

Atoms

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What are Atoms?

- Building blocks of the IoT
- We compose **Models** from **Atoms**
- Atoms are / should be non-decomposable

Atom Requirements

- Be URL addressable (Linked Data)
- Be clear - intended target is humans!
- Be open ended - you don't know everything Be correct - faithfully represent the world
- Minimize assumptions

IOTDB Atoms

- **iot**: core definitions - types, relationships...
- **iot-purpose**: vocabulary for Things to describe how do they actuate / sense
- **iot-facet**: vocabulary for Things to describe how what they do

Example Model

```
CREATE MODEL HueLight WITH
  schema:name = "Hue Light",
  schema:description = "Philips Hue colored light",
  iot:facet = iot-facet:lighting.light
ATTRIBUTE on WITH
  schema:name = "on",
  iot:purpose = iot-purpose:on,
  iot:type = iot:type.boolean,
  iot:sensor = true,
  iot:actuator = true
ATTRIBUTE color WITH
  schema:name = "color",
  iot:purpose = iot-purpose:color,
  iot:type = iot:type.string,
  iot:format = iot:format.color
  iot:sensor = true,
  iot:actuator = true
;
```

Compiled to JSON-LD

```
"@id": "",
"@type": "iot:Model",
"schema:name": "Hue Light",
"schema:description": "Philips Hue colored light",
"iot:facet": [
  "iot-facet:lighting",
  "iot-facet:lighting.light"
],
"iot:attribute": [
  {
    "@type": "iot:Attribute",
    "@id": "#on",
    "schema:name": "on",
    "iot:purpose": "iot-purpose:on",
    "iot:type": "iot:type:boolean",
    "iot:read": true,
    "iot:write": true,
    "iot:sensor": true,
    "iot:actuator": true
  },
  {
    "@type": "iot:Attribute",
    "@id": "#color",
    "schema:name": "color",
    "iot:purpose": "iot-purpose:color",
    "iot:type": "iot:type:string",
    "iot:format": "iot:format.color",
    "iot:read": true,
    "iot:write": true,
    "iot:sensor": true,
    "iot:actuator": true
  }
]
```

URLs

- <https://iotdb.org/pub>
 - `iot:` core definitions
 - `iot-purpose:` sensor and actuators
 - `iot-unit:` units of measure
 - `iot-facet:` facets (what does it do)
- GitHub <https://github.com/dpjanes/...>
 - `.../vocabulary` – source
 - `.../homestar-hue/models/HueLight.iotql`

Related

- There's lots of stuff out there!
- May be reusable in part or in whole
 - schema.org - built in!
 - Project Haystack - Smart Buildings
 - SAREF - Smart Appliances
 - Signalk - Marine
 - OGC Sensors

Get in touch!
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http://iotdb.org/social/imadeit/