Cross Domain

Thanh Do Chi and Quan Dinh Huu Hai

Ha Noi University of Science and Technology, Viet Nam
{thanh.do-chi,quan.dinh-huu-hai}@gmail.com
http://www.soict.hust.edu.vn

Abstract. The Internet of Things (IoT) is evolving very quickly. In this IoT world, there are massive of sensors and devices. To management these sensors and devices efficiently, we need IoT platforms, each often suit to a given scenario and use different kind of communication, device control protocols. Because IoT platforms are heterogeneous, which ones usually cannot communicate to each other, the problem of interoperability these IoT platforms is one of the most important and challenging part of IoT. In this paper, we propose a cross-platform layer, which allow intergrate new IoT platforms easily, enable interoperability between platforms and also provide APIs for developers create innovative and cross-domain applications

1 Introduction

2 Related Work

3 Cross-platform model

3.1 Huan's Model

3.2 Quan's Model

3.3 Ontology

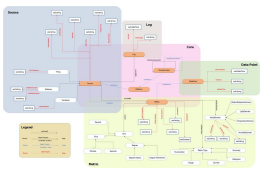

Fig. 1. Cross-platform ontology.

- **Smart Context** is the root of the graph, which is a testbed implemeted the cross-platform system.
- **Platform** is `a multi-layer technology that enables straightforward provisioning, management, and automation of connected devices within the Internet of Things universe. It basically connects your hardware, however diverse, to the cloud by using flexible connectivity options, enterprise-grade security mechanisms, and broad data processing powers` [1].
- **Source** is the device or component that generate the data. A **Source** might be a **Thing**, a **Gateway** or a **Container**.
- **Thing** is a device which is a set of sensors.
- **Gateway** is .
- **Container** is .
- **Log** is a service that collect the data generated from **Sources** and store it for future purpose.
- **Metric** is ...
- **Data Point** is generated when a **Metric** active.

3.4 Resource Graph

Figure below show the format of resource graph.

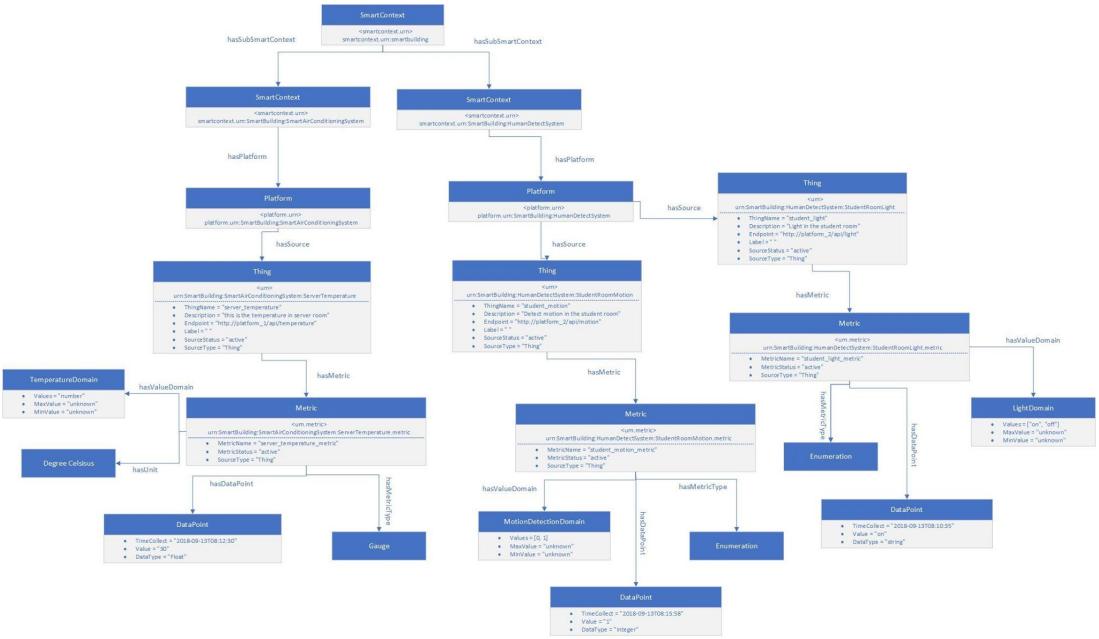

Fig. 2. Cross-platform ontology.

1 smartcontext.um:SmartBuilding is a `Smart Context`
2 smartcontext.um:SmartBuilding:SmartAirconditionSystem is a `Smart Context`
3 smartcontext.um:SmartBuilding:HumanDetecSystem is a `Smart Context`
4 platform.um:SmartBuilding:SmartAirconditionSystem is a `Platform`
5 platform.um:SmartBuilding:HumanDetecSystem is a ttPlatform
6 urn:SmartBuilding:HumanDetecSystem:StudentRoomLight is a `Thing`
7 ThingName ”student light”
8 Description ”Light in the student room”
9 Endpoint ”http://platform2/api/room”
10 Label ””
11 SourceStatus ”active”
12 SourceType ”Thing”
13 urn:SmartBuilding:SmartAirconditionSystem:ServerTemperature is a `Thing`
14 urn:SmartBuilding:HumanDetecSystem:StudentRoomMotion is a `Thing`
15

4 Experiment

5 Conclusion

6 The References Section

References

1. https://www.kaaproject.org/what-is-iot/