Crop Variety Trials Data Ingestion Tool

NDSU | COMPUTER SCIENCE

Capstone 2024

Team Members: Skyler Skees, Harrison Swift, Levi Iverson, Adam Pearson, Steven Champagne

Sponsor: Microsoft and NDSU Big Data Pipeline
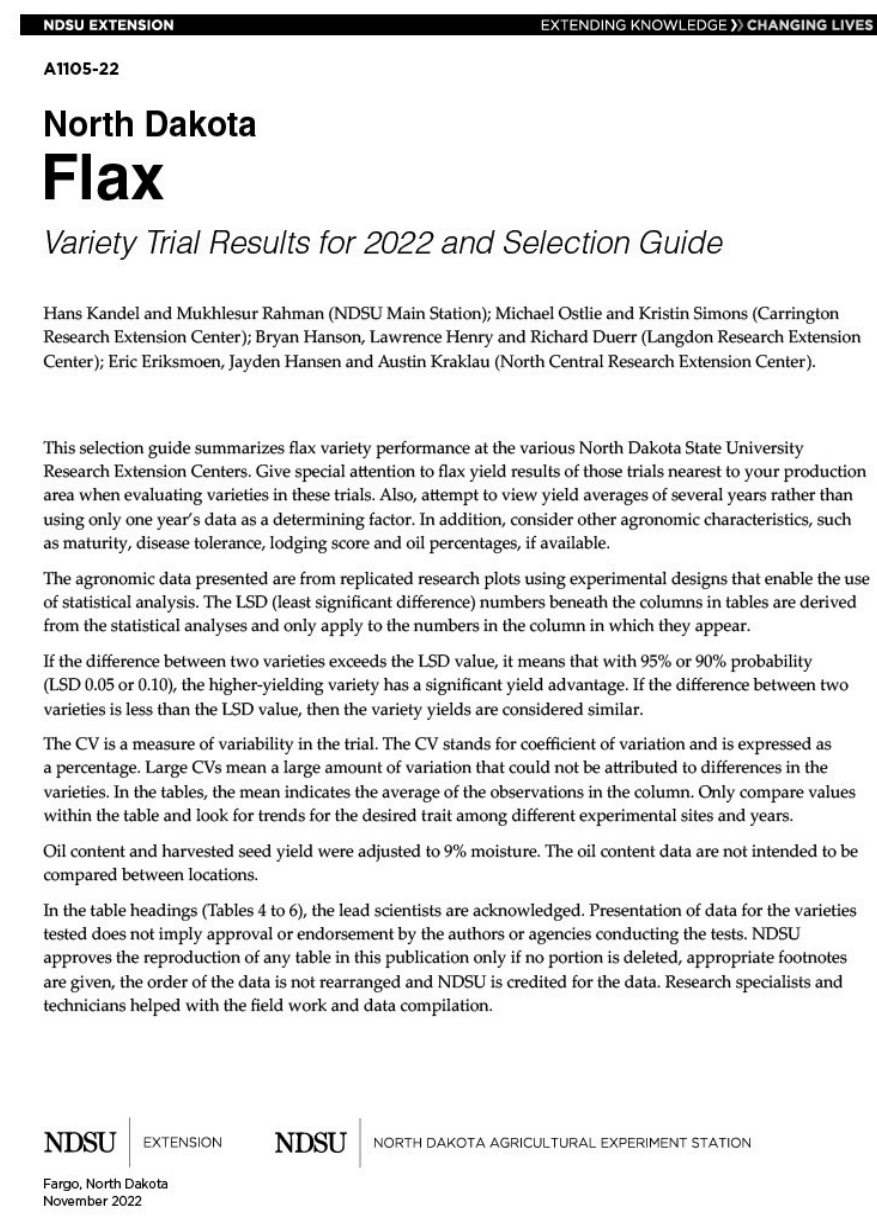
BIG DATA PIPELINE UNIT | NDSU

Background
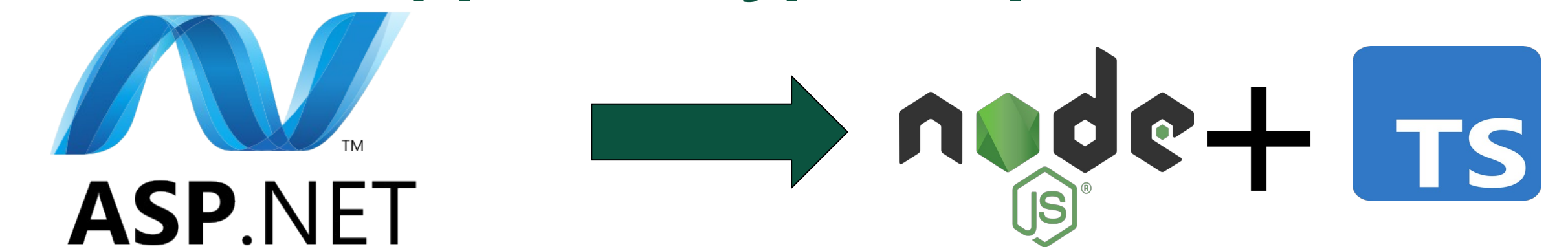
Flax Trial Report 2022

- In its second year, our project is a continuation and improvement of a tool for NDSU Agriculture to mitigate the human resources required to collect and analyze seed trial data.
- Currently, it takes 3 months for the data to be collected, analyzed, and formatted into a report.
- This yearly report is vital to local farmers and ranchers to assess the performance of various crop varieties across North Dakota.
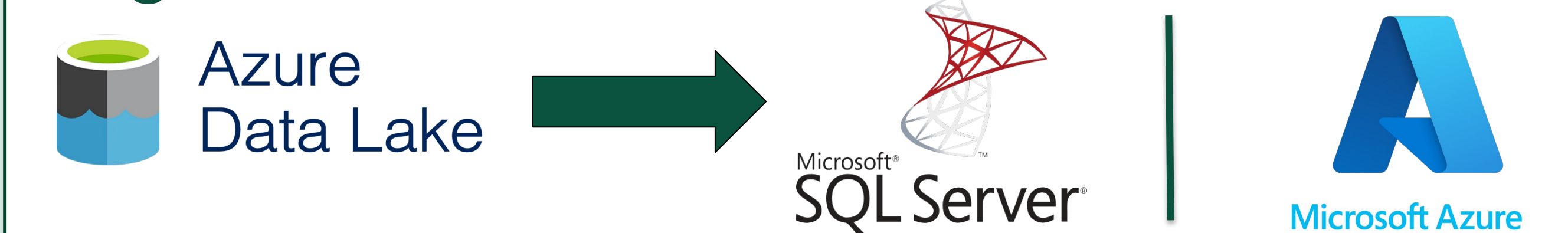
Ask us about our:
- API !
- Backend development !
- Mapping editor !
- Report generation !

Migrations

We migrated the backend from ASP.NET to Node.JS, wrapped in Typescript.

ASP.NET → node + TS

We transitioned our storage from Data Lakes to a MSSQL Database, hosted by NDSU Agriculture on a Microsoft Azure server.

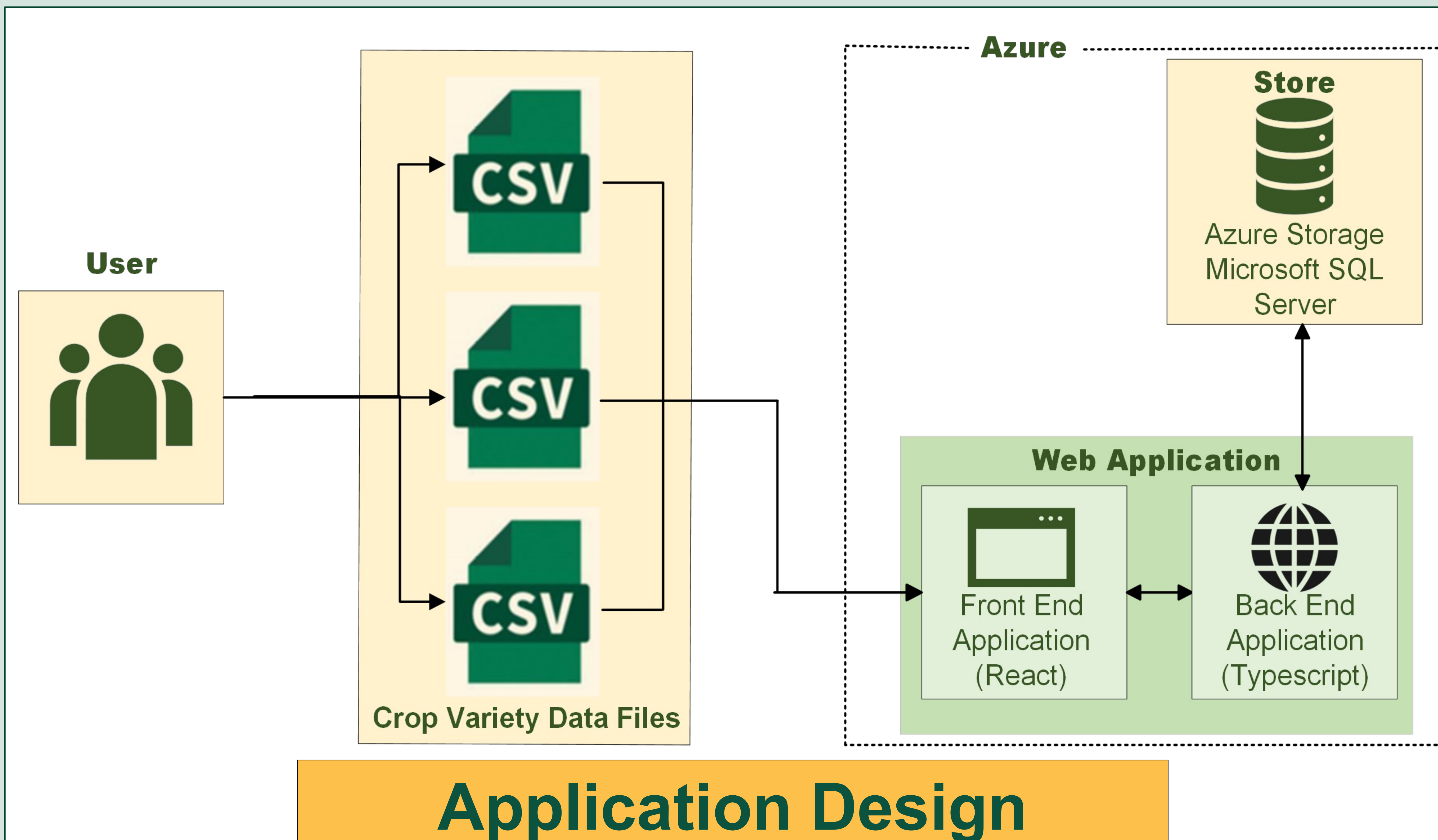Azure Data Lake → Microsoft SQL Server | Microsoft Azure

Goals

We accomplished 3 key goals:
- Adding support for mapping of uploaded datasets to a common schema
- Migrating the back-end from ASP.NET to Node.js
- Creating and implementing a <u>file mapping editor</u> for a better user experience

Mapping Editor

Unselected fields will be auto-mapped. At least one selection must be made *

Source Column	Destination Column
Select for Variety	Variety
Select for Brand	Brand
Select for Seed Color	Seed Color
Select for Plant Stand	Plant Stand
Select for Days to Flower	Days to Flower

Application Design

User

Crop Variety Data Files

Azure

Store
Azure Storage
Microsoft SQL Server

Web Application
Front End Application (React)
Back End Application (Typescript)