# ITAS 164

# Project Assignment 2 – Initiation & Planning

Mikaela Knutson, Aidan Maude, Joey Bueckert

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# Introduction

This project is a network-connected digital photo frame that allows people to remotely upload images or short messages in real-time. In this document, we will lay out our project plans and scope statements below. This will include various points, such as needs analysis, deliverables, and general time estimations.

# Scope Statement

Below are the key points highlighting our project scope.

## Justification:

Digital photo frames have existed on the consumer market since the late 1990s. Typically, their main limitation is power consumption, removing the flexibility of a traditional photo frame. These models are geared towards individual use, generally relying on third-party applications that may require additional configurations, such as account management or subscription models. This increases bloatware on consumer devices and reliance on proprietary company material. This project aims to remove these limitations and increase accessibility, without sacrificing convenience for the end user. With the growing focus on digital privacy, having an open-ended submission approach allows users to freely collaborate without reliance on corporate cloud-based infrastructure.

## Product Scope:

Our product development will be broken down into multiple milestones, shown below:

1. Ensuring that all product hardware modules are compatible and function properly together, accounting for power management, display quality, and network connectivity. The following considerations need to be made:
    a. GPIO header compatibility
    b. Power module capability
    c. Wireless connectivity
2. Configuring network infrastructure, such as:
    a. Raspberry Pi OS setup
    b. Server VM deployment (Rocky Linux)
        i. File server
        ii. Web server
3. Frontend development of web form:
    a. User interface
    b. Collaborative link between frontend form and file server
    c. Administrative elements and moderation
    d. Security considerations
4. Modular additions:
    a. Submission themes
    b. Text-only submission integration
    c. Adding captions to form submission

d. Live display of current image on web form

## Acceptance Criteria:

At its most basic state, successful completion of this project would include the following mandatory capabilities:

1. A reliable, stable method for any user with an administrative code to upload images over the internet to be displayed on the frame.
2. A properly implemented network between the RPi, file server, and web form
3. A fully automated display.

## Deliverables:

Below are the primary interim deliverables in correct order for this product:

1. All hardware assembled properly and functional
2. Having Raspberry Pi OS configured to project needs
3. Deploying reliable web and file server that can be successfully accessed via the internet
4. HTML form functional and with clean UI / UX
5. Implementation of password-protected administrator interface
6. Successful communication of web form and backend servers
7. Proper communication between backend servers and Raspberry Pi
8. Assembly of custom frame

## Project Exclusions:

Exclusions to consider for this project include functionalities such as:

- The photo frame does not utilize any physical interactions, like touch-screen capabilities or manual scrolling
- HTML web form is a simple interface for users to upload images – there are no social aspects such as commenting or user reactions

## Constraints:

For this product, some constraints to consider include the following:

- Limitation of E-Ink Technology:
  - E-Ink is limited to stationary pictures with an average refresh rate of 30 seconds
  - Image quality will render in a slightly different way, as compared to a traditional backlit display
- Heavy reliance on hardware availability / quality:
  - Display panel is the key piece of hardware – outcome of entire project rests on compatibility and a working display

## Assumptions:

Below are some potential uncertainties in this project which may influence our project priorities:

- Hardware availability:
  - We assume that all key hardware components will arrive on time as needed (display, Raspberry Pi, power modules, etc.). If any hardware is out of stock or

delayed, we can pivot to server and web form development, placing it at the beginning of our task list instead of the end as previously planned.

- Network connection:
    - We assume that internet connectivity will be consistent and stable, in order for the frame to pull images from the web server. If this is not the case, or it is moved, this will need to be addressed.
- Honor system:
    - We assume that this product will be used in good faith, providing images that are safe, appropriate, and free of malicious content. The implementation of technical safeguards such as password-based access and additional moderation features should combat this to a certain extent but may impact scope in a negative way.

## Summary

Our project aims to create an open-submission digital photo frame that addresses common constraints like proprietary infrastructure and power limitations. By integrating a Raspberry Pi, e-ink display, and a secure web interface, we will implement collaborative photo uploads while maintaining password-based moderation. We assume stable hardware availability, reliable connectivity, and ethical user participation, with contingency plans if these assumptions fall through. Ultimately, our goal is a user-friendly, fully automated product that balances openness with essential safeguards.