Software Requirements Specification

for

ADvantage

Version 1.0

Prepared by

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1.0	Team ADvantage	Initial draft	3/3/25

Introduction

This section provides a **brief introduction** to the project, explaining its purpose and goals. The document further elaborates on the **system's overall description, specific requirements, non-functional requirements, and additional technical considerations** essential for development and implementation.

1.1 Document Purpose

This document outlines the **Software Requirements Specification (SRS)** for **ADvantage**, an AI-powered advertising platform that generates **global, contextually relevant ads** in real time. The purpose of this document is to define the **functional, non-functional, and technical requirements** necessary for developing and deploying the system. It serves as a reference for **developers, project managers, stakeholders, and testers** to ensure the system is built as per the intended design and objectives.

1.2 Product Scope

ADvantage is a **web-based AI-driven advertising product** that helps businesses create **personalized and targeted ads** by leveraging **real-time global/Country data** such as social trends and cultural events. Unlike traditional advertising solutions, ADvantage ensures that each ad is **contextually relevant to the country's audience** by leveraging **up-to-date national news and trends**, increasing customer engagement and conversion rates. The system will allow businesses to generate, preview, and deploy AI-created advertisements through channels such as Email.

1.3 Intended Audience and Document Overview

- **Developers**: To understand system functionality, technical requirements, and constraints necessary for building the ADvantage platform.
- **Project Managers**: To track progress, ensure alignment with business goals, and manage project milestones.
- **Testers**: To define test cases and validate the platform against functional and non-functional requirements.
- **Clients**: To assess whether the system meets specified requirements and aligns with project objectives.
- **Stakeholders & Business Analysts**: To evaluate the business impact and feasibility of the solution.

Document Overview

- **Introduction** – Provides an overview of the project, its purpose, and audience.
- **Overall Description** – Explains the system's functionality, constraints, and dependencies.
- **Specific Requirements** – Details functional and external interface requirements, including use cases.

- **Other Non-Functional Requirements** – Defines performance, security, and software quality attributes.
- **Other Requirements** – Covers any additional constraints or system needs.

Suggested Reading Sequence:

- New readers should start with **Section 1: Introduction** and **Section 2: Overall Description** to understand the project scope.
- **Developers** should focus on **Section 3: Specific Requirements** for technical implementation details.
- **Testers** should refer to **Section 4: Non-Functional Requirements** for performance and security criteria.
- **Clients and stakeholders** can review **Section 5** and **Appendices** for additional details on system expectations and project tracking.

1.4 Definitions, Acronyms and Abbreviations

- **API** – Application Programming Interface
- **AI** – Artificial Intelligence
- **ADvantage** – AI-powered ad generation platform
- **LLM** – Large Language Model
- **UI/UX** – User Interface/User Experience
- **SMS** – Short Message Service
- **SRS** – Software Requirements Specification

1.5 Document Conventions

This document follows the **IEEE SRS formatting standards**. The following typographical and structural conventions are maintained:

Formatting Conventions

- **Font**: Arial, Size **11 or 12**.
- **Text Style**:
  - *Italics* for comments or placeholders.
  - **Bold** for section headings and important terms.
- **Line Spacing**: Single-spaced text with 1” margins on all sides.
- **Bullet Points & Tables**: Used for structured representation of key points.

1.6 References and Acknowledgments

IEEE Standard for Software Requirements Specification

- OpenAI API Documentation: https://platform.openai.com/docs/
- Django Documentation: https://docs.djangoproject.com/en/5.2/
- Smtplib Documentation: https://docs.python.org/3/library/smtplib.html
- Postgres Documentation: https://www.postgresql.org/docs/current/index.html
- Google API Documentation: https://developers.google.com/

Overall Description

2.1 Product Overview

ADvantage is an innovative, AI-powered platform designed to revolutionize the way businesses create and deploy advertisements. In today's fast-paced, content-driven world, traditional advertising methods often fail to capture the attention of consumers due to their generic and non-contextual nature. ADvantage addresses this challenge by offering a global/Country specific, real-time ad generation solution that leverages news trends to create personalized and engaging ads.

Context and Origin

ADvantage is a **new, self-contained product** that aims to fill a critical gap in the advertising industry. While existing advertising platforms offer broad targeting options, they lack the granularity and real-time adaptability required to connect with audiences effectively. ADvantage was conceived to address this limitation by integrating advanced AI technologies, including Large Language Models (LLMs), with real-time data sources to deliver ads that are contextually relevant.

The product is particularly relevant in regions where cultural, social, and environmental factors significantly influence consumer behavior. By operating at a country-level scope, ADvantage ensures that ads align with national trends and sentiments, thereby enhancing relevance, engagement, and conversion rates.

Key Features and Functionality

1. **Trend-Based Ad Generation**:
    - Ads are dynamically generated based on real-time data from Google News, capturing weekly and daily trends across the country.
    - Country-level targeting ensures ads stay timely, relevant, and aligned with national sentiment.
2. **Real-Time Customization**:
    - Businesses can modify ad campaigns like setting a tone for generated Ads, ongoing trends and external conditions.
    - Ads are updated in real-time to maintain relevance.
3. **User-Friendly Dashboard**:
    - An intuitive web-based interface allows businesses to **set preferences**, monitor campaigns, and analyze performance.

- Generated ads can be modified by the business accordingly.

4. **Scalable and Secure Infrastructure**:

    - The application is systematically designed using a decoupled architecture, allowing independent scaling of core features.
    - It employs secure API configurations, robust authentication mechanisms, and adheres to industry-standard data protection practices.

System Architecture and Interfaces

ADvantage is designed as a **standalone platform** but can integrate with third-party APIs for data sourcing (e.g., google trends & News updates) and ad deployment (e.g., SMTPLIB). The system architecture comprises the following key components:

- **Frontend**: A responsive website with a modern UI/UX design.
- **Backend**: Handles ad generation, data processing, and user management.
- **AI Engine**: Integrates LLMs for dynamic ad creation and trend analysis.
- **Database**: Stores user data, ad templates.
- **APIs**: Facilitates integration with external data sources and ad deployment platforms.

Target Audience

ADvantage is designed for **businesses of all sizes** looking to enhance their marketing efforts. It is particularly beneficial for:

- Small and medium enterprises (SMEs) targeting specific regions.
- Large enterprises with diverse customer bases across multiple localities.
- Marketing agencies seeking innovative tools to deliver personalized campaigns.

Demonstration and Commercialization

For demonstration purposes, ADvantage will operate with mock or synthetic data to showcase its capabilities. The platform will serve as a demo tool for new clients, while existing clients can log in to generate ads by providing product descriptions and further customization like adding Hashtags, uploading customer data to publish Ads and set the tone of generated Ads. Although the initial focus is on demonstration, the system is designed with scalability in mind, allowing for future commercialization and integration with real-time data sources.

In summary, ADvantage represents a next-generation advertising solution that combines AI-driven personalization in marketing to deliver ads that are not only relevant but also impactful. By addressing the limitations of traditional advertising methods, ADvantage empowers businesses to connect with their audiences in meaningful and engaging ways.

2.2 Product Functionality

Secure User Access & Role Management

- Provides a **protected login system** with email and password authentication.
- Supports **OTP-based email verification** for **password recovery and account security**.
- Implements **tiered user access** (administrators & general users) for controlled functionality.

AI-Powered Smart Ad Generation

- Businesses can **instantly create location-based advertisements** powered by AI.
- Users can **customize ad content** by selecting parameters such as **tone and use of Hashtags**.
- The system offers a **"hands-free" mode** for automated ad generation based on real-time trends.
- Each ad is tailored to **the Product Description**, ensuring **precise audience targeting**.
- Users can **edit ads, modify inputs, or delete unwanted ads**.

Business Dashboard & Campaign Oversight

- A **control panel designed for observability** allows businesses to **track generated ads, number of users which can help them make data driven decisions**.
- Provides **real-time insights** into engagement metrics, impressions, and overall reach.

Location-Based Ad Distribution & API Connectivity

- The platform facilitates **ad deployment** based on **scraped data**.
- Integrates with **external APIs** to pull in **media trends and national events**, enriching ad content.
- Can further be customized to support **business API access** for streamlined integration into existing marketing systems.

Content Moderation & Regulatory Compliance

- AI-driven **content screening** ensures advertisements meet ethical, legal, and industry guidelines.
- Prevents **inappropriate or misleading content** from being published to maintain brand reputation.

Payment Model

- Users can **purchase credits or subscribe to a plan** that determines how many ad generations they can request.
- **Different pricing tiers** will be available, offering **basic, standard, and premium** packages with varying ad request limits.

2.3 Design and Implementation Constraints

2.3.1 Technical & Computational Constraints

- The platform **relies on Large Language Models (LLMs)** for ad generation, which may have **performance limitations** based on the model used.
- Computational constraints require **optimized processing of real-time data**, such as social media trends, and local events, to avoid **latency issues**.
- **Synthetic or mock data** will be used for testing instead of full-scale real-time data scraping due to resource limitations.

2.3.2 Technology Stack & Development Limitations

- The system will be built using **HTML, CSS & JS** for **frontend and Django, Postgres for backend, and other API interactions**.
- Ad content generation depends on **third-party APIs**, which could introduce **rate limits, dependency risks, or access restrictions**.
- **API integration for ad distribution** (e.g., Email) is currently limited to **demonstration purposes**.

2.3.3 Software Design & Modeling Constraints

- The software **must follow the COMET method** for system architecture and modular design.
- **UML (Unified Modeling Language)** must be used for system documentation, including **class diagrams, use case diagrams, and sequence diagrams**.
- The architecture must support **scalability** but will initially focus on a **functional prototype rather than a commercial-grade system**.

2.3.4 Security & Compliance Restrictions

- User authentication will include **basic security measures**, such as **email/password login, OTP verification, and role-based access control (RBAC)**.
- **End-to-end encryption** must be implemented to protect user data and payment details.
- The platform must comply with **privacy regulations (GDPR, CCPA)** while ensuring **pincode-based targeting does not store personal user data**.
- Only **essential security protocols** (OAuth, JWT) will be implemented in the initial development phase.

2.3.5 Scope & Operational Constraints

- The platform is designed for **demonstration purposes**, meaning **commercial scalability and full production deployment are not immediate priorities**.
- The project will be **developed by a team of seven members**, limiting the complexity of features that can be implemented within the given timeframe.
- The system will undergo **testing with a limited number of users** before considering wider deployment.
- **Computational efficiency must be balanced** with real-time ad personalization to **avoid excessive server loads**.

2.3.6 Time & Project Deadline constraints

- The entire project **must be completed by May 20, 2025**, leaving a **fixed timeline** for each development phase.
- The **initial focus will be on core functionalities**, including ad generation, tone specifications and campaign management, with **future iterations** planned for advanced features.

2.4 Assumptions and Dependencies

Assumptions

- The project will be completed within the defined timeline (by May 20, 2025).
- The platform will use LLMs to generate ad content based on local data.
- ADvantage will rely on external APIs for social trends, and local events.
- A basic authentication system (login, role-based access) will be sufficient for security.
- The platform will be tested with a limited number of users to evaluate functionality.
- Ads will be generated dynamically based on user-provided product descriptions, Tone setting and use of hashtag accordingly

Dependencies

- Third-Party APIs: Integration with external services (e.g. OpenAI, Google trends and social media trends).
- Large Language Models (LLMs): The ad generation system depends on LLMs for text creation.
- Frontend & Backend Frameworks: Development will use technologies like JS and Django. Postgres for Database Management, Relies on a structured database to store ads and user data.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

3.1.1.1 Logical Interfaces

Contextual Menus : Users can navigate through the homepage to enter product description, set a tone for their Ads, option to use Hashtags and upload a CSV with customer information to send ads

Ad Generation & Review: The system generates advertisements based on the company's target location

The company reviews the generated ads through a dashboard.

- The company can **approve or reject** each ads or modify them further

Display Screen (Ad Preview & Review)

- Shows the generated advertisement based on the selected location.
- Buttons for editing the ad.
- Option to send the ads to their customer once approved.

3.1.2 Hardware Interfaces

The software product primarily operates in a **local dev environment** with minimal direct hardware interaction. However, it integrates with specific hardware components for ad distribution and analytics. The key hardware interfaces include:

Server Infrastructure

- Hosts the LLM, processes advertisement generation, and manages company approvals
- The software interacts with the server to generate, store, and send advertisements to users via the SMTP server.

SMTP server integration (Communication Hardware)

- Mobile devices (smartphones, tablets)
- Delivers advertisements directly to users via emails
- The software sends data packets (text) to email servers, which then distribute them to users

User Devices (End-Users & Companies)

- Smartphones, Tablets, Desktops
- **End-users** receive ads and interact via emails
- **Companies** review and approve advertisements using a web-based dashboard
- **Interaction:**
    - The web-based dashboard for companies provides an interface for ad approval
    - Users interact via emails, responding to ads or clicking links

3.1.3 Software Interfaces

The software product integrates with multiple external and internal software components to generate, approve, and distribute advertisements. Below is a breakdown of these interfaces:

Large Language Model (LLM) API

- Generates advertisement content based on company preferences, user location, and online trends.
- The system sends input parameters such as **business type, recent trends, and preferred tone** to the LLM.
- The LLM returns a structured advertisement.
- The generated ad is stored in the system and displayed for company approval.

Email Servers

- Sends approved advertisements directly to end-users via email.
- The system formats the approved ad and sends it.
- Processes and delivers the ad to targeted users.

Google Trends API and Search API(Trend Scraping)

- Scrapes online data to generate trend-based advertisements.
- Fetches trending **topics** from the specified data.
- Processes and filters relevant data before sending it to the LLM.
- The LLM generates ads that align with **current trends and user interests.**

Web-Based Dashboard (Company Interface)

- Allows businesses to review, approve, and analyze advertisements.
    - Displays **generated advertisements** for review.
    - Companies can **approve, reject, or edit** ads before sending them.
    - Provides real-time **engagement analytics** (ad views and responses).

3.2 Functional Requirements

The ADvantage AI-powered advertising platform is designed to provide businesses with an intuitive and automated system for generating and managing context-based advertisements. This section describes the functional requirements that define the behavior of the system.

3.2.1 User Authentication and Authorization

- The system shall allow users to create an account using an email and password.
- The system shall provide authentication via OTP-based email verification for password recovery.
- The system shall support role-based access control (RBAC) to distinguish between different user types (e.g., administrators, business users, general users).

3.2.2 Hyper-Local Ad Content Generation

The platform will allow users to generate AI-powered hyper-local advertisements with customizable inputs.

3.2.2.1 Input Interface for Ad Generation

- Users shall have access to a text box to enter remarks or specific prompts for the LLM to guide ad generation.
- Users shall be able to specify preferences such as:
- Advertisement Tone: Predefined categories such as Gen Z, Causal and Formal.
- Use of Hashtags: Users can specify the requirement for a Hashtag
- Customer Data to send Ads: Users can upload customer data for sending approved Ads
- The system shall provide an option for users to skip input customization, allowing for automated, trend-based generation.

3.2.3 API and Data Integration

- The system shall integrate with external APIs to fetch real-time trends and location-based insights.
- APIs shall be used for:
  Fetching social media and news trends.
  Retrieving public event data for contextual relevance.
  Accessing weather and local news feeds to improve ad contextualization.
- The system shall process location-based insights to ensure ads are aligned with current local trends.

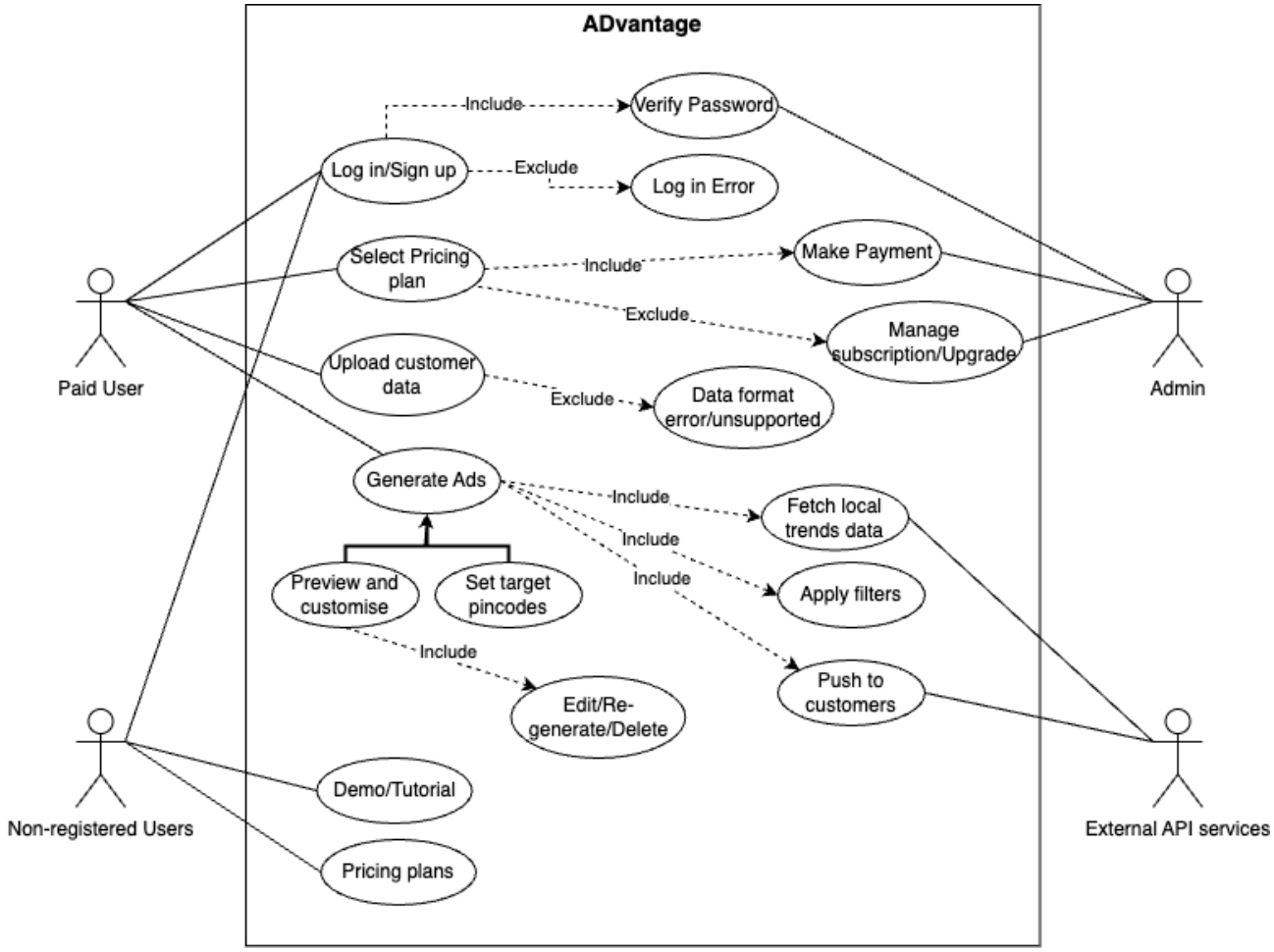
3.2.4 Ad Content Filtering and Moderation

- The system shall implement automated moderation to filter inappropriate content.
- AI-based content moderation algorithms shall check for:
  Offensive language
  Misinformation
  Regulatory compliance
- Business users shall have the ability to review and modify AI-generated ads before deployment.

3.2.5 System Notifications and Alerts

- The system shall send notifications and alerts for important updates, such as:
  Confirmation messages for generated ads.
- A "Send Ads" button shall allow businesses to send all ads in bulk to their targeted audience.

3.3 Use Case Model



Use Case #1: User Authentication & Authorization (U1)

Author - Pranav Yeturu

Purpose - To ensure that only authorized users can access the system by allowing account creation, login, and role-based access control.

Requirements Traceability

1. User must be able to create an account.
2. OTP-based email verification for password recovery.
3. Role-Based Access Control (RBAC) for different user types.

Priority - High

Preconditions -

1. User must provide a valid email and password during sign-up.
2. The email must be unique within the system

Post conditions -

1. The user gets successfully authenticated and assigned the appropriate role.
2. The system securely stores user credentials.

Actors

1. Business User
2. Administrator
3. General User

Extends – It extends an error message upon invalid credentials.

Flow of Events

1. User enters email and password to sign up/login.
2. System validates credentials.
3. If logging in, the system grants access based on role.
4. If signing up, the system sends an OTP for email verification.
5. User enters OTP, and the account is created.

Use Case #2: Ad Content Generation (U2)

Author: Harsha Dayini Akula
Purpose: To allow business users to generate AI-powered advertisements based on real-time trends and user inputs.
Requirements Traceability:

1. User should be able to enter prompts for LLM.
2. System should provide predefined tone and genre filters.
3. System should allow automated generation if no input is given.

Priority: High
Preconditions :

User must be logged in with a valid business account.

Postconditions:

AI-generated advertisements are available for review and customization.

Actors:

1. Business User
2. System (AI/LLM)

Basic Flow:

1. User enters a remark or prompt for ad generation.
2. User selects an advertisement tone and genre.
3. System processes inputs and generates AI-powered ads.

4. Generated ads are displayed for the user.

Alternative Flow:

If no user input is provided, the system auto-generates ads based on trends.

Exceptions:

1. API failure in fetching trend data.
2. System-generated content flagged as inappropriate.

Use Case #3: Ad Customization (U3)

Author: Yashaswi Matla
Purpose: To allow business users to customize generated ads based on user preferences.
Requirements Traceability:

1. Users must be able to edit or regenerate ads.
2. Each ad must have a "Re-generate" button.

Priority: Medium
Preconditions:

1. Ads must have been generated successfully.
2. Postconditions:
3. Updated advertisements replace previous ones.

Actors:

1. Business User
2. System (AI/LLM)

Basic Flow:

1. User clicks "Re-generate" next to an ad.
2. User enters additional instructions (optional).
3. System regenerates and replaces the ad.

Alternative Flow:

User deletes an ad/row instead of regenerating it.

Exceptions:

AI fails to generate new content.

Use Case #4: Ad Deployment & Delivery (U4)

Author: Manasvi Boggarapu
Purpose: To send location-based ads to targeted users.
Requirements Traceability:

1. Ads should be sent based on pincode, city, or state.
2. System must automatically expand scope if trends are absent.

Priority: High
Preconditions:

Ads must be approved and finalized.

Postconditions:

Ads are successfully pushed to targeted users.

Actors:

1. Business User
2. General User

Basic Flow:

1. User clicks "Push All" to send ads.
2. System validates the ads and sends them based on location.
3. General users receive ads.

Alternative Flow:

1. System automatically adjusts the scope if trends are missing.

Exceptions:

1. Network failure in sending notifications.

Use Case #5: System Notifications & Alerts (U5)

Author: Sahithi Nampally
Purpose: To notify users about ad status and actions.
Requirements Traceability:
Users must receive alerts for ad approvals, modifications, or rejections.
Priority: Medium
Preconditions:

User must have an active business account.

Postconditions:

Users receive relevant notifications.

Actors:

Business User

Basic Flow:

1. System sends confirmation messages for generated ads.
2. System alerts users when ads are pushed or rejected.

Alternative Flow:

Users disable notifications.

Exceptions:

System error prevents notification delivery.

Use Case #6: Content Filtering & Moderation (U6)

Author: Zauq Mohammed
Purpose: To ensure that AI-generated content is appropriate and complies with guidelines.
Requirements Traceability:

System should filter inappropriate content.

Priority: High
Preconditions:

Ad content must be generated before moderation.

Postconditions:

Ads with inappropriate content are flagged or modified.

Actors:

1. Administrator
2. System (AI/LLM)

Basic Flow:

1. System scans generated ads for compliance.
2. Inappropriate content is flagged for review.

Alternative Flow:

Administrator manually reviews flagged content.

Exceptions:

False positives in moderation.

Use Case #7: API Data Integration (U7)

Author: Vijaya Sai Chigurupati
Purpose: To fetch real-time trends from external sources.
Requirements Traceability:

The system must integrate with APIs for real-time data.

Priority: High
Preconditions:

APIs must be available and accessible.

Postconditions:

Updated trends are available for ad generation.

Actors:

1. External APIs
2. System (AI/LLM)

Basic Flow:

1. System requests data from external APIs.
2. API returns relevant trend data.

Alternative Flow:

If an API is unavailable, fallback mechanisms apply.

Exceptions:

API response failure.

4. Other Non-functional Requirements

4.1 Performance Requirements

P1) The system must generate ads within 5 seconds of receiving a request from the user dashboard.
P2) The system must process and integrate real-time data (e.g., weather updates, social media trends) with a maximum latency of 2 seconds.
P3) Ads must be deployed to the target audience within 10 seconds of generation.
P4) The platform must handle up to 10,000 concurrent ad generation requests without significant performance degradation.

P5) The user dashboard must load within 3 seconds and respond to user inputs (e.g., ad customization, campaign monitoring) immediately.
P6) API integrations (e.g. Twitter APIs,weather APIs) must respond within 2 seconds to ensure seamless ad generation and deployment.

4.2 Safety and Security Requirements

S1) Data Encryption - All user data, including payment details and ad campaign information, must be encrypted using AES-256 encryption both in transit and at rest. Encryption ensures that sensitive data is protected from unauthorized access, even in the event of a data breach.

S2) User Authentication - The platform must implement multi-factor authentication (MFA) for all user accounts, including company admins and marketing team members. MFA adds an additional layer of security, reducing the risk of unauthorized access to user accounts.

S3) Role-Based Access Control - The platform must enforce role-based access control (RBAC) to ensure that users can only access features and data relevant to their role (e.g., admins can manage subscriptions, while marketing teams can only create and monitor ads). It prevents unauthorized users from accessing sensitive functionalities, reducing the risk of data misuse.

S4) Regular Security Audits - The platform must undergo quarterly security audits to identify and address potential vulnerabilities. Regular audits help maintain the security integrity of the platform, ensuring that it remains protected against emerging threats.

S5) Secure API Integrations - All API integrations must use OAuth 2.0 for secure authentication and authorization. Secure API integrations prevent unauthorized access to the platform's data and functionalities.

S6) Data Anonymization - The platform must anonymize user data used for ad generation, ensuring that no personally identifiable information (PII) is stored or processed. Anonymization protects user privacy and ensures compliance with data protection laws.

4.3 Software Quality Attributes

Functional Attributes

Accuracy – The model will generate ads that are contextually relevant based on real-time local data after trends scraping.
Adaptability – The system dynamically adjusts ad content based on changing trends, weather conditions, and cultural events.
Personalization – Ads are customized to the target audience at a hyper-local (pincode) level.

Non-Functional Attributes

Performance & Efficiency

- **Response Time** – AI-generated ads should be created and displayed within a few seconds.
- **Scalability** – The system should support multiple concurrent users and handle large-scale data processing efficiently.

Reliability & Availability

- **Uptime** – The platform should maintain a high uptime (e.g., 99.9%) to ensure continuous ad generation.
- **Fault Tolerance** – The system should handle failures gracefully and ensure uninterrupted operation.

Security

- **Data Privacy** – User and business data should be securely stored and processed following data protection regulations.
- **Access Control** – Role-based authentication should be enforced for different types of users (advertisers, admins, etc.).

Usability

- **User-Friendly Interface** – The platform should provide an intuitive UI for ad generation, preview, and deployment.
- **Accessibility** – The system should comply with accessibility standards.

Maintainability & Extensibility

- **Modularity** – The system should have a modular architecture to allow easy updates and integration of new features.
- **Code Maintainability** – Code should be well-documented and follow best practices for future enhancements.

Interoperability

- **Multi-Channel Integration** – The platform should support ad deployment across WhatsApp, SMS, social media, and other marketing channels.
- **API Support** – External services should be able to interact with ADvantage through APIs for seamless automation.

5 Other Requirements

Appendix A – Data Dictionary

Name	**Type**	**Description**	**Possible Values/ Format**	**Related Operations & Requirements**
Constants				
max_ad_length	Constant	Maximum allowed ad text length	280 characters	Enforced during ad generation
defualt_region	Constant	Default geographic region if location data is missing	Hyderabad	Used when real-time location is unavailable
supported_channels	Constant	Communication channels for ad deployment	WhatsApp, SMS	System must validate selected channels before deployment
State Variables				
user_status	State Variable	Current status of a user session	Active, Inactive	Determines access
ad_status	State Variable	Status of an advertisement	Draft, Pending Approval, Approved, Rejected	Tracks the ad lifecycle
system_mode	State Variable	Operational state of ADvantage	Normal, Maintenance, Error	Affects system availability
payment_status	State Variable	Payment processing state for ads	Pending, Completed, Failed	Payment gateway integration requirement
Inputs				
user_location	Input	User's real-time location data for ad targeting	Pincode	Collected via gps or client

business_category	Input	Category of business placing the ad	Retail, Food, OTT, Technology	Determines ad templates and relevant data
budget	Input	Advertising budget set by the business	Rupees	Used to optimize ad reach
campaign_duration	Input	Duration of the ad campaign	Start - End Date	Affects scheduling and expiration
user_feedback	Input	Ratings and comments from ad viewers	5 star rating, text comments	Used to refine ad generation algorithms
Outputs				
generated_ad	Output	AI-generated advertisement content	Text	Must meet relevancy and engagement criteria
engagement_metrics	Output	Data on ad performance	Clicks, Forwards, Impressions	Used for analytics and optimization
report_summary	Output	Business reports on ad effectiveness	PDF, CSV	Downloadable for performance review
system_alerts	Output	Notifications on system events	Ad Rejected, Budget Limit Reached, Campaign Expiring	Displayed via dashboard

Appendix B - Group Log

10/2/25 Project Decision - As we changed our allotted project idea, we took one week to brainstorm ideas and decide on a project idea and spoke with Vijay Rao sir for approval. Finalized AI-powered advertising concept, target audience, and scope.

17/2/25 Statement of Work - Defined project description, key activities, deliverables, timeline, roles, assumptions and constraints. Assigned tasks for SRS drafting.

3/3/25 System Requirement Specification - Reviewed functional and non-functional requirements and finalised Appendix A and B.