**Data Science Use Case Document Template**

**1. Problem Statement**

**Description:**  
Telecom companies often face challenges in delivering personalized customer support due to the vast diversity of customer needs, languages, and preferences. Traditional support systems rely on static responses and fail to adapt dynamically to individual customers, leading to dissatisfaction and increased churn. A solution is needed to provide real-time, tailored support experiences.

**2. Target Variable / Number of Clusters**

**Definition:**  
The target outcome is a personalized response or resolution tailored to the customer's query, preferences, and historical interactions. Clustering can be applied to segment customers based on behavior, usage patterns, or demographics.

**3. Input Variables / Parameters**

**Key Influencers:**

* Customer profile data (e.g., demographics, preferences)
* Historical interaction records (e.g., past queries, complaints, resolutions)
* Real-time query text or voice input
* Sentiment analysis results from customer communications
* Service usage patterns (e.g., data, voice, or OTT services)
* Regional or language preferences

**4. Sector**

**Telecom**

**5. Approach / Technology Used**

**Technology Stack:**

* **Natural Language Processing (NLP)**: For understanding customer queries and intent detection.
* **Machine Learning Models**: To predict customer needs and recommend resolutions based on historical data.
* **Chatbots and Virtual Assistants**: Powered by generative AI to deliver conversational, context-aware responses.
* **Sentiment Analysis Tools**: To gauge customer emotions and adjust the tone of responses.
* **Integration with CRM Systems**: To leverage existing customer data for contextual support.

**6. Benefits**

* Improved customer satisfaction through fast and relevant support responses.
* Reduction in average handling time (AHT) for queries by automating repetitive tasks.
* Increased customer retention by delivering personalized experiences.
* Cost savings through automation and efficient resource allocation.

**7. Expected Outcome**

* **Real-Time Personalization**: Tailored responses to customer queries based on context and history.
* **Higher CSAT Scores**: Improved customer satisfaction and loyalty.
* **Operational Efficiency**: 20-40% reduction in support costs and time.
* **Scalable Solutions**: Support for diverse languages and regional needs.

**8. Challenges / Risks**

* Potential biases in AI models affecting personalization accuracy.
* Ensuring data privacy and compliance with regulatory standards.
* Initial cost and time investment for integrating AI-powered systems.