MICHIGAN STATE UNIVERSITY

# Project Plan Presentation

## Stripe Business Portal

## The Capstone Experience


### Team Stripe

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*From Students…*
*…to Professionals*

# Project Sponsor Overview

- Mission: To increase the GDP of the Internet
- Provides fintech infrastructure for online transactions
- Enables businesses to accept payments globally

# Project Functional Specifications

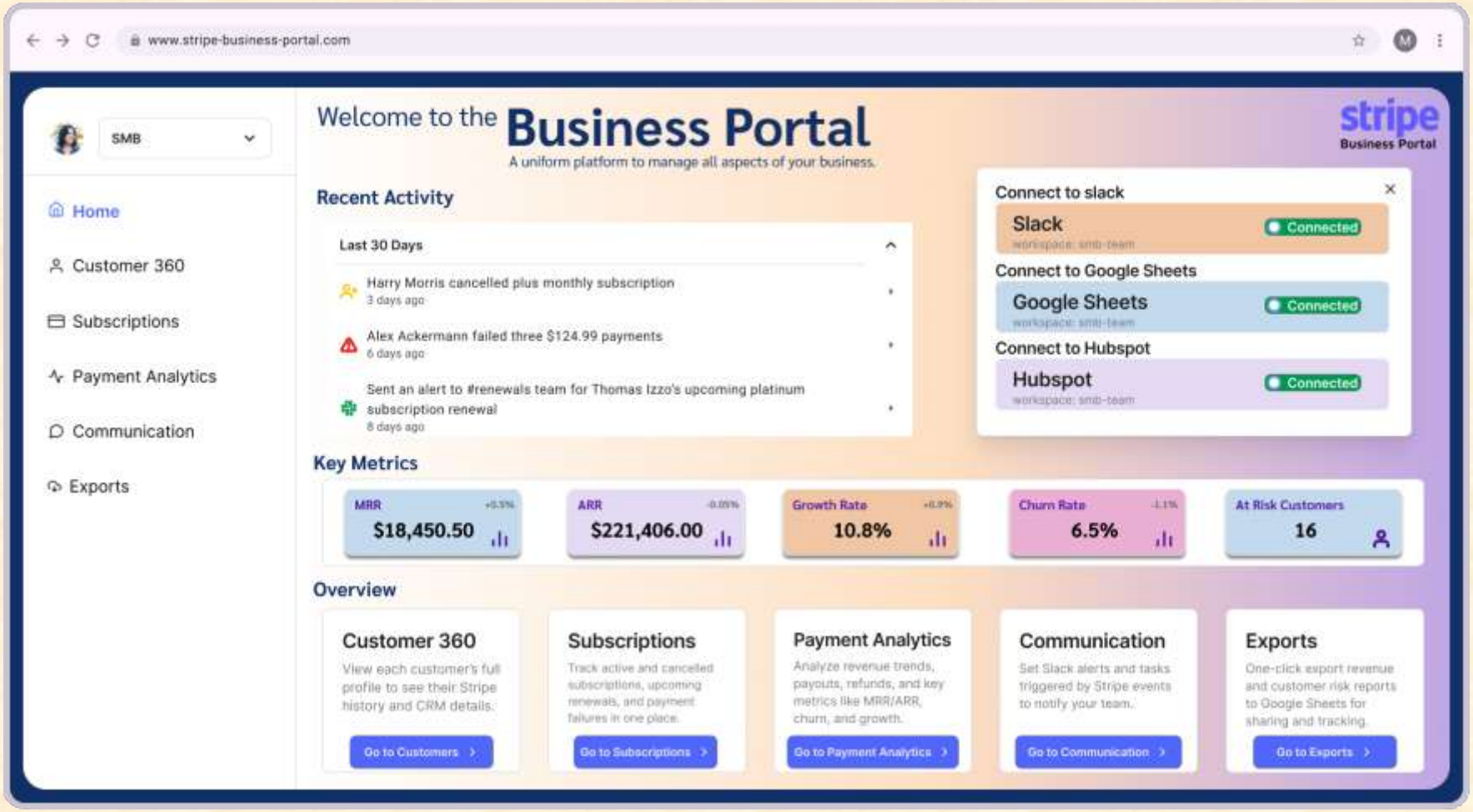
- Problem: Small and medium businesses manage payments, CRMs, communication, and reporting across separate tools, causing manual work and data inconsistencies.
- Solution: Stripe Business Portal unifies Stripe, HubSpot, Slack, and Google Sheets into a single web app that centralizes customer, revenue, and operational workflows
- It automatically ingests Stripe data to power real-time revenue dashboards and a unified customer 360 view combining payments, subscriptions, and CRM data.
- It enables faster decisions and actions through automated alerts and shared/exportable reports, turning Stripe into a complete operational hub.

# Project Design Specifications

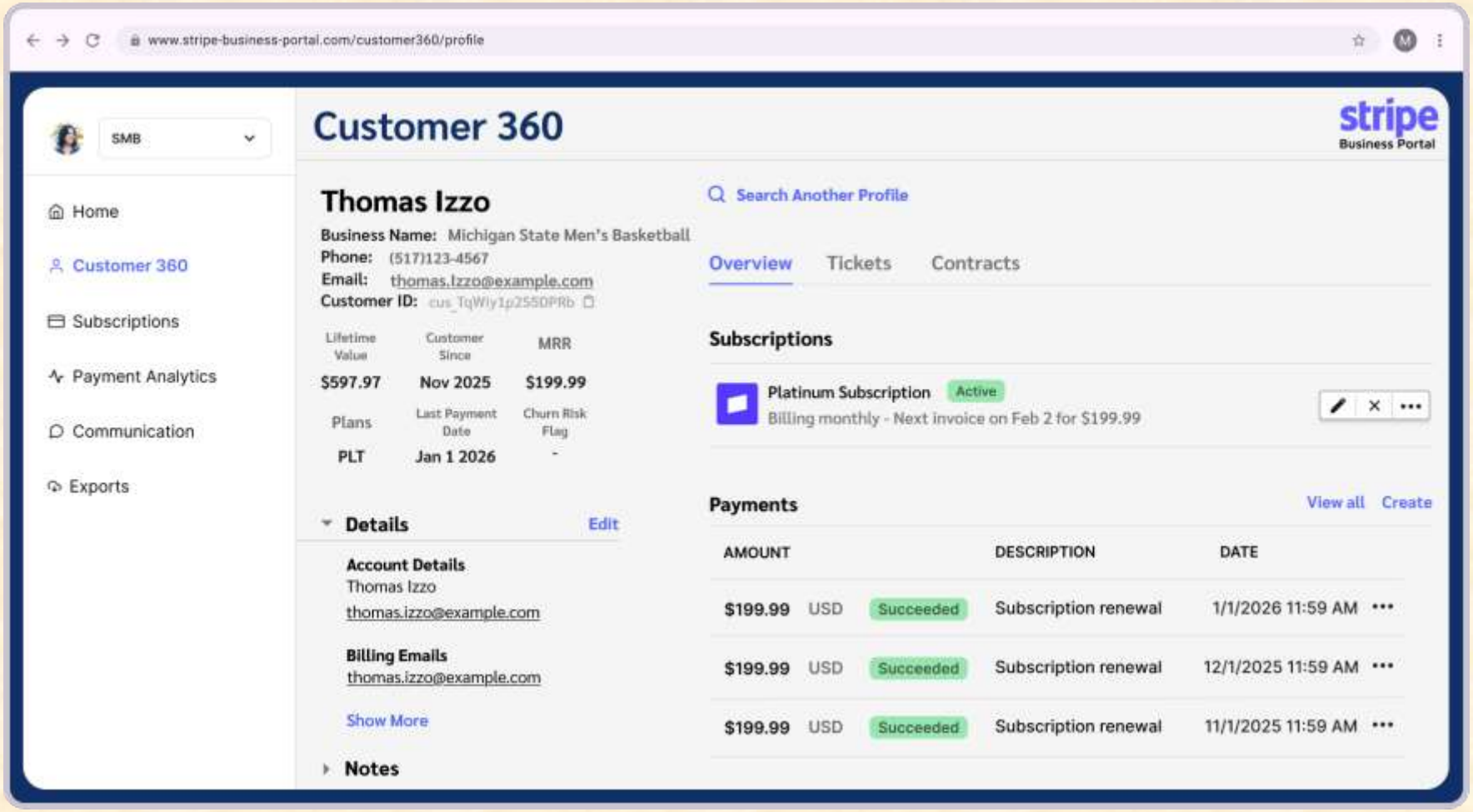
- A single web interface with clear navigation for Customer 360, Subscriptions, Analytics, Communications, and Exports, enabling fast access to core business workflows
- Stripe data is automatically ingested and visualized through metrics, tables, and charts to surface revenue trends, subscription status, and customer risk at a glance
- Built-in SaaS integrations (HubSpot, Slack, Google Sheets) allow users to manage customers, trigger alerts, and export reports directly from the platform without context switching



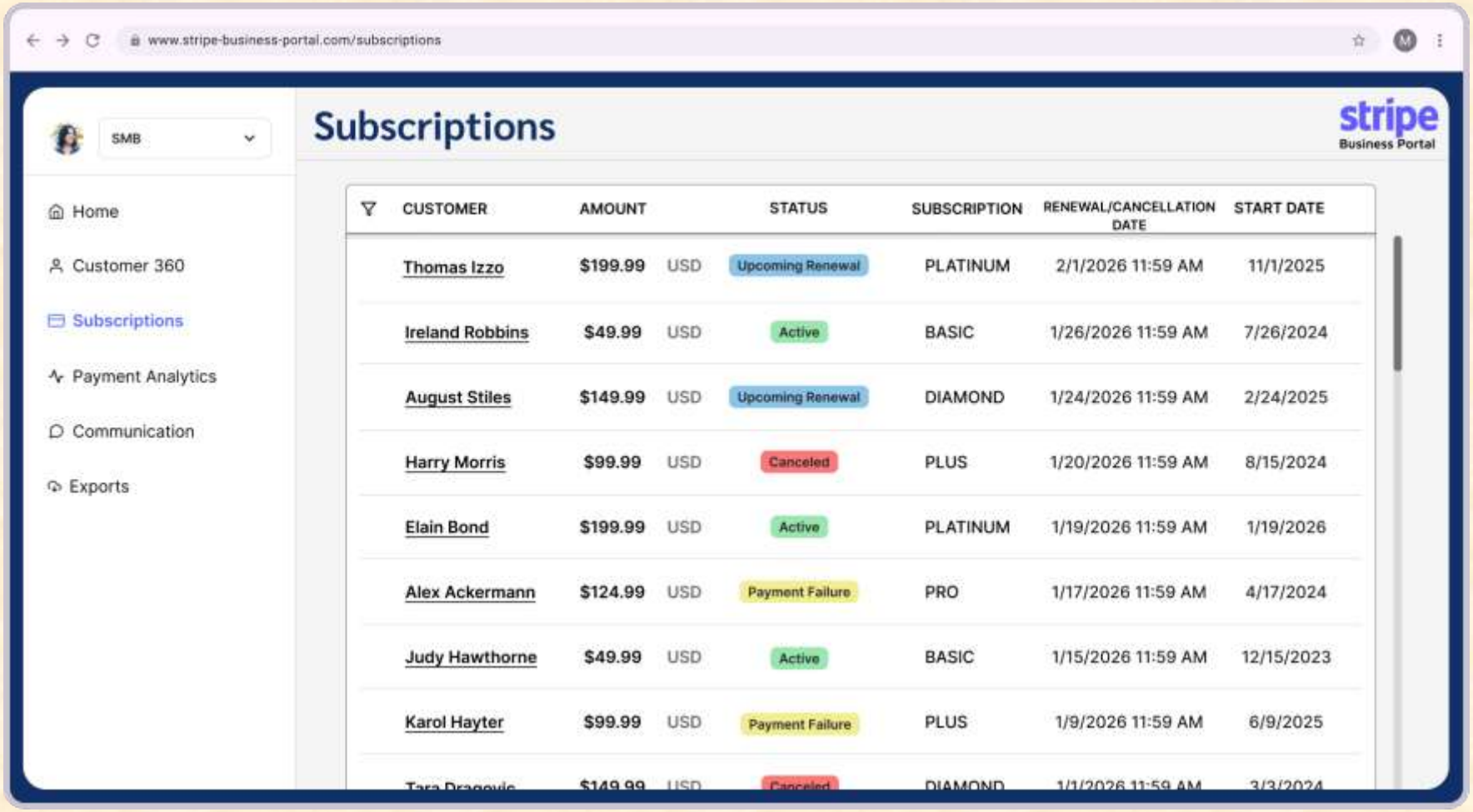
# Screen Mockup: Home Page



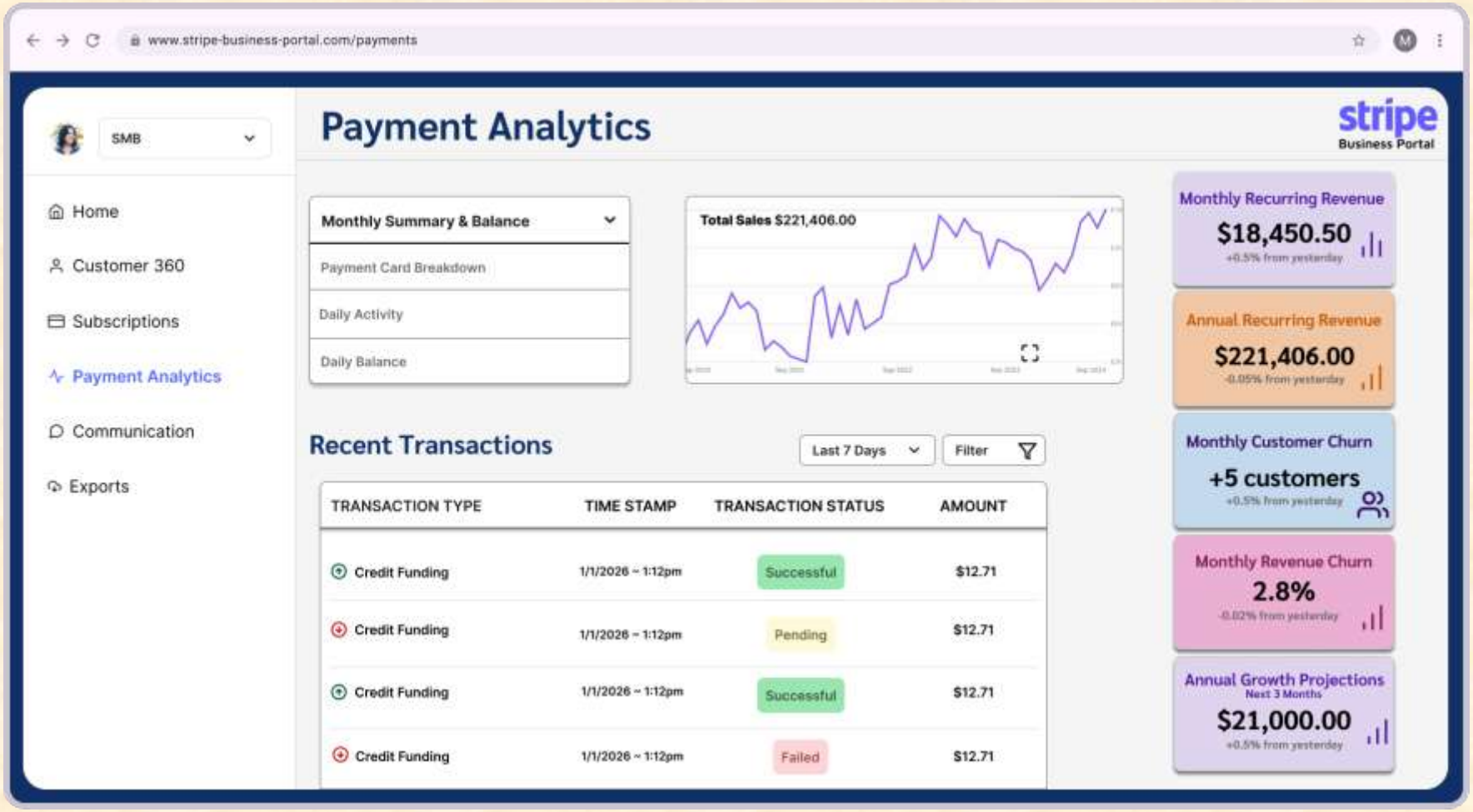
# Screen Mockup: Customer 360 View



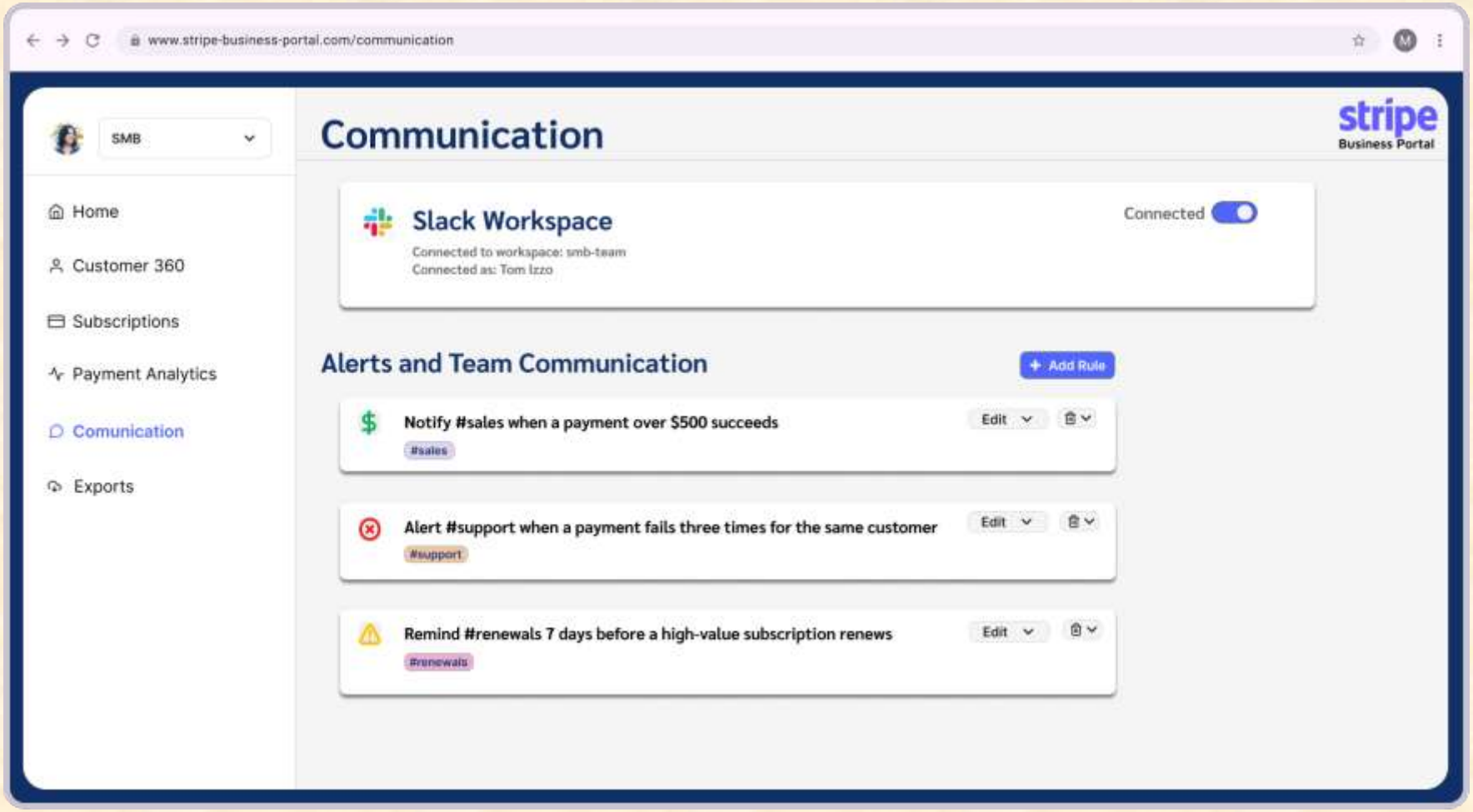
# Screen Mockup: Subscriptions Page



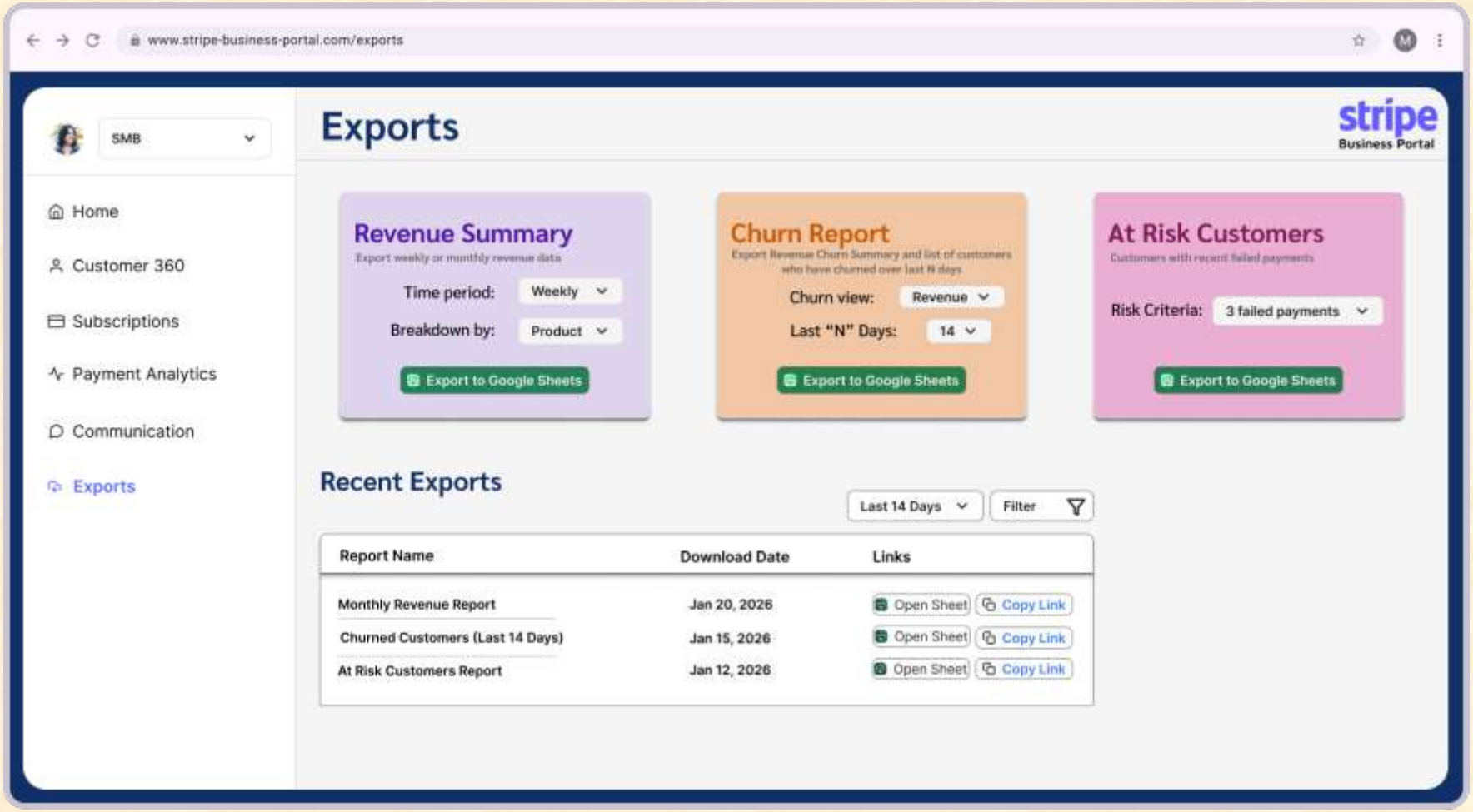
# Screen Mockup: Payment Analytics Page



# Screen Mockup: Communications Page



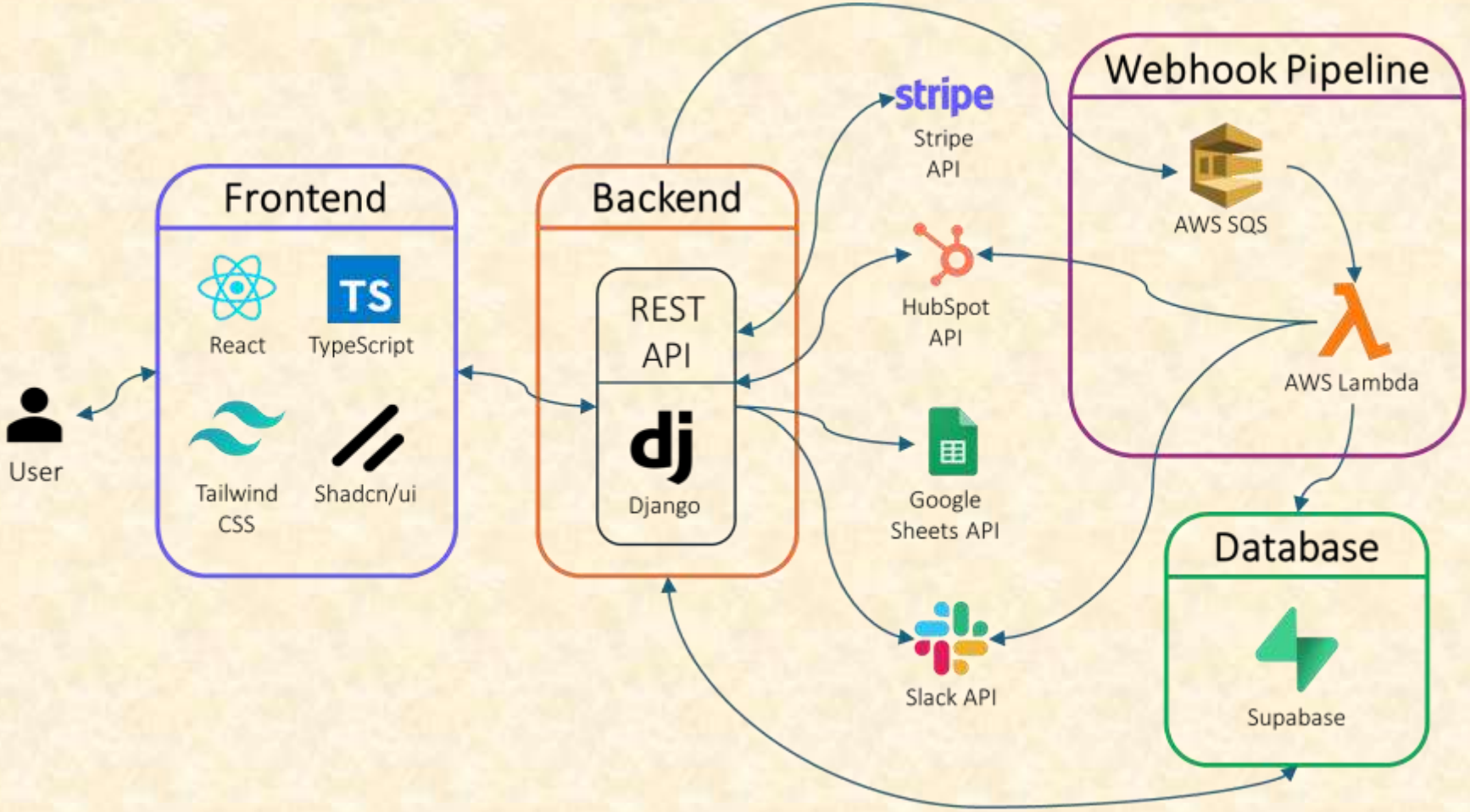
# Screen Mockup: Exports Page



# Project Technical Specifications

- Frontend & UI: React (with Typescript), Tailwind CSS, shadcn/ui
- Backend: Django REST API
- Data storage: Supabase PostgreSQL
- Webhook pipeline: Amazon SQS, AWS Lambda
- Integrations: Stripe API, HubSpot API, Google Sheets API, Slack API
- Authentication: Supabase Auth, Redis

# Project System Architecture



# Project System Components

- Software Platforms / Technologies
  - AWS Application Load Balancer (ALB)
  - Amazon ECS/Fargate
  - Amazon SQS
  - AWS Lambda
  - Supabase (PostgreSQL + Auth)
  - Stripe API
  - HubSpot API
  - Google Sheets API
  - Slack API
  - Vercel



# Project Risks

- **Risk 1: Customer Metadata Derivation (LTV & Churn)**
  - Description: LTV and churn risk are not directly provided by Stripe or HubSpot and must be computed from available data
  - Mitigation: Research industry heuristics and derive formulas using Stripe payment history and subscription behavior
- **Risk 2: Server-Side Authentication & Token Management**
  - Description: OAuth access tokens for Stripe and SaaS integrations are short-lived and cannot be persisted long-term
  - Mitigation: Use encrypted Redis caching with TTL to securely store access tokens and regenerate them on expiration
- **Risk 3: Webhook Data Consistency & Idempotency**
  - Description: Duplicate or replayed Stripe webhook events can corrupt analytics and customer data
  - Mitigation: Enforce idempotent webhook handling using unique event IDs and stateless, lightweight handlers
- **Risk 4: Time Limit on Long File Exports (Google Sheets)**
  - Description: Some Google Sheets exports exceed the 30-second proxy timeout, causing requests to fail
  - Mitigation: Process requests asynchronously by returning HTTP 202 Accepted and running the job in the background, updating status and sheets link on completion

# Questions?

