

W3C Web of Things + Oracle IoT Asset Monitoring

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W3C Web of Things

- The Web of Things standard allows to describe devices (things) in a common ways across device manufacturers and protocols.
- It is developed in the W3C working group with participants from Siemens, Intel, Panasonic, Hitachi, Fujitsu and SmartThings and others.
- Oracle focuses on interoperability and mashup scenarios of Oracle's IoT Cloud Service and Applications with devices from WoT participants.

Oracle IoT Applications

Apps

Asset
Monitoring

Production
Monitoring

Fleet
Monitoring

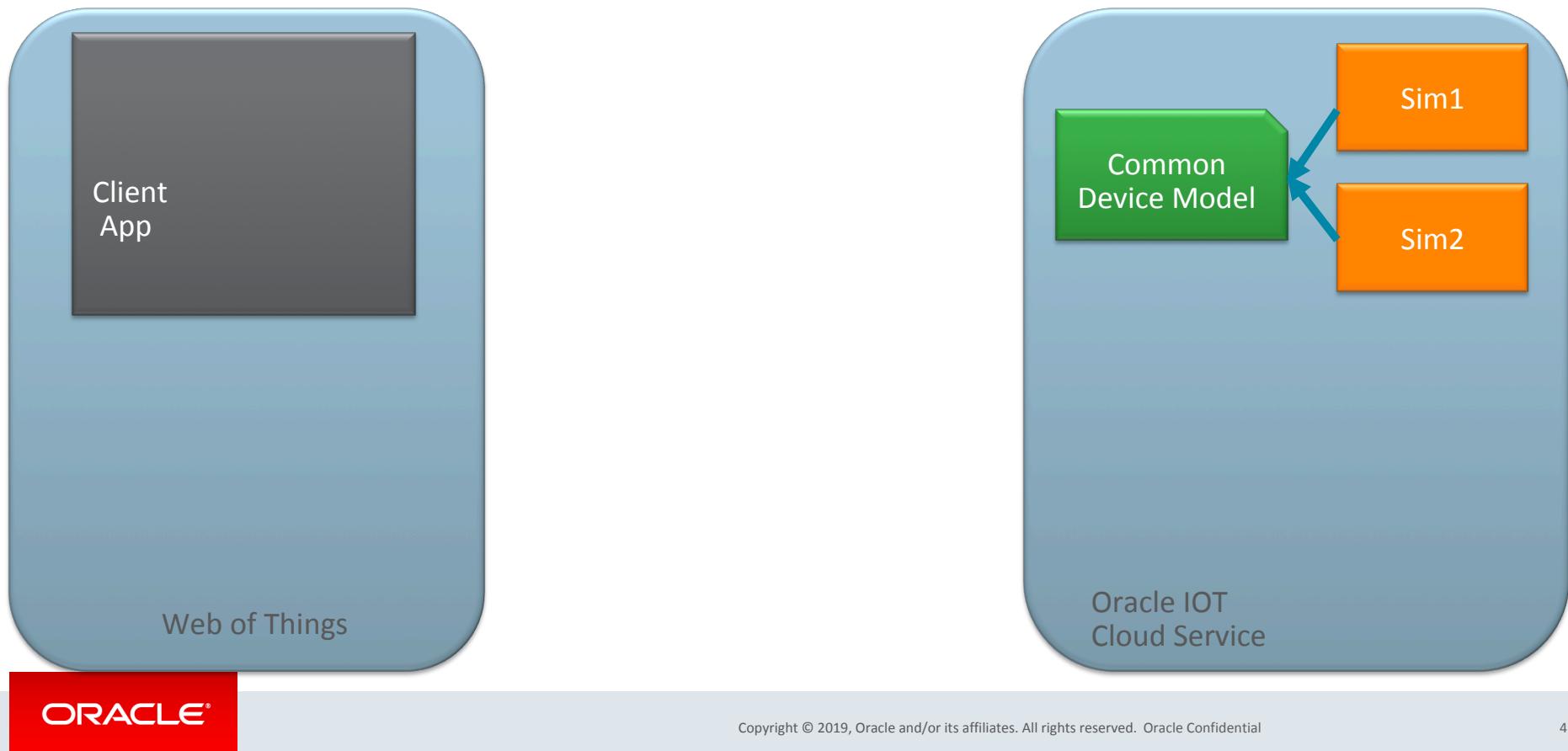
Connected
Worker

Platform

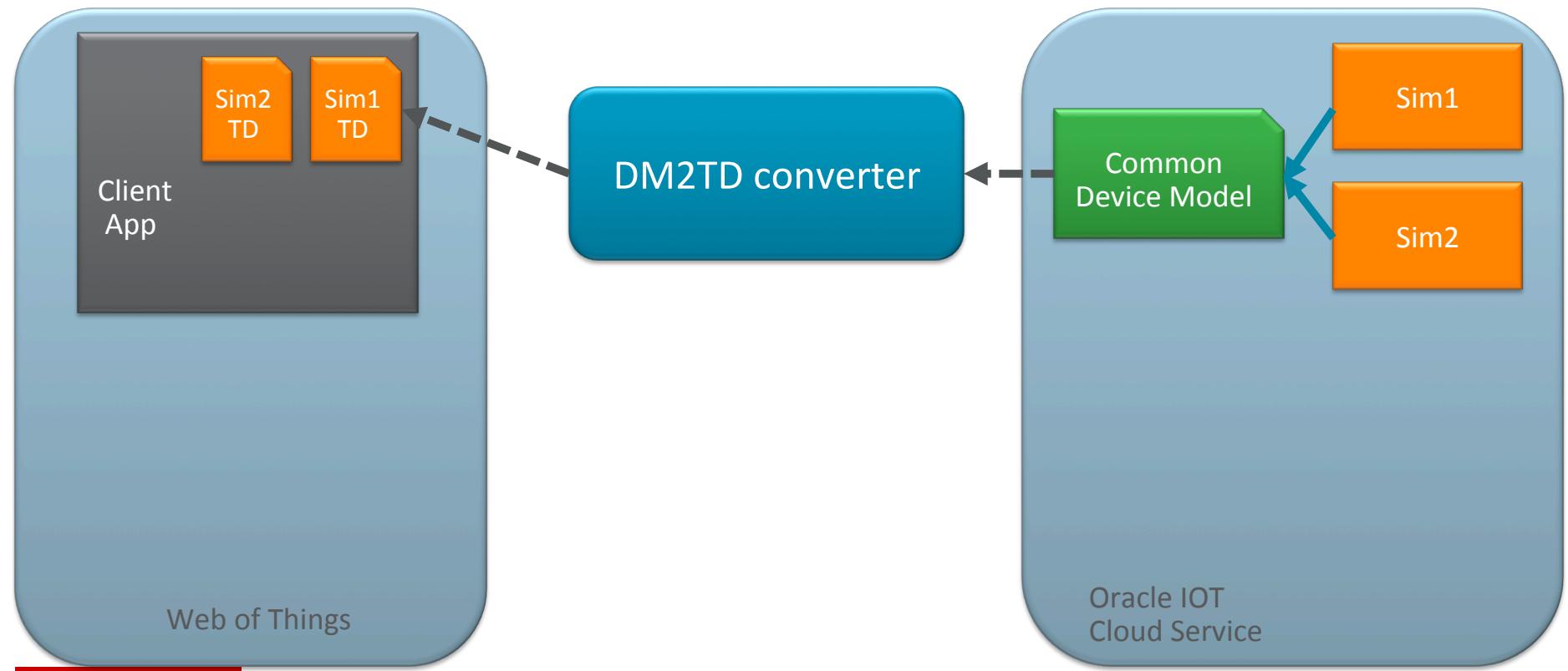
IOT Cloud Service

Digital Twin
Simulator

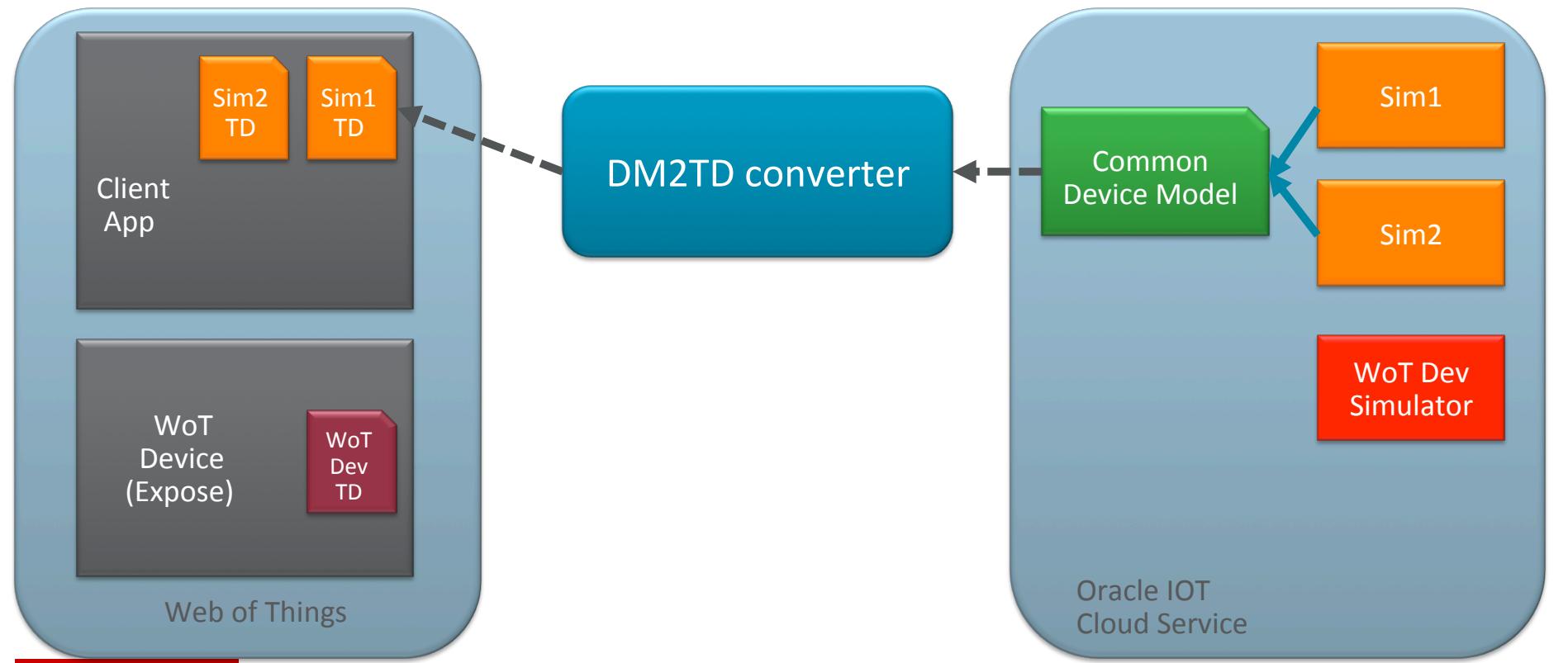
Oracle Device Model and W3C Thing Description Interworking



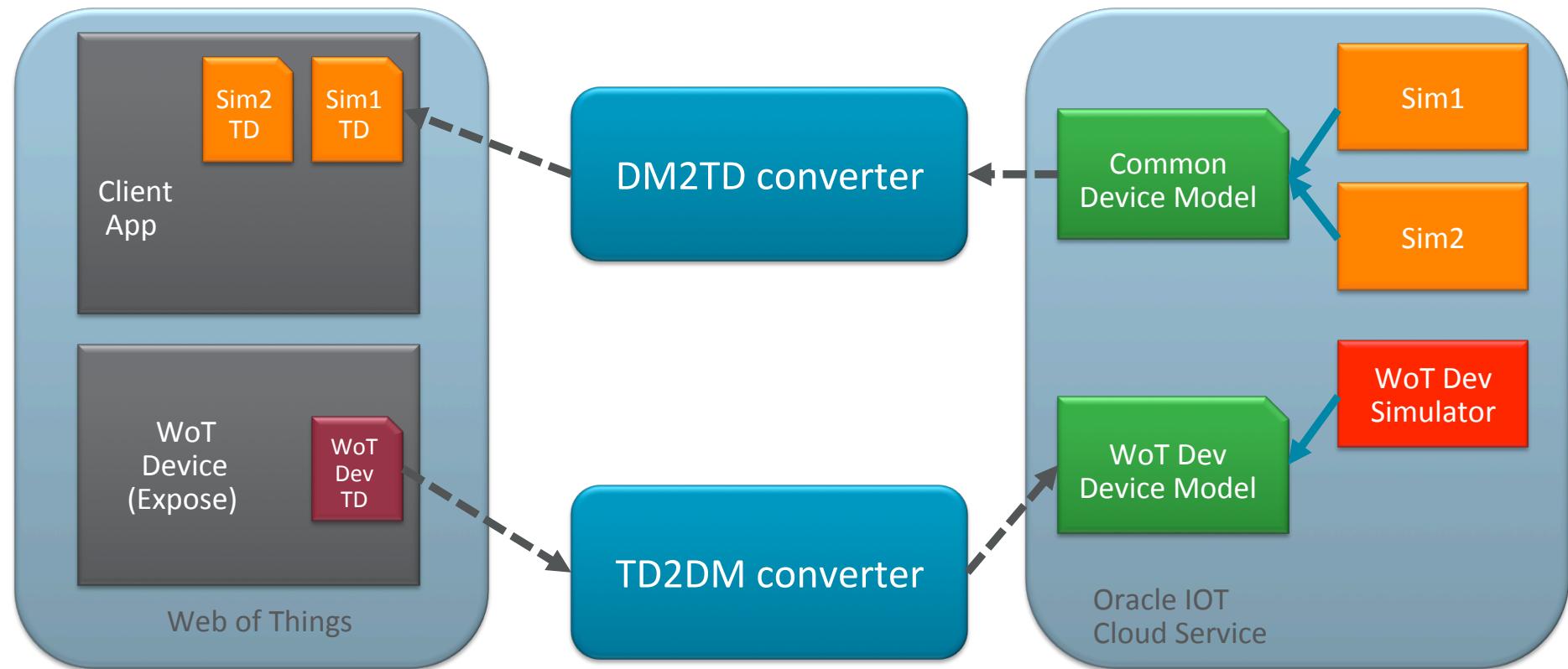
Oracle Device Model and W3C Thing Description Interworking



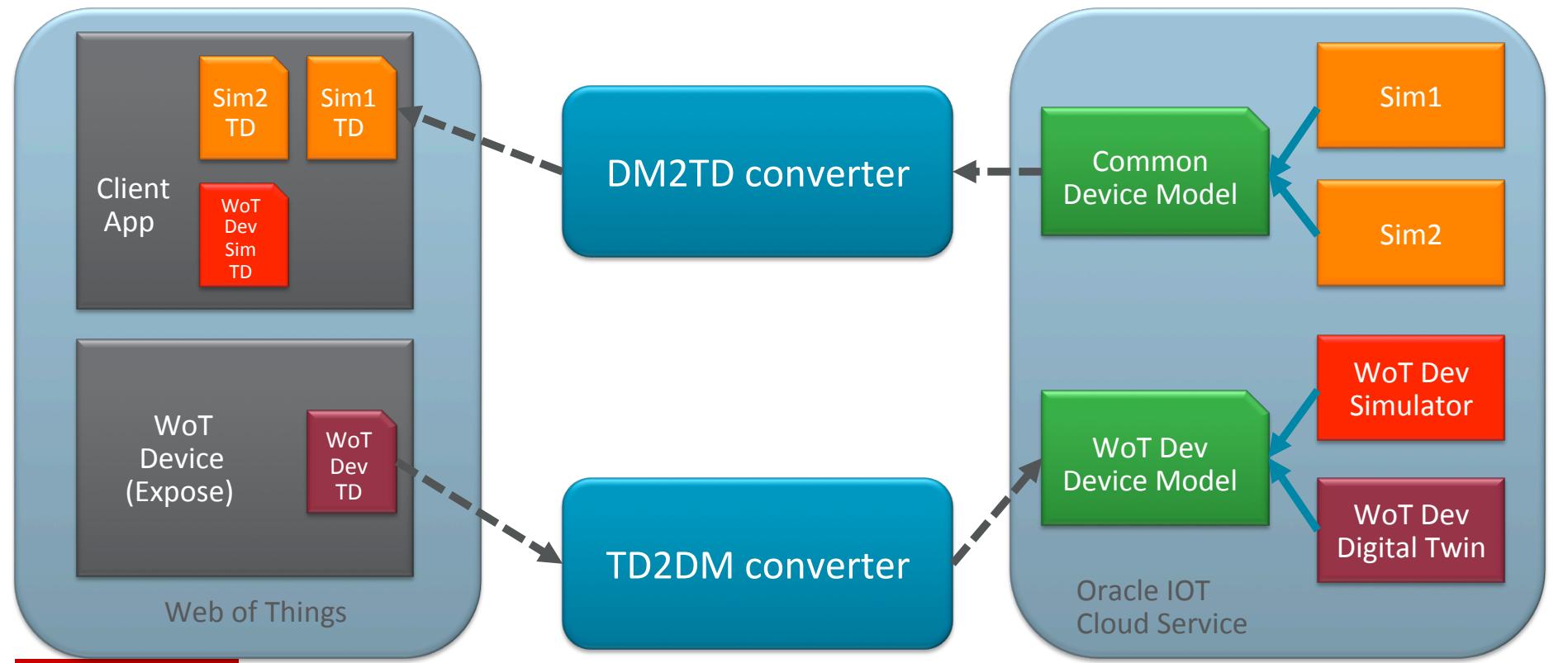
Oracle Device Model and W3C Thing Description Interworking



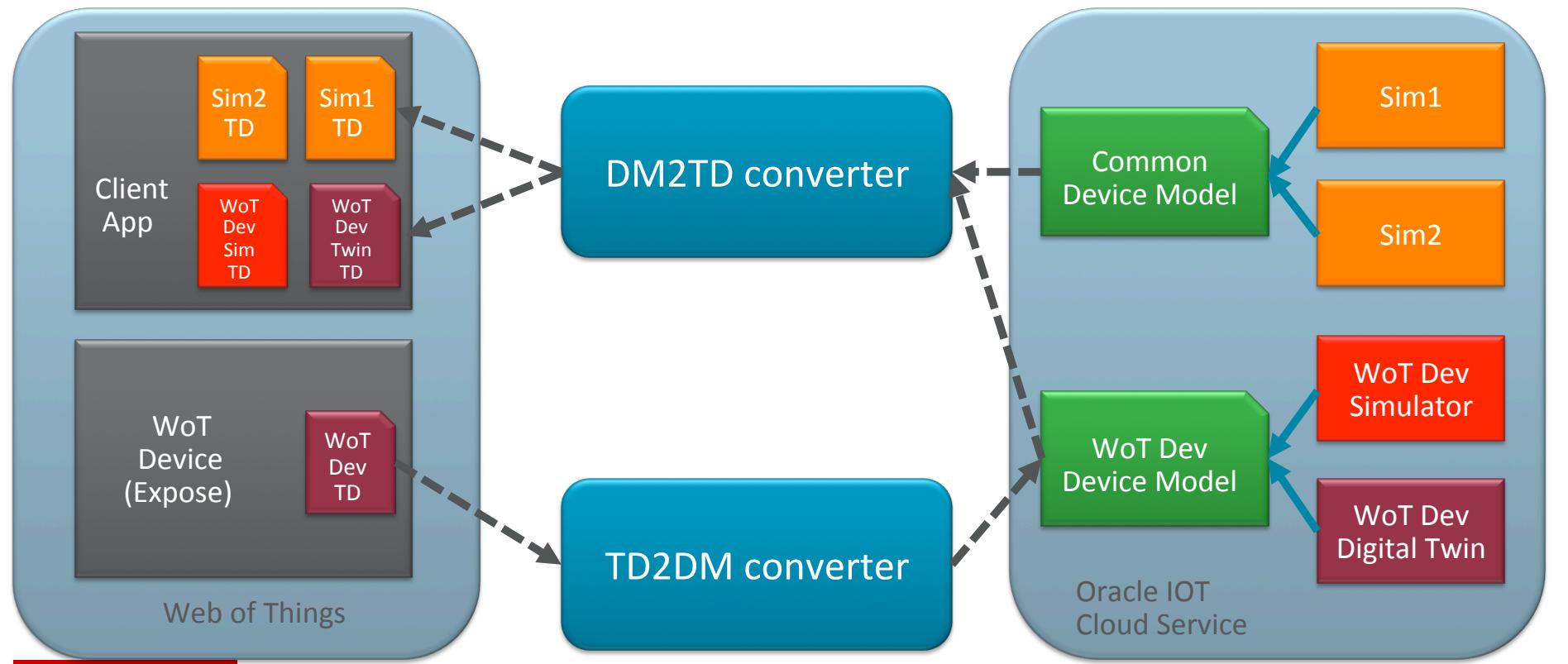
Oracle Device Model and W3C Thing Description Interworking



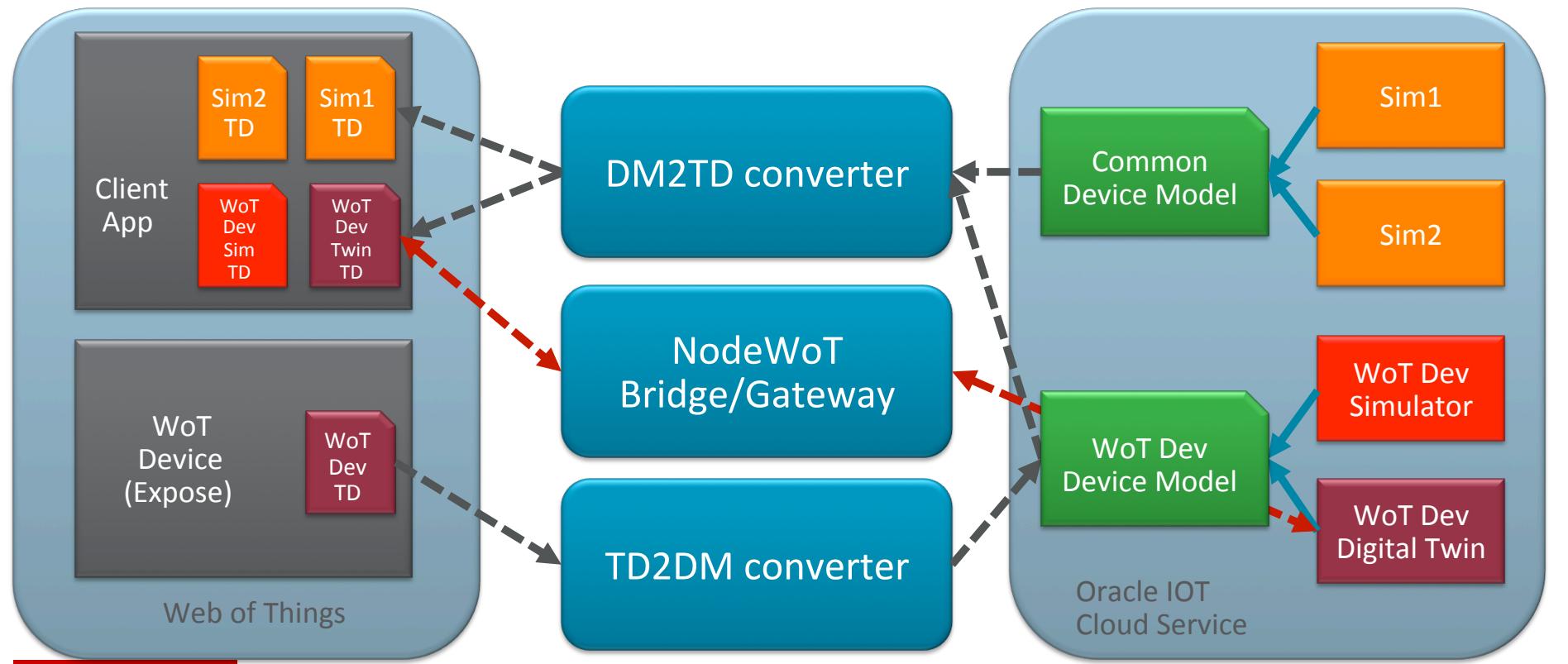
Oracle Device Model and W3C Thing Description Interworking



Oracle Device Model and W3C Thing Description Interworking



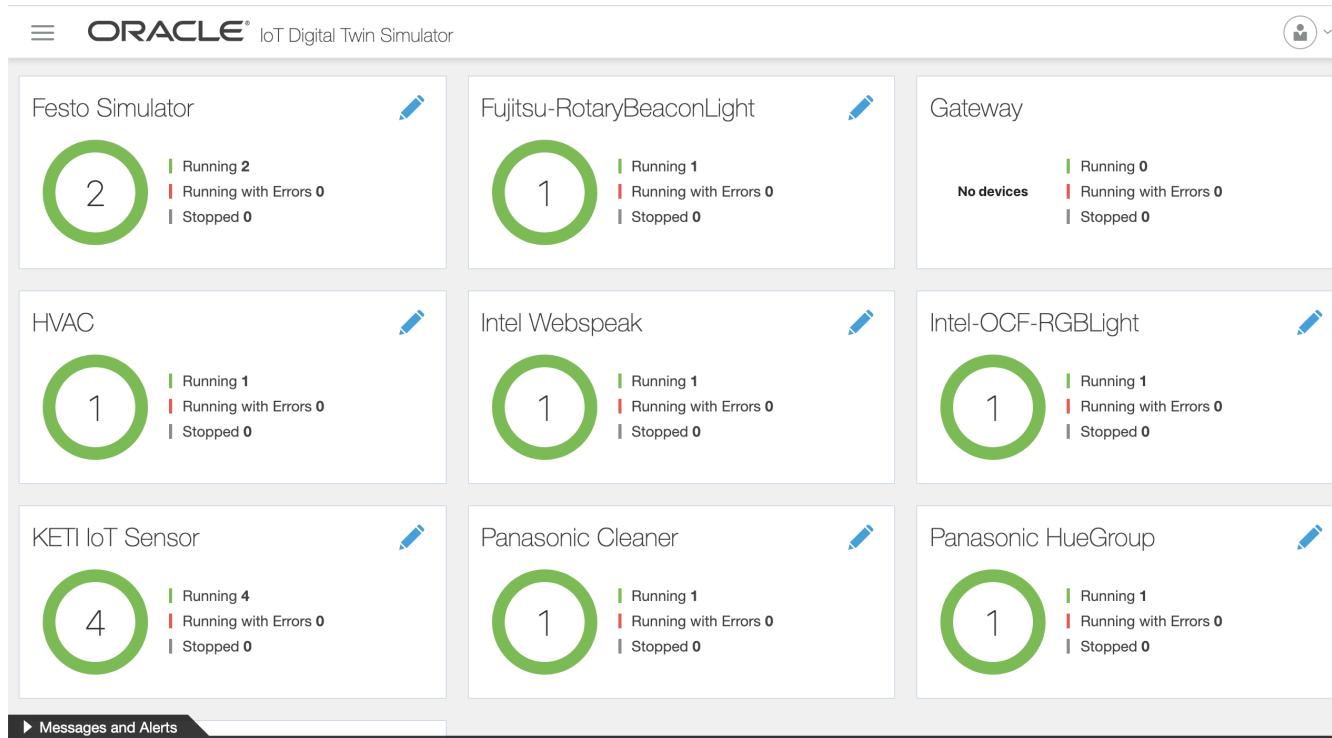
Oracle Device Model and W3C Thing Description Interworking



Asset Monitoring of plugfest devices

- WoT members use various different devices during the plug fests
- Device models were generated using the td2dm converter
- they were imported into the Oracle IoT Cloud service
- Simulators were created for these devices
- Thing descriptions for these Simulators were generated using the dm2td converter

Digital Twin Simulators



HVAC Simulator

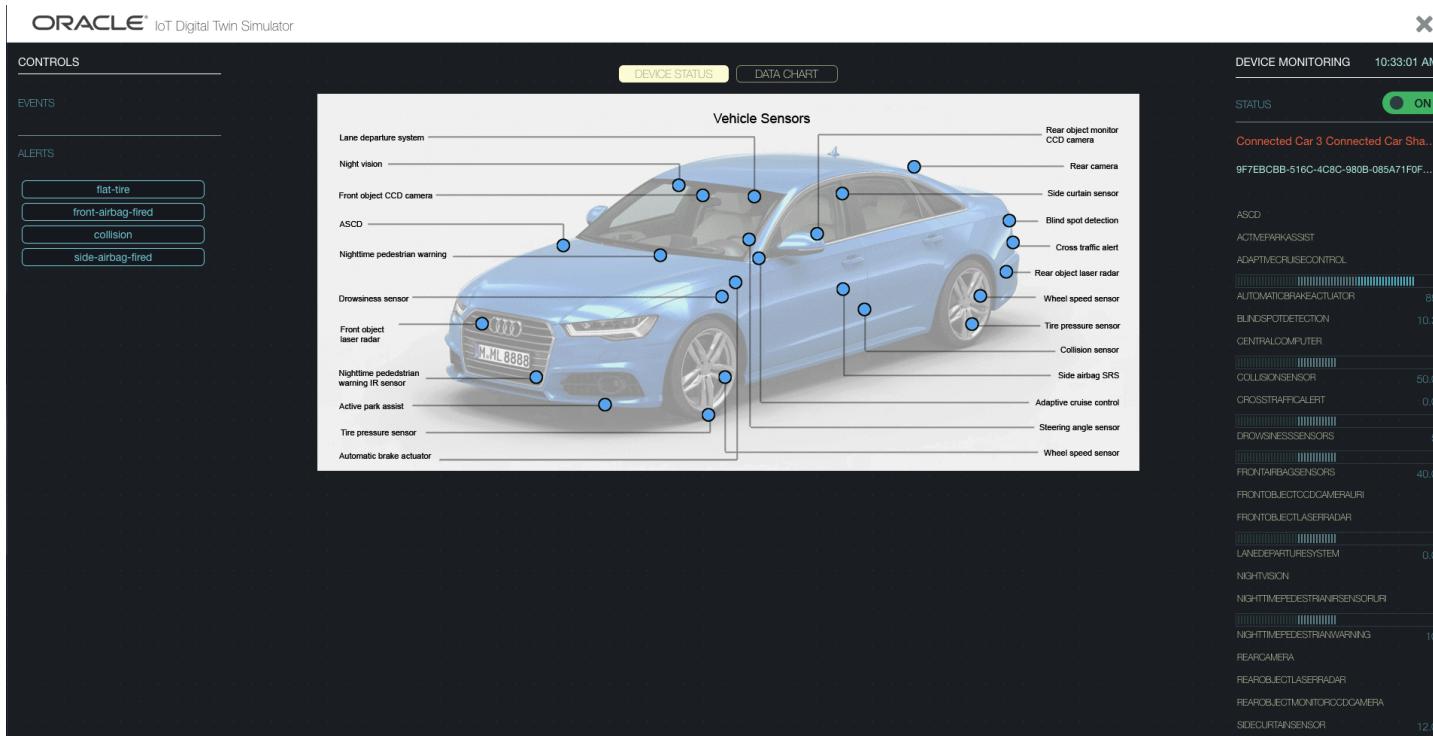


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Connected Car Simulator

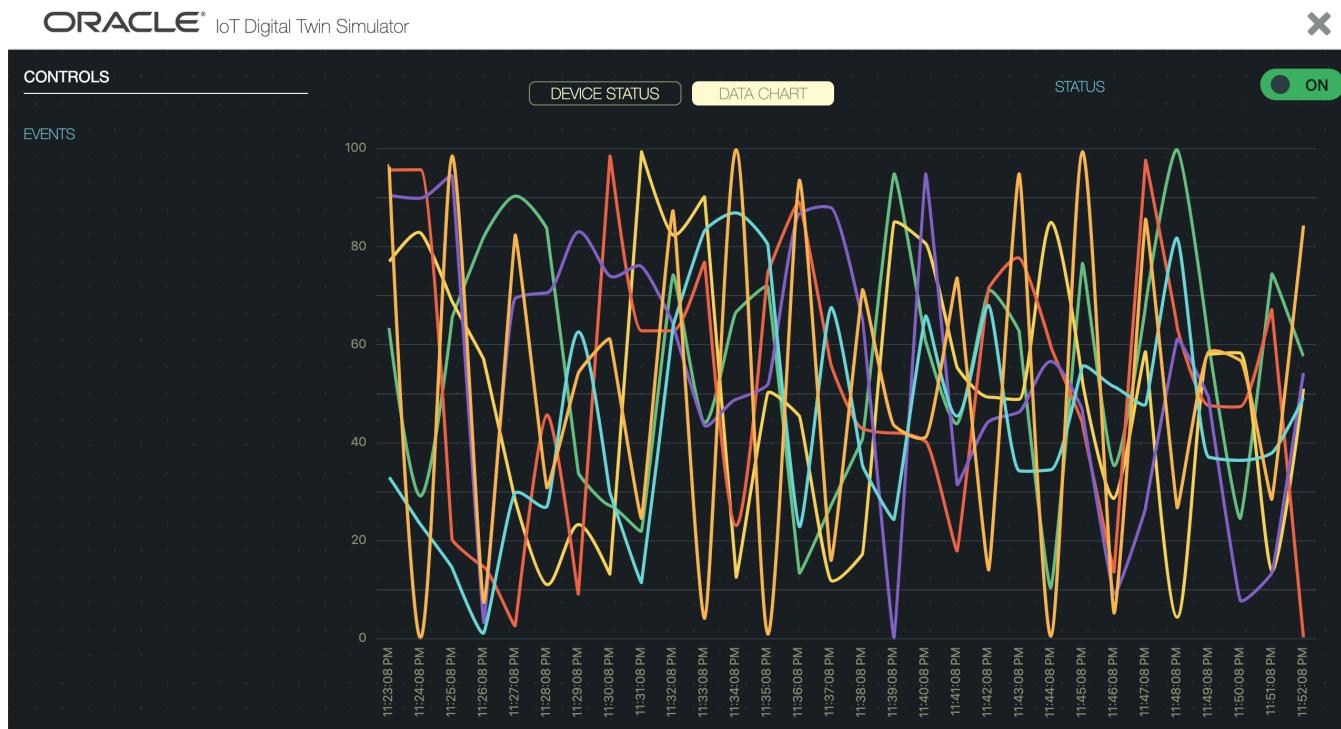


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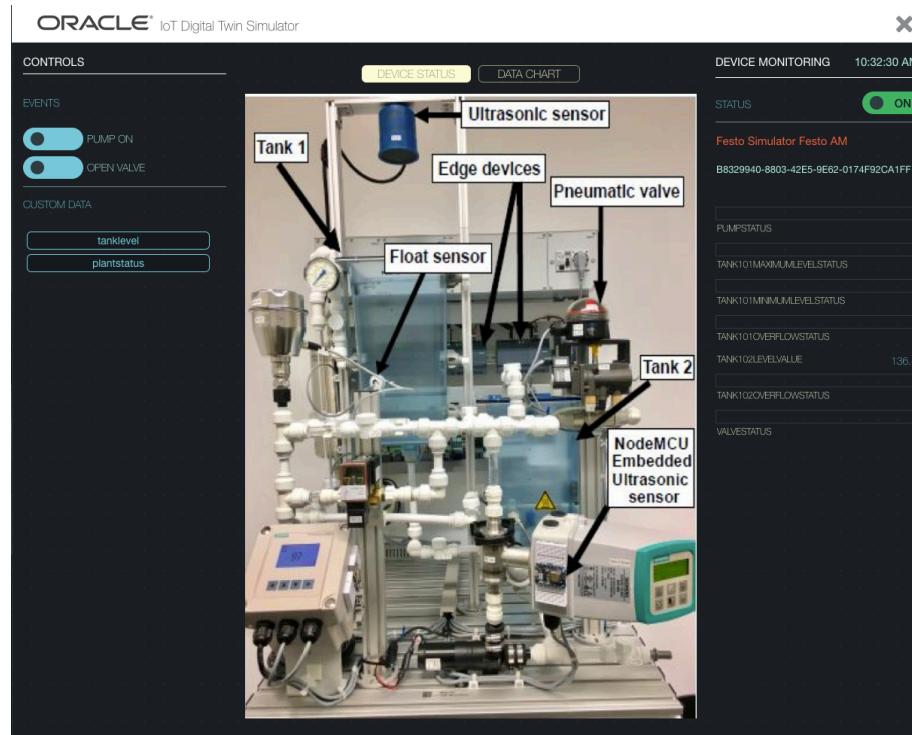
Sensor Simulator (KETI)



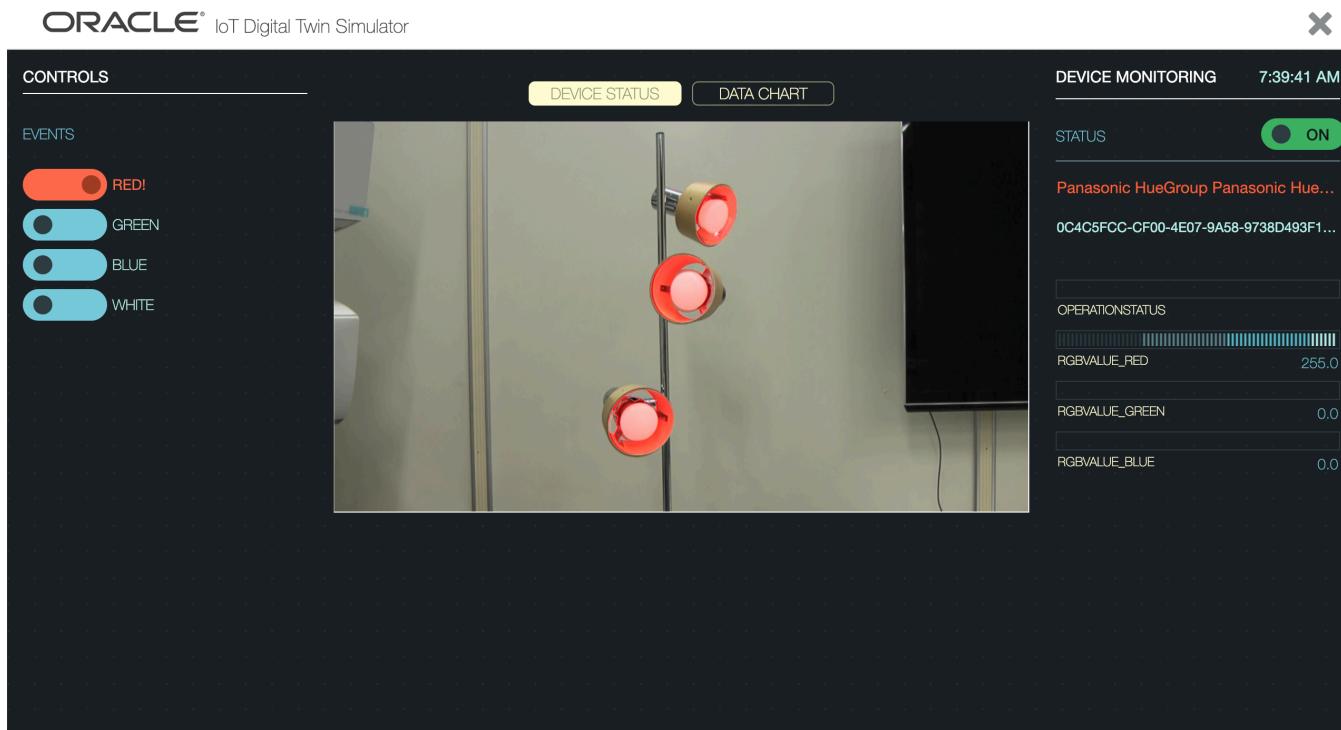
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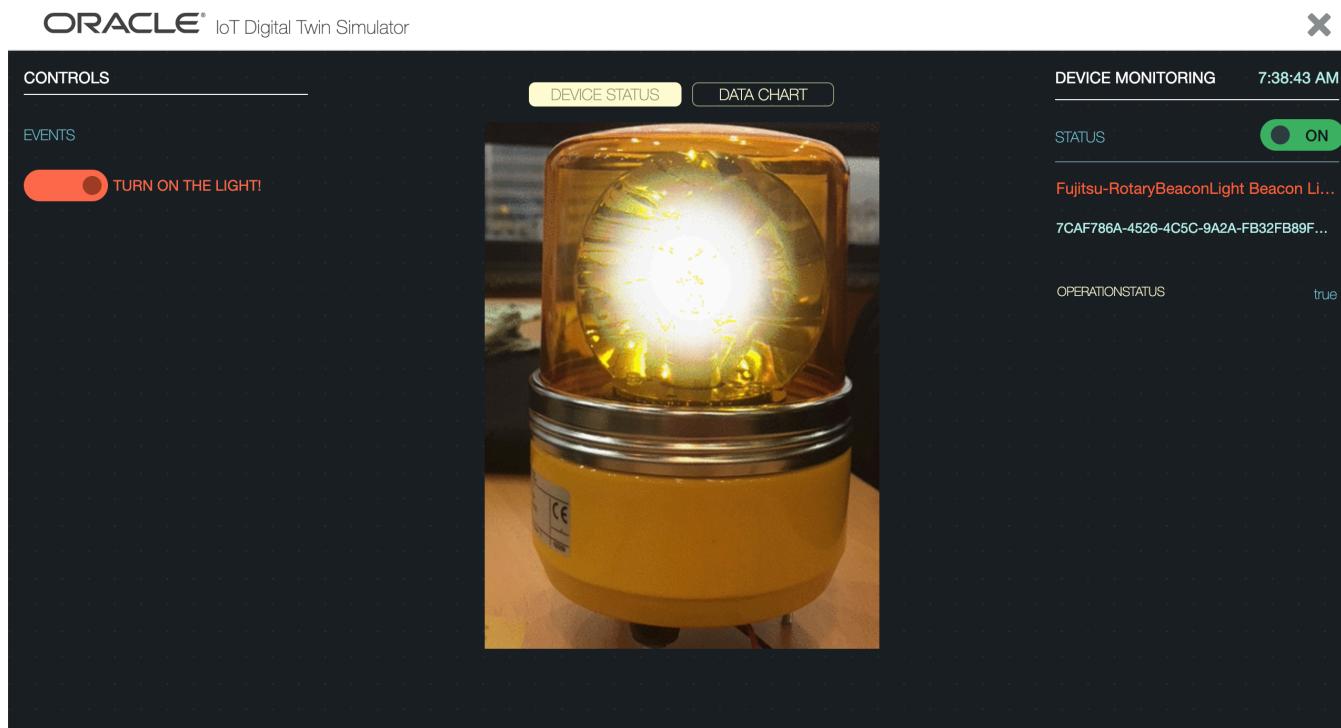
Festo Simulator (Siemens)



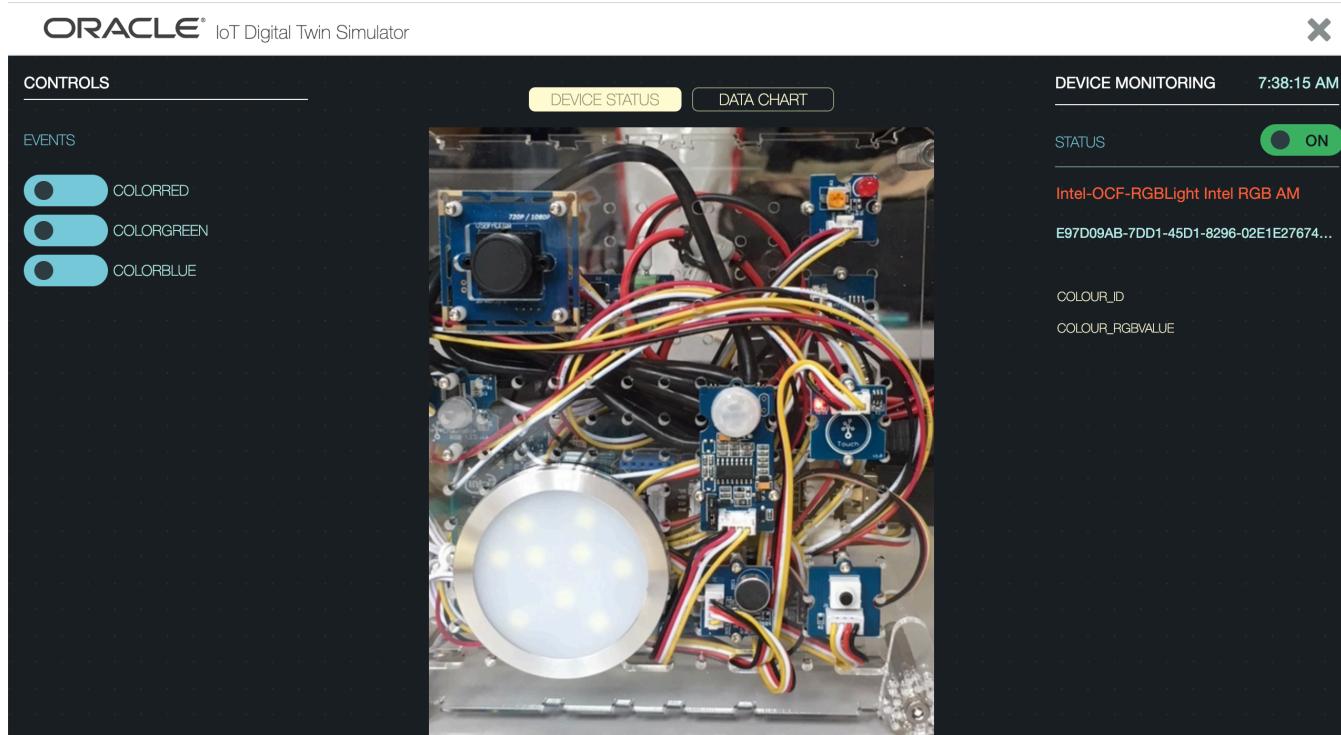
Hue Group Simulator (Panasonic)



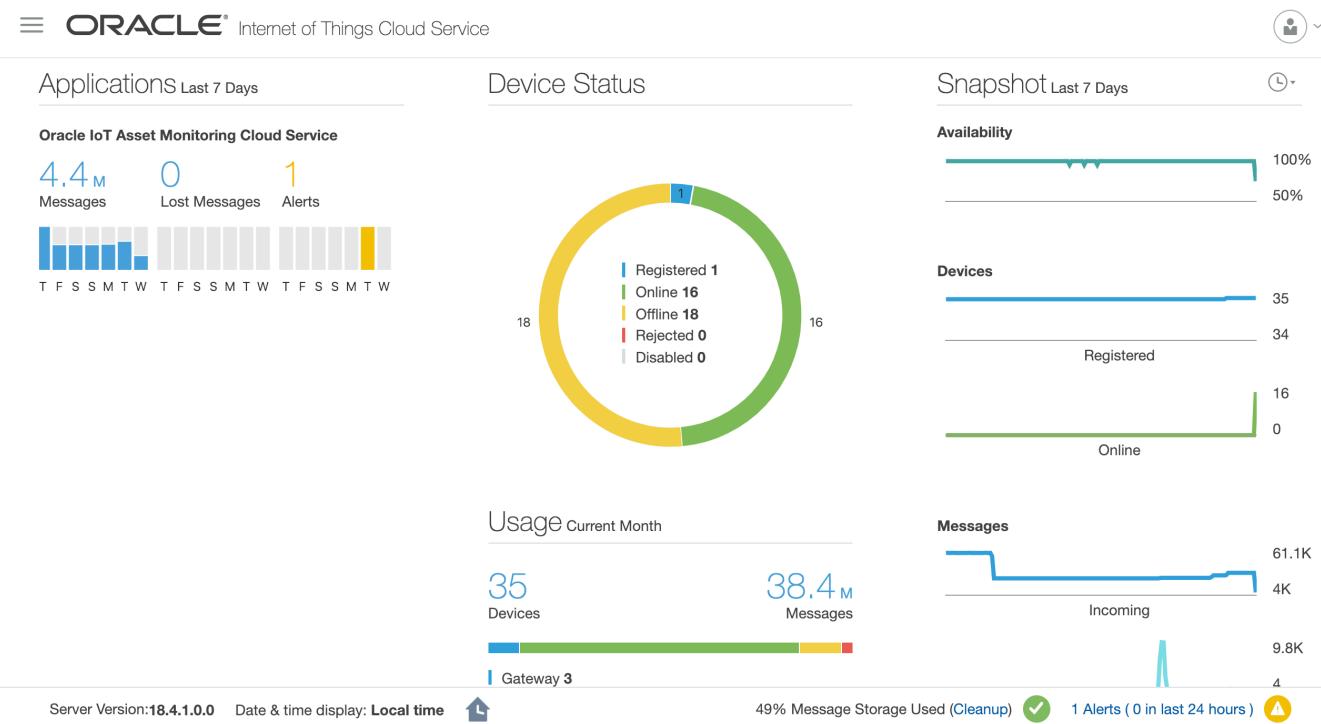
Beacon Light Simulator (Fujitsu)



OCF Simulator (Intel)



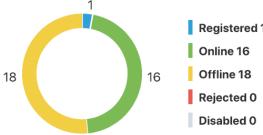
Management Console



Management console for device management

☰ ORACLE® Internet of Things Cloud Service

◀ Overview - All Devices



Status	Count
Registered	1
Online	16
Offline	18
Rejected	0
Disabled	0

Total Devices **35**

Last Heard < 1 Hour **16**

Last Heard < 24 Hours **0**

Not Heard > 24 Hours **18**

Device Search

Property: Serial Number Value: Go

35 Items

Name	Type	Manufacturer	Model Number	Serial Number
24 Festo AM	Directly Connected Device			simulated-serial-1544195693669
25 Siemens Festo Plant Neuperlach	Connected via Gateway	Festo		
26 Blue Pump Hitachi	Directly Connected Device			simulated-serial-1544189938622

Server Version: 18.4.1.0.0 Date & time display: Local time 

49% Message Storage Used (Cleanup)  1 Alerts (0 in last 24 hours) 



Device Management – Siemens Festo Plant Neuperlach

ORACLE® Internet of Things Cloud Service

Siemens Festo Plant Neuperlach

GPS Coordinates

Latitude: 48.1368995
Longitude: 11.5438295

Device Models

Messages

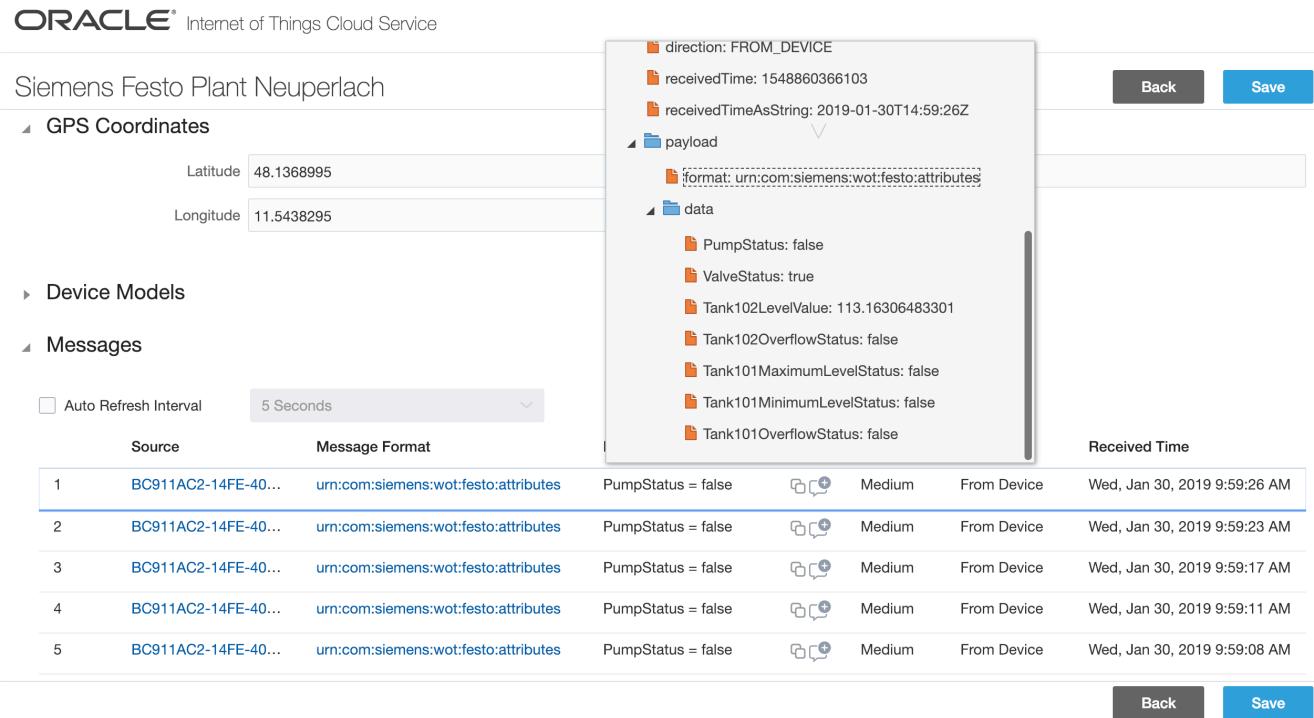
Auto Refresh Interval: 5 Seconds

Source Message Format Received Time

Source	Message Format	Received Time
1 BC911AC2-14FE-40...	urn:com:siemens:wot:festo:attributes	PumpStatus = false Medium From Device Wed, Jan 30, 2019 9:59:26 AM
2 BC911AC2-14FE-40...	urn:com:siemens:wot:festo:attributes	PumpStatus = false Medium From Device Wed, Jan 30, 2019 9:59:23 AM
3 BC911AC2-14FE-40...	urn:com:siemens:wot:festo:attributes	PumpStatus = false Medium From Device Wed, Jan 30, 2019 9:59:17 AM
4 BC911AC2-14FE-40...	urn:com:siemens:wot:festo:attributes	PumpStatus = false Medium From Device Wed, Jan 30, 2019 9:59:11 AM
5 BC911AC2-14FE-40...	urn:com:siemens:wot:festo:attributes	PumpStatus = false Medium From Device Wed, Jan 30, 2019 9:59:08 AM

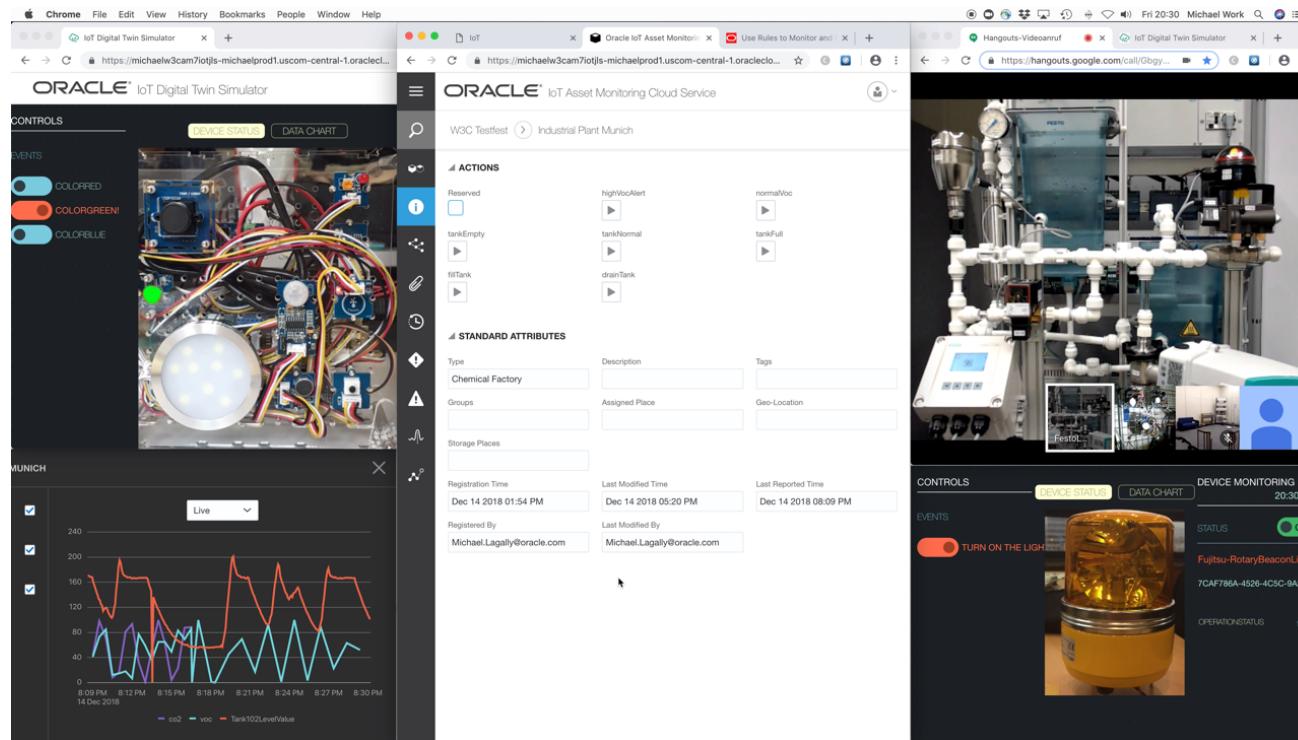
direction: FROM_DEVICE
receivedTime: 1548860366103
receivedTimeAsString: 2019-01-30T14:59:26Z
payload
format: urn:com:siemens:wot:festo:attributes
data
PumpStatus: false
ValveStatus: true
Tank102LevelValue: 113.16306483301
Tank102OverflowStatus: false
Tank101MaximumLevelStatus: false
Tank101MinimumLevelStatus: false
Tank101OverflowStatus: false

Back Save



Oracle IoT Asset Monitoring

Monitoring and Control of real and simulated devices



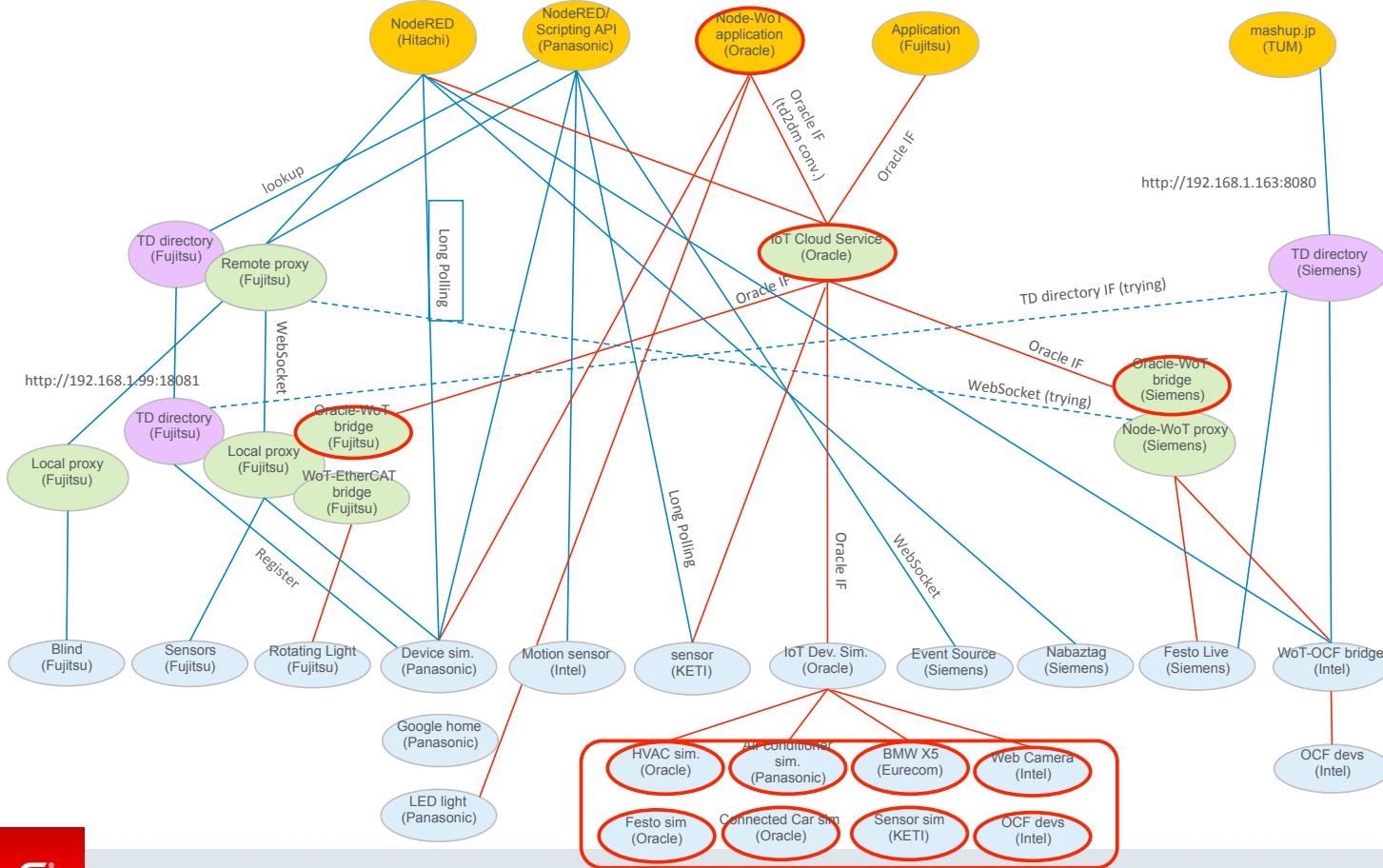
WoT Interoperability and Mashup

WoT Plugfests

- At a plug fest the WoT group members get together to verify the spec with real implementations
- PlugFests last for two days on the weekend before the workgroup meeting
- See for example <https://www.w3.org/2018/03/23-29-wot-minutes.html>



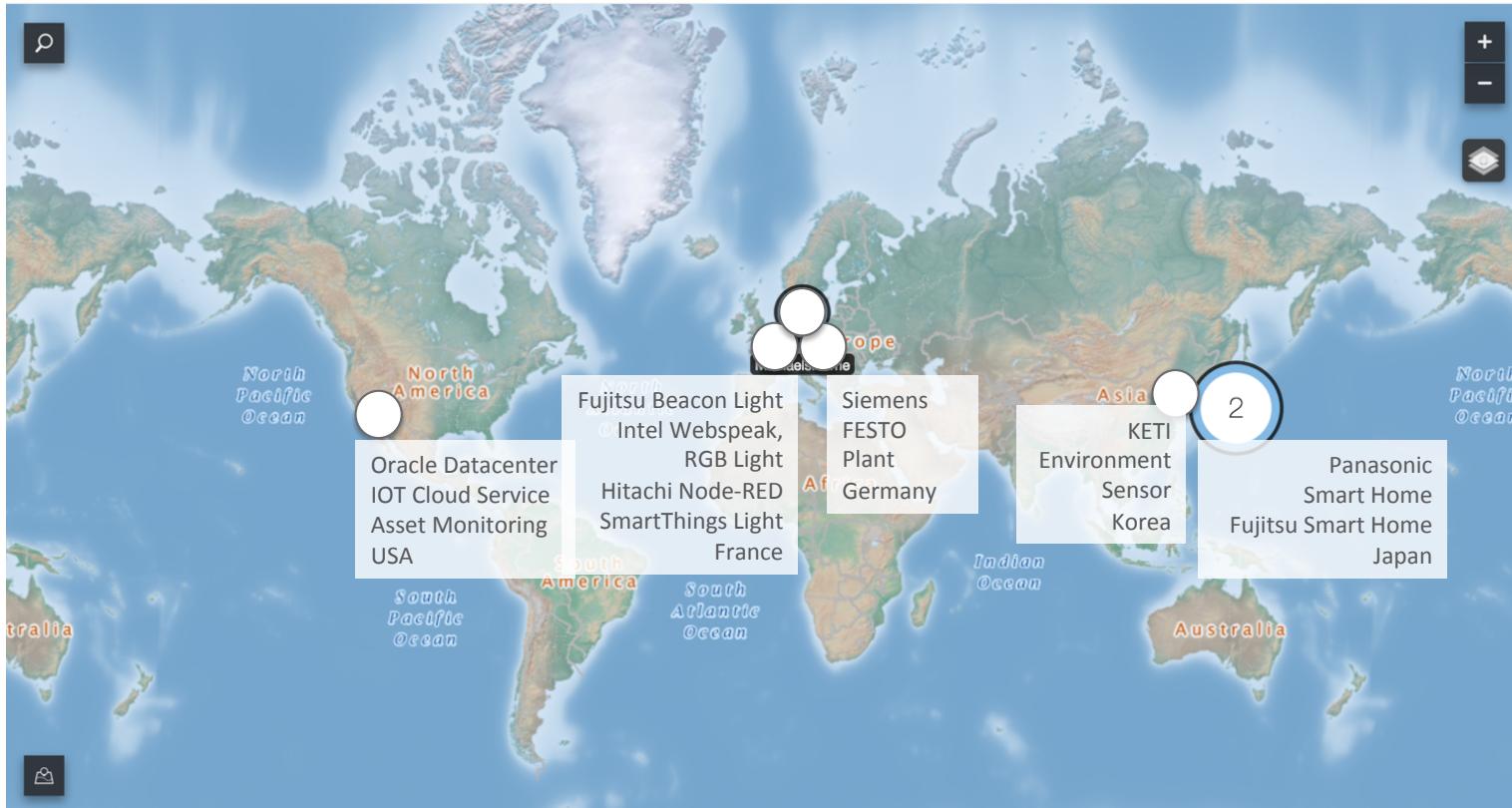
Mashup Architecture (TPAC)



Oracle IoT Cloud and WoT interoperability

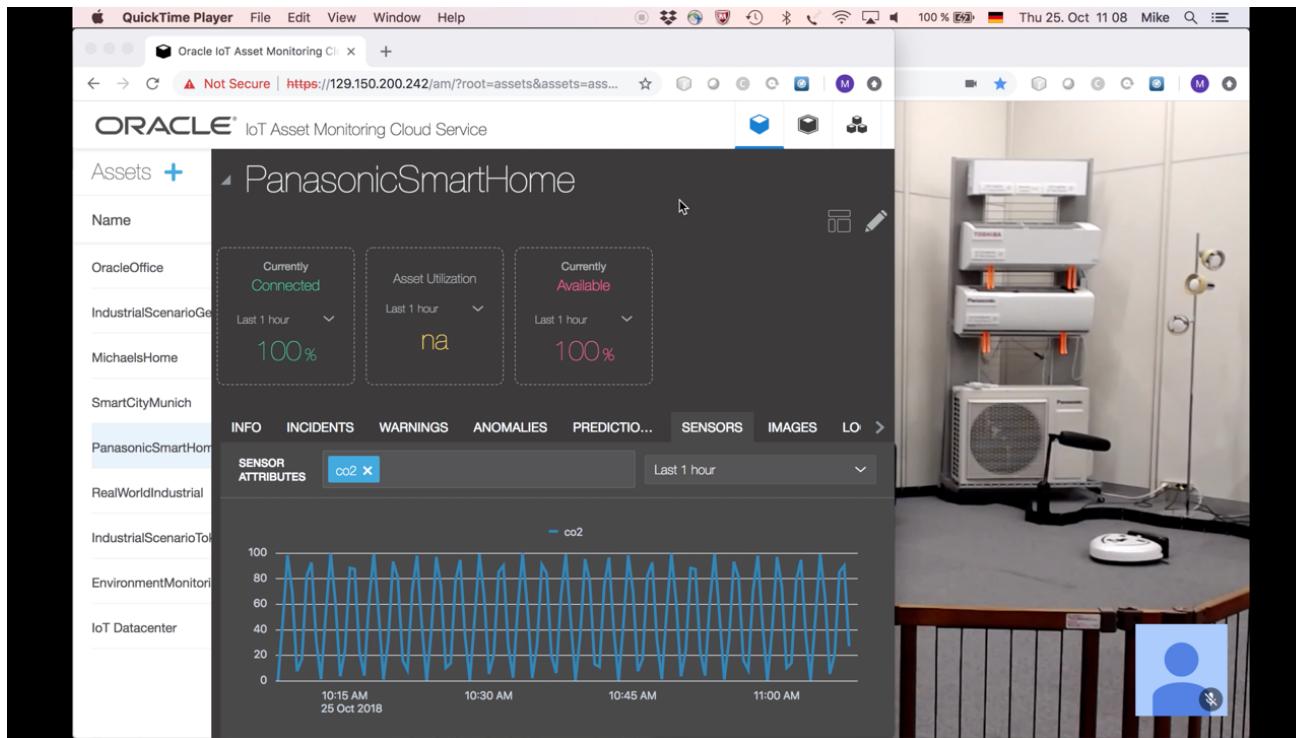
- Two interoperability scenarios using Oracle's IoT Asset Monitoring were demonstrated at the W3C technical plenary:
- A home scenario, where an air conditioner and some lamps were controlled based on sensor data
- An industrial scenario, where sensor data controls an industrial plant, an alert light, and gives speech output
- Devices are real physical devices connected to the Oracle Cloud:
 - Siemens: Industrial plant (simulator)
 - Intel: Speech output and RGB LED lamps
 - Fujitsu: beacon light
 - Panasonic: air conditioner and hue lights group, vacuum cleaning robot
 - Korean Electronics Technology Institute: environment sensor

WoT Interoperability Demo Infrastructure



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Home Scenario



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Industrial Scenario

The image displays three separate browser windows illustrating an industrial monitoring and control scenario:

- Left Window (Oracle IoT Digital Twin Simulator):** Shows a photograph of a physical electronic circuit board with various components and wires. Overlaid controls include three buttons labeled "COLORED", "COLORGREEN!", and "COLORBLUE". Below the image is a "DATA CHART" section titled "MUNICH" showing three line graphs for CO2, VOC, and Tank102LevelValue over time from 8:00 PM to 8:30 PM on December 14, 2018.
- Middle Window (Oracle IoT Asset Monitoring Cloud Service):** Displays a "W3C Testfest" entry for "Industrial Plant Munich". It lists actions like "highVocAlert", "normalVoc", "tankEmpty", "tankNormal", "fillTank", and "drainTank". Under "STANDARD ATTRIBUTES", it shows the object type as "Chemical Factory" and registration details: Dec 14 2018 01:54 PM, Last Modified Time: Dec 14 2018 05:20 PM, Last Reported Time: Dec 14 2018 08:09 PM, Registered By: Michael.Lagally@oracle.com, and Last Modified By: Michael.Lagally@oracle.com.
- Right Window (Hangouts-Videocall):** A video feed of an industrial plant with complex piping and equipment. The interface includes a "CONTROLS" section with a button labeled "TURN ON THE LIGHT", a "STATUS" indicator set to "ON", and a "DEVICE MONITORING" section showing a yellow beacon light and its status information: Fujitsu-RotaryBeaconLight F7CAF786A-4526-4C5C-9A2A-FE, and OPERATIONSTATUS True.

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Q & A

For more questions please mail me:

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