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

Submission by:

Jonas Wagner (JW)
Team Lead

Dipesh Kewalramani (DK)
Frontend Lead

Seshenya Weerasinghe (SW)
Backend Lead

Gihan Kaushal Weerappullige (GK)
GitHub Master

Rohan Kolagada (RK)
Developer

Alex Francis Pullukkara (AF)
Developer

Prof. Dr. Rainer Todtenhöfer
Class CEO/CTO

Revision	Date	Author(s)	Description
1.0 (Milestone 1)		JW, DK, SW, GK, RK, AF	First and final version of Milestone 1

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1. Executive Summary

Project <NAME HERE>

In a dynamic landscape of global distributed software development, our project, <NAME HERE>, 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, <NAME HERE> 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.

<NAME HERE>'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, <NAME HERE> incorporates advertisements for university events,

creating a vibrant digital space that fosters engagement within the academic community.

At its core, <NAME HERE> 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.

One distinctive feature of <NAME HERE> is its innovative approach to bundling digital media. Users can access a variety of digital content, including virtual workshops and tutorials, all within a single platform. To ensure the quality and authenticity of digital media, the platform introduces a comprehensive review system encompassing seller/buyer/user reviews, product reviews, and product FAQs.

To address concerns about ownership and content authenticity, <NAME HERE> 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 <NAME HERE> to fruition. We are excited about the potential of <NAME HERE> 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, <NAME HERE> 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.

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.

3. List of main data items and entities

1. **User Profile**
   - **Username**
   - **Email**
   - **Password**
   - **Contact information**

   Users can create their Profile to embark on a personalized journey through digital media. With a username, Email, Password and contact information, 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**

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

3. **Transactions**
   - **Transaction history**
   - **Invoice details**

   Buyers 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 buyers and sellers**
   - **Notification of new messages**

   Easily communicate with buyers and sellers using our messaging system. Direct communication and real-time notifications help to streamline the buying and selling process.

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, with an option to choose buyer or seller role. Clear interface prompting users to define their role during registration, 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 letting 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

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	**WWW site for Buy/Sell/Share of Digital media**
Access to royalty-free digital media	Yes	Yes	Yes	Yes	**Yes**
Negotiation between seller & buyer via messaging	No	No	No	No	**Yes**
Collabarative project spaces	No	No	No	No	**Yes**
Bundling digital media	No	No	No	No	**Yes**
Reviews per Seller & Product Reviews & Filtering/Searching	No	No	No	Yes	**Yes**
Advertisements per sellers' interest	No	No	No	No	**Yes**

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 special feature that is only found in our platform is, the sellers having the ability to collaboratively build and sell a product. The product ownership would be distributed among all contributing sellers and we believe that such a feature would open new avenues for sellers to develop newer content or else extend their current products to a higher level. In addition, we also introduce a new feature that is not common among any parallel platforms, which is giving the opportunity for sellers to create bundles or a series or a collection of products and monetize it. For example, a seller could create a tutorial series for a certain module which would have more value in comparison to a one-off tutorial video for a sub topic. Having product ratings, product reviews and seller 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. For buyers' convenience, we would facilitate filtering/searching reviews by keywords. Although advertisements on e-commerce websites are not uncommon, we did not find any advertisements in most of the platforms that are similar to ours. We decided to have a unique way of using advertisements on our website. People would be able to promote social, educational and sport events happening related to Hoschule Fulda, free of charge, given that those advertisements receive the acceptance by an administrator of the platform. Moreover, we would introduce credit points for buyers for watching advertisements and let them use it as a form of currency to get discounts on certain products.

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

Name	Role	E-Mail	GitHub Username	Frontend or Backend
Jonas Wagner	Team Lead / Document Master	jonas.wagner@informatik.hs-fulda.de	choan312	Backend
Dipesh Kewalramani	Frontend Lead	dipesh.kewalramani@informatik.hs-fulda.de	DipeshK1999	Frontend
Seshenya Weerasinghe	Backend Lead	seshenya.weerasinghe@informatik.hs-fulda.de	Seshenya-Weerasinghe	Backend
Gihan Kaushal Weerappullige	GitHub Master	gihan-kaushal.weerappullige@informatik.hs-fulda.de	gihanHsFulda	Backend
Rohan Kolagada	Developer	rohan.kolagada@informatik.hs-fulda.de	Rohan-Kolagada	Frontend
Alex Francis Pullukkara	Developer	alex-francis.pullukkara@informatik.hs-fulda.de	lxthetic	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**

USPs:

- **Event Promotions**
  - Directly on the Platform Hosting Competition → controlled by Administrator
  - Ads for events of Hochschule
- **Collaborative Project Spaces** → Teams / Group Chats
  - Skills on profile to look for people to collaborate → Good User Profile
- **Bundling Digital Media**
  - Example: Virtual Workshops and Tutorials
- **Reviews per Seller/Buyer/User + Product Reviews + Product FAQ**
- **Ads** → Media is free but can have ads to generate credits
  - Seller can decide for ads or no ads
- **Auction** → does it make sense for digital media (discuss with professor)
  - Ownership selling
  - Admin verifies if the product is not a copy etc.
  - Combined with **Owner History** USP