# Getting Started With CFET2

## What is CFET2?

CFET2 is a control system framework, which allow user to plug their “thing” into the CFET2 app, and the CFET2 app will allowed others to access the resource on them. Like you developed a lamp controller, and others can access the switch of it via CFET2. But how? This is something the person who developed the lamp controller need not to concern, the CFET2 take care of it.

## Why CFET2

As stated above, one develop some “thing” need not to think about how others are going to access it. You just focus on the main business logic of you “thing”, like how to control a relay that controls the lamp. How other access this function like via MQTT, CoAP, HTTP RESTful, Bluetooth or ZigBee, those protocol or media are completely out of the developer’s concern. They are taken care by CFET2.

## Basic Concept

### Thing

You see the CFET2 is design to be a control framework for every”thing”. It’s for Internet of Thing and Web of Things. Then what is a “Thing”?

A thing is an object that has resources that can be accessed by the others. Like a light is a thing, it has a switch to toggle on off, it may have a brightness tune. Or a person who have his name we can refer. So everything can be a thing. Then it’s impossible to work with them if we don’t find stuff they have in common. So we have thing abstraction.

The image shown below is a thing abstraction, it has 3 resource we can access. So if everything can only has those 3 resources, CFET2 can manage them. More about the 3 resources later.



**From CFET2 programming perspective: a thing is an object that has properties or method marked as status, config or method.** You define a class that implement you business logic, and mark some properties and method to be those resource for others to access, that’s so called a thing. CFET2 will handle accessing of this resource.

### Resources

Thing, Status, Config, Method, those are resources. The resource contains useful information about the thing. Like a brightness of a lamp is a resource of the lamp. The thing is self is also a resource, but we do not access the thing directly, we access its resources as said the status, config and method.

### Status

A thing may have a set of status. Status is a property that others can observe but cannot change. It can only be changed by a thing itself. It represent the current states of a thing that the thing wants others to know. All the information others needs to know should be made into status. And by looking at the statuses solely, one can determine all the output and behavior of the thing. Of course a thing may hide internal states that other don’t need. This is not status.

**From CFET2 programming perspective: a status is a property of a method of a class that returns a value.** The status may not be read only or have only getter, from the CFET2 app, other can only get the value in the property. If a method are marked as status, it must have a return value represent the status value. Also it’s not enforced by (and cannot) CFET2 that a status should not change anything in the thing but it should not be! Just simply return the corresponding value. You can pass parameters to a status, more about this later in <how to make a CFET2 thing> section.

### Config

A thing may have a set of configurations. Configuration is a property that the thing it self cannot change but can only be changed by others. It represents how the others want the thing to behave, and the supported behaviors of this thing.

The effect of configuration changes will take place based on the things designated behavior. The above is to say configuration does not necessarily tells how a thing should behave, and others cannot determine the output of the thing by looking at the configurations (should by looking at status). Once a configuration changes, it may result in a transitional state of thing. It takes time for a thing to transit from one set of configurations to another. But the transition will definitely be presented in statutes. Moreover in some situations, one may want to change a number of configuration than let the change take place instead of change the behavior in the middle of these changes. So the thing may not apply these configuration change until a method is called.

**From CFET2 programming perspective: a config is a property of a method of a class that accept a value and returns a value.** The most obvious config can be a property that are public get and set. But it need not to be. It can be a get only property plus a set only property. It can be method accept a value and change value in the thing. More about this later in <how to make a CFET2 thing> section.

### Method

### Sample

### Hub

### Communication Module

### CFET2 Host

## How to Make a CFET2 “Thing”

## How to Make a CFET2 Communication Module