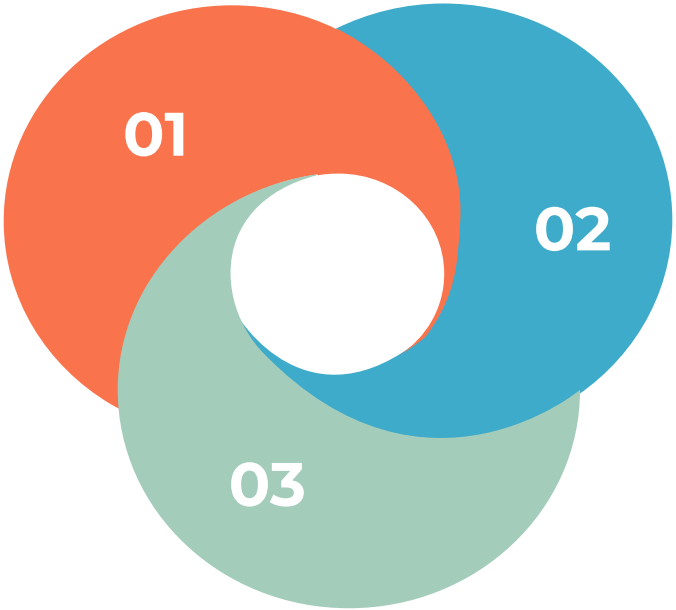
# Predicting Customer Churn

This presentation provides an overview of a machine learning model developed to predict customer churn and its business implications.

# Introduction

**Project Goal:** To develop a machine learning model that predicts customer churn with high accuracy.

**Why It Matters:** Reducing churn improves customer retention, lowers acquisition costs, and increases revenue stability.




**Business Value:** Helps the company identify at-risk customers and take proactive measures to reduce churn rates.

# Data Overview

- **Dataset Source:** The data is sourced from Kaggle's Telecom Customer Churn Dataset.
- **Key Features:** Customer demographics, account information, and service usage.
- **Target Variable:** Whether a customer churned (Yes/No).

# Methodology

01 **Evaluation Metrics:** Accuracy, Precision, Recall, and F1-Score.

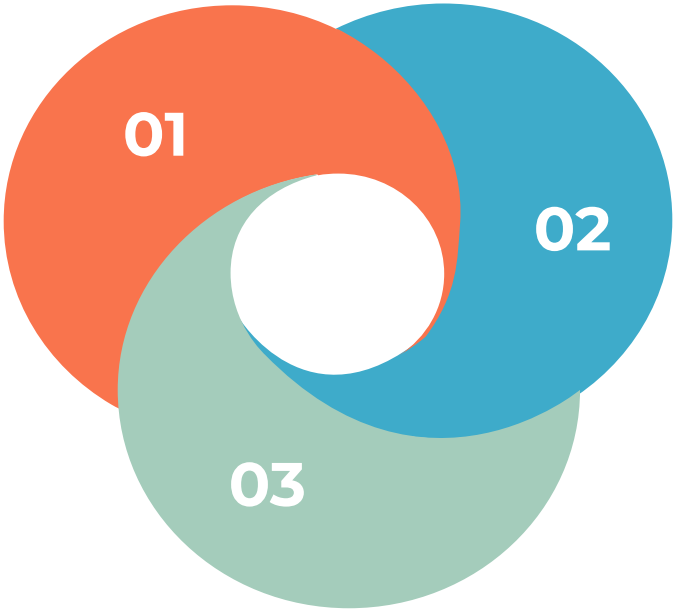
02 **Data Preprocessing:** Handled missing values, encoded categorical variables, and normalized numerical features.

03 **Modeling Approach:** Compared multiple models including Logistic Regression, Random Forest, and Decision Tree.

# Key Findings

**Best Performing Model:** The Decision Tree model outperformed others with 93.9% accuracy.

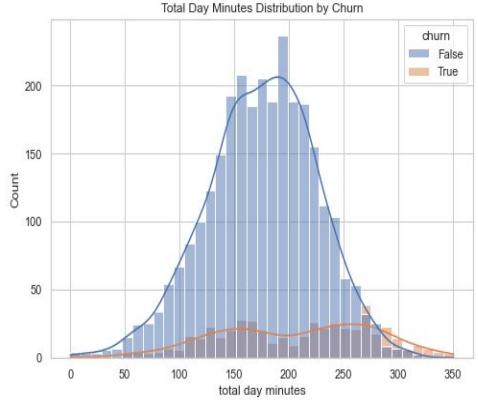
**Business Implication:** The model can be used to prioritize customer outreach efforts, focusing on those most likely to churn.

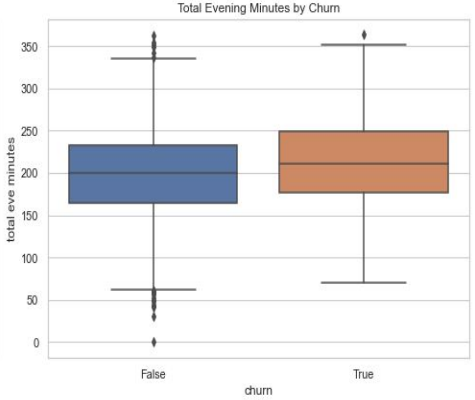


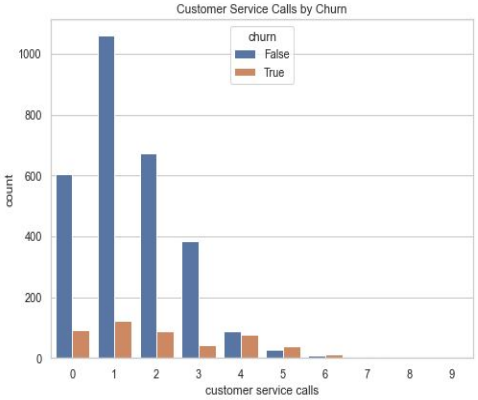

**Insights:** Precision and recall indicate the model is effective at identifying both churned and retained customers.

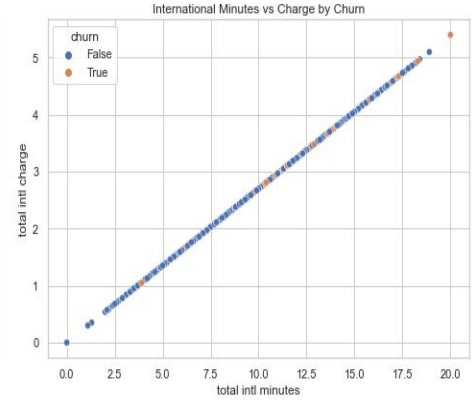
# Visualizations

## Visualization of Key Features

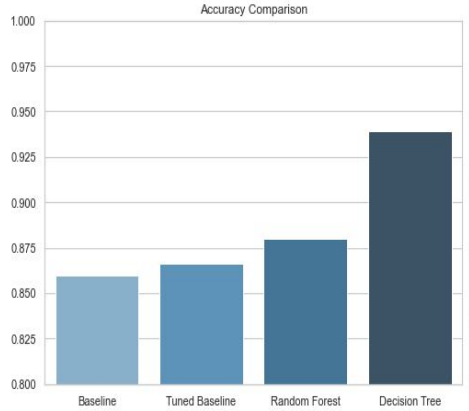


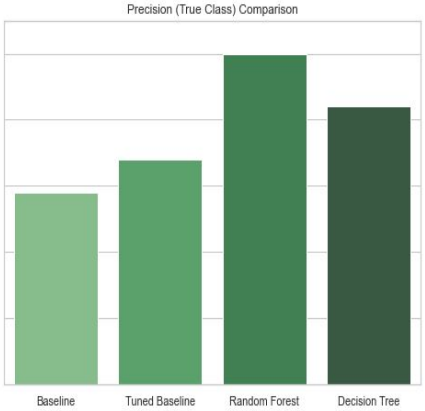



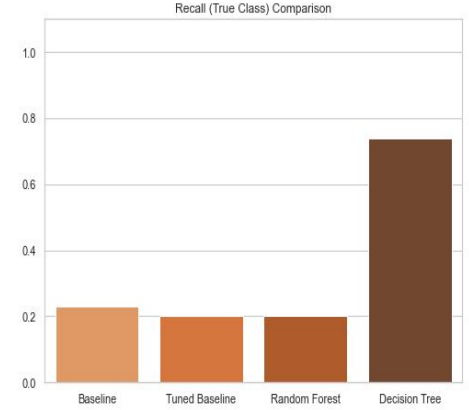



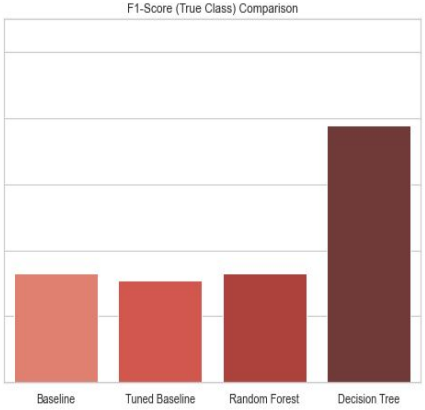




## Model Comparison Plot



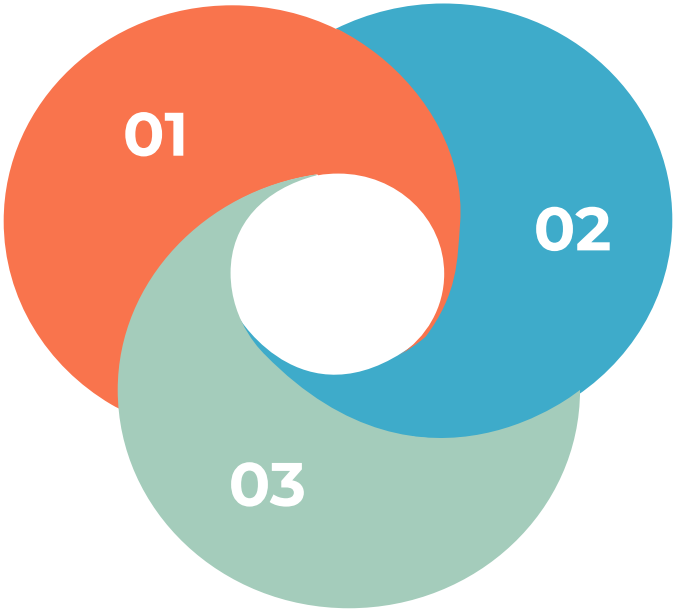
# Recommendations

- **Short Term Actions:** Implement the Decision Tree model into the customer management system.
- **Long Term Strategy:** Regularly retrain the model with updated data to maintain its predictive accuracy.
- **Stakeholder Engagement:** Use model outputs to guide marketing and customer service teams in retention efforts.

# Next Steps

**Potential Improvements:** Explore additional features like customer satisfaction scores for better predictions.

**Scaling:** Consider extending the model to other customer segments or regions.




**Further Development:** Test model performance in real-time with live customer data.

# Conclusion

01 **Final Thought:** Ongoing refinement and stakeholder collaboration will ensure the model continues to add value.

02 **Recap:** Successfully built a predictive model that identifies customers at risk of churning.

03 **Business Value:** The model supports targeted retention strategies, helping reduce churn and increase profitability.

# Thank you for your time 😊