Browser-Based Servient

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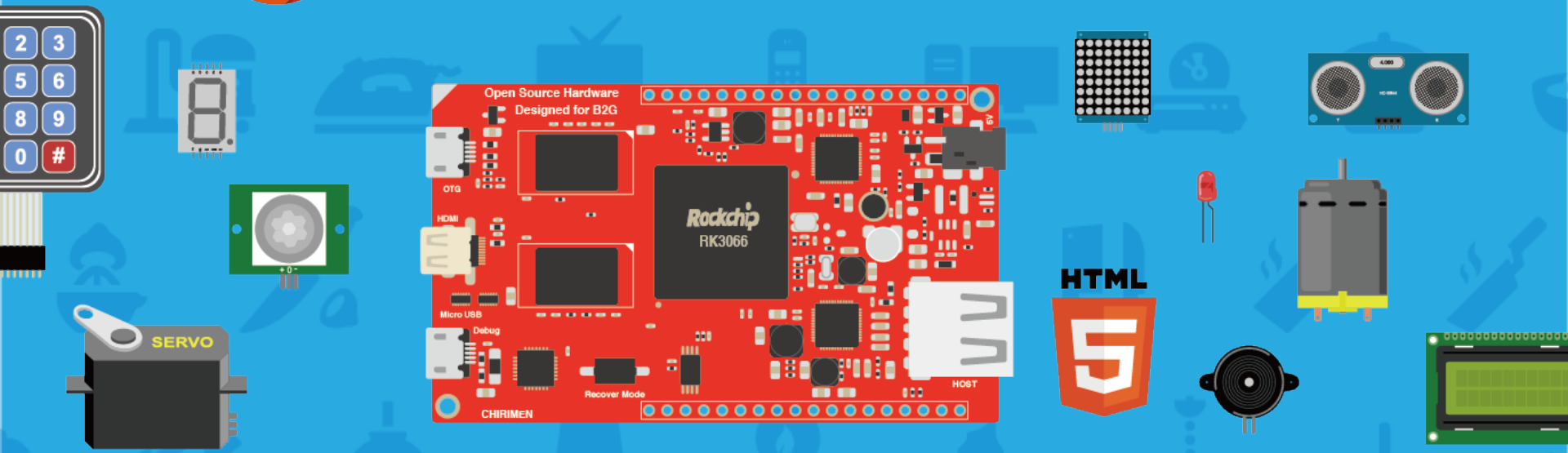
Agenda

- CHIRIMEN recent activities
- Web GPIO / I2C API recent activities
- Architecture of our plugfest demo

CHIRIMENとは What is CHIRIMEN?



- CHIRIMEN is a reference open source hardware board providing web GPIO/I2C API.
- CHIRIMEN board can interact with sensors and actuators through web applications (HTML5, CSS3, JavaScript).

CHIRIMEN RECENT ACTIVITIES

Exhibition / Event

Try and Touch event (Feb. 2017)

Interop Tokyo 2016 (Jun. 2016)

Keio SFC Event (Nov. 2016)

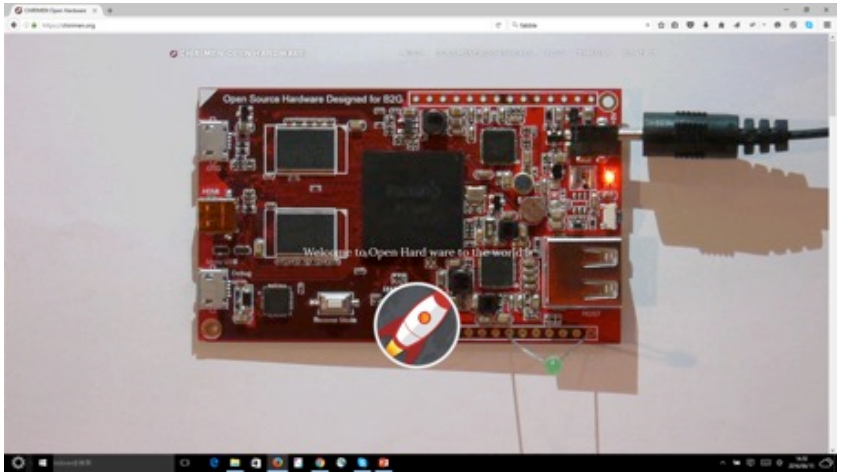
Maker Faire

Maker Faire NY 2015 (Sep. 2015)

Maker Faire Tokyo 2016 (Aug. 2016)

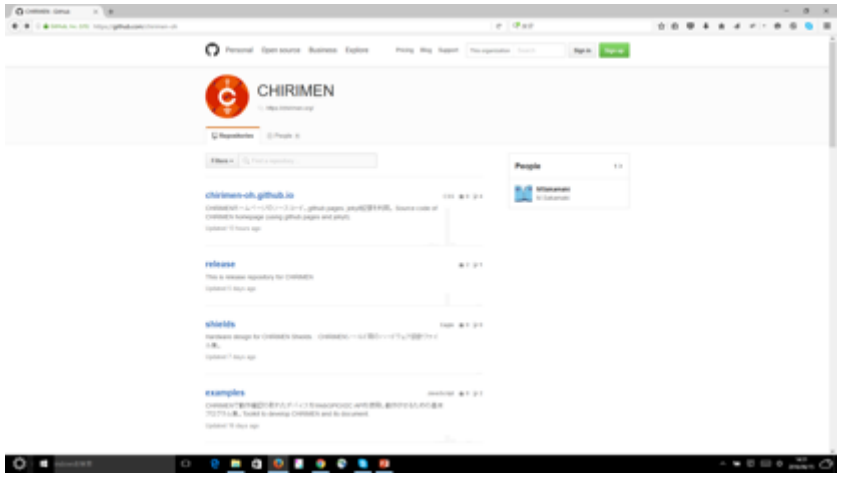
Ogaki Mini Maker Faire 2016 (Dec. 2016)

Online Resources



Home Webpage:
https://chirimen.org/

Facebook :
https://www.facebook.com/groups/chirimen/



Github:
https://github.com/chirimen-oh

Slack:
https://chirimen-oh.slack.com

Web x IoT Maker's Hackathon

KDDI Research

IoT Innovative human resource development program for youth and entrepreneurs

Mar. 18th and 19th , 2017 @ Impact HUB Tokyo (Japan), 40+ attendees

Supported by W3C






Hack WebGPIO/I2C API (and its prototype environment "CHIRIMEN".)

Report (in Japanese): https://browserobo.github.io/hackathon2017/report/

Web x IoT Maker's Hackathon (cont.)

Highest award: "Heart weather"
"Real world" in front of "Virtual World" (display)

Discuss on WebGPIO/I2C API
(and relationship to WoT WG activities)

Raised issues:
- Security
- API abstraction
- etc.

WEB GPIO/I2C API RECENT ACTIVITIES

Vision: Pervasive browsers

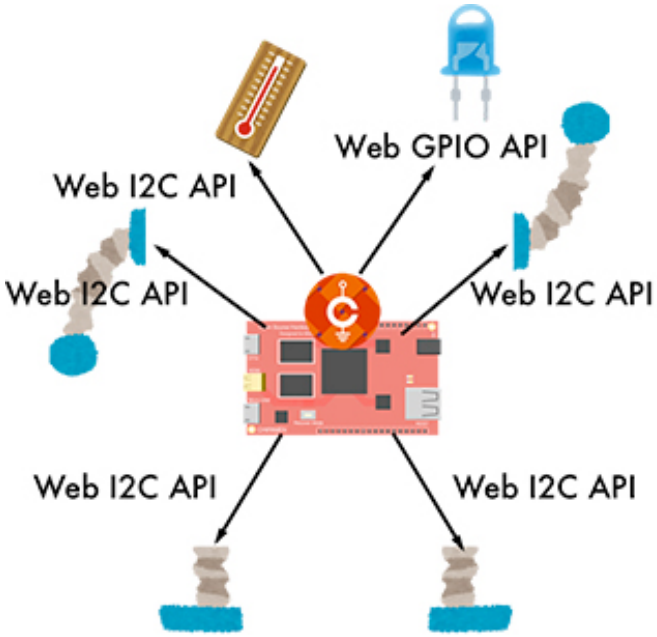
Web 技術が導入された IoT デバイス

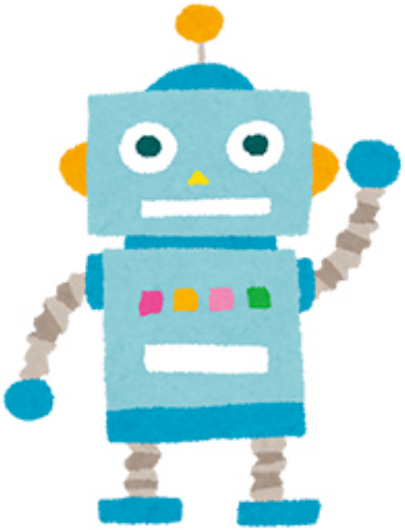
IoT devices into which Web technology has been introduced.

https://github.com/chirimen-oh/any-issues/files/298603/CHIRIMEN-A3.-.pdf

Web GPIO/ I2C API

- Web GPIO/I2C API proposed by W3C browser and robotics CG and CHIRIMEN open hardware community
  https://browserobo.github.io/
- Enable interaction with sensors and actuators through GPIO and I2C





A robot controlled by browser

https://codeiq.jp/magazine/2017/04/50354/

Recent Activities

KDDI Research

■ Improved stability

- **APIs implemented as polyfills**
  - https://github.com/chirimen-oh/WebGPIO
- **address bugs in the polyfills for hackathon in March**

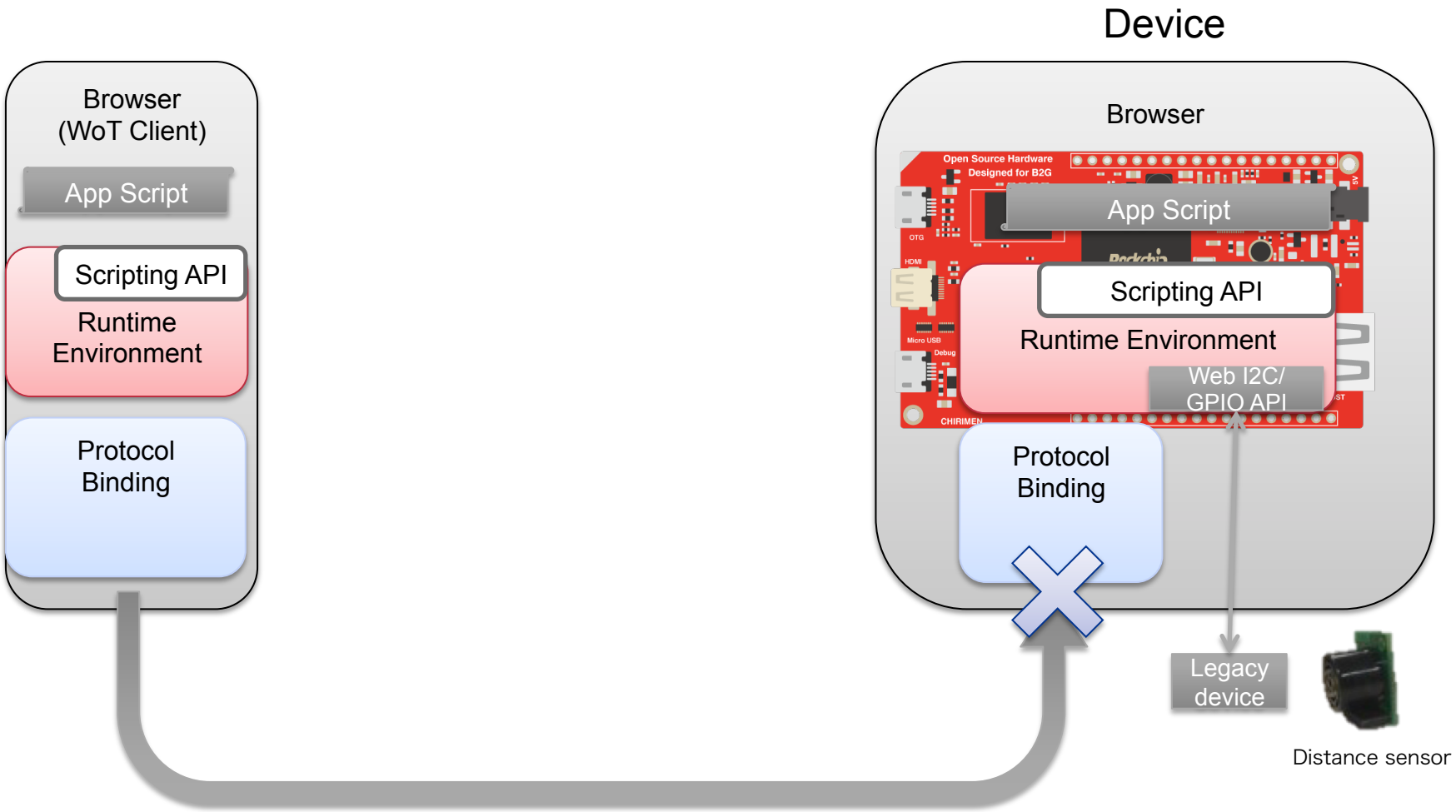
■ Discussion about APIs (feedback from the hackathon event)

- **Web I2C API does not currently supports to write a byte.**
  - plan to be implemented
- **Should more general APIs to control hardware be prepared for web developers?**
  - considering wrapping generic sensor API (Device and Sensor WG) and abstracting by thing description
- **Security issues**

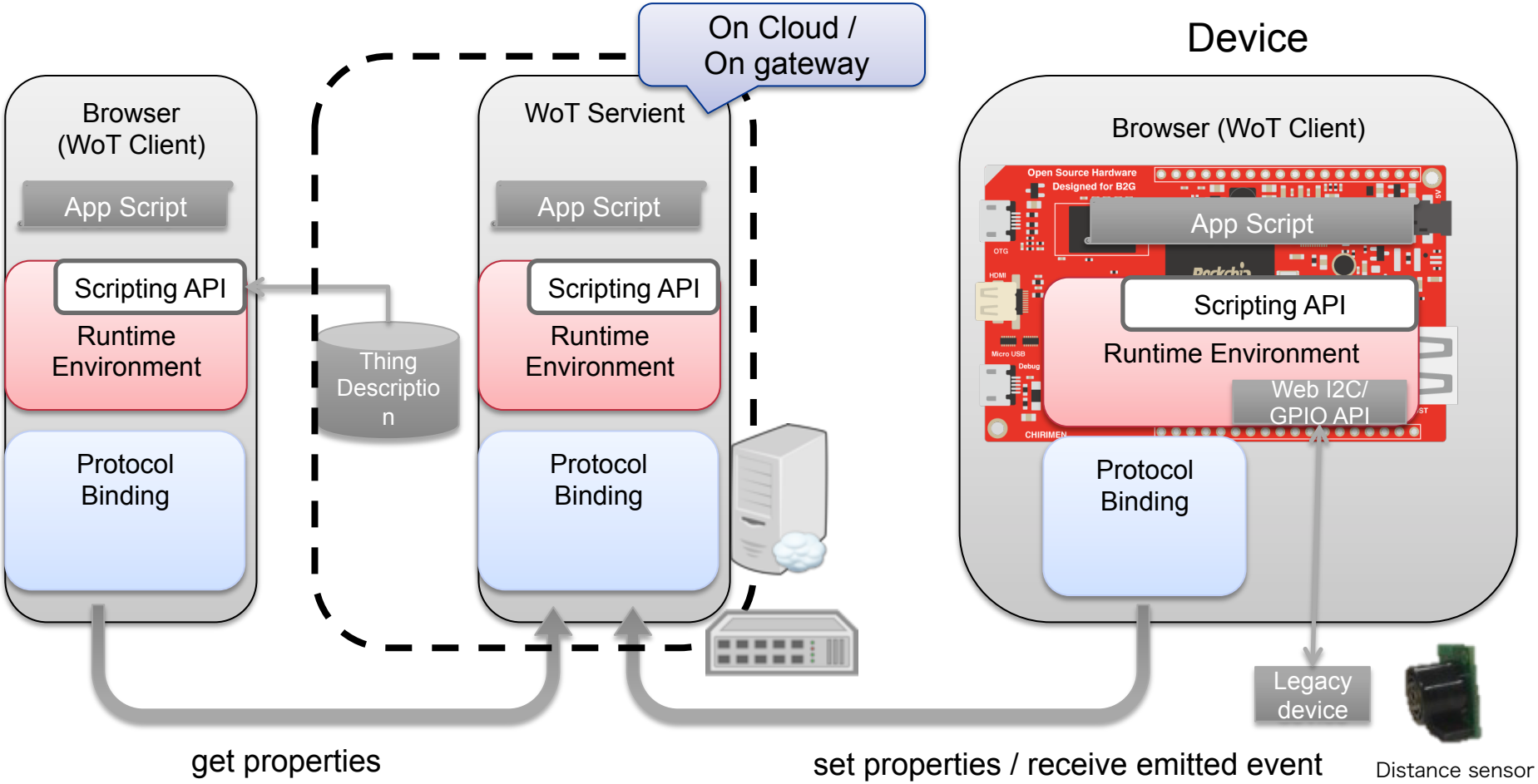
https://codeiq.jp/magazine/2017/04/50462/

ARCHITECTURE OF OUR PLUGFEST DEMO

Browser has no server function

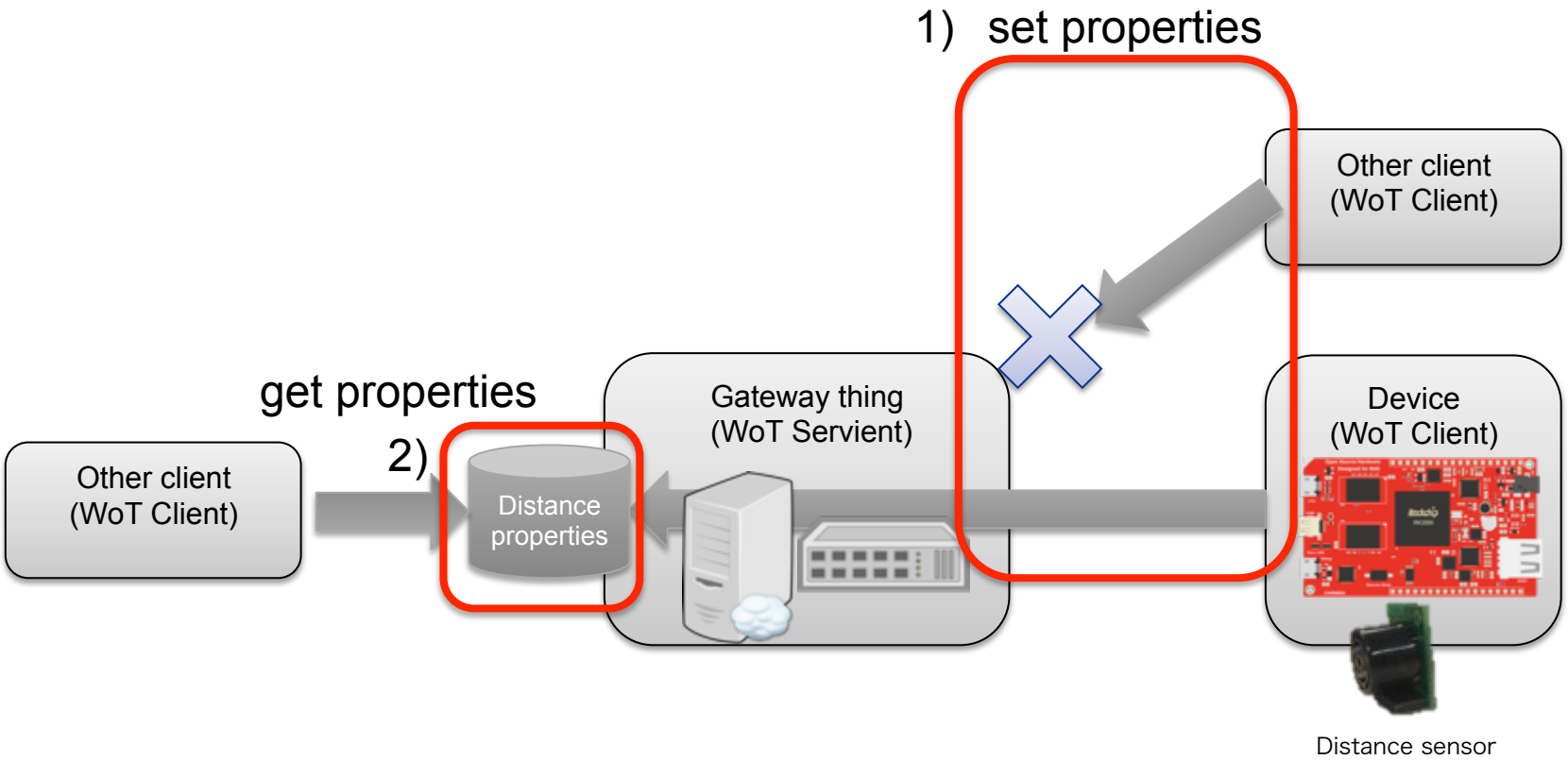


WoT servient with browser



- **Browser on the device communicate with WoT servient on cloud or gateway as a WoT client.**
- **It can behave as an adapter for legacy sensor and actuator.**

Issues



1) Authentication and authorization of browser/client.
   - Setting properties should be allowed only to specified client.
2) Consistency between thing descriptions and the device.
   - ex) Distance sensor value should be set as a distance properties.

Thank you!

Spec

OS	B2G 2.5
CPU	RK3066 (1.6GHz dual core)
GPU	Mali-400 (quad core)
Memory	DDR3 1GB
Storage	NAND Flash 8GB, microSD slot
Interface	microHDMI, microUSB (OTG), USB,GPIO, I2C, etc.