

# B25 Flight Simulator Project

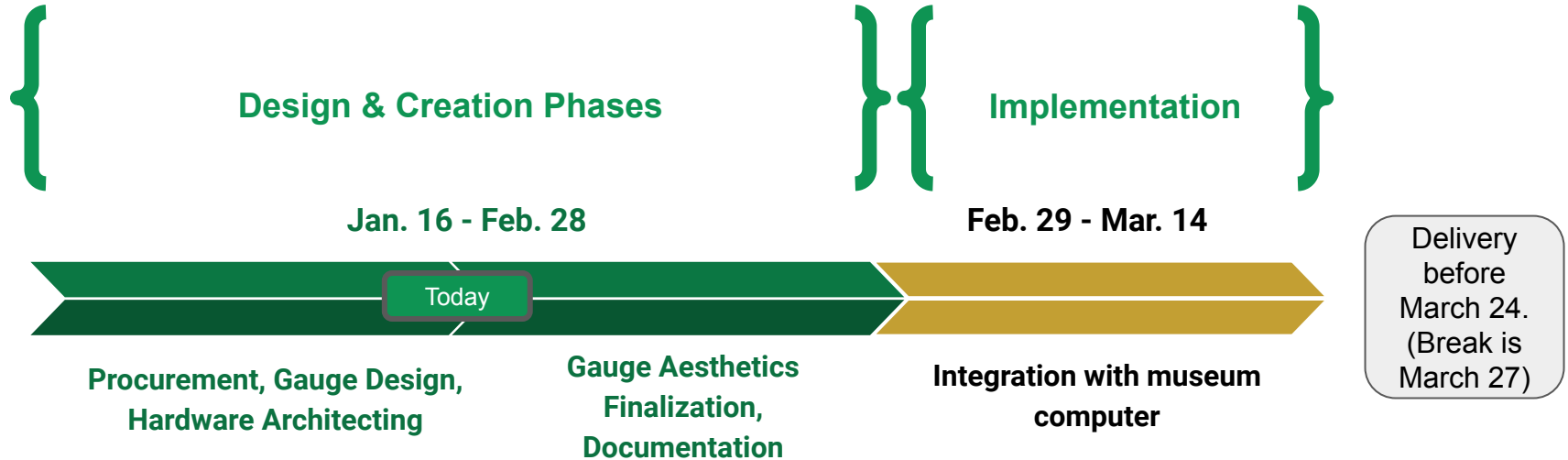
National Museum of WWII Aviation

Milestone #1 & 1/2

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# Project Phases



# Project Timeline

## Milestone #1.5

- Software environment
- Procurement of major hardware/tools.
- Selection of gauges complete
- Hardware architecture

## Milestone #3

- Gauge details finalized.
- Final report 75% done.

## Final Delivery

- Requirements validation.
- Electronic copies of files delivered.
- Poster rough draft completed.



## Milestone #2

- Hardware solution demo.
- Schematics
- Engine Util. gauges complete.
- Gauge graphics fine tuned.

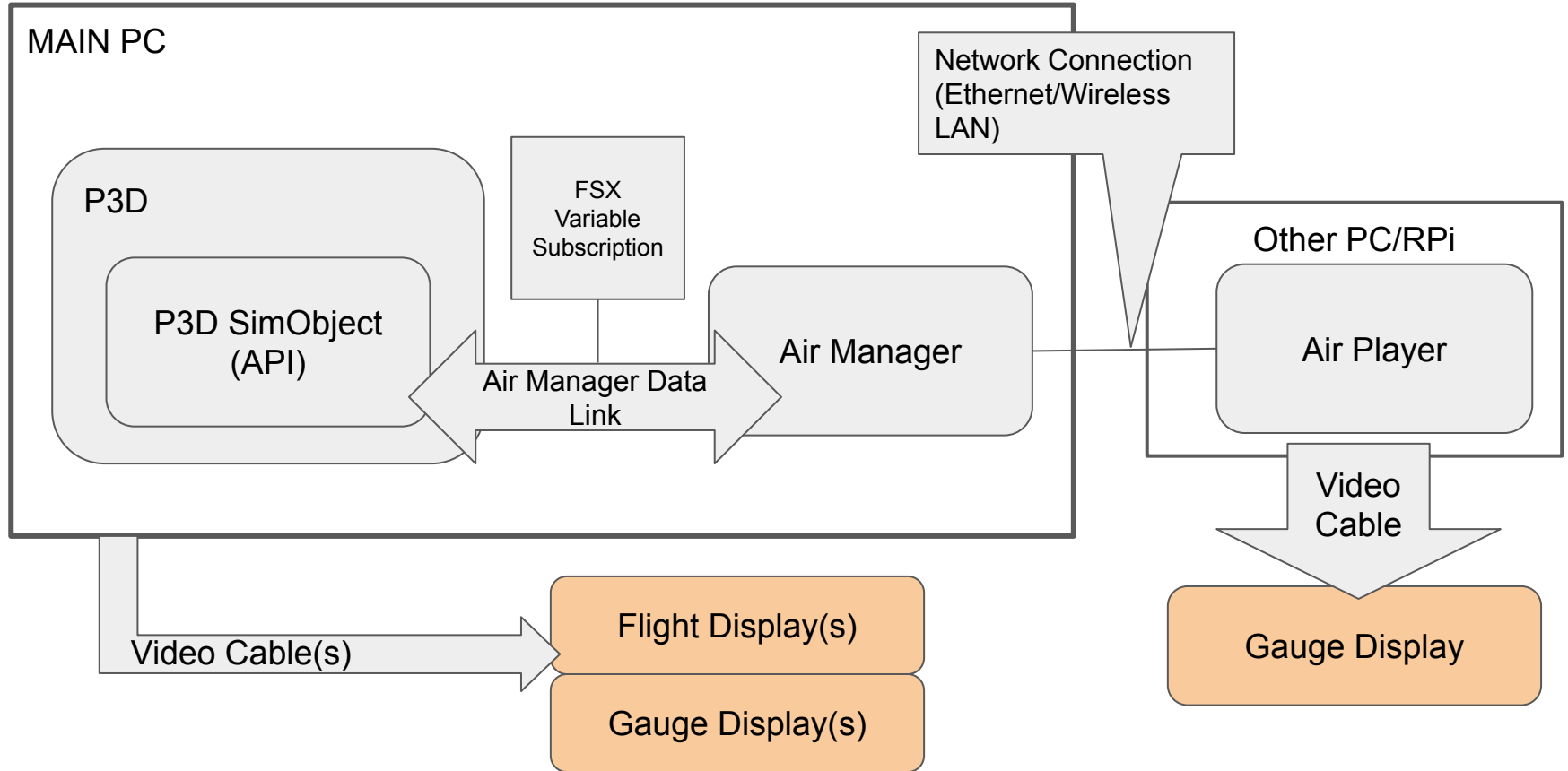
## Milestone #4

- Integration with museum computer complete.
- Final report completed.

# Current Accomplishments

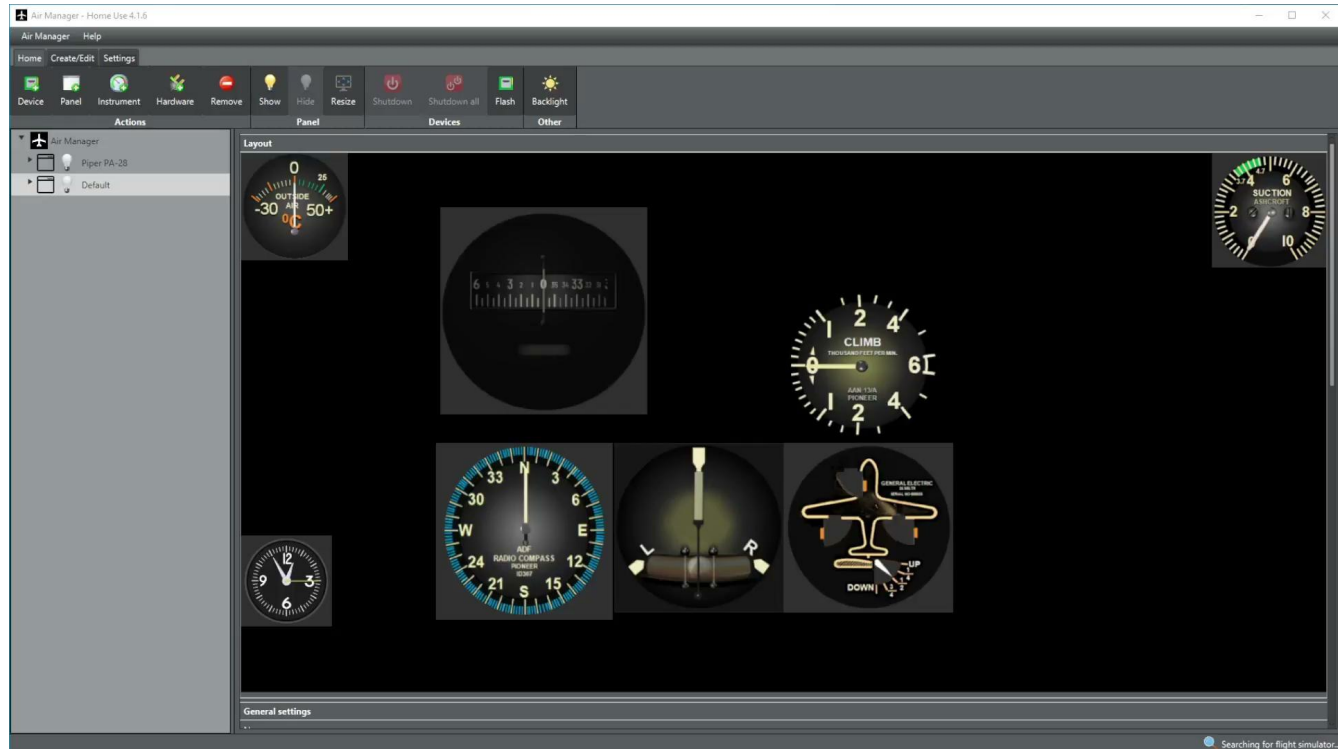
- Major equipment procurement completed
  - Development PC (team member loan).
  - Texture pack acquired.
- Software environment is setup
  - P3D, Air Manager & Air Player working on development PC.
- Team familiarized with Air Manager & P3D API.
  - Gauge development workflow formulated and formalized.
- Major gauges functional
- Hardware Architecture

# Software Environment



# Air Manager Demo

(Layout Config. Capabilities)



# Air Manager Demo

Same Gauge, Three Styles (RAF, B25-B). Time to Complete: Aprx. 2 hrs each

```
2 -- Senior Design, Sp 2023, Natl. Museum of WW2 Aviation - B25 Simulator Implementation
3 -- logic.lua file for B-25 Mitchell Flap Indicator Gauge
4
5 -- image files in ./resources (AM API by default will locate in that directory)
6 gear_down_img_file_str = "Flaps_Gear_Down(1).png"
7 gear_up_img_file_str = "Flaps_Gear_Up.png"
8 gear_tr_img_file_str = "Flaps_Gear_Transit.png"
9
10 -- reference positions
11 indc_home_x = { ["right"] = 200.5, ["middle"] = 126, ["left"] = 52
12 indc_home_y = { ["down"] = 133, ["transt"] = 93, ["up"] = 53
13 indc_home_tb = { ["gear position"] = indc_home_x, ["gear status"] = indc_home_y
14
15 ANIMATION_SPEED = 0.03
16 MOVEMENT_STYLE = "LOG"
17 SCALE_INDC_IMGS_X = 40.2
18 SCALE_INDC_IMGS_Y = 40.2
19
20
21 GearDownR_img = img_add gear_down_img_file_str, 200.5, 133, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
22 GearDownM_img = img_add gear_down_img_file_str, 126, 134, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
23 GearDownL_img = img_add gear_down_img_file_str, 52, 134, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
24
25 GearTranstR_img = img_add gear_tr_img_file_str, 200.5, 93, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
26 GearTranstM_img = img_add gear_tr_img_file_str, 126, 93, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
27 GearTranstL_img = img_add gear_tr_img_file_str, 52, 93, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
28
29 GearUpR_img = img_add gear_up_img_file_str, 200.5, 53, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
30 GearUpM_img = img_add gear_up_img_file_str, 126, 53, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
31 GearUpL_img = img_add gear_up_img_file_str, 52, 53, SCALE_INDC_IMGS_X, SCALE_INDC_IMGS_Y
```

Console Variables Watch Call stack

FSX (Flight Simulator X)

Filter on name: X

<input checked="" type="checkbox"/>	GEAR LEFT POSITION - percent over 100	0.000000	Send
<input checked="" type="checkbox"/>	GEAR MIDDLE POSITION - percent over 100	0.000000	Send
<input checked="" type="checkbox"/>	GEAR RIGHT POSITION - percent over 100	0.000000	Send
<input checked="" type="checkbox"/>	TRAILING EDGE FLAPS LEFT PERCENT - percent over...	0.000000	Send

Console

No message

# Gauge Showcase

(Gauge Behavior, P3D SimObject Data Connection -> Air Manager)

```
design, SP 2025, Natl. Museum of WW2 Aviation - B2S Simulator Implementation  
a file for B-25 Mitchell Radio Compass
```

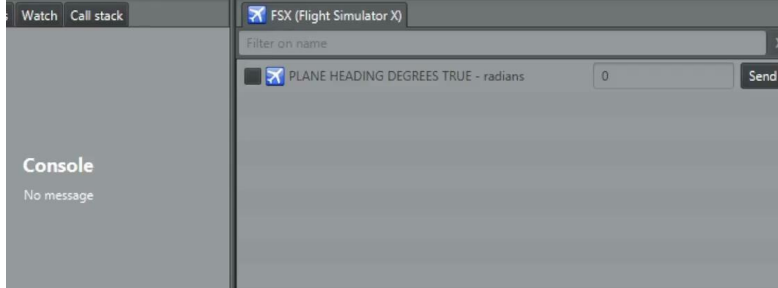
```
_img = "background_grey.png"  
"needle2.png"  
= "rad_cmp.png"
```

```
= img_add fullscreen background_img  
g_add fullscreen Rad_gauge  
g_add measure,205,235,nil,nil
```

```
dle, -90, 50, 15,0)
```

```
AD_callback hdg  
(hdg*180) / math.pi  
Needle,hdg-90, 50, 15,0, "LOG", .03, nil)
```

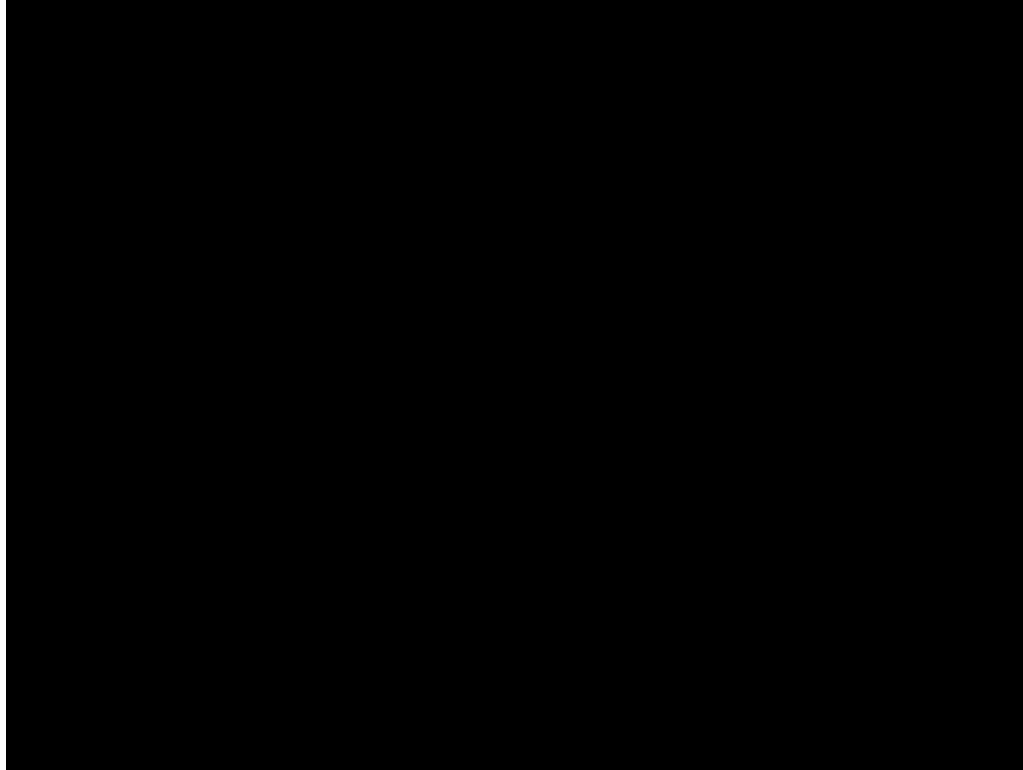
```
le_subscribe "PLANE HEADING DEGREES TRUE", "Radians", RAD_callback
```





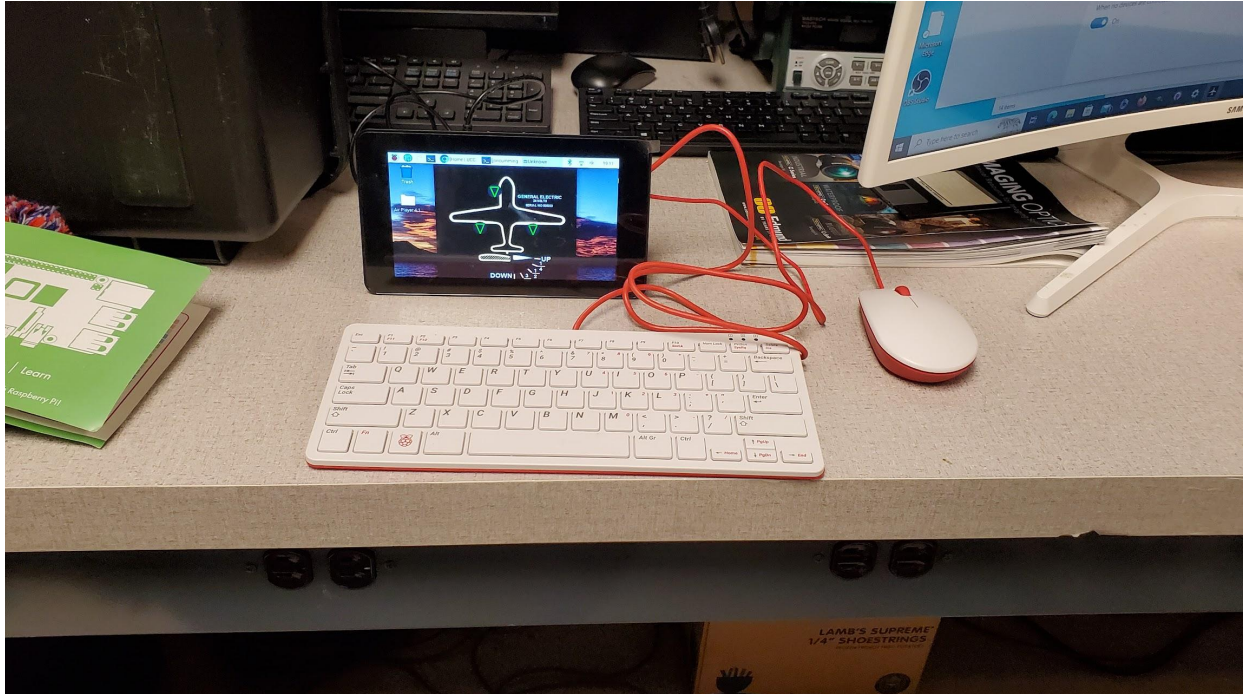
# Gauge Showcase Flight Indicator

(Gauge Behavior, P3D SimObject Data Connection -> Air Manager)



# Air Player Setup (RPi)

Via Local Area Network (Wireless), Mini Monitor



# Multi-Monitor Setup



# Next Milestone

- Hardware Demo
  - With:
    - Accompanying electronics schematics
    - Associated hardware interface software scaffolded
- Most Remaining gauges
  - All save for:
    - Autopilot related gauges

# End of Project Deliverables

- Gauges working on a museum computer.
- Final Report, on paper and electronically delivered.
  - Design Description and Extension/Integration guide
  - User manuals
  - Schematics
  - Copies of course deliverables (copy of **poster** and copy of final **PowerPoint**).
- Digital copy of code files and graphics that were used.
  - Delivered on USB drive and/or a online repository.

# Questions & Discussions

**UCCS**