arc42 of Finstergram - An international image sharing application

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Business Requirements Document (BRD) of Finstergram

1. Introduction The purpose of this BRD is to outline the business requirements for an image sharing app targeting photography enthusiasts and professionals. The app will allow users to share and discover high-quality, visually stunning images that are not found on other social media platforms. The app will differentiate itself from competitors by offering advanced editing tools, customizable filters, and a strong community aspect.

2. Scope The app will be available on both iOS and Android platforms and will be accessible to users globally. The primary target audience is millennials and Gen Zers who are interested in photography and visual storytelling. The app will offer both a free version with limited features and a paid subscription model for access to advanced tools and features.

3. Business Requirements

    - User Profiles The app will allow users to create profiles and connect with other users based on shared interests and photography styles. Users will be able to create collections of their favorite images and follow other users for inspiration and engagement.

    - Image Sharing

Users will be able to share their images with the community and tag them with relevant keywords for search and discovery. The app will allow for easy sharing of images on other social media platforms such as Facebook and Instagram.

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* Advanced Editing Tools
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The app will offer a range of advanced editing tools such as color correction, white balance adjustment, exposure adjustment, and cropping. Users will also be able to add text, borders, and other creative elements to their images.

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* Customizable Filters
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Users will be able to create and save their own custom filters, as well as choose from a range of pre-made filters that cater to various photography styles and aesthetics.

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* Community Features
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The app will have a strong community aspect, with features such as user-generated challenges and competitions, a social feed for following other users' activity, and the ability to leave comments and engage with other users.

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* Subscription Model
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The app will offer a free version with limited features, as well as a paid subscription model for access to advanced tools and features. Subscription plans will be offered on a monthly or annual basis, with the ability to cancel at any time.

4. Business Goals The primary business goals for the app are to attract a large and engaged user base, increase brand awareness and user retention, and generate revenue through the subscription model and potential advertising and sponsored content opportunities.

5. Third-party integration The third-party service we plan to integrate with is Pixlr, a cloud-based photo editing platform that provides users with a wide range of editing and filtering tools. The integration will allow users to access Pixlr's tools directly within our app, without having to leave the platform.

6. Acceptance Criteria The app must meet the following acceptance criteria:

    - The app must be user-friendly and easy to navigate
    - The app must be stable and function without significant bugs or errors
    - The app must be optimized for performance and load times
    - The app must offer advanced editing tools and customizable filters
    - The app must have a strong community aspect with engaging features such as challenges and competitions
    - The subscription model must be clearly communicated and easy to understand
    - The app must meet all relevant security and privacy regulations

7. Sign-Off We, the undersigned stakeholders, have reviewed and approved this Business Requirements Document for the image sharing app. We agree that the requirements outlined in this document are accurate and reflect the goals and objectives of the project.

Signed: Sarah Chen, Marketing Manager, Bold Branding Agency Michael Nguyen, Project Manager, Digital Dreams Inc. Ava Patel, Lead Developer, Pixel Perfect Solutions Emily Wong, UX/UI Designer, Creative Co. Samir Singh, User Representative, Photography Enthusiast Lucas Rodriguez, Photography Expert, Snap & Shoot Magazine

Introduction and Goals

Finstagram is a social media platform dedicated to high-resolution image sharing and dynamic content creation.

Requirements Overview

Finstergram is a image sharing app with focus on professional photography. The five most important functional requirements are:

- Image sharing and navigation
- Image editing and custom filter creation
- Community challenges, competitions and activities
- Third-party integration of popular image editing software
- Paid subscription model

Quality Goals

The three most important quality goals are:

Priority	Quality	Motivation
1	High resolution images	The quality of the images is important in order to differentiate from the competition and satisfy the target audience
2	Performance	Every process executed by the end-user should be fast enough to match the current standard
3	Compatibility	The application should perform well on every type of device

Stakeholders

The five most important stakeholders of the system are:

Role/Name	Contact	Expectations
End-user	end-user@email.com	They want a place to share and edit images with likeminded people
Influencer	influencer@email.com	They want to earn money
Administrator	administrator@email.com	They want an easy to maintain, update and administrate system
Investor	investor@email.com	They want the platform to make profit
Product owner	product-owner@email.com	They want the platform to grow and make profit

Architecture Constraints

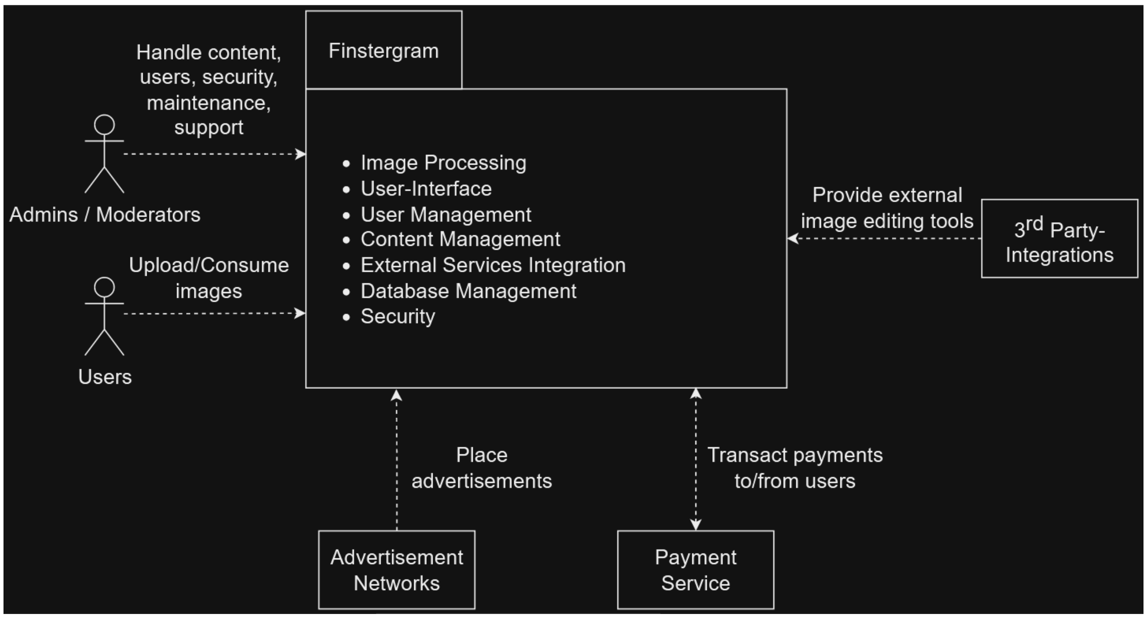
The five most important architectural constraints are:

Constraints	Background and/or motivation
Integration	Careful coordination is required in order to ensure, that the microservices do not impact each other
Scaling	Scaling individual microservices accurately can be complex and needs a lot of attention
Service Communication	Communicating between microservices requires lightweight protocols like REST or gRCP
Testing	Testing across multiple microservices poses a challenge in ensuring a complete test coverage
Team Adaption	A microservices architecture often requires new skills and enhanced teamwork among the development team

System Scope and Context

The system scope and context provides a concise overview of the project's boundaries, stakeholders, and operating environment.

Business Context Diagram



This business context diagram gives a high level overwiev of the system and shows which data are exchanged with the environment. The primary actors and external systems are visualized here.

Solution Strategy

The three most important goals and their architectural approaches are:

Goal/Requirements	Architectural Approach
Image Editing and Sharing	Microservices - Enables the easy addition of new filters and photo functions. Ensures professional image editing capabilities with extensibility.
Third-party Integration of cloud-based software	Service-Oriented Architecture (SOA) - Seamless integration of a service, developed by the partner.
User-generated Challenges and Competitions	Microservices - A central challenge creation service and additional services for challenge validation. Facilitates user-generated challenges, competitions, and feeds.

Fundamental Decisions

We have opted to maintain our Microservices architecture. Microservices offer agility and flexibility, allowing us to respond quickly to evolving requirements and reducing the complexity associated with a monolithic architecture.

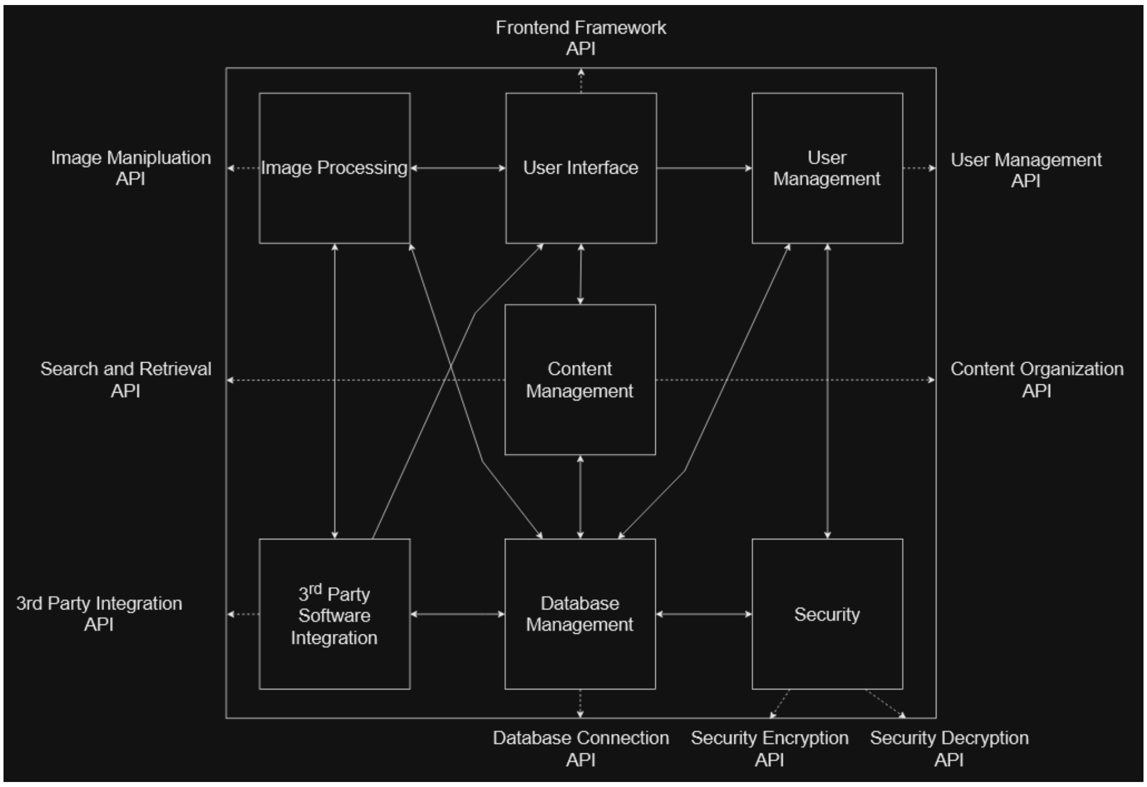
The three most important fundamental decisions are:

Problem	Considered Alternatives	Decision
A microservice is necessary for a new challenge	Adapt old microservice for new challenges	We chose to create a new microservice for every new challenge, to be able to reactivate old challenges.
If every filter has its own microservice, they are too dependent	Do not give every filter its own microservice	Filtering is a single microservice and all filters are saved in a database
Testing is complex, because every single service has to be tested	With SOA, there would be less testing expense	Because we do not have liquidity problems, we stay with microservices

Building Block View

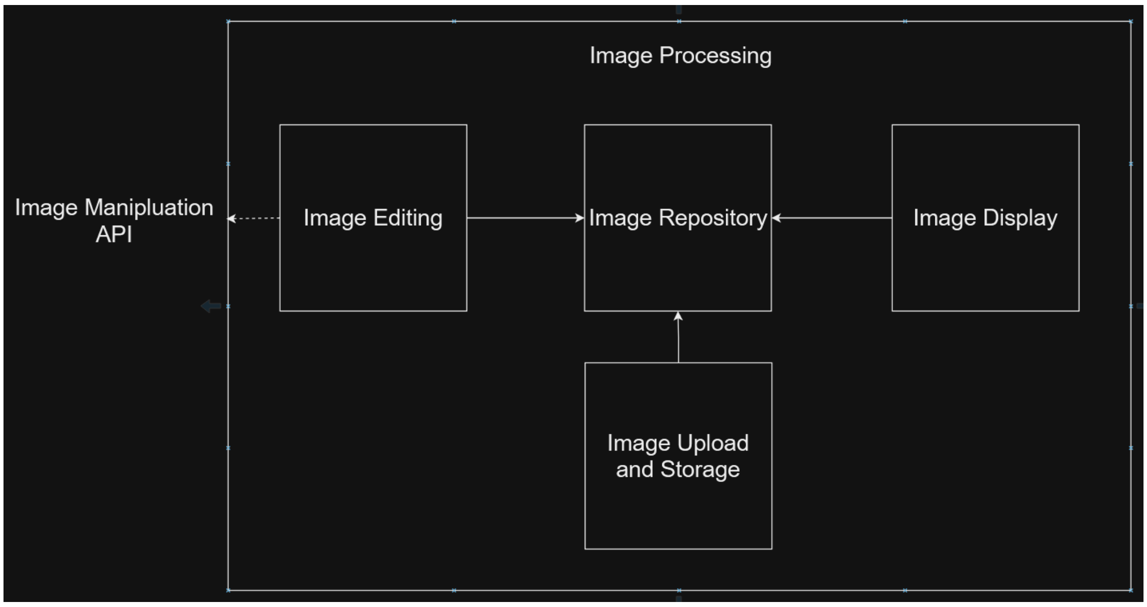
The Building Block View provides insight into the foundational components crucial for the development and functionality of Finstagram. In Level 1, we showcase the core functionalities of Finstagram and delve into more details for 'Image Processing' and 'Content Management'.

Level 1



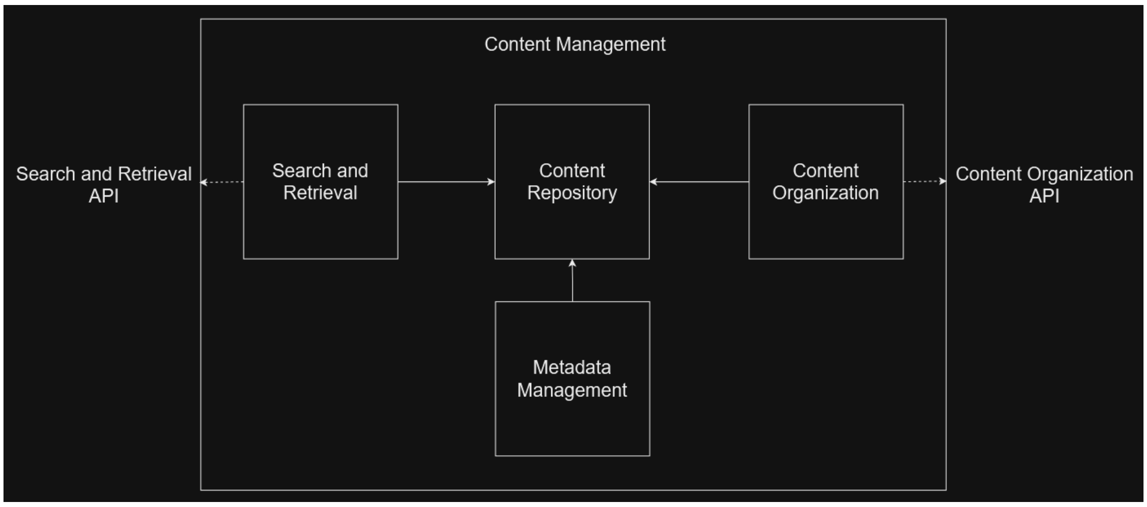
This building-block-diagram on level 1 provides a structured depiction of the key building blocks and their interrelationships of the system. It offers a high-level overview of the major components within the system.

Level 2 Image Processing



This building-block-diagram on level 2 presents a more detailed perspective of the Image Processing-Component, showcasing their internal structure and relationships.

Level 2 Content Management

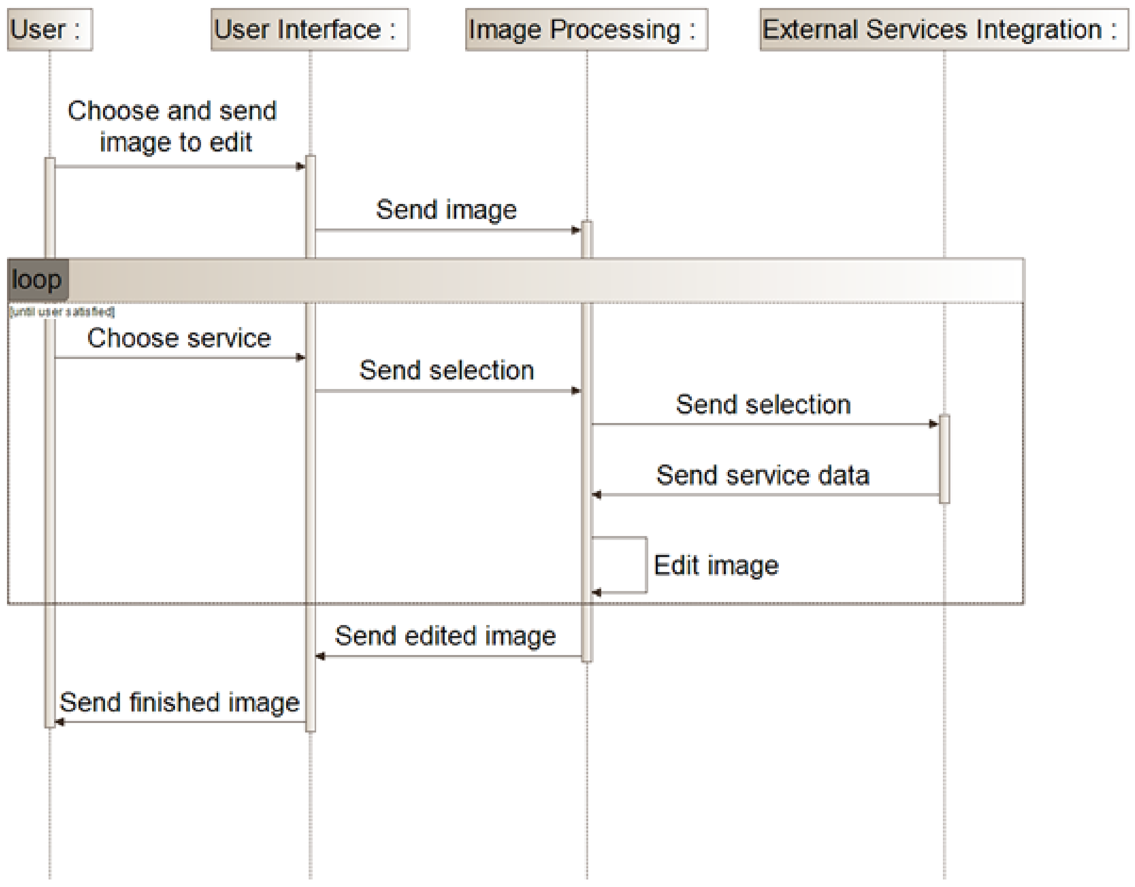


This building-block-diagram on level 2 presents a more detailed perspective of the Content Management-Component, showcasing their internal structure and relationships.

Runtime View

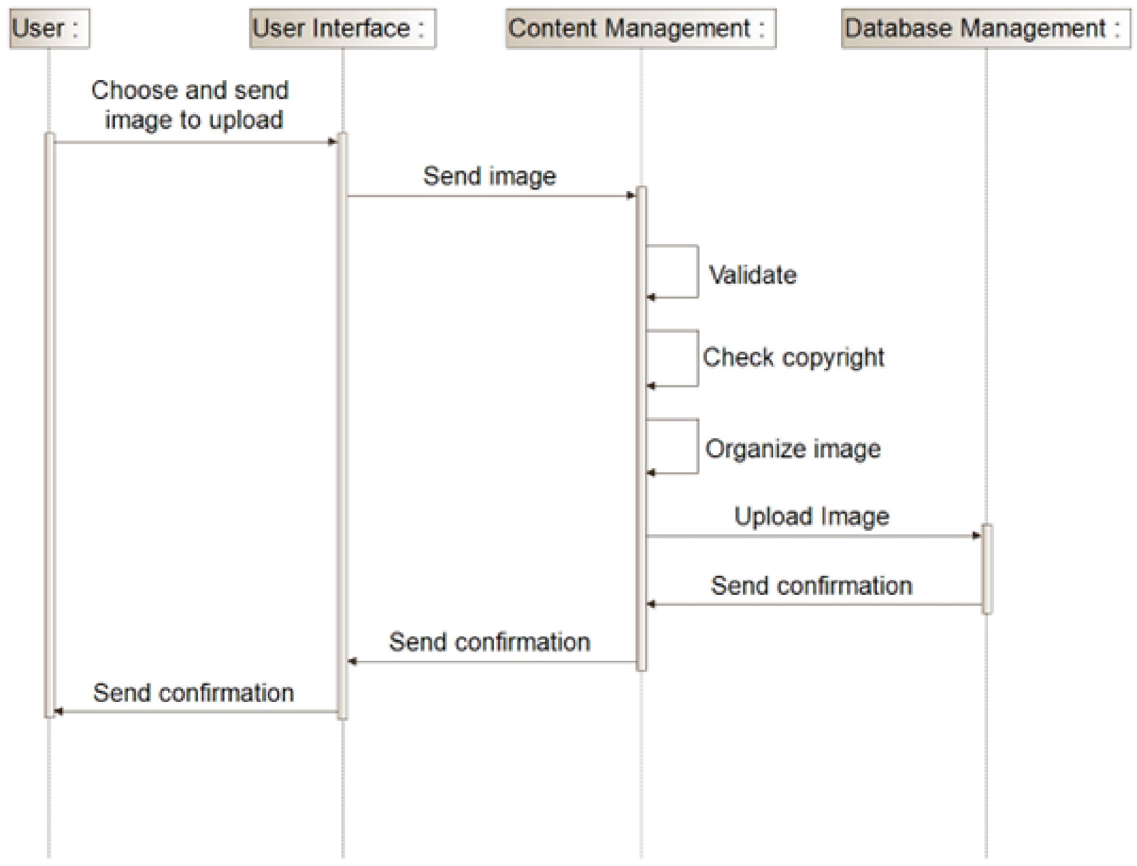
The runtime view of our system provides a dynamic perspective on the core functionalities related to image editing, and uploading.

Runtime Scenario: Edit Image



This runtime-view-diagram illustrates the dynamic aspects of the Edit Image-Process. It showcases how the components interact and collaborate at runtime. Here a user wants to edit an image using Finstergram.

Runtime Scenario: Upload Image



This runtime-view-diagram illustrates the dynamic aspects of the Upload Image-Process. It showcases how the components interact and collaborate at runtime. Here a user wants to upload an image to Finstergram.

Deployment View

The deployment section outlines the strategy and procedures for introducing the system into its operational environment, utilizing the CAP theorem and a deployment diagram.

CAP

The CAP theorem tells us that a distributed system can only provide two of the three desired properties: Consistency, Availability and Partition Tolerance.

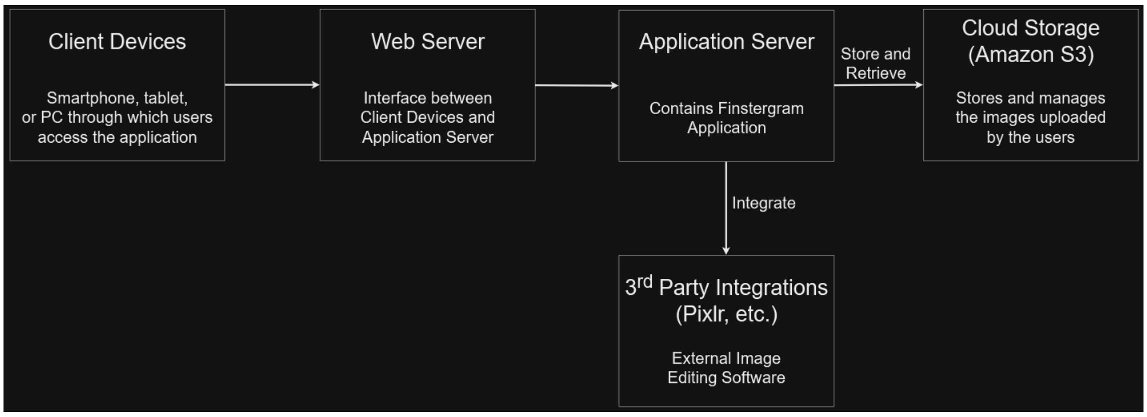
Finstergram chooses Availability and Partition Tolerance (AP):

Availability (A) is crucial because it ensures that Finstergram is consistently accessible and usable by its users. It guarantees that they can interact with the application whenever they need to without encountering frequent downtime or unavailability. It is essential for maintaining a positive user experience and to meet the stakeholders expectations.

Partition Tolerance (P) is important because it gives Finstergram the ability to operate and function effectively despite potential network issues or partitions. It ensures that even if certain parts of the system cannot communicate with each other temporarily because of hardware failures, communication delays, etc., the system as a whole can continue to operate without complete failure.

On the other hand, Consistency (C) could guarantee that every user has the same view of the data at the same time. However, strong Consistency has to be sacrificed in favor of Availability and Partition Tolerance. It has to be accepted that various users do not always have immediate access to the latest version of the data.

Deployment-Diagram


Client Devices
Smartphone, tablet, or PC through which users access the application
Web Server
Interface between Client Devices and Application Server
Application Server
Contains Finstergram Application
Store and Retrieve
Cloud Storage (Amazon S3)
Stores and manages the images uploaded by the users
Integrate
3rd Party Integrations (Pixlr, etc.)
External Image Editing Software

This deployment-view-diagram describes the technical infrastructure of Finstergram. Users communicate via client devices with the internet. A web server hosts the app's interface, while an application server manages its functions. The application server also interfaces with third-party integrations like Pixlr. Amazon S3 Cloud Storage is used to store the images and user data.

Cross-cutting Concepts

The three most important cross-cutting concepts are:

- Development concept

  Developers should name Variables etc. after a strict concept/pattern/system to ensure consistency across Services

- Organizational concept

  The backup-server runs at reduced speed during maintenance of the main-servers to enusure stability

- Security concept

  Passwords are stored with encryption via a hashcode converting system from an external library to ensure security

Architecture Decisions

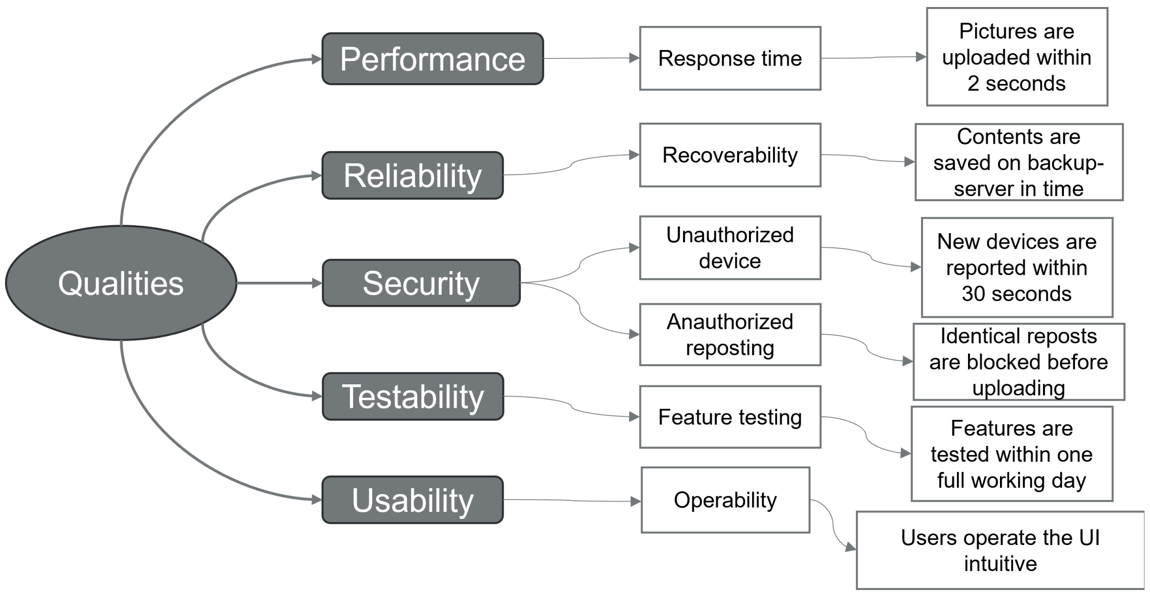
The three most important architectural decisions are:

Context	Decision	Consequences
We want to manage the code on GitHub and need to decide if, we want one or more repositories	We will only use a single repository	The whole code is in a single place and one can find it faster. There might be organizational problems.
We have multiple teams and not everyone can code the same language	We will use multiple coding languages	We have a microservices architecture, which means that every code of a microservice can be written in a different language. Not everybody will be able to work on every code.
We have a lot of user passwords and need to store them	We will store passwords in a hash code library	Database performs worse due to computationally intensive process. An extra library has to be implemented. The passwords are more secure.

Quality Requirements

The quality requirements section sets the standards and criteria for evaluating the system's performance, reliability, security, and other system atributes, utilizing the frameworks "Quality Tree" and "Quality Scenarios".

Quality Tree


Qualities
Performance
Response time
Pictures are uploaded within 2 seconds
Reliability
Recoverability
Contents are saved on backup-server in time
Security
Unauthorized device
New devices are reported within 30 seconds
Anauthorized reposting
Identical reposts are blocked before uploading
Testability
Feature testing
Features are tested within one full working day
Usability
Operability
Users operate the UI intuitive

Quality Scenarios

Three quality scenarios are:

- Performance Scenario: A user wants to upload a picture under normal operations. The picture is uploaded within 2 Seconds.
- Recoverability Scenario: A user wants to edit a picture and the server closes. All changes are saved in time.
- Security Scenario: A user logs in with a different IP-address. The report is sent within 30 seconds.

Risks and Technical Debts

The three most important risks/technical depts are:

- Data Management The influx of inconsistent data poses challenges in terms of organization and distribution. Ensuring the consistency and accuracy of data across the system becomes a complex task. Failure to manage data effectively can lead to data quality issues, potentially impacting decision-making and system performance.
- Security Implementing security measures in each Microservice incurs significant costs. Additionally, securing sensitive data across multiple services is both cost and time-intensive.
- Complexity The increasing complexity of the architecture demands more resources for inter-service communication and the seamless integration of new services into the existing network.

Glossary

Term	Definition
Finstergram	The title identifying this image sharing application
Github	A web-based platform for collaborative software development and version control using Git
Image	A picture, that the user can edit, upload, and find on Finstergram
Image sharing	Sharing images with other users on Finstergram
Image upload	Transferring an image file to a remote server for storage and sharing on Finstergram
Image navigation	Browsing or moving through images within the user interface on Finstergram
Image editing	Modifying images to enhance or alter their appearance
Filter	Visual effects applied to an image to change their appearance
Image editing software	Applications for modifying and enhancing images