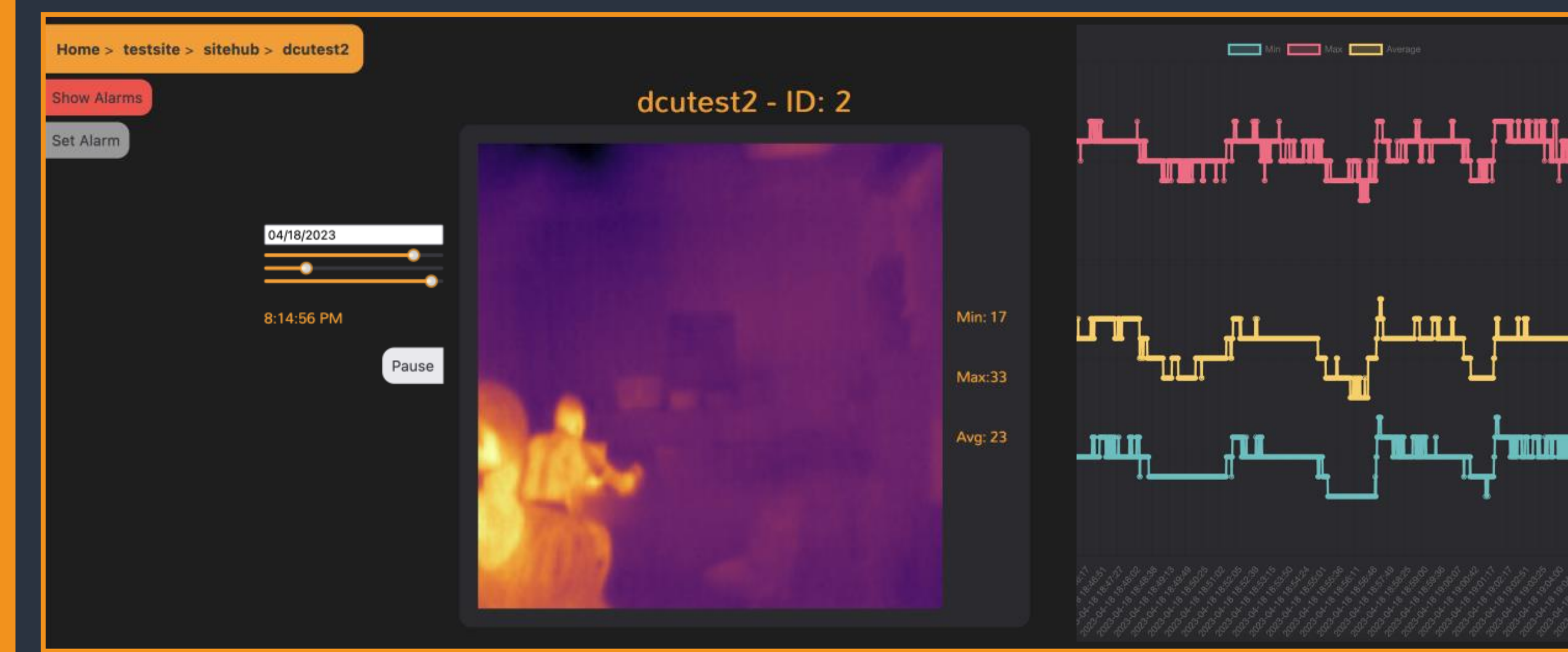


Lava Lamp System

THE FIREFLIES: Collin Graham, Matt King, Marci Milligan, Ivan Rodriguez, Will Snider, Tucker Travins

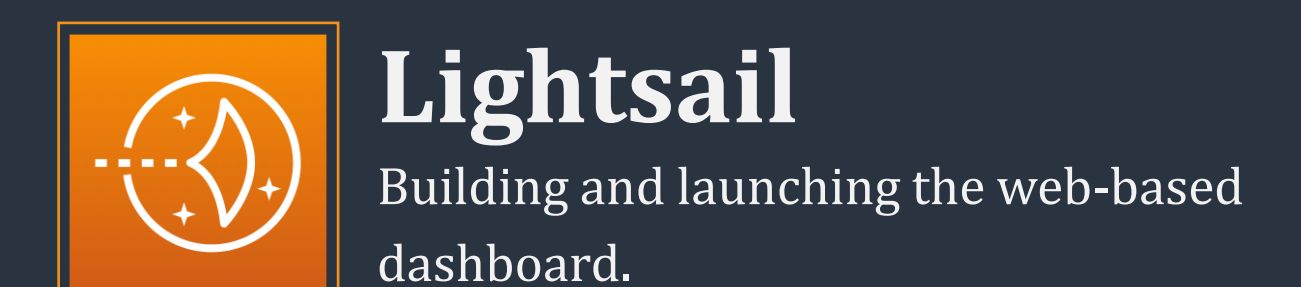
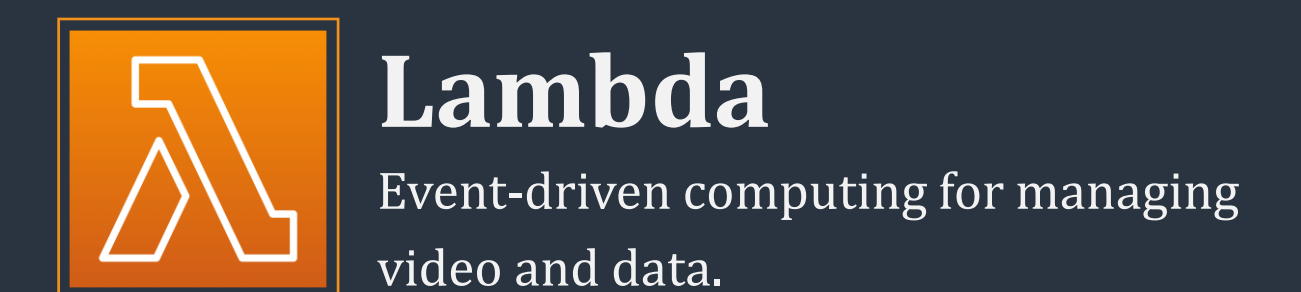
Sponsor: Amazon Web Services



Dashboard:

- Graph of average, minimum, and maximum temperatures
- Displays live, paused, or historic video feed
- Create and view alarms (triggered by hazardous temperature conditions)
- Hosted using Nginx web server

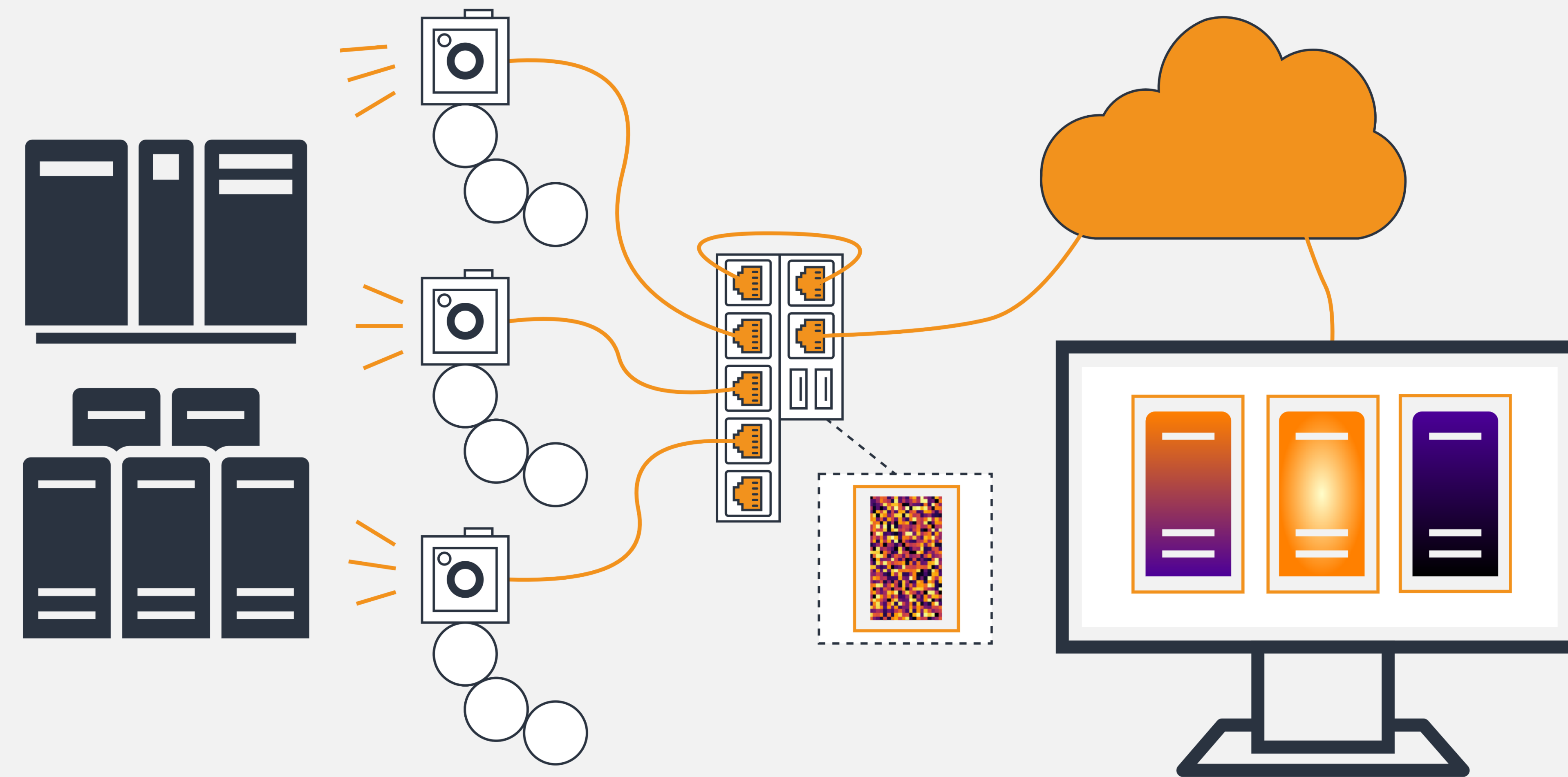
Cloud Backend Services:



Development Journey:

The speed of progress rose and fall, as expected, but setbacks were mitigated by contingency plans and frequent communication with the customer. Development pace benefitted from specialization and working in parallel.

Expandable infrared camera system that monitors and displays thermal imagery.

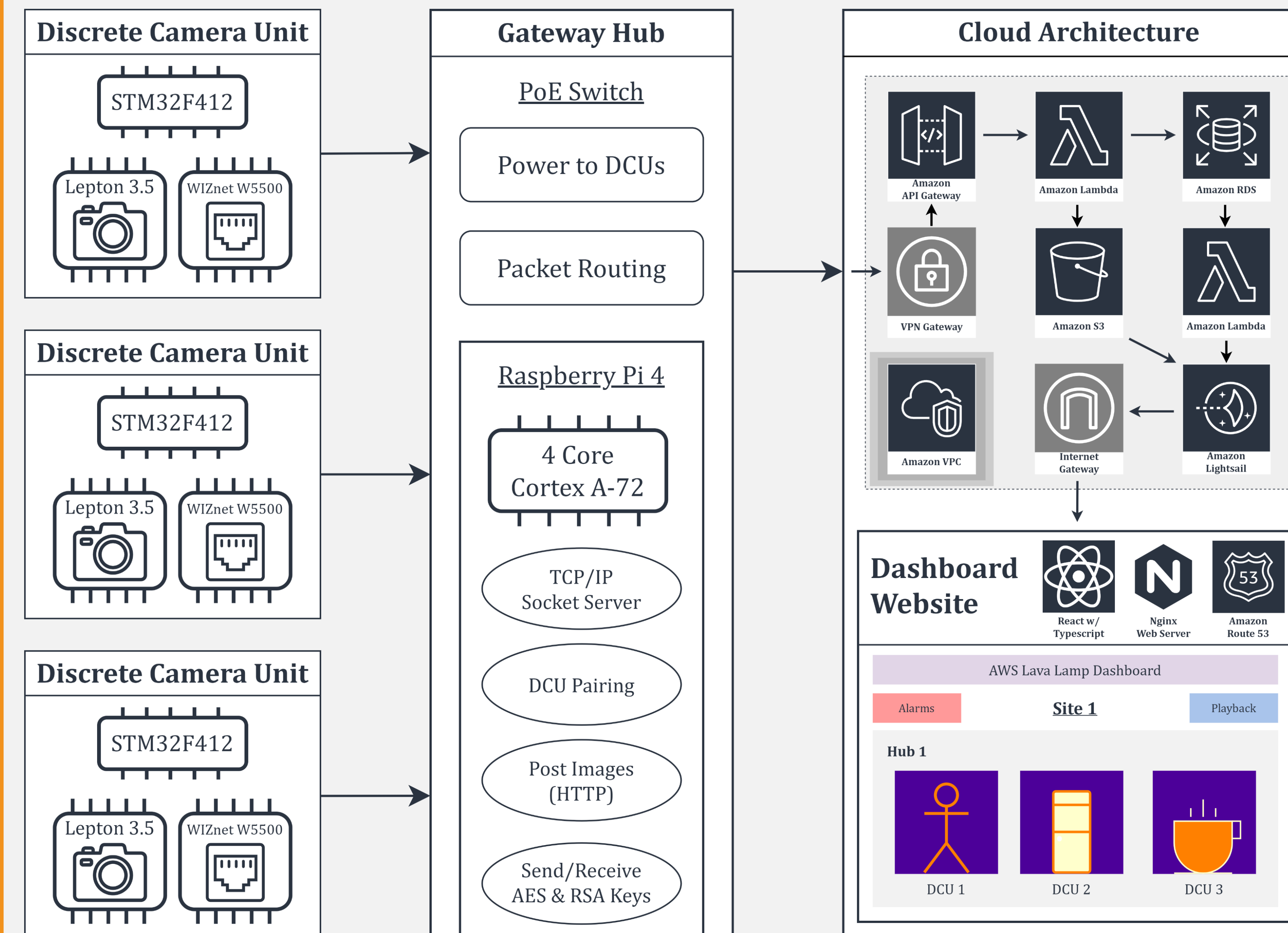


Gateway Hub:

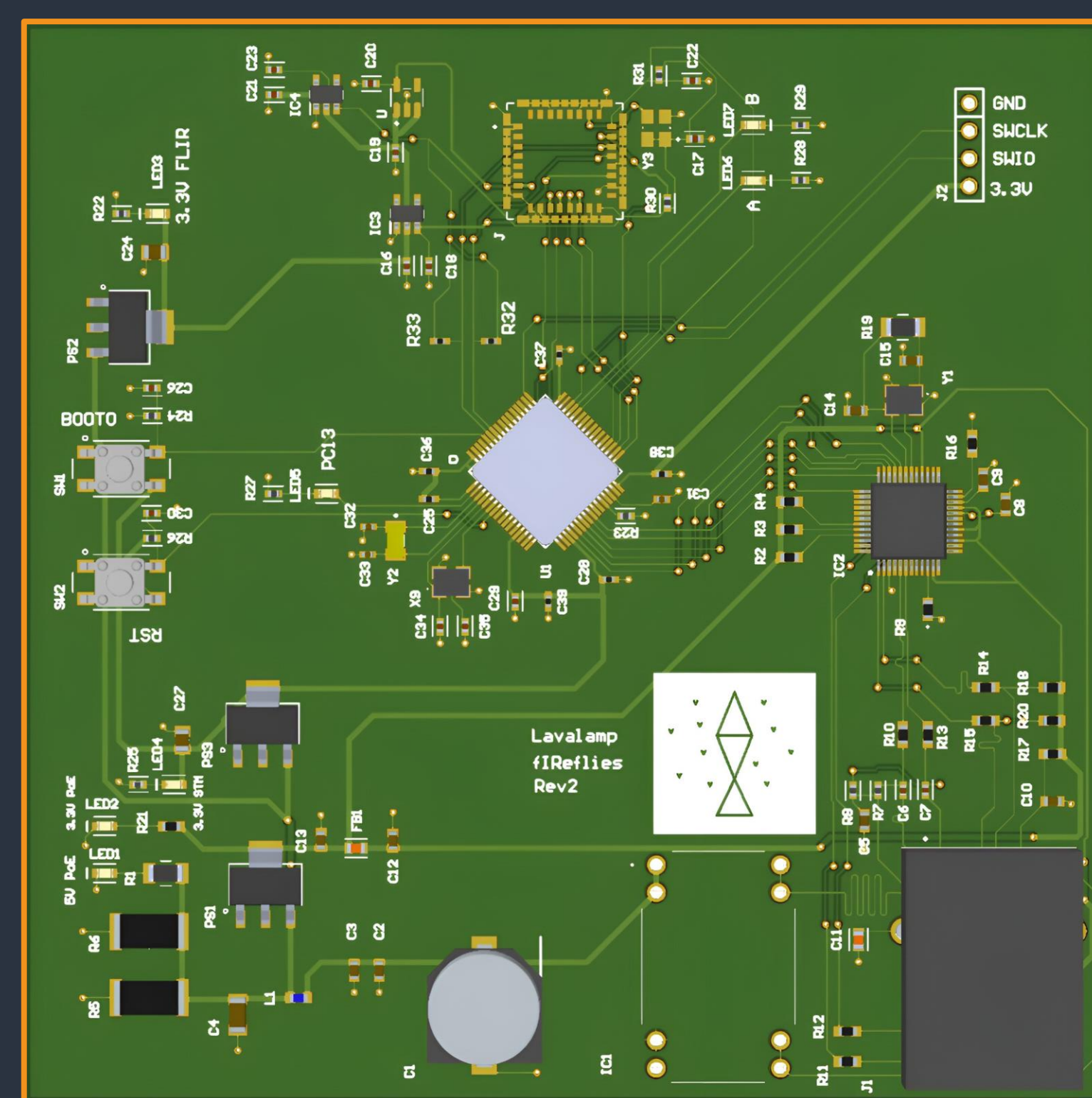
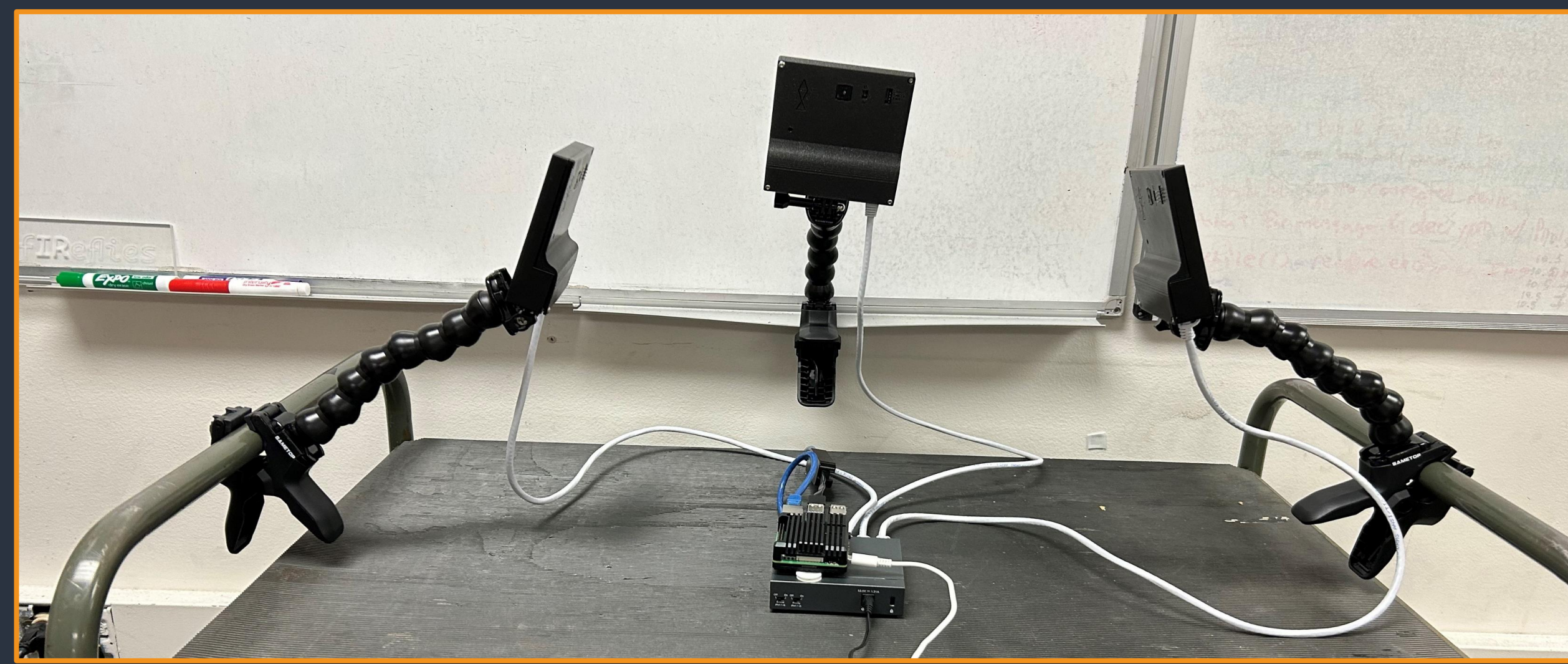
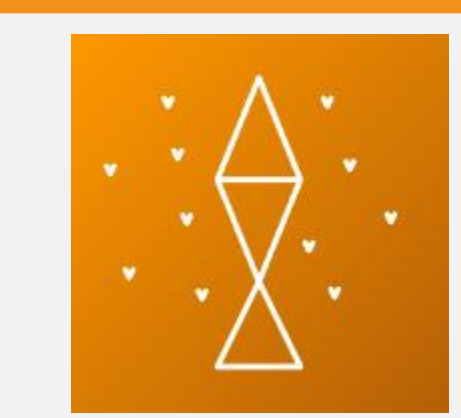
- Forwards video feed to cloud
- Provides PoE to DCU network
- Approves new connections

Discrete Camera Unit:

- **FLIR Lepton 3.5:** 160x120 infrared video (≈ 4 fps)
- **WIZnet W5500:** Power over Ethernet & TCP/IP
- **STM32F412:** Data encryption & device management



Acknowledgements: Mason Bell, Val Gordon, Harout Hedeshian, Adam Chehadi, Eric Bogatin, Tyler Davidson, Gabriel Altman, John Lettang



Encryption:

- All video frames are immediately encrypted upon capture
- Video is decrypted when it enters the cloud database