

Team:

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Thanks to William Augustine With Design

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Problems to Solve

Modern architectural signage is expensive, is out of step with today’s dynamics and provides limited static information. Examples include the name plates outside of faculty offices with appointment level/job title and name, but have limited information about the occupant and/or office location itself. This is evident by faculty posting additional information themselves. All dynamic information requiring a large cost to keep current for traditional architectural signage.

Solution and Approach

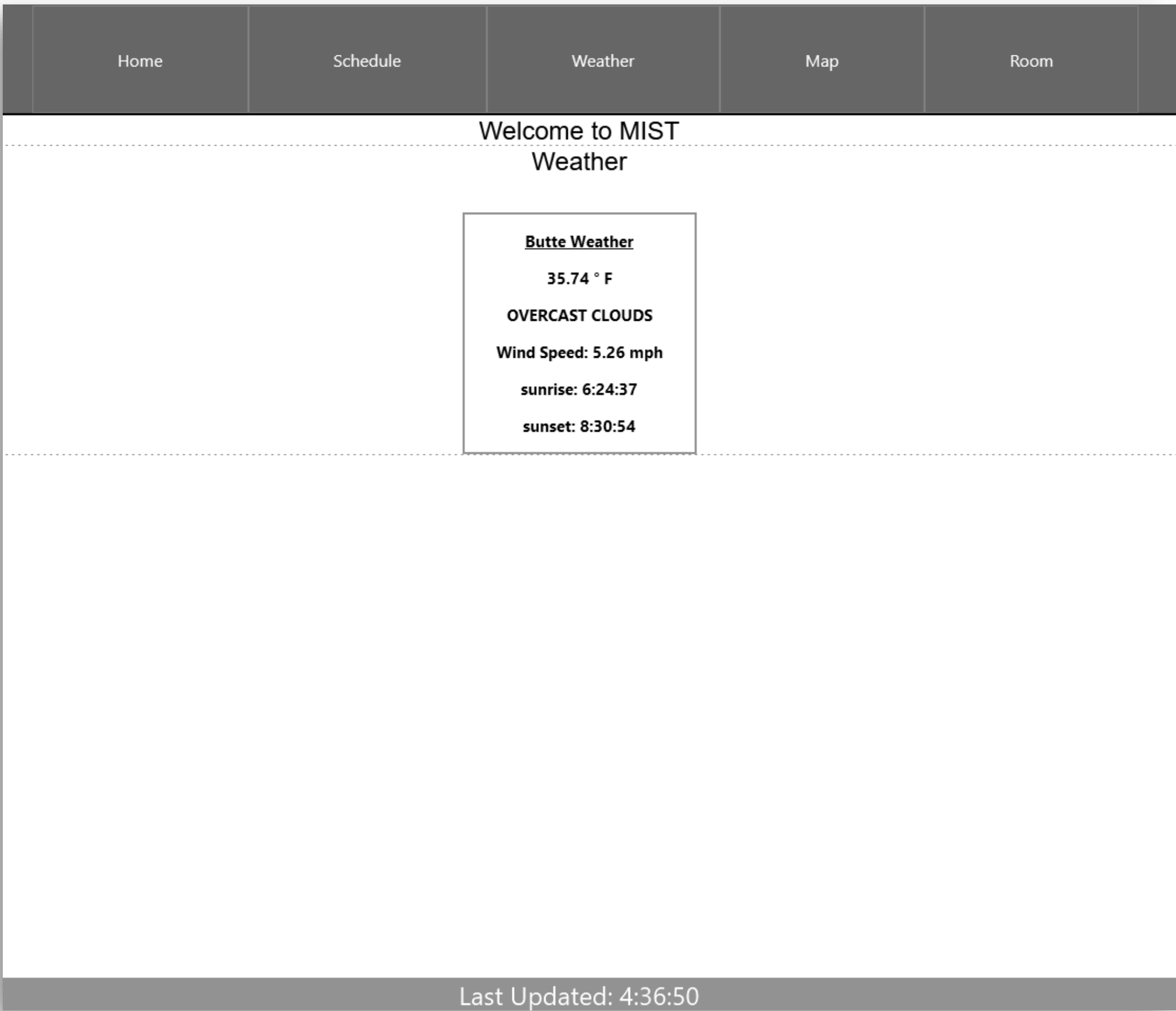
One solution is to make use of open hardware and software in a multi-tiered software architecture to create an information proxy that drives information to be displayed on ePaper that replaces architectural signage. This information proxy is a user’s portal into an interactive collection of information services that can be reached through the ePaper display device. Such a system can display static information, but also accommodate change easily and be a conduit for individuals to obtain a wealth of information through the information portal.

Software

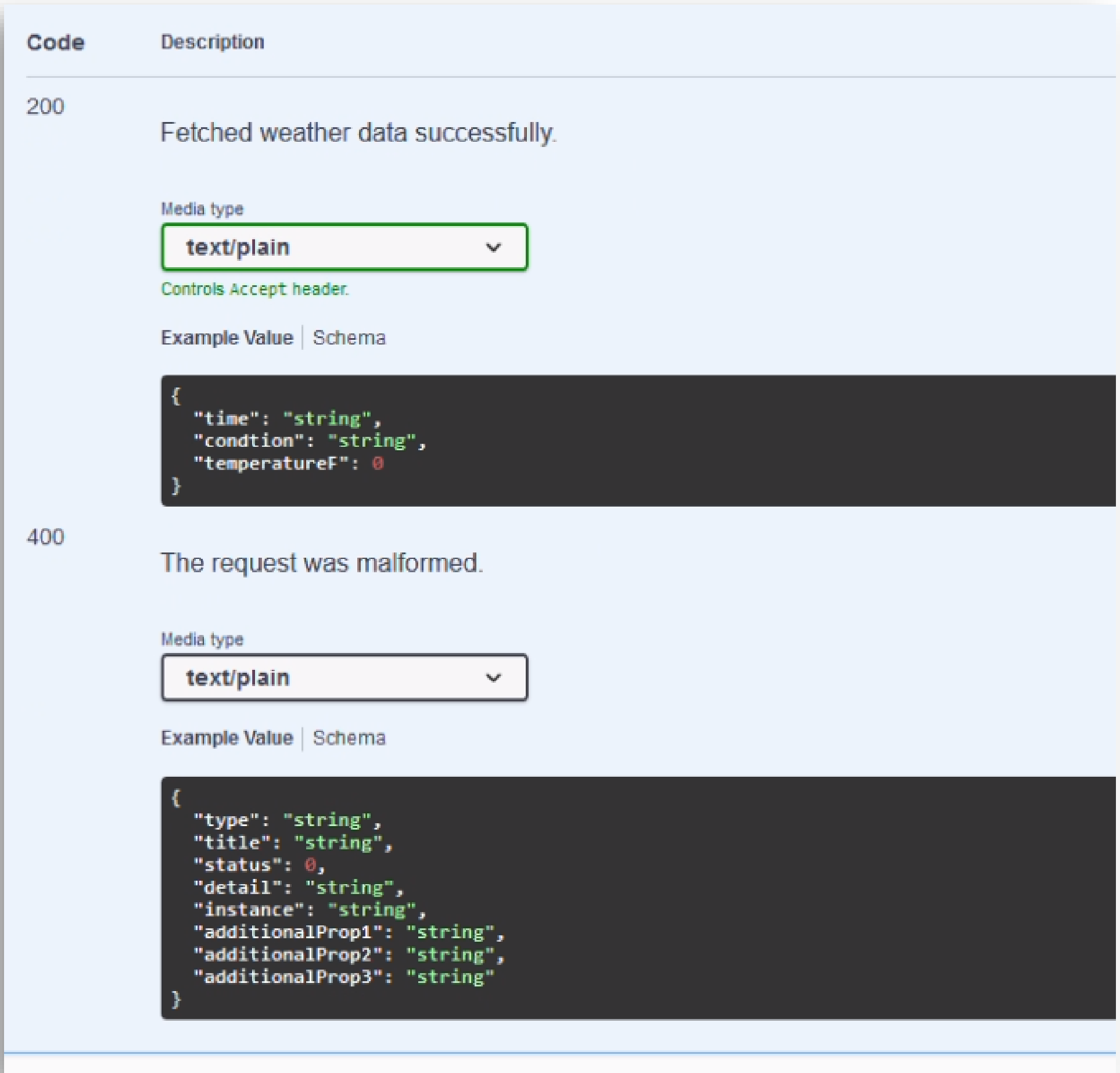
- C#
- React
- Material UI
- Embedded Systems Endpoints



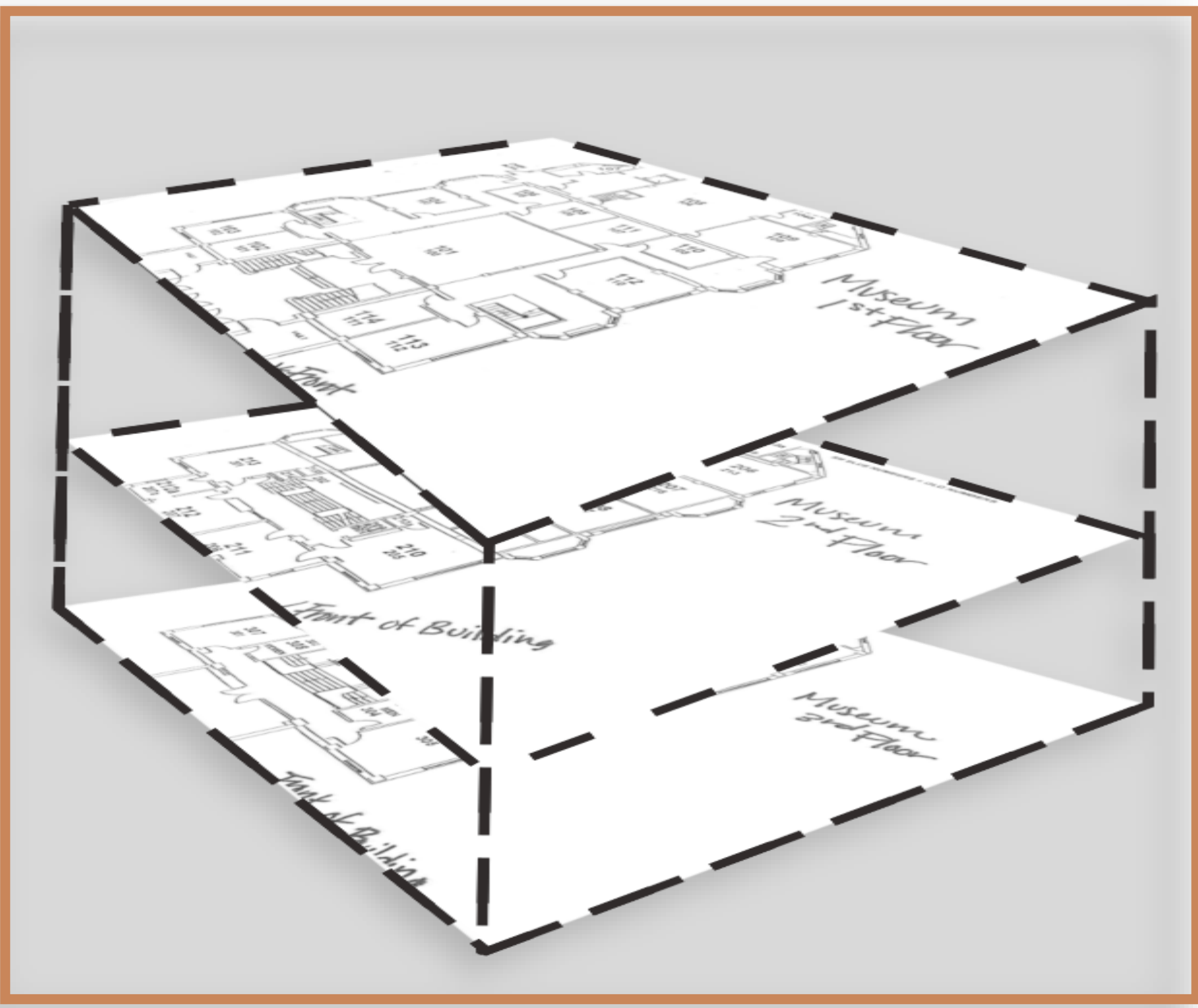
Mountain Information  
System Terminal



Display of weather gathered weather information in Grayscale



Example structure of an endpoint, gathered from OpenWeather.org

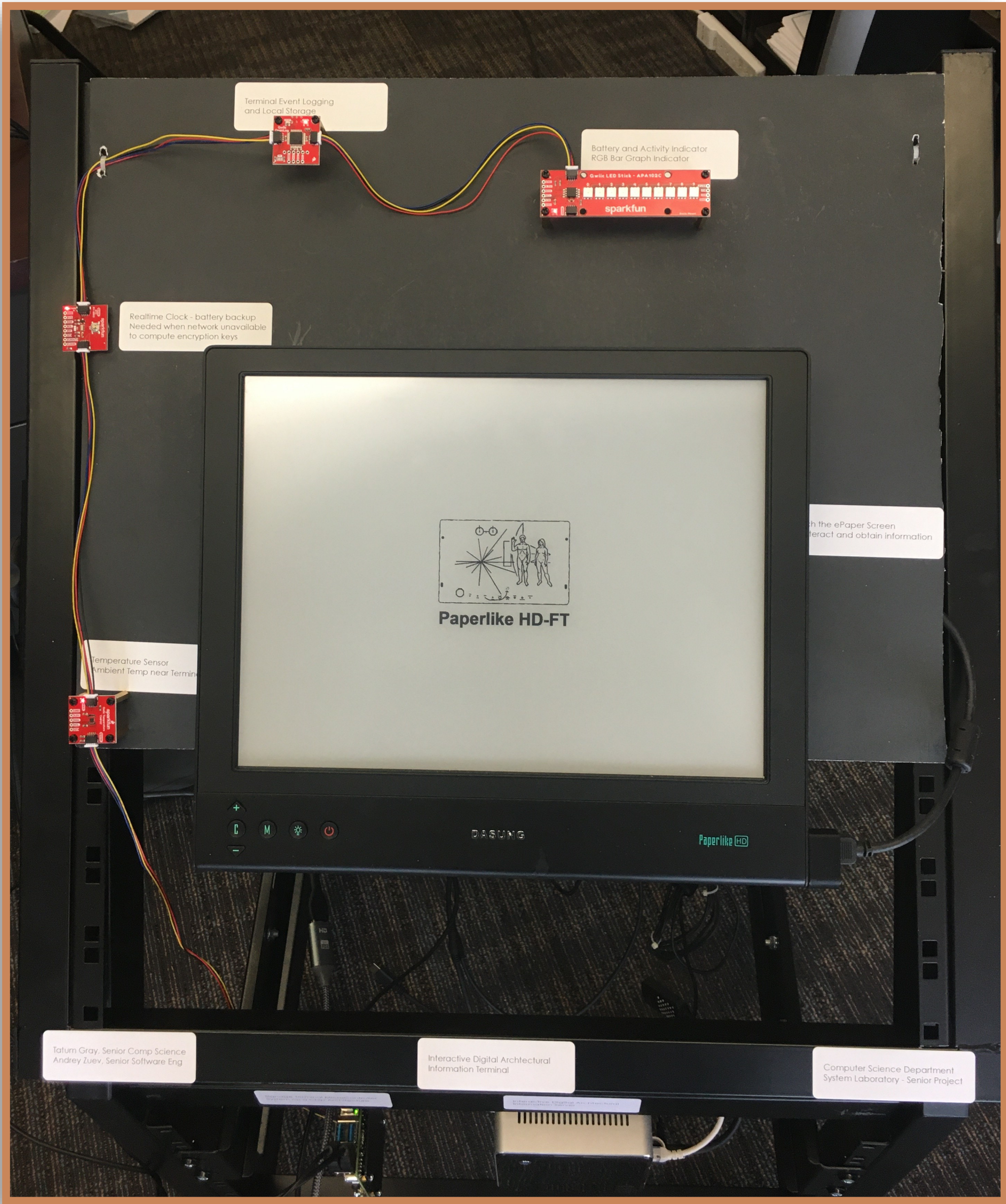


Future Expansions

To add onto the existing functionality of the terminal, we can add a logging system that helps identify what was done on a specified device. This is especially useful considering expansion throughout campus where usage statistics can help determine which features are useful in specific areas of campus.

Specific implementations of MIST can its utility in specific areas on campus. For instance a display showing the current contents of a library bookshelf on a search query. Or perhaps a specific terminal designation for the dormitories to see what campus buildings are currently open or what events are occurring within the week.

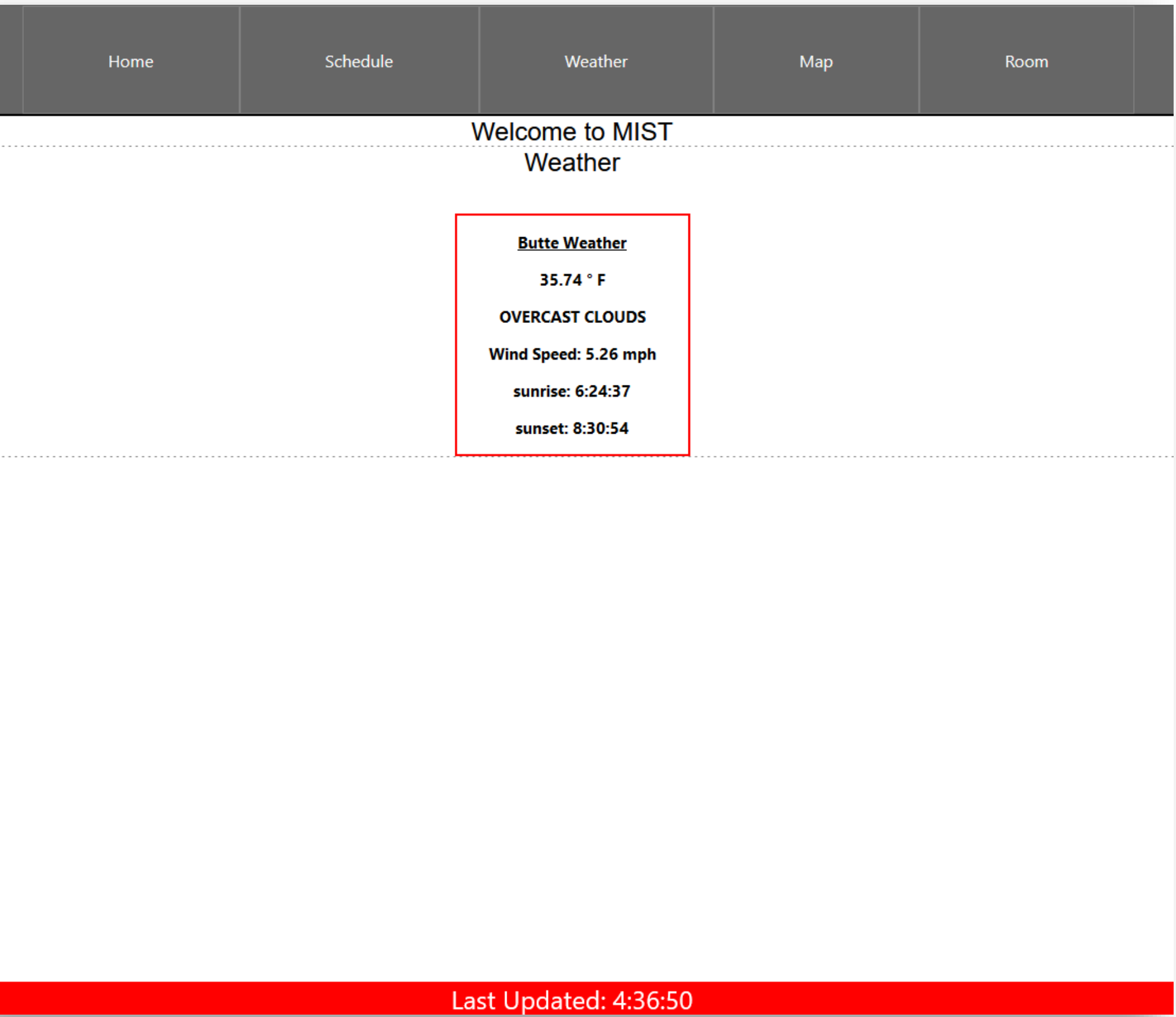
Above all, since these terminals would be spread throughout campus, they could have the added function of displaying emergency information. This would be received via a lowrang frequency to the server and distributed throughout campus. With this implementation, from any terminal, threat, building, and safety measures to take will overwrite the current display



Cost at Scale*	
*Funding by Montana Tech Foundation	
Budget	\$2100
Raspberry pi	Variable
Screen	Variable
Mini-NUC	\$850
Embedded Sys-tems	~\$50
Complete Rack Setup,	~\$310
Total Spent	~\$1580

Hardware

- NUC MiniPC Intel i7 (4 core) , 500GB SSD, 16GB RAM as Server
- Dasung e-Ink PaperLike 3 HD
- Raspberry Pi 4 (4 core), 4GB RAM
- RV-8803 Qwiic Real Time Clock Module
- APA102C Qwiic LED Stick
- OpenLog Qwiic Loggin Module
- TMP117 Qwiic Tempurature Module
- Qwiic Shim for Rpi
- Adjustable Studio Rack Trolley



Example of tri-color display view