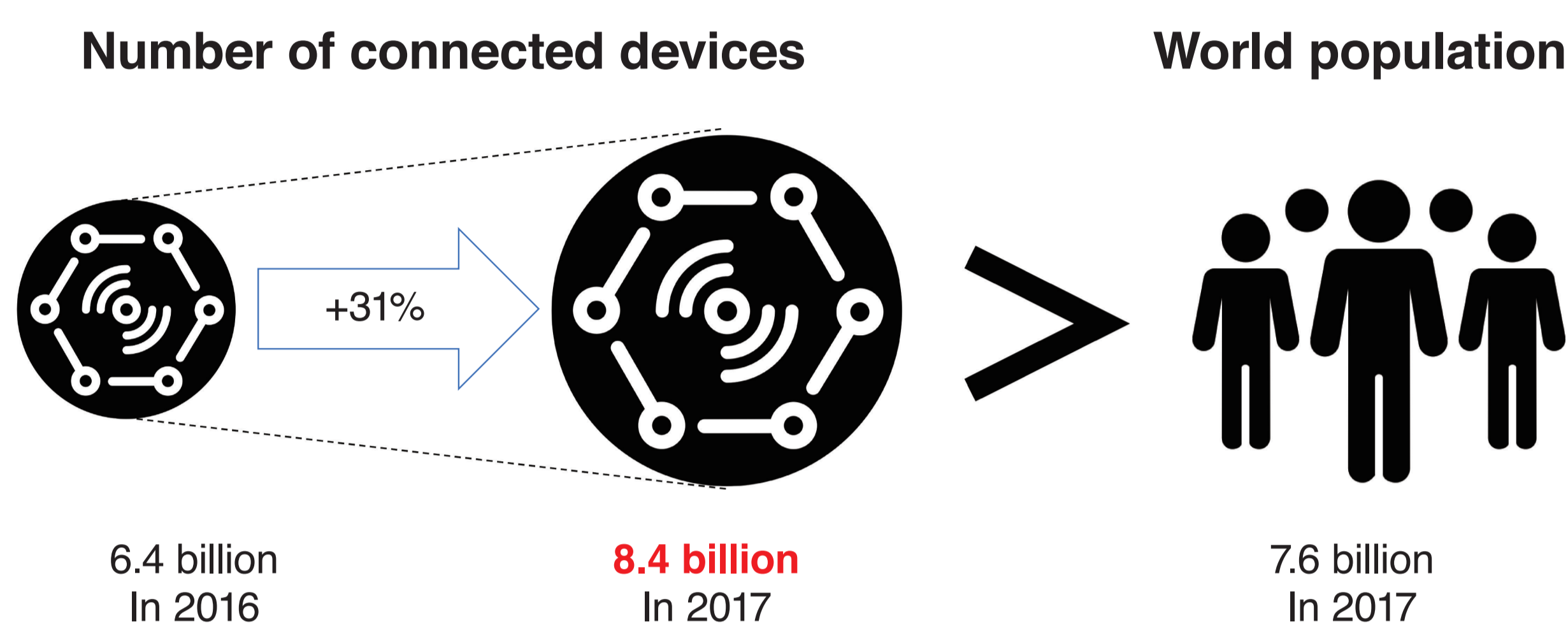


## Access control mechanism & resource sharing platform for IoT Era

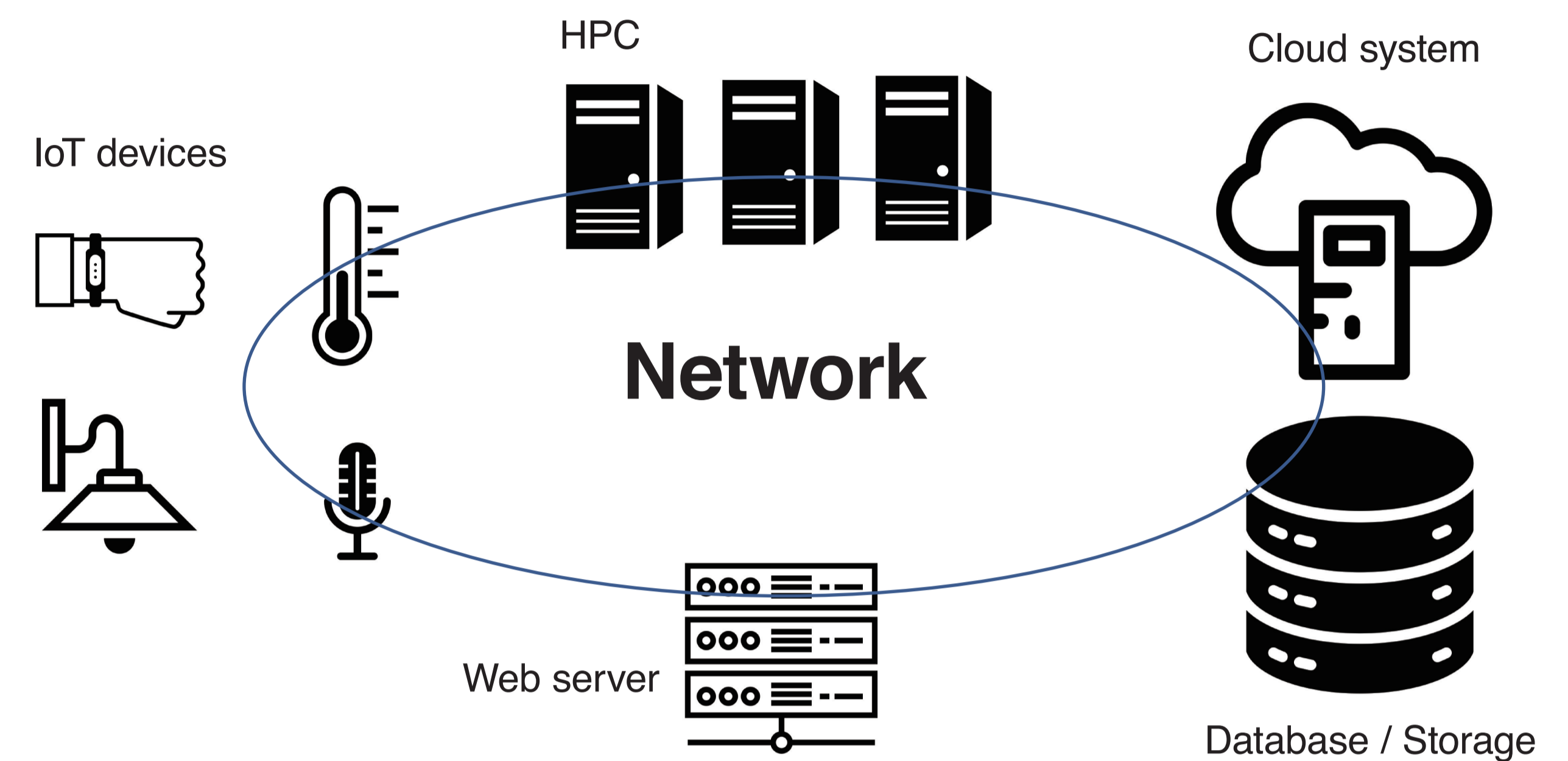
### Motivation

Today, there is **a large number of IoT devices** distributed widely throughout world. According to the Gartner, Inc. 's forecast, **"8.4 billion connected things"** will be in use worldwide in 2017" [1].

[1] Gartner, Inc., "Gartner Says 8.4 Billion Connected "Things" Will Be in Use in 2017, Up 31 Percent From 2016," <http://www.gartner.com/newsroom/id/3598917>



In general, in an IoT system, many types of & a large number of resources (IoT devices, computational resources, Storage, etc.) are connected by network and cooperated with each other.



Therefore, it is important that **how to manage / connect a large number of resources distributed widely throughout world.**

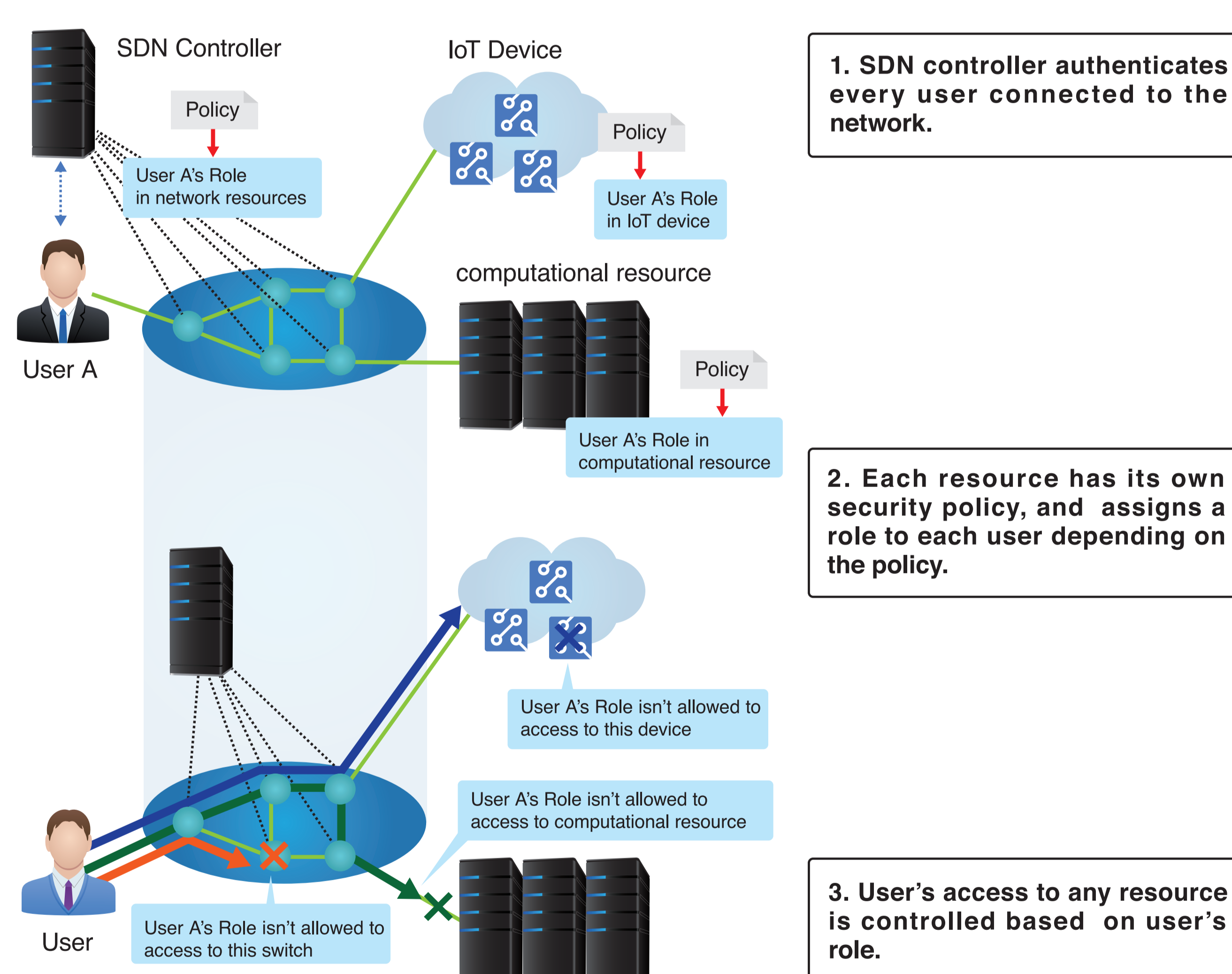
In this background, we have been tackling two research themes;

1. **FlowSieve: Access control mechanism that dynamically organizes a flexible and secure network linking devices.**
2. **Sharing Economy of Things Platform: Platform for sharing IoT resources (sensors, computational resources, actuators, etc.)**

### FlowSieve

To date, various security technologies have been proposed and implemented. However, these technologies have targeted only computational resources.

We propose an access control mechanism **that targets network resources as access-controllable resources**. We have adopted **RBAC** (Role Based Access Control) and **SDN** to develop the mechanism. The mechanism works as shown below, and **provides user-dedicated infrastructure**.



**FlowSieve** is a preliminary implementation of the access control mechanism. FlowSieve is implemented as an OpenFlow controller program, and can **control access to network resources**. However, under the current version of FlowSieve, all devices and network resources are controlled under only one security policy.

In the next plan, we extend FlowSieve so that each resource can have its own security policy towards multi-site network.

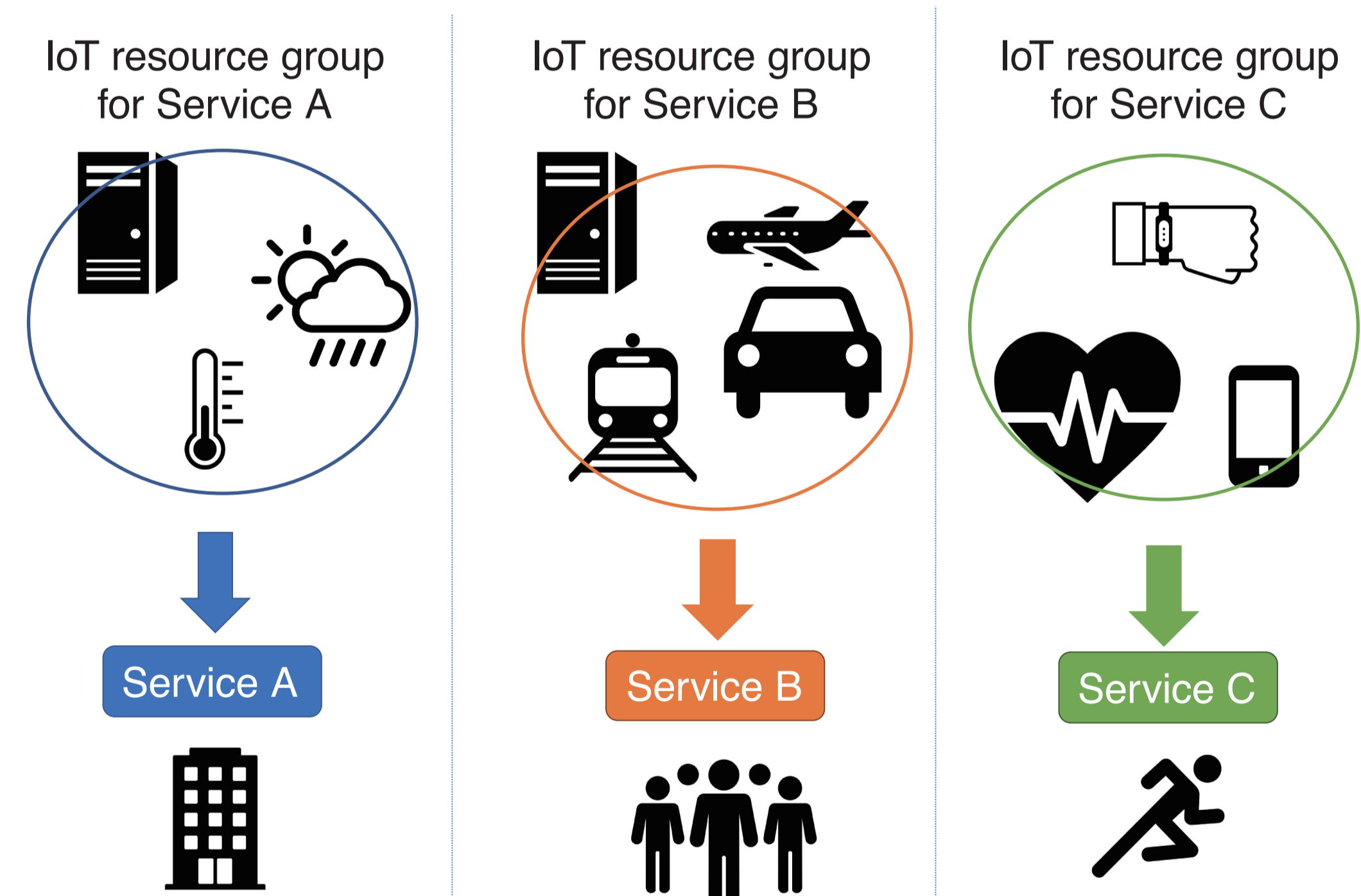
**GitHub:** <https://github.com/shimojo-lab/flowsieve>

### Sharing Economy of Things Platform

With the arrival of Internet of Things (IoT) era, diversity of IoT devices have been connected to the Internet. However, IoT services have never been popular because of **the lack of a platform for sharing IoT devices**. We tackle this problem by proposing a platform for sharing IoT devices based on **the idea of Sharing Economy**.

Without sharing platform, Each service developer prepares resource group for building each service.

#### Without sharing platform



With sharing platform, resources are register with the platform, and service developers can build services by using registered resources.

#### With sharing platform

