**Project Background**

In a highly competitive market and with a business model that is “owned by members”, strategizing consumer retention is crucial to credit union success.

**Project Goal**

The purpose of this project is to provide our client with a tool that will allow them to input member data and predict what loan product to offer the member. Along with the predictive models provided we also offer insights into member trends via dashboards and suggestions for future data analytics endeavors.

**Methodology**

**Data Preprocessing**
- Raw Data
- Data Cleaning
  - Outlier Detection
  - Null values
  - Feature Engineering
- Exploratory Analysis
- Feature Selection

**Modeling**
- Train
- Test
- Evaluate
- Deploy

**Prediction**
- New Data
- Multiclass Decision Forest Model
- Output

**Descriptive & Diagnostic Analytics**

- **Loan Dashboard**
- **Avg Loan Size & Credit**

**Predictive & Prescriptive Analytics**

- **Model 1: Next Loan**
  - This model is for members who have 1 or more loans open with Sound.
  - **Insights:**
    1. Gained an understanding of KPIs and their trends for total loans, closed loans, average loan size, loan categories and average loan duration.
    2. The average credit limit for home loans has increased over the past 3 years while other categories have remained stagnant.
    3. Recognize drop in home loans in 2008, believed to be from US housing crisis.

- **Model 2: First Loan**
  - This model is for members who do not currently have a loan open with Sound.

**Tools:**
- Tableau, PowerBI and Jira
- Azure ML Studio, SSIS, VS Code
- MS Office - Excel, Publisher, PowerApp

**Languages:**
- SQL, R, CSS, Python, and HTML

**Recommendations**

Add demographic data to model
- Begin collecting data on loan offers and their acceptance/denial rate
- Add more loan types to model
- Investigate adding more columns that were removed early in our process