

Linked Data Model for Things

Based upon a survey of use cases and existing IoT platform standards

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Linked Data Model for Things

- Every thing is an instance of the class “Thing”
- Things may have zero or more properties, actions and events
- Things may have zero or more application defined types
- Things may identify the IoT platform they are hosted by, along with ancillary metadata
 - Used by application platform drivers
- Properties, actions and events must have a human meaningful name
 - Could be provided in multiple languages
- Properties, actions and events can have structured data, e.g. nested properties
- Ordered and unordered collections
 - Generalisation of arrays
 - Optional length constraints
- Each action may describe a request and/or a response
 - Defined in terms of the data that they convey
- Streams as sequence of property updates
 - Sources and sinks, sampling rate, latency
- The core data types are
 - Booleans
 - Numbers & Integers
 - Optional range constraints
 - Strings
 - Optional pattern constraints
 - Language tags
 - Enumerations
- Unions are a set of allowed types
- Vectors are a set of named slots with the same data type
- Opaque values and opaque streams
 - Byte sequence with an identifier for its type
- Things as first class data types
 - With links to their models (thing description)
- Things may have additional metadata
 - Device location, product serial number, units of measure, etc.
- Syntactic modularity
 - Through links to imported models
- Semantic modularity
 - Through instance and subclass links

Linked Data Model for Things

- "a" is a Turtle shortcut for `<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>`
- `td:thing` expands to `<http://www.w3.org/ns/td#thing>`

* Zero or more
 + One or more
 ? Zero or one
 No suffix: exactly one

D is predefined type or an app defined type

