MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Data Consistency and Reconciliation Tool

The Capstone Experience

Team Ally

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From Students…
…to Professionals

Project Sponsor Overview

- Financial company that was originally founded by GM for auto financing services.
- One of the leading financial service companies in the United States, offering services that range from insurance to loans.
- Company has a "Do It Right" mission to the people first.

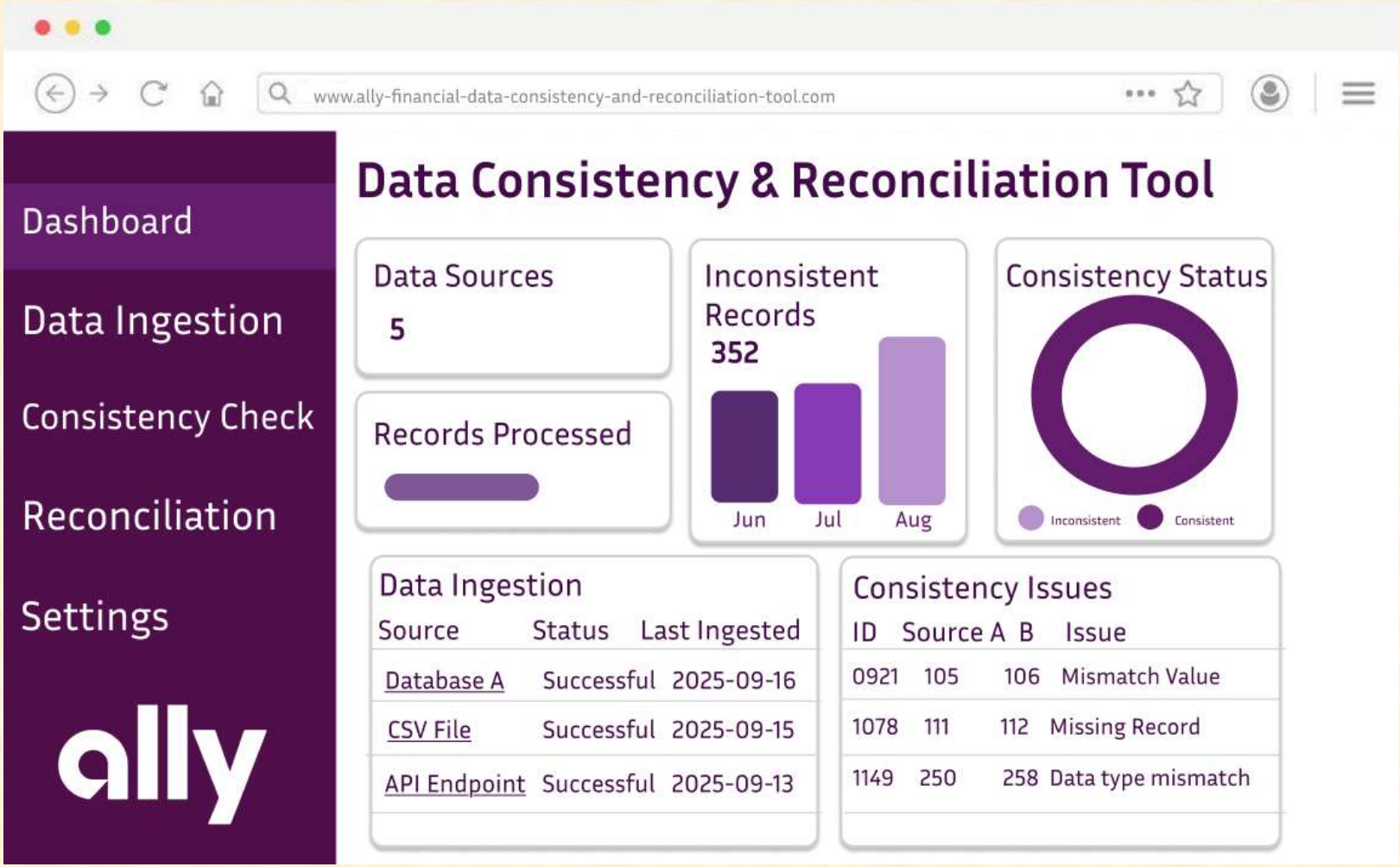
Project Functional Specifications

- Countless hours spent on manual data management, analysis, and reconciliation of data
- Business users wish to have a faster, efficient way
- Web-based tool streamlining this process:
  - Connecting to numerous data sources while also allowing users to log in and upload their data sources
  - Run consistency checks utilizing ML tools
  - Generate dashboards on a user-friendly interface highlighting the summary of the reports and discrepancies
  - Provides the user with the access and the option to reconciliate any of the issues manually
- Ensure consistency and accuracy across sources, improving the confidence in reporting and decision-making

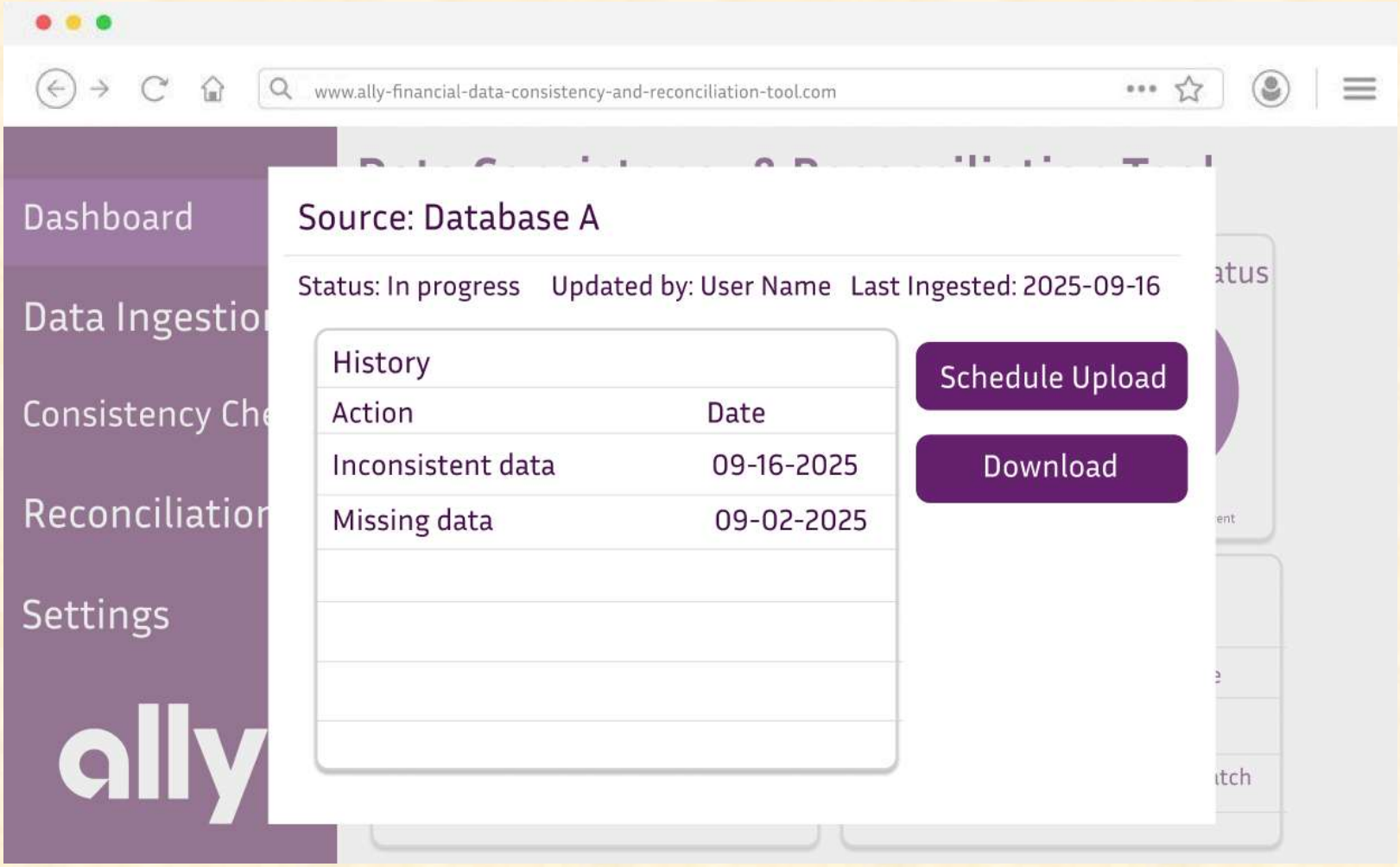
Project Design Specifications

- Dashboard provides insights regarding data analysis and reconciliation.
- Users can upload files in different formats e.g. CSV, XML, excel, etc., for reconciliation.
- Gives users in-depth details regarding rules and discrepancies.
- Users can view log of files and their modification history.

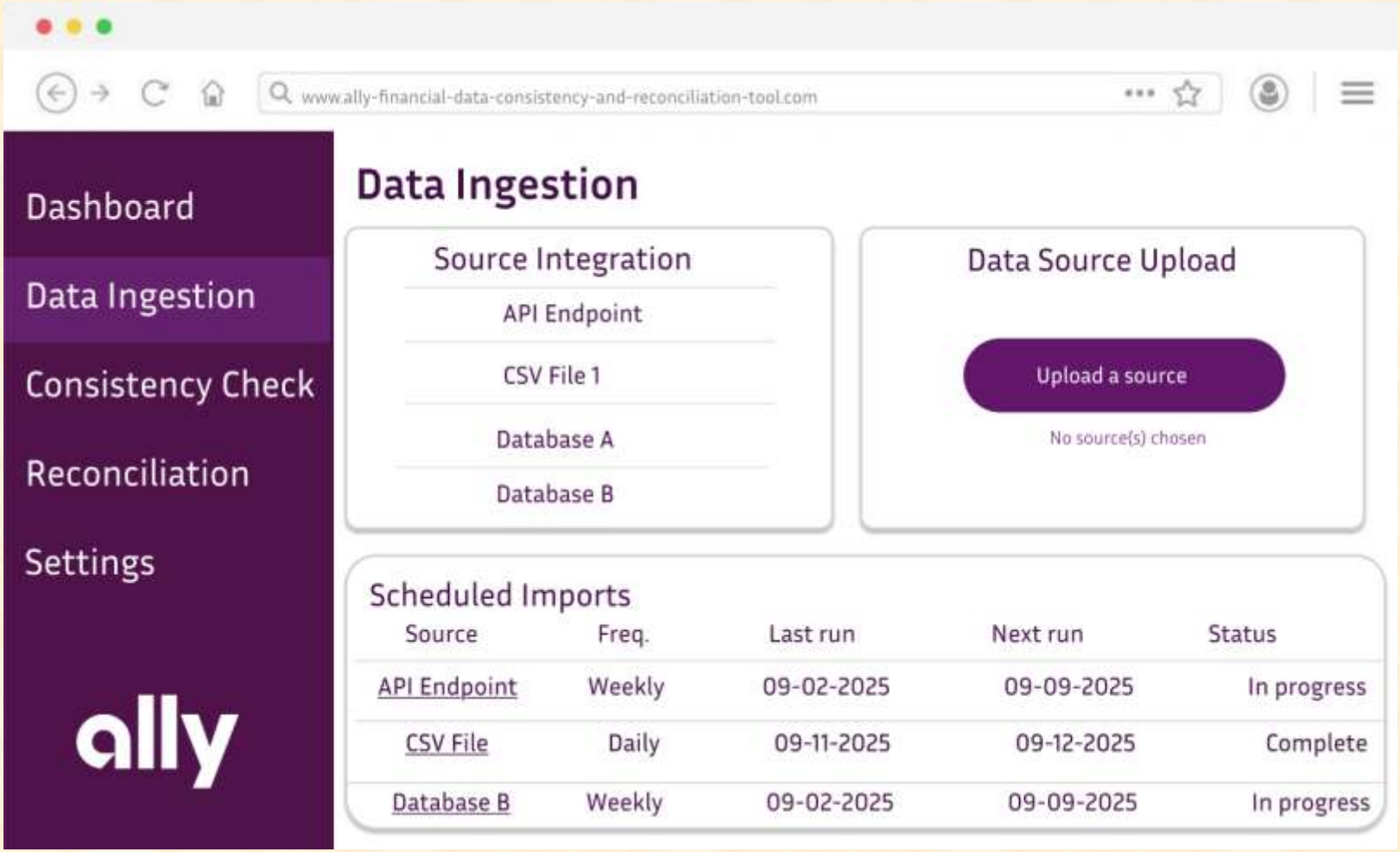
Screen Mockup: Dashboard



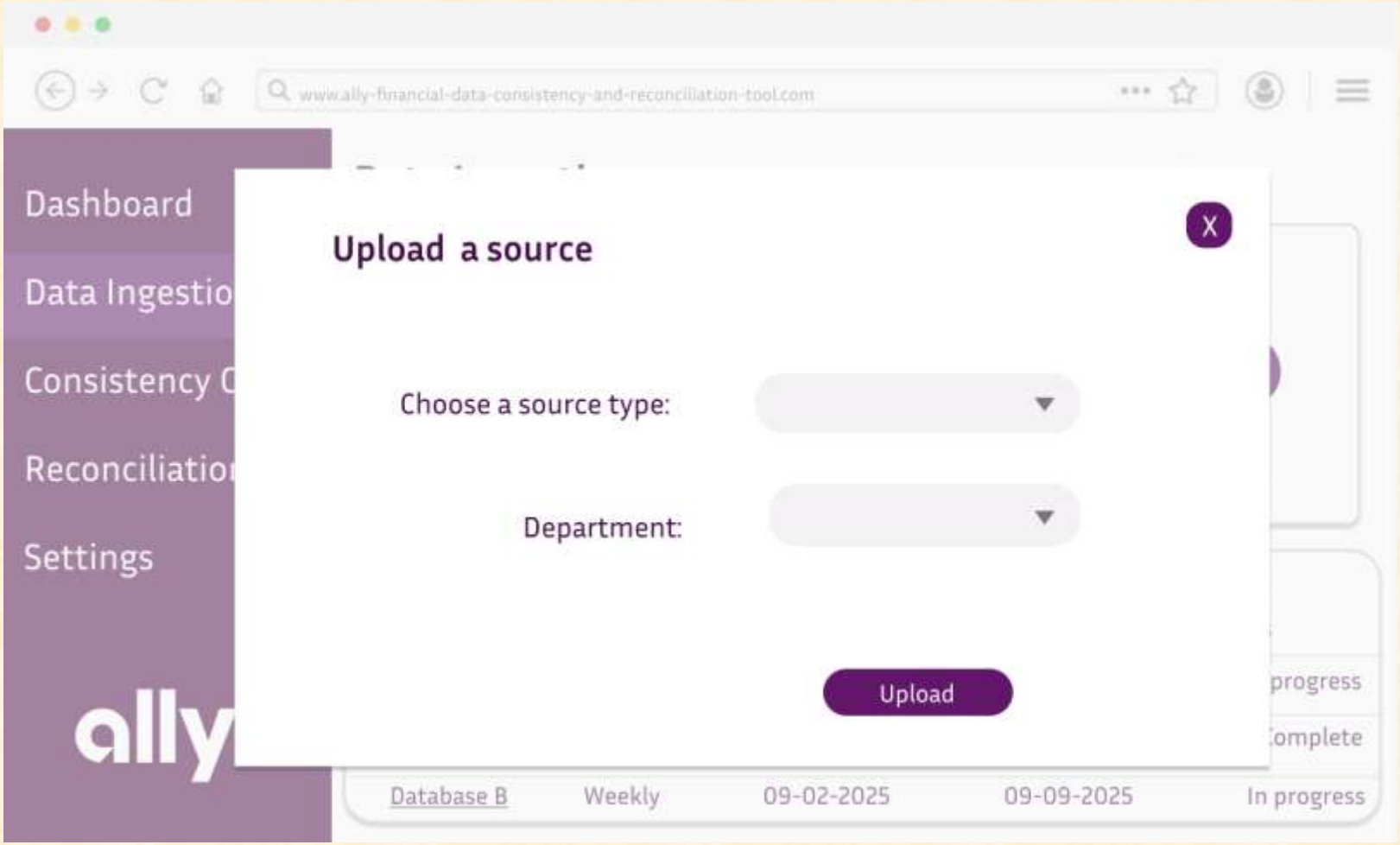
Screen Mockup: Dashboard Pop-up



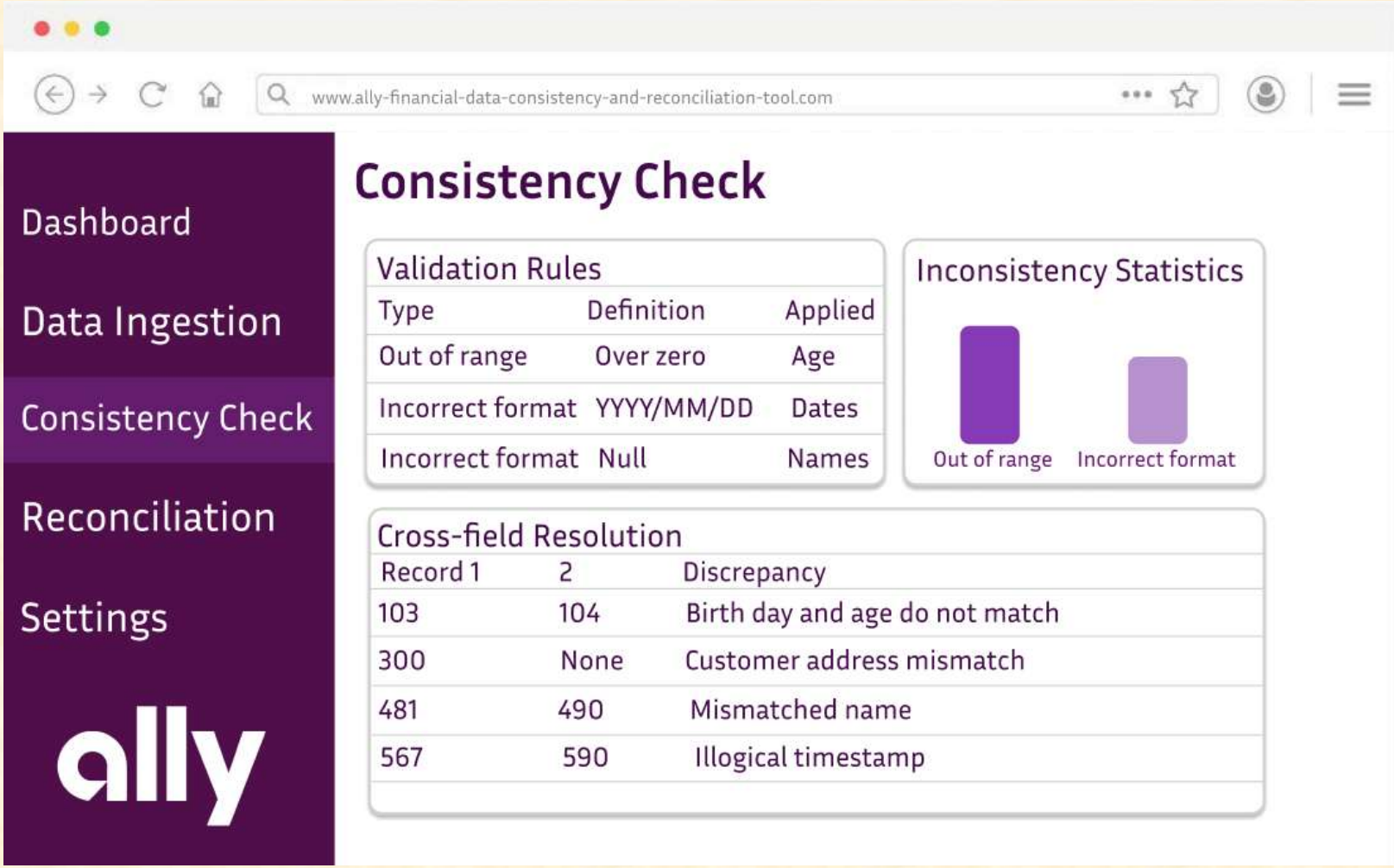
Screen Mockup: Data Ingestion



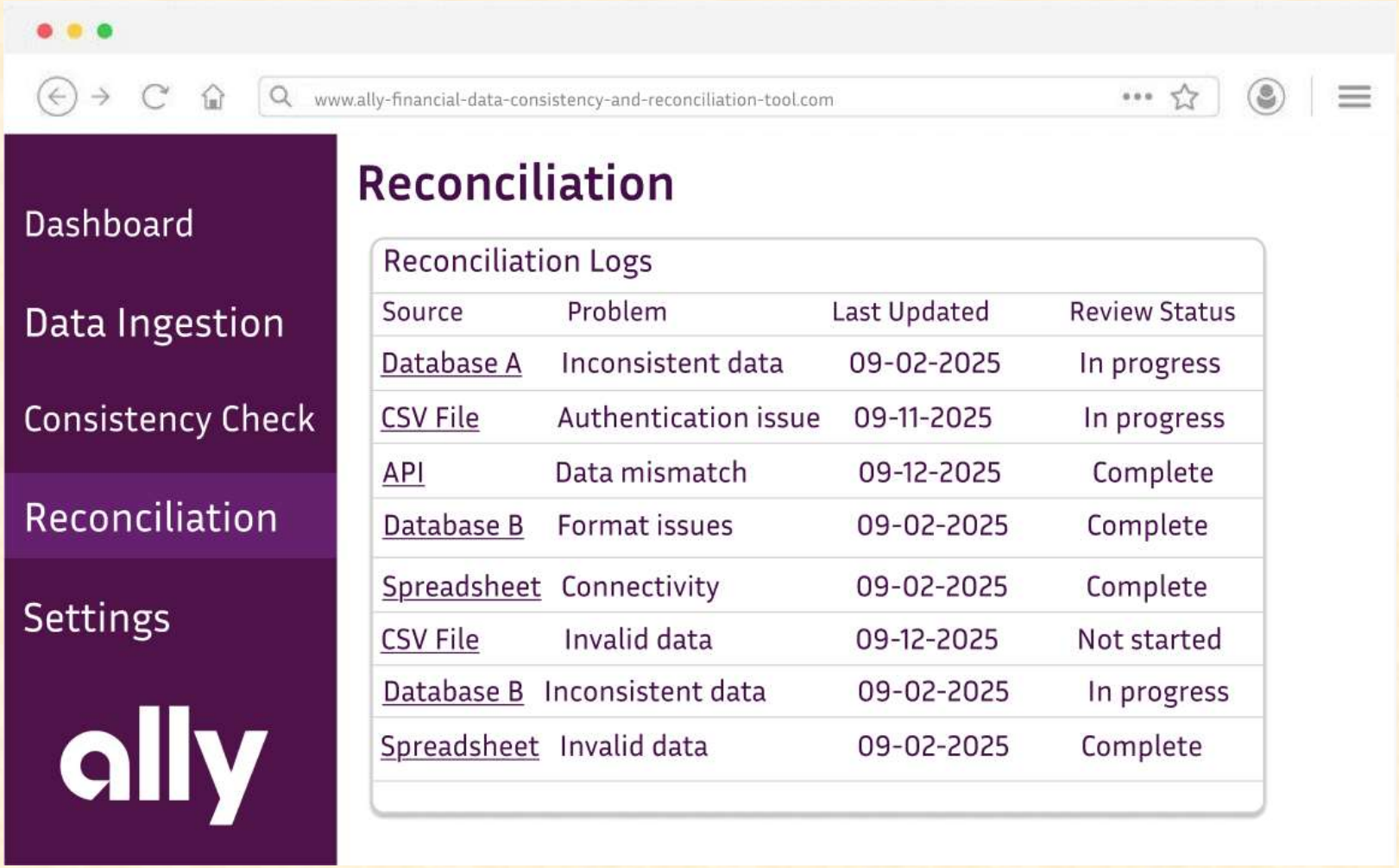
Screen Mockup: Ingestion Pop-up



Screen Mockup: Consistency Check



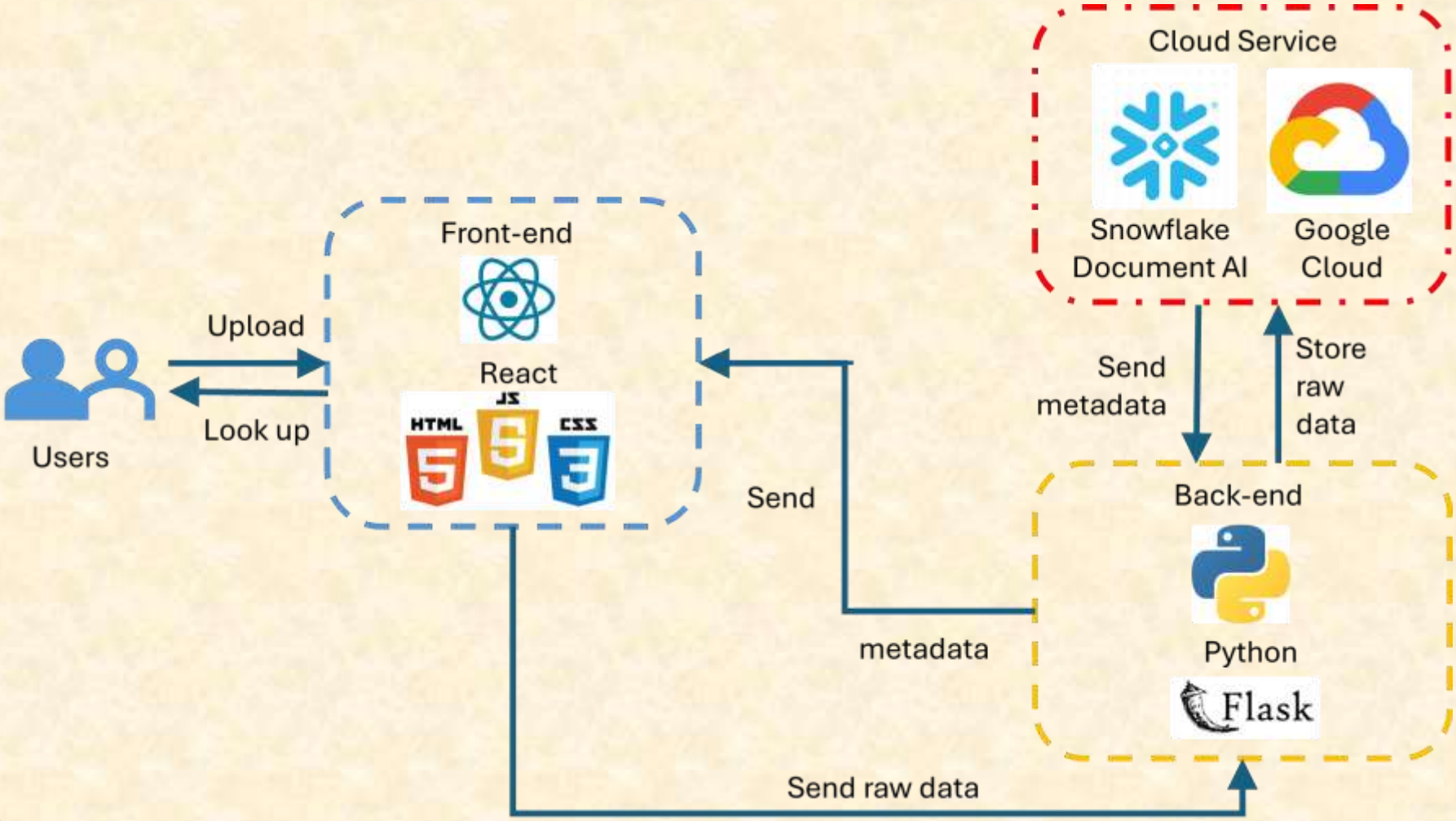
Screen Mockup: Data Reconciliation



Project Technical Specifications

- React web application
- Python for machine learning tasks
- Flask as backend server
- React frontend, built with Node.js
- Snowflake as data warehouse and processing layer for data
- Google Cloud Storage buckets provided via Snowflake

Project System Architecture



Project System Components

- Software Platforms / Technologies
  - Python
  - SQL
  - Flask
  - React.js
  - Node.js
  - Snowflake
  - Google Cloud Platform

Project Risks

- Data Processing and Storage
  - Upload dataset from user to Snowflake cloud and use SQL to query and send back.
  - Use small test dataset first and split into 3 storage layers (raw, process, metadata) to manage each step within Snowflake no need to send to back-end again.
- Data Format Ingestion
  - Defining the validation rules to deal with different data file format.
  - Allow upload one file at a time and deal with each type separately save it to cloud.
- Data Sources for Testing and Training
  - Using the ML model to look at different content of data sources and creating correlation rules.
  - Familiarize with banking data and efficient methods to utilize ML techniques.
- Data Security
  - Security of data when AI to analyze and process the data.
  - Filter out the confidential information and hide the label of the data and just analyze the consistency of the content type, range, and differences.

Questions?