

# Software Requirement Specification

## Version 4.0

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# 1 Version History

Editor	Version	Date	Description
Group 6	1.0	4 Dec 2025	Checkpoint 1: First draft of document. Basic information added for Lab Activity.
Kadence Tang	2.0	5 Dec 2025	Checkpoint 2: Added helpful information and more details.
Kadence Tang	3.0	7 Dec 2025	Checkpoint 3: Fixed wording, rewrote Legal and Ethical Considerations section.
Kadence Tang	4.0	9 Dec 2025	Final Draft.

## 2 Introduction

### 2.1 Purpose

This SRS outlines the requirements for the Influencer Analysis Tool (IAT). It serves as a guide for developers, managers, and users to understand the scope, functionality, and technical requirements of the system.

### 2.2 Intended Audience

The intended audience includes the following.

- YouTube Content Creators
- Content Creator Managers
- Software Developers
- Testers

### 2.3 Overview

The IAT identifies shared viewers between two YouTube channels by scraping comment sections and comparing usernames. It calculates overlap frequency and percentage, presenting results in a clear format to help creators understand their shared audience base.

### 2.4 Product Scope

#### 2.4.1 Product

The product is the "Influencer Analysis Tool" web application.

#### 2.4.2 Description

The IAT enables YouTube creators to input their own channel identifier and a target channel identifier. It scrapes public comment sections, compares usernames, and calculates overlap statistics. Results are displayed in a structured format accessible on both desktop and mobile.

### 2.4.3 Product Objectives

The software aims to provide actionable insights into audience overlap, support collaboration decisions, and help creators understand their reach. Objectives include:

- Simplify audience analysis between channels.
- Provide secure and accurate overlap statistics.
- Ensure compliance with YouTube's API policies.

## 3 External Interface Requirements

### 3.1 User Interface

The user interface consists of a homepage with input fields for two YouTube channel URLs, options to select the number of videos and filter method, and a 'Compare' button to initiate analysis. The results page displays overlap statistics, including shared commenter counts, percentages visualized in charts, and sortable tables for detailed exploration. A dashboard view may also include tutorials, usage instructions, and feedback options.

### 3.2 Hardware Interfaces

Users will need a mobile device or personal computer with an active internet connection. On desktop, a keyboard and mouse or trackpad are required. On mobile, touchscreen input will be supported.

### 3.3 Software Interfaces

The tool communicates with YouTube APIs and uses the following technologies:

- **Frontend: React, Tailwind CSS, Recharts** – Provides the user interface, styling, and chart visualization.
- **Backend: Node.js with Fastify** – Handles server-side logic, routing, and request/response management.
- **HTTP Client: Axios** – Communicates with the YouTube Data API to retrieve public comment data.
- **Database: PostgreSQL** – Stores channel identifiers, scraped usernames, recurring viewer records, and overlap statistics.
- **Environment Management: dotenv** – Manages environment variables securely, including API keys and database credentials.
- **Programming Languages: JavaScript/TypeScript** – Used across frontend and backend for consistent development.

### 3.4 Deployment Environment

- **Frontend Hosting: Vercel** – Provides serverless deployment and scaling for the React-based frontend.
- **Backend Hosting: Railway** – Hosts the Node.js/Fastify backend with PostgreSQL integration.
- **Security:** All deployments enforce HTTPS connections and environment variables are managed via dotenv.

### 3.5 Communications Interfaces

The frontend and backend communicate via RESTful API endpoints over HTTPS to ensure secure data transfer. Users may contact the development team via email for support or bug reports. The application may also provide optional notifications or reports via email.

## 4 Legal and Ethical Considerations

The IAT operates exclusively on public information, specifically usernames that appear in the comment sections of YouTube videos. No other account identifiers or personal data are collected, stored, or used in the analysis. **Privacy:**

- Only public usernames are collected; no sensitive personal data is accessed.
- User-provided channel identifiers are stored securely.
- Results are anonymized and used solely for overlap analysis.

#### **Security:**

- Secure authentication mechanisms will be implemented for user accounts.
- Data transfer between client and server will use HTTPS encryption.
- Databases will be protected against unauthorized access.

#### **Compliance:**

- The IAT adheres to YouTube API Terms of Service.
- The tool respects GDPR and COPPA guidelines where applicable.
- Clear documentation will inform users about data usage and limitations.

The IAT addresses key legal and ethical concerns by operating only on public YouTube data. The tool complies with YouTube's API TOS, ensuring privacy, security, and adherence to platform policies.

## 5 Glossary

Term	Definition
IAT	Influencer Analysis Tool
API	Application Programming Interface
UI	User Interface
TOS	Terms of Service
GDPR	General Data Protection Regulation
COPPA	Children's Online Privacy Protection Act

## References

- [1] “YouTube API Services Terms of Service — Google for Developers.” Google, Google, [developers.google.com/youtube/terms/api-services-terms-of-service](https://developers.google.com/youtube/terms/api-services-terms-of-service). Accessed 4 Dec. 2025.