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shaping tomorrow with you
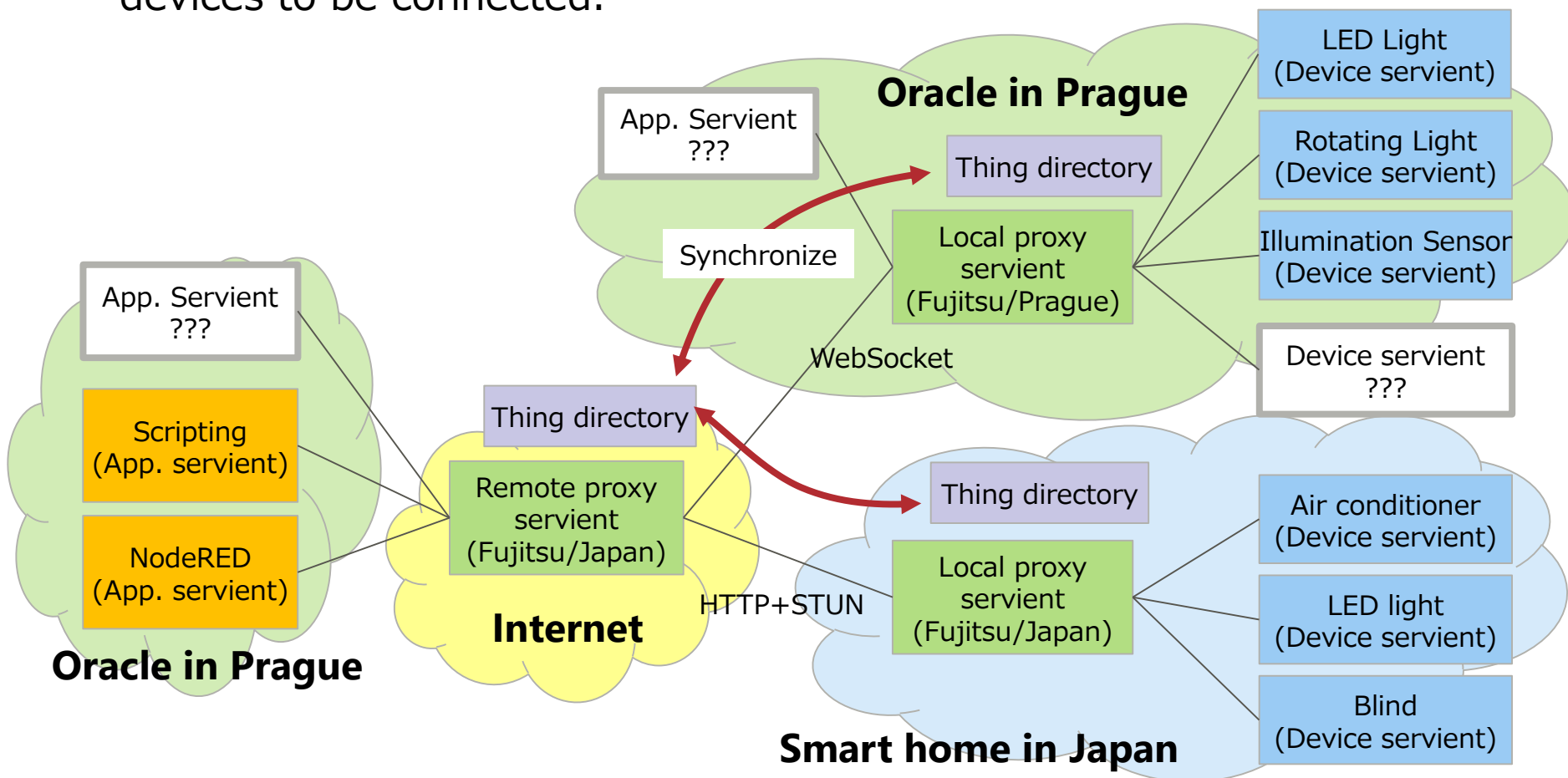
Synchronization of Servients

March 27, 2018
Ryuichi Matsukura
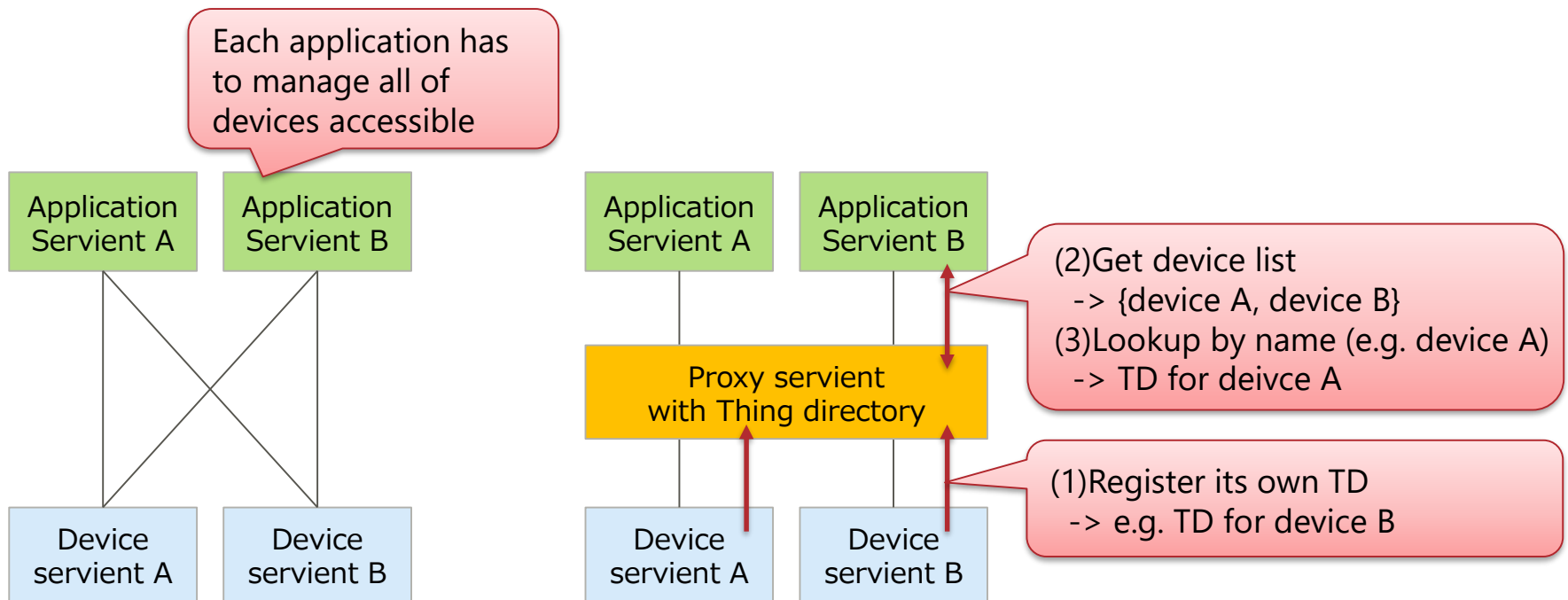Fujitsu Laboratories Ltd. / Fujitsu Ltd.

Plugfest architecture in Prague

- Proxy servients coordinate applications and devices.
  - Participants' applications and device can connect to our proxies.
  - Proxy servient has own thing directory to register and manage the devices to be connected.
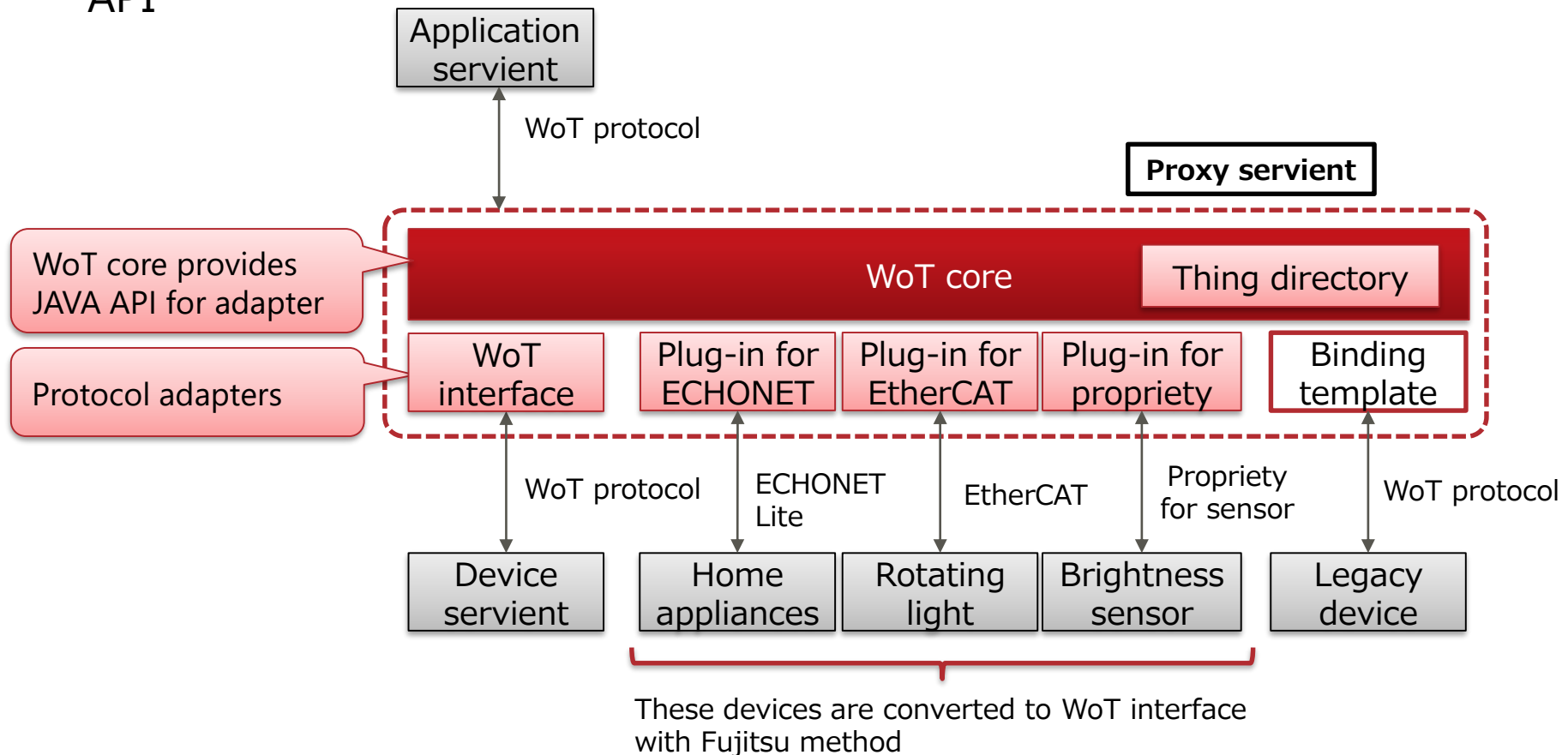
Role of proxy servient

- Proxy servient manage TDs and coordinate connection between application and device.
  - Device servient registers its own TD to the directory
  - Application servient gets TDs of devices from the directory
    - proxy servients provide lookup function to get device list and to search by name.

Each application has to manage all of devices accessible

Application Servient A | Application Servient B

Device servient A | Device servient B

Application Servient A | Application Servient B

Proxy servient with Thing directory

Device servient A | Device servient B

(2)Get device list
-> {device A, device B}
(3)Lookup by name (e.g. device A)
-> TD for deivce A

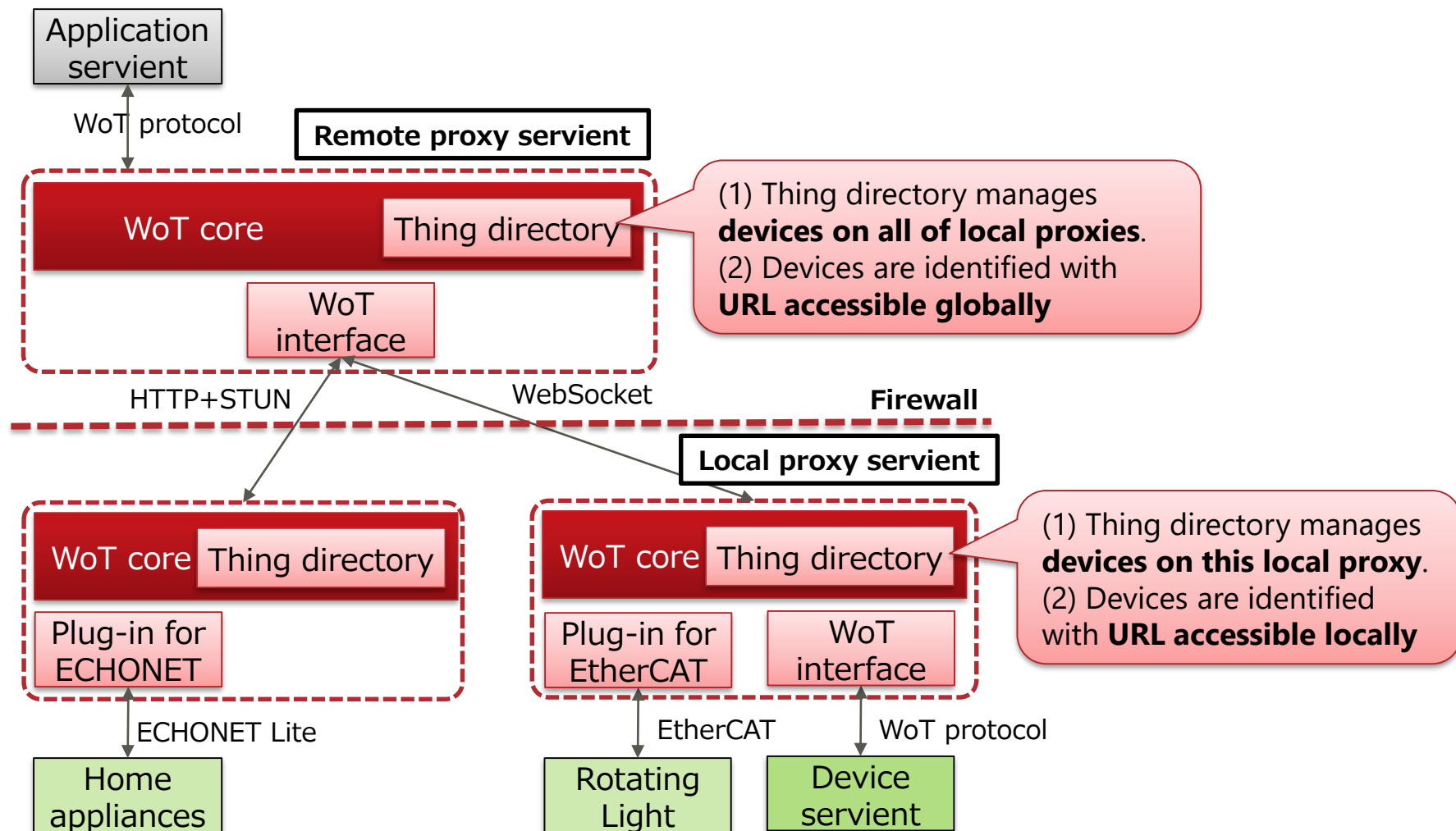(1)Register its own TD
-> e.g. TD for device B

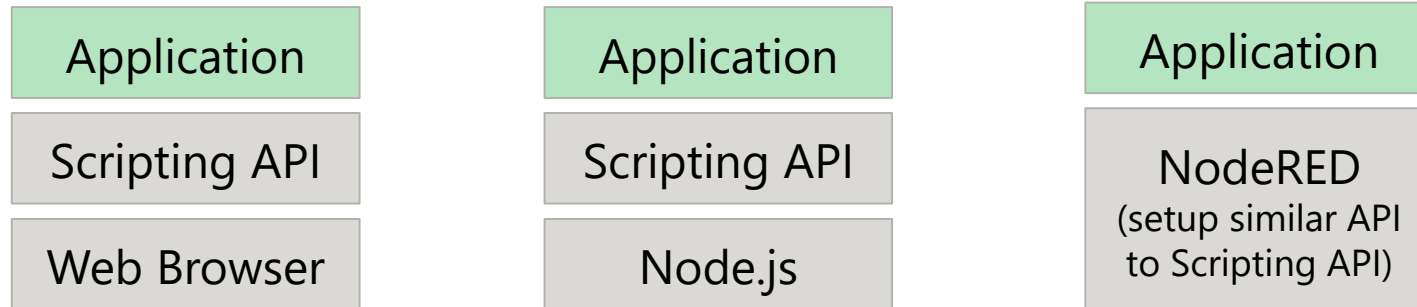# Proxy servient architecture

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- ■ Proxy servient has a function of converting legacy protocols to WoT
  - ■ WoT core has a similar interface to Scripting API
    - Create/Delete thing. Read/Write property, and Event handling with subscription.
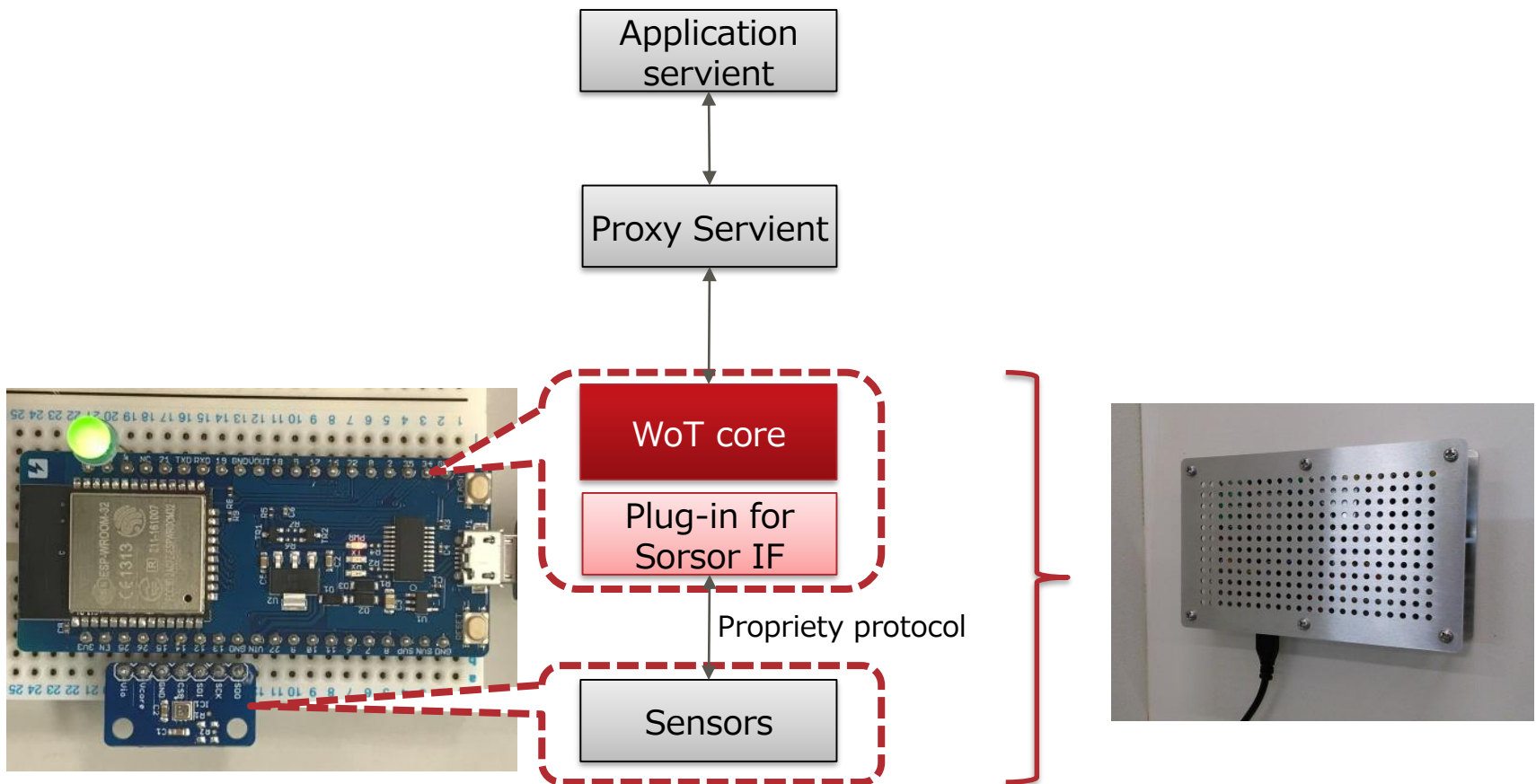 - ■ Protocol adaptors can be plugged in to Proxy servient using WoT core API

These devices are converted to WoT interface with Fujitsu method

Integrated architecture

■ Sequence diagrams corresponding to this architecture in preparation.md on github

Application servient

WoT protocol

Remote proxy servient

WoT core | Thing directory

WoT interface

(1) Thing directory manages **devices on all of local proxies**.
(2) Devices are identified with **URL accessible globally**

HTTP+STUN | WebSocket | **Firewall**

Local proxy servient

WoT core | Thing directory

Plug-in for ECHONET

WoT core | Thing directory

Plug-in for EtherCAT

WoT interface

(1) Thing directory manages **devices on this local proxy**.
(2) Devices are identified with **URL accessible locally**

ECHONET Lite | EtherCAT | WoT protocol

Home appliances

Rotating Light

Device servient

Application Servient

Application
Scripting API
Web Browser

Application
Scripting API
Node.js

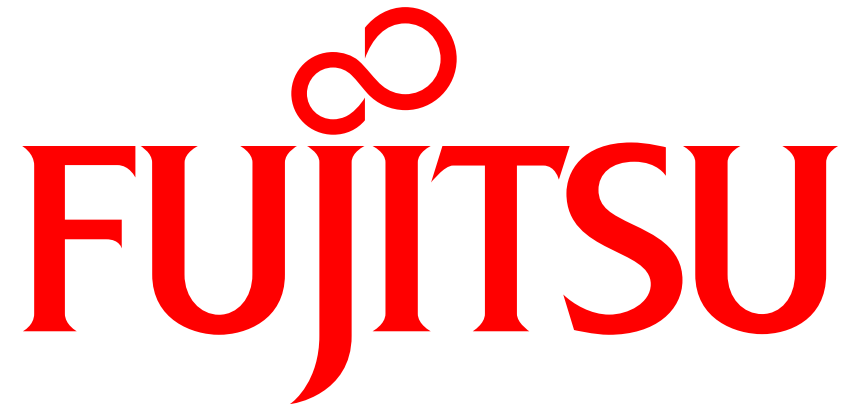| Application |
|---|
| NodeRED
(setup similar API
to Scripting API) |

Device servient

- **Compact WoT core is required for devices Servients**
  - Implemented device servient on Wi-Fi module with temperature sensor

Application servient

Proxy Servient

WoT core

Plug-in for Sorsor IF

Propriety protocol

Sensors

Conclusion and Next step

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- ■ **Many possible combinations of servients for use cases**
  - ■ Some variations have been shown in the plugfest
  - ■ Need to clarify these combinations after this meeting
- ■ **Proposal for Architecture documents**
  - ■ Some useful information for developers should be described
    - • Role and interface of Thing directory
    - • Description of proxy
    - • Building blocks variation of application, proxy, and device servients
    - • Inter-servient interface and sequence diagrams