

FORMATIVE ASSIGNMENT

Ci-NDA Project

Project Proposal

Ci-NDA: A Digital Platform for Cinematography Skill Development & Global Exposure

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Institution: African Leadership University

Date: 22/09/2025

1. The Mission

- My mission at ALU is to empower Rwandans with the skills and opportunities to thrive in cinematography. Through Ci-NDA, I aim to provide accessible digital resources, mentorship, and exposure pathways that elevate filmmaking standards. This mission seeks to bridge the gap between local talent and international platforms, ensuring that Rwandan stories are told authentically and competitively. By doing so, we strengthen youth employment, cultural identity, and Rwanda's position in the global creative economy.

Relevance in Africa:

Africa's creative economy is booming, but Rwandan filmmakers lack easy access to structured training and global opportunities. Ci-NDA bridges that gap by making resources and opportunities accessible from anywhere in Rwanda, especially for youth who can't afford expensive film schools.

2. Problem Statement

“Rwandan filmmakers lack skills, resources, and exposure.”

- Rwandan filmmakers struggle to access the skills, resources, and opportunities needed to compete in today's global cinema industry. The creative sector contributes less than 2% to Rwanda's GDP compared to Nigeria's Nollywood at 5%, highlighting a major gap in growth potential. Filmmakers face a lack of advanced training programs, mentorship, and structured career pathways. Access to professional-grade equipment and affordable learning resources remains limited. Opportunities for international exposure and festival participation are scarce, leaving many unable to showcase their talent on global platforms. Without a centralized system to connect them with knowledge, resources, and opportunities, Rwanda risks underutilizing its creative talent pool.

3. Software Development Model

- To address this challenge, the Incremental Prototyping Model will guide the development of the platform. The first phase will deliver a Minimum Viable Product (MVP) featuring mentorship and structured training resources for filmmakers. The second phase will allow users to upload portfolios and access a resource library to elevate their skills. The third phase will integrate tools for festival submissions and international collaboration. Finally, an investor and sponsorship analytics dashboard will connect creators with financial opportunities. This staged model ensures that each release delivers tangible value, reduces upfront risk, and allows feedback-driven improvements. Investors can track growth and fund development gradually, making progress measurable at every step.

4. Hypothesis of the Solution

- If aspiring filmmakers are given a digital platform that provides structured learning, mentorship, and access to global opportunities, then Rwanda's cinema industry can be transformed into a thriving regional hub. With curated resources, creators will sharpen their technical and creative skills while gaining visibility for their work. Portfolio showcases and submission tools will expand their reach to festivals, investors, and distributors worldwide. This will drive youth employment, stimulate innovation, and increase Rwanda's cultural exports. Within 5–10 years, the country can build a self-sustaining creative ecosystem recognized on global platforms. The solution will bridge the gap between talent, training, and opportunity.

5. References (APA Style)

- UNESCO. (2022). *The African Creative Economy Report*.
- Rwanda Development Board. (2023). *Creative Industries Policy Brief*.
- African Union. (2021). *Agenda 2063: The Africa We Want*.

Software Requirements Specification (SRS)

Ci-NDA

Prepared by NTARE GAMA Allan

KCAMEL

25/09/2025

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Revision History

Name	Date	Reason For Changes	Version
Problem Statement	22/09/2025	The solution came up to be more clear than it was before I thought of a computer-based solution.	2.0

Hypothesis of the Solution	23/09/2025	I believe looking at things from different angles gives you a different way to shape your thoughts.	2.0
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1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) defines the requirements for Ci-NDA v1.0, a digital platform available as both a website and mobile application. The product is designed to support aspiring and professional Rwandan filmmakers by providing access to learning resources, mentorship opportunities, industry news, and platforms for showcasing portfolios.

The scope of this SRS covers the initial release (v1.0) of Ci-NDA, which will include the core subsystems:

- **Resource Library:** Tutorials, guides, and articles to support skill development.
- **Mentorship System:** A matching feature to connect learners with industry experts.
- **Opportunity Board:** Listings of grants, competitions, and festival submissions.
- **Portfolio Showcase:** Tools for filmmakers to upload and present their work.

Future releases may expand functionality with additional analytics, sponsorship dashboards, and API integrations with international film platforms. This SRS focuses only on the core system needed for the MVP and first release cycle.

1.2 Document Conventions

This SRS follows the IEEE 830–1998 standards for Software Requirements Specifications to ensure consistency and clarity. The typographical and formatting conventions applied are as follows:

- **Headings and Subheadings** are written in bold with hierarchical numbering (e.g., 1.0, 1.1, 1.2).
- **Functional Requirements (FR)** are labeled sequentially as *FR1, FR2, FR3....*
- **Non-Functional Requirements (NFR)** are labeled sequentially as *NFR1, NFR2, NFR3....*
- **Priorities** are explicitly assigned to every requirement (High, Medium, Low). Priorities are not inherited from higher-level requirements; each statement must carry its own.
- **Text Font:** Times New Roman, size 12, is used for body text. Bold is used for emphasis, while italics are used for terms of special significance.
- **Lists and Bullets** are used for readability and to separate requirements clearly.

These conventions ensure that requirements are well-structured, traceable, and easy to review for both technical and non-technical stakeholders.

1.3 Intended Audience and Reading Suggestions

This document is intended for multiple stakeholders involved in the design, development, deployment, and use of the Ci-NDA platform. The intended audiences are:

- **Developers and Designers:** To understand functional and non-functional requirements, system architecture, and implementation constraints.
- **Project Managers:** To track scope, prioritize requirements, and plan incremental releases.
- **Testers and Quality Assurance Teams:** To verify requirements and ensure that system features meet specifications.

- **Investors and Stakeholders:** To gain clarity on the platform's purpose, scope, and business value.
- **End Users (Filmmakers, Students, Mentors):** To understand the scope of services that Ci-NDA will provide, though this audience may focus more on user-facing requirements than technical details.
- **Documentation Writers:** To prepare user manuals, training materials, and system guides.

The rest of this SRS is organized into four main sections:

1. **Introduction** (purpose, scope, conventions, audience, product scope, references).
2. **Overall Description** (system perspective, functions, user classes, constraints, assumptions).
3. **Specific Requirements** (functional and non-functional requirements, priorities, use cases).
4. **Appendices** (glossary, diagrams, and supporting materials).

Suggested Reading Order:

- **All readers** should begin with the *Introduction* for context.
- **Project managers and stakeholders** may focus on *Overall Description* for scope and system perspective.
- **Developers and testers** should read *Specific Requirements* in detail.
- **Documentation writers** should review both *Overall Description* and *Specific Requirements* for accuracy in user manuals.

This structure ensures that every audience type can navigate the document efficiently according to their role.

Map the audiences to their key sections

Audience–Section Mapping

Audience	Relevant Sections to Focus On
Developers & Designers	<ul style="list-style-type: none">2. Overall Description,3. Specific Requirements,4. Appendices (diagrams, system details)
Project Managers	<ul style="list-style-type: none">1. Introduction,2. Overall Description,3. Specific Requirements (priorities, scope management)
Testers & QA Teams	<ul style="list-style-type: none">3. Specific Requirements (FRs, NFRs, use cases),4. Appendices

Investors & Stakeholders	<ol style="list-style-type: none"> 1. Introduction, 2. Overall Description (scope, product value, assumptions)
End Users (Filmmakers, Students, Mentors)	<ol style="list-style-type: none"> 2. Overall Description (user classes, product functions), 3. Specific Requirements (user features only)
Documentation Writers	<ol style="list-style-type: none"> 2. Overall Description, 3. Specific Requirements, 4. Appendices

1.4 Product Scope

The Ci-NDA platform is a web and mobile application designed to support aspiring and professional filmmakers in Rwanda and across Africa by providing access to structured training resources, mentorship opportunities, professional networks, and exposure to global

opportunities in the cinema industry. The system will serve as a centralized hub where users can read, learn, connect, and showcase their work to industry stakeholders.

The primary purpose of Ci-NDA is to bridge the gap between local talent and global film industry standards by offering:

- A digital library of training materials and resources.
- A mentorship and networking system connecting filmmakers with industry experts.
- A platform for filmmakers to upload portfolios and showcase projects.
- A linkage to opportunities such as film festivals, grants, and sponsorships.

The objectives and goals of Ci-NDA are to:

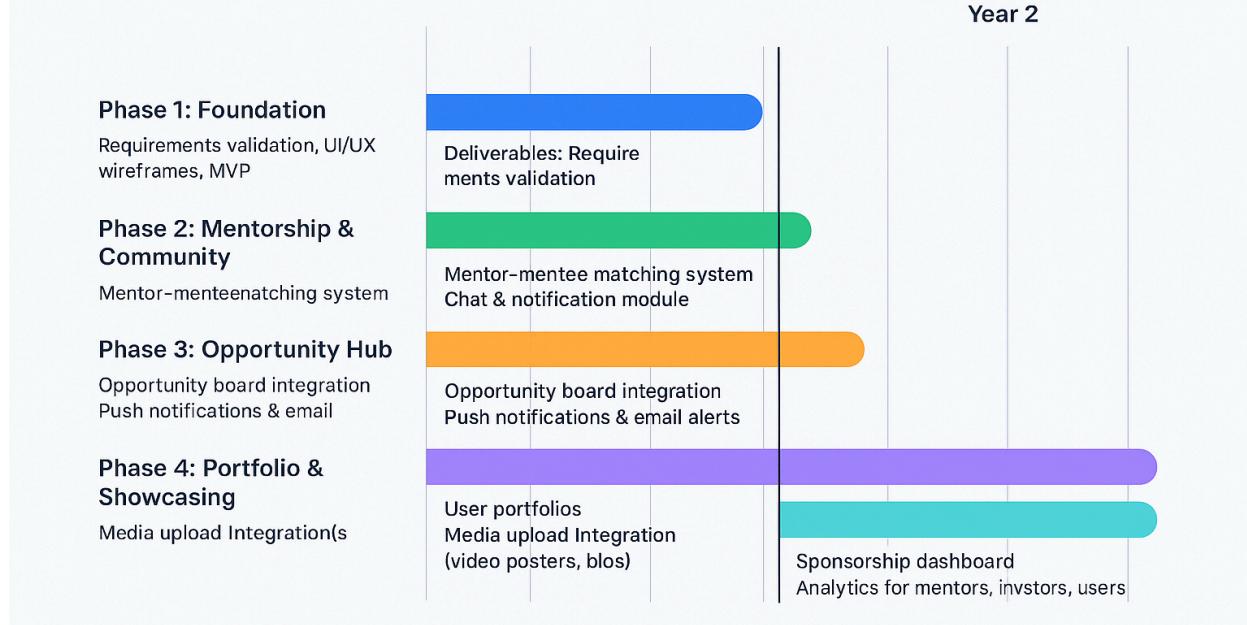
- Enhance technical and creative skills within the Rwandan cinema industry.
- Create employment opportunities for youth in the creative sector.
- Strengthen Rwanda's presence in regional and global film markets.
- Promote cultural storytelling through local content production.

This product aligns with Rwanda's Vision 2050 and the country's strategic focus on a knowledge-based economy and digital transformation. By equipping filmmakers with skills and visibility, Ci-NDA contributes to national goals of economic diversification, cultural promotion, and global competitiveness in the creative industries.

For detailed product evolution and release milestones, refer to the *Ci-NDA Product Roadmap Document, v1.0.*" [Ci-NDA Roadmap](#)

Ci-NDA Product Roadmap

A Digital Platform for Cinematography Skills & Opportunities



2. Overall Description

2.1 Product Perspective

Ci-NDA is a new, self-contained digital platform (web + mobile app) designed to empower aspiring filmmakers by providing access to educational resources, mentorship, and career opportunities. It is not a follow-on product but an original solution addressing Rwanda's need for a centralized cinematography hub. While independent, Ci-NDA will integrate with external platforms such as YouTube, Vimeo, and film festival APIs for video uploads and submission support.

A simplified view of the system:

- **Front-End (User Interfaces):** Web portal + Mobile app (Android/iOS).

- **Back-End (Server + Database):** Manages content, portfolios, mentorship connections, and opportunity listings.
- **External Interfaces:** APIs (YouTube/Vimeo for uploads, Email/SMS for alerts, Payment gateways for sponsorships).

2.2 Product Functions

1. Resource Library

- The platform will host a structured digital library of tutorials, articles, masterclasses, and videos covering various aspects of filmmaking such as cinematography, editing, directing, sound, and storytelling.
- Users will be able to search, filter, and bookmark resources for easy access.
- This function ensures that aspiring filmmakers who lack access to film schools can learn at their own pace.

2. Mentorship Matching

- A system that connects aspiring filmmakers with experienced professionals.
- Users can view mentor profiles, send requests, and engage in 1-on-1 or group mentorship sessions through in-app chat, scheduling tools, or video calls.
- This function provides personalized guidance, feedback on projects, and industry insights that users cannot easily get through online tutorials alone.

3. Opportunity Board

- A central listing of filmmaking opportunities such as grants, workshops, film festivals, internships, and competitions.
- Users can filter opportunities by category, deadline, or eligibility.

- Notifications/alerts will be triggered when new opportunities are posted, ensuring users never miss a chance.
- This solves the problem of scattered and hard-to-find opportunities for local filmmakers.

4. Portfolio Uploads & Showcasing

- Users can create personal profiles where they upload short films, trailers, posters, bios, and resumes.
- These portfolios act as digital showcases that can be shared with sponsors, festival organizers, and investors.
- Filmmakers gain visibility both locally and internationally, making it easier to secure funding or career opportunities.

5. Notifications & Alerts

- The system will send real-time push notifications, SMS, or email alerts about new opportunities, mentorship updates, or resource recommendations.
- This function increases user engagement and ensures timely action (e.g., applying before deadlines).

6. Analytics & Dashboards

- Sponsors, mentors, and administrators will have access to analytics dashboards.
- For sponsors: insights into user engagement, popular portfolios, and project visibility.
- For mentors: performance tracking of mentees and progress reports.
- For admins: system monitoring (active users, most accessed resources, flagged content).

- This function ensures accountability, transparency, and strategic decision-making.

2.3 User Classes and Characteristics

1. Aspiring Filmmakers (Primary Users)

- **Characteristics:** Usually students, independent creators, or entry-level professionals. They may have limited access to formal training or industry connections.
- **Needs:** Learning resources, mentorship, opportunities to showcase work, and access to competitions/funding.
- **Importance:** They are the main target audience — the platform is designed primarily to serve them.

2. Mentors / Industry Professionals

- **Characteristics:** Experienced filmmakers, directors, producers, or technical experts willing to guide newcomers.
- **Needs:** Tools for mentoring (profile visibility, scheduling sessions, feedback mechanisms).
- **Importance:** They ensure the platform's credibility and provide knowledge transfer that textbooks or tutorials cannot fully offer.

3. Sponsors / Investors / Grant Providers

- **Characteristics:** Organizations, NGOs, brands, or individuals funding film projects, festivals, or training.
- **Needs:** Analytics dashboards, access to filmmaker portfolios, and reliable ways to discover talent.

- **Importance:** Their financial and strategic support helps sustain the ecosystem and creates real opportunities for users.

4. Administrators (System Managers)

- **Characteristics:** The technical and support staff responsible for maintaining the platform.
- **Needs:** Tools for content moderation, system monitoring, and user management.
- **Importance:** They keep the platform secure, up-to-date, and aligned with organizational goals.

In short:

- **Filmmakers = learn + showcase.**
- **Mentors = guide + support.**
- **Sponsors = invest + discover talent.**
- **Admins = manage + secure the system.**

2.4 Operating Environment

Hardware Platform

- The platform will run primarily on cloud-based servers (e.g., AWS, Azure, or Google Cloud) to ensure scalability and global accessibility.
- End-users will access it through standard devices:
 - **Desktops/Laptops** (Windows, macOS, Linux).
 - **Mobile Devices** (Android and iOS smartphones/tablets).

Operating Systems

- **Server side:** Linux-based OS for stability and scalability.
- **Client side:**
 - Web browsers (Chrome, Firefox, Safari, Edge — latest versions).
 - Mobile apps for iOS (16+) and Android (12+).

Software Components

- **Web Frameworks:** React (frontend), Node.js/Django (backend).
- **Databases:** PostgreSQL (primary), Redis (for caching).
- **APIs & Integrations:** Payment gateways, video hosting (e.g., Vimeo/YouTube API), cloud storage (Google Drive, AWS S3).
- **Security Modules:** SSL/TLS for encryption, OAuth 2.0 / JWT for authentication.

Network Requirements

- A stable **internet connection** (minimum 2 Mbps for general use; 5 Mbps+ for video streaming and uploads).
- Adaptive design ensures functionality even with limited bandwidth by scaling video quality.

Coexisting Applications

- The platform must integrate with:

- **Email Services** (Gmail, Outlook).
- **Collaboration Tools** (Slack, Discord, or integrated chat).
- **Social Media Platforms** for content sharing (Instagram, TikTok, YouTube).

2.5 Design and Implementation Constraints

These are the “rules of the game” ; things that limit how Ci-NDA can be built:

1. Regulatory Policies

- Must comply with data protection laws (GDPR, Rwanda Data Protection Law, CCPA for global users).
- Copyright & licensing compliance for uploaded media (films, music, scripts).

2. Hardware Limitations

- Mobile devices with limited storage or slower processors must still run the app smoothly → requires lightweight coding and adaptive video streaming.

3. Technology Stack Requirements

- Frontend: React (web), Flutter/React Native (mobile).
- Backend: Node.js/Django (as per initial architecture).
- Database: PostgreSQL (primary), Redis (cache).

4. Interfaces

- Payment systems (Stripe, PayPal, Mobile Money).
- Cloud storage & video hosting.

- Social media APIs (YouTube, Instagram, TikTok).

5. Security Considerations

- Multi-factor authentication for accounts.
- Role-based access control (admin, mentor, learner, partner).
- Encrypted communications (SSL/TLS, HTTPS).

6. Programming Standards

- Must follow industry-standard REST/GraphQL API guidelines.
- Codebase documented and version-controlled with Git.

2.5 Design and Implementation Constraints



Regulatory Policies

Must comply with data protection laws (GDPR, Rwanda Data Protection Law, CCPA for global users)



Hardware Limitations

Mobile devices with limited storage or slower processors must still run the app smoothly
→ requires lightweight coding and adaptive video streaming



Technology Stack Requirements

Frontend: React (web), Flutter/React Native (mobile)

Backend: Node.js/Django (as per initial architecture)

Database: PostgreSQL (primary), Redis (cache)



Interfaces

Payment systems (Stripe, PayPal, Mobile Money)

Cloud storage & video hosting

Social media APIs (YouTube, Instagram, TikTok)

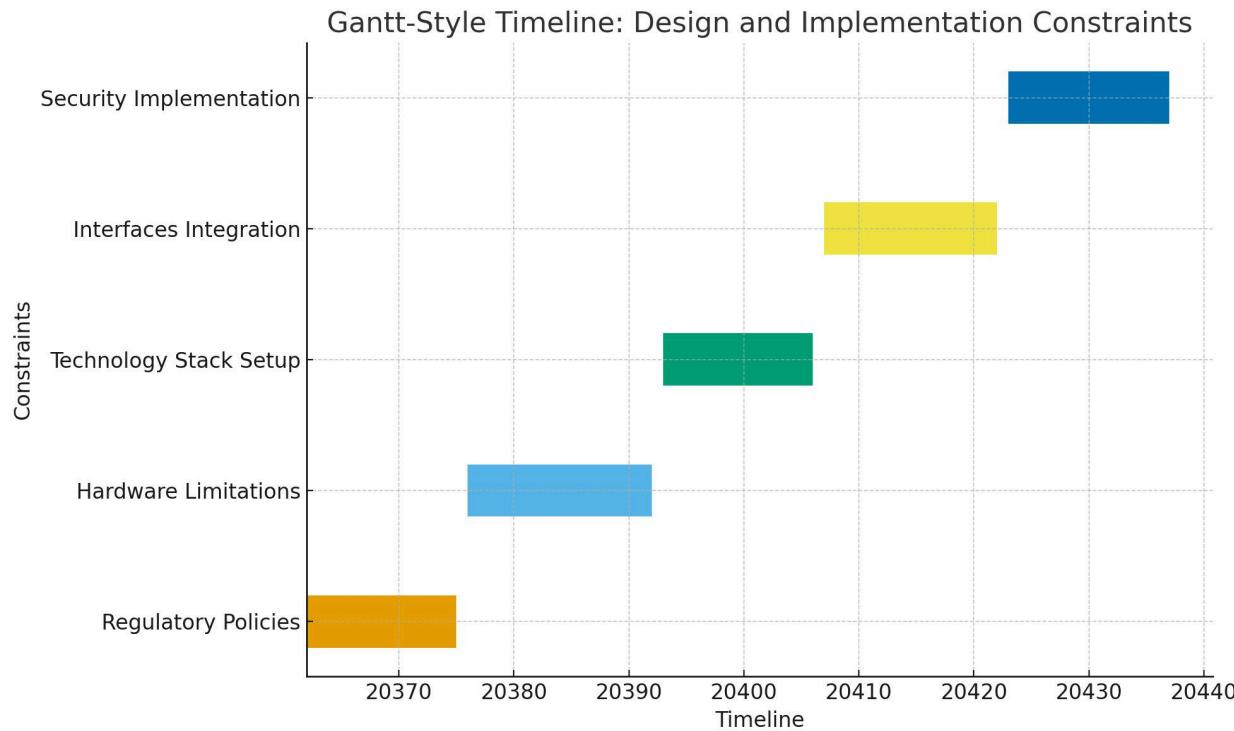


Security Considerations

Multi-factor authentication for accounts

Role-based access control (admin, mentor, learner, partner)

Encrypted communications (SSL/TLS, HTTPS)



2.6 User Documentation

The Ci-NDA platform will be delivered with a comprehensive set of documentation resources, ensuring accessibility for both technical and non-technical users. Documentation will be designed with clarity, simplicity, and inclusivity in mind, given that the user base spans from beginners to industry professionals.

Types of Documentation:

1. User Manuals (Web & Mobile):

- Covers all major features: creating accounts, accessing training, portfolio uploads, applying for opportunities, and managing profiles.
- Available in downloadable PDF and interactive web format.
- Written in clear, jargon-free language with screenshots and diagrams.

2. Quick Start Guides:

- One-page summaries for new users.
- Step-by-step instructions for signing up, navigating the dashboard, and using the mentorship portal.
- Delivered as **printable PDFs** and in-app cards.

3. Online Help Center (Knowledge Base):

- Searchable articles and FAQs.
- Organized by topics: “Getting Started,” “Uploading Media,” “Opportunities,” “Mentorship,” “Payments.”
- Available 24/7 with chatbot assistance for common issues.

4. Interactive Tutorials & Videos:

- Walkthroughs demonstrating common tasks (e.g., uploading a film, applying to a festival).
- Hosted on the platform’s YouTube channel and embedded into the app.

5. In-App Onboarding & Tooltips:

- First-time users guided with step-by-step overlays (e.g., “Click here to upload your portfolio”).
- Contextual help icons (?) next to advanced features.

6. Developer & API Documentation (Internal Use):

- For Ci-NDA developers and third-party integrators.
- Includes API references, integration instructions, and technical architecture notes.

Delivery Formats:

- PDF documents (downloadable).
- Web-based documentation (responsive, searchable).
- In-app embedded guides and tutorials.
- Localized in English, French, and Kinyarwanda to ensure accessibility.

2.7 Assumptions and Dependencies

The Ci-NDA platform's success and functionality depend on several assumptions (things believed to be true but not guaranteed) and dependencies (external factors the system relies on). These must be clearly acknowledged to manage risk.

Assumptions

1. User Access & Technology

- Users have stable internet connections (≥ 2 Mbps) for streaming training videos and uploading media.
- The majority of users own smartphones (Android/iOS) capable of running the app with at least 2 GB RAM.
- Film professionals and mentors will adopt and regularly contribute to the platform.

2. Market Readiness

- Rwandan filmmakers and students are motivated to seek digital mentorship, training, and opportunities.

- Institutions (film schools, cultural centers) are open to partnering and listing their opportunities on Ci-NDA.
- Regional and global film distributors (Netflix, Amazon, Showmax) will remain interested in African content.

3. Sustainability

- Investors or sponsors will continue funding platform growth until revenue streams (ads, subscriptions, partnerships) stabilize.
- The policy environment in Rwanda and EAC (East African Community) will remain supportive of creative industries.

Dependencies

1. Third-Party Services

- **Cloud Hosting:** AWS, Azure, or GCP for reliable uptime.
- **Video Hosting:** Integration with Vimeo/YouTube APIs for portfolio videos.
- **Payment Systems:** Stripe, PayPal, and Mobile Money for subscriptions, donations, and sponsorship.

2. Technology Stack & Tools

- Continued support and updates from frameworks (React, Flutter, Node.js, PostgreSQL).
- Security patches and compatibility updates for third-party libraries.

3. Partnerships & Content Supply

- Film schools, training institutes, and mentors must provide quality content and mentorship sessions.

- Festivals, agencies, and investors must list opportunities on the platform.

4. Regulatory Environment

- Compliance with data privacy laws (Rwanda Data Protection Law, GDPR for international users).
- Copyright/IP enforcement to prevent misuse of uploaded content.

3. External Interface Requirements

3.1 User Interfaces

The software product will provide a graphical user interface (GUI) designed for simplicity, consistency, and accessibility.

- **Layout & Style**

- Consistent header, navigation bar, and footer across all screens.
- Color palette and typography aligned with the corporate branding guide.
- Clear separation of sections (e.g., dashboard, profile, reports).

- **Screen Elements**

- **Navigation Menu:** Accessible from every screen, allowing quick access to main modules.
- **Standard Buttons:** “Save,” “Cancel,” “Back,” and “Help” included consistently.
- **Forms & Input Fields:** With validation prompts and error highlighting.

- **Notifications:** Pop-up or banner messages for errors, warnings, and confirmations.
- **Usability Features**
 - **Keyboard Shortcuts:** For frequent actions (e.g., Ctrl+S to save, Esc to cancel).
 - **Accessibility:** Support for screen readers, adjustable text sizes, and color contrast compliance.
 - **Error Handling:** Clear, non-technical error messages with guidance for resolution.
- **Consistency & Standards**
 - Follows [insert applicable UI design guidelines, e.g., Material Design or Apple HIG].
 - Common layout grid for all screens to ensure uniformity.
 - Icons and tooltips used consistently to aid understanding.
- **Interfaces Needed**
 - **Admin Dashboard** (system monitoring, user management).
 - **User Dashboard** (core product functions).
 - **Reports Interface** (viewing, exporting, printing).
 - **Support & Help Center** (FAQs, tutorials, contact support).

3.2 Hardware Interfaces

The Ci-NDA platform will interface with the following hardware components:

1. User Devices

- **Supported Devices:**
 - Smartphones (Android 10.0+ / iOS 14.0+)
 - Tablets (Android / iOS)
 - Desktop and Laptop computers (Windows 10+, macOS 11+, Linux distributions with modern browsers)
- **Interaction:**
 - Input through touchscreen, keyboard, and mouse.
 - Output through device display, speakers (for tutorials), and notification system (push or SMS).
- **Data Exchange:**
 - Encrypted communication via HTTPS.
 - Local storage (cache) for offline access to resources.

2. Server Infrastructure

- **Cloud Hosting Servers** (AWS, Azure, or equivalent).
- **Database Servers:** Handle storage of user data, portfolios, and content.
- **Streaming Servers:** Support video tutorials and film uploads.
- **Interaction:**
 - Continuous data sync with user devices through secure APIs.
 - Authentication handled through secure login protocols.

3. Peripheral Devices (Optional/Extended)

- **Projectors & Smart Screens:** For workshops or training events hosted by Ci-NDA.
- **External Storage Devices:** Possible data export to USB or external drives by administrators.

4. Communication Protocols

- **Web Protocols:** HTTPS, WebSocket (for real-time mentorship chat).
- **Mobile Notifications:** Firebase Cloud Messaging (Android) & Apple Push Notification Service (iOS).
- **Streaming Protocols:** HLS/DASH for adaptive video streaming.

3.3 Software Interfaces

The Ci-NDA platform will integrate with multiple software components to provide its full functionality. These include databases, operating systems, external APIs, and communication services.

1. Operating Systems

- **Supported:** Android 10.0+, iOS 14.0+, Windows 10+, macOS 11+, and Linux (Ubuntu 20.04+).
- **Interface Purpose:** Enables platform compatibility across web and mobile devices.
- **Data Exchange:** Device system calls for storage, notifications, and camera/microphone access (for portfolio uploads).

2. Databases

- **Database System:** PostgreSQL 15 or MySQL 8.0.
- **Interface Purpose:** Store user accounts, mentorship connections, opportunity postings, portfolios, and learning resources.

- **Data Items:**
 - Incoming: user registration info, uploaded content (videos, bios).
 - Outgoing: search results, recommended resources, portfolio display.
- **Communication:** SQL queries via secure API services.

3. Streaming & Media Services

- **YouTube / Vimeo APIs (latest versions).**
- **Interface Purpose:** Host and stream training videos/tutorials.
- **Data Items:**
 - Incoming: metadata of tutorials, streaming links.
 - Outgoing: embedded playback within Ci-NDA.
- **Protocols:** REST APIs, OAuth 2.0 for secure access.

4. Authentication & Security Software

- **OAuth 2.0 / JWT tokens** for user authentication.
- **Interface Purpose:** Manage logins, secure sessions, and access control.
- **Data Items:**
 - Incoming: login credentials, social login tokens.
 - Outgoing: authentication tokens, session keys.

5. Mentorship & Communication Services

- **Firebase Realtime Database / WebSocket** (for chat and messaging).
- **Interface Purpose:** Real-time communication between mentors and mentees.
- **Data Items:**
 - Incoming: chat messages, mentor availability updates.
 - Outgoing: notifications, chat responses, session logs.

6. Payment Gateways (Future Expansion)

- **PayPal, MTN Mobile Money, Airtel Money APIs.**
- **Interface Purpose:** Handle subscription fees, sponsorships, and festival submission payments.
- **Data Items:**
 - Incoming: user payment details.
 - Outgoing: transaction confirmations, receipts.
- **Protocols:** Encrypted API calls following PCI-DSS standards.

7. Analytics & Reporting Tools

- **Google Analytics / Mixpanel.**
- **Interface Purpose:** Track user engagement and learning outcomes.
- **Data Items:**
 - Incoming: usage events (e.g., page visits, video watch time).
 - Outgoing: aggregated performance metrics for dashboards.

3.4 Communications Interfaces

The Ci-NDA platform relies on several communication functions to connect users, servers, and third-party services. These interfaces define the protocols, standards, and security mechanisms that ensure smooth and safe data exchange.

1. Web & App Communication

- **Protocols:** HTTPS (TLS 1.3) for all browser-to-server and app-to-server requests.
- **Message Format:** JSON over REST APIs.
- **Purpose:** Ensures encrypted, secure transmission of user data, content requests, and mentorship interactions.

2. Real-Time Messaging

- **Protocols:** WebSocket and Firebase Cloud Messaging (FCM).
- **Purpose:** Enables instant chat between mentors and mentees, as well as push notifications for new opportunities.
- **Message Format:** Lightweight JSON messages.
- **Security:** Encrypted channels with token-based authentication.

3. E-Mail Integration

- **Service:** SMTP via a third-party provider (e.g., SendGrid, AWS SES).
- **Purpose:** Account verification, password recovery, event reminders, newsletters.
- **Message Format:** HTML and plain-text emails with standardized branding.
- **Security:** TLS encryption for mail transmission.

4. Video Streaming

- **Protocols:** HLS/DASH for adaptive video delivery.
- **Purpose:** Stream tutorials and portfolio films in varying bandwidth conditions.
- **Synchronization:** Automatic resolution adjustment based on the user's internet speed.

5. Payment Communication (Future Expansion)

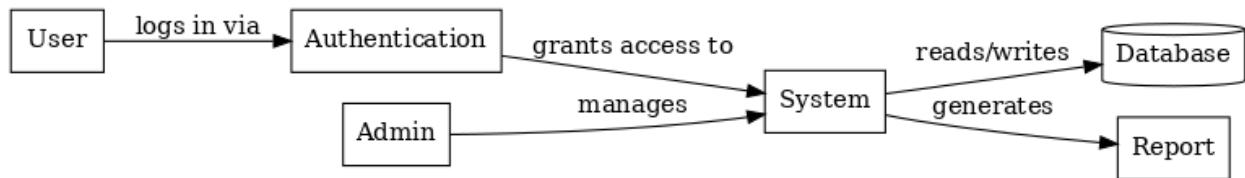
- **Protocols:** Encrypted REST APIs for PayPal, MTN Mobile Money, Airtel Money.
- **Message Format:** JSON requests/responses containing transaction details.
- **Security:** PCI-DSS compliance, end-to-end encryption, tokenization of sensitive data.

6. Synchronization Mechanisms

- **Offline Support:** Local caching of selected tutorials and articles on mobile devices.
- **Data Sync:** Automatic synchronization with the server when internet access is restored.

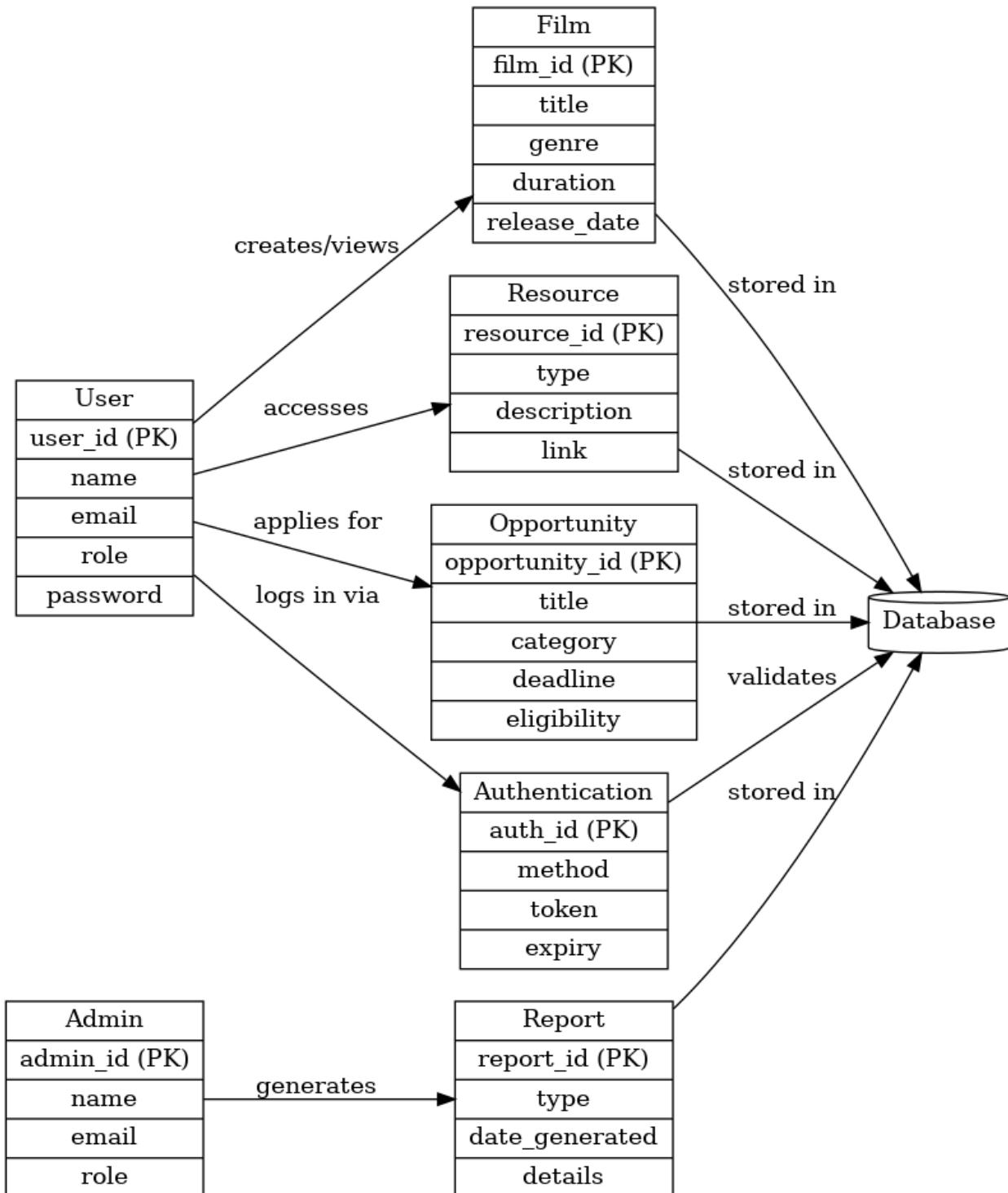
4. System Features

4.1 Requirement Specification



STAKEHOLDER REQUIREMENTS SPECIFICATION

THE CI-NDA PLATFORM MUST ENABLE FILM STUDENTS, PROFESSIONALS, AND INSTITUTIONS TO CONNECT, COLLABORATE, AND GROW THROUGH TRAINING, MENTORSHIP, AND PROJECT OPPORTUNITIES. STAKEHOLDERS REQUIRE AN INTUITIVE INTERFACE, REAL-TIME COMMUNICATION, SECURE DATA HANDLING, AND ACCESSIBLE EDUCATIONAL RESOURCES.



STAKEHOLDER REQUIREMENTS SPECIFICATION

Functional Requirements

Req ID	Requirements	Description
FR 1	User Authentication	The system must allow secure sign-up and login.
FR 1.1	Register New User	Allow users to register via email, mobile, or social login.
FR 1.2	Login	Allow users to log in securely with credentials.
FR 1.3	Password Recovery	Allow users to reset password through email/SMS verification.
FR 2	User Profile Management	The system must let users create and manage profiles.

FR 2.1	Create/Edit Profile	Allow users to add personal info, skills, and film interests.
FR 2.2	Upload Media	Allow users to upload resumes, scripts, or short films.
FR 2.3	Privacy Settings	Allow user to set visibility of their profile (public/private).
FR 3	Mentorship Module	The system must support mentor-mentee connections.
FR 3.1	Find Mentor/Mentee	Allow users to search for mentors/mentees by skill, location, or field.
FR 3.2		

	Schedule Sessions	Allow users to book mentorship sessions.
FR 3.3	Session Tracking	Maintain records of completed mentorship sessions.
FR 4	Training & Learning	The system must provide access to tutorials and courses.
FR 4.1	Access Learning Material	Allow users to stream or download tutorials.
FR 4.2		

	Quizzes & Assessments	Provide users with tests after training modules.
FR 4.3	Certification	Generate digital certificates for completed courses.
FR 5	Communication & Collaboration	The system must enable real-time communication.
FR 5.1	Messaging	Allow private chat between users.
FR 5.2	Group Discussions	Allow creation of group discussion forums.
FR 5.3	Notifications	Send push/email notifications for key updates.

FR 6	Project & Opportunity Management	Systems must allow opportunity sharing and collaboration.
FR 6.1	Post Opportunities	Allow institutions and studios to post jobs/projects.
FR 6.2	Apply to Opportunities	Allow users to apply to projects or competitions.
FR 6.3	Project Collaboration Tools	Provide shared space for project updates and planning.
FR 7	Administration & Moderation	Admins must manage users and content.
FR 7.1	Content Moderation	Admins can approve, flag, or remove content.

	User Management	Admins can suspend or deactivate accounts.
FR 7.3	Analytics Dashboard	Admins can view reports on platform usage.

5. Other Nonfunctional Requirements

5.1 Non-Functional Requirements

The following non-functional requirements define the quality attributes and operational constraints of the system, including performance, reliability, security, usability, and maintainability. These requirements ensure the system not only delivers the specified functionality but also operates efficiently, securely, and with a positive user experience.

Requirement Type	Req ID	Description
Security	NFR 1	All data must be encrypted in transit and at rest. Strong password policies must be enforced.
Performance	NFR 2	The system must support at least 10,000 concurrent users with a response time of less than 500ms.
Scalability	NFR 4	The platform must scale to support 100,000+ unique users with minimal downtime.
Compatibility	NFR 5	The app must run on Android, iOS, and major web browsers without significant performance degradation.
Maintainability	NFR 6	The system must be easily maintainable, with a low cost of ownership over its lifetime.

Requirement Type	Req ID	Description
		The system must be modular and documented so future developers can maintain/extend it.
Accessibility	NFR 7	The platform must comply with accessibility standards (WCAG 2.1), ensuring usability for people with disabilities.
Localization	NFR 8	The platform must support multilingual content with easy addition of new languages.
Backup & Recovery	NFR 10	Automated backups must run daily with a disaster recovery plan ensuring restoration within 24 hours.

5.1 Performance Requirements

The system must deliver fast and reliable performance to ensure a smooth user experience. It should respond to user inputs within two seconds under normal load and be capable of

supporting up to 500 concurrent users without noticeable degradation. The platform should also handle at least 100 transactions per second to accommodate growth and high activity periods.

5.2 Safety Requirements

The system must safeguard users and their data by preventing unauthorized access to sensitive information. It should include error-handling mechanisms to detect and recover from failures without causing data loss. Additionally, the system must comply with applicable safety and data protection standards to avoid any potential harm or misuse of the platform.

5.3 Security Requirements

The system must ensure that all user data, including personal details and uploaded resources, is protected at all times. Authentication will require unique user accounts with secure passwords, and multi-factor authentication will be introduced for administrators and content managers. All data must be encrypted both in transit (SSL/TLS) and at rest, following industry standards. The platform must also comply with relevant data protection policies such as GDPR guidelines, ensuring privacy and user consent are respected.

5.4 Software Quality Attributes

The software must be designed with high availability, maintaining at least 98% uptime to ensure users can access resources consistently. Reliability and correctness are prioritized, meaning that uploaded resources and user-generated content must always remain intact and accessible without corruption. The system must be adaptable to future growth, flexible enough to integrate with third-party APIs (such as film festival submission platforms), and portable across devices and browsers. Usability is a core attribute ; the interface must remain simple, intuitive, and inclusive, supporting both English and Kinyarwanda. Maintainability and testability must be supported through modular code design and clear documentation.

5.5 Business Rules

Access to certain system features will depend on user roles. For example, general users can access resources and opportunities, but only verified filmmakers may upload portfolios.

Administrators will have the right to approve or remove inappropriate content, while investors and sponsors can only access analytics dashboards. Content moderation rules must ensure that resources uploaded follow copyright and community guidelines. These business rules ensure fair usage of the platform, protect user integrity, and maintain the system's credibility.

6. Appendix

6.1 Additional Requirements

- **Database Requirements:** The system shall use a scalable cloud-based database (e.g., PostgreSQL or MongoDB) to handle user profiles, resources, and analytics data.
- **Internationalization Requirements:** The system must support multilingual functionality, beginning with English and Kinyarwanda, with the ability to add more languages in the future.
- **Legal Requirements:** All uploaded content must comply with copyright and intellectual property laws. Users must accept terms of service and privacy policies during registration.
- **Reuse Objectives:** The modular design should enable future reuse of components (e.g., user authentication, resource management) in related projects.

Appendix A: Glossary

- **Ci-NDA:** Cinema Networking and Digital Access, the name of the software platform.
- **MVP:** Minimum Viable Product ; the simplest functional version of the platform that can be launched to early users.
- **API:** Application Programming Interface ; a set of rules enabling the platform to connect with external software services.
- **UI/UX:** User Interface / User Experience ; the design and usability of the application.
- **GDPR:** General Data Protection Regulation ; international data protection and privacy law.

- **Stakeholders:** Individuals or groups interested in the success of the platform, including filmmakers, mentors, investors, and administrators.

Appendix B: Analysis Models

For clarity, the following models may be included to support the SRS:

- **Data Flow Diagram (DFD):** Illustrating how user inputs (e.g., portfolio uploads) flow through the system and interact with databases.
- **Entity-Relationship Diagram (ERD):** Showing relationships between entities such as Users, Resources, Mentors, and Investors.
- **Use Case Diagrams:** Outlining how different user roles interact with the system.
- **State-Transition Diagram:** Defining system responses to actions such as login, resource submission, or error handling.