



GROUP 4

Predicting Customer Churn In Telcos

Phase 3 Group Project
DSF-FT13 Hybrid
14TH Sept. 2025



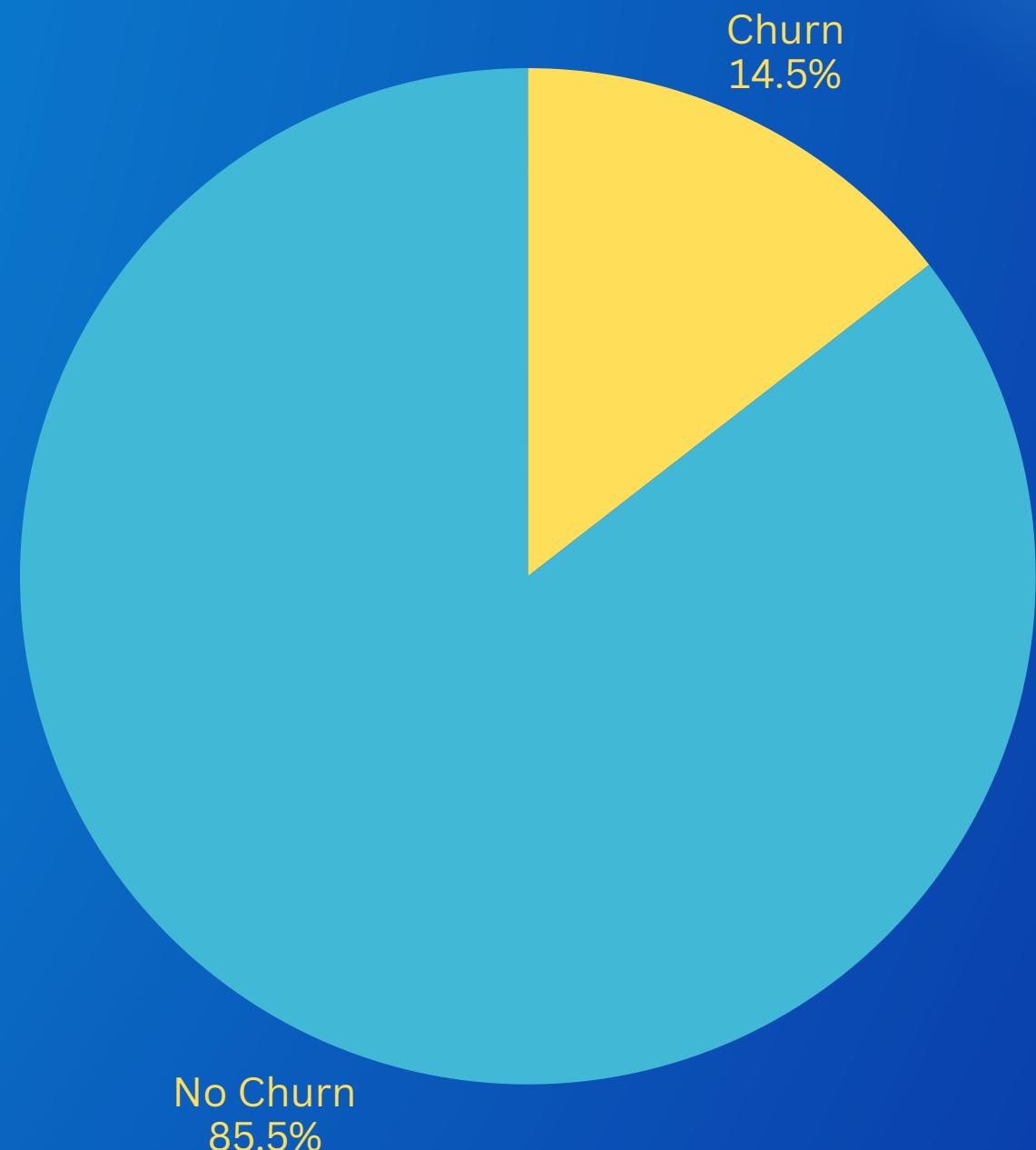
Problem Statement



- Customer churn is a major challenge in telecommunication companies.
- Losing customers means **lost revenue** and **high replacement costs** to the company.
- **Goal:** Predict which customers are likely to churn and act early.

Dataset Overview

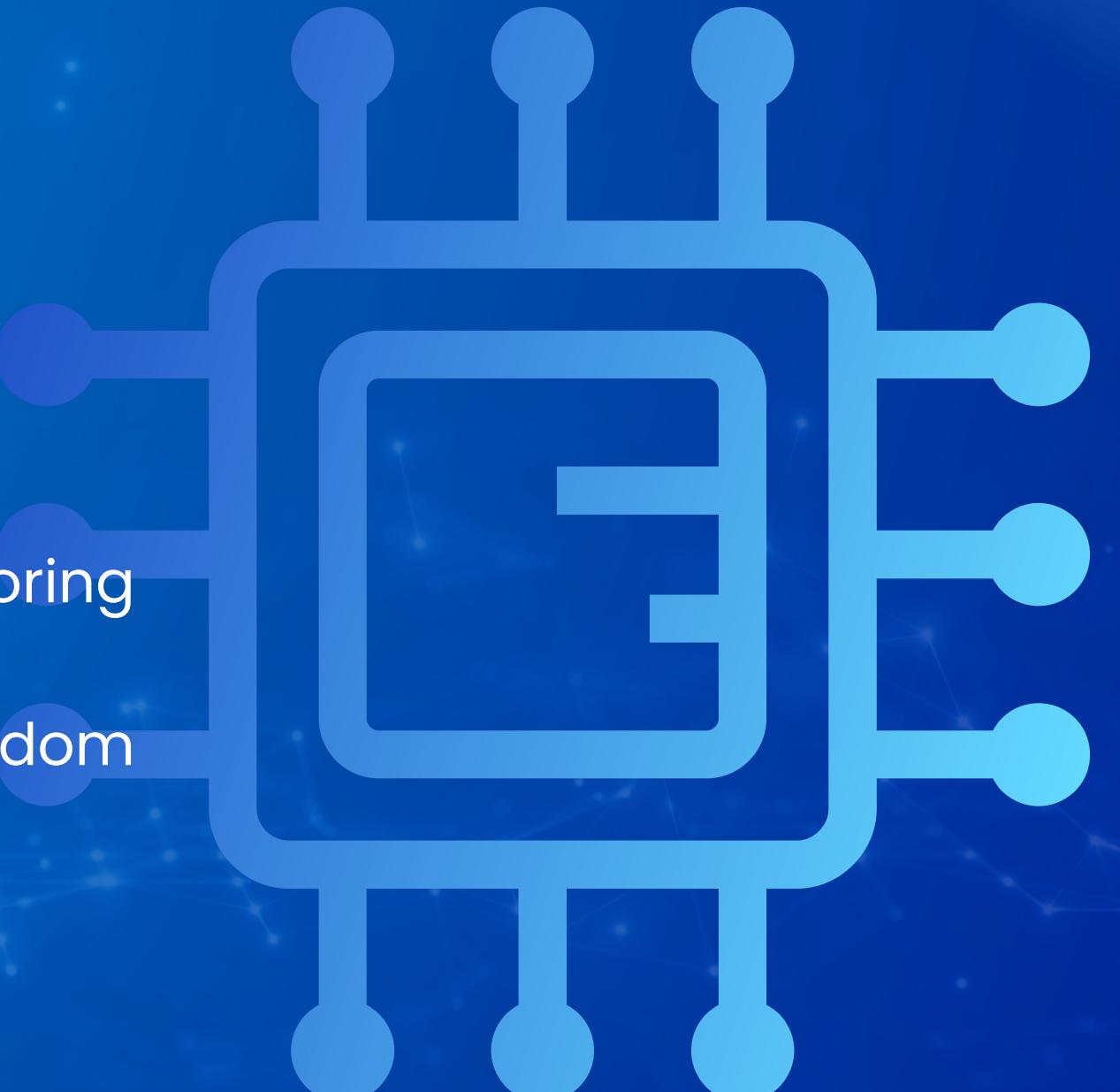
- Data from telecom customers.
- **Includes:** usage patterns, contract details, billing information and demographics.
- ~3,300 records analyzed.
- **Target:** Churn (**Yes / No**).





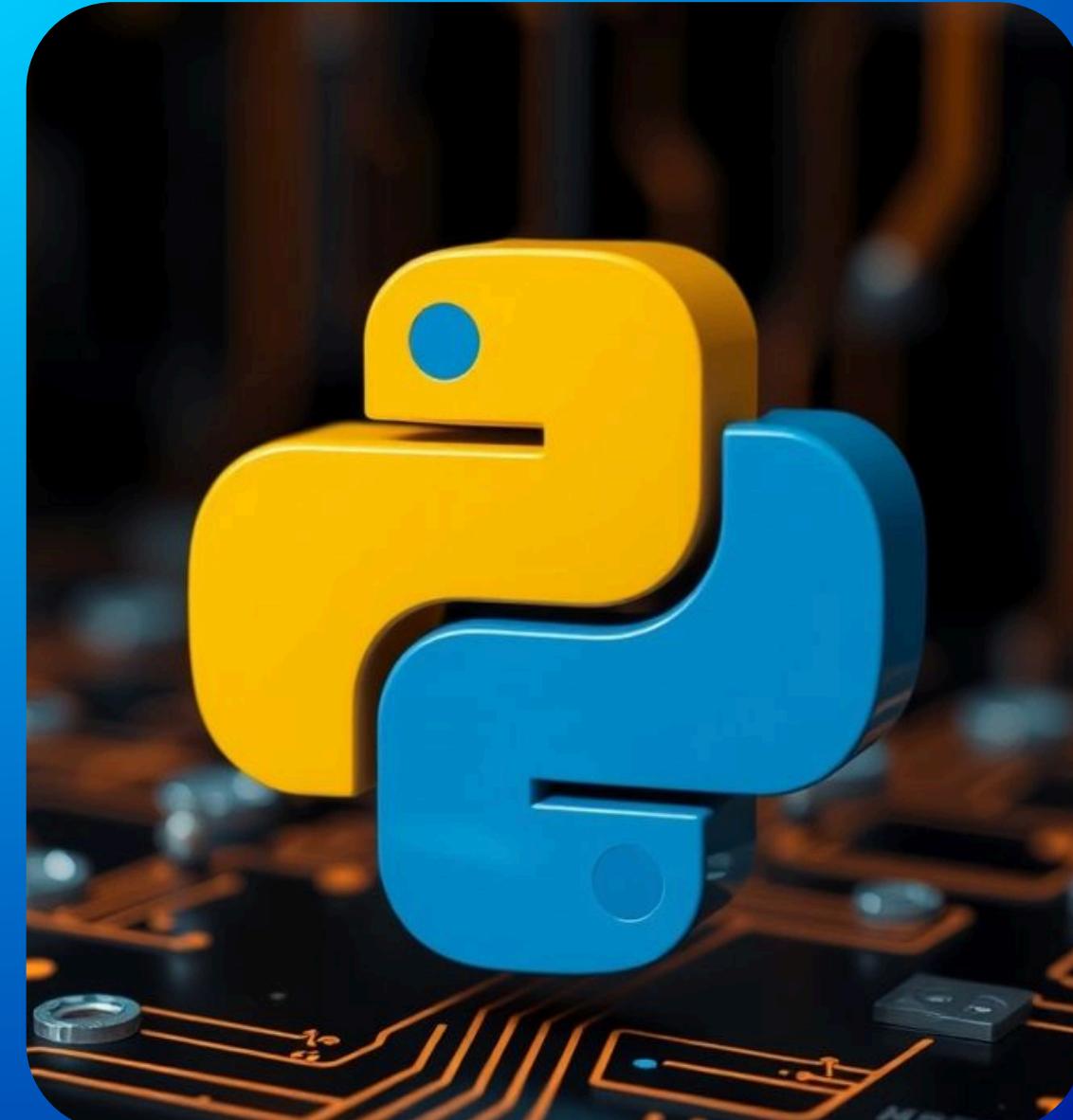
Approach (CRISP-DM)

- **Business Understanding** → Why churn matters.
- **Data Understanding & Preparation** → Cleaning and the exploring the dataset.
- **Modeling** → Used: Logistic Regression, Decision Tree and Random Forest.
- **Evaluation** → ROC AUC comparison.
- **Recommendations** → Use insights for customer retention.

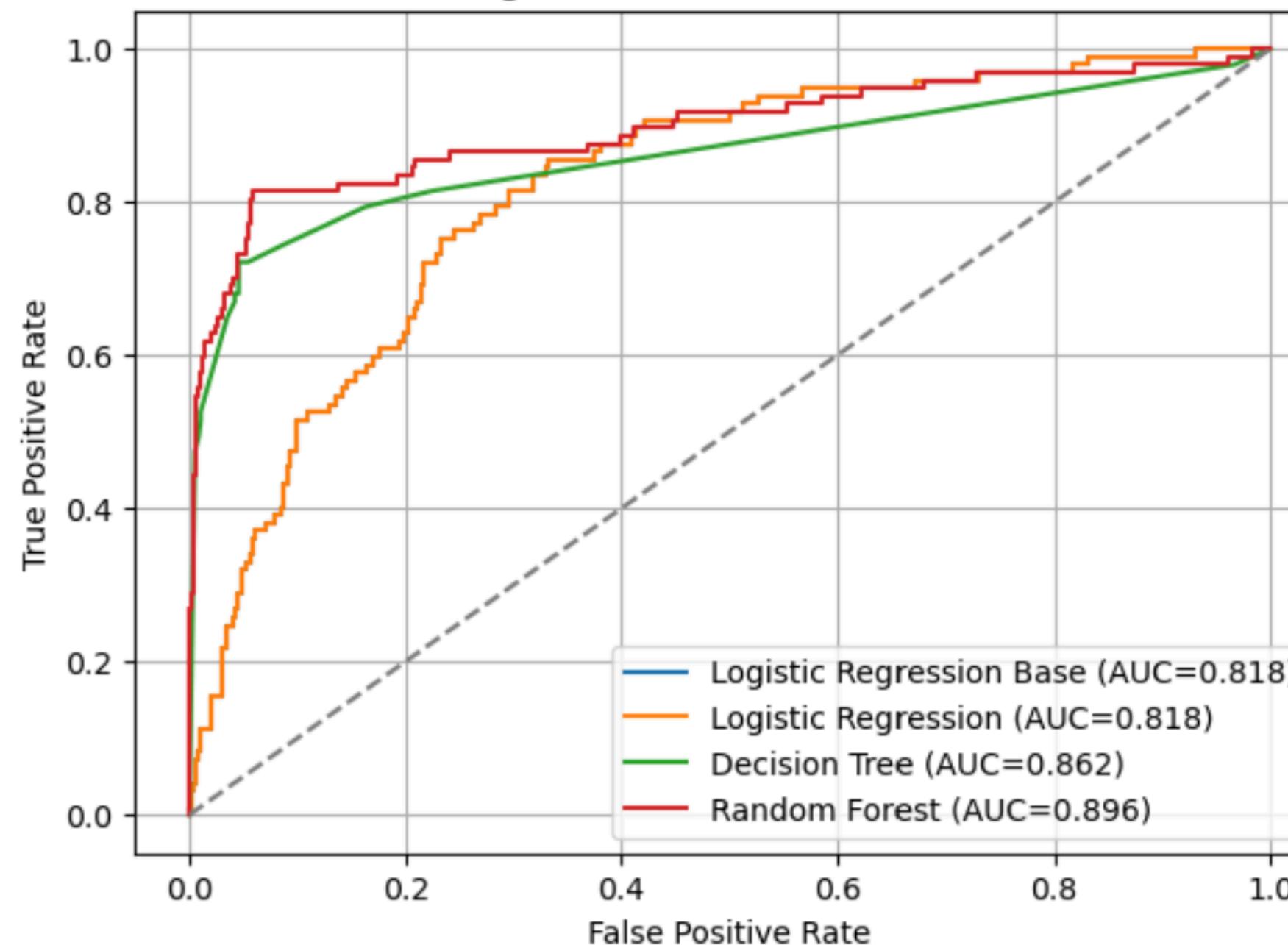


Model Results

- Logistic Regression (Base): 0.816
- Logistic Regression (Tuned): 0.816
- Decision Tree: 0.895
- **Random Forest: 0.921 (Best model)**



ROC Curves: Logistic vs Decision Tree vs Random Forest

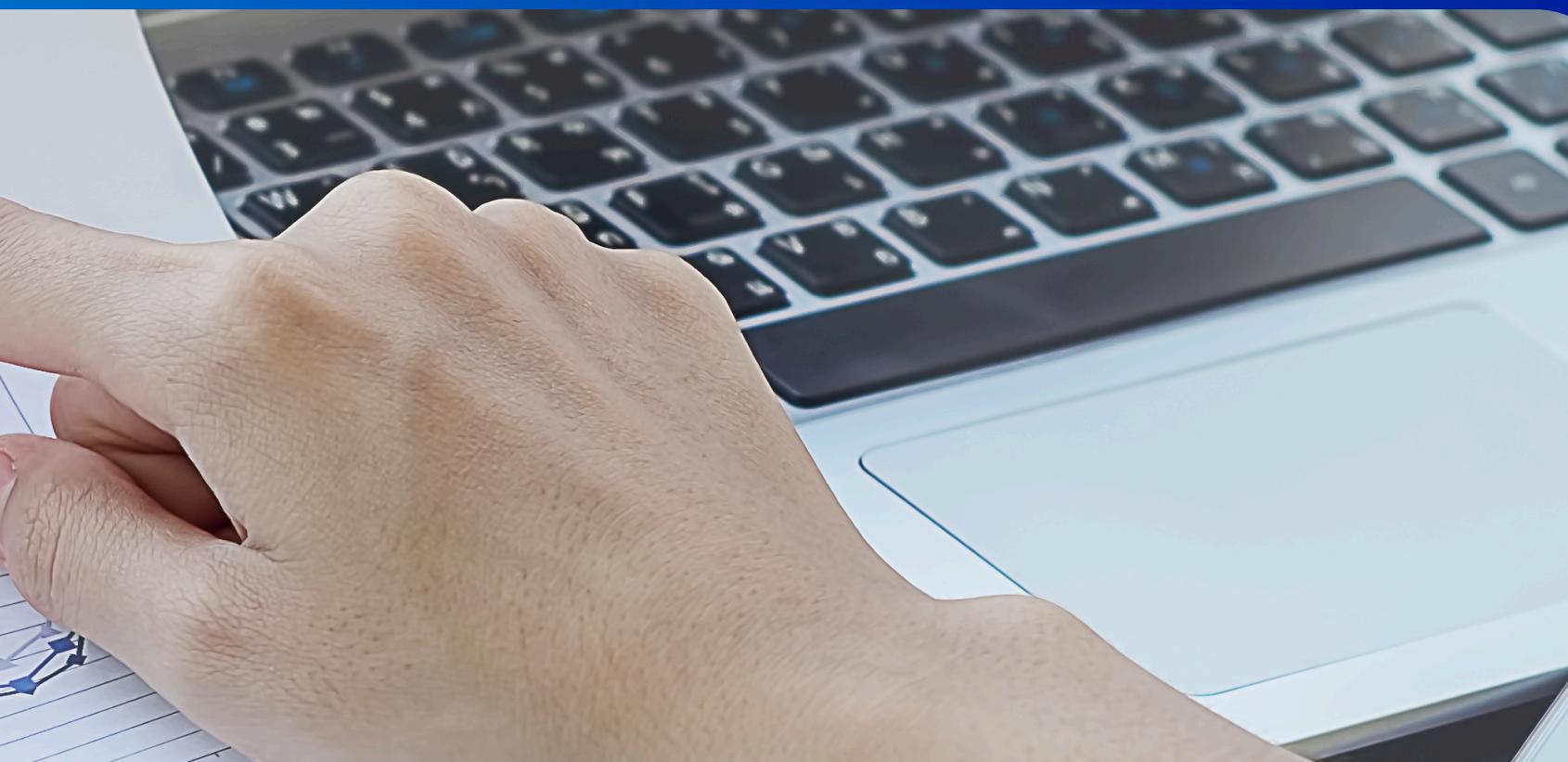


➡
"MACHINE
LEARNING TURNS
DATA INTO
DECISIONS AND
DECISIONS INTO
INSIGHT."



Insights

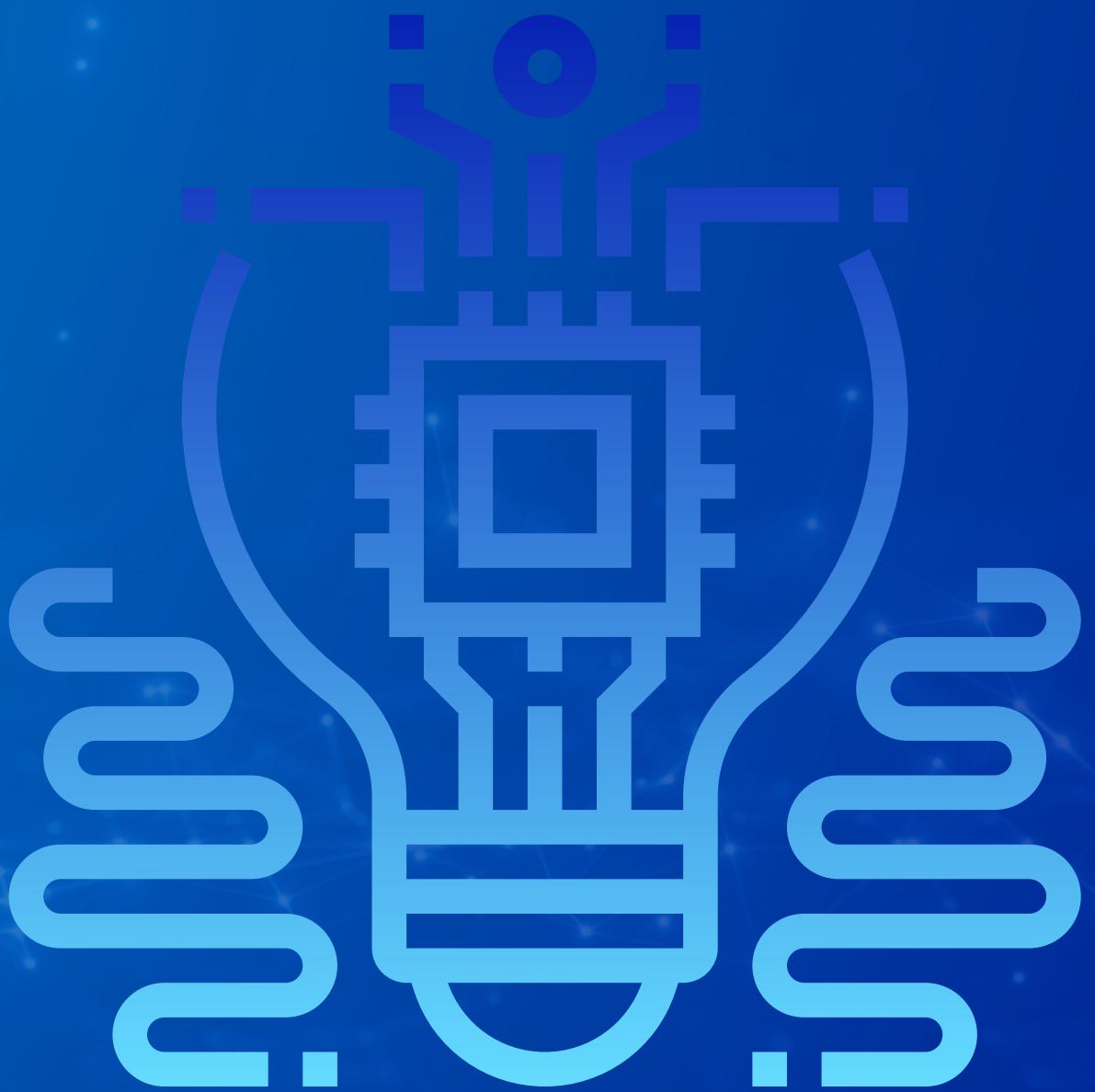
- Random Forest is best predicts churn.
- Important churn factors:
 - Contract type (month-to-month vs. long-term).
 - Monthly charges.
 - Customer tenure (length of service).





Recommendations

- Deploy **Random Forest** for churn prediction:
 1. *Use Logistic Regression When Interpretability Matters*
 2. *Treat Decision Trees as a Supporting Model*
- Focus on retention efforts on high-risk customers.
- Offer targeted loyalty programs, bundles or discounts.
- Continuously update the model with new customer data.



Business Impact

- **Lower churn** means higher customer retention.
- It saves money on acquiring new customers.
- It improves long-term customer loyalty and revenue stability.



Conclusion

- Data science provides actionable insights for telecom.
- **Random Forest** outperformed other models.
- **Next step:** Deploy the model and integrate with customer support systems.

