# **Data Alliance**

IoT data driven value creator platform

### 2018.11





# Company Overview



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## **Company Overview**

#### Uber (Taxi), AirBnB(Hotel), Data Alliance(IoT Network& Data)



### **Intellectual Property Rights**

	Number	Title
Patent Pending	1020150014505 , PTC/KR2016/000800	DATA DEALING MEDIATING SYSTEM AND METHOD
	1020150046158	Service Method for Providing Information of Exposure of Contents and Service System
		thereof
	1020150045996	DATA FUND SERVICE METHOD AND SYSTEM
	1020150046157	Service Method and System for Intermediating Recorded Video
	1020150046119	DISTRIBUTED DATA COLLECTING METHOD AND SYSTEM
	10-2014-0179490, PCT/IB2016/050557	DATA MEDIATING SYSTEM AND METHOD
	10-2018-0037200, PCT/KR2018/003755	IoT Device Control System And Method Using Virtual reality And Augmented Reality
	10-2018-0033202	Method and System for Preventing Dropping of a Mobile Terminal in a Vehicle
	10-2018-0035097	IoT Device Positioning Method and System
	10-2018-0036076	IoT Device Control System And Method Using Positioning Technology
Patent	Number	Title
	1310900	Method of Providing Services Information, System Thereof and Method of Receiving
		Service Information
	10-2016-0166101, PCT/KR2017/014227	Distributed Network Node Service Contribution Evaluation System and Method

# Market Trend





### LPWAN(Low Power Wide Area Network) Growth

#### We believe that the total addressable market for LPWA services may be close to 14 billion devices by 2023



#### LPWAN MARKET SHARE BY SECTOR

Estimated market share by end of 2016



#### [Source: Infoholic Research, 2016]



- Battery life
- Long range

LPWAN ?	Cellular 📝	
ong Range w/ Battery	Long Range w/Power Traditional M2M	
LoRa	3 <sup>G+</sup> /H+ ESE: //4G	
55% SOM	10% SOM	
<ul> <li>Emerging PHY solutions</li> </ul>	<ul> <li>✓ Well established standards</li> </ul>	

Good for:

Not good:

Long range

Low cost

Positioning

High data-rate

Long battery

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- Good for:
  - Long range
  - High data-rate

- Coverage
- □ Not good:
  - Battery life
  - Cost

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### LoRa-based IoT Network Solution (LoRaWAN)

#### LPWAN (Low Power Wide Area Network) - Best Network Technology for IoT Services



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# **OCF IoT connectivity and Data Standard**

#### **Open Connectivity Foundation**



- One of biggest international industrial connectivity standards organizations for IoT. OIC and AllSeen had merged under one name - OCF.
- Currently there are over 385 member companies such as Samsung, LG, GE, Intel, Cisco, Microsoft, Qualcomm, HP, Haier, Sony. **Data Alliance is also a Gold member of OCF**.





SHOWCASE @CES2017 OCF standards based connectivity solution between a smart phone and a vehicle, exhibited by Data Alliance



Ex. Air quality data format



# How the sharing Economy Work?

**Collaborative Consumption** 

#### Basically, it is a monetized form of sharing.

# Traditional Capitalist economic goods are owned by individuals. Personal Consumption **Sharing Economy** FEW Individuals owns the goods, Others can pay the privilege to "borrow"

**Collaborative** Consumption

Then, let's think about Networks.

Currently, traditional network operators own and supply both networks and services

It is closed model, therefore the respective network operators should install all equipment and manage, operate it.

### It costs tremendous.

For example, mobile service operators; AIS, DTAC, TRUE, CAT, TOT in Thailand. These operators have their own exclusive networks and service in the same area. User choose 'one' operator ( based on cost and network quality)

# Decentralized IoT Network Platform



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# **Decentralized IoT Platform Alliance**

Building a nationwide IoT network by sharing gateways owned by public institutions, private companies, and individuals (Shared Economy)

Connect gateways of government, municipalities, and private operators using our Network Server  $\rightarrow$  can provide a globalwide IoT network service



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# **DIP (Decentralized IoT Platform) Alliance Plan**

Linking partner networks with the operations group networks

 $\rightarrow$  Construction of efficient nationwide IoT network through prevention of redundant investment

→ Establish a participatory shared network by linking the networks established by partners with the networks established by the operations group



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# How does IoT network sharing economy work as collaborative consumption?



#### IF AS-IS model is used



- High initial equipment cost
- Redundancy Investment
- Network Coverage issued
- Waste of unused Network
- Slow growth
- · Limitation of the services provided

#### Left Users

- · Limitation of the service selection
- Network Coverage issued

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# How does IoT network sharing economy work as collaborative consumption?



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#### How does it work?

• Participating networks must know the service and terminal **information** to share each other's networks.

• The network service operator tracks the data flow path of the terminal and the service and pays the network usage fee(Rewards).

• The block chain not only keeps track of the data flow, but also makes it possible to settle the network fee based on this data. All of these processes must be based on transparency and reliability, which is why we need a **block chain**.



## How does IoT network sharing economy work as collaborative consumption?



#### IF TO-BE model is used

#### **Operators**

- Small investment, instant profit
- Low Market entry barriers
- Network Coverage guarantee
- No idle Networks
- Efficiency of Network operation
- Rapid growth
- More services provided
- Concentrate on better service
- Eco system expansion

### Left Users

- · Freedom of the service selection
- Network Coverage guarantee

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### **Solution**



# + Decentralized service & Data Platform



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**Block Chain** 

IoT Network, Service and Data sharing via Blockchain echo system



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### Architecture



Authentication, Authorization, Accounting(AAA) (E2E secure channel)

# **OCF based IoT Service Platform**

#### Interactive & Interoperated IoT Service

#### **Data Alliance IoT Service Platform**



#### What's Different



#### Script Engine

- Develop 10 times faster
- · Easy to interoperate with various devices
- No APK release required



#### **Voice Interactive Interface**

- User-friendly contactless interface
- The best user interface in Home & Vehicle area
- Easy to connect other Interactive service



#### Internet Service Bridging

- Service associated with user content
- Expansion of IoT service area
- Eliminate the border between device and service

### **OCF Service Script Example**

# Service Scene : If a tracker is within 100 meters near and room temperature is higher than 24 degree, turn on the air conditioner

\_resources = ({"name": "tracker", "device": "oic.d.sensor", "resource": "oic.r.geolocation"}, {"name": "thermostat", "device": "oic.d.sensor", "resource": "oic.r.temperature"}, {"name": "airconditioner", "device": "oic.d.airconditioner", "resource": "oic.r.switch.binary"})

\_user\_values = { "comment": "If current temperature is higher than {1}{0}, set the temperature to {2}{0}",

"params": ({"id": 0, "name": "temp\_unit", "default\_value": "°C"},

{"id": 1, "name": "current\_temp", "default\_value": "26"},

{"id": 2, "name": "target\_temp", "default\_value": "22"},

{"id": 3, "name": "base\_longitude", "default\_value": "127.05771557986736"},

{"id": 4, "name": "base\_latitude", "default\_value": "37.50753830810053"})}

All the part of entire script is following Python standard and easy to make a code.

#### def \_condition(): # define the condition here

if get\_distance(get\_value("tracker", "longitude"), get\_value("tracker", "latitude"), get\_value("base\_longitude"), get\_value("base\_latitude")) < 99: if get\_value("thermostat", "temperature") > get\_value("current\_temp"):

return True

return False

def \_run(): # define the action here

set\_value("airconditioner", "value", "true")

DA Script Engine Feature for writing IoT status.

DA Script Engine Feature for reading IoT status.

## Mobile Application example using API







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### **Mash-up Service Script and Device control**



### **Platform Service Area**





#### **Smart Tracking** 00 次次 Social Biclycle·Motorc care(disabled, dementia) Children Car ycle 8 **,** Security Real Estate Pet Valuable Equipment



#### **Smart Agriculture**



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### **Device Example**





Gas, Water metering



Waste Monitoring



Black Box

GPS data

Speed, acceleration

Sensor data

Vehicle Diagnostic · Tracking



Cow Monitoring



OCF vehicle VN, Cluster





**OCF Standard Appliances** 



Manhole Management



River Level Sensor



Shared BikeTracking



Asset Mangement



Temp, Humidity, Soil Sensor for Smart Farm



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# Thank you

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