**Product Requirements Document (PRD)**

**1. Title Page**

* **Product Name**: Social Pulse: Sentiment Analysis & Insights Platform
* **Document Title**: Product Requirements Document (PRD)
* **Version**: 1.1
* **Author**: Heckerbella Limited
* **Date**: 10th February 2025
* **Stakeholders**: Platform Owner, Industry Clients (e.g., Retail, Healthcare, Telecom, Banking), Regulators

**2. Introduction**

* **Purpose**:  
  This project aims to build a sentiment analysis platform that collects and analyzes social media and blog conversations across industries to provide insights into customer sentiment. The platform will help businesses and regulatory bodies detect trends, manage brand reputation and improve customer experience.
* **Background**:  
  In Nigeria’s competitive market, understanding customer sentiment is critical for maintaining a positive brand image and improving customer satisfaction. Traditional feedback methods are slow and reactive, whereas sentiment analysis provides automated, real-time tracking. The platform will cater to multiple industries, including finance, retail, healthcare, technology, and public services. This platform will use **natural language processing (NLP)** and **machine learning** to analyze customer feedback from social media platforms like X (formerly Twitter), Facebook, Instagram, TikTok and blog posts.
* **Goals**:
  1. Provide real-time sentiment analysis of customer feedback across industries.
  2. Enable early detection of public relations (PR) crises and customer dissatisfaction.
  3. Offer actionable insights to improve customer service and brand perception.
  4. Create alerts for regulators to identify unlicensed businesses on social media.
  5. Monetize the platform through advisory services, subscriptions, and data insights.

**3. Objectives**

* **Business Objectives**:
  1. Generate revenue through subscription models, advisory services, and data insights.
  2. Establish the platform as a valuable tool for multiple industries (e.g., retail, healthcare, telecom, banking).
  3. Enhance brand loyalty and customer satisfaction for platform subscribers.
  4. Monetize through API access
  5. Provide regulators with tools to monitor business compliance.
* **User Objectives**:
  1. Enable industries to monitor and improve their brand perception.
  2. Provide industries with data-driven insights to enhance customer engagement.

**4. Target Audience**

* **User Personas**:
  1. **Businesses & Corporate Entities**: Monitor customer sentiment to improve services and address complaints (e.g., retail, healthcare, telecom, banking).
  2. **Regulatory Bodies** – Identify and act against non-compliant businesses.
  3. **Marketing & PR Teams** – Develop strategies based on public perception
  4. **Government Agencies** – Use sentiment trends for policymaking
  5. **Platform Owner**: Monetize insights and provide advisory services.
  6. **Customer Feedbacking**: The system becomes a platform customers engage to report complaints and share their concerns on the various businesses.
* **User Stories**:
  1. As a retail company, I want to monitor customer sentiment in real-time to address negative feedback and improve customer satisfaction.
  2. As a regulator, I want to receive alerts about unlicensed businesses on social media to take enforcement actions.
  3. As the platform owner, I want to generate revenue by selling insights and advisory services to multiple industries.

**5. Scope**

* **In-Scope**:
  1. Crawling and collecting data from social media platforms (X, Facebook, Instagram, TikTok) and blog posts.
  2. Cleaning and preprocessing data (deduplication, spell correction, removing special characters).
  3. NLP-based sentiment classification (positive, negative, neutral, urgency, intent, emotion detection: happy, sad, angry, frustrated, excited).
  4. Dashboard with visualized sentiment trends and alerts.
  5. API access for enterprise clients.
  6. Providing actionable insights to improve customer service and brand perception.
  7. Creating alerts for regulators to identify unlicensed businesses.
  8. Data visualization through Power BI, Tableau, and web-based dashboards.
* **Out-of-Scope**:
  1. Direct integration with industry-specific systems (e.g., banking, retail).
  2. Real-time customer support for end-users.

**6. Functional Requirements**

* **Feature 1: Data Collection**
  + Description: Crawl social media platforms for customer feedback.
  + User Flow: API integration → Data fetching → Data storage.
  + Acceptance Criteria: Data from X, Facebook, Instagram, TikTok, and blog posts is collected and stored securely.
* **Feature 2: Data Cleaning and Preprocessing**
  + Description: Clean and preprocess data for analysis.
  + User Flow: Remove duplicates → Correct misspellings → Remove special characters.
  + Acceptance Criteria: Cleaned data is structured and ready for analysis.
* **Feature 3: Sentiment Analysis**
  + Description: Analyze sentiment using NLP and machine learning.
  + User Flow: Tokenization → Sentiment classification (positive, negative, neutral) → Emotion detection (angry, happy, sad).
  + Acceptance Criteria: Sentiment is accurately classified with a confidence score of 90%+.
* **Feature 4: Reporting and Alerts**
  + Description: Generate reports and alerts for stakeholders.
  + User Flow: Analyze data → Generate insights → Send alerts to industries and regulators.
  + Acceptance Criteria: Reports are generated in real-time, and alerts are sent promptly.
* **Feature 5: Web Application Dashboard**
  + Description: Provide an interactive web-based dashboard for users to view insights, reports, and alerts.
  + User Flow: Login → View dashboard → Filter data by industry, sentiment, or time period → Download reports.
  + Acceptance Criteria: The dashboard is user-friendly, responsive, and accessible on multiple devices.

**7. Non-Functional Requirements**

* **Performance**:
  + The platform should handle 1 million+ social media posts daily, with a response time of <5minute
* **Security**:
  + Data encryption and secure API integrations to protect user data.
  + Role-based access control for user permissions.
  + Compliance with NDPR (Nigeria Data Protection Regulation), GDPR, and other relevant laws.
* **Scalability**:
  + The platform should be scaled to accommodate additional industries and data sources.
* **Usability**:
  + Intuitive dashboards and reports for non-technical users.

**8. Success Metrics**

* 1. Accuracy of sentiment analysis (target: 85%+).
  2. Revenue generated from subscriptions and advisory services.
  3. Number of regulatory alerts generated and acted upon.
  4. Customer feedbacks and rate of industry engagement.

**9. Timeline & Milestones**

* **Milestone 1**: Data Collection and Preprocessing (Month 1-2).
* **Milestone 2**: Sentiment Analysis Model Development (Month 3-4).
* **Milestone 3**: Reporting & API development (Month 5-6).
* **Milestone 4**: Web Application Development and Pilot Testing (Month 7-8).
* **Milestone 5**: Platform Launch (Month 9).

**10. Dependencies**

* **Internal Dependencies**:
  1. Data science team for model development.
  2. Development team for platform integration.
* **External Dependencies**:
  1. Social media APIs (X, Facebook, Instagram, TikTok, LinkedIn).
  2. Cloud hosting providers (AWS, Google Cloud, or Azure).

**11. Appendices**

* **Glossary**:
  + NLP: Natural Language Processing.
  + API: Application Programming Interface.
  + PR:
* **References**:
  + Sentiment Analysis Proposal by Heckerbella Limited.
  + PRD Template.

**12. Key Deliverables**

* **Web Application**: A fully functional web-based platform for monitoring and analyzing customer sentiment across industries.
  + Features: Interactive dashboards, real-time alerts, and downloadable reports.
  + Hosting: The platform will be hosted on a secure cloud infrastructure (AWS, Google Cloud, or Azure).
* **Data API Service**
  + REST API for accessing sentiment data and integrating with third-party applications.
  + Secure authentication (OAuth2) for businesses subscribing to API access.
* **Sentiment Analysis Engine**: A robust NLP and machine learning model for sentiment classification.
* **Real-Time Alerts**: Alerts for industries and regulators.
* **Reports and Dashboards**: Visual insights using tools like Power BI or Tableau, integrated into the web application.