POT (平安通) Health Monitoring Application

Leveraging REST APIs and WebSockets for Real-Time Elderly Care

CST8916 – Group 10

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Introduction

"POT" (平安通) is a health monitoring system that's a joint project between the Macau government and CTM (Companhia de Telecomunicações de Macau), my previous employer.

We use wearable tech to keep an eye on people's health especially the elderly in real time.

(Social Welfare Bureau, n.d.)

(*CTM*, n.d.)

System Structure

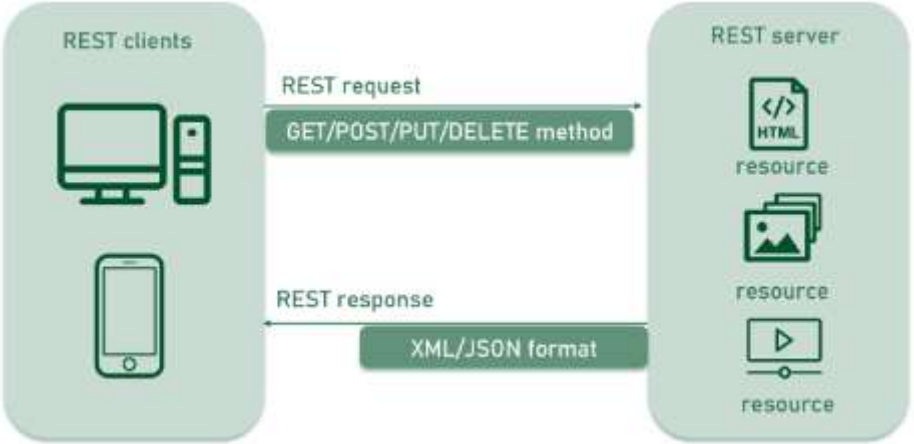
For the **POT (平安通)** health monitoring system, we've built a **hybrid architecture:** using **REST APIs** for data management and **WebSockets** for real-time communication.

For the Operation team and Monitoring Center working on the project:
Management front-end <==REST APIs==> Microservices (management microservice)

For the users wearing the devices
Wearable Devices <==WebSocket==> Microservices (device connection microservice)

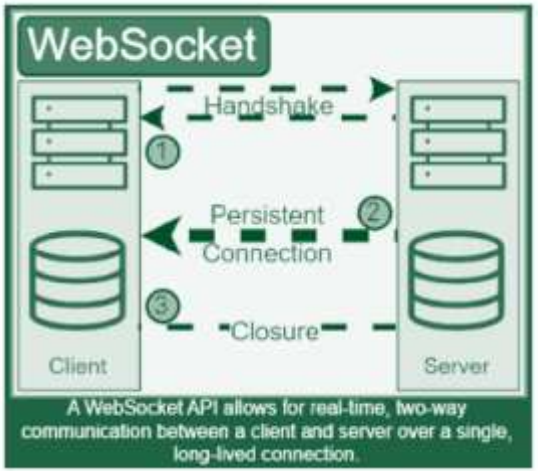
REST APIs for Management Platform

•In the POT, we use a REST API to handle data requests and updates between the management front-end and our microservices.



WebSockets for Wearable Devices

In our POT (平安通) app, we use WebSockets
to handle real-time data
between wearable devices and our system.



Benefits of Our Hybrid Approach

Our hybrid approach leverages the strengths of both **REST APIs** and **WebSockets** to optimize our system.

REST APIs are used for the management front-end to communicate with microservices, handling everyday data tasks easily with lots of community support.

Meanwhile, **WebSockets** manage communication with wearable devices, allowing us to monitor health data in real time and send instant alerts.

This mix boosts performance, scales smoothly as we grow, and makes it easier for our team to develop and maintain the system.

Conclusion

By combining REST APIs with WebSockets, the POT system effectively manages both reliable data handling and real-time communication.

This hybrid approach ensures high performance, scalability, and the ability to respond instantly to critical health events, perfectly aligning with our goal of providing a safe and responsive health monitoring solution.

Reference

CTM. (n.d.). *Companhia de Telecomunicações de Macau* https://www.ctm.net/en-US/person/index.html
Social Welfare Bureau. (n.d.). *Social Welfare Bureau*. https://www.ias.gov.mo/en

Thank You All