User Requirements Document: Telecom Customer Churn Analysis Dashboard

# Objective

To build a complete end-to-end telecom customer churn analysis solution that extracts, transforms, and loads (ETL) customer data into a database, applies machine learning models to predict churn, and visualizes insights using Power BI for informed business decision-making.

# Problems Identified

The business is struggling to understand:  
- Why customers are churning.  
- Which customer profiles are more likely to churn.  
- How to design targeted retention campaigns.  
- How to leverage historical data to predict future churners.  
  
There is currently:  
- No centralized data pipeline.  
- Limited visibility into churn drivers.  
- No predictive capabilities.  
- Fragmented data sources and manual analysis.

# Target Audience

- Primary – Head of Customer Retention  
- Secondary – Marketing Team, Business Analysts, Data Science Team

# Use Cases

## 1. Analyze Customer Data Across Key Segments

User Story:  
As the Head of Retention, I want to view customer data segmented by demographic, geographic, account, and service-related details, so that I can understand usage and risk patterns.

Acceptance Criteria:

* - Dashboard should visualize customers by:  
   - Age, Gender (Demographic)  
   - Location, Region (State)  
   - Monthly charges, contract type, payment method (Payment & Account Info)  
   - Services subscribed (phone, internet, tech support, streaming, etc.)  
  - Filters should be provided for interactive analysis.

## 2. Profile Churners to Identify Key Risk Factors

User Story:  
As a Marketing Analyst, I want to understand the typical profile of customers who churn so that I can design targeted retention campaigns.

Acceptance Criteria:

* - Dashboard shows churners vs. non-churners by key attributes.  
  - Identify top factors correlated with churn.  
  - Display churn rate across different customer groups.

## 3. Predict Future Churners Using Machine Learning

User Story:  
As a Data Scientist, I want to build and deploy a machine learning model to predict churn so that the business can proactively retain at-risk customers.

Acceptance Criteria:

* - A predictive churn model using classification techniques is created.  
  - Model outputs probability of churn for each customer.  
  - Results are visualized in the dashboard.  
  - Metrics such as Accuracy, Recall and F1 Score are presented.

# Success Criteria

The stakeholders can:  
- Understand customer base through demographic and behavioral insights.  
- Identify at-risk customer segments.  
- Visualize real-time churn metrics.  
- Act on ML-driven predictions to reduce churn rate.  
- Use insights to shape retention campaigns and improve ROI.

# Metrics Required

- Total Customers  
- Total Churners  
- Churn Rate  
- New Joiners  
- Monthly Revenue (optional)  
-  
- Churn by Contract Type, Payment Method, Service Type, Region

# Information Needed

- Customer ID  
- Gender, Age, Region, Tenure  
- Contract Type, Monthly Charges, Payment Method  
- Services subscribed (Internet, Phone, Streaming, etc.)  
- Churn Label (Yes/No)

# Data Quality Checks

- Row count check  
- Null value check  
- Data type check  
- Unique key check (CustomerID)

# Additional Requirements

- End-to-end ETL process documented (SQL scripts, transformations).  
- Power BI dashboard published and shareable via workspace or embedded link.  
- Machine learning code version-controlled in GitHub (e.g., logistic regression, decision tree, etc.).  
- ML pipeline documented for reproducibility and scalability.  
- Option to refresh Power BI data daily or weekly.