

Matter Smart Home laboratory

Proposta de Bolsa/Estágio na Altice Labs



ID do Projeto	2024/25_N55
Departamento	DPS12
Proponente	Paulo Chainho
Data de validade	31 Dec 2024

IDI - Áreas Chave

IoT

Tema / Título

Matter Smart Home laboratory

Contexto

Matter has the goal of being an interoperable standard that fosters technology adoption and innovation, gradually replacing proprietary protocols for smart home ecosystems. Matter is implemented by an open source SDK that contains not only the implementation of the specification but also a rich set of examples and interoperable code. Matter is flexible and interoperable. It builds upon years of challenges and successes of low power 802.15.4 networks as well as Wi-Fi smart home devices. Like Thread, Matter builds atop IPv6. It includes strong cryptography, a well-defined modeling of Device Types and their data, and the support for multiple ecosystem administrators. Matter also supports bridging of other Smart Home technologies such as Zigbee, Bluetooth Mesh and Z-Wave. This means that devices based on these protocols may be operated as if they were Matter devices through a Bridge, which is a member device of both a Matter network and the other, bridged, IoT technologies. Matter is a local protocol, and any entity directly controlling a Matter device must be local too. In Matter, these are called controllers and serve as the 'brains' of the smart home, managing communications, control, automation, and often remote access. Altice Labs Connected Home platform is already supporting a beta version of Matter Controller in its Fiber Gateway.

Objetivos do Projeto

This project aims to exploit new Smart Home use cases based on Matter standard and to setup a Matter Connected Home Laboratory to experiment and demonstrate innovative features with new device types and smart automations leveraging AI technologies. In this project, the Matter Controller that is embedded in ALB Fiber Gateway will be evolved to implement these new Use Cases.

Aspetos Inovadores

This project will demonstrate innovative features that leverage new concepts from Matter (including Multi-admin, Fabrics,), new technologies like AI, and all supported Matter device types (Light, Plugs, Switches, Sensors, Closures, HVAC, Media, Robots, Appliances, Energy Devices, etc)

Ferramentas a utilizar

- Altice Connected Home platform
- Chip-tool <https://github.com/project-chip/connectedhomeip/blob/master/examples/chip-tool/README.md>
- Yocto <https://www.yoctoproject.org/>
- DAC + Dobby: <https://wiki.rdkcentral.com/display/RDK/Containerization+using+META+DAC+SDK+in+RDK-B+RPI>
- Github

Referências Bibliográficas

<https://handbook.buildwithmatter.com/>

<https://csa-iot.org/all-solutions/matter/>

<https://developers.home.google.com/matter/overview>

<https://github.com/project-chip/connectedhomeip>

https://github.com/project-chip/connectedhomeip/blob/master/docs/guides/chip_tool_guide.md

Atividades

Study & Research (3-4 months)

- Matter Study
- Introduction to Altice Connected Home solution
- Experimentation of Matter devices and development tools
- Matter Connected Home Laboratory Setup

Prototype and demo (6 - 7 months)

- Design including definition of main features to be implemented taking into account the initial experimentation done
- Implementation and test of the prototype
- Demo
- Report

Competências Chave Requeridas

- Dinâmico e com vontade de aprender;
- Boa capacidade de comunicação e espírito de equipa
- Facilidade em discutir conceitos, arquiteturas e tecnologias de forma a obter consensos
- Gestão autónoma de tempo
- Bons conhecimentos em sistemas embebidos, programação em C++, e redes IP

Orientador (nome e email)

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