YANG interaction model for IoT

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For:
Being RESTful
YANG (routers)

IoT (small stuff)

CoMI
YANG (routers)

IoT (small stuff)

CoMI
YANG (routers)

IoT (small stuff)

Non-YANG IoT

CoMI
NOT

Replacement for:
- All CoRE stuff
NOT

Replacement for:
- Linked Data
- HATEOAS
  - REST
- PubSub
- ...

A  B  C
NOT

Replacement for:
- Semantics
- RDF
- ...
Richer vocabulary, better foundation to build upon
Richer exchange model between two entities
Interaction model (IN)

Defines how data is accessed and retrieved from the endpoints, being therefore tied to the specific communication pattern that the system has (e.g. REST methods, Publish/Subscribe operations or RPC-calls).
A non-interaction

Data representation A
IDL
CORBA

Data representation B
CBOR
CoAP

Data representation C
ASN.1
SNMP
Interaction model description

• REST
  – Follow the links
  – Get the content formats
  – Submit the forms
PUT /temp CBOR 25

200 OK
METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp CBOR 25

200 OK
When? (where?) URI /temp
Why? (what?) METHOD PUT
(content format) DATA SYNTAX CBOR
(how?) DATA VALUES 25

200 OK
Why?  
When?  

(what?)  (where?)  (how?)  (how much?)

METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp CBOR 25

2.04 Changed
METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp CBOR

“One more Kimchi, please”

4.00 Bad Request
Why?
When?

METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp CBOR 189 756

4.00 Bad Request
METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp CBOR

189 756

4.00 Bad Request

How does the client know the schema of the data? How to handle collections? …
METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp application/cbor+positive-temp-less-than-100
Interaction model description

• REST
  – Follow the links
  – Get the content formats
  – Submit the forms

• How are these billions of potential content formats handled?
  – Are we doomed of always referring to HTTP/CoAP primitives?
    • I know of little Web devs that use Sockets today
Instead of limiting to “low-level” REST API, use high-level CoMI API

Use HATEOAS to discover the CoMI entry point(s)
Why?

• YANG community – primarily routers
• CoRe / T2T / W3C community – primarily IoT

• Powerful tool… Disjoint communities… Getting together…

• Topic in T2TRG?
  – Something else?
  – Nothing else?
Thanks!

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