

# **GDSD Team 4 WS 2023/2024 Milestone 1:**

## **Use cases, High Level Requirements and Architecture**

Global Software Development  
WWW site for Buy/Sell/Share of Digital media

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## **1. Executive Summary**

### **Project ArtSync Fulda**

In a dynamic landscape of global distributed software development, our project, ArtSync Fulda, emerges as a groundbreaking initiative to revolutionize the online sale of digital media for educational institutions. Understanding the imperative role of digital content in modern education, ArtSync Fulda focuses on providing a seamless platform for universities to sell and share educational digital media. The motivation behind our endeavour is rooted in the need for a centralized hub that not only promotes university events but also facilitates collaborative learning through project spaces and group chats.

ArtSync Fulda's key advantage lies in its multifaceted approach to supporting educational endeavours. Firstly, the platform serves as an efficient channel for event promotions, enabling administrators to control and host competitions directly. Moreover, ArtSync Fulda incorporates advertisements for university events, creating a vibrant digital space that fosters engagement within the academic community.

At its core, ArtSync Fulda is designed to enhance collaborative efforts among students and faculty. The inclusion of collaborative project spaces and group chats facilitates seamless communication, fostering teamwork and knowledge exchange. The platform further leverages user profiles, allowing individuals to showcase their skills and find like-minded collaborators, thereby enriching the collaborative learning experience.

To address concerns about ownership and content authenticity, ArtSync Fulda introduces a robust verification system. Admin verification ensures that products are not copies, guaranteeing the integrity of the digital media available on the platform. This system is further complemented by the Owner History Unique Selling Point, providing users with transparency regarding the history and origin of digital content.

Our dedicated student startup team, comprised of passionate individuals from diverse backgrounds, is committed to bringing ArtSync Fulda to fruition. We are excited about the potential of ArtSync Fulda to reshape the landscape of digital media distribution in educational institutions, fostering collaboration and knowledge-sharing on a global scale. With its innovative features and commitment to authenticity, ArtSync Fulda represents not just a project but a transformative force in the realm of global distributed software development.

## **2. Personae and main Use Cases**

In the development of this website catering exclusively to Fulda students and faculty, understanding the needs and goals of the end users is paramount. In this chapter, we delve into the key personas, their characteristics, objectives, and challenges, followed by a series of user stories or journeys that illustrate how these personas will interact with the website.

### **2.1. Personae**

#### **1. Fulda Student/Faculty - Seller**

A current Fulda University student who wants to sell digital media such as images, music, videos, or graphics. Their goal is to post their digital media items for sale on the website, connect with potential buyers, and facilitate transactions. They may also aim to make some extra income from their creative work.

## **2. Fulda Student/Faculty - Buyer**

A Fulda University student looking for digital media content, such as images, music, videos, or graphics, for academic or personal use. Their goal is to search for and find digital media that suits their needs, contact sellers, and arrange for secure downloads or transactions.

## **3. Administrator**

An administrator responsible for overseeing the website's content, ensuring it complies with university policies, and addressing user concerns. Their goal is to review and approve media items, maintain a safe and respectful online environment, and support users as needed.

## **4. Visitor - Curious Explorer**

A potential user, who wants to explore the Fulda Buy/Sell/Share platform without registering. Their goal is to browse available digital media resources, gain an understanding of the platform's offerings, and assess its potential value. While they can't engage in transactions, the limited access allows them to explore featured content and sample listings.

## **2.2. Use Cases**

**1: As a Fulda Student or Faculty Member, I want to find high-quality digital media resources for my academic/personal projects.**

**Scenario:** I log in to the website using my university email and use filters/search field to find specific digital media items. I explore available listings and find media that matches my needs, I contact sellers through the in-site messaging system to discuss the media items and negotiation. After negotiation and agreement, I can securely download the media in full resolution.

**2: As a Fulda Student or Faculty Member, I want to collaborate with other users on a multimedia project.**

**Scenario:** I log in to the website using my university email and, I post my digital media items, indicating their availability for collaboration. I connect with potential collaborators, who may be students or faculty members, interested in

the project. Together with my collaborators, we jointly create digital content, sharing skills and resources within the platform.

**3: As a Fulda Student or Faculty Member, I want to contribute to the platform by showcasing and selling my digital media creations.**

**Scenario:** I log in to the website using my university email and navigate to the Sell section. I create listings for my digital media, providing detailed descriptions and pricing. I submit the listings for review and approval by the Administrator. After approval, my media becomes visible to potential buyers, who can be students or faculty members. Interested users contact me through the in-site messaging system, and we negotiate terms. After reaching an agreement, the buyer securely downloads the digital media in full resolution.

**4: As an Administrator, I want to maintain a safe and respectful online environment for all users.**

**Scenario:** I log in to the administrator dashboard. I review newly submitted digital media items for compliance with university policies. I approve or reject the listings based on their adherence to policies, ensuring that content is appropriate for all users. I monitor user activities and address reports or issues from users, whether they are students or faculty members. I manage the platform's content to maintain a respectful and safe online environment.

**5: As a Fulda Student or Faculty Member, I want to host a Competition/Challenge on the platform for the creators to showcase their talent.**

**Scenario:** I log in to the website using my university email and navigate to the Host section. I create a listing for the competition, providing detailed descriptions. I submit the draft for review and approval by the Administrator. After approval, the challenge becomes visible on the platform, where students or faculty members can participate. After the deadline I can go through the submissions, I can declare the winners on the same page and also display their submissions as well.

**6. As a potential user curious about the Fulda Buy/Sell/Share platform, I aim to explore available digital media resources without the need to register, assessing the platform's offerings.**

**Scenario:** I land on the platform's homepage and am immediately presented with featured digital media content, capturing my attention. I navigate through

various categories and sample listings using the intuitive interface, allowing me to get a feel for the platform's content. Despite not being registered, I gain insights into the platform's community, the types of media shared, and the overall user experience, keeping my exploration commitment-free. Intrigued by the content, I contemplate the potential value of the platform and consider registering for more active involvement in the future.

### **3. List of main data items and entities**

#### **1. User Profile**

- **Username**
- **Email**
- **Password**
- **Contact information**
- **Skills**

Users can create their Profile to embark on a personalized journey through digital media. With a username, Email, Password, contact information and skills, users can personalize their experience and connect with a community of digital content buyers, sellers, and sharers.

#### **2. Media**

- **Title**
- **Description**
- **Price**
- **File format**
- **Size**
- **Date added**

Users add digital media items with titles, descriptions, and optional pricing to the platform, populating it with a variety of content. Users create listings, adding metadata such as type, tags, and categories to make digital media discovery and categorization easier.

#### **3. Transactions**

- **Transaction history**
- **Invoice details**

Users initiate transactions by expressing interest or making a purchase, which activates the platform's buying/selling process, maintaining a transparent record of digital media exchanges and providing status updates for user convenience.

#### **4. Message**

- **Direct messaging between users**

- **Notification of new messages**

Easily communicate between users using our messaging system. Direct communication and real-time notifications contribute to an improved user experience.

#### **4. Initial list of functional requirements**

##### **1. User Registration and Login as a Buyer/ Seller/Administrator**

Registration form for users to input basic details like name, email, and password. Clear interface facilitating a smooth onboarding process. Email verification process to ensure the security and authenticity of user registrations.

##### **2. Edit user profile**

Easy-to-navigate profile management interface, allowing users to update information.

##### **3. Media content approval**

Admin interface for reviewing and approving/disapproving seller-uploaded media content to maintain quality standards.

##### **4. Seller media upload**

Seller-friendly interface for seamless digital media upload. Sellers can input product details, including name, description, and price, and select the media category to enhance the organization and visibility of their products for potential buyers.

##### **5. Buyer product purchase**

User-friendly buyer interface displaying essential details like name, price, and a brief description to purchase digital media products.

##### **6. Product Search functionality**

A simple search bar on the buyer interface lets users to find digital media products by typing keywords. This feature streamlines the shopping experience, allowing buyers to discover specific items, such as images or videos, quickly and precisely according to their interests or preferences.

##### **7. Media categorization**

Buyer interface with categories for easy sorting. Buyers can quickly filter and find digital media products, making it straightforward to discover and purchase items.

##### **8. Shopping cart functionality**

A user-friendly feature allowing buyers to add preferred digital media items to their cart. Buyers can easily view and manage all selected items in the cart for a convenient and organized shopping experience.

## **9. Chat feature**

Communication tool for sellers and buyers after placing an order. Allows direct chatting to discuss updates, and clarify details related to the purchase.

## **10. Order history view**

User interface that provides visibility into past and current orders. Allows users to easily track and review their order history for a comprehensive overview of their digital media purchases.

## **11. Selling item count**

Display functionality indicating the number of units sold for each digital media product. This Offers sellers valuable insights about the popularity and demand for their products.

## **12. Product rating**

Users can rate digital media products using stars to show their overall satisfaction.

## **13. Product Reviews**

Buyers can provide detailed feedback by writing reviews and sharing their specific experiences and opinions.

## **14. Download Management**

This functionality ensures a secure and user-friendly digital media download experience

## **15. Collaboration management**

Interface for managing collaboration requests, accepting or rejecting requests, and coordinating with collaborators.

## **16. Competition/Challenge creation**

Interface for creating a new competition or challenge. Form fields for detailed information such as competition name, description, rules, submission guidelines, deadline, and any other relevant details.

## **17. Participant Registration for Competition**

An interface that showcases the list of available competitions and allows participants to easily register for their chosen competition and automatic confirmation to participants upon successful registration.

## **18. Content Browsing**

Allow users to explore digital media content without the need for registration. Implement a user-friendly interface with filters and sorting options for easy content discovery.



## **5. List of non-functional requirements**

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in Milestone 0. Application delivery shall be from chosen cloud server.
2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers.
3. All or selected application functions must render well on mobile devices.
4. Data shall be stored in the database on the team's deployment cloud server.
5. Full resolution free media shall be downloadable directly, and full resolution media for selling shall be obtained after contacting the seller/owner.
6. No more than 50 concurrent users shall be accessing the application at any time.
7. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.
8. The language used shall be English (no localization needed).
9. Application shall be very easy to use and intuitive.
10. Application should follow established architecture patterns.
11. Application code and its repository shall be easy to inspect and maintain.
12. Google analytics shall be used (optional for Fulda teams).
13. No e-mail clients shall be allowed.
14. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.
15. Site security: basic best practices shall be applied (as covered in the class) for main data items.
16. Application shall be media rich (images, video etc.). Media formats shall be standard as used in the market today.
17. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development.
18. For code development and management, as well as documentation like formal milestones required in the class, each team shall use their own GitHub to be set-up by class instructors and started by each team during Milestone 0.
19. The application UI (WWW and mobile) shall prominently display the following exact text on all pages "Fulda University of Applied Sciences Software Engineering Project, Fall 2023 For Demonstration Only" at the top of the WWW page. (Important to not confuse this with a real application).

## **6. Competitive analysis**

	Adobe Stock	Shutter stock	Getty Images	Bandcamp	<b>ArtSync Fulda</b>
Access to royalty-free digital media	Yes	Yes	Yes	Yes	<b>Yes</b>
Negotiation between seller & buyer via messaging	No	No	No	No	<b>Yes</b>
Collaborative project spaces	No	No	No	No	<b>Yes</b>
Event promotions and hosting	No	No	No	Yes	<b>Yes</b>
Ability to auction digital media (only on selected ones)	No	No	No	No	<b>Yes</b>
User Reviews & Product Reviews	No	No	No	Yes	<b>Yes</b>

A feature commonly found in the majority of similar platforms as well as ours is, access to royalty-free digital media. We believe that it fits the business better compared to a subscription based model, given the nature and scale of the products sold in such platforms. One unique feature that is found in our platform and none/few of the major competitors is the ability for the buyer and seller to negotiate on the final price, through messaging. It would give more flexibility for the buyers as well as the sellers. Another unique feature in our product is the capacity for users to seamlessly share media collaboratively within their teams. This empowers users to collectively engage in projects or collaborate on various digital media, fostering a dynamic team environment. We are confident that this distinctive feature will significantly enhance the appeal of our product, attracting a broader user base. In addition, people would be able to promote social, educational and sport events happening related to Hochschule Fulda, free of charge, given that those promotional advertisements receive the acceptance by an administrator of the platform. Having product ratings, product reviews and user ratings is a feature that we would add to our system but it is a feature that is already found in some similar platforms in which digital products are sold. This would be beneficial for both buyers and genuine sellers. Other than these main key features, we are planning our application to have the ability to auction selected types of digital media. These unique functionalities set our product apart from other commercially available options.

## **7. High-level system architecture and technologies used**

The high-level system architecture for the Fulda University Buy/Sell/Share of Digital Media project will incorporate several key components to ensure its smooth operation. The main software components will include:

1. **Frontend Framework:** React
2. **Backend Framework:** NodeJS with ExpressJS
3. **Database Management System:** MySQL
4. **APIs:** Custom APIs will be developed to enable seamless integration
5. **Cloud Server:** Azure for scalability and reliability
6. **Responsive UI Implementation:** Ensure functionality on desktop and mobile browsers

### **Server Configuration:**

- **Host:** Azure Virtual Machines 1vCPU 2GiB RAM
- **Operating System:** Ubuntu Server 22.04
- **Web Server:** Nginx 1.18.0
- **Server-Side Language:** Javascript

### **Additional Technologies:**

- **IDE:** Visual Studio Code
- **Testing:** Cypress

## **8. Team and roles**

<b>Name</b>	<b>Role</b>	<b>E-Mail</b>	<b>GitHub Username</b>	<b>Frontend or Backend</b>
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Alex Francis Pullukkara	Developer	<a href="mailto:alex-francis.pullukkara@informatik.hs-fulda.de">alex-francis.pullukkara@informatik.hs-fulda.de</a>	Ixthetic	Frontend

## **9. Checklist**

- Team found a time slot to meet (online) outside of the class **DONE**
- GitHub master chosen **DONE**
- Team decided and agreed together on using the listed SW tools and deployment server **DONE**
- Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing **ON TRACK**
- Team lead ensured that all team members read the final M1 and agree/understand it before submission **ON TRACK**
- GitHub organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.) **ON TRACK**