



CANKAYA UNIVERSITY PROJECT PRESENTATION

# MINDSART

Artificial Intelligence Based Art Gallery Mobile Application

**Advisor**

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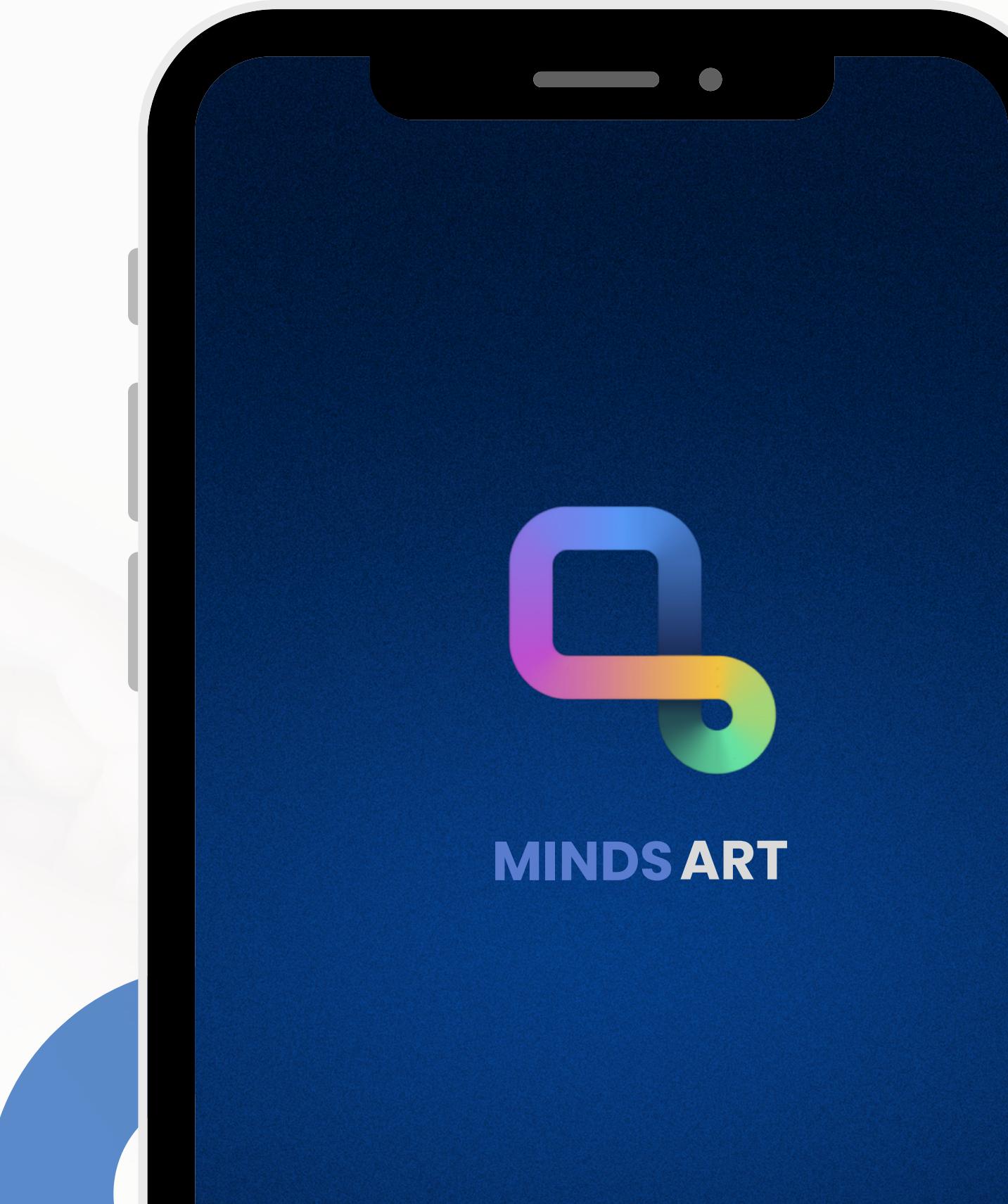
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<https://mindsart21.wixsite.com/mindsart>



# Team Members



**Batuhan ÖZER**



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**Emre Şahin  
DEMİRBAŞ**



**Tunahan GÜLTEKİN**

# Agenda



Problem



Solution



Application Structure



Test Plan & Results



Conclusion & Future  
Work



Demo Video

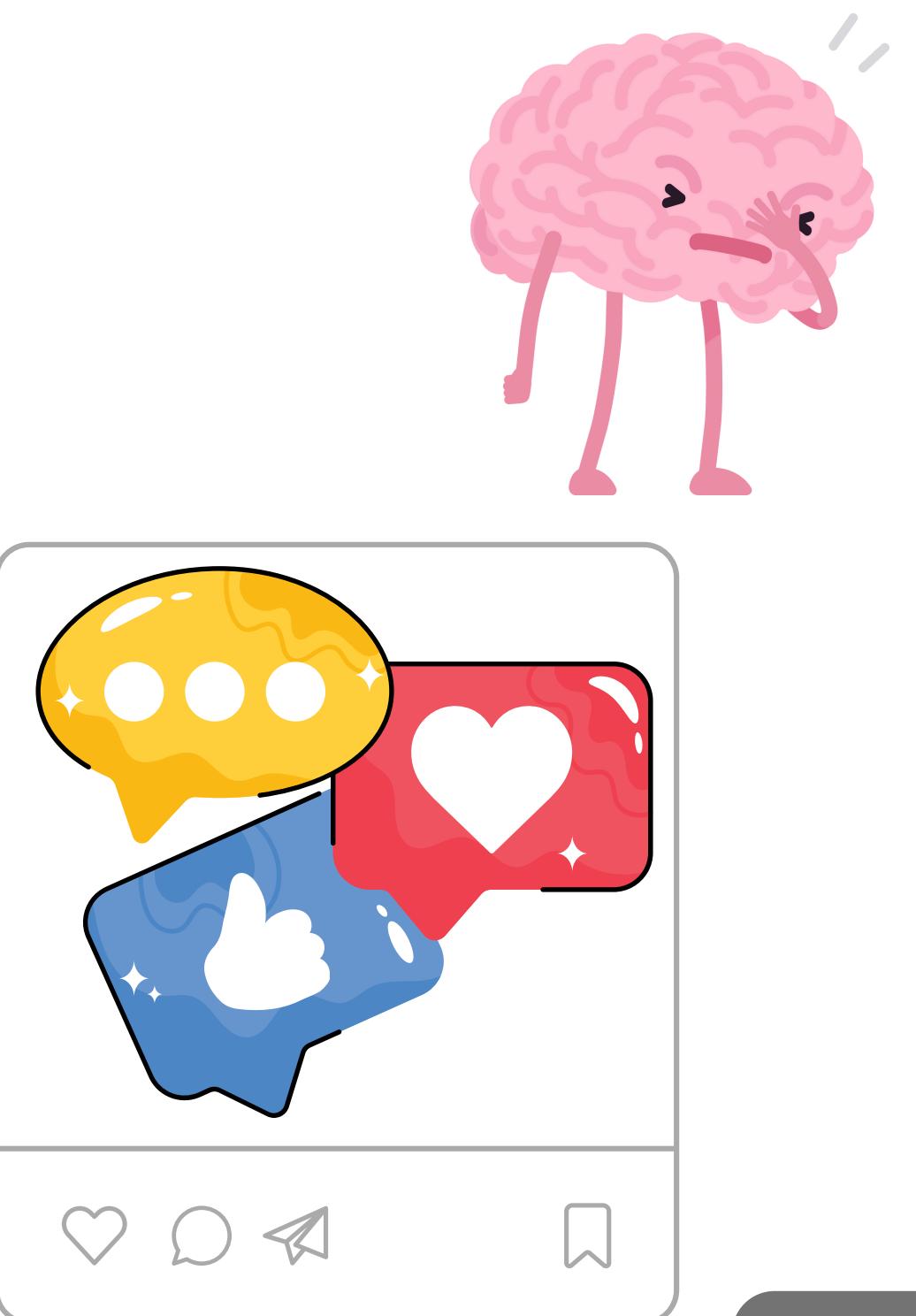
# Problem Statement



# Problems of Existing App

- Lack of Narrative Context

- Limited Social Features



# Strengths and Weaknesses of Existing Applications

Application Name & Feature	Leanordo.AI-Image Generator	Dream By WOMBO	DaVinci - AI Image Generator	Imagine: AI Art Generator	CreArt - AI Image Generator	Starryai -AI Art Generator	Gencraft - AI Art Generator
Social media features - Interaction with other users	✓ Yes	✓ Yes	✗ No	✗ No	✗ No	✓ Yes	✓ Yes
Preset styles	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes
Negative prompt	✓ Yes	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes	✓ Yes
Writing a story for the prompt and art	✗ No	✗ No	✗ No	✗ No	✗ No	✗ No	✗ No
Ability to choose models	✓ Yes	✗ No	✓ Yes	✗ No	✗ No	✗ No	✗ No
Gamification Features	✗ No	✗ No	✗ No	✗ No	✗ No	✓ Yes	✓ Yes
Cloud Usage	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes
Models Used for Image Generation	Stable Diffusion 1.5 and 2.1, SDXL 0.9 and 1.0, SDXL.LIGHTNING, and custom fine-tuning models	Stable Diffusion, VQGAN CLIP	Stable Diffusion XL, DALL-E 3, and its own specially developed model DaVinci XL	Stable Diffusion, DALL-E, SDXL, Flux Schnell and custom models	Stable Diffusion DALL-E SDXL, custom models	Altair and Orion	DALL-E 2, Stable Diffusion, custom models
Release Date	2024	2021	2022	2022	2023	2021	2023

# Strengths and Weaknesses of Existing Applications

Model Name	Has API?	Free to Use?	Is Open Source?	Min GPU VRAM Needed
Stable Diffusion	<span>✓ Yes</span>	<span>✓ Yes</span>	<span>✓ Yes</span>	4 - 8 GB*
DALL-E 3	<span>✓ Yes</span>	<span>✗ No</span>	<span>✗ No</span>	-**
Midjourney	<span>✗ No</span>	<span>✗ No</span>	<span>✗ No</span>	-**
Imagen 3	<span>✓ Yes</span>	<span>✓ Yes</span>	<span>✗ No</span>	-**
FLUX. 1	<span>✓ Yes</span>	<span>✓ Yes</span>	<span>✓ Yes</span>	8 GB
Ideogram 2.0	<span>✓ Yes</span>	<span>✓ Yes</span>	<span>✗ No</span>	-**
StyleGAN3	<span>✓ Yes</span>	<span>✓ Yes</span>	<span>✓ Yes</span>	12 GB

\* Stable Diffusion 1.5 requires 4-6 GB, 2.1 requires 4-6 GB, XL requires 8 GB, and XL Turbo requires 8 GBs of VRAM.

\*\* These models do not have a local usage option.

# Existing Applications Generation Results

Input : Budgie in a suit



Leonarda.AI



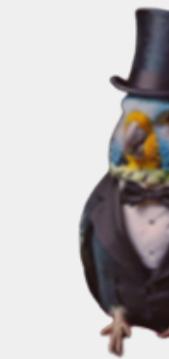
DaVinci AI



Imagine AI



CreArt



starryai



Gencraft



# Solution

# What are we offering?

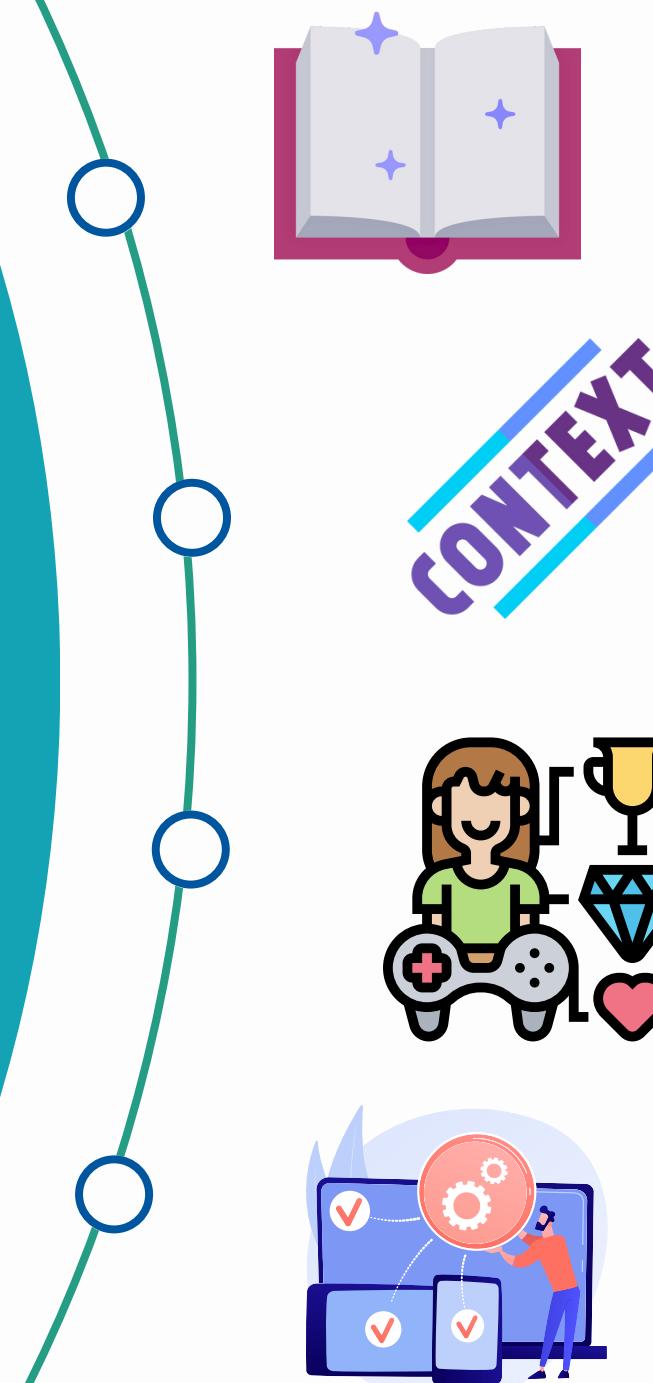


## Our Solution

An AI image generation application that creates artwork with accompanying stories, enhancing the artistic value of AI-generated images. The platform includes social media integration and gamification elements, setting it apart from existing AI image generators.



# Main Features



Story-driven image generation process  
(user prompt → AI story → AI image)

**CONTEXT**



Enhanced artistic value through narrative context



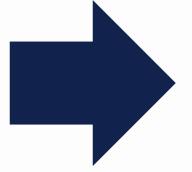
Gamification elements to increase user engagement

User-friendly interface accessible across multiple devices

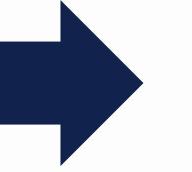
# Technologies



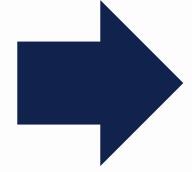
Azure



GPT/DALL-E



OkHttp



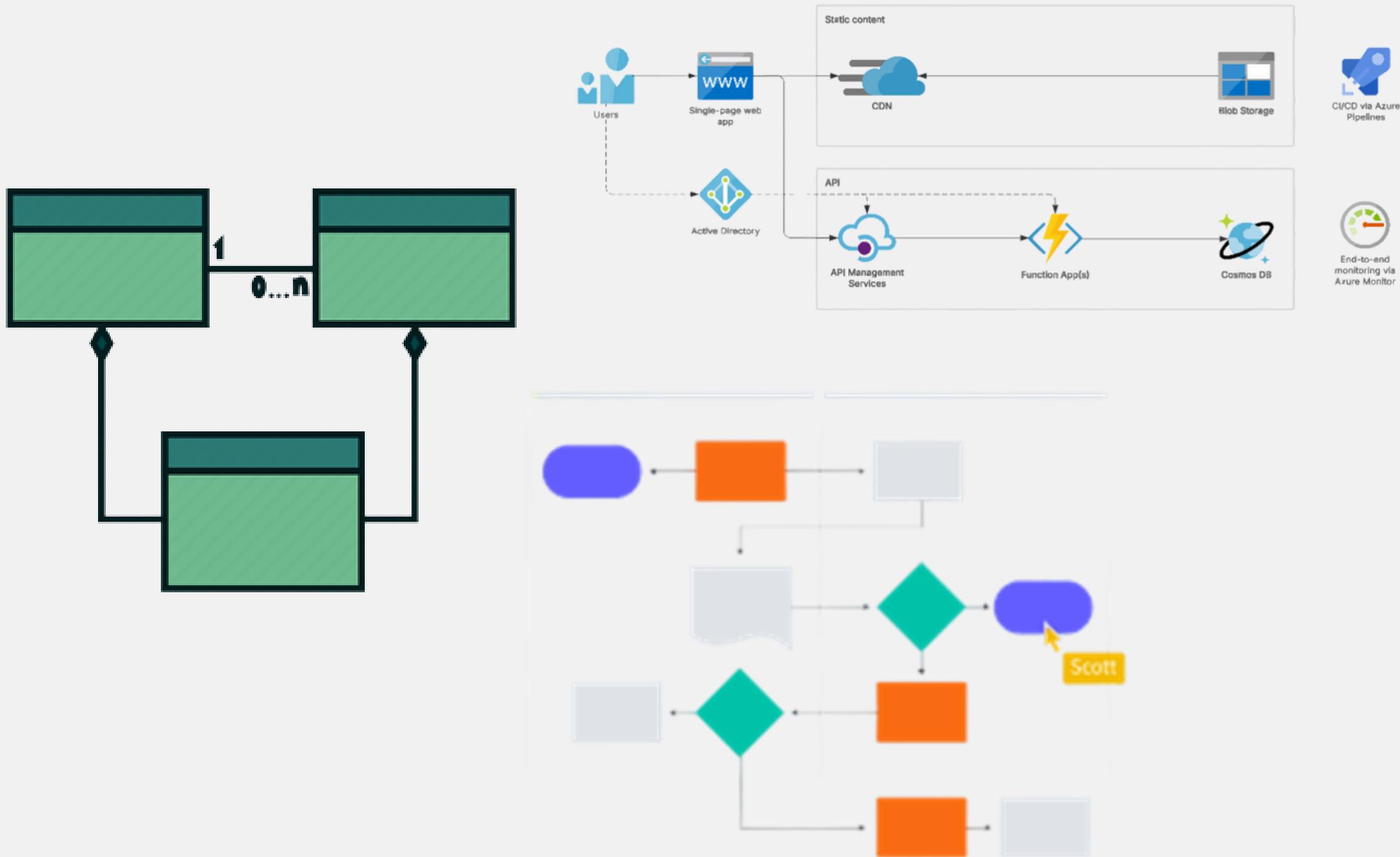
MindsArt



Firebase

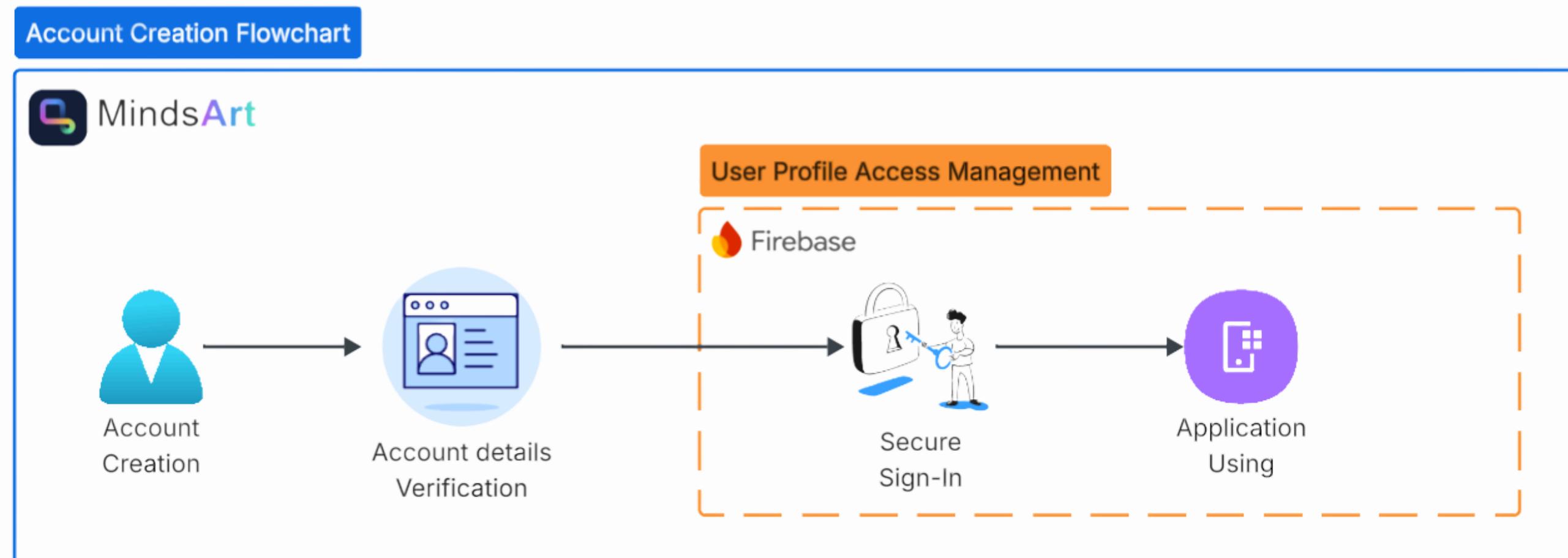


# Application Structure



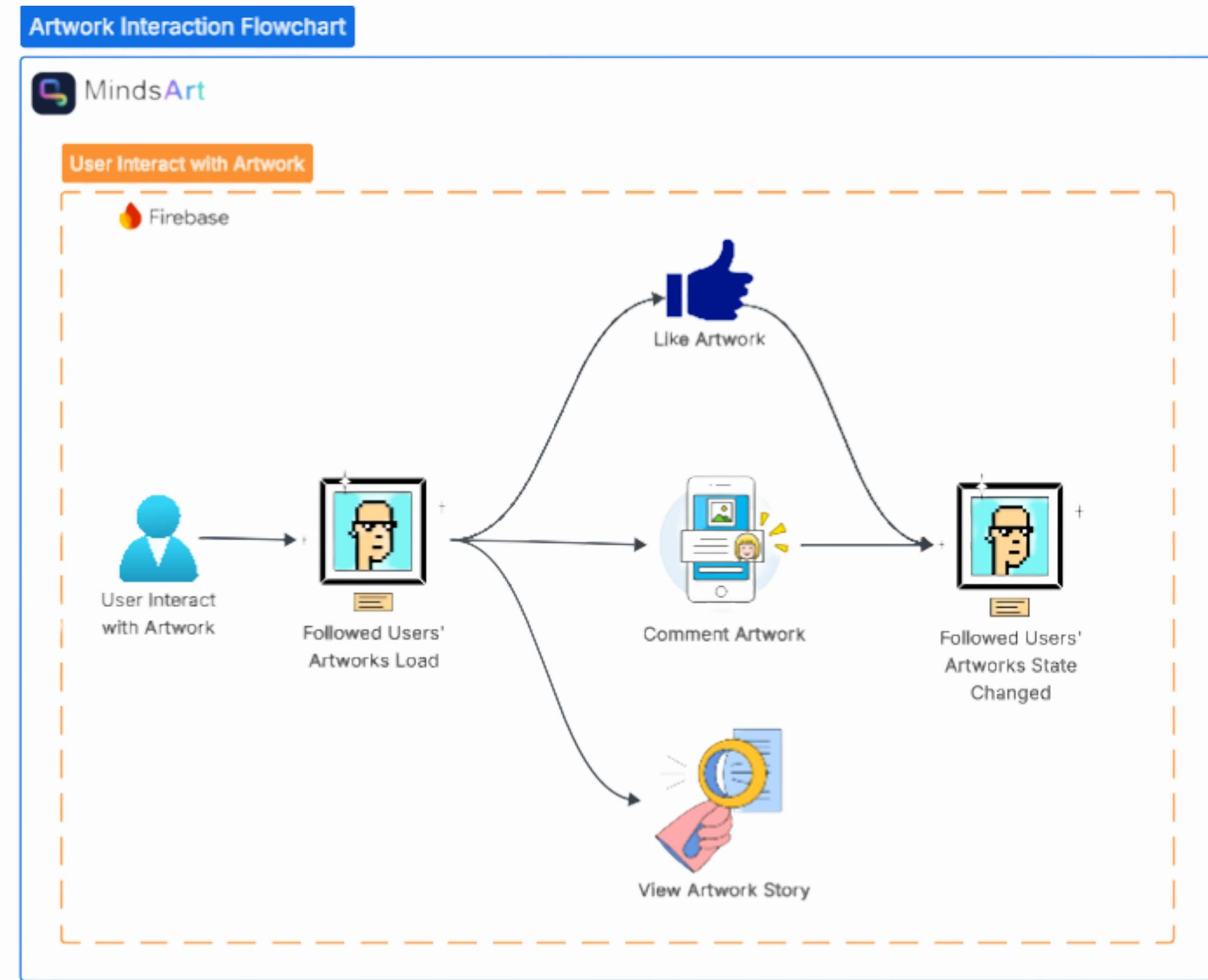
# App Structure

## ACCOUNT CREATION



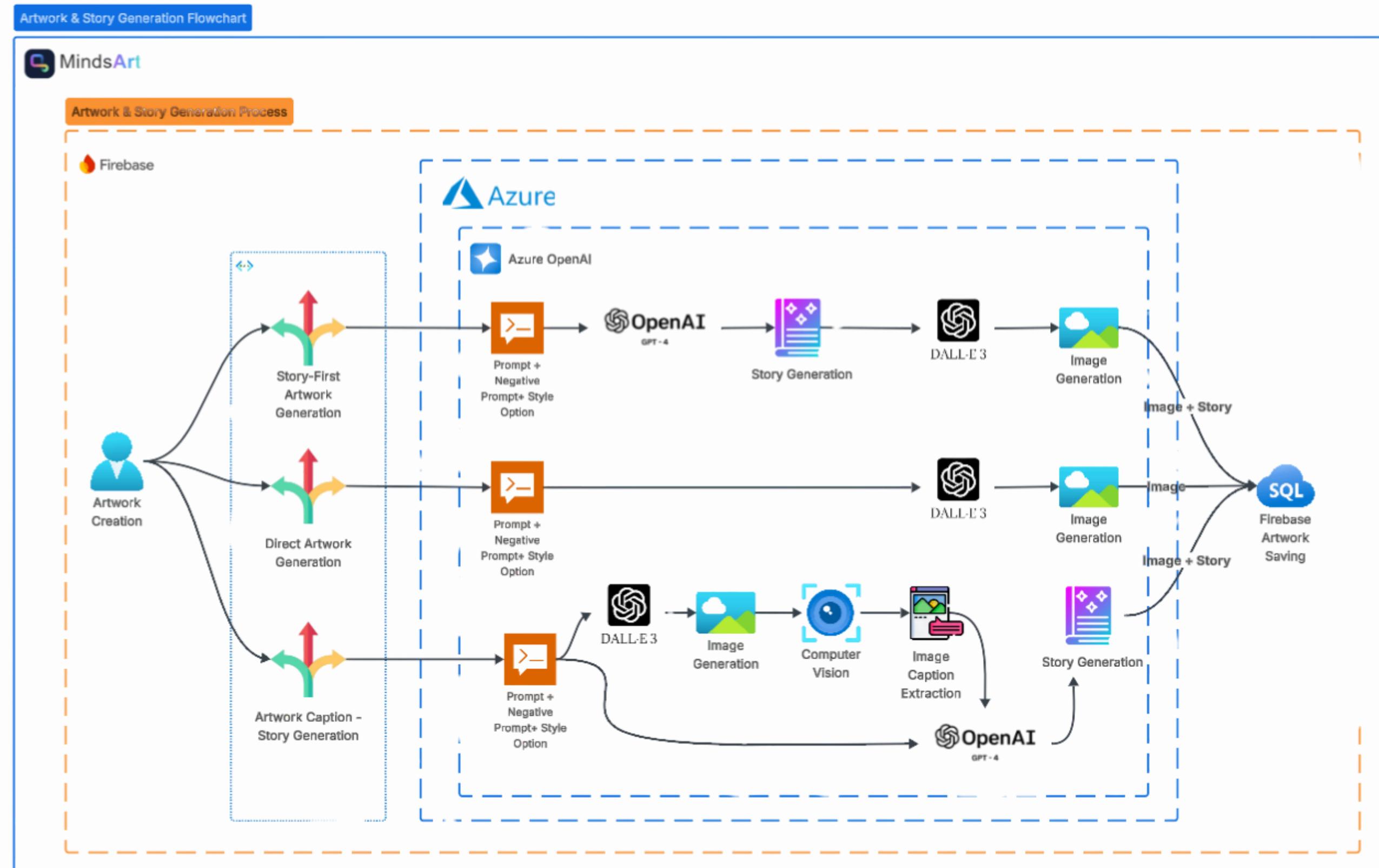
# App Structure

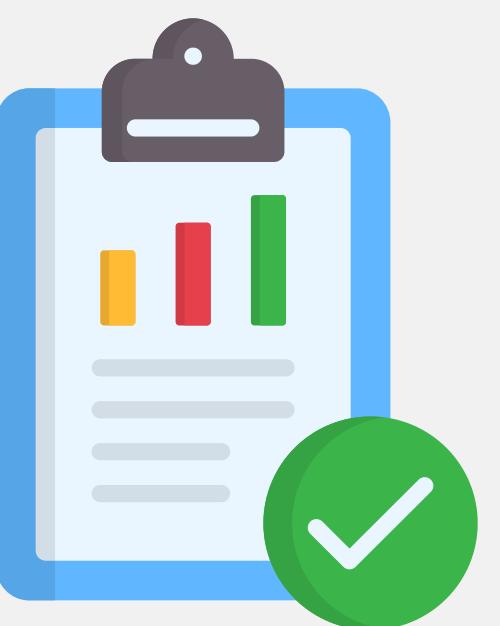
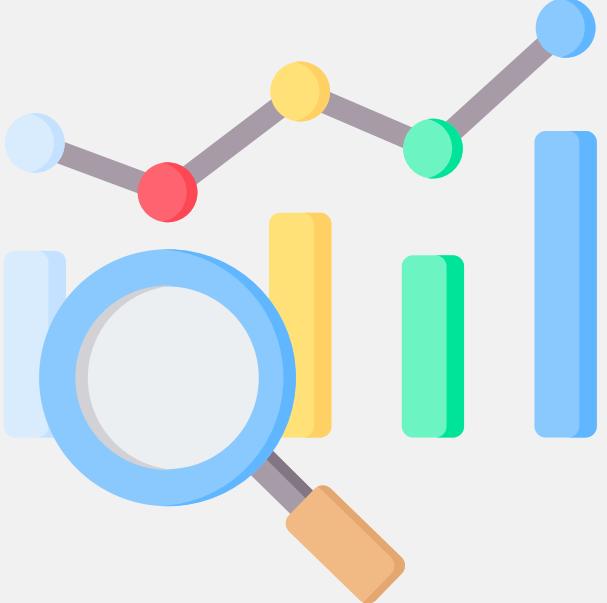
## ARTWORK & USER INTERACTION



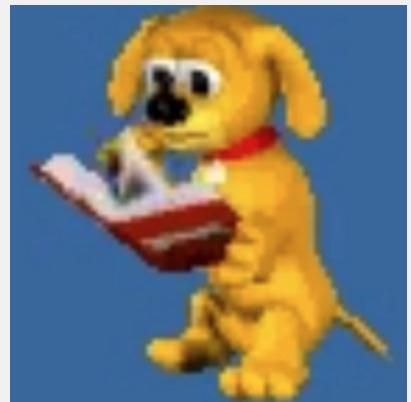
# App Structure

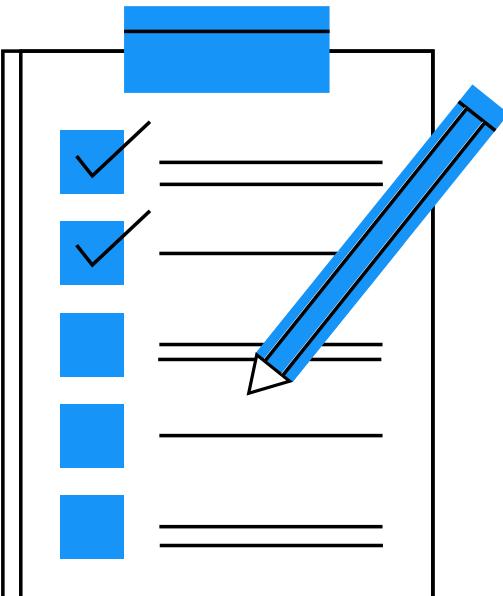
## ARTWORK & STORY CREATION





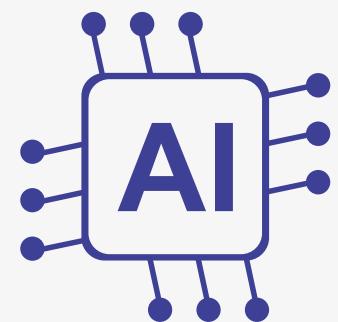
# Test Plan & Results





# Test Plan

The application has been tested for the following features:



## AI Integration

Making sure that everything works correctly related to Image/Story Generation Models (GPT/DALL-E)



## Firebase Interactions

Ensuring that the users could perform their database related actions (sign up, login etc.) as consistent as possible



## Kotlin UI Elements

Confirming that the operations related to UI changes (e.g. changing color theme, navigating between pages etc.) are handled properly

# Test Results

## Firebase Storage Limits Details

Cloud Firestore				
Stored Data	Network Egress	Document Writes	Document Reads	Document Deletes
1 GB Total	10 GB/Month	20K Writes/Day	50K Reads/Day	20K Deletes/Day

*Cloud Firestore usage limits for Spark Plan resource: <https://firebase.google.com/pricing>*

Cloud Storage				
GB Stored	GB Downloaded	Upload Operations	Download Operations	Multiple Buckets per Project
5 GB	1 GB/Day	20K/Day	50K/Day	N/A

*Cloud Storage usage limits for Spark Plan resource: <https://firebase.google.com/pricing>*

# Test Results (Contd.)

## Firebase Authentication Limits Details

Authentication			
Phone Auth - All Regions	Other Authentication Services	Monthly Active Users	Monthly Active Users - SAML/OIDC
N/A	Yes	50K/Month	50/Month

Authentication usage limits for Spark Plan resource: <https://firebase.google.com/pricing>

# Test Results (Contd.)

## AI Image/Story Generation Models Limitations

AI Models					
Model Name	Model Version	Model Retirement Date	Content Filter	Capacity	Rate Limit (Tokens per Minute)
GPT-4	613	Jun 6, 2025	Default V2	1K TPM	1000 (RPM) = 6
DALL-E-3	3.0	Jun 30, 2025	Default	1 CU	N/A

Used models table during Image & Story generation

# Test Results (Contd.)

## AI Image/Story Generation Models Language Limitations

AI Models' Language		
Category	User Prompts (Input)	Model Completions (Output)
Violence	Medium	Medium
Hate	Medium	Medium
Sexual	Medium	Medium
Self-harm	Medium	Medium

*Default/V2 Content filter restrictions while generating image & story*

# Test Results (Contd.)

## GUI Test Results

Priority	Number of TCs	Executed	Passed
 High ▾	<b>26</b>	<b>26</b>	<b>26</b>
 Medium ▾	<b>24</b>	<b>24</b>	<b>22</b>
 Low ▾	<b>16</b>	<b>16</b>	<b>16</b>
 Total ▾	<b>66</b>	<b>66</b>	<b>64</b>

# Test Results Conclusion

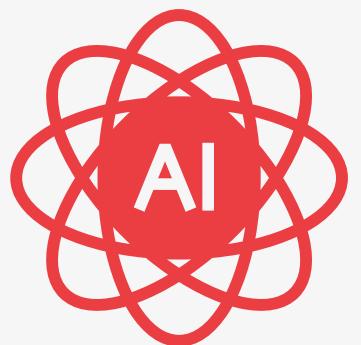
Task	Exit Criteria	Status
<b>Test Coverage</b>	All test cases executed	 Met ▾
	90% or more test cases passed	 Met ▾
	All High Priority test cases passed	 Met ▾
<b>Critical Functionality</b>	No outstanding high priority or severe bugs	 Met ▾
	Essential functionalities pass without critical issues	 Met ▾
<b>Stability and Performance</b>	Essential functionalities perform within acceptable parameters	 Met ▾
<b>Specific Functionality</b>	All essential functionalities pass testing.	 Met ▾



# Conclusion & Future Work



# Conclusion



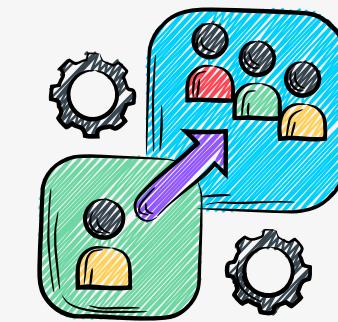
## AI-Powered Creative Platform

Integrated DALL-E, GPT, and Azure for seamless content generation



## Social Media Integration

Built-in community features with likes, follows, and comments



## Scalable Architecture

Firebase backend ensures reliable performance and real-time updates

# Future Work



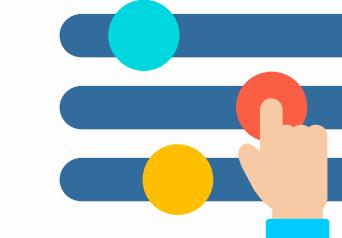
**Collection Image Formats**



**Cloud scaling**



**Enhancement of Gamification elements  
to increase user engagement**



**Model Fine Tuning & Mode model options**

# Challenges



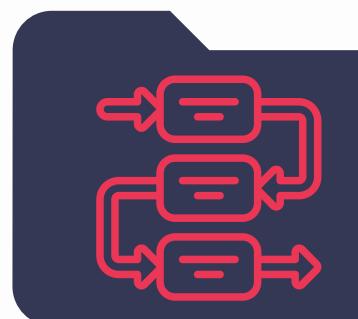
Prompt Violation Issue



High coupling & merge problem



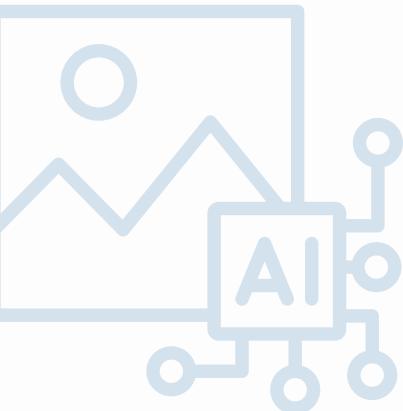
API & Firebase usage problem



Dependencies & Inconsistency problem

# Demo Video

[Video Link](#)



CENG408 Presentation

# Thank You For Your Attention

GENERATE



End Presentation

<https://mindsart21.wixsite.com/mindsart>

