iot.schema.org Community Update

May 17, 2017

Agenda

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

iot.schema.org

Feature of Interest

Haystack Vocabulary Alignment

May 17, 2018

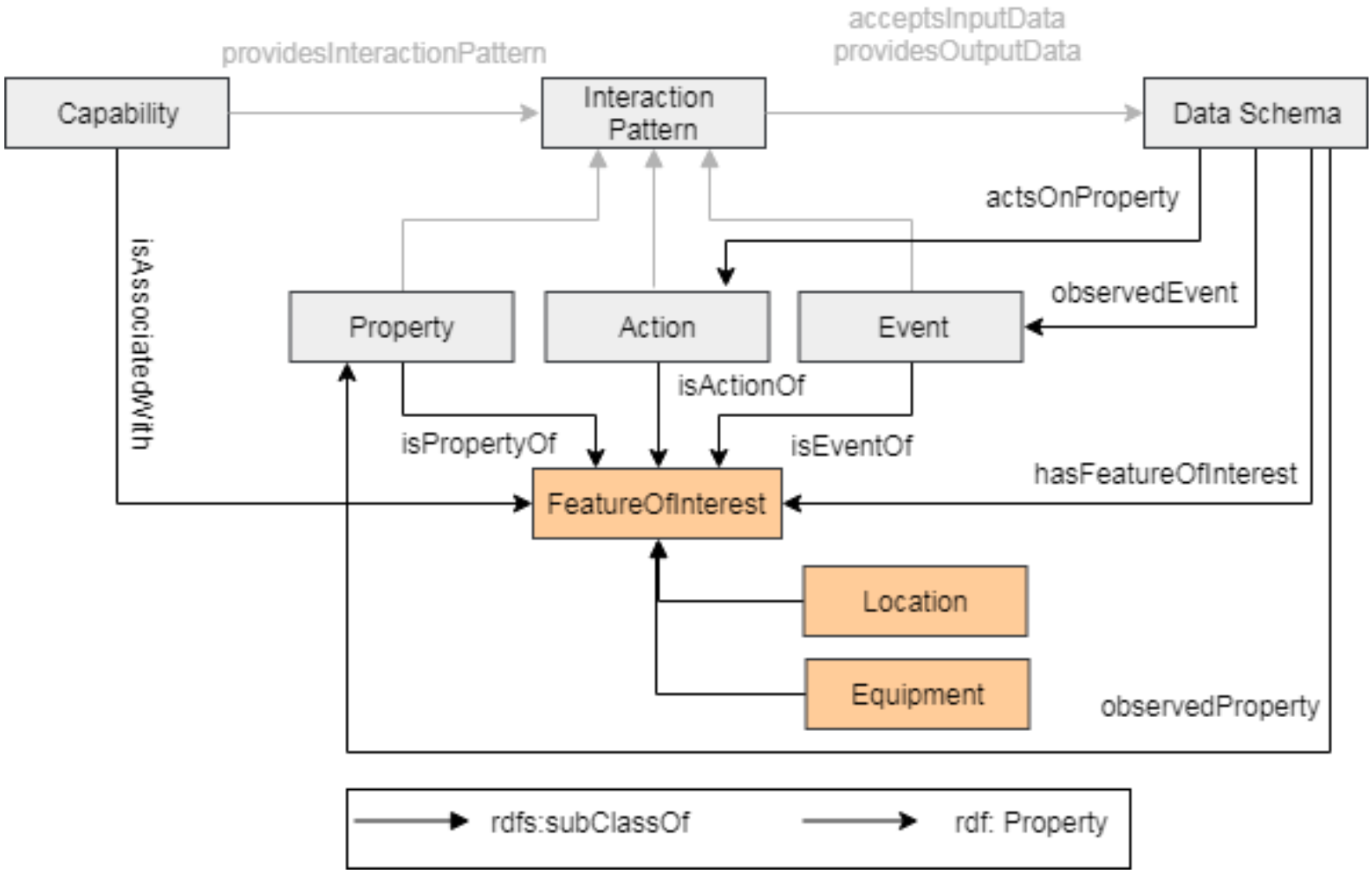
Feature of Interest

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 (FoI) 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.

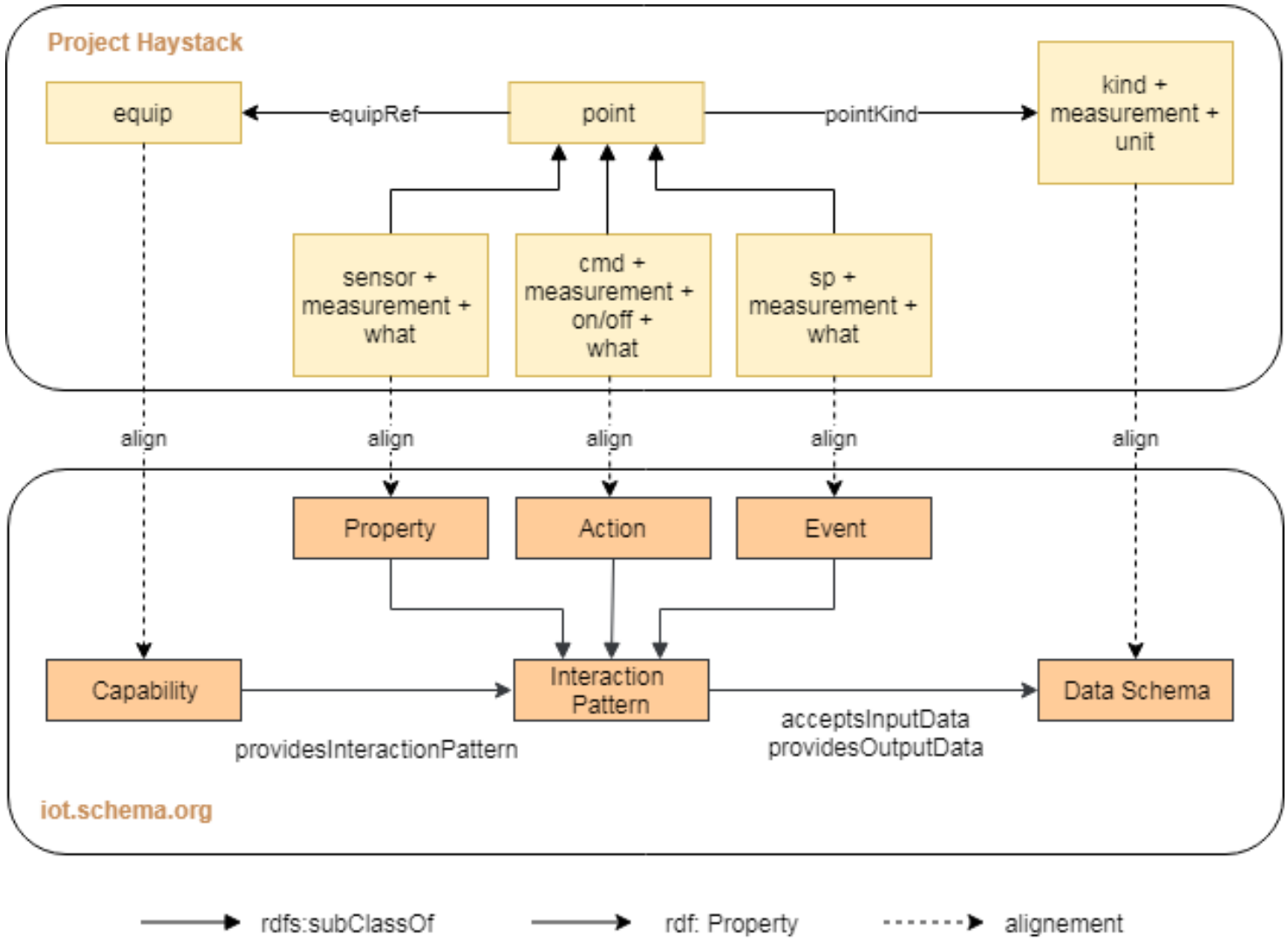
Haystack Model

- 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



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 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