IoTtalk: A Platform for IoT Applications Quick Development

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Outline

- The Evolution of Communication
- What and Why is IoTtalk?
- How to deploy?
- Device Connections with IoTtalk
- IoTtalk System Architecture
- Web-based IoT Applications
- Conclusion

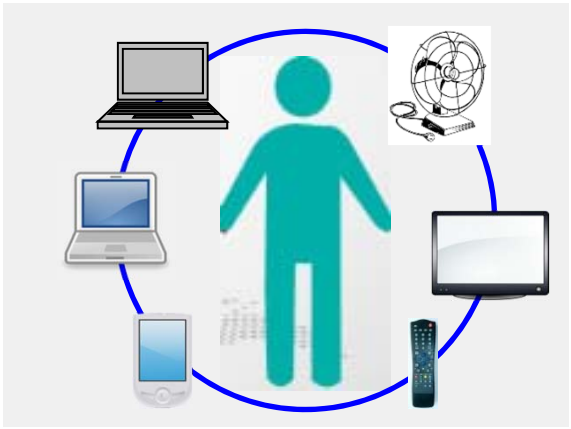
The Evolution of Communication

H2H → H2M → M2M

A humans talks to the other humans.

The human talks to the other humans.

A human directly controls the machines.



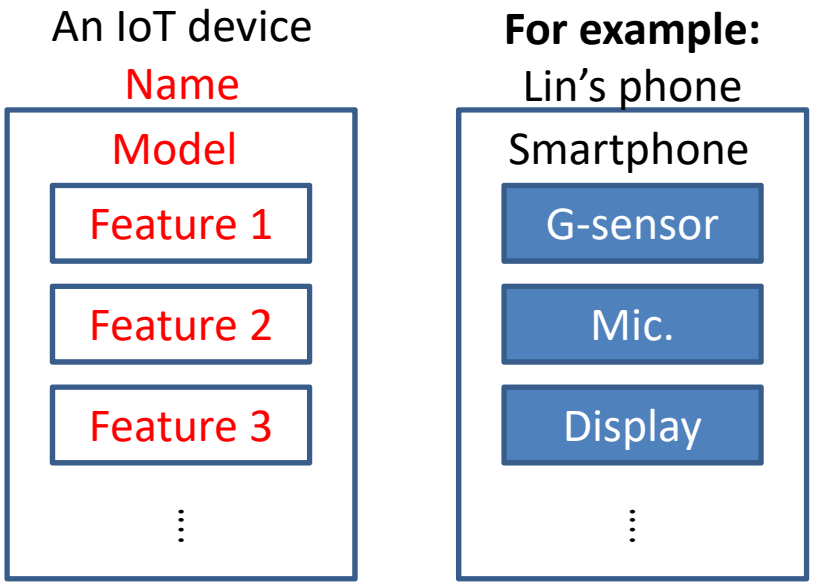
The human manipulates the machine himself.

A machine automatically controls the other machines.

Machines have logic or intelligence to manipulate other machines. That is, IoT devices can talk to each other, IoTtalk!

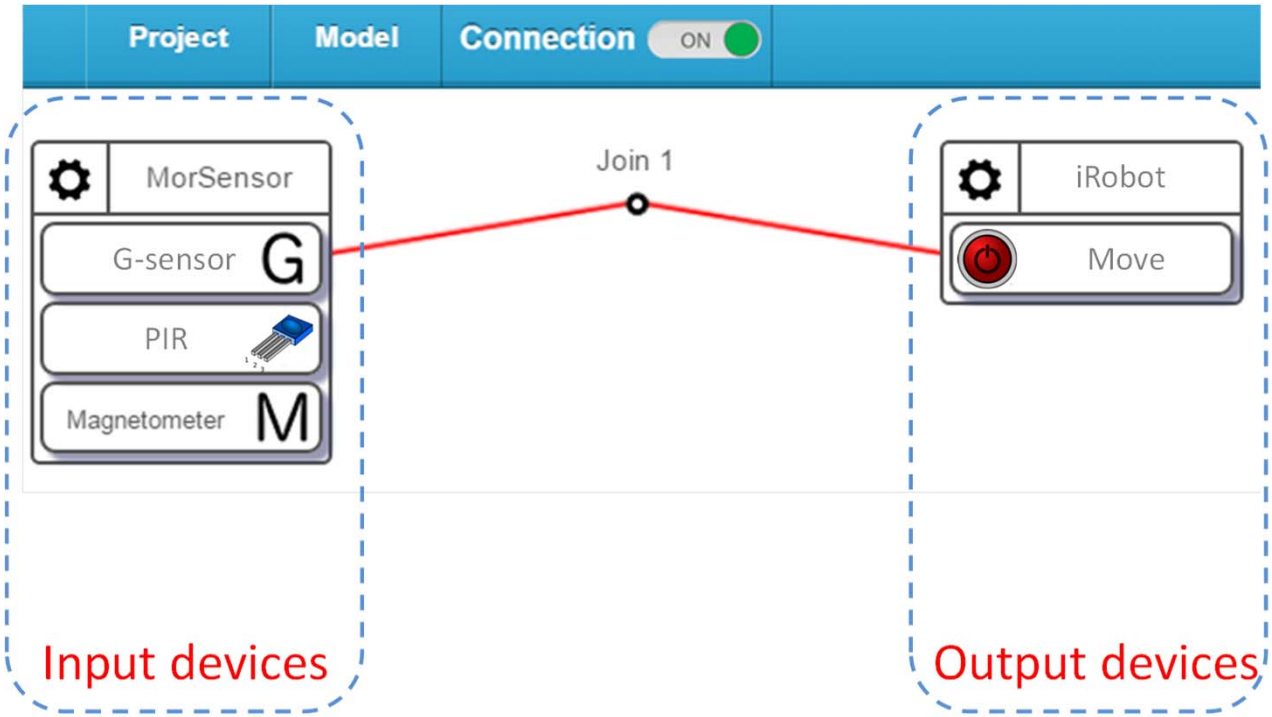
What is IoTtalk?

- **IoTtalk is an IoT device management tool**
- **IoT management concept**
  - Device Feature
    - The function or capability which an IoT can provide
  - Device Model
    - A set of device features
    - A device model refers to a specific product
  - Device name
    - The name of a specific product



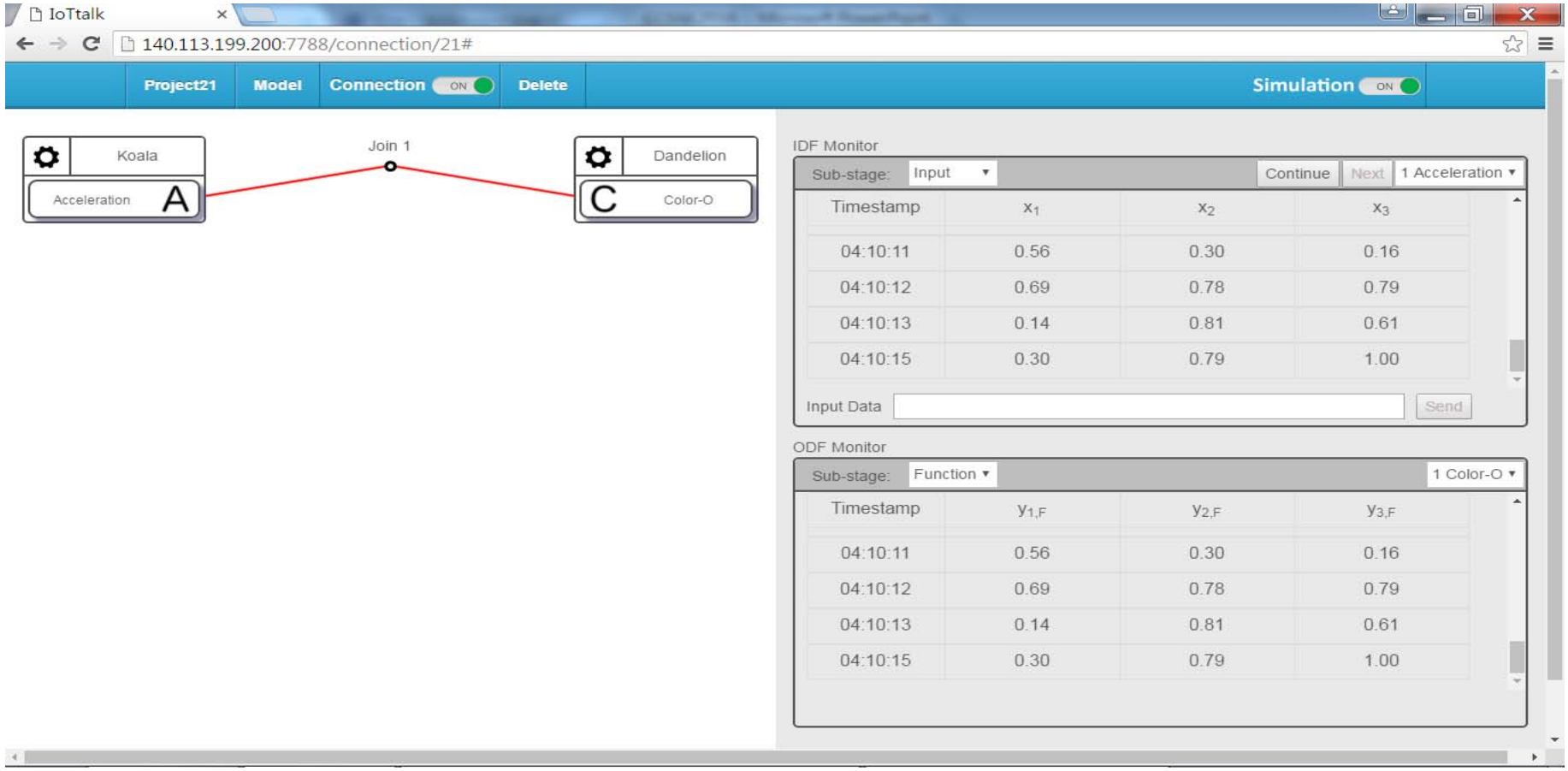
Why is IoTtalk?

- **Applications can simply develop with lower efforts**
- **Simple and intuitive GUI**
- **Application development without real devices is feasible**



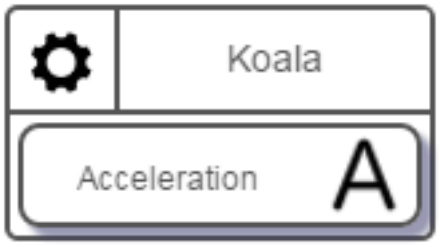
Simple and Intuitive GUI

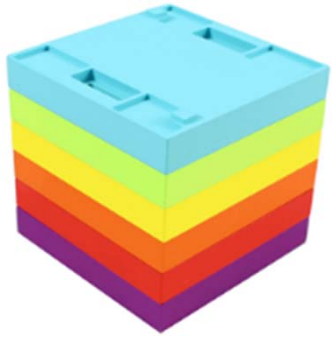
- Connections by intuitional drawing links between IoT devices
- Transparently observe the connections between IoT devices
- Monitor the transmitting values between IoT devices
- Application debugging is more easier



Applications can simply develop with lower efforts

- Reusable DF modules
  - Even they are different IoT devices





Application development without real devices is feasible

- Do not need the real devices first to develop applications
- The simulator provides the numerical values as inputs

Easy to Deploy and Operate

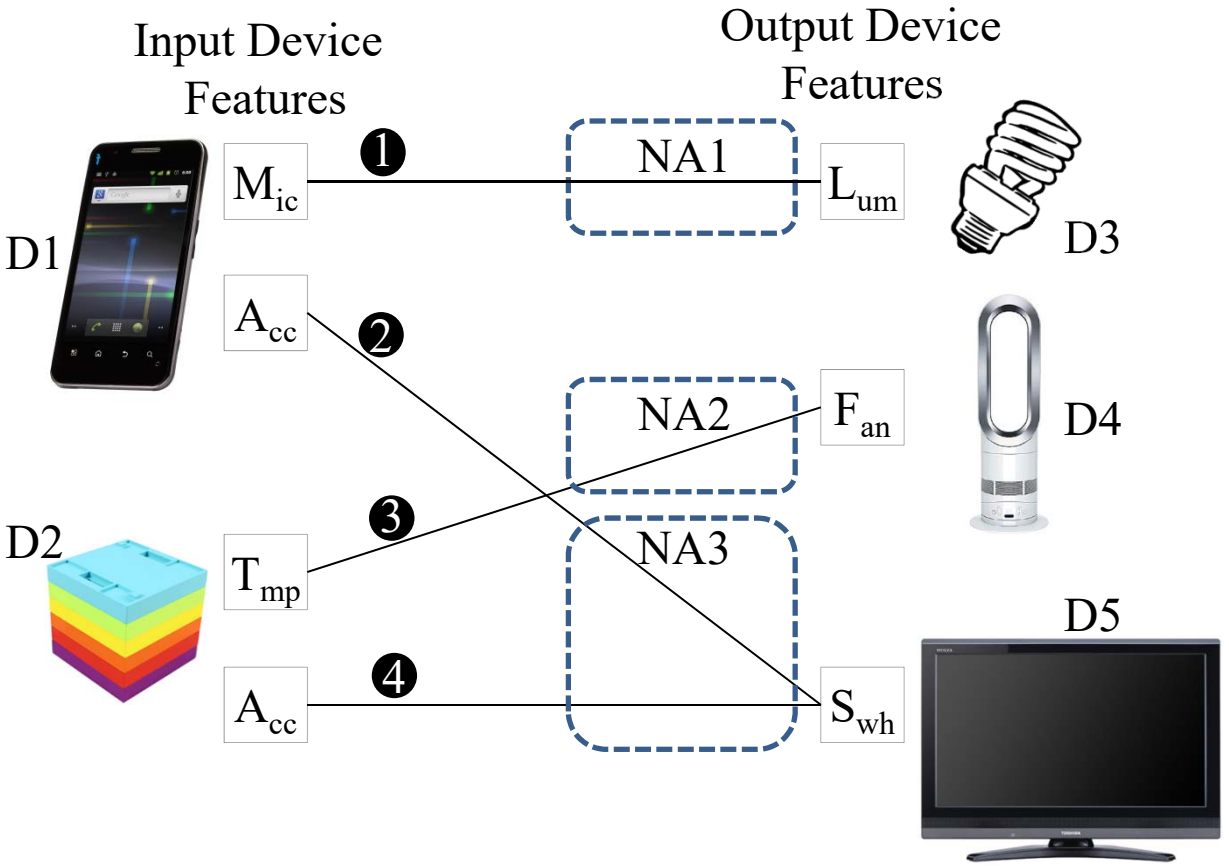
Intel Edison

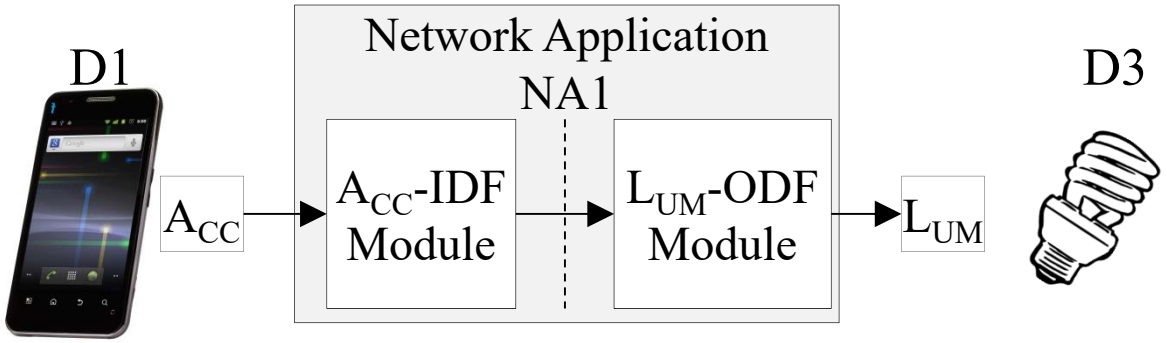
Raspberry Pi3

PC server

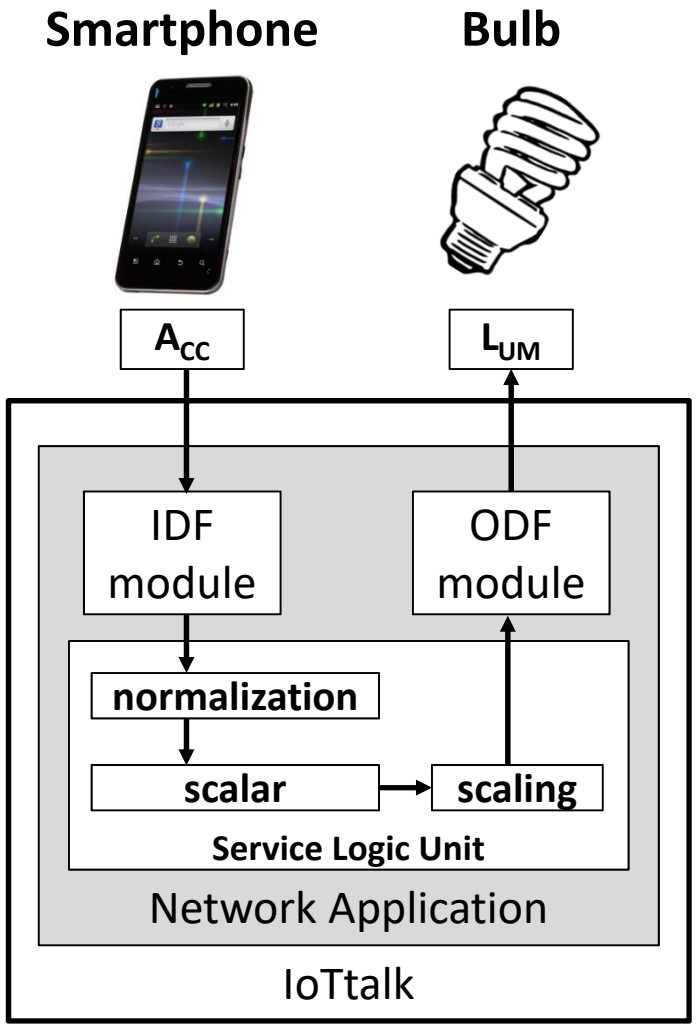
For example, you can try
http://140.113.199.200:7788/connection

Appliance Connections with IoTtalk

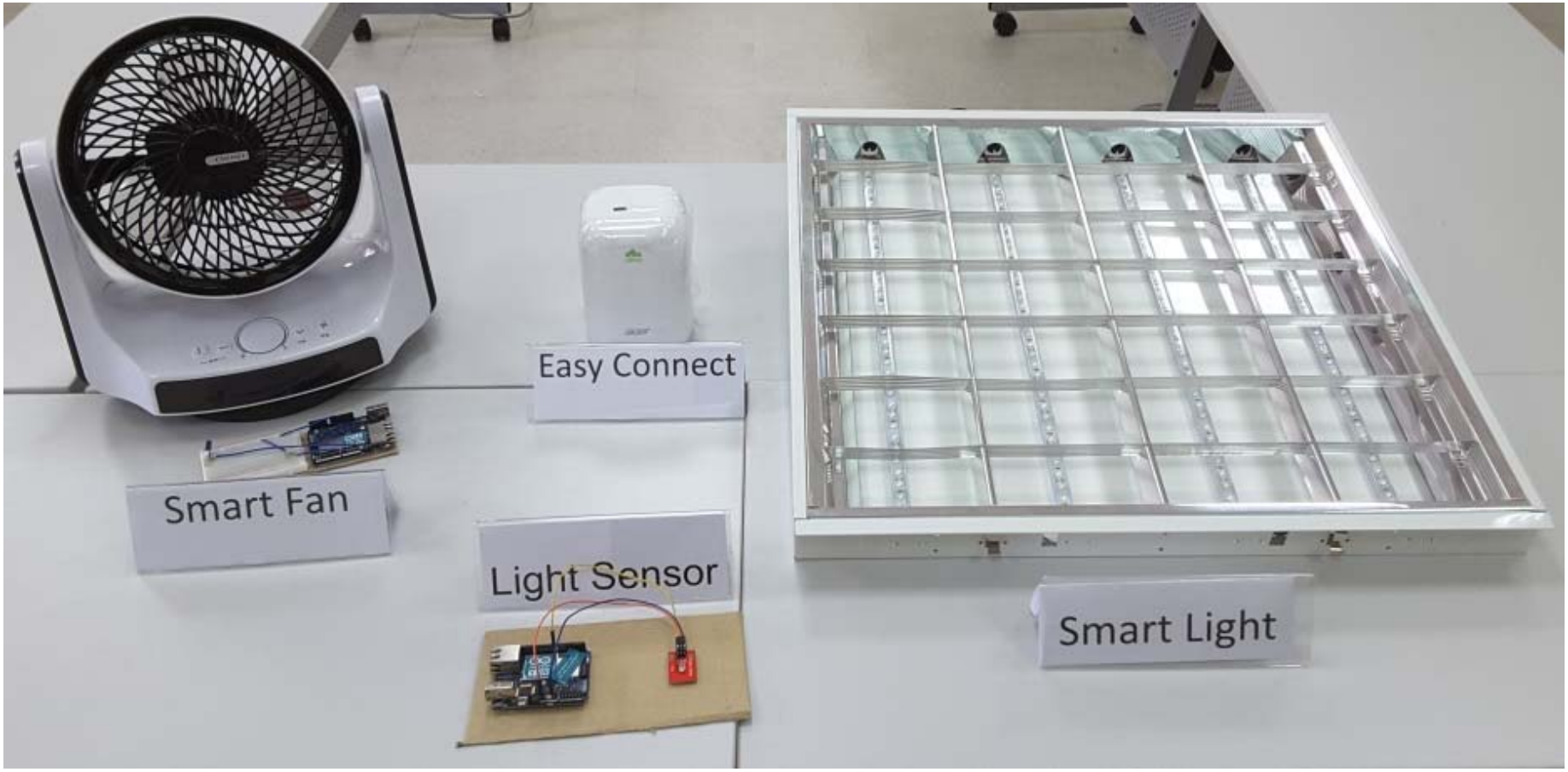




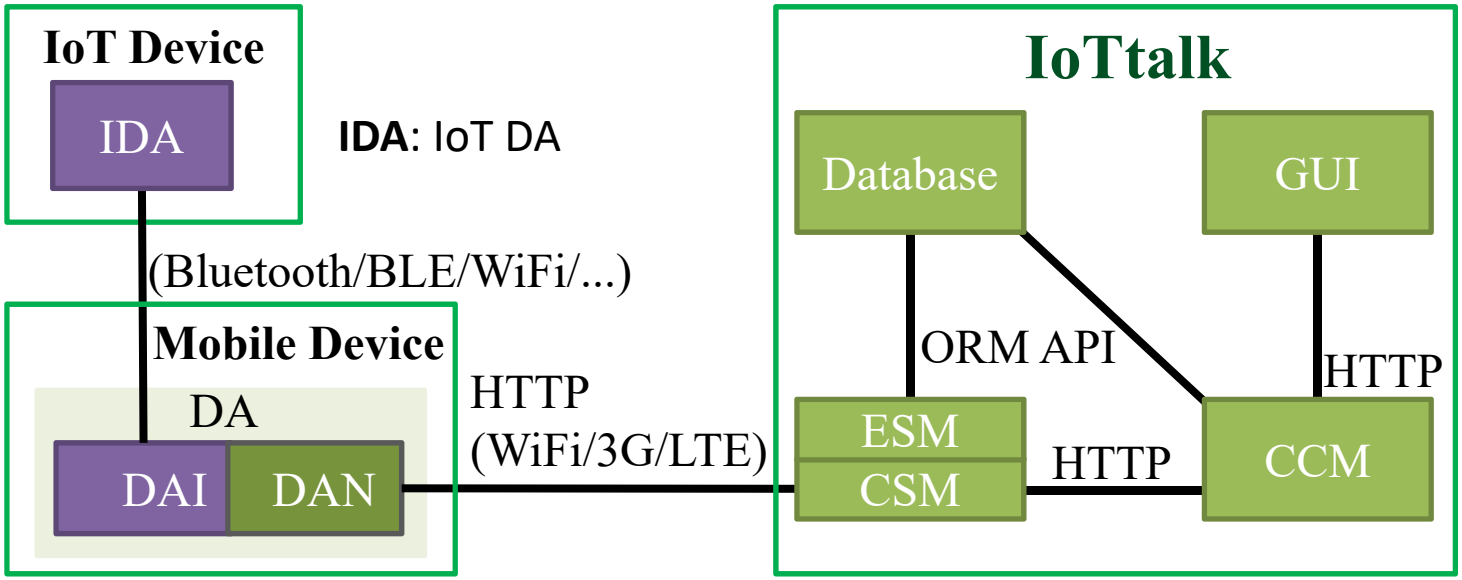
Connection and Mapping Manner



Connect Appliances to IoTtalk

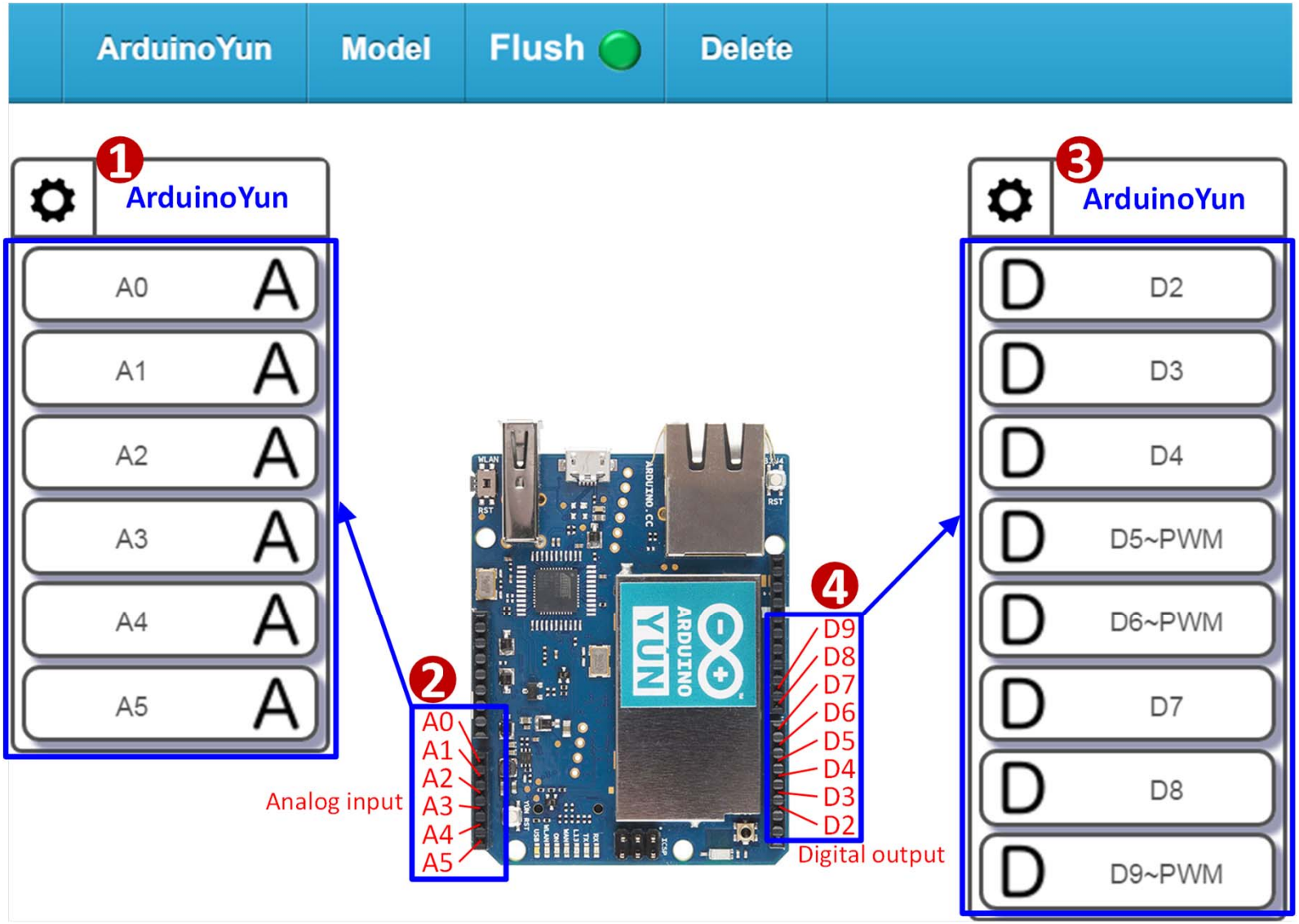


System Architecture



DA: device application
DAN: DA to Network
DAI: DA to IoT device
IDA: IoT DA

ArduTalk -
IoTtalk and Arduino Yun



ArduTalk - IoTtalk and Arduino Yun

IDA: IoT DA

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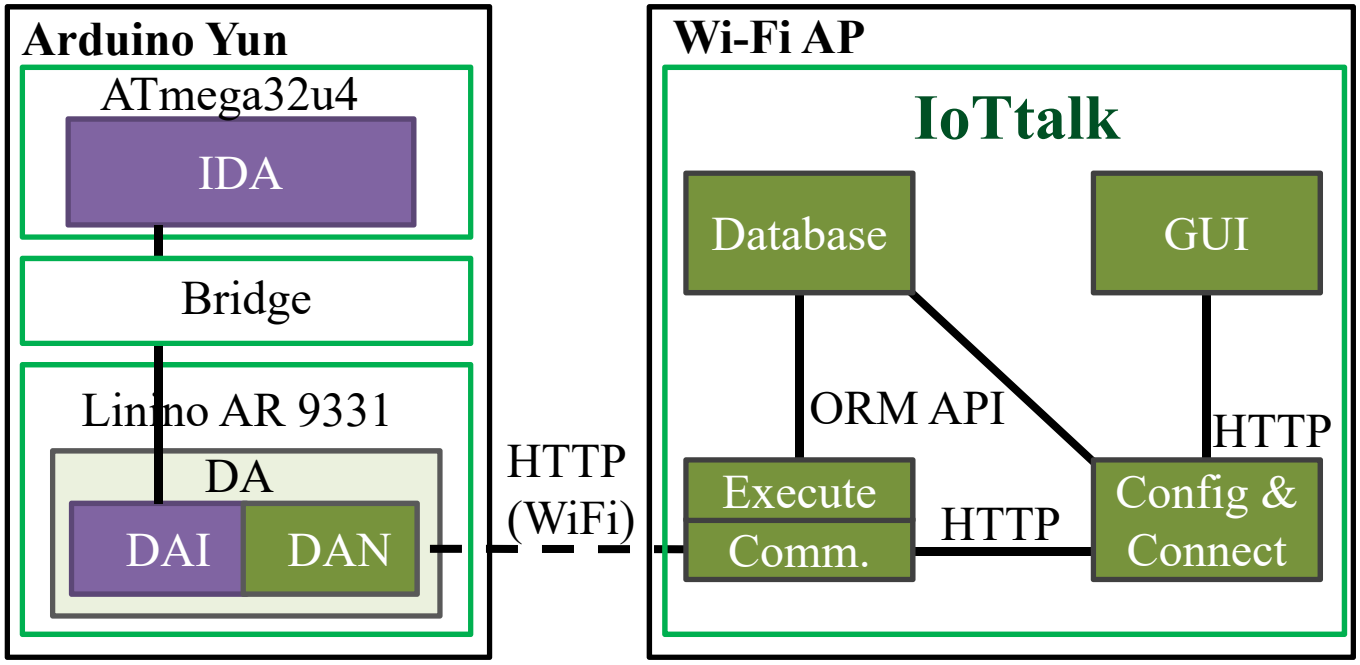
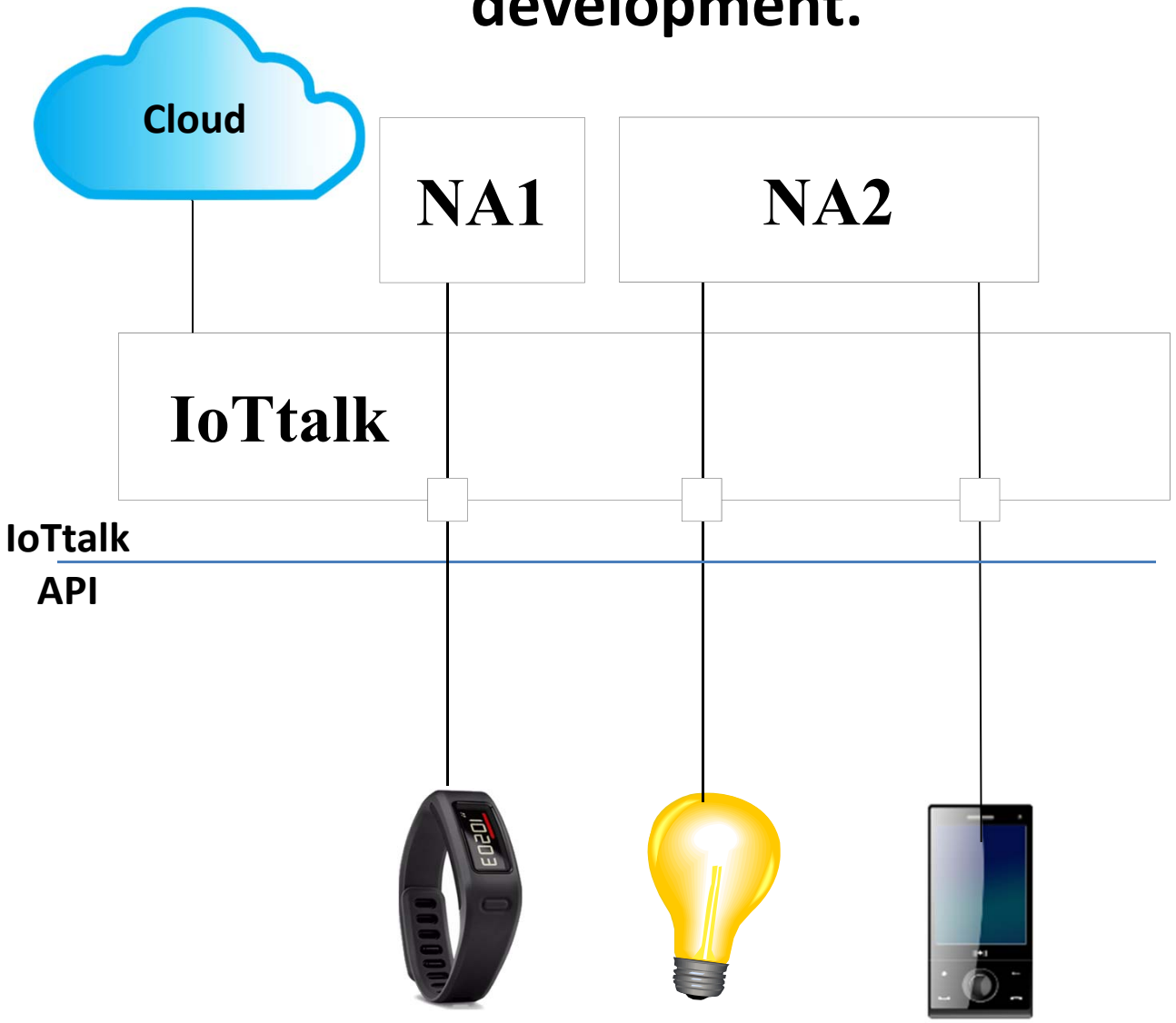
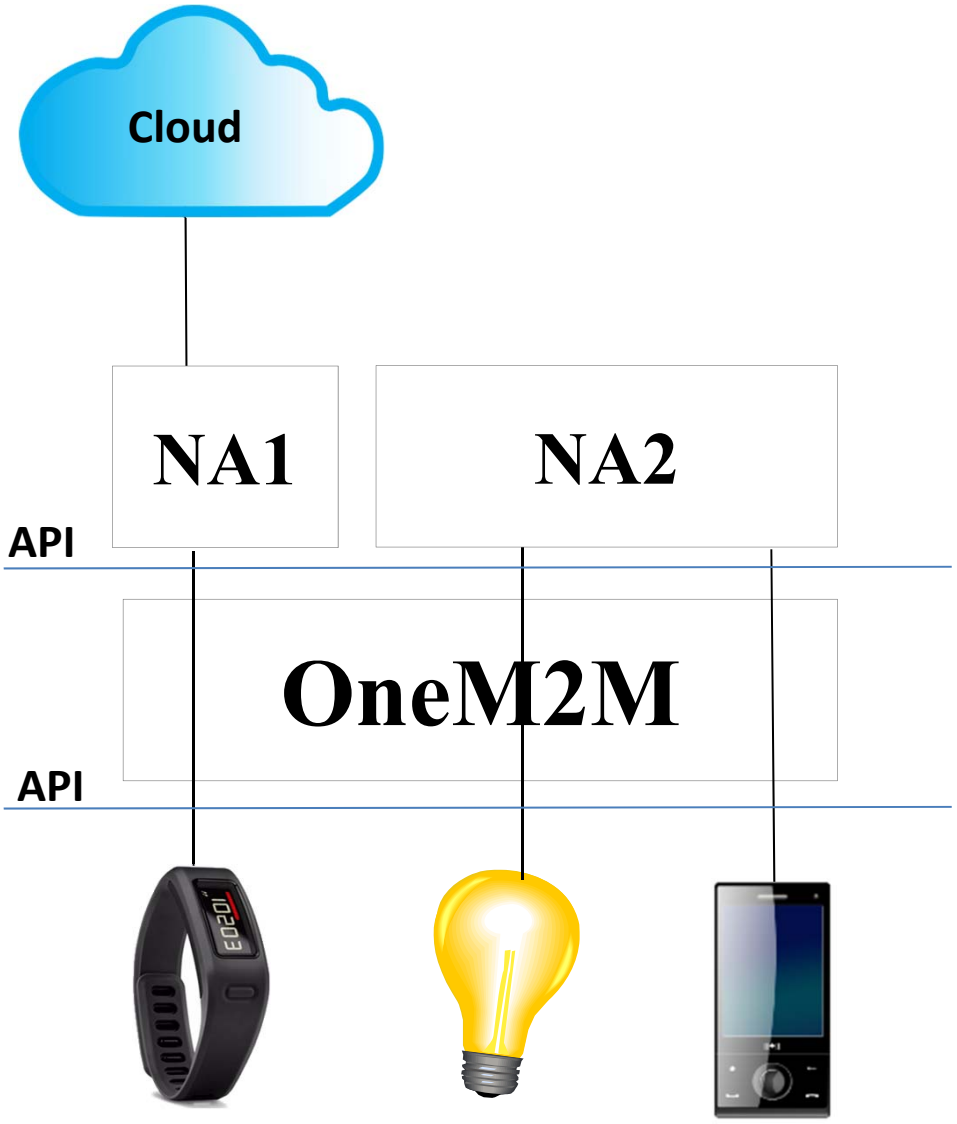
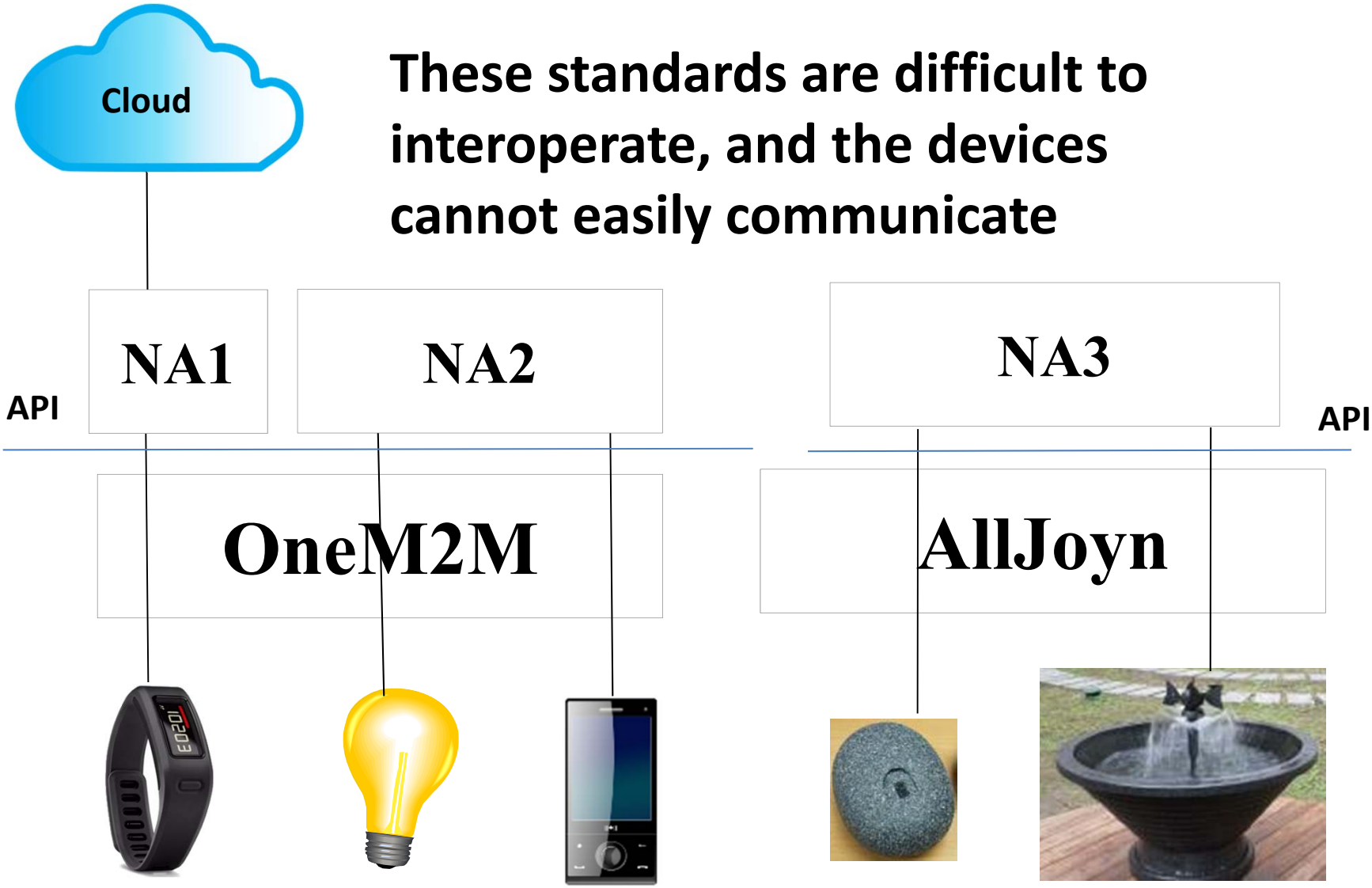


IoTtalk is a network application platform to simplify the network application development.

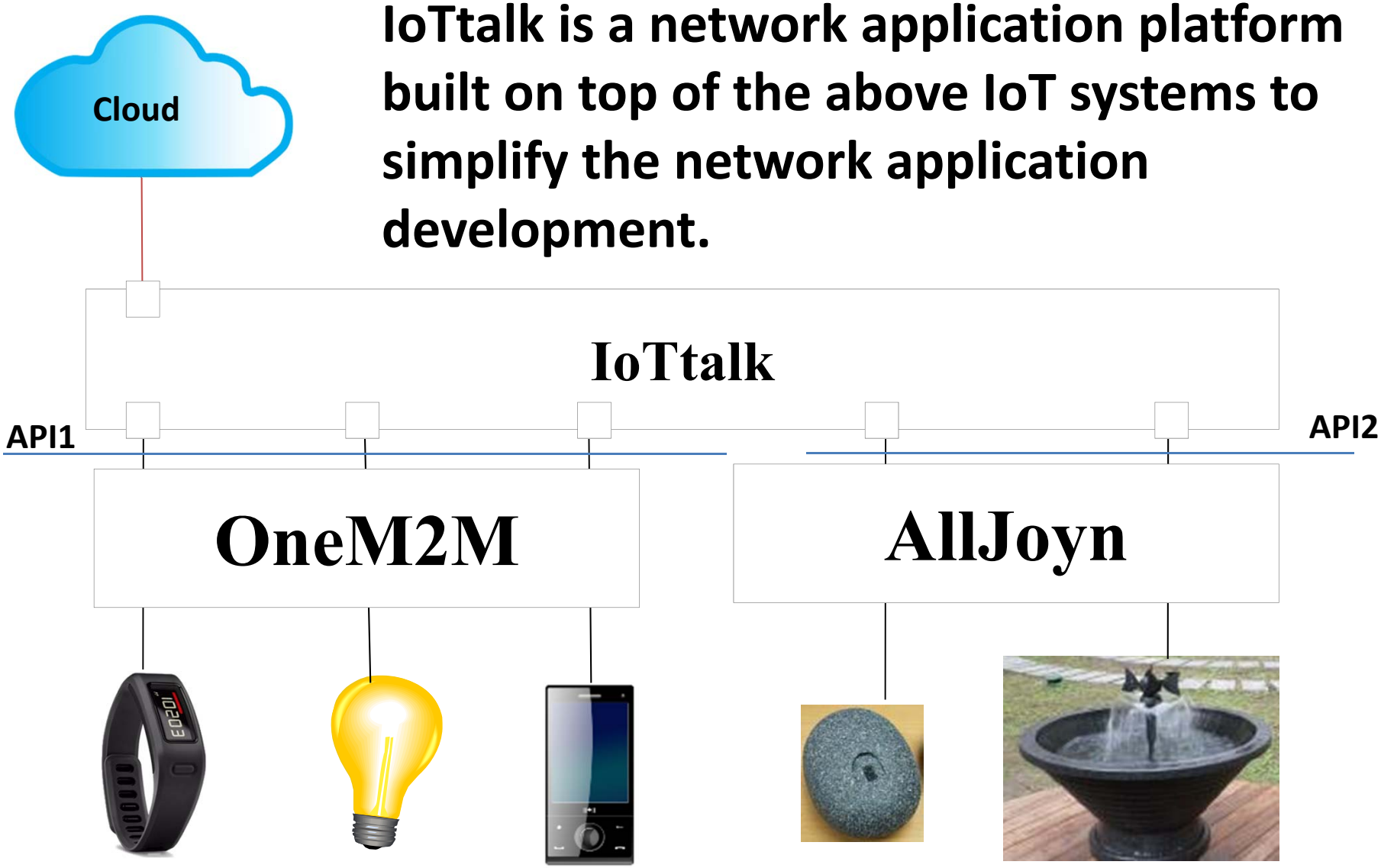




If the device is developed under oneM2M, openMTC, or AllJoyn, these IoT platforms will provide APIs for the user to develop network application for the device.

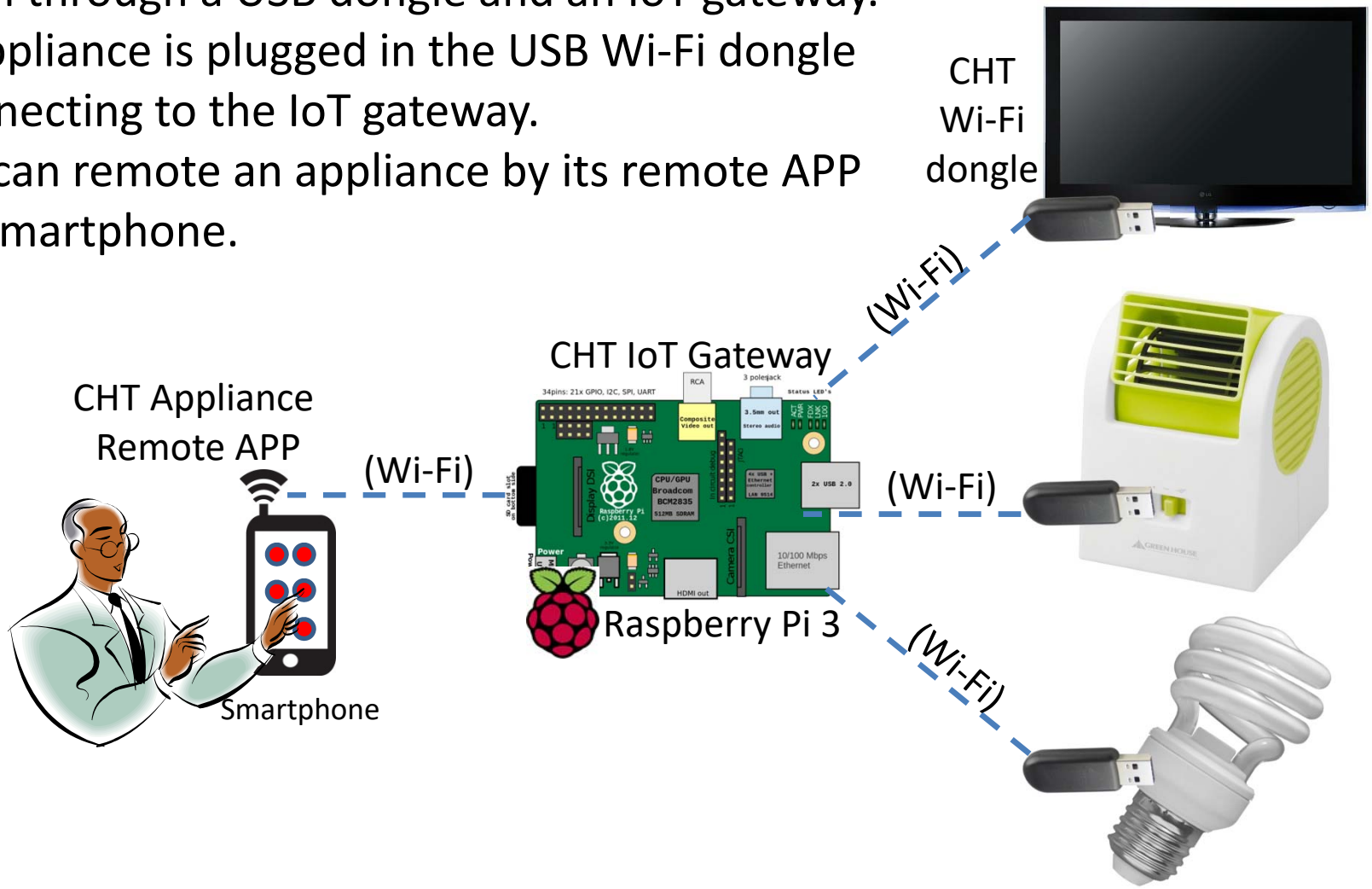

Cloud
These standards are difficult to interoperate, and the devices cannot easily communicate
NA1
NA2
NA3
API
API
OneM2M
AllJoyn

IoTtalk is a network application platform built on top of the above IoT systems to simplify the network application development.

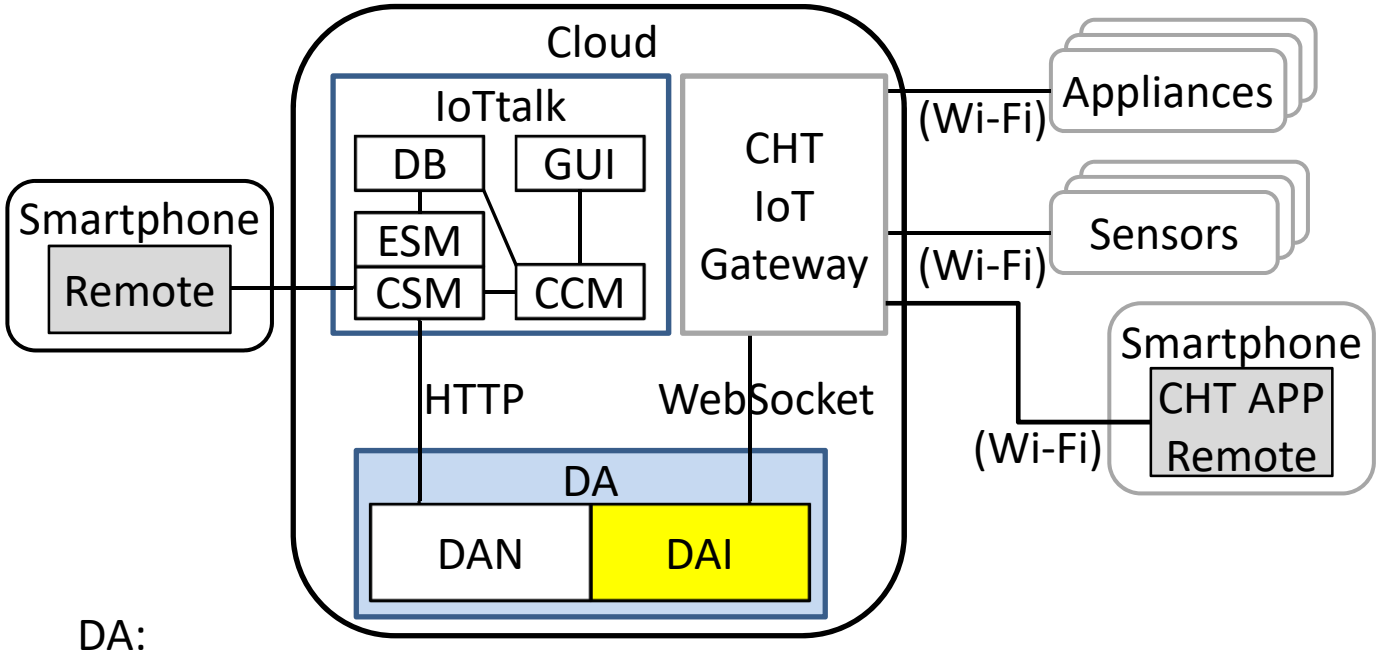


The Smart Home Solution by CHT

- Chunghwa Telecom (CHT) provides a smart home solution through a USB dongle and an IoT gateway.
- Each appliance is plugged in the USB Wi-Fi dongle for connecting to the IoT gateway.
- A user can remote an appliance by its remote APP in the smartphone.



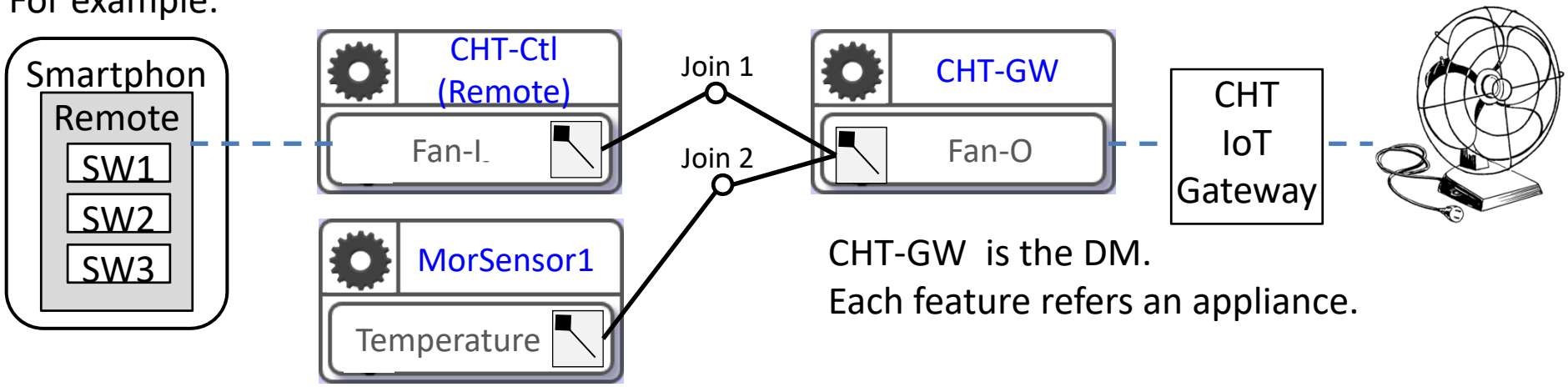
CHT Smart Home with IoTtalk



DA:

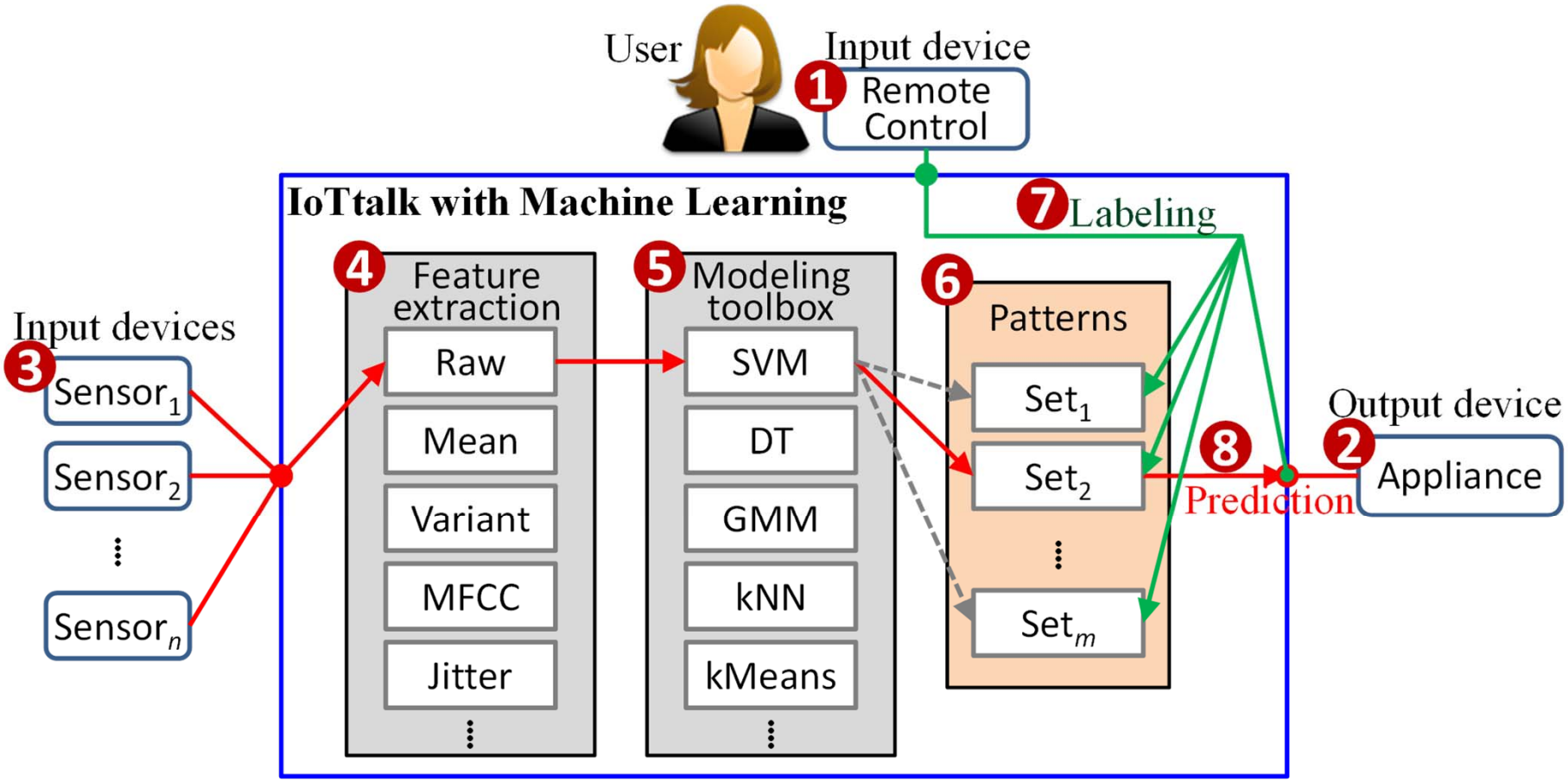
1. *Register*/*Deregister* for appliances/sensors according to notifications
2. *Pull* **commands** from the IoTtalk server to CHT home server
3. Receive **sensor data** then *Push* them to the IoTtalk server

For example:

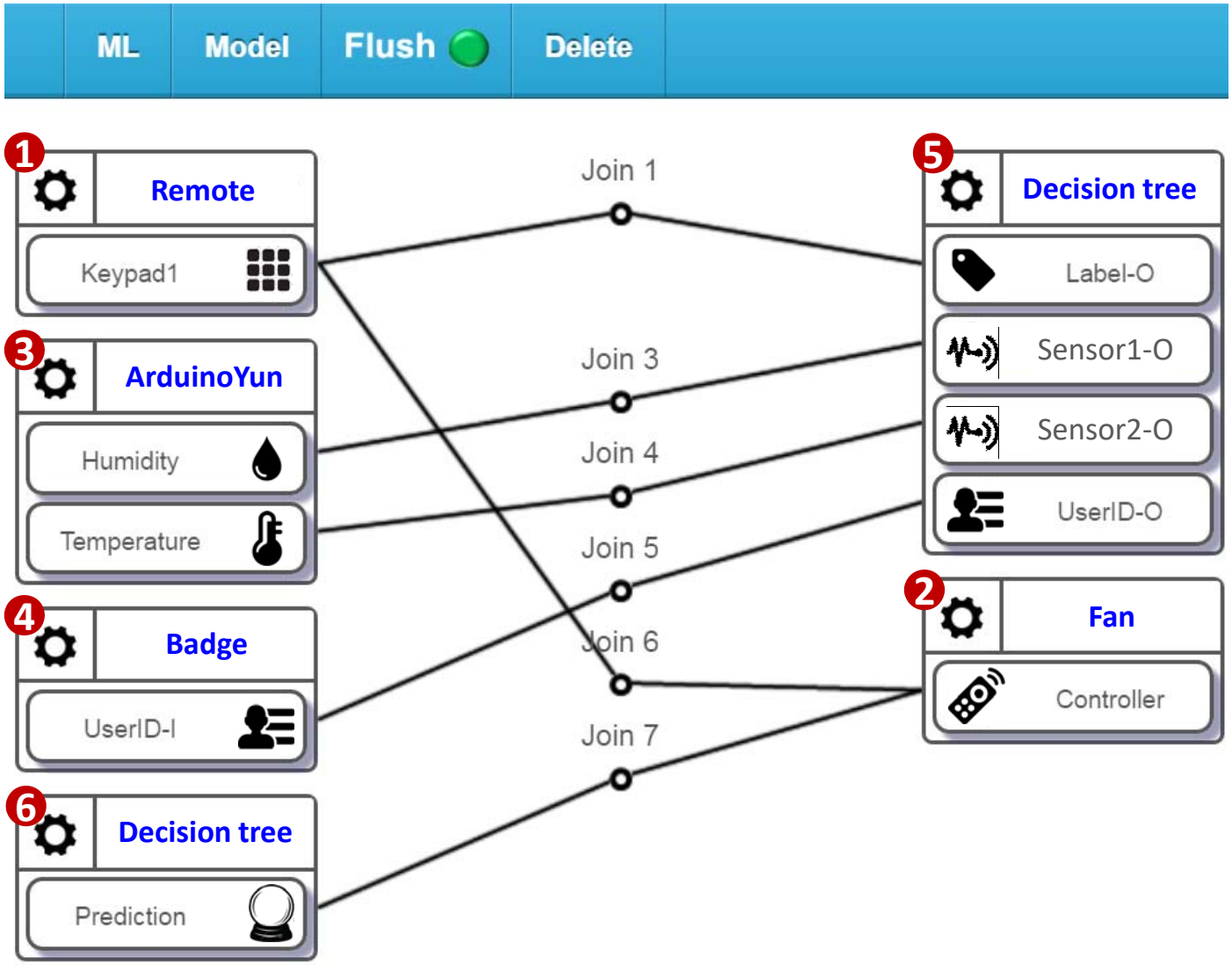


CHT-GW is the DM.
Each feature refers an appliance.

IoTtalk with Machine Learning



Smart Fan by using Decision Tree Algorithm



Conclusion

- IoTtalk is an IoT device management tool
- Easy to deploy and operate
- Easy to develop applications - simply connect IDFs and ODFs
- Transparently observe the connections between IoT devices
- Monitor the transmitting values between IoT devices
- Application debugging is more easier