

WIoT Practice Based on Thing Model

2022. 2

The Problem of IoT Connection

The connection of a large number IoT devices leads to the **interoperability problem** between various protocols and semantics.

Problems of data access and control

- Data ambiguity
- Data parsing is difficult
- Complexify integration efforts
- Data Fragmentation and isolation
- Impossible to share or interact with data

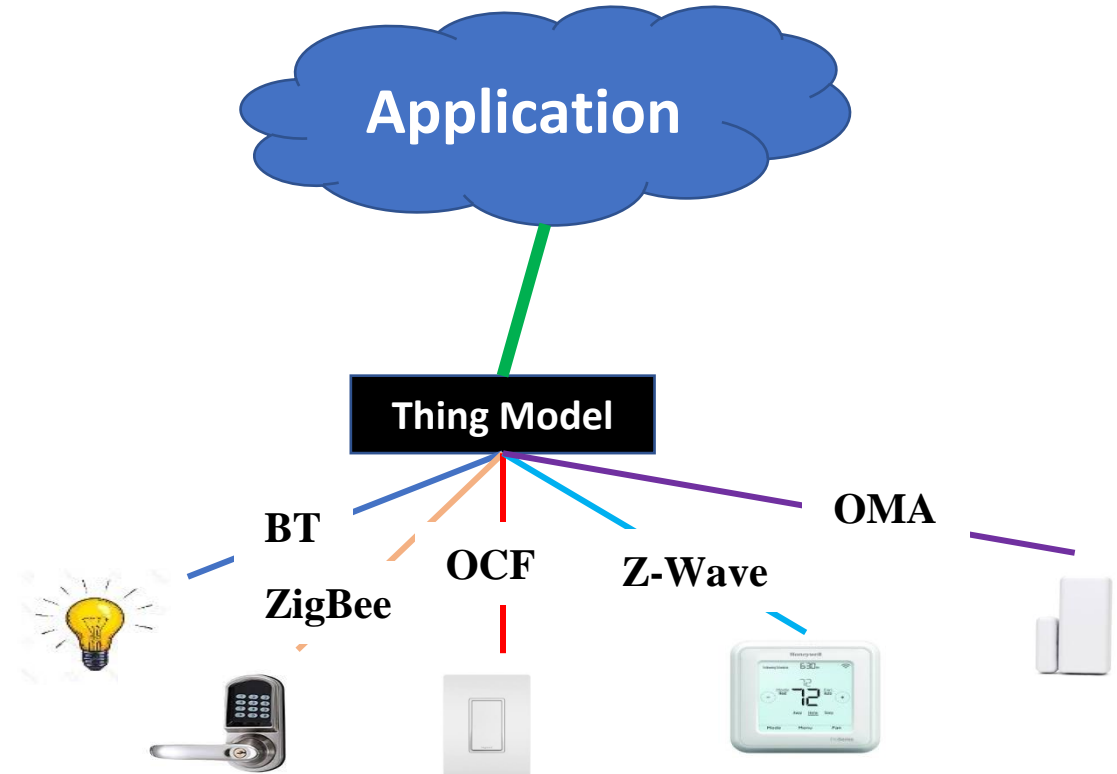


A Solution for Interconnection

The Thing Model can provide a **data and functionality abstraction** method that independent of host protocol

Goals and objectives

- Define a **common data model** for IoT devices
- Be **independent** of underlying protocols
- Keep **simple** and **understandable** for users
- Provide a **structured SDK** to improve the interaction between platforms and devices

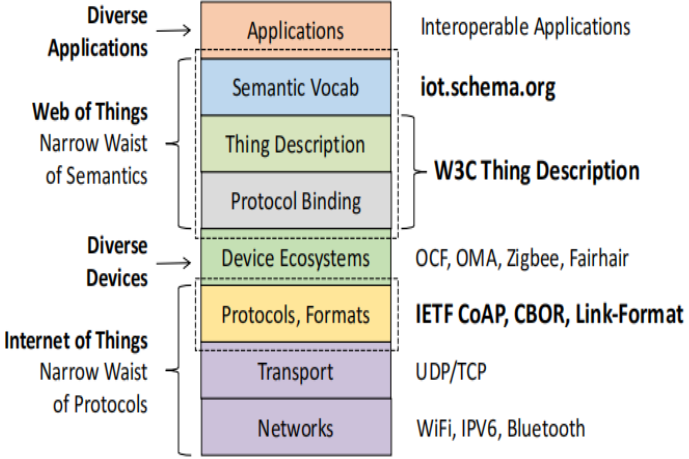


Thing Model - Unified IoT Connection Service

Abstraction and Modularity

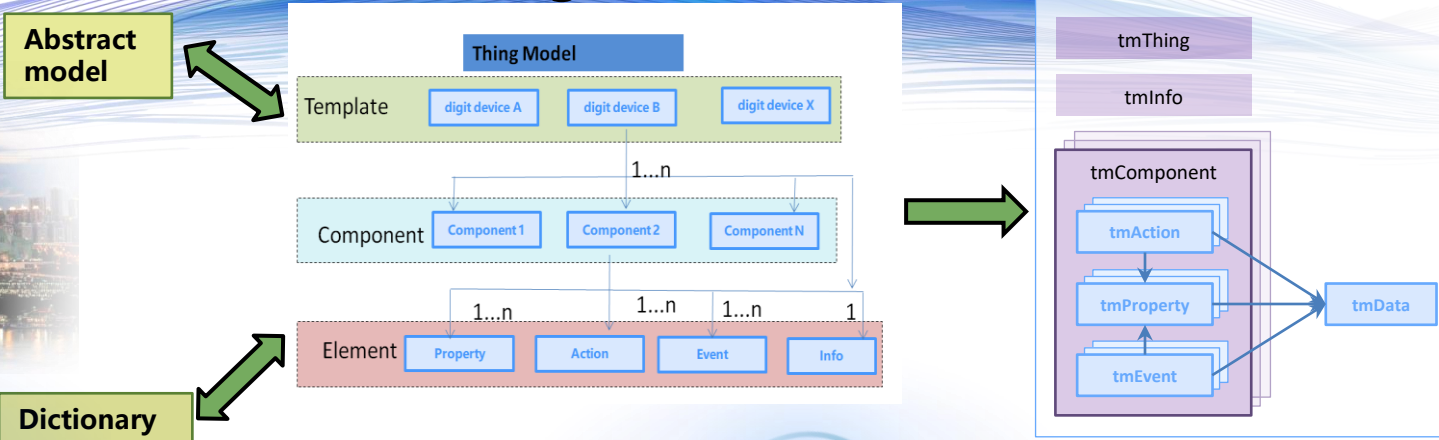
Flexibility

JSON Encoding

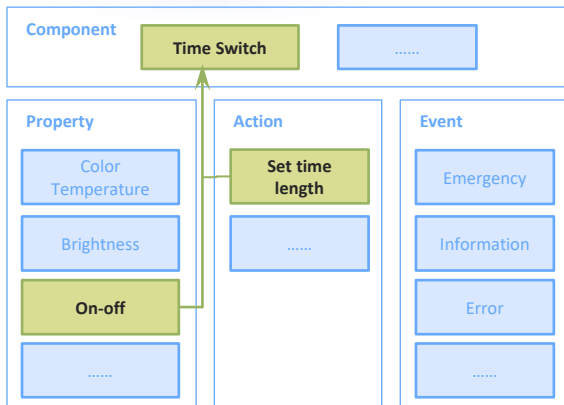


Thing Model Architecture

Thing Model



Model Abstract

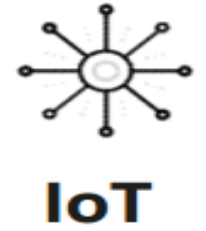


Model Description

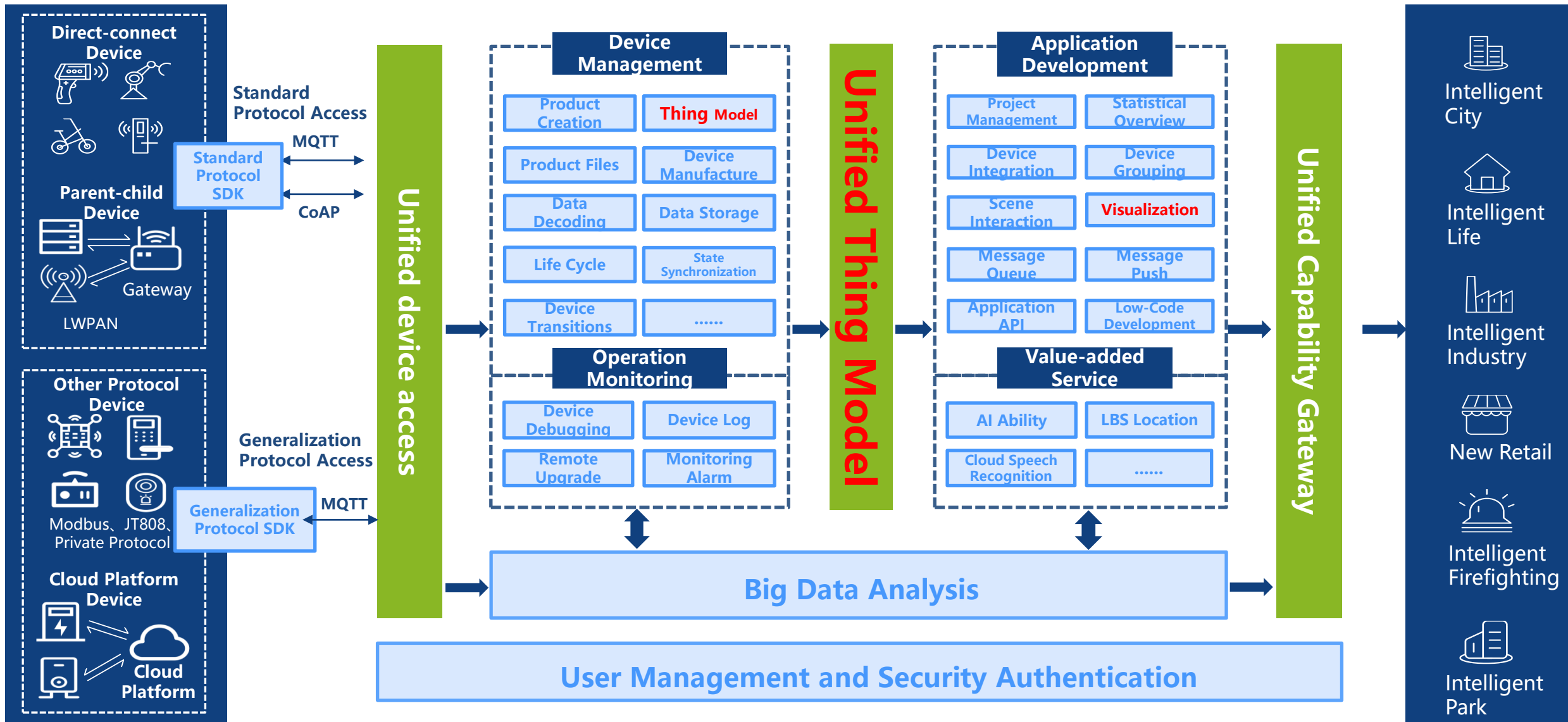
```

{
  "tmThing": [
    {
      "tmInfo": {
        "name": "Light",
        "deviceID": "xxxxxxx",
        "protocol": "MQTT",
        "tmComponent": {
          "tmProperty": {
            "tmData": {
              "dataType": "bool",
              "unit": "血压 / mmHg"
            },
            "tmAction": {
              "iutPut": {
                "tmData": {}
              },
              "outPut": {
                "tmData": {}
              }
            },
            "tmEvent": {
              "outPut": {
                "tmData": {}
              }
            }
          }
        }
      }
    }
  ]
}
    
```

Model Instantiation

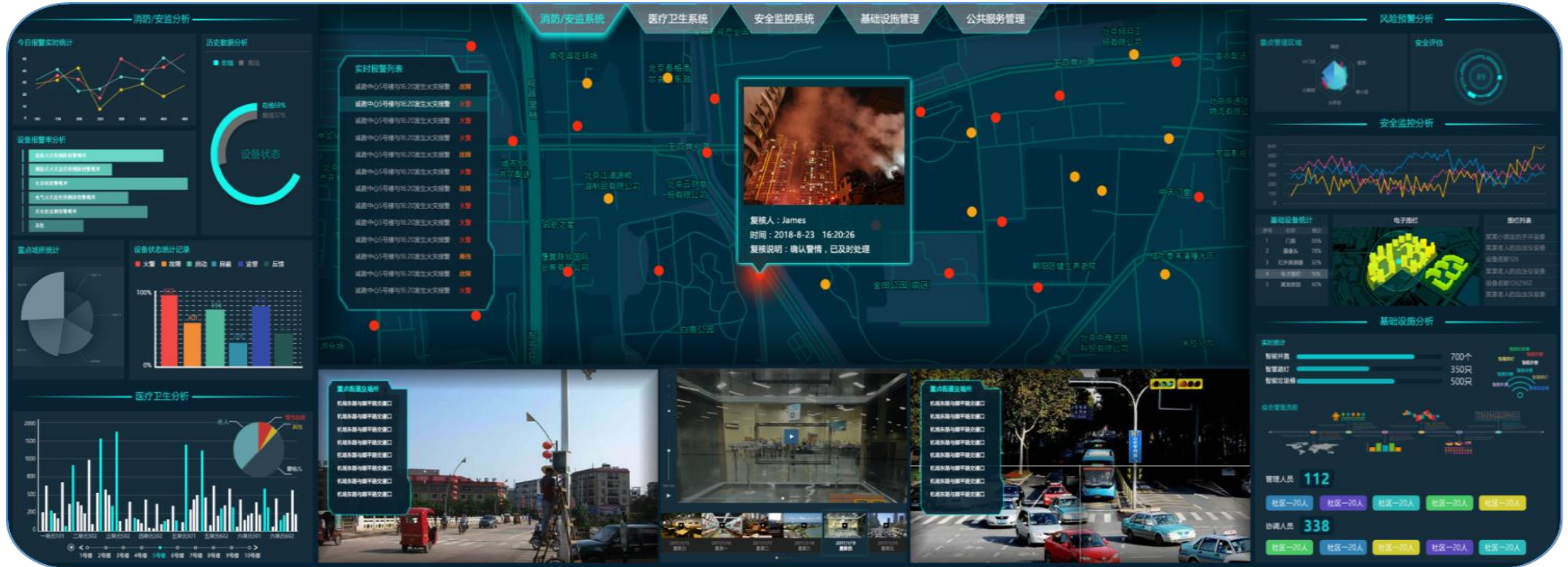


Thing Model Based Platform



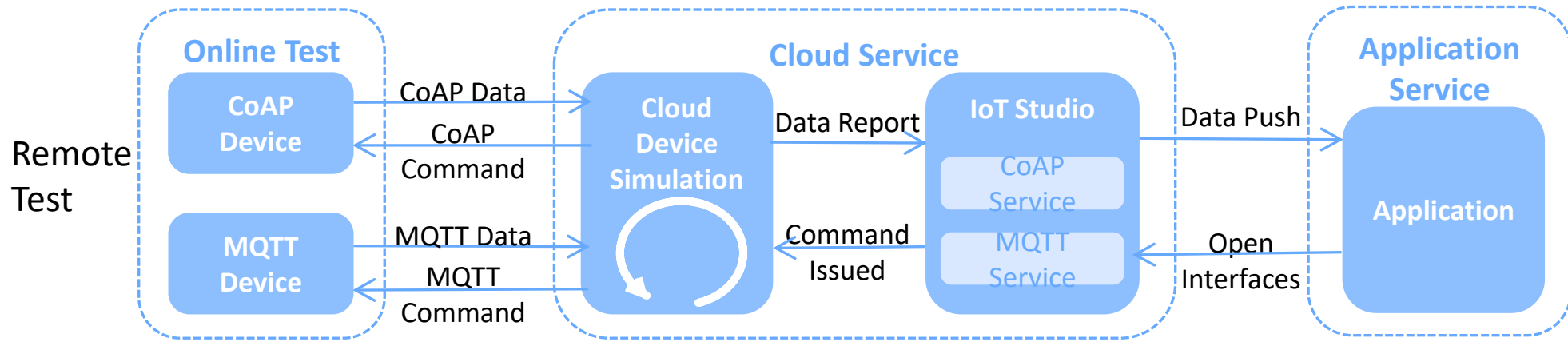
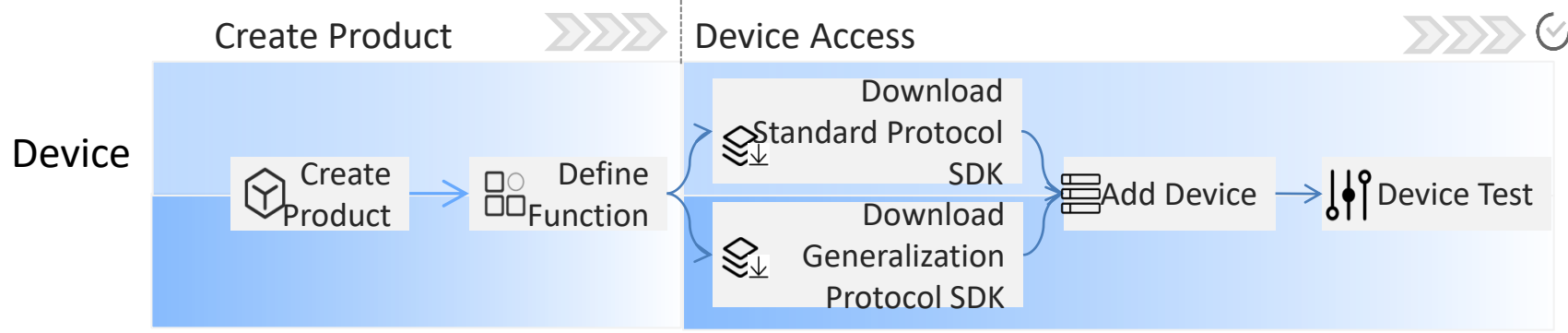
Thing Model Use Case

The **unified data format and interface** defined by Thing Model provide unified presentation and interaction of data, thus support **integrated management** of firefighting system between various department and systems



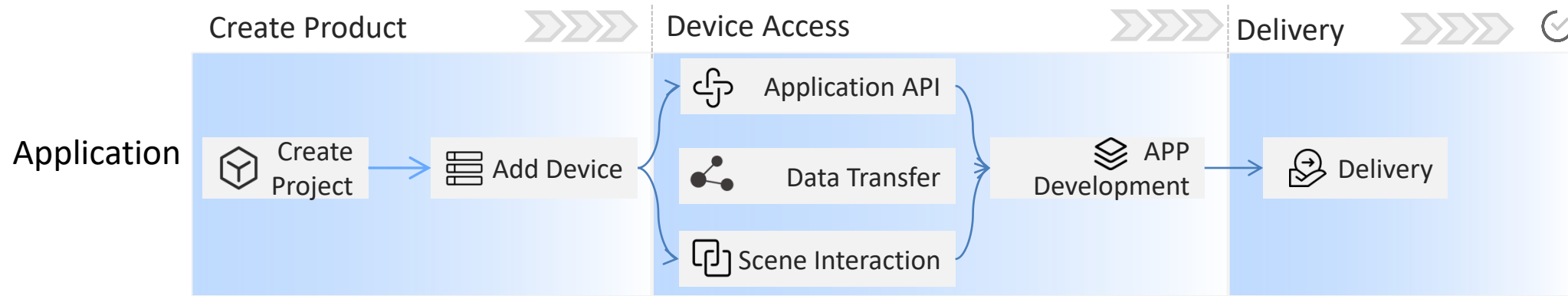
- Unified data format
- Device collaboration
- Heterogenous data convergence
- Unified data interface
- Data fusion and mining
- Integrated management

How to use Thing Model



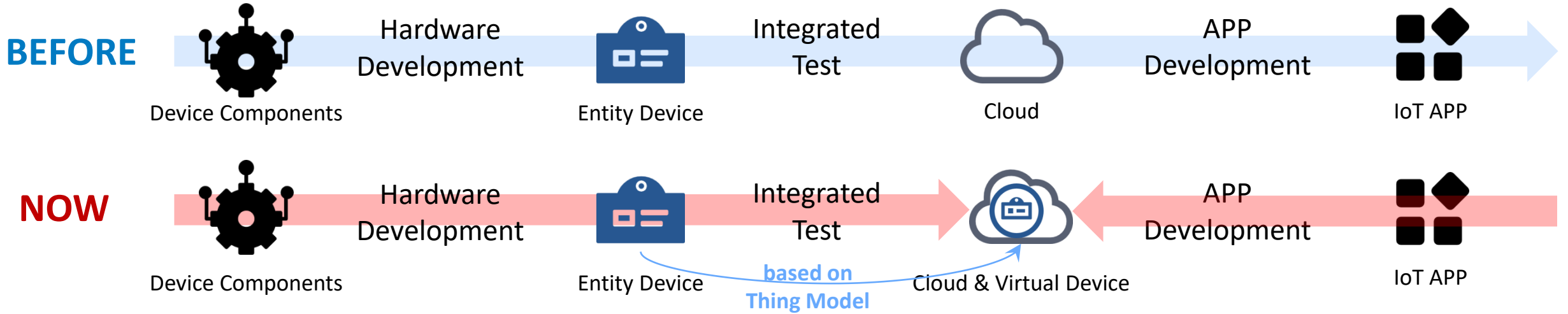
添加产品

- 产品名称: 4-30, 支持中文、数字、英文、特殊字符, 产品名称唯一
- 产品类型: 请选择
- 节点类型: 请选择
- 接入协议: 请选择
- 联网方式: 有线 wifi 以太网 NB 其他
- 数据协议: 请选择
- 产品描述: 最多100个字

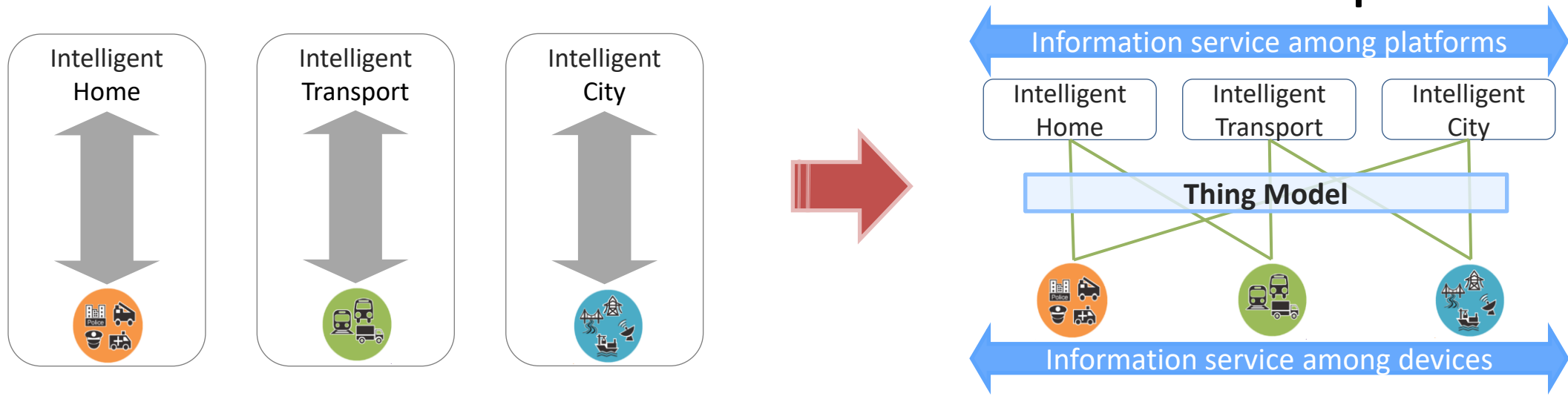


Advantage of Thing Model

✓ **Less Time** by decoupling software and hardware development process



✓ **More flexible Data Flow** with horizontal transfer between devices and platforms





Converge and evolve with new technologies (**Digital Twin, CPS**)



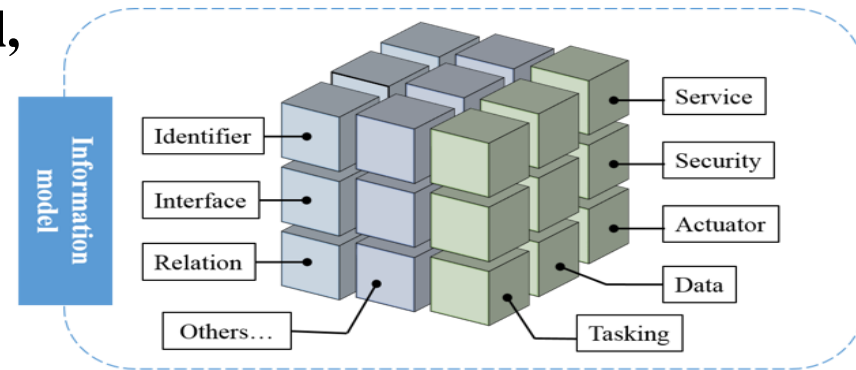
Update standard and application tool of Thing Model, provide new service such as **low-code development platform** and **out-of-the-box functionality**



Develop Thing Model based **data derivatives service**



Provider **resources sharing and crowdfunding platforms**, enrich **Thing Model library**, and complete **certification and validation** capability, refine **Thing Model ecological system**



Thanks

<https://open.iot.10086.cn/intro>