

iotschema patterns

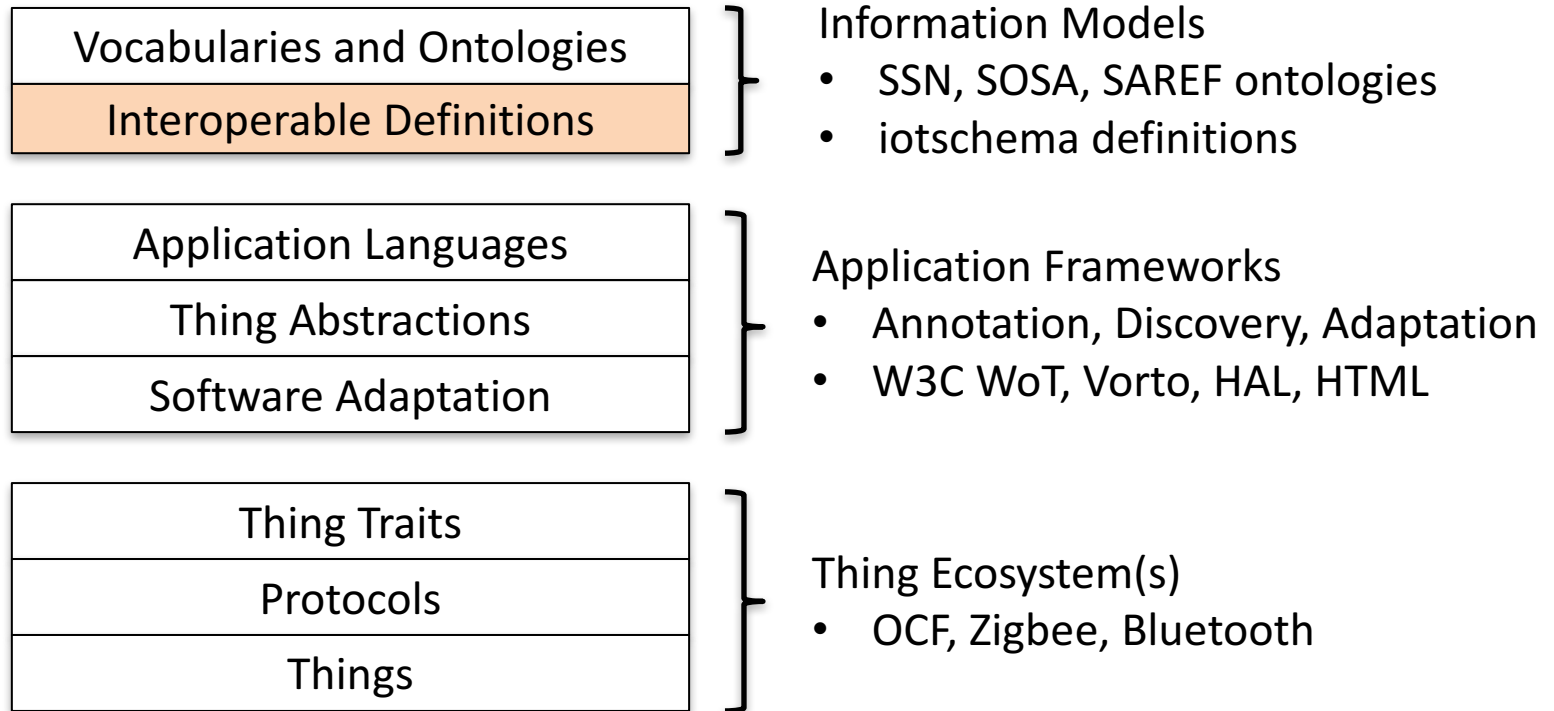
Update June 14, 2017

Design Patterns for iot.schema.org

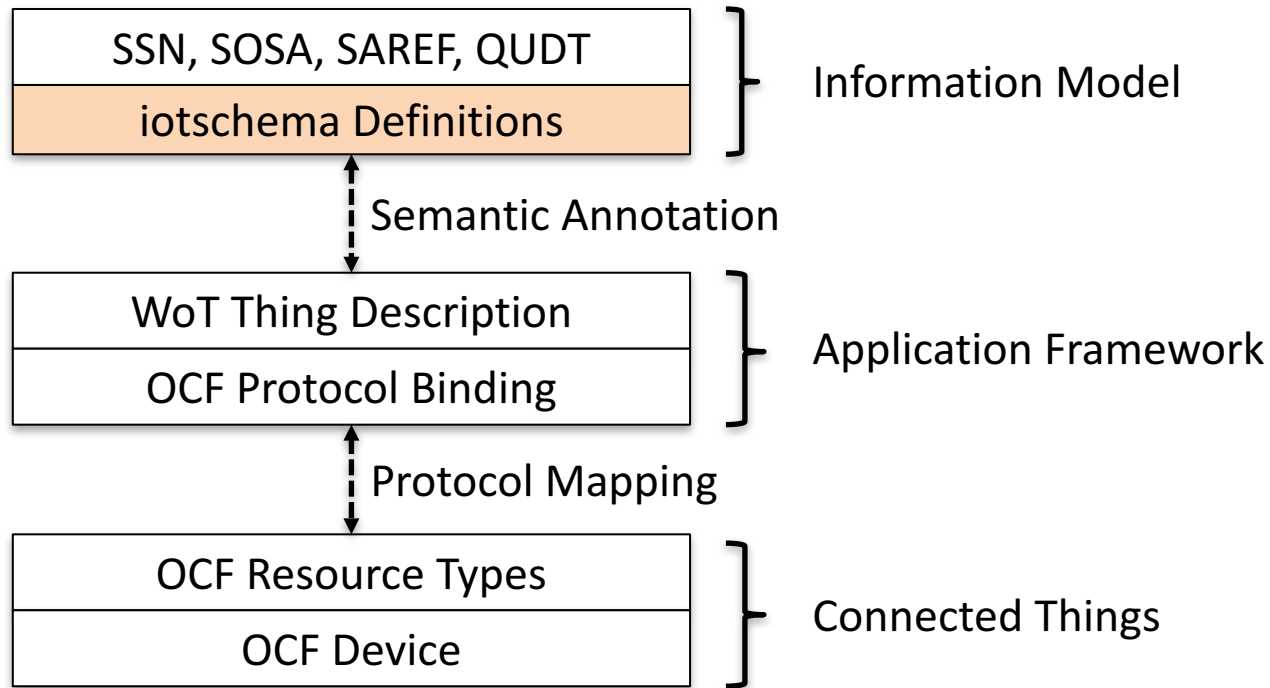
Update

- Use Cases - Semantic Stack
- Capability Pattern
- Example definitions using the pattern
- Example instances using the definitions

Semantic Stack Model



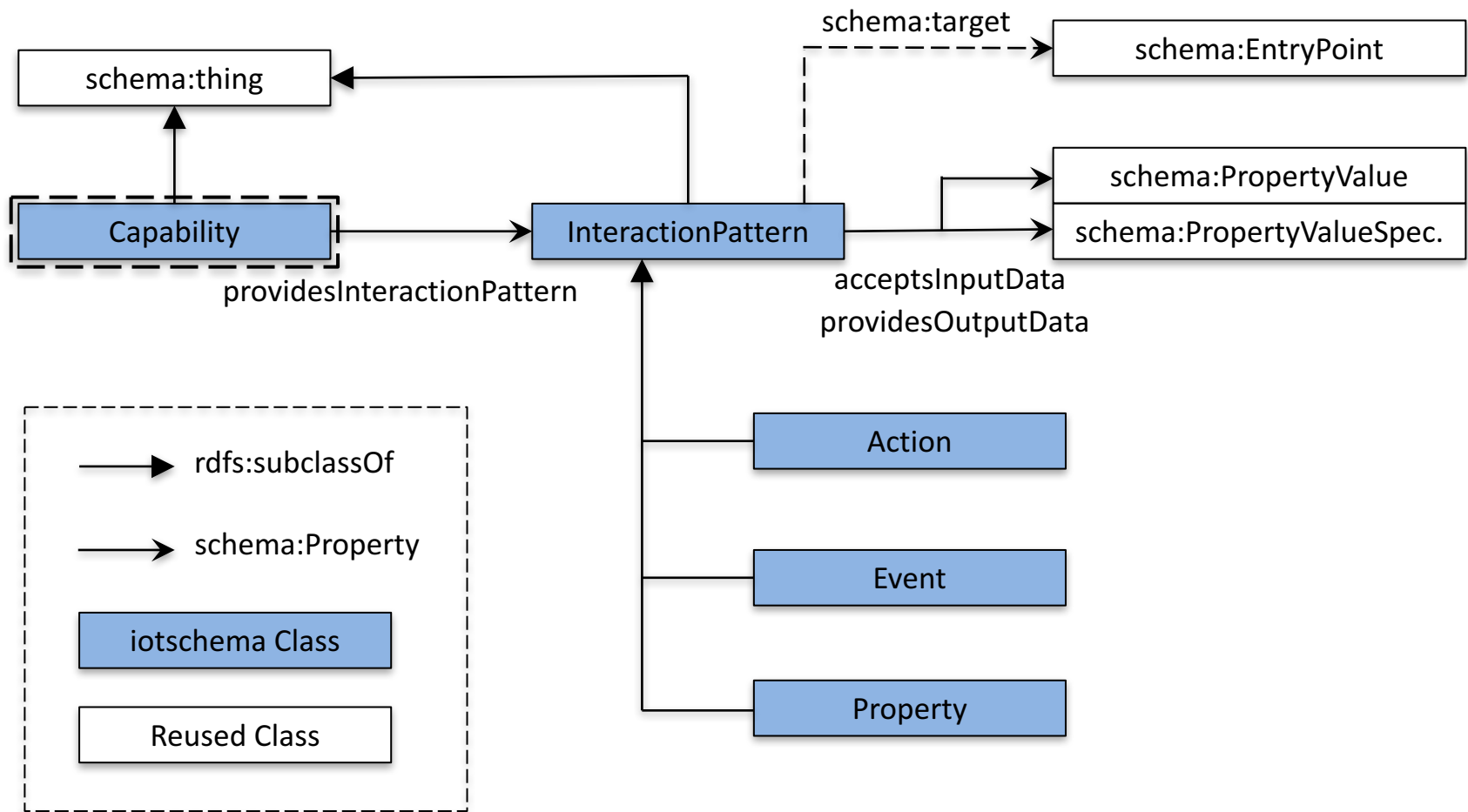
Semantic Stack Example



Capability Pattern

- Reusable and Compose-able definitions for common functions
- A set of interactions that define a unit of functionality; typically a single function
- Functions are on/off control, motion sensing
- Interactions are events, actions, properties
- Thing traits might not expose actions directly
- On/Off Control Capability
 - Properties are On/Off State (boolean)
 - Actions are TurnOn, TurnOff

iotschema Capability Pattern



Things and Interactions

Thing	Capabilities	Properties	Type	Actions
Motion Sensor	Motion Sensing	Motion	Boolean	N/A
Temperature	Temperature Sensing	Temperature	Number	N/A
Light	Switch	SwitchState	Boolean	TurnOn TurnOff
Light	Level Control	Level TransitionTime	Number Number	MoveToLevel MoveLevel StepLevel

Example Definition

```
"type": "LevelCapability",
"id": "iotschema:LevelCapability",
"subClassOf": "Capability",
"description": "Level Sensing and Control Capability",
"providesInteractionPattern": {
  "level": {
    "type": "Property",
    "name" : "level",
    "acceptsInputData": {
      "type": "schema:Number",
      "schema:valueName": "level",
      "schema:unitCode": "ucum:%"
    },
    "providesOutputData": {
      "type": "schema:Number",
      "schema:valueName": "level",
      "schema:unitCode": "ucum:%"
    }
  },
},
```


Example Definition

```
"moveToLevel": {
  "type": "Action",
  "name": "moveToLevel",
  "acceptsInputData": {
    "level": {
      "type": "schema:Number",
      "schema:valueName": "level",
      "schema:unitCode": "ucum:%"
    },
    "transitionTime": {
      "type": "schema:Number",
      "schema:valueName": "transitionTime",
      "schema:unitCode": "ucum:s"
    }
  }
}
```

Example Instance – TD Interaction

```
{
  "semtype": ["action", "sch:movetolevel"];
  "name": "set brightness level",
  "inputdata": {
    "type": "object"
    "properties": {
      "P0001": {
        "type": "number",
        "semtype": "sch:level"
      },
      "P0002": {
        "type": "number",
        "semtype": "sch:transitiontime"
      }
    }
  },
  "links": [
    (protocol goes here)
  ]
}
```

Example Instance – TD Protocol

```
links: [  
  {  
    "href": "/example/light/brightness",  
    "mediatype": "application/vnd.ocf+cbor",  
    "method": "ocf.update",  
    "rt": ["oic.r.brightness", "oic.r.ramptime"],  
    "if": ["oic.if.a"],  
    "inputschema": {  
      "type": "object",  
      "properties": {  
        "brightness": {  
          "value": "{{P0001}}"  
        },  
        "ramptime": {  
          "value": "{{P0002}}"  
        }  
      }  
    }  
  }  
]
```