, including curation, query optimization, and use case application, across diverse search engines like Elasticsearch, Apache Solr, and OpenSearch.

- **Complexity in Deployment and Management:**

Our subscription plans offer different deployment instances based on tiers (Basic, Standard, and Enterprise). However, the process of selecting a preferred cloud provider (AWS, Azure, or GCP) and deploying the instances can be complex for users. The varied number of instances deployed for each plan adds another layer of complexity, requiring seamless management to ensure smooth operation.

- **Licensing and Permission Management:**

Ensuring that users are granted permission to access specific functionalities as per their license agreement poses a significant challenge. Each license specifies both the permitted functionalities and the total number of units accessible. To address this challenge, we leverage the Cryptlex software licensing provider to manage permissions effectively and ensure compliance.

- **Usage-Based Billing Integration**

Implementing a usage-based charging model presents challenges in accurately tracking and billing users for their usage of specific features. We track usage duration through the integration of the Amberflo service, which triggers metering upon project creation and halts upon deletion. This integration also facilitates seamless payment management through Stripe, with a fallback option to ingest data via Amazon S3 even during Amberflo downtime.

- **Analytics and Reporting:**

Monitoring user behaviour and generating insightful reports require an efficient analytics platform. Tracking metrics such as total queries, recent searches, popular search terms, and "no results" occurrences helps us understand user engagement and optimize search performance. Our internal analytics platform enables us to generate reports based on user search behaviour, aiding in decision-making and platform enhancement efforts.



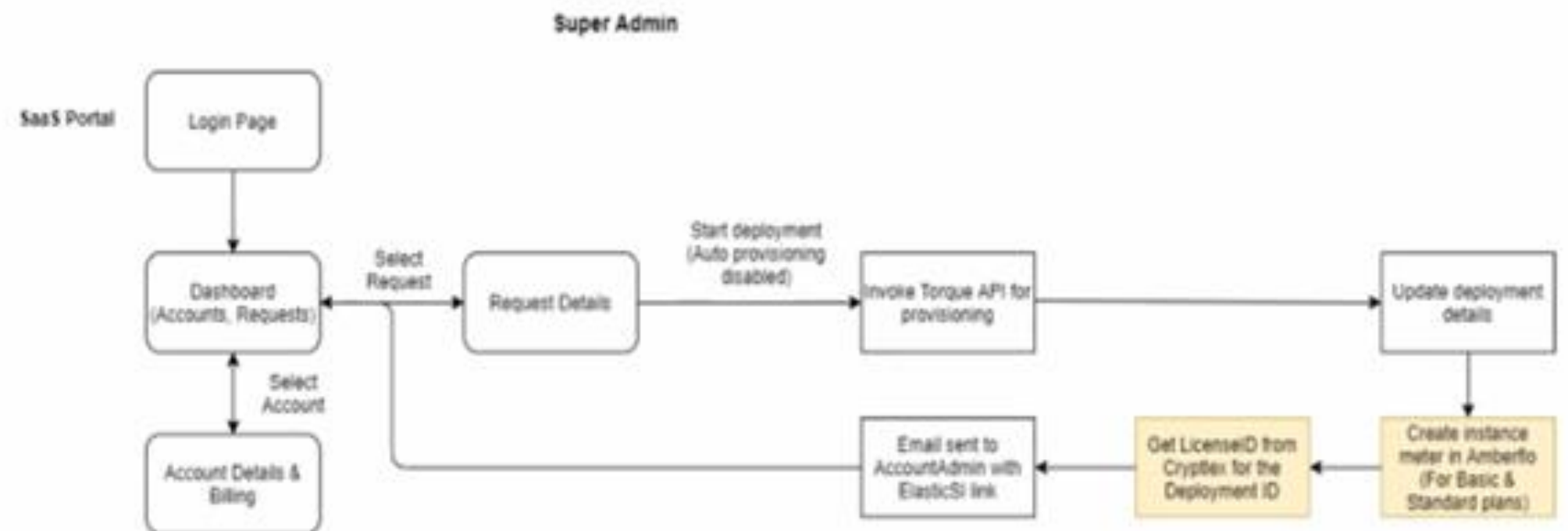
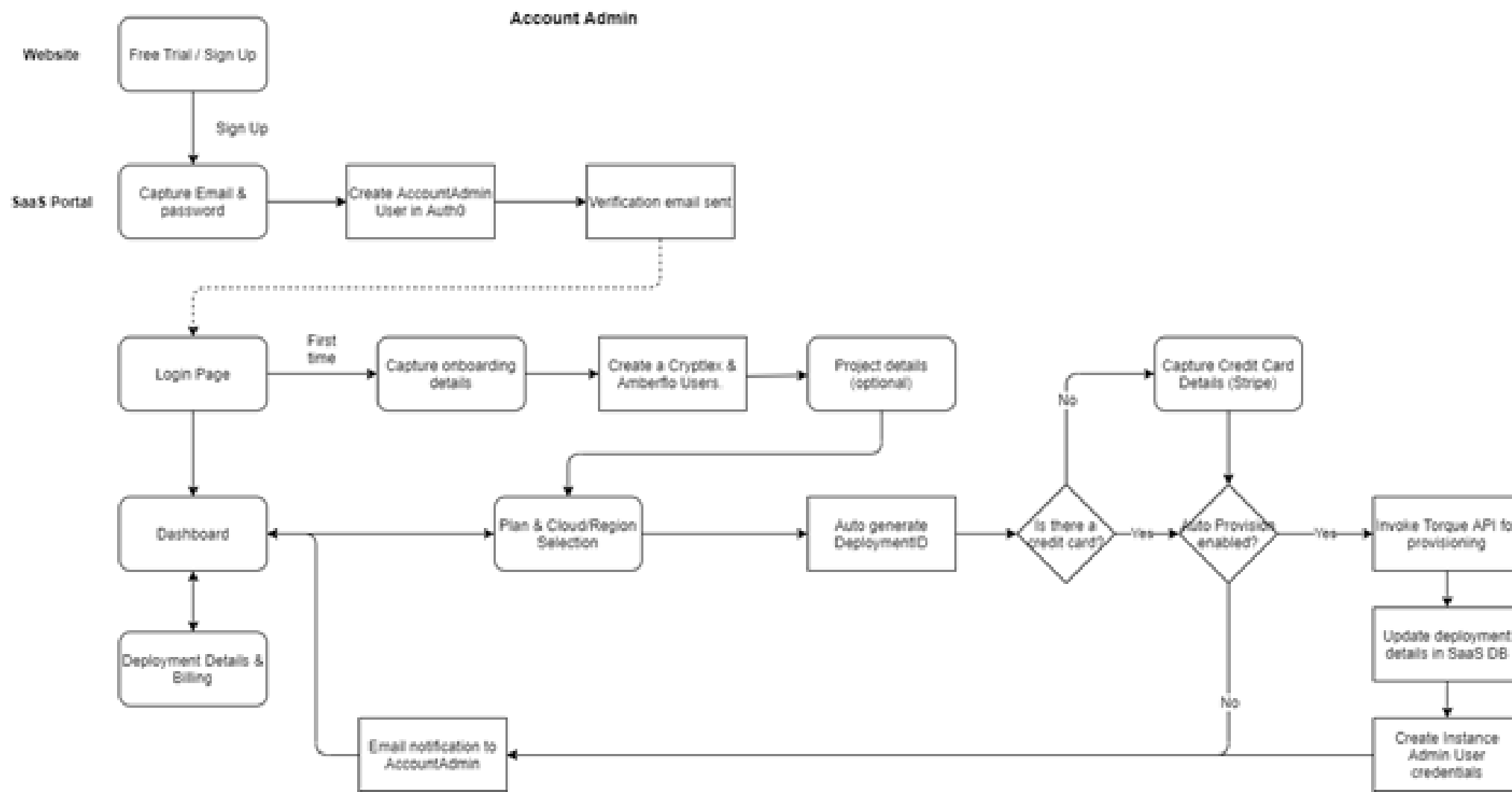
# Applied Technologies

- Java 8
- Spring Boot
- React (version 17)
- Microservices
- Rest APIs
- MongoDB
- ELK Stack (Elasticsearch, Logstash, Kibana)
- Apache Solr
- OpenSearch
- ElasticUI
- Redis
- Auth0
- Amberflo
- Cryptlex
- Handlebars
- JUnit
- Cypress
- Kubernetes
- Helm Chart
- QTorque
- GCP
- AWS
- Azure





# Architecture Diagram




# Thank You...



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