

iotschema Review: Status and Planning

September 2019

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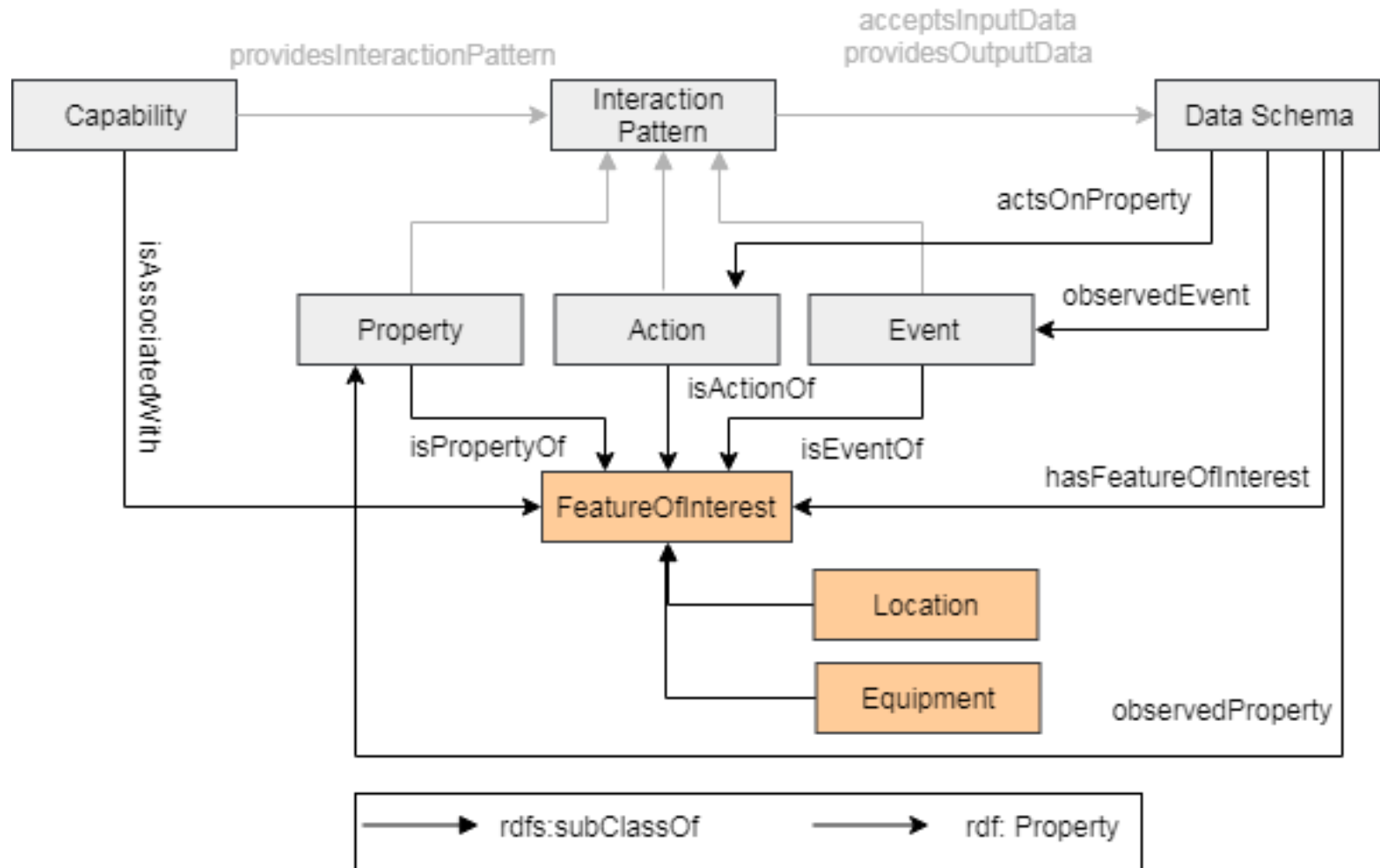
Charter and Objectives

- Create an extension to Schema.org that will enable IoT semantics
- Work with relevant vendors and SDOs to architect a common information model for IoT
- Develop a process to enable free contribution from diverse organizations, driving toward normalization to a common model
- Enable domain and subject experts to create and maintain definitions and models
- Work on practical integration with Schema.org

Status

- Developed a common meta-model which is well adopted in industry (graphic)
 - Functional/semantic capabilities with common Property, Action, and Event classes of affordances
 - Feature of Interest integration from other namespaces – GENIVI/VSS, BrickSchema, Project Haystack
 - Integration with W3C SOSA/SSN
- Published strawman definitions for some common IoT capabilities
- Conducted test case evaluation with W3C Web of Things and IRTF T2TRG WISHI including hands-on

Information Meta-Model



W3C WoT Test Case

- Integrated iotschema definitions with WoT Thing Description as semantic annotation (example)
- Created strawman definitions for common use
- Investigated use in discovery and configuration
- Several organizations used semantic annotation
- Node-RED application for semantic interoperability
 - Uses WoT Thing Description with iotschema annotation
- WoT discovery will be further developed

iotschema for Node-RED

Recipe-based applications

- iotschema embedded in Node-RED tool
 - Enables an easy configuration of things using iotschema definitions
- Easies the use of semantics for IoT developers
 - No need for a developer to know RDF(S), JSON-LD, RDF Shapes ...
- Simplify creation of applications with W3C WoT
 - Avoids translations of serializations formats, data types, units ...
- Demonstrates semantic discovery and processing
 - Integrates WoT Thing Directory
- GitHub project location:
 - <https://github.com/iot-schema-collab/iotschema-node-red>

Schema.org Integration

- iotschema model has been adapted in order to comply with schema.org model and software
- Some issues
 - Class names Event, Action, Property conflict
 - iotschema has diverse semantic types for objects, schema.org has diverse property types
 - Property types could be synthesized from objects but...
 - iotschema will potentially define hundreds of types for physical quantities (temperature, humidity, voltage, acceleration...), control affordances (open/close, brightness, color control, camera controls, operating modes...), and features of interest (rooms, machines...)

W3C Community Group

- Started early 2019
- A few members have joined but not active yet
- IPR policy for contributions based on CG membership
- CG membership will become part of the community and be required for contributors and participants
- Can we adopt the BSD 3-Clause license for our contributed and published content?

OneDM Liaison Group

- Semi-private group of SDOs and associated vendors
- Goal is to create a common IoT data model and normalized device definitions
- Creating open source JSON language and developer tools for definitions, using BSD 3-Clause license
- High level alignment with the Property-Action-Event meta-model
- OneDM definitions can feed iotschema
- We can share OneDM language and tools

Going Forward

- Create an experimental area on schema.org for normalized, accepted iotschema content
- Create a namespaced area per contributing org in the public github, allow open contribution of raw content
 - CI tools validate the contributed definitions
- The definition can immediately be dereferenced in the contributor's namespace (on schema.org?)
- Move definitions into the official github repository and schema.org experimental area when they are accepted

To Do

- Integrate the iotschema W3C Community Group into the process, define licensing and publication
- Design a namespace scheme for contributing orgs and for linked ontologies
- Refactor the vocabulary as necessary to remediate the name conflicts
- Build and deploy CI tools to check contributions

iotschema: Resources

- W3C Community Group:
The Schema Extensions For IoT

- <https://www.w3.org/community/iotschema/>

- GitHub repository:

- <https://github.com/iot-schema-collab/iotschema>

Teleconferences:

- <https://github.com/iot-schema-collab/teleconferences>

Contributions:

- <https://github.com/iot-schema-collab/iotschema>

Charter:

- <https://github.com/iot-schema-collab/ws-charter>

- Web site:
Current location

- <http://iotschema.org/docs/full.html>

- Tools:
iotschema for Node-RED

- <https://github.com/iot-schema-collab/iotschema-node-red>