

Complete System Requirements for Copper Print Gallery

System Purpose

The purpose of this system is to create an online platform for an artist to showcase their copper print artworks. The system consists of two main components:

1. A public-facing gallery for viewers to browse artwork anonymously.
2. A dedicated web app for the artist to manage content.

The public gallery will support both Danish and English languages, while the artist's dedicated web app will be in English only.

Requirements

[Note: Requirements specific to the dedicated web app are marked with [WEBAPP]]

1. User Management

1.1 Authentication and Authorization (High-Level, Non-Functional)

[WEBAPP]

- The system shall use a username and password combination for authentication.
- The system shall implement two-factor authentication (2FA) for additional security.
- The system shall implement secure session handling with appropriate timeouts.
- The system shall provide a "Remember Me" functionality, implemented securely.
- The system shall provide a secure password reset mechanism via email.
- The system shall implement a simple role-based access control with a single "Artist" role.
- The system shall use HTTPS for all communications.
- The system shall implement protection against common web vulnerabilities.
- The system shall implement login attempt limits to prevent brute-force attacks.
- The system shall log all login attempts and critical actions for security monitoring.

2. Content Management

2.1 Image Upload and Storage (High-Level, Functional)

[WEBAPP]

- The system shall support high-quality image formats: JPEG, PNG, and HEIF/HEIC.
- The system shall convert HEIF/HEIC to JPEG or WebP for broader compatibility if necessary.

- The system shall store original, full-resolution images as uploaded by the artist.
- The system shall support images up to 20 megapixels in size.
- The system shall automatically generate multiple resized versions of each uploaded image:
 - Thumbnail (e.g., 200x200 pixels)
 - Medium (e.g., 800 pixels on the longest side)
 - Large (e.g., 1600 pixels on the longest side)
 - Full (original size, up to 4000 pixels on the longest side)
- The system shall use intelligent cropping to create thumbnails that focus on the main subject.
- The system shall optimize all generated images for web delivery.

[PUBLIC GALLERY]

- The system shall implement responsive image techniques to serve appropriate image sizes based on device and viewport.
- The system shall use a Content Delivery Network (CDN) to cache and quickly serve images.
- The system shall implement progressive image loading techniques.

2.2 Metadata Management (High-Level, Functional)

[WEBAPP]

- The system shall support the following metadata fields for each artwork:
 - Title
 - Artist name
 - Year of creation
 - Medium
 - Technique
 - Dimensions
 - Edition information
 - Subject matter
 - Style or movement
 - Keywords/Tags
 - Plate material
 - Paper type
 - Ink type
 - Printing press used
 - Provenance and Exhibition History
 - Conservation Information
 - Location and Availability
 - Price and Purchase Information
 - Copyright and Reproduction Information
 - Artist's statement about the work
- The system shall preserve important EXIF data from original images.
- The system shall allow the artist to view and edit metadata through the web app.

3. Gallery Organization

3.1 Gallery Structure (High-Level, Functional)

[WEBAPP]

- The system shall allow creation of multiple galleries with unique themes.
- The system shall allow a single picture to belong to one or more galleries.
- The system shall not limit the number of pictures in a gallery.

3.2 Picture Ordering (Detailed, Functional)

[WEBAPP]

- The system shall allow the artist to control the order of pictures within each gallery.
- The system shall provide a drag-and-drop interface or numeric ordering system for picture arrangement.

4. User Interface

4.1 Responsive Design (High-Level, Non-Functional)

[PUBLIC GALLERY]

- The system shall use a fluid grid layout that adapts to screen sizes from 320px to 4K resolution.
- The system shall implement the following major breakpoints:
 - Mobile: 320px - 767px
 - Tablet: 768px - 1023px
 - Desktop: 1024px and above
- On mobile devices, the main navigation menu shall collapse into a hamburger menu.
- The system shall display galleries in different layouts based on screen size:
 - Mobile: Single column layout
 - Tablet: Two-column grid
 - Desktop: Three or four-column grid
- The system shall use responsive images that adapt to both screen size and device pixel ratio.
- The system shall implement lazy loading for images.
- The system shall optimize page weight for mobile devices, with a target maximum page weight of 1MB on initial load for mobile.

[WEBAPP]

- The dedicated web app shall be optimized for desktop use but shall be usable on tablet devices.

4.2 Accessibility (High-Level, Non-Functional)

[PUBLIC GALLERY & WEBAPP]

- The system shall conform to Web Content Accessibility Guidelines (WCAG) 2.1 Level AA standards.
- All functionality shall be operable through a keyboard interface.
- The system shall provide visible focus indicators for all interactive elements.
- All content and functionality shall be compatible with common screen readers.
- The system shall maintain a color contrast ratio of at least 4.5:1 for normal text and 3:1 for large text.
- Text shall be resizable up to 200% without loss of content or functionality.
- The system shall use proper heading structure to convey document hierarchy.
- The system shall use ARIA landmarks to identify page regions.

- The focus order of interactive elements shall be logical and intuitive.
- The system shall use valid, well-formed HTML.

5. Search and Filter Functionality

5.1 Full-Text Search (Detailed, Functional)

[PUBLIC GALLERY]

- The system shall implement a full-text search functionality across all textual metadata fields.
- The search shall be case-insensitive.
- The system shall provide autocomplete suggestions as the user types in the search bar.

5.2 Filtering Options (Detailed, Functional)

[PUBLIC GALLERY]

- The system shall implement filters for the following metadata fields:
 - Year of creation (range selection)
 - Medium
 - Technique
 - Dimensions (range selection for both height and width)
 - Subject matter
 - Style or movement
 - Availability status
 - Price range (if applicable)
- The system shall allow filtering artworks by the galleries they belong to.
- The system shall implement a tag-based filtering system using the keywords/tags associated with each artwork.

[WEBAPP]

- The system shall provide advanced search and filter capabilities for the artist to manage their artwork inventory.

6. Viewer Interaction

6.1 Limited Interaction (High-Level, Functional)

[PUBLIC GALLERY]

- The system shall limit viewers to browsing and viewing artwork and galleries.
- The system shall not implement features for commenting, liking, sharing, or any other form of direct interaction with the artwork or other users.
- All viewing shall be anonymous, with no user accounts or profiles for viewers.
- The system shall not collect or store any personal information from viewers.

7. Performance and Scalability

7.1 User Load (Detailed, Non-Functional)

[PUBLIC GALLERY]

- The system shall support up to 500 concurrent users without degradation in performance.
- The system shall handle peak loads of up to 1000 daily active users.

7.2 Response Time (Detailed, Non-Functional)

[PUBLIC GALLERY]

- The homepage shall load within 2 seconds for 95% of users.
- Gallery pages shall load within 3 seconds for 95% of users.
- Individual artwork detail pages shall load within 2.5 seconds for 95% of users.
- Search results shall be returned within 1.5 seconds for 95% of queries.
- Applying filters shall update the gallery view within 1 second for 95% of interactions.
- The system shall have a server response time of less than 200ms for 95% of API requests.

[WEBAPP]

- The dedicated web app shall have response times no more than 50% slower than the public gallery for equivalent operations.

8. Multilingual Support

8.1 Language Options (High-Level, Functional)

[PUBLIC GALLERY]

- The public-facing gallery system shall support both Danish and English languages.
- The system shall provide a clear and easily accessible language toggle between Danish and English.
- The system shall remember the user's language preference for subsequent visits.
- The system shall detect the user's browser language settings and initially display the appropriate language version.

[WEBAPP]

- The dedicated web app for the artist shall support English only.

8.2 Content Translation (Detailed, Functional)

[PUBLIC GALLERY]

- All static content shall be available in both Danish and English.
- The system shall support the display of artwork titles, descriptions, and other metadata in both Danish and English.
- The system shall use language-specific URLs (e.g., '/da/' for Danish pages, '/en/' for English pages).
- The system shall properly support and display Danish-specific characters.
- Dates shall be displayed in the appropriate format for each language.
- Numbers and currency (if applicable) shall be formatted according to the conventions of each language.
- The search function shall operate in the currently selected language, but allow for cross-language searching if content is available in both languages.

[WEBAPP]

- The system shall allow the artist to input metadata in both Danish and English through the dedicated web app.

9. Backup and Recovery

9.1 Manual Backup Process (High-Level, Functional)

[WEBAPP]

- The system shall support manual initiation of full backups on a weekly basis.
- Backups shall include all artwork images, metadata, gallery structures, system configuration files, and database content.
- Backups shall be stored in a location separate from the primary system.
- The system shall support exporting backups to a local drive or a specified cloud storage service.
- The system shall provide a simple interface for the artist to initiate a backup.
- Upon completion of a backup, the system shall generate a backup report.

9.2 Recovery Process (High-Level, Functional)

[WEBAPP]

- The system shall provide a documented, step-by-step manual recovery process.
- The system shall support partial recovery of specific components without requiring a full system restore.
- The system design shall support a manual recovery process that can be completed within 24 hours.
- The system shall be capable of being restored to the state it was in at the time of the last successful backup.
- The system shall retain at least the three most recent successful backups.

10. Integration

10.1 Standalone System (High-Level, Non-Functional)

[PUBLIC GALLERY & WEBAPP]

- The system shall operate as a standalone platform without integration to external social media platforms.
- The system shall not implement any automatic sharing features to social media platforms.
- The system shall not require or use any social media login functionality.
- The system shall not pull or push any data to or from social media platforms.
- The user interface shall not include social media sharing buttons or widgets.

11. Legal and Copyright

11.1 Copyright Protection (High-Level, Non-Functional)

[PUBLIC GALLERY]

- Each page of the website shall display a clear copyright notice in the footer.
- All displayed images shall include a visible watermark or signature of the artist.
- The system shall implement measures to discourage unauthorized downloading of images.
- The system shall include a comprehensive Terms of Use page.
- Each artwork's individual page shall prominently display copyright information along with the image.

[WEBAPP]

- All image files shall include embedded metadata with copyright information.

11.2 Legal Compliance (Detailed, Non-Functional)

[PUBLIC GALLERY]

- The system shall include a clearly visible notice and takedown procedure compliant with both the DMCA and EU E-Commerce Directive.
- The system shall provide a dedicated email address or web form for submitting copyright infringement notices.
- The system shall include a privacy policy page that outlines how user data (if any) is collected, used, and protected.
- All legal and copyright information shall be easily accessible from any page on the website.

[WEBAPP]

- The system shall maintain records of received notices and actions taken.

12. Future Expansion

12.1 Current Focus (High-Level, Non-Functional)

[PUBLIC GALLERY & WEBAPP]

- The system shall be designed and implemented based on current known requirements, without specific provisions for future expansion.
- No additional components or functionalities shall be implemented in anticipation of potential future needs.
- The system shall not include unused placeholders or stub implementations for potential future features.
- Documentation shall reflect only the current system capabilities and requirements.
- The system shall be developed using modern, maintainable coding practices to allow for easier modifications if needed in the future.
- The system architecture shall follow principles of modularity and separation of concerns.
- All design decisions shall be clearly documented to facilitate understanding and potential future changes.

13. Analytics

13.1 No Analytics (High-Level, Non-Functional)

[PUBLIC GALLERY & WEBAPP]

- The system shall not implement any analytics functionality at this time.
- The system shall not collect, store, or process any user behavior data.
- No third-party analytics tools or scripts shall be integrated into the system.
- The system architecture shall not include components dedicated to data analytics or user tracking.
- The system shall not have any features for generating reports on user activity or engagement.