

Functional Requirements Document (FRD)

Project Name: Project Sentinel: AI-Driven Retention & Revenue Recovery

Associated BRD: BRD-Sentinel-1.0

Version: 1.0 | **Date:** October 2023

Status: Final for Engineering Review

1. System Overview

Project Sentinel is a middleware application that integrates with the Telco's Central Data Warehouse and the Salesforce CRM. It uses a logic-based scoring engine to trigger retention workflows based on the "Service Gaps" identified in the churn analysis.

2. Functional Requirements (Process Logic)

2.1 Data Intake & ETL (Extract, Transform, Load)

- **FR-1.1:** The system shall ingest the following data points daily: CustomerID, Tenure, ContractType, InternetType, OfferType, and PremiumTechSupport_Status.
- **FR-1.2:** The system shall validate data integrity; records with null ContractType or MonthlyCharges shall be flagged for manual review.
- **FR-1.3:** The system shall categorize customers into tenure cohorts: 0-6 Months, 6-12 Months, 1-2 Years, and Over 2 Years.

2.2 Scoring Engine (The Risk Algorithm)

The system must calculate a **Churn Propensity Score (0-100)** for every active account.

- **FR-2.1: Contract Weighting:** If Contract == "Month-to-Month", add **30 points**.
- **FR-2.2: Support Gap Weighting:** If InternetService == "Fiber Optic" AND PremiumTechSupport == "No", add **25 points**.
- **FR-2.3: Offer Weighting:** If OfferType == "Offer E", add **20 points** (based on the 52.9% churn rate data).
- **FR-2.4: Geography Weighting:** If City == "San Diego" OR City == "Fallbrook", add **10 points**.

2.3 CRM User Interface (UI) Requirements

- **FR-3.1: Risk Indicator:** The CRM Account Page shall display a visual "Risk Badge" (Green < 40, Yellow 40-70, Red > 70).

- **FR-3.2: Revenue-at-Risk Field:** Display the `TotalRevenueAtRisk` based on the customer's `MonthlyCharges` multiplied by their `Churn_Probability`.
- **FR-3.3: Embedded Analytics:** The UI shall embed a Tableau Dashboard frame showing the "City-Level Churn Heatmap" to provide agents with local context.

2.4 Automation & Integration Triggers

- **FR-4.1: Automated Save-Offer:** When `Risk_Score > 75`, the system shall trigger a REST API call to the Marketing Automation platform to send "**Retention Campaign: Offer A**".
- **FR-4.2: Support Provisioning:** If `Risk_Score > 60` and `PremiumTechSupport == "No"`, the system shall automatically generate a "Free 3-Month Tech Support Trial" coupon code.
- **FR-4.3: High-Value Notification:** If `Customer_Segment == "High-Value"` AND `Risk_Score > 70`, the system shall create a high-priority "Outbound Call Task" for the Senior Retention Team.

3. Data Dictionary (Key Variables)

Field Name	Data Type	Description	Source
<code>Churn_Score</code>	Integer (0-100)	Calculated probability of churn.	Internal Engine
<code>Tenure_Cohort</code>	String	Categorization of customer length.	<code>churn_tenureDropoff.csv</code>
<code>Service_Gap_Flag</code>	Boolean	True if Fiber Optic user lacks Tech Support.	<code>churn_serviceGap.csv</code>

Target_Offer	String	Recommended migration offer (A, B, or C).	churn_offerType.csv
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4. Non-Functional Requirements (NFR)

4.1 Performance & Scalability

- **NFR-1.1:** The scoring engine must be capable of processing up to 10,000 customer records in under 60 seconds.
- **NFR-1.2:** The API response time for CRM badge updates must be less than 200ms.

4.2 Security & Compliance

- **NFR-2.1:** System must comply with CCPA (California Consumer Privacy Act) for all 7,043 CA-based customers.
- **NFR-2.2:** Access to the "Revenue-Lost" data fields shall be restricted to Manager-level roles and above.

5. User Acceptance Criteria (UAT)

- **UAT-1:** Verify that a "Month-to-Month" customer in "San Diego" is correctly assigned a score higher than a "Two Year" customer in "Los Angeles."
- **UAT-2:** Confirm that an email trigger is successfully fired to the Marketing platform when a test account hits a score of 80.
- **UAT-3:** Ensure the Tableau "Geography" map accurately reflects the churn percentages in `churn_geographyType.csv`.