Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	13 May 2023
Team ID	NM2023TMID00055
Project Name	Project – Pixel Perfection: Transforming your photos with our cutting-edge image editing platform.

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login	Login via Username and Password Login via Gmail
FR-4	Upload Image	Upload Image through Drive Upload Image through Local Storage Upload Image through Url
FR-5	Transform Image	Choose Background remover Choose Cartoonize Choose Face Beauty Choose 3Dcartoon Choose Motion
FR-6	User Submit	Submit by Clicking Button

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	1. Intuitive Interface: The user interface should be designed in a way that is easy to understand and navigate. Clear and concise

		labeling, well-organized menus, and intuitive icons can help users quickly locate and access the editing tools they need. 2. Simple and Consistent Controls: The editing controls should be straightforward and consistent throughout the platform. Users should be able to easily adjust settings, apply effects, crop or resize images, and perform other editing actions without confusion or complexity. 3. Visual Feedback: The platform should provide visual feedback to users when they perform actions. For example, when a user applies an effect or adjusts a setting, there should be clear visual cues indicating the changes made to the image. This helps users understand the impact of their actions and make adjustments accordingly.
NFR-2	**Security**	1. Secure Authentication: Implement a robust authentication mechanism to verify the identity of users before granting access to the platform. This can include features such as username/password authentication, two-factor authentication (2FA), or integration with third-party authentication providers. 2. Encryption: Employ encryption techniques to protect sensitive data such as user credentials, edited photos, and any communication between the client and server. Use strong encryption algorithms and ensure that data at rest and in transit is properly encrypted. 3. Authorization and Access Control: Implement role-based access control (RBAC) to ensure that users can only access the functionalities and features appropriate for their roles and permissions. This helps prevent unauthorized access and restricts users from tampering with other users' data.

NFR-3	**Reliability**	1. Error Handling: The platform should have robust error handling mechanisms in place to detect and handle errors gracefully. This includes providing informative error messages to users, logging errors for analysis and troubleshooting, and recovering from errors to maintain the stability of the system. 2. Fault Tolerance: Pixel Perfection should be designed to withstand faults or failures without experiencing complete system breakdown. This can be achieved by implementing redundancy, such as backup servers or data replication, to ensure that the platform remains accessible even if certain components fail. 3. Data Integrity: The platform should ensure the integrity of users' photos and edited images. This involves preventing data corruption, maintaining the accuracy of edits, and preserving the original files without unintended alterations or losses.
NFR-4	**Performance**	1. Speed and Responsiveness: Users expect real-time or near-real-time response when making edits to their photos. The platform should minimize processing delays and provide immediate feedback as users interact with the editing tools. 2. Image Processing Efficiency: The platform should be able to handle image processing operations efficiently, especially when dealing with large image files or complex editing tasks. Optimizing algorithms and utilizing hardware acceleration (such as leveraging graphics processing units, if applicable) can help improve processing speed. 3. File Loading and Saving: Loading and saving images should be quick and efficient. Users should not experience significant delays when

		importing images into the platform or saving their edited photos back to their devices or cloud storage.
NFR-5	**Availability**	1. Redundancy and Failover: Implement redundancy at various levels of the system architecture to minimize the impact of potential failures. This can include redundant servers, databases, and network infrastructure. Employ failover mechanisms to automatically switch to backup systems in case of failures, reducing downtime. 2. Load Balancing: Distribute the user load across multiple servers to prevent any single server from becoming overwhelmed. Load balancing helps ensure that the system can handle a high volume of simultaneous user requests without degradation in performance.
NFR-6	**Scalability**	1. Horizontal Scalability: Pixel Perfection should be designed to scale horizontally, meaning that as the user base grows, the platform can handle the increased load by adding more servers or instances. This could involve deploying the platform across multiple servers or using cloud-based infrastructure that allows for easy scaling. 2. Load Balancing: To efficiently distribute the incoming user requests and workload across multiple servers or instances, a load balancing mechanism should be implemented. This ensures that no single server is overwhelmed while others remain underutilized.