

# A Study of Internet of Healthcare Things (IoHT) to Fight COVID-19 and Future Public Health Crises in Wisconsin

Michael Du Mez | Riley Asp | Brock Holtschlag | Caleb Gullickson | Jacob Mahoney  
Chase Heim | Collin Shultz | Corner Shultz | Charles Carlson | Logan Koneczny

Advisors: Holly Yuan, Son Nam Nguyen, Yuan Xing, Brandon Cross, Sam Wosika, and Greg Garneau,  
University of Wisconsin – Stout



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## Project Description

COVID-19 has caused a profound disruption to the U.S. healthcare industry. It reveals the challenges the sector is currently facing as well as new hurdles to overcome. Many technologies have been implemented to fight against COVID-19.

One of these technologies is the Internet of Healthcare Things (IoHT), which has used latest technologies in smart biosensors, wearable devices, Internet of Things (IoT), cloud computing, machine learning (ML), and artificial intelligence (AI) to revolutionize healthcare with point-of-care (PoC) diagnostics and enabling the next generation of patient-centric personalized health care.

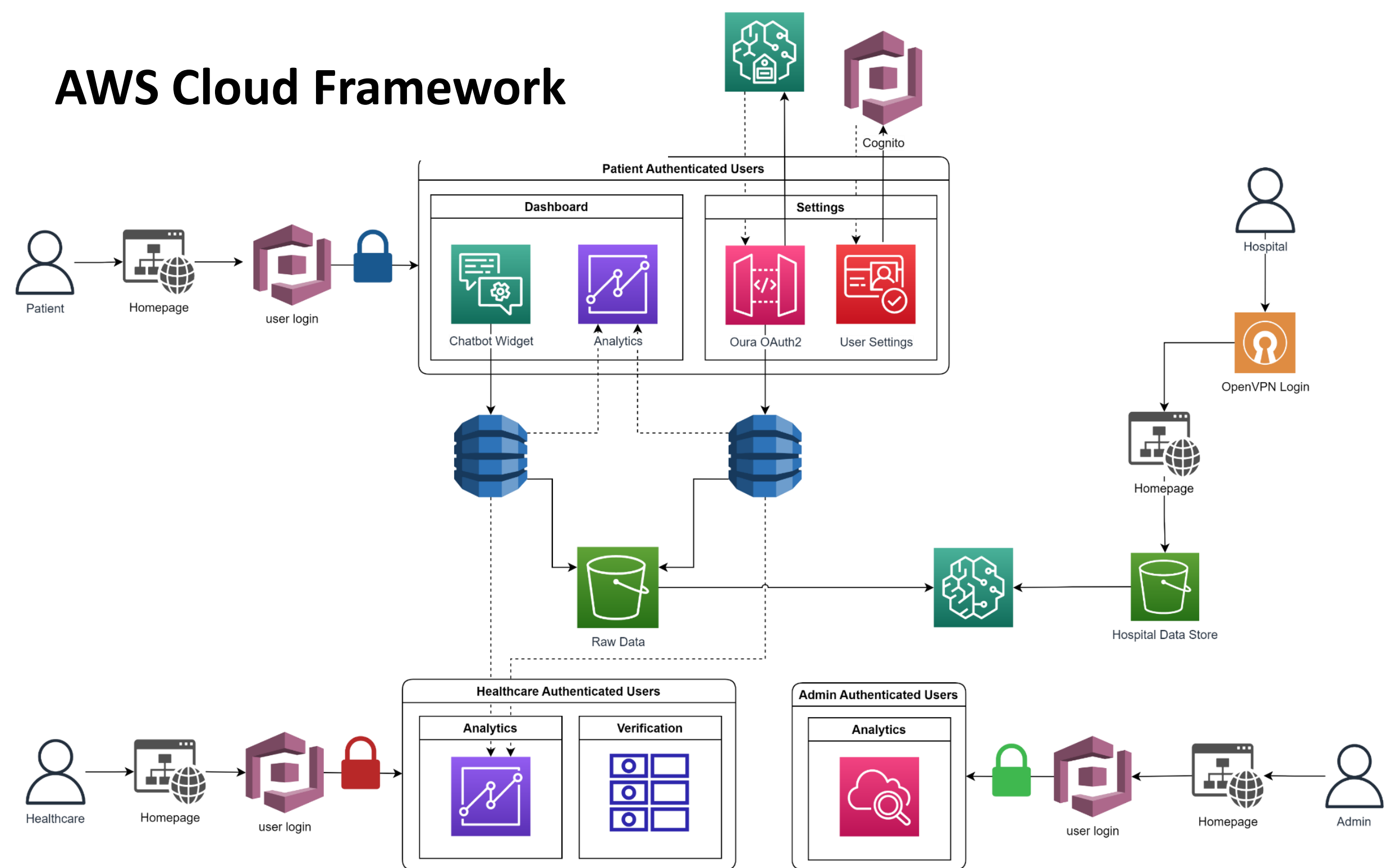
## Objectives

1. Conduct a survey and review IoHT architecture, security, privacy, and applications during the COVID-19 pandemic.
2. Simulate a secure IoHT framework and workflow with smart biosensors, wearable devices, disinfectant drones, medical/delivery drones, proximity tracing, robots, using cloud computing, machine learning, and artificial intelligence.
3. Collaborate with the Thompson Center and the healthcare sectors to deliver workshops, seminars, and panel discussions to further discuss and evaluate privacy, security, opportunities, challenges in the IoHT, and propose some productive solutions to overcome or confront the future healthcare crisis.
4. Create training materials for Healthcare Cybersecurity Workforce and initiate a Cybersecurity Healthcare Certificate program by creating "Wisconsin Digital Healthcare Pathway" with UW System schools, Wisconsin Department of Health Services, Wisconsin Partnership Program, and IT & cybersecurity industry

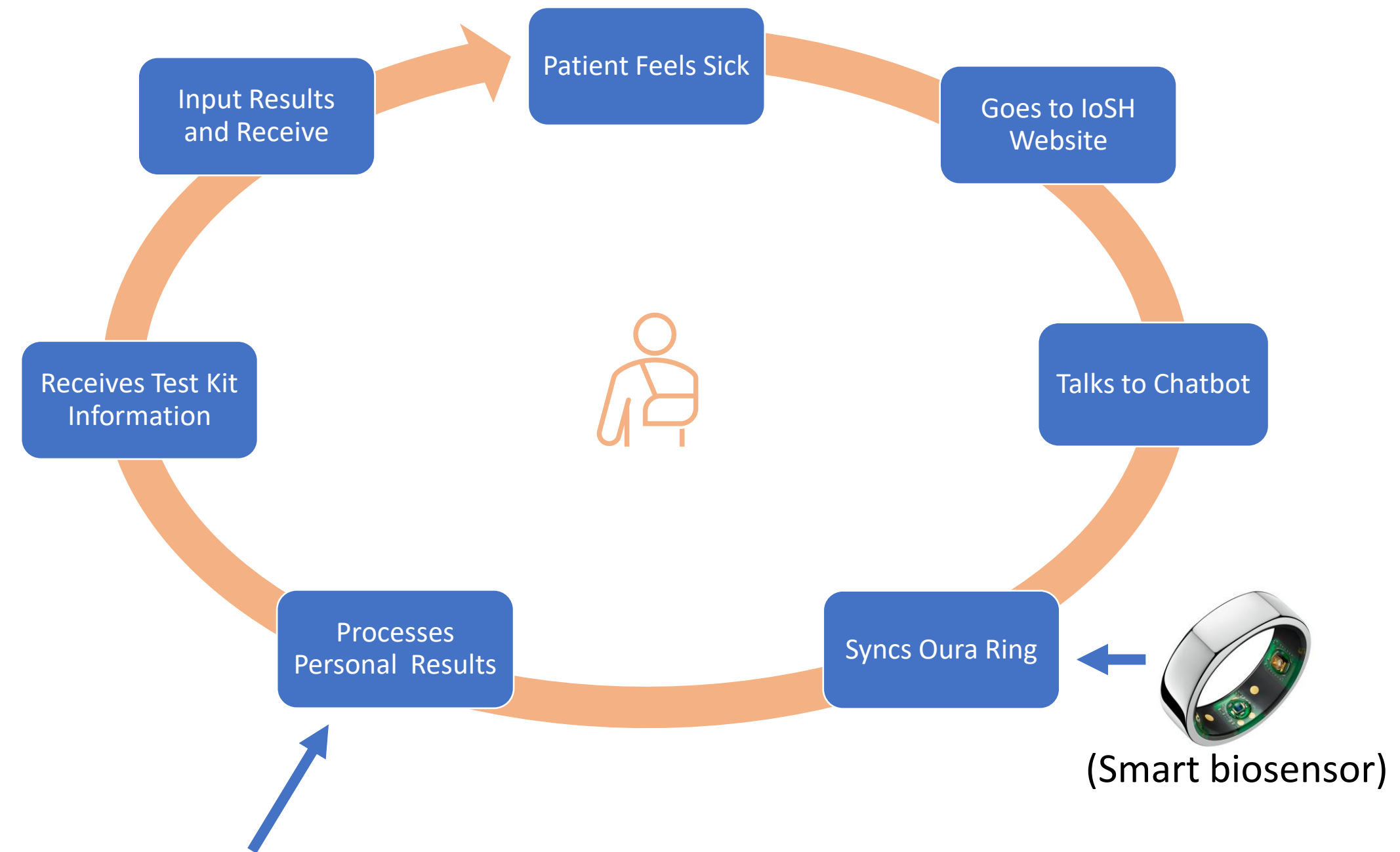
## HIPPA Compliance

- Patients have full control of all personal medical data
- Encrypted data at rest and in transit
- VPN access and TLS encryption for web data transport
- Extensive logging through CloudTrail, CloudWatch, and Events
- Continual auditing and safety checks

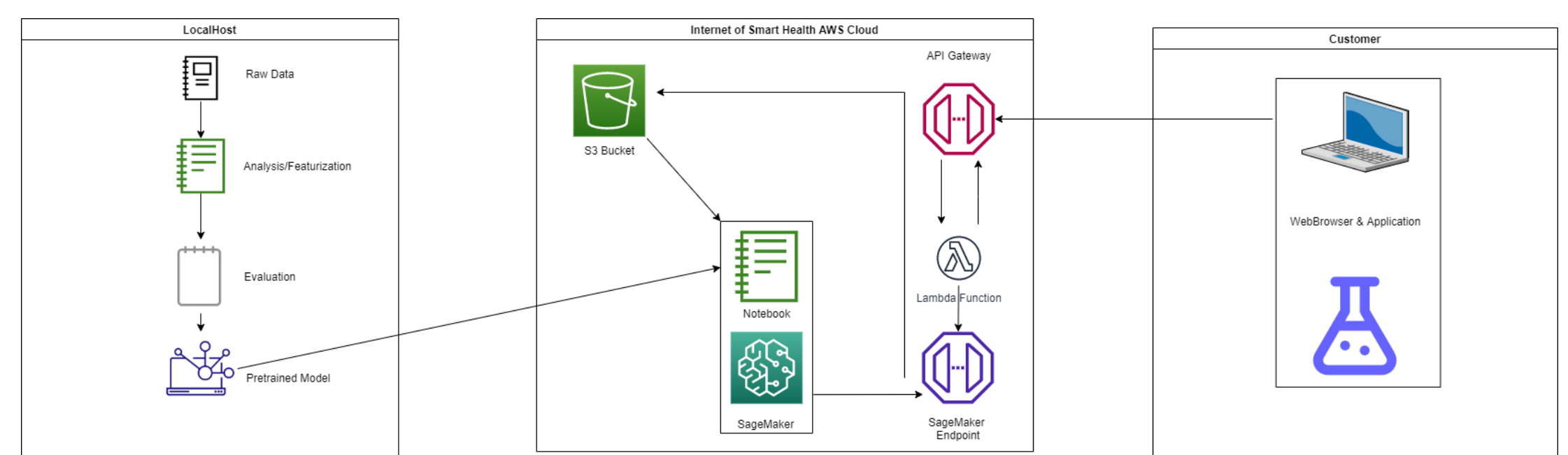
## Implementation



## Dashboard Workflow



## Health Status Inferencing using ML



## Security Framework Design

Zero Trust model • Cloud Security • Remote Access Security

