Executive Summary

Nowadays in a world where digitalization is a key factor to boost your business by many folds, a platform where digital artists can buy and sell their digital art, just like in an art gallery. **Blue Bird** is an online platform where people will be able to buy and sell their art, particularly designed and developed just to cater the ongoing increasing demand for digital art.

Blue Bird will assist its users to make profiles and then upload there digital art in any format they want. Through our intensive marketing campaign we are reaching to people who adore and are fond of keeping digital art. We are currently increasing our user pool and on daily basis we are observing significant increase in our user pool. There are very few websites who are currently doing what **Blue Bird** does, but they are not dedicated towards digital art. For instance we have Amazon.com, Etsy.com, you can find everything over there but eventually user gets distracted and starts looking for other things, a platform whose sole purpose is to buy/sell digital art is a dire need to motivate and encourage young artists.

A platform where modern payment methods would be implemented. Usually payments take 2-3 days to get from buyer to seller or vice versa, but in **Blue Bird** we are implementing payment methods in such a way where buyer/seller will be able to pay/receive payments in a day. That is something where our keen focus is on.

Motivation behind the developing **Blue Bird** is to learn new technologies, integrating them and getting hands-on experience over them. In this project all the latest technologies possible are being used, such way it would be really nice for the resumes of group members to secure a job in competitively.

In **Blue Bird** there's a unique referral program for faculty/students/buyer/seller, which will attract every user and will be able to free vouchers depending upon the referral codes.

Team behind Blue Bird is highly motivated to make it through all hurdles and to get investment, everyone is best in what they do. Gulshair is experienced backend/dev-ops engineer working with Hadil, who has already started working on designing backend structure where Trushar is also working as Backend Developer, Sagar and Deepak both are experienced React Developers, where Mutee becoming hand in need also working on designing Frontend.

Personae and main Use Cases

User:

Characteristics:

1. A person must be currently a part of Hoschule Fulda.
2. They must have a valid email address ending with hs-fulda.de

3. He must also have a valid card which is needed to upload for verification purposes.

Use cases:

1. Users can download free or paid media after payment e-g images, music, videos & graphics.
2. Users can post free/paid media to allow download to other users.
3. Users can contact another user as a buyer or seller.
4. Users can search for media and view media
5. Users are able to delete the media uploaded only by them

Users can download…

Users can download the media which is available for free or can only download the paid media after payment processing. Users will be able to download the original file with full resolution/quality.

Users can post…

Users can post a media to allow other users to download the free media. Or even can also post the paid media which can only be downloaded after payment processing. All required information like created at, name, genre and type will be added along with the media upload.

Users can contact…

Users can contact a user who has posted the media. When a chat thread is created the seller can also contact the user who requested information about a specific media from them. Both will communicate with each other with real-time messaging.

Users can search media…

Users can search media either providing a plain text to search by name or by using the filter criteria. A search can be any valid alphabetic text and filters can be applied based on the date published and media type.

Users can delete the media …

Users can delete the media uploaded only by them. While on the other hand if a specific media has been deleted, it's required to be made sure that someone who has already bought the media is able to download it from his purchases even if it has been deleted by the owner of the media.

Administrator:

Characteristics:

1. A user with specific admin credentials to get access to the admin dashboard.

Use Cases

1. An admin can see the list of users and can see the list of media uploaded by specific users.
2. An admin can disable/delete a user or disable/delete the media uploaded by a specific user.
3. An admin can delete all the media/users.

An admin can see…

An admin can see the list of users who have been registered either as faculty or as students. He must be able to apply filters of either a student or user. He can also apply the sorting based on the emails, first name, last name or created at timestamp. Similarly, an admin can see the list of media uploaded by all the user or uploaded by a specific user. Date uploaded and media type filters can be applied to the list of media.

An admin can disable/delete…

An admin can disable a user or even delete a user from the list of the users. An admin will also be responsible for authorizing a specific media to be published. He will also be able to disable currently published media or even can delete the media.

An admin can delete all…

An admin can delete all the users or media uploaded by different users. This will be shown as a highly risky task and must be secured with multiple warnings to the admin. It will be protected with an extra layer of security of providing a pin code.

List of main data items and entities

• **User**: an entity representing a user of the web-based service. A user can be a student/faculty or an admin.

1. ID: a unique identifier of the user
2. first_name: the user's first name
3. last_name: the user's last name
4. email: the user's (university) email address
5. address: the user's address
6. card_image_url: a url for the user's university card's image
7. is_admin: a boolean value and defines whether the user is an administrator or not
8. is_enabled: a flag to show whether the user is enabled or not (admin must approve it for it to be enabled)

• **Media**: an entity representing the digital media to be sold, shared, or bought.

1. ID: a unique identifier of the media
2. title: a title for the media
3. created_at: date and time when the media was uploaded/created

4. updated_at: date and time when the media was last modified
5. description: a description of the media
6. price: the price if it is paid, default will be 0
7. is_enabled: a flag to show whether it's enabled or not (admin must approve it for it to be enabled)
8. owner: user who owns the media
9. type: type of the media e.g., image, video

- **Transaction**: entity that represents a single transaction (a request to buy or obtain access to a media)
    1. ID: a unique identifier for the transaction
    2. media: media being sold or shared
    3. order: the order in which this transaction is a part of

- **Order**: one or more transactions placed by a user
    1. ID: a unique identifier of the order
    2. created_at: the date and time on which the order was created
    3. updated_at: the date and time on which the order was last modified
    4. status: string a status denoting the status of the order (pending, processing, canceled, or completed)
    5. buyer: User the user that placed the order
    6. total: the total cost of the order

Functional Requirements

1. **User Registration**: A User should be able to register himself by providing correct required information.
2. **Exclusive Access**: There should be a validation where only Hochschule Fulda students and faculty members can register as a user.
3. **User login**: After registeration, a user should be able to login with only correct credentials (authentication and validation).
4. **User password update**: A user should be able to update/change his password from profile settings after logging in to the site.
5. **Forget Password**: A registered user should be able to change their password after verifying if he/she forgets it.
6. **Logout function**: A user should also be able to logout from the site by clicking a logout button.
7. **Search/Browse function**: Users can search/browse items for sale or share and they should also be able to contact the sellers by messaging.
8. **User account**: A user can also delete/deactivate himself and his uploaded media items.
9. **Uploading Media**: Registered users can upload media (images, videos, music, graphics) to sell or just share free of cost with other users.
10. **Messaging**: The seller should be able to receive contact messages from interested buyers.

11. **User media control**: The owner of the posted media item should have the access to delete his post.
12. **Accessing Paid Media**: Users should not be able to download full resolution media directly from the paid list of items but only after buying and contacting the seller.
13. **Accessing Free Media**: Media items posted as free of cost by some other user should be accessible to every user in full resolution.
14. **Admin access**: An admin should have access to all media items uploaded and all users.
15. **Admin approval**: Every media item uploaded by a user must be approved by the administrator first and then go live on the website.
16. **Media owner**: It should be visible who is the owner of the posted media item.
17. **Media description**: Each posted media item should have a title, description or price tag.
18. **Admin control**: An admin should be able to disapprove and delete inappropriate media items and disable/delete users.
19. **Deletion of all media by admin**: An admin can also disable/delete all media items from a specific user or all users. This option should display a warning before deleting.

Non-functional requirements

20. 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
21. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers
22. All or selected application functions must render well on mobile devices
23. Data shall be stored in the database on the team's deployment cloud server.
24. Full resolution free media shall be downloadable directly, and full resolution media for selling shall be obtained after contacting the seller/owner
25. No more than 50 concurrent users shall be accessing the application at any time
26. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.
27. The language used shall be English (no localization needed)
28. Application shall be very easy to use and intuitive
29. Application should follow established architecture patterns
30. Application code and its repository shall be easy to inspect and maintain
31. Google analytics shall be used
32. No e-mail clients shall be allowed.
33. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.
34. Site security: basic best practices shall be applied (as covered in the class) for main data items
35. Application shall be media rich (images, video etc.). Media formats shall be standard as used in the market today
36. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development

37. 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
38. The application UI (WWW and mobile) shall prominently display the following exact text on all pages "Fulda University of Applied Sciences Software Engineering Project, Spring 2022 For Demonstration Only" at the top of the WWW page. (Important to not confuse this with a real application).

Competitive Analysis

Features	Blue Bird	Videezy	Splitshire	Mixkit	Coverr
Video, Clips	✔	✔	✔	✔	✔
Images	✔	✖	✔	✖	✖
Graphics, Audio	✔	✔	✖	✔	✖
Sell, Exchange	✔	✖	✖	✖	✖
Specifically made for certain audience	✔	✖	✖	✖	✖
Free to Use	✔	✔	✔	✔	✔
Require License	✔	✔	✖	✖	✖
Administration	✔	✖	✖	✖	✖

As per the competitive analysis, above mentioned sites do not provide all the multimedia on the same site but Blue Bird provides everything on the same board. Secondly, any of the website neither provide the feature of selling or exchanging multimedia nor the on-site messaging feature. Whilst all the websites are free to use but Videezy charges for its premium media files.

All the analyzed websites are open source, meaning they are accessible to anyone while Blue Bird will be exclusively used by Fulda students and faculty members. Many of the websites do not guarantee the originality of the media but our website will have terms and condition to give credit to the author (excluding free media). Moreover, Blue Bird will have administrators to check the media before it goes live.

High-level system architecture and technologies used

1. The application's frontend will be built using the React.js (18.1.0) framework/library.
2. Django (4.0.5) framework will be used for backend development of the application.
3. App will support Chrome, Mozilla, Edge and Safari browsers.
4. Frontend app will be deployed on Firebase Hosting.
5. The Django application and its dependencies will be packaged using Docker, and the package will be deployed on an AWS EC2 instance.
6. S3 from AWS will be utilized to store media assets in the cloud, and RDS will be used to host the application's database.
7. Users will interact directly with the frontend, which will connect with the backend via REST apis.
8. Nginx SW installed in the EC2 instance will act as a reverse proxy.