

Semester Project 3

WiFi2BLE REST API

Intro v2

Semester project: Distributed Software Systems with Embedded Elements

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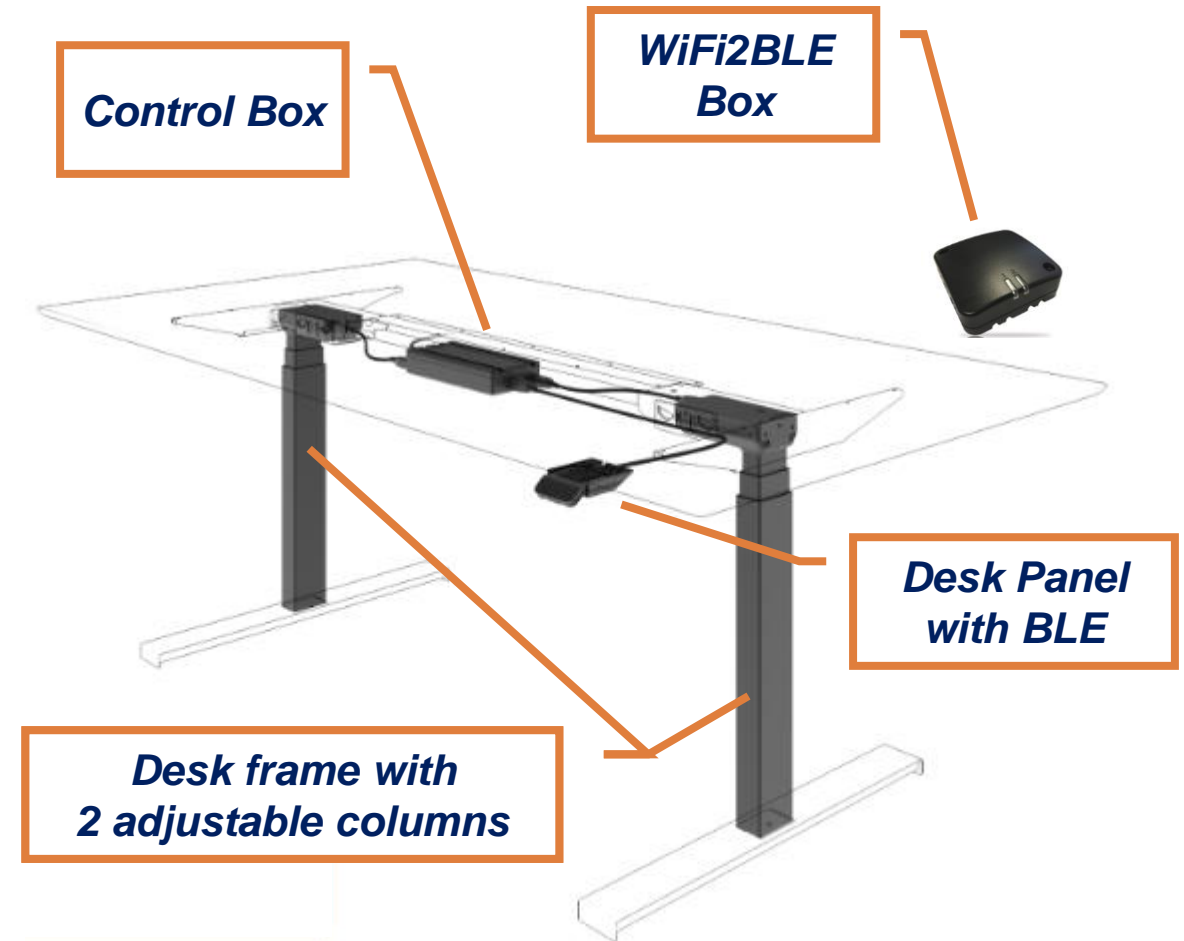
Generated by AI

Project Case Study: Desk Usage Supervision

- Obtain, visualize and analyze desk usage data for health, occupancy and maintenance
- Motorized desks are commonly used in office spaces as they can improve user working comfort
- Greater gains could be achieved by learning from the desk data, for example about the desk moving distance and frequency

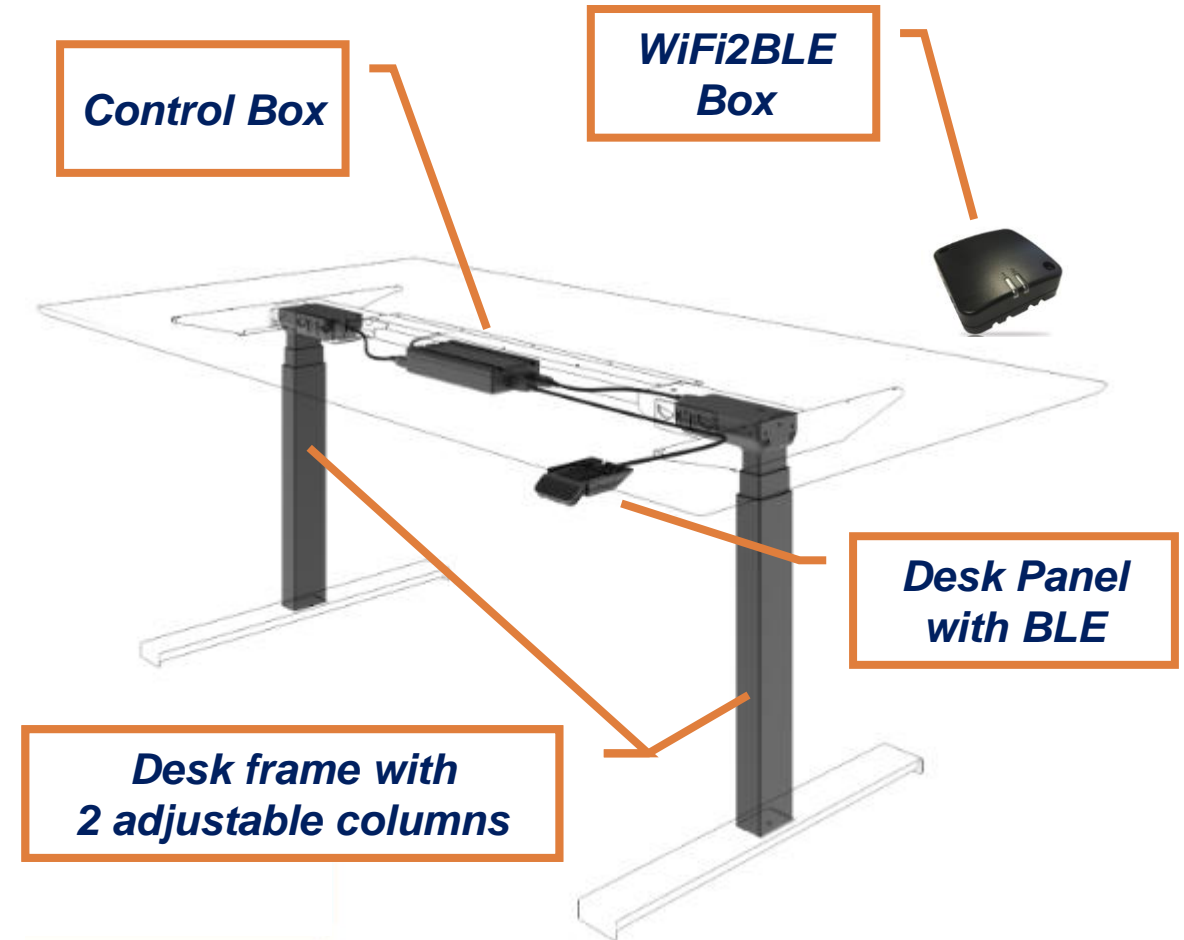
Desk System Operation

- Desks columns are controlled by the intelligent Control Box that is connected to the Desk Panel
- The desk panel accepts user commands to adjust desk height up and down
- The WiFi2BLE box exposes desk information over a Wi-Fi by translating the desk Bluetooth Low Energy (BLE) protocol to a Web API
- This allows for monitoring and controlling desks remotely
- Desk Panel has as built-in anti-collision sensor, display, and storage of favorite positions 🤖



Web API Data

- Number of desks connected to WiFi2BLE box
- Desk ID, Name, Manufacturer
- Position
 - Get and Set
- Speed
- Status
- Last errors with timestamps
- Activation counter
- Sit/stand counter



Python WiFi2BLE Simulator

- Simulation of the WiFi2BLE box Web API
- To speed up project development and testing
- Get independent of the hardware and NDAs
- Mitigate the Project Coordinator temporary “disabilities”
- Requirements: Python 3
- Almost all, but missing
 - Errors dynamics
 - User inputs



Creative use of AI 😊

REST API Basics

→ Base URL for HTTP: <http://127.0.0.1:8000>

→ Assuming local execution

→ For testing only

→ Expecting path format: /api/<version>/<api_key>/<endpoint>

→ Versioned API, <version>: v2

→ “Secured”, <api_key>: 32 characters, for example: E9Y2LxT4g1hQZ7aD8nR3mWx5P0qK6pV7

→ Object type: JSON

→ Content type: application/json

→ See **README.md** for details

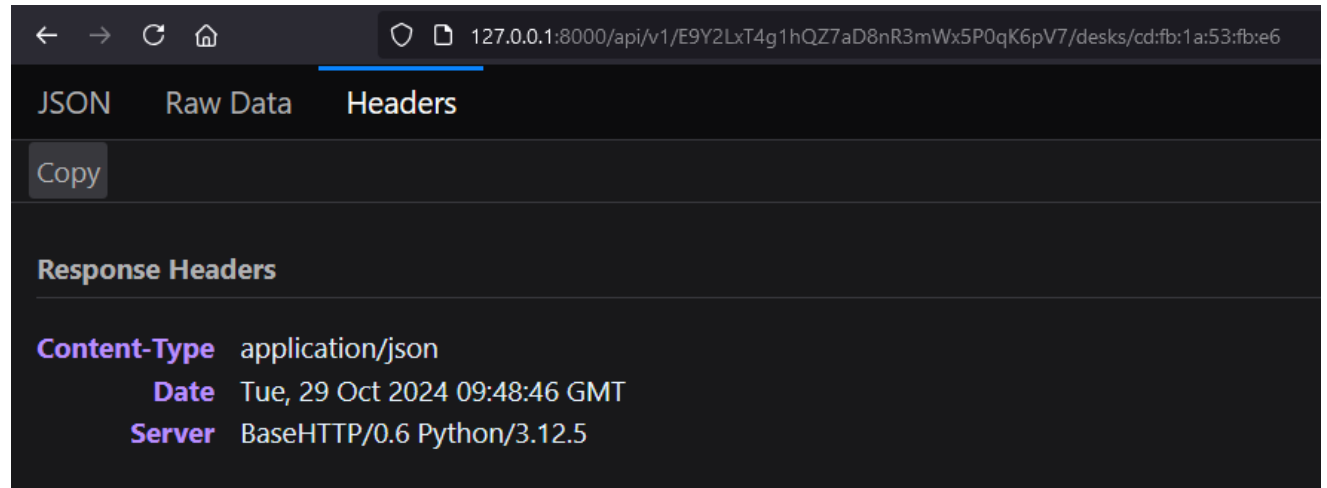
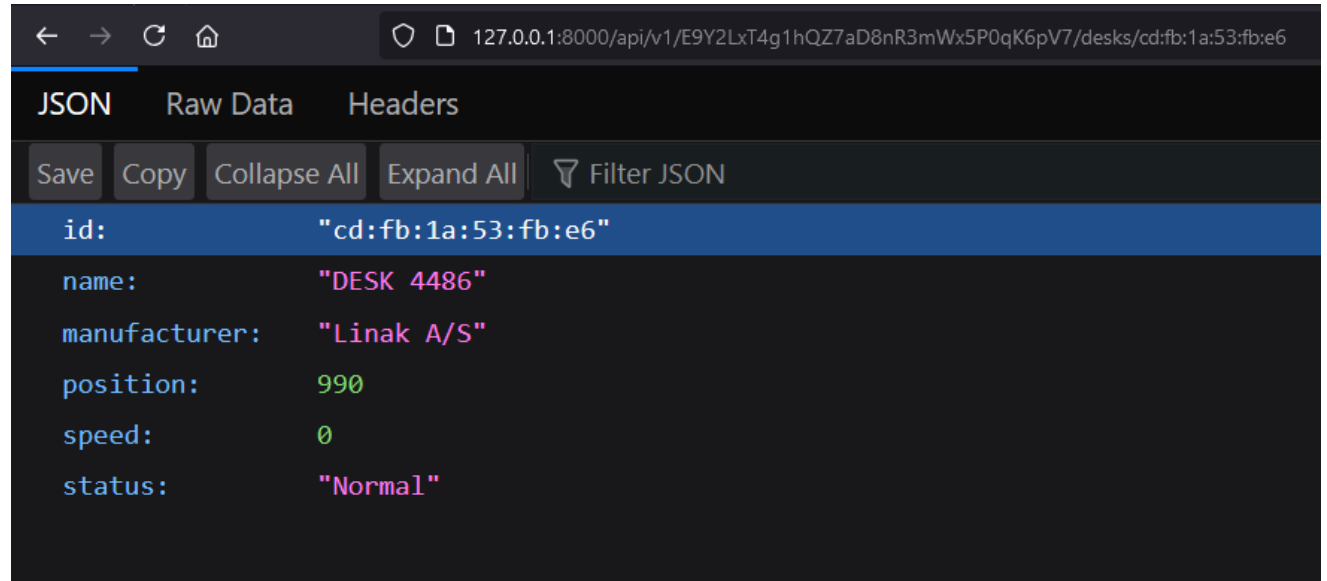
Testing REST API

→ Browser, Firefox

→ Hoppscotch

→ Open-source alternative to Postman

→ <https://docs.hoppscotch.io/>



Thank you 🤗