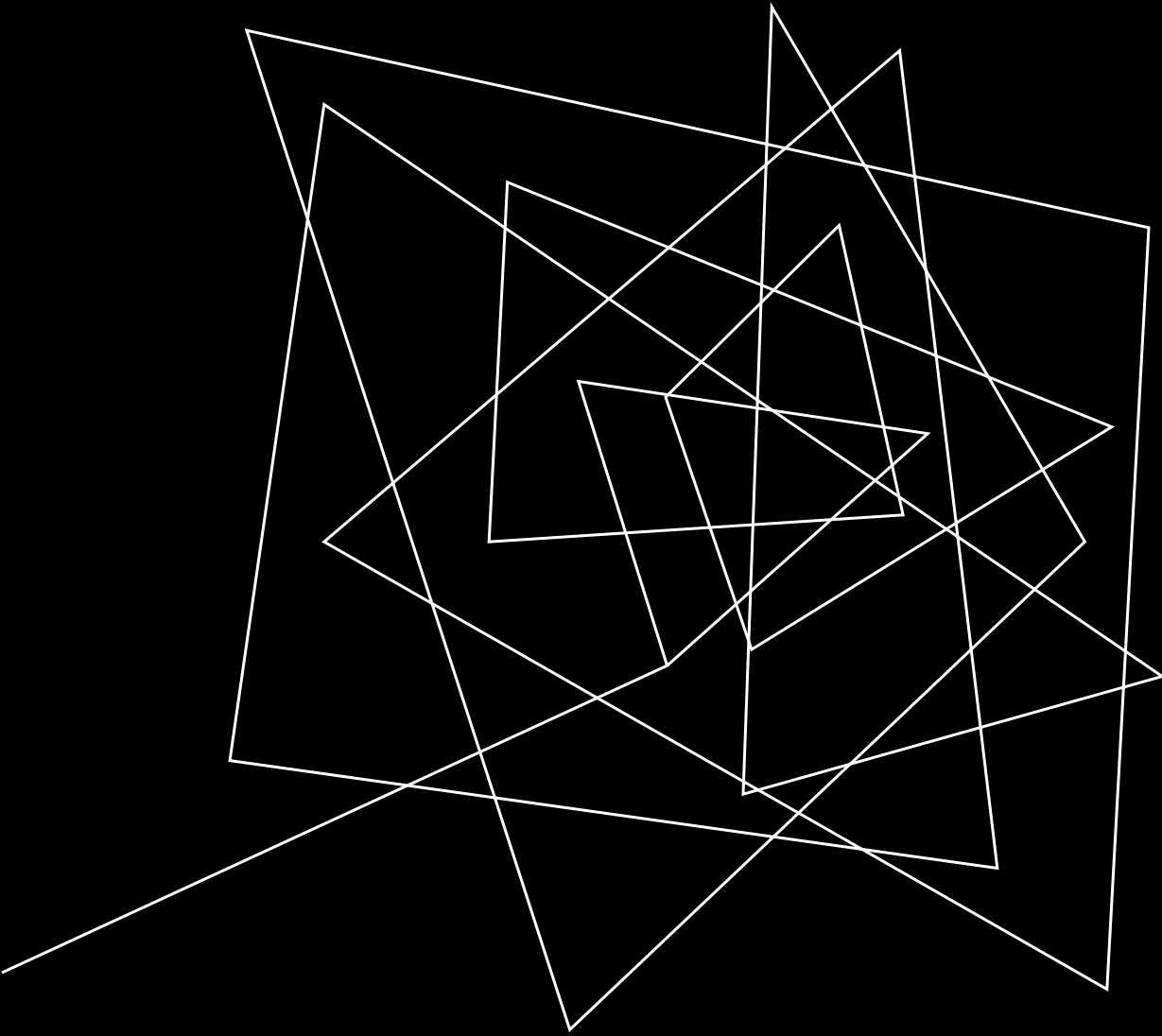# SYRIATEL TELECOMMUNICATIONS: CUSTOMER CHURN PREDICTION ANALYSIS

OPTIMIZING RETENTION STRATEGIES USING PREDICTIVE MODELS

BUSINESS PROBLEM – UNDERSTANDING CUSTOMER CHURN

-**CUSTOMER CHURN** OCCURS WHEN CUSTOMERS STOP USING A COMPANY'S SERVICES.

-TELECOM COMPANIES LIKE SYRIATEL FACE **HIGH CHURN RATES** (15-25% ANNUALLY).

-**RETAINING EXISTING CUSTOMERS** IS FAR LESS EXPENSIVE THAN ACQUIRING NEW ONES.

-**KEY CHALLENGE:** IDENTIFYING **HIGH-RISK CUSTOMERS** EARLY TO IMPLEMENT TARGETED RETENTION STRATEGIES.
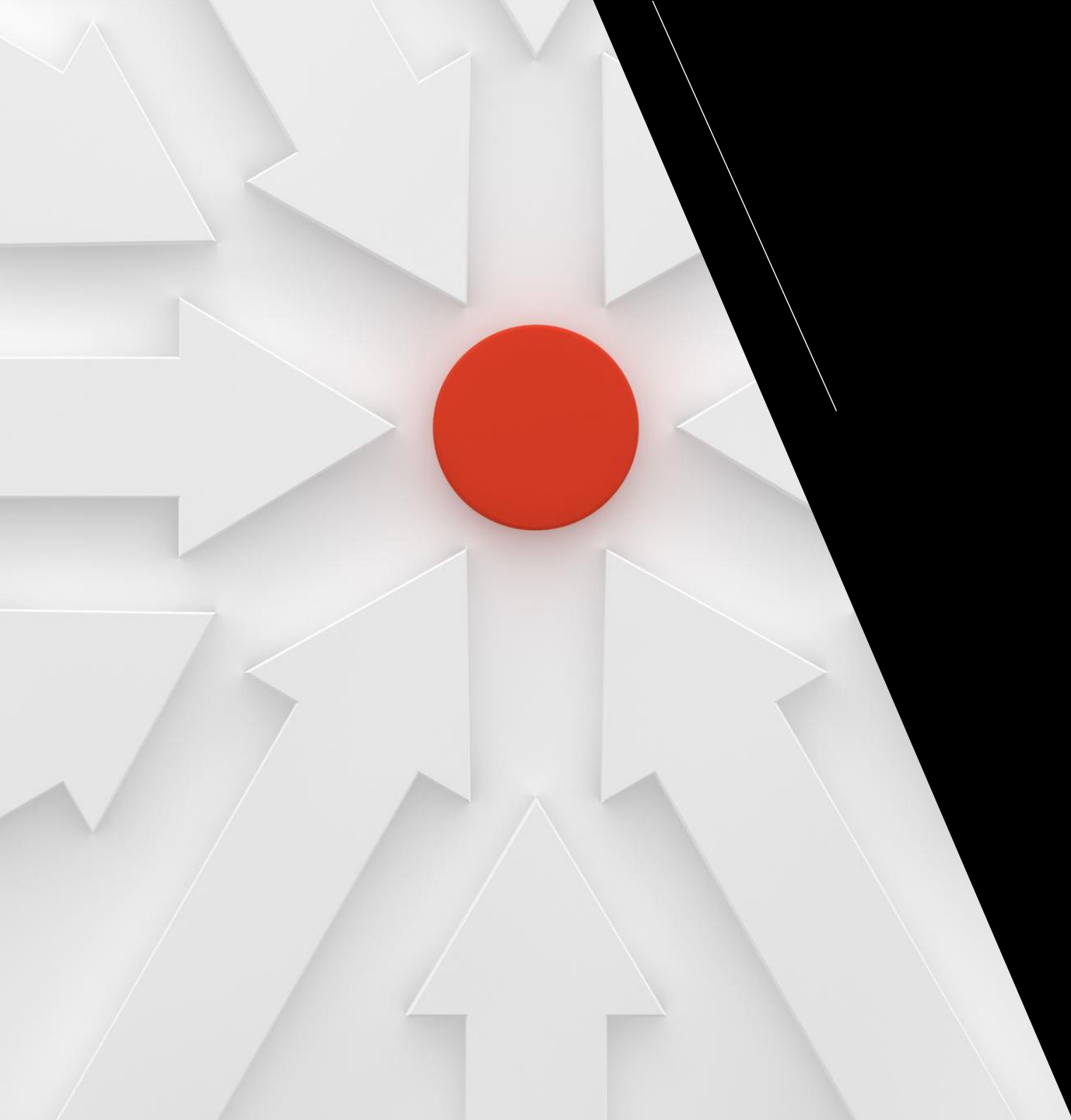
BUSINESS OBJECTIVES

1.**CHURN RATE ANALYSIS** – UNDERSTAND CUSTOMER ATTRITION PATTERNS.
2.**GEOGRAPHICAL INSIGHTS** – IDENTIFY AREAS WITH HIGH CHURN.
3.**SERVICE IMPACT** – EVALUATE HOW PLANS (INTERNATIONAL, VOICEMAIL) AFFECT CHURN.
4.**USAGE BEHAVIOR** – INVESTIGATE HOW DAY AND INTERNATIONAL USAGE CORRELATE WITH CHURN.
5.**CUSTOMER SERVICE INTERACTION** – EXAMINE THE LINK BETWEEN SERVICE INTERACTIONS AND CHURN.
6.**MODELING** – DEVELOP ACCURATE CHURN PREDICTION MODELS TO TARGET RETENTION EFFORTS.
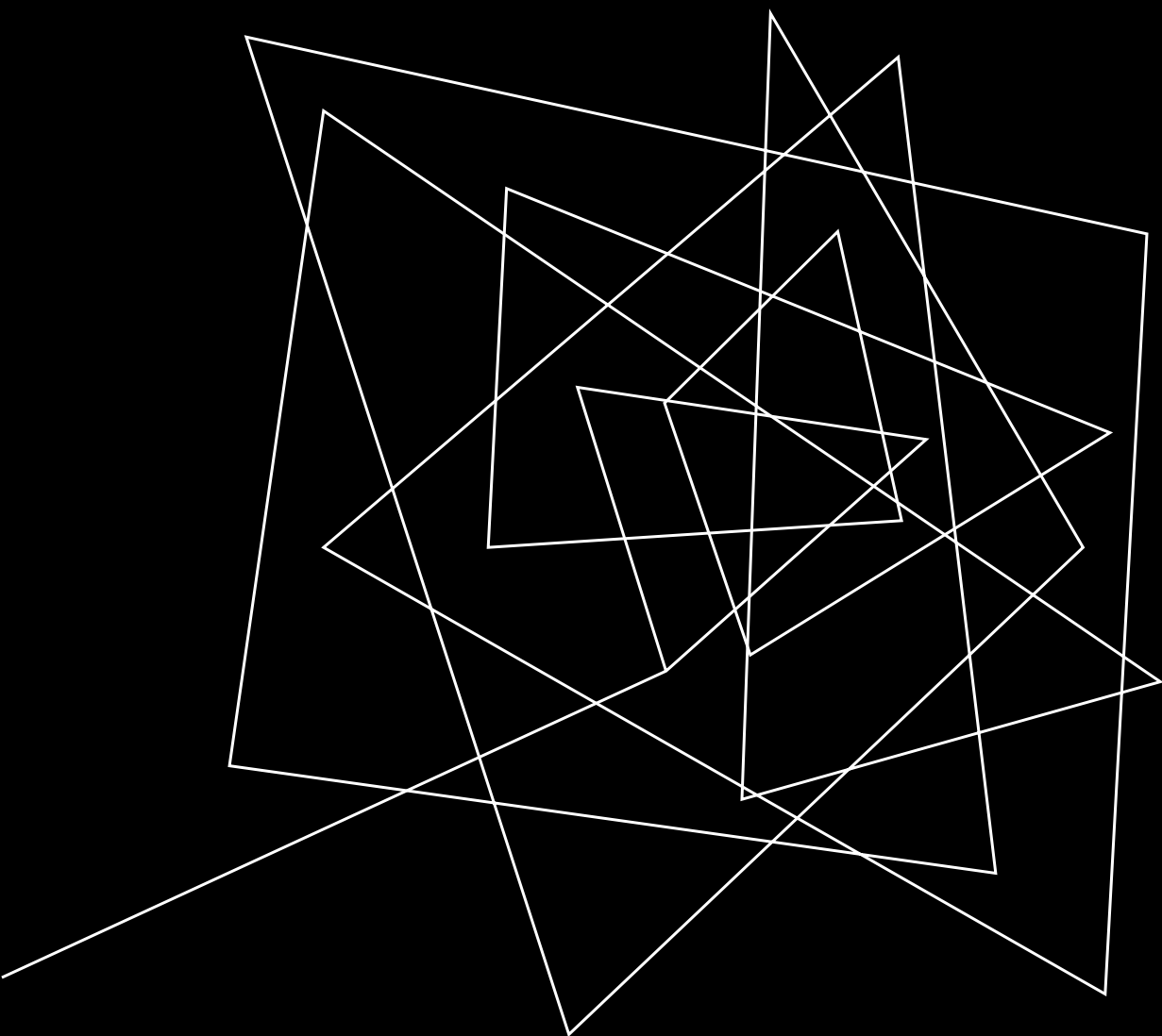
KEY INSIGHTS
FROM DATA
EXPLORATION

•**Churn Imbalance:** Only **14%** of customers churn, creating class imbalance.

•**High Churn States:**

•New Jersey, Texas, and Maryland show the highest churn.

•**Service Plan Impact:**

•**International plan** customers have a higher churn rate (dissatisfaction).

•**Voicemail plan** users are less likely to churn (higher satisfaction).

•**Usage Patterns:**

•**High day minutes** and **high international charges** are strongly linked to churn(dissatisfaction).

BUSINESS RECOMMENDATIONS BASED ON DATA EXPLORATION

1. States with Most Churned Customers

Focus your customer retention efforts in New Jersey, Texas, Maryland, Michigan, and New York. Consider offering special promotions or loyalty programs to customers in these states to increase retention.

2. International Plan

Improve International Plan: Since customers with an international plan are more likely to churn, it's essential to enhance the value of this plan. Review the pricing, benefits, and customer feedback to make necessary improvements.

Marketing Strategy: Promote the international plan to customers who might genuinely benefit from it, but make sure the value proposition is clear to avoid dissatisfaction.

3. Voice Mail Plan

Encourage Adoption: Since customers with a voice mail plan are less likely to churn, encourage more customers to adopt this plan. Consider bundling it with other services or offering it at a discounted rate.

Enhance Features: Continuously improve the voice mail plan features to ensure customer satisfaction.

4. Daily Charges

Review Pricing: High daily charges are linked to churn. Review and possibly revise your pricing strategy to ensure it is competitive and offers value for money.

Transparent Billing: Ensure your billing is transparent and easy to understand, reducing any dissatisfaction related to perceived high charges.

5. Customer Service

Improve Customer Service: Since customers who contact customer service are more likely to churn, it's crucial to enhance your customer service experience. Train your staff to be more empathetic, responsive, and efficient in resolving issues.

Customer Feedback: Collect and analyze feedback from customers who have contacted customer service to identify pain points and areas for improvement.

6. International Charges

Competitive Pricing: Review and adjust international call charges to make them more competitive and attractive to customers.
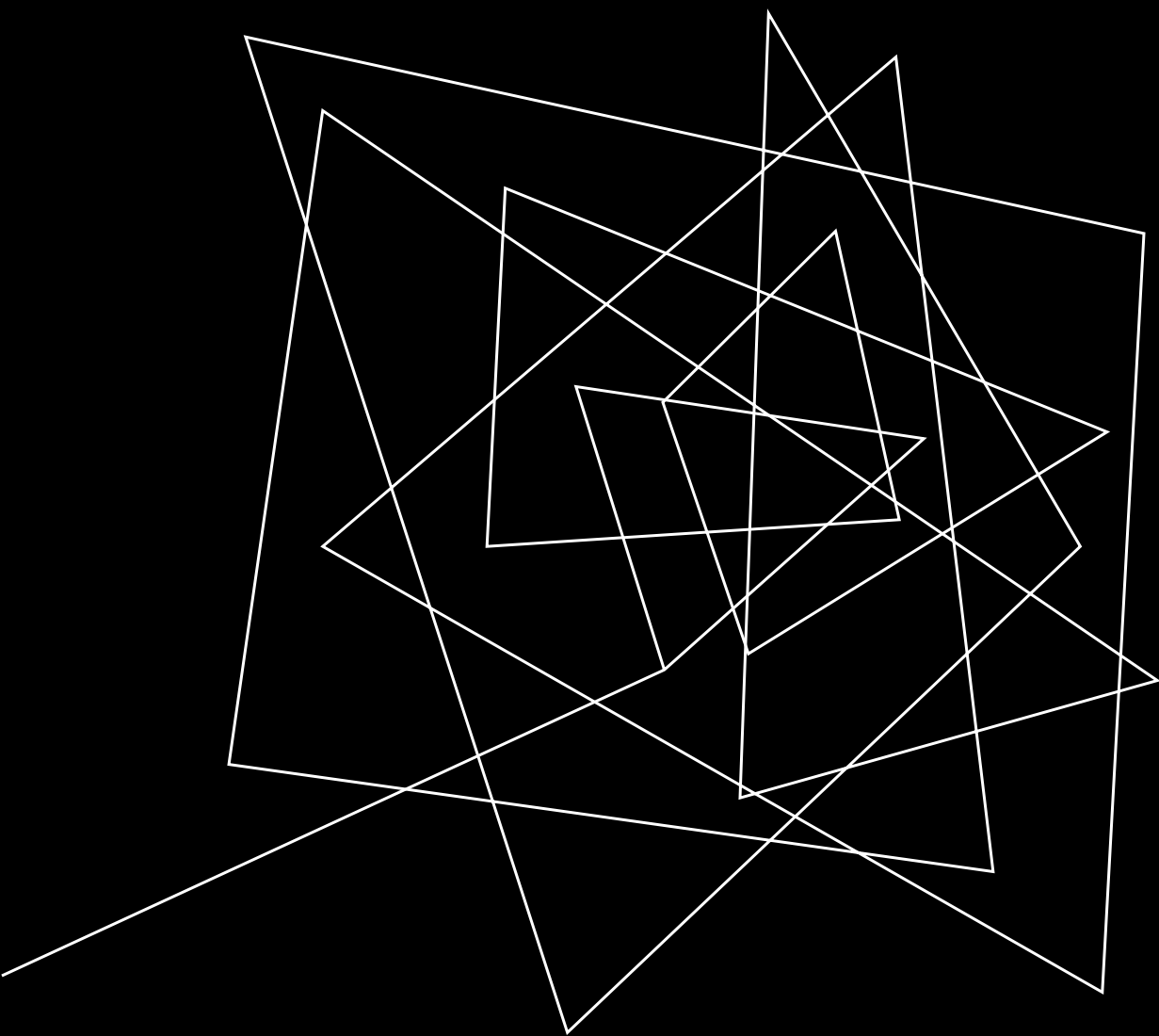
Clear Communication: Ensure that customers understand the benefits and costs associated with international calls to reduce dissatisfaction.

7. Voice Mail Messages

Increase Usage: Encourage customers to use voice mail more frequently by educating them on its benefits and ease of use. This can increase satisfaction and reduce churn.

EVALUATION RESULTS - MODEL PERFORMANCE

here we are going to focus on 3 evaluation.

- our main focus is increasing the number of TRUE POSITIVES (customers more likely to churn) while reducing the number of FALSE NEGATIVES (customers who are likely to churn but the model cant identify them).
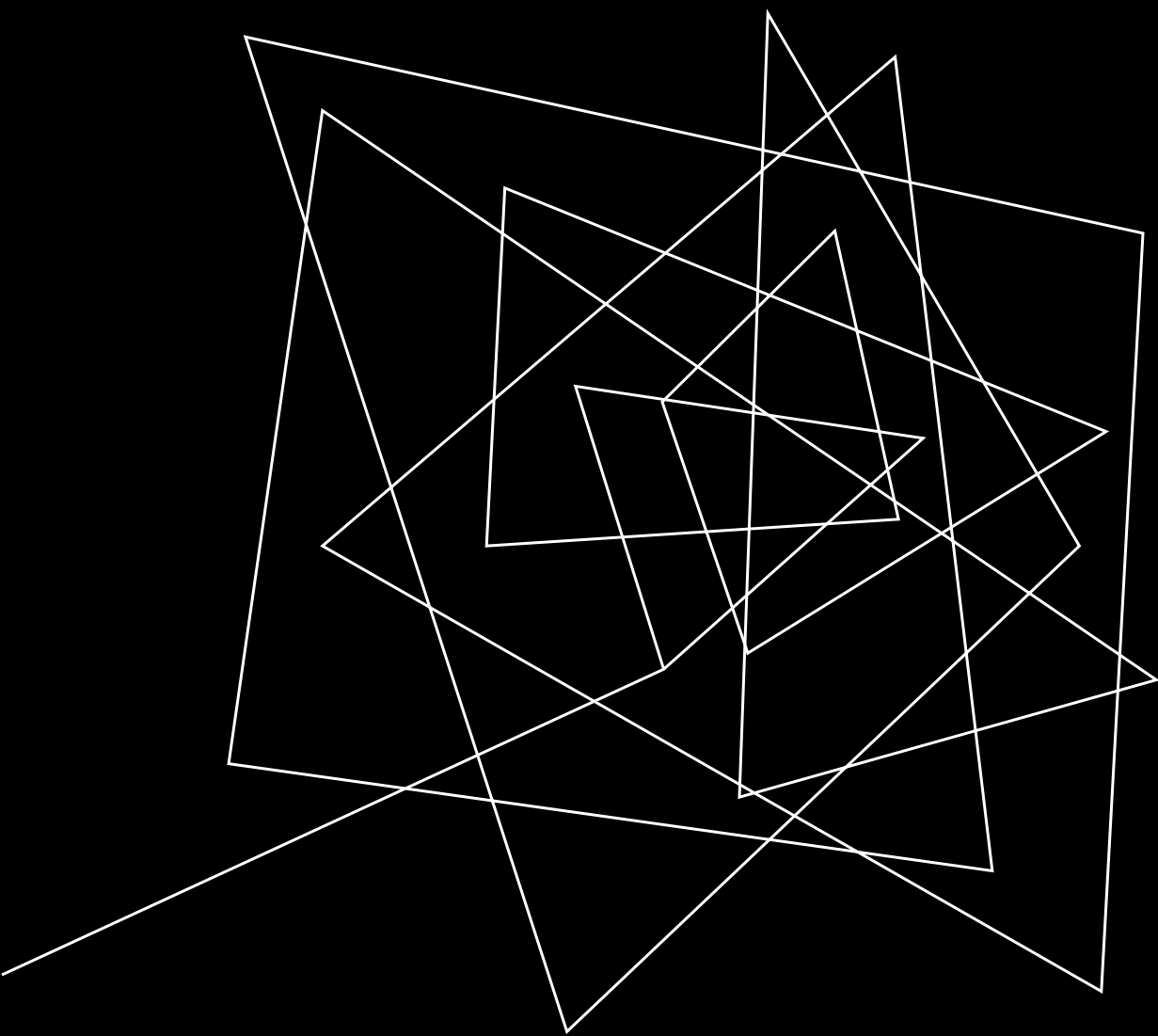
MODEL COMPARISON AND SELECTION FOR PREDICTING CUSTOMER CHURN

STEPS FOLLOWED
.**Hyperparameter Tuning:**
•Optimize Random Forest and Gradient Boosting for better recall and precision.
•**Feature Engineering & Selection:**
•Fine-tune feature selection to improve model accuracy further.
•**Class Balancing:**
•Utilize techniques like SMOTE to handle the **class imbalance** and improve model performance.
•**Retention Strategy Focus:**
•Target **high-risk churn customers** with personalized offers or improved service plans.

Random Forest:

Recall for Class 1: **0.76** (captures more positives)

Slightly lower precision compared to Gradient Boosting

Gradient Boosting:

Precision: **0.74** (better precision than Random Forest)
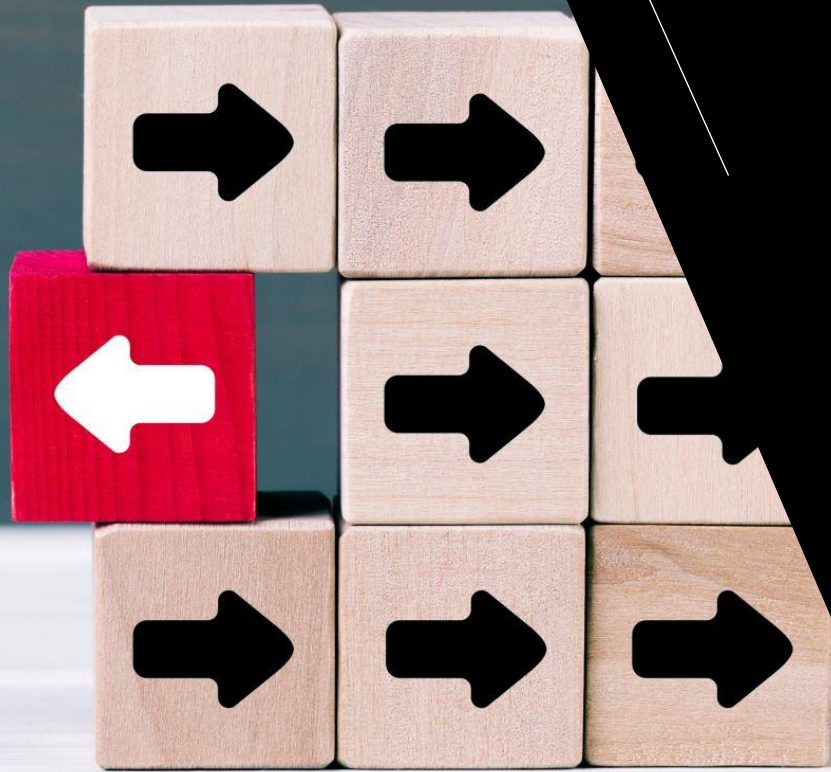
Higher false negatives (misses more positives)

LightGBM:

Slightly higher false negatives

RANDOM FOREST IS THE BEST MODEL TO PREDICT CUSTOMER CHURN.
- CLASS 1 RECALL: **76%**
- IT HAS THE LEAST NUMBER OF FALSE NEGATIVES, TOTALING **23**.

NEXT STEPS FOR IMPLEMENTATION

DATA ENRICHMENT
•**COLLECT MORE DATA:** GATHER MORE DATA ON CUSTOMER BEHAVIORS AND INTERACTIONS, SUCH AS SOCIAL MEDIA ENGAGEMENT, IN-APP USAGE, AND FEEDBACK FROM CUSTOMER SURVEYS. THIS CAN HELP IN UNDERSTANDING CUSTOMER SENTIMENT AND SATISFACTION MORE COMPREHENSIVELY.

CUSTOMER SEGMENTATION
•**SEGMENT CUSTOMERS:** USE CLUSTERING TECHNIQUES TO SEGMENT CUSTOMERS BASED ON THEIR BEHAVIOR AND CHURN PROBABILITY. TAILOR RETENTION STRATEGIES FOR DIFFERENT SEGMENTS TO IMPROVE EFFECTIVENESS.

•**PERSONALIZED RETENTION:** DEVELOP PERSONALIZED RETENTION CAMPAIGNS FOR HIGH-RISK CUSTOMERS. OFFER CUSTOMIZED PROMOTIONS, DISCOUNTS, OR LOYALTY PROGRAMS TO KEEP THEM ENGAGED AND SATISFIED.

THANK YOU

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