

# Software Requirements Specification for “ArtSpace”

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## 1. Introduction

### 1.1. Purpose: Mission Statement

Delivering a virtual platform to foster a global community of artists by promoting collaboration and exposure for emerging artists.

This specification document was prepared for the stakeholder group composed of artists, art enthusiasts, developers and art schools and institutions.

### 1.2. Scope

The “ArtSpace” system, herein referred to as “The System”, will provide a software solution that allows artists to collaborate on projects, share their work with a global audience, and receive feedback.

The goal is to leverage the transforming digital revolution and provide a dynamic platform equipped with virtual exhibition halls, live critique sessions, and tools for creating digital art so that artists can engage in projects and gain exposure.

### 1.3. Definitions, Acronyms, and Abbreviations

- **VR: Virtual Reality**
  - Technology that allows users to experience and interact with computer-generated environments, as used in the virtual art exhibitions in this platform.
- **3D: Three-Dimensional**
  - Visual representation of objects in three dimensions, which can be viewed from different angles, used for art displays and exhibitions in this system.
- **CDN: Content Delivery Network**
  - A network of servers used to deliver content to users efficiently and to handle high traffic loads, ensuring quick access to images and videos.

- **CI/CD:** Continuous Integration / Continuous Deployment
  - A set of software development practices where code changes are automatically tested and deployed to production, ensuring faster and reliable updates to the platform.
- **SSL/TLS:** Secure Sockets Layer / Transport Layer Security
  - Protocols used to encrypt data transmitted over the internet, ensuring the privacy and security of user data and transactions.
- **Portfolio:** A collection of an artist's work displayed on their profile, which can be curated, organized, and shared with others.
- **Exhibition:** A virtual or physical event where artists showcase their artwork to a wider audience. This includes both live and VR-based exhibitions.
- **SFW (Safe for Work):** Artwork that is appropriate for general viewing, suitable for professional or public spaces.
- **NSFW (Not Safe for Work):** Artwork that may contain mature or explicit content, which is typically restricted or requires a warning.
- **Real-Time Collaboration:** The ability for multiple users to work together in real-time through tools such as live chats, voice channels, and collaborative workspaces.

#### 1.4. Overview

The requirements have been divided into logical sections based on key system functions and user needs, covering aspects from user interaction to technical infrastructure.

## 2. Overall Description

### 2.1. Product Perspective

This system is a software-based platform designed to provide a range of interconnected features for users, artists, students, and institutions. At this stage, it's unclear whether the necessary devices or hardware exist in the commercial market. The document takes a broad approach, combining system functions with the general demand for certain capabilities.

The next step in moving forward with this project would be to assess the feasibility and perform a cost analysis of the various requirements. The document abstracts the system's interfaces, recognizing the need for communication between them but without specifying exact devices or protocols at this point.

## 2.2. Product Functions

The product functions will be organized into several key categories.

**User Profile** and **Social Interaction** will enable users to create customizable profiles, connect with social media, and engage through comments, ratings, and collaboration features.

**Art Showcase** and **Portfolio Management** will allow artists to manage and display their work in various formats, including images, videos, and VR exhibitions, while offering filtering and organizational tools for better visibility.

**Content Creation** and **Collaboration** will focus on content sharing, real-time collaboration, and communication through live chats and workspaces to support artistic growth and networking.

**Art Visualization** and **User Experience** will provide an immersive viewing experience with gallery-style browsing, 3D, and VR support for exhibitions, as well as access to live virtual events.

**E-Commerce** and **Payment** will handle artwork sales, subscriptions, donations, and auctions, offering secure payment options to support both artists and buyers.

Lastly, **Learning** and **Education** will provide resources like workshops, tutorials, and feedback mechanisms to foster growth and learning among students and artists.

Together, these functions create an engaging, interactive, and supportive platform for artists and their communities.

## 2.3. Stakeholder Profiles

Stakeholder	Interests	Constraints
Artists	Seeking collaboration and exposure.	None.
Art Enthusiasts	Interested in viewing and purchasing art.	None.
Developers	Platform development.	None.
Art Schools and Institutions	Teaching and showcasing student work.	None.

### 3. User Profile and Social Interaction

This section outlines the features that enable user interaction and engagement, allowing artists, students, and other users to manage their profiles, connect socially, and interact with each other's content.

#### 3.1. Profile Management

- 3.1.1. System shall allow artists to create and customize a profile, including options for profile descriptions, artistic genre, background, and journey.
- 3.1.2. System shall allow users to link multiple social media accounts to their profiles (Instagram, X, Soundcloud, Facebook, TikTok, and others as needed).
- 3.1.3. System shall allow students to create profiles under their institution with customizable privacy options and a designated "Student" label for identity within the institution.

#### 3.2. Interaction and Collaboration

- 3.2.1. System shall allow users to comment on artwork.
- 3.2.2. System shall allow users to edit their own comments on artwork.
- 3.2.3. System shall allow users to delete their own comments on artwork.
- 3.2.4. System shall allow users to "like" artwork.
- 3.2.5. System shall allow users to "rate" (from 0-5) artwork.
- 3.2.6. System shall allow users to give shoutouts to artworks and other artists.
- 3.2.7. System shall allow artists to indicate their availability for collaboration on their profile.
- 3.2.8. System shall allow users to filter profiles by geographical location, genre, and collaboration status.
- 3.2.9. System shall provide a collaborative channel for artists to work together, including live chat, messaging, and voice channels.

#### 3.3. Community and Feed

- 3.3.1. System shall display a community feed with trending artworks and profiles.
- 3.3.2. System shall recommend new artists and artworks based on user preferences and interests.
- 3.3.3. System shall allow users to follow other users.
- 3.3.4. System shall allow users to receive notifications of updates from following users.

## 4. Art Showcase and Portfolio

This segment focuses on features for displaying and managing artwork within the system. It specifies tools for users to create portfolios, share different media types, and participate in virtual and physical exhibitions, including VR and 3D capabilities.

### 4.1. Portfolio Management

- 4.1.1. System shall allow artists and students to showcase their work in a portfolio.
- 4.1.2. System shall support various media types for portfolios, including images, videos, and 3D art.
- 4.1.3. System shall allow artists and students to pin specific works to the top of their portfolio.
- 4.1.4. System shall allow artists and students to delete individual items from their portfolio.

### 4.2. Exhibition and Gallery Options

- 4.2.1. System shall allow artists to create and manage virtual or physical exhibition announcements in a dedicated section.
- 4.2.2. System shall support 3D and VR visualization for virtual exhibitions and gallery displays.
- 4.2.3. System shall support both live and virtual exhibitions for artists and institutions.
- 4.2.4. System shall allow professors and institutions to create virtual exhibition halls for showcasing student artwork.

### 4.3. Art Filtering and Display

- 4.3.1. System shall allow users to filter artwork by tags, keywords, style, medium, price, and more.
- 4.3.2. System shall categorize artwork as SFW or NSFW for appropriate content display.
- 4.3.3. System shall display detailed information about artworks when a user hovers over them.

## 5. Content Creation and Collaboration

This section covers the core content-creation tools and real-time collaboration features, allowing artists and institutions to post content, create events, and work together.

## 5.1. Posting and Events

- 5.1.1. The system shall allow artists to post content to their portfolios, upcoming exhibitions, and community feeds.
- 5.1.2. The system shall allow institutions to create events, workshops, and tutorials for students.
- 5.1.3. The system shall allow professors to host live sessions and post video tutorials.

## 5.2. Real-Time Collaboration

- 5.2.1. The system shall support real-time collaboration among artists through live discussions and voice channels.
- 5.2.2. The system shall provide low-latency, peer-to-peer communication for real-time collaborative work.
- 5.2.3. The system shall offer collaborative workspaces with version control for students to work together.

# 6. Art Visualization and User Experience

This section focuses on the end-user experience when viewing and interacting with art.

## 6.1. Viewing Options

- 6.1.1. The system shall offer gallery-style browsing for easy viewing of artwork.
- 6.1.2. The system shall support 3D and walk-through viewing for artwork, including VR support.
- 6.1.3. The system shall allow users to attend live virtual events such as artist talks and critiques.

## 6.2. Guided and Interactive Exhibitions

- 6.2.1. The system shall allow artists to give guided tours of their portfolios and exhibitions.
- 6.2.2. The system shall support walk-through, 3D, and VR visualization modes for immersive experiences.

# 7. E-Commerce and Payment

This section defines the system's e-commerce functionality, covering direct purchases, auctions, donations, and subscriptions.

## 7.1. Art Sales and Donations

- 7.1.1. The system shall allow direct single and multiple purchases of artworks by users.
- 7.1.2. The system shall support multiple payment methods, including credit cards, PayPal, and cryptocurrency.
- 7.1.3. The system shall allow users to make donations and provide sponsorship to artists.

## 7.2. Subscriptions and Fees

- 7.2.1. The system shall offer subscription plans or one-time fees for enhanced artwork promotion.
- 7.2.2. The system shall support discounts on selected artwork.

## 7.3. Auction and Bidding

- 7.3.1. The system shall support auction-style bidding for exclusive artworks.

# 8. Learning and Education Content

Aimed at supporting educational interactions, this section provides access to resources like articles, recorded tutorials, and institutional content.

## 8.1. Educational Resources

- 8.1.1. The system shall provide access to expert articles, editorial pieces, and curated interviews.
- 8.1.2. The system shall allow users to rewatch recorded events and tutorials.
- 8.1.3. The system shall allow institutions to create workshops and tutorials for students.

## 8.2. Student and Institution Interaction

- 8.2.1. The system shall allow professors and students to comment on each other's artworks for feedback.
- 8.2.2. The system shall allow students to receive private feedback from professors and other students.
- 8.2.3. The system shall enforce moderation tools to ensure appropriate interactions.

## 9. Language and Accessibility

This section ensures inclusivity and ease of use, focusing on multi-language support, accessibility, and usability.

### 9.1. Multi-language Support

- 9.1.1. The system shall support the most popular languages (English, Spanish, French, Portuguese) and allow users to change their preferred language.

### 9.2. Accessibility and Usability

- 9.2.1. The system shall allow new users to learn basic navigation and posting in under 5 minutes by following a familiar social media layout.
- 9.2.2. The system shall provide an optional, skippable tutorial for complex tasks.
- 9.2.3. The system shall feature a FAQ section to assist users with onboarding.
- 9.2.4. The system shall be optimized for desktop, mobile, and VR platforms.
- 9.2.5. The system shall allow for synchronization of user data and preferences across all devices.
- 9.2.6. The system shall support adjustable font sizes and text-to-speech capabilities.

## 10. Content Moderation and Security

The requirements in this section aim to safeguard content rights, user privacy, and secure interactions.

### 10.1. Copyright and Licensing

- 10.1.1. The system shall validate uploaded content for copyright compliance.
- 10.1.2. The system shall allow artists to specify if their artwork was created using AI.

### 10.2. Privacy and Content Security

- 10.2.1. The system shall prevent free downloads, screenshots, and screen recordings of artworks.
- 10.2.2. The system shall secure transactions and payment details with encryption.
- 10.2.3. The system shall enforce two-factor authentication for transactions.



### 10.3. Feedback Moderation

- 10.3.1. The system shall provide moderation tools to maintain respectful feedback on artwork, holding users accountable for behavior.

## 11. Technical Architecture and Performance

This section focuses on the technical infrastructure needed to support a scalable, high-performance system.

### 11.1. Central Processing

- 11.1.1. The system shall be capable of multi-processing.
- 11.1.2. The system shall support near real-time execution of instructions.
- 11.1.3. The system shall achieve high availability with at least 99.9% uptime.
- 11.1.4. The system shall use redundant databases and automated recovery for failover support.

### 11.2. Scalability

- 11.2.1. System shall utilize a microservices architecture to allow scalable deployment for virtual exhibitions and collaboration features.
- 11.2.2. The system shall automatically scale to manage high volumes of users and content.

### 11.3. Platform Architecture

- 11.3.1. The system shall implement a microservices architecture for scalable deployment and CI/CD integration.
- 11.3.2. The system shall ensure efficient inter-service communication using lightweight protocols.

### 11.4. Content Delivery and Traffic Management

- 11.4.1. The system shall use Content Delivery Networks (CDNs) and local caching to handle peak traffic.
- 11.4.2. The system shall automatically scale CDN resources based on traffic demand during peak times.

### 11.5. Performance and Loading Times

- 11.5.1. The system shall load image previews in 1 second or less.

- 11.5.2. The system shall load detailed images, like artwork in exhibitions, within 5-10 seconds.
- 11.5.3. The system shall maintain a 100ms latency or less for real-time collaboration tools.
- 11.5.4. The system shall load VR or 3D exhibition environments within 15 seconds for initial entry and 5 seconds for subsequent artwork views.
- 11.5.5. The system shall limit live stream delay to 1-2 seconds for real-time interaction.

## 11.6. Real-Time Collaboration

- 11.6.1. The system shall support low-latency real-time collaboration using peer-to-peer communication through WebRTC.

# 12. Marketplace and Payment Security

This section enhances the e-commerce functionality by detailing secure transaction handling, compliance with regulations, and transparent payment options.

## 12.1. Secure Transactions

- 12.1.1. The system shall use SSL/TLS encryption for data in transit and at rest.
- 12.1.2. The system shall conduct regular security audits and publish transparency reports.
- 12.1.3. The system shall provide a refund policy that complies with international regulations.

## 12.2. Payment Options and Compliance

- 12.2.1. The system shall support multiple payment options, including traditional methods (credit cards, PayPal) and cryptocurrency transactions for digital art, and comply with country-specific regulations.

# 13. Maintenance and Update

The focus in this section is on system reliability and seamless updates.

## 13.1. Maintenance

- 13.1.1. The system shall announce maintenance with at least a 30-minute warning.
- 13.1.2. The system shall perform scheduled maintenance during off-peak hours (12 AM - 6 AM).