

iot.schema.org

Community Update

May 17, 2017

Agenda

- Review the agenda, items to add
- Updated meta model/ontology with Fol
- Mapping Haystack tags in iot.schema.org
- Documentation Workstream
- Organizational updates
- AOB

iot.schema.org

Feature of Interest

Haystack Vocabulary Alignment

May 17, 2018

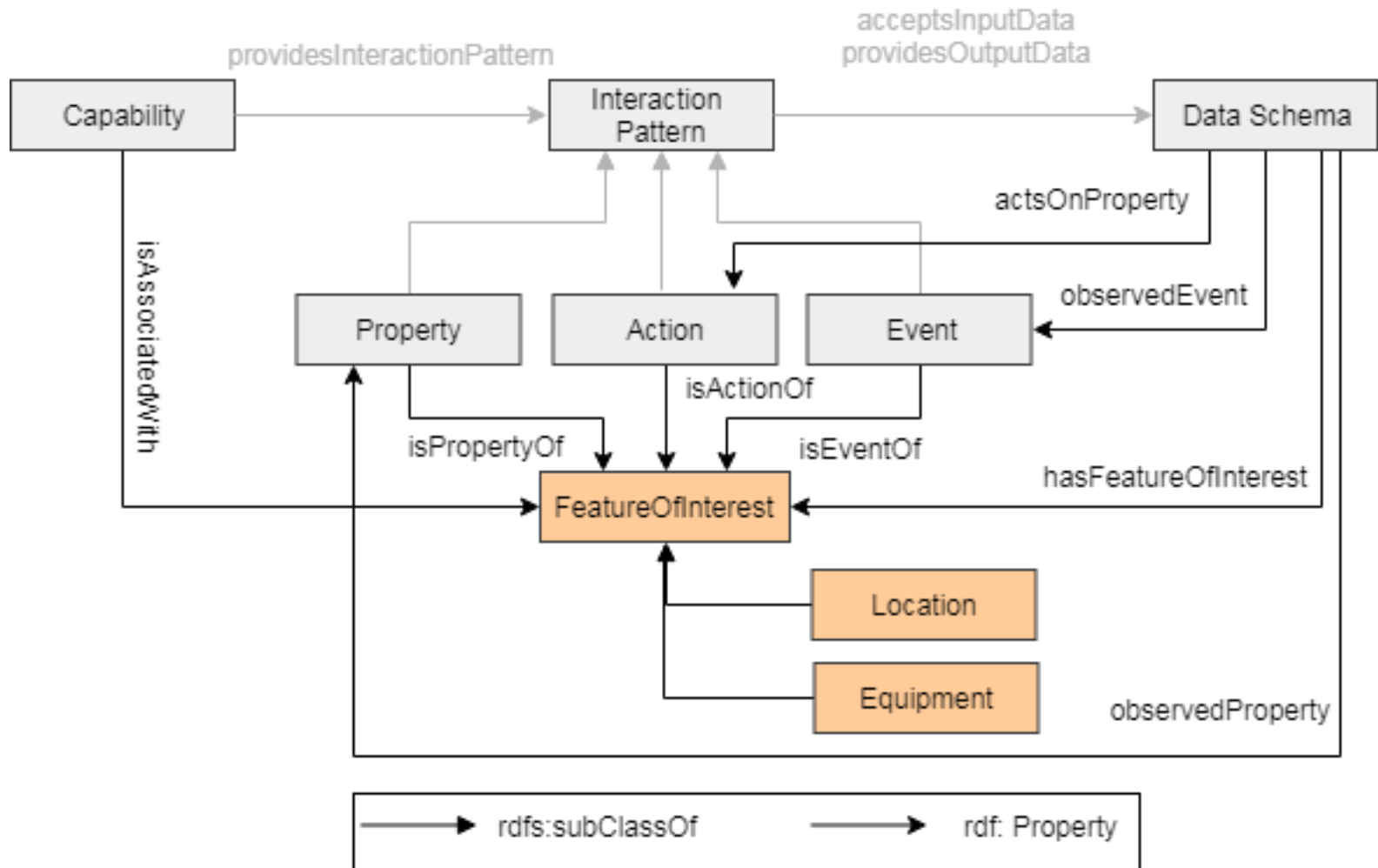
Feature of Interest

Update on the meta-model

Motivation for Feature Of Interest Pattern

- Binds Capability and Interaction Patterns to real-world objects
- This provides information about the environment in which sensing/actuating is applied
- PlugFest use cases prove that the Feature of Interest (Fol) pattern is needed in iot.schema.org

Feature Of Interest Pattern



Feature of Interest Example

```
{
  "@id": "iot:TemperatureSensing",
  "rdfs:subClassOf": { "@id": "iot:Capability" },
  "iot:providesInteractionPattern": [
    {
      "@id": "iot:Temperature"
    }
  ], {
    "@id": "iot:Temperature",
    "rdfs:subClassOf": { "@id": "iot:Property" },
    "iot:isPropertyOf": { "@type": "iot:Room" },
    "iot:providesOutputData": {
      "@id": "iot:TemperatureData"
    }
  }, {
    "@id": "iot:TemperatureData",
    "rdfs:subClassOf": { "@id": "iot:DataSchema" },
    "iot:hasFeatureOfInterest": { "@type": "iot:Room" },
    "iot:observedProperty": "iot:Temperature",
    "schema:propertyType": { "@id": "schema:Float" },
    "schema:unitCode": { "@id": "iot:TemperatureUnit" },
    "schema:minValue": "schema:Float",
    "schema:maxValue": "schema:Float"
  }
}
```

Haystack vocabulary in iot.schema.org

Extension of iot.schema.org

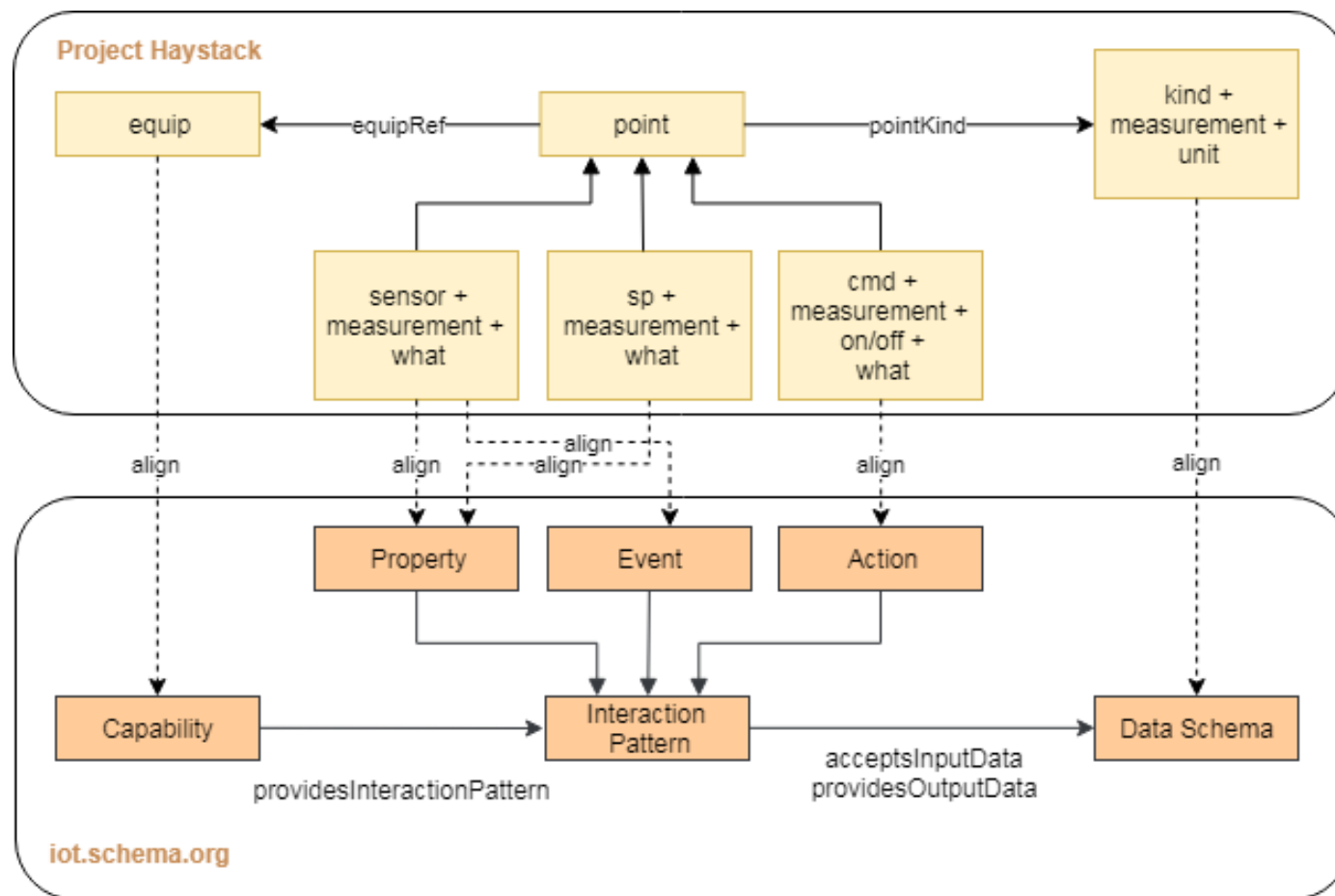
Project Haystack

- Aims to standardize semantic data models to unlock the value of data generated by building equipment.
- It is an open source initiative to enable Internet of Things applications.
- Applications include automation, control, energy, HVAC, lighting, and other environmental systems.

Haystack Model

- **entity**: is an abstraction for some physical object in the real world, e.g. sites, equipment, sensor points, etc.
- **tag**: is a name/value pair applied to an entity.
- **equip**: is a physical asset, e.g. AHU, boiler, or chiller. Can also be used to model a logical grouping, e.g. chiller plant.
- **point**: is typically a digital or analog sensor or actuator
 - **sensor**: input, AI/BI, sensor
 - **cmd**: output, AO/BO, actuator, command
 - **sp**: setpoint, internal control variable, schedule
- **kind**: Defines a tag value type, e.g., number, bool, str
- Multiple tags are used to model the role of a point:
 - **where**: discharge, return, exhaust, outside
 - **what**: air, water, steam
 - **measurement**: temp, humidity, flow, pressure

Integration of Haystack vocabulary in iot.schema.org



→ rdfs:subClassOf

→ rdf: Property

-----> alignment

Example: Boiler in Haystack

equip: boiler

It is used to generate hot water or steam for heating.

Equip level tags:

- where: equipRef must reference parent plant if associated with a plant
- what: hot water or steam or oil or gas

Points associated with the boiler equip:

- run cmd
- run sensor
- circ pump cmd
- circ pump sensor
- condensate pump cmd
- condensate pump sensor

Example: Boiler mapped to iot.schema.org

iot:Capability: iot:Boiler

- subclasses: iot:HotWaterBoiler, iot:SteamBoiler, iot:OilBoiler etc

iot:InteractionPattern:

- iot:Action: iot:TurnOn, iot:TurnOff (**run cmd**)
 - iot:Property: iot:RunStatus (**run sensor**)
 - iot:Action: iot:CirculatePumpOn, iot:CirculatePumpOff (**circ pump cmd**)
 - iot:Property: iot:CirculatePumpStatus (**circ pump sensor**)
 - iot:Action: iot:CondensatePumpOn, iot:CondensatePumpOff (**condensate pump cmd**)
 - iot:Property: iot:CondensatePumpStatus (**condensate pump sensor**)
- What should be the result of mapping the Haystack vocabulary into iot.schema.org?

Thank You!

Questions please...

Documentation Workstream

- Landing page
- One page summary
- White paper
- Slide deck
- User guide
- Developer guide

Landing Page (s)

- iot.schema.org entry point
 - Browse the schemas
- [github](https://github.com) entry point
 - Focus on developers and users
 - Technical guidance and examples
 - Tools
- W3C Community Group entry point
 - Summary, informational, getting started
 - Focus on incubating new definitions

One Pager

- What, why, how, and getting involved on a single page
- Some technical detail to explain what part of the solution this is and what technology is being used
- Same information on the W3C Community page

White Paper

- Describes iot.schema.org in a conference style and format
- Broad analysis of other approaches and formats
- References for research

Slide Deck

- Explains iot.schema.org
- Comprehensive
- Available as source material for anyone to include
- 10 minute version for outreach

User Guide

- How to use iot.schema.org definitions in systems
- Semantic annotation and categories
- Annotation examples in TD, other formats
- Discovery and filtering
- Feature of Interest annotation

Developer Guide

- How to create and contribute iot.schema.org definitions
- Best practices for definitions

Organizational update

- Resources
 - Shared Google Document – historical, rolling agenda
 - Google Discussion Group – broad issues
 - Github organization – issues and discussion
- W3C Community Group
 - A venue for incubation and contribution of new definitions
 - New application domains – eventually may split off
 - Framework to apply a contributor IPR policy to CG members
 - Also can accept contributions from schema.org members under the schema.org IPR policy

Upcoming Semantic Interop Events

- W3C Web of Things Plugfest
 - South Korea, June 30th and July 1st
- WISHI Plugfest/Hackathon at IETF 102
 - Montreal, July 14th and 15th

Any Other Business