YANG interaction model for IoT

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A huge thanks to:
Peter van der Stok
Andy Bierman
Benoit Claise

And to our chairs:
Ari and Carsten

A huge thanks to:
Jaime Jimenez
Hannes Tschofenig
Dave Thaler

For writing:
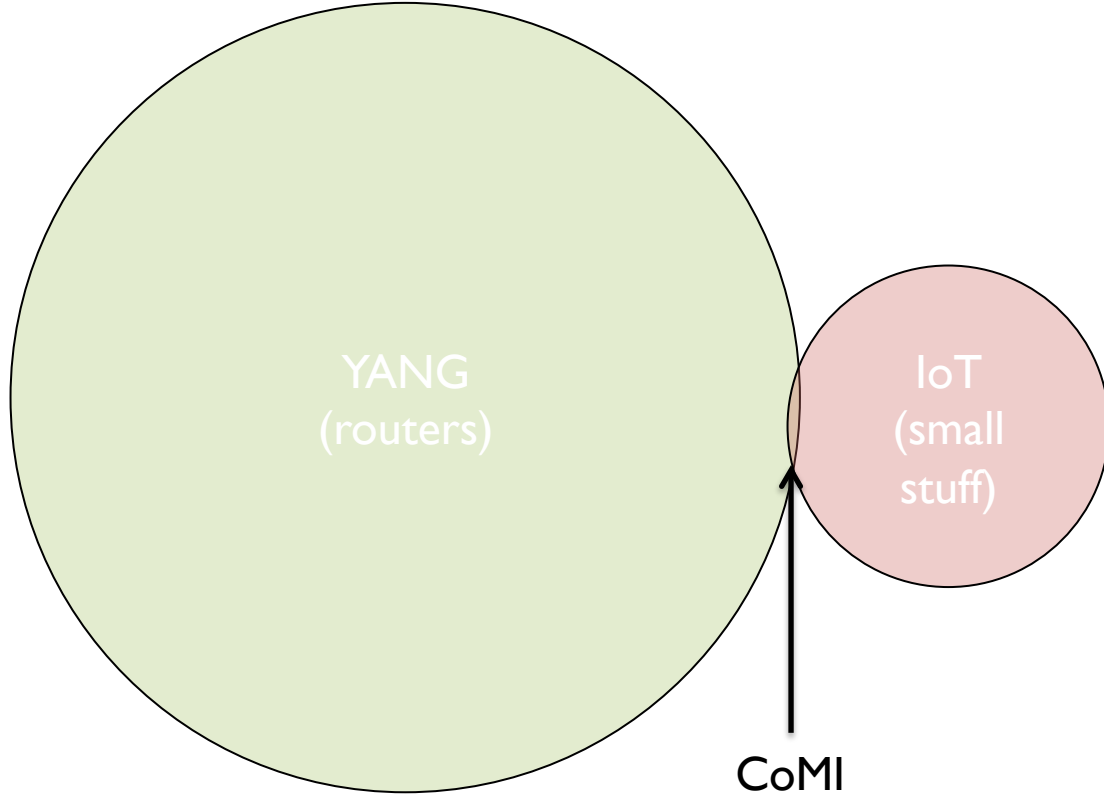draft-iab-iotsi-workshop
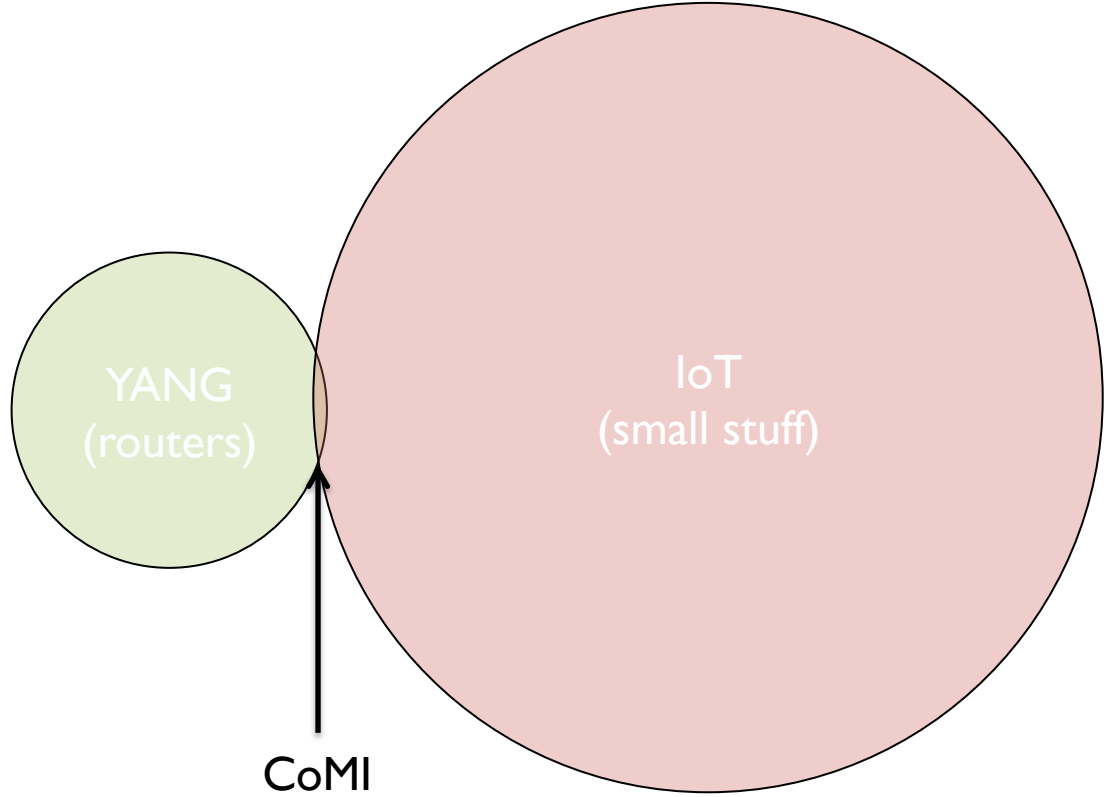
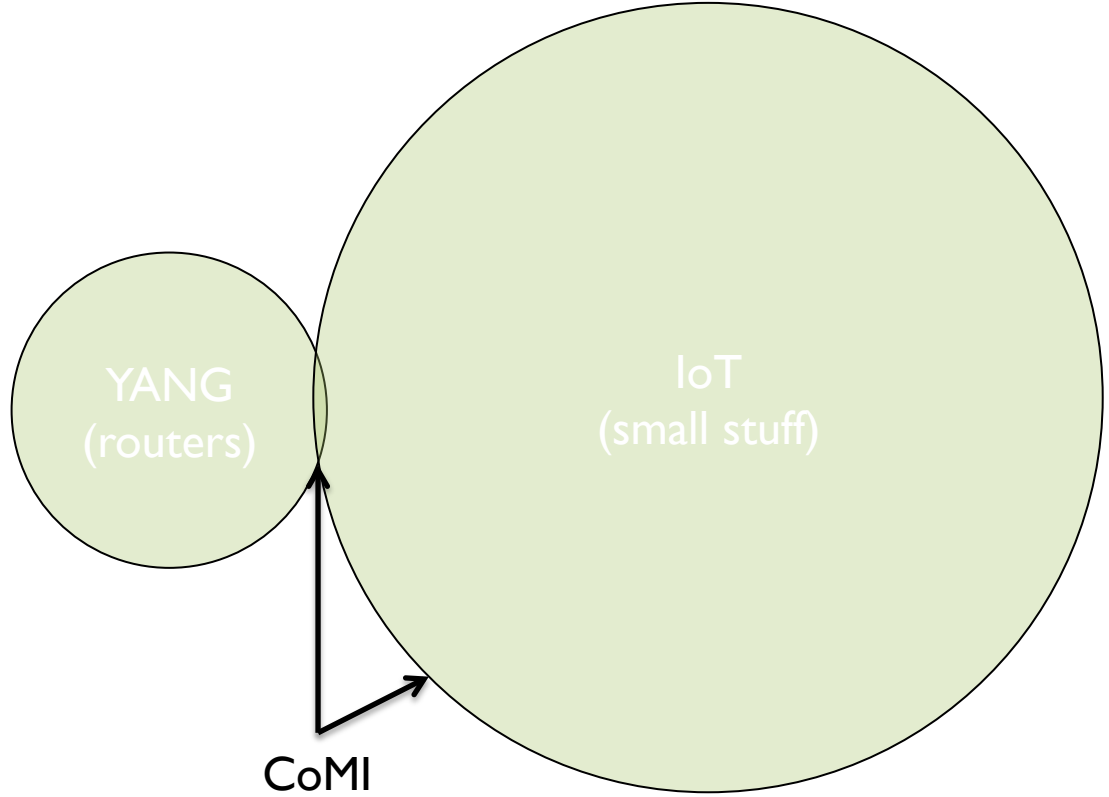**A huge thanks to:**
Matthias Kovatsch
Klaus Hartke
Michael Koster
(and lots of people I've certainly omitted)

For:
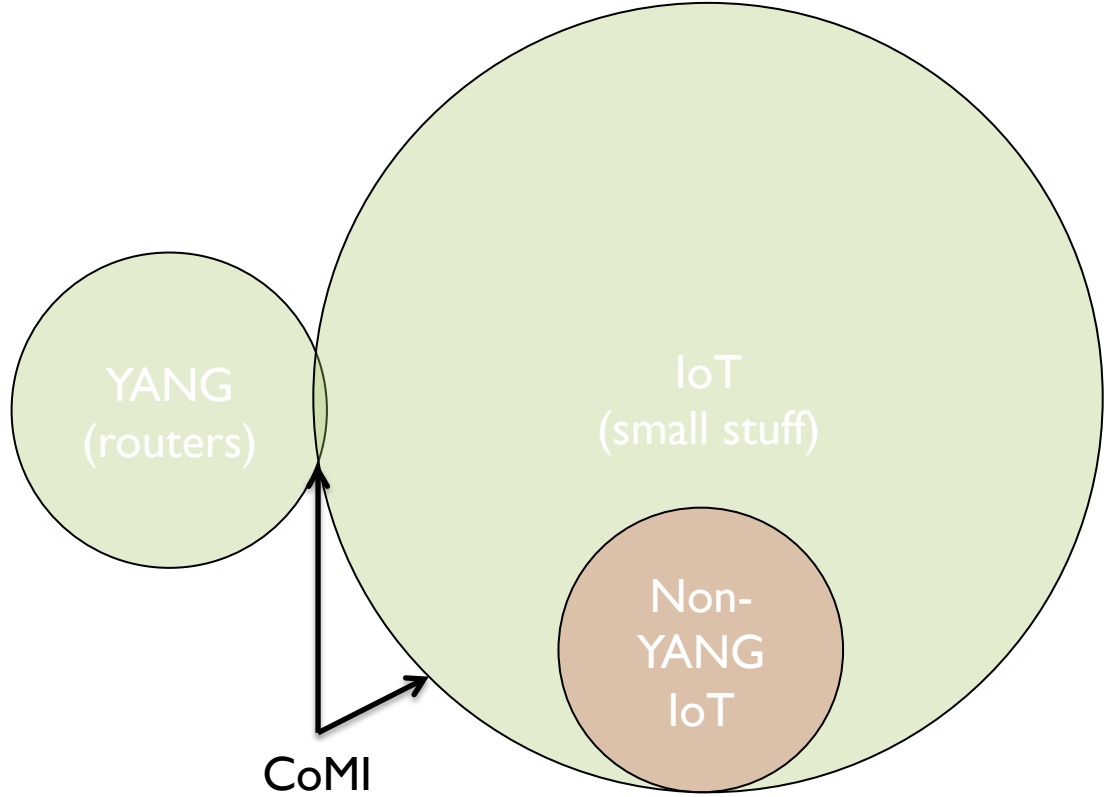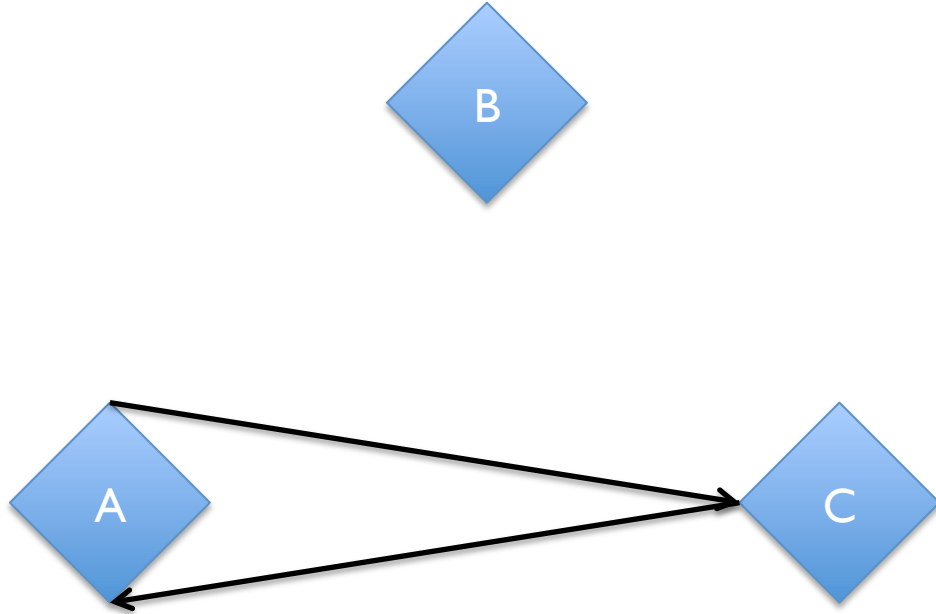Being RESTfull

YANG
(routers)

IoT
(small stuff)

CoMI

YANG
(routers)

IoT
(small stuff)

CoMI

YANG
(routers)

IoT
(small stuff)

CoMI

YANG
(routers)

IoT
(small stuff)

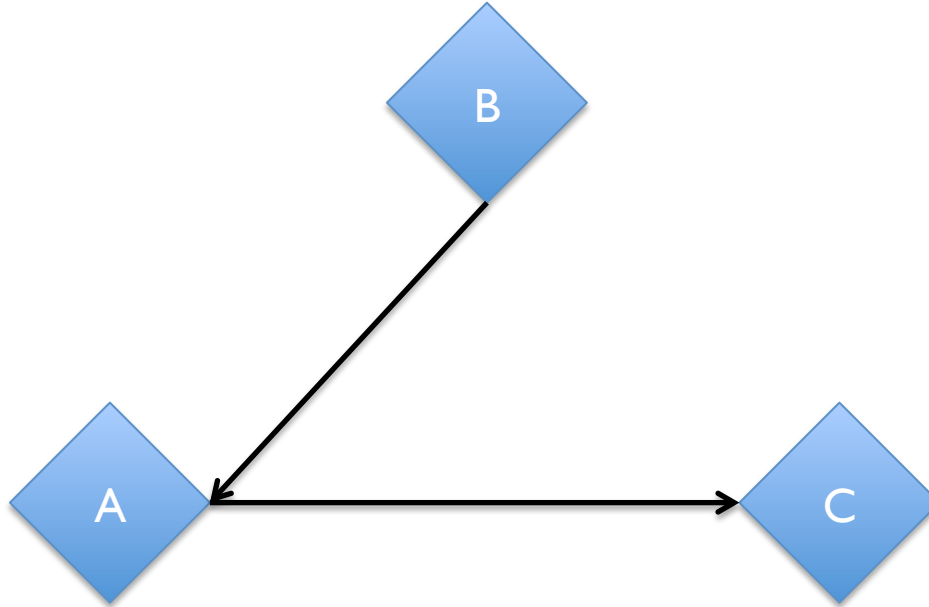Non-
YANG
IoT

CoMI

NOT

Replacement for:
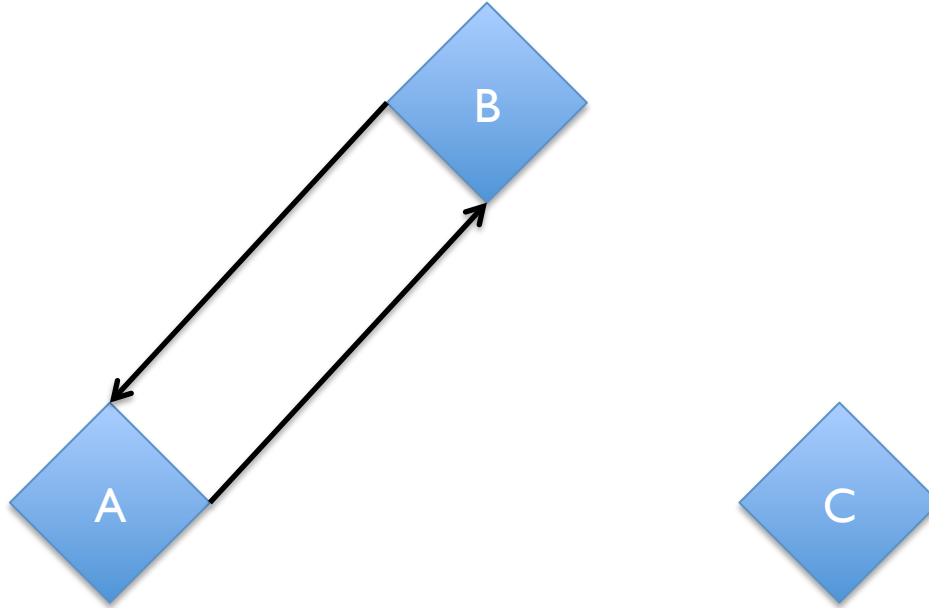- All CoRE stuff

NOT

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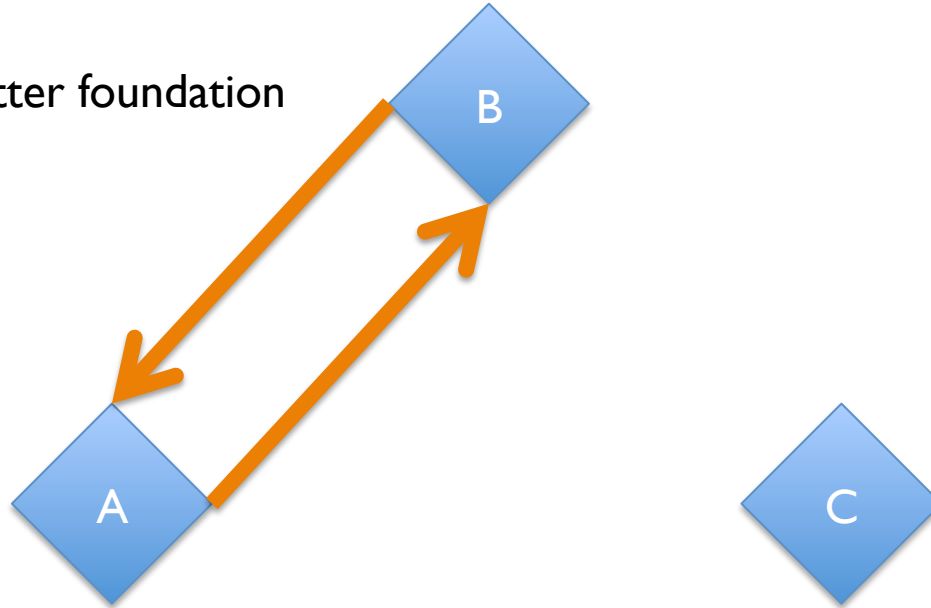- HATEOAS
    - REST
- PubSub
- …

NOT

Replacement for:
- Semantics
- RDF
- …

IS

Richer vocabulary, better foundation to build upon

IS

Richer exchange model
between two entities
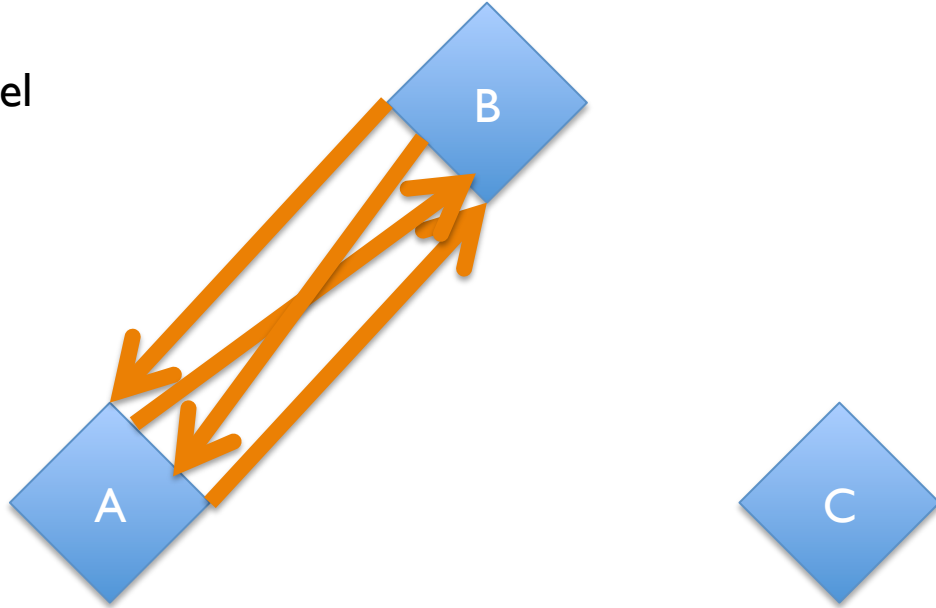
Interaction model (IN)

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
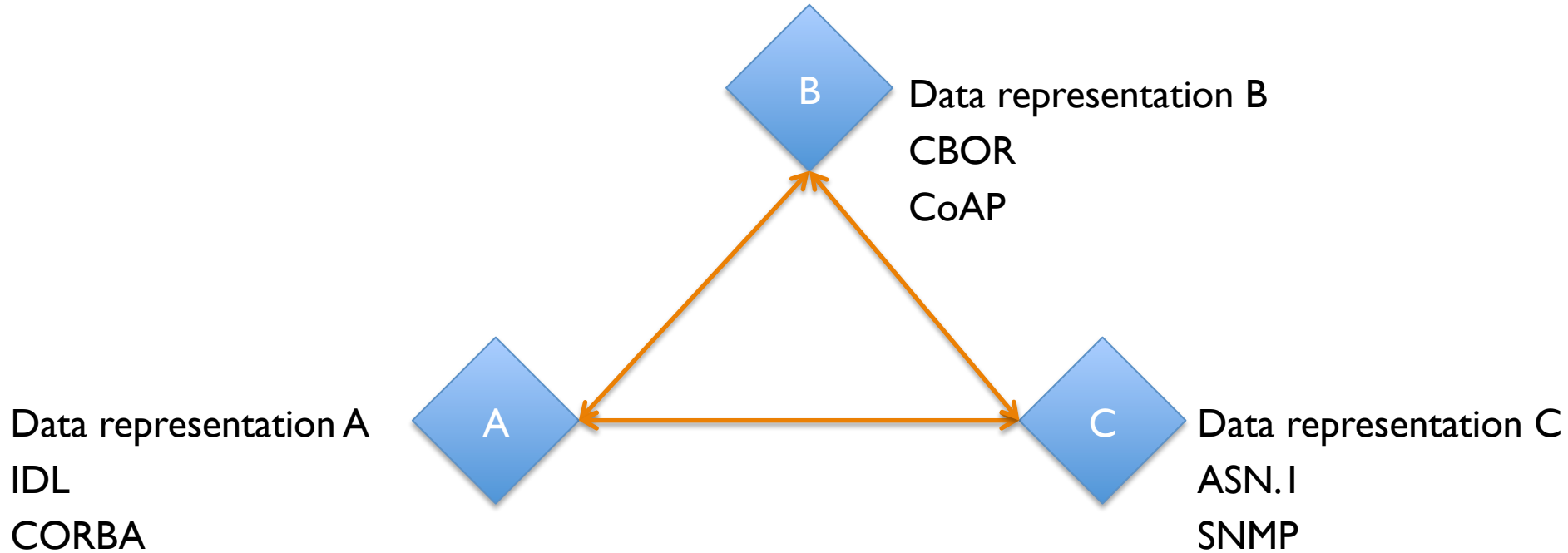
Data representation B
CBOR
CoAP

Data representation A
IDL
CORBA

Data representation C
ASN.1
SNMP

Interaction model description

- REST
  - Follow the links
  - Get the content formats
  - Submit the forms

PUT   /temp   CBOR   25

PUT /temp CBOR 25

→

←
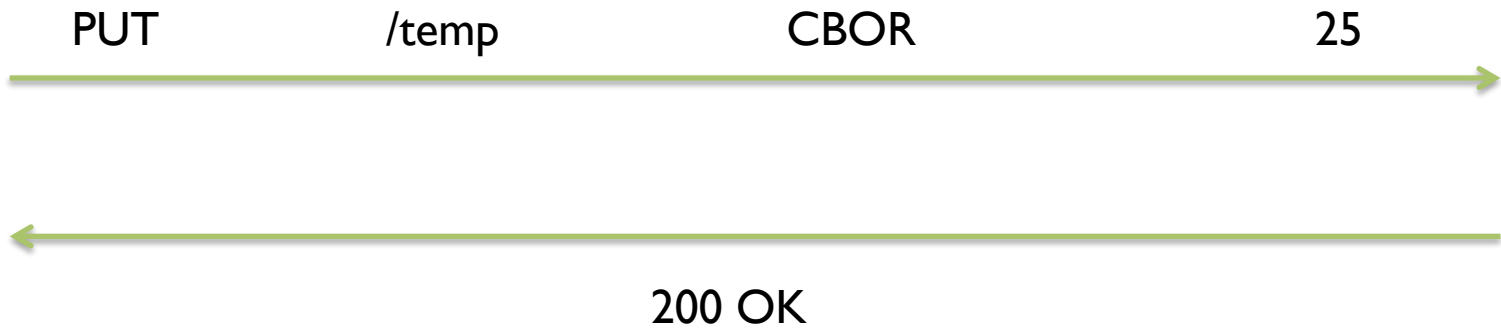
200 OK

METHOD + URI + DATA SYNTAX + DATA VALUES

PUT   /temp   CBOR   25

200 OK

Why?
When?

(content format)

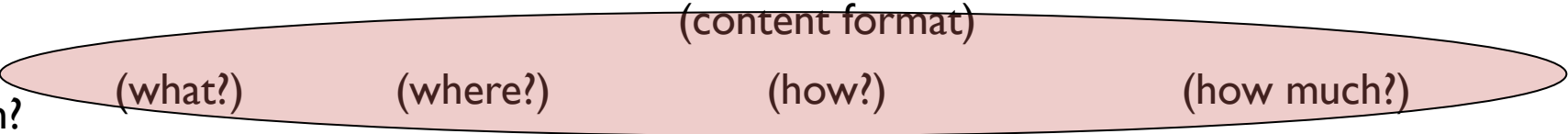(what?)   (where?)   (how?)   (how much?)

METHOD   +   URI   +   DATA SYNTAX   +   DATA VALUES

PUT   /temp   CBOR   25

→

200 OK

←

SEMANTICS

Why?
When?

(content format)

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

METHOD   +   URI   +   DATA SYNTAX   +   DATA VALUES

PUT   /temp   CBOR   25

→

←

2.04 Changed

SEMANTICS

Why?
When?

(content format)

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

METHOD + URI + DATA SYNTAX + DATA VALUES

PUT /temp CBOR "One more Kimchi, please"

4.00 Bad Request

SEMANTICS

Why?
When?

(content format)

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

METHOD + **URI** + **DATA SYNTAX** + **DATA VALUES**

PUT /temp CBOR 189 756

4.00 Bad Request

SEMANTICS

Why?
When?

(content format)

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

METHOD + **URI** + **DATA SYNTAX** + **DATA VALUES**
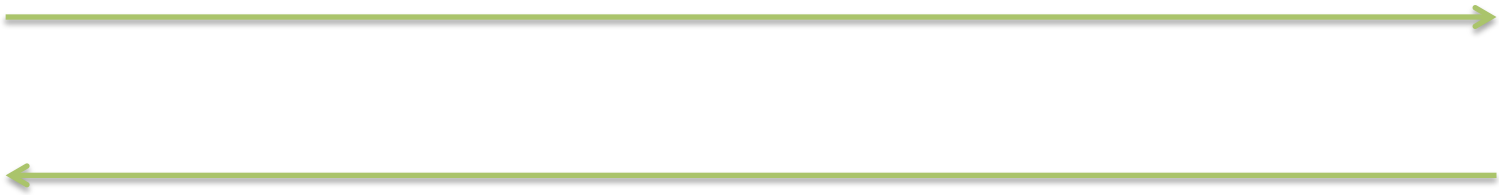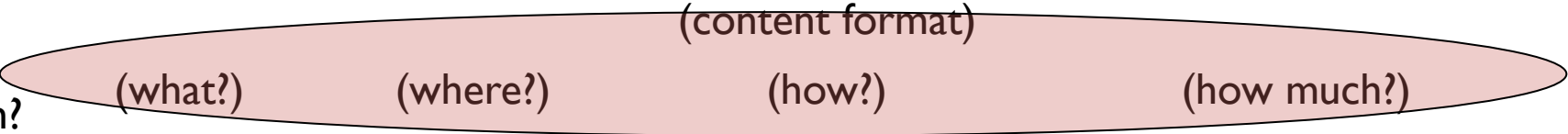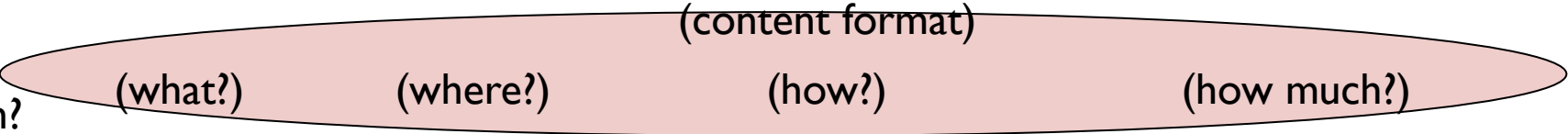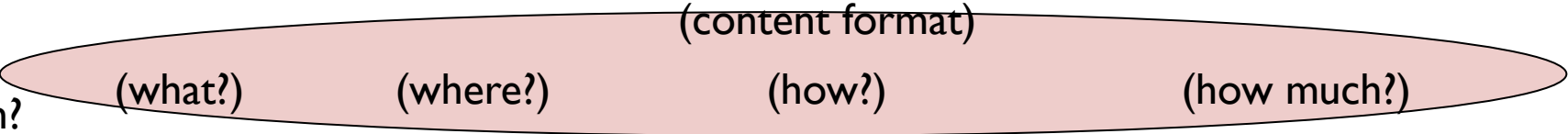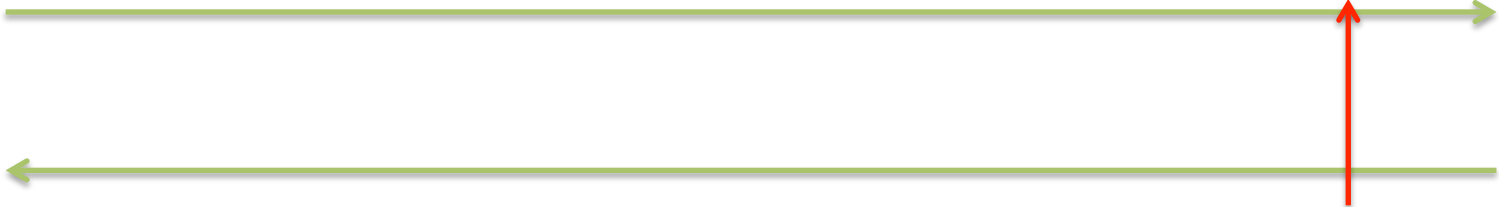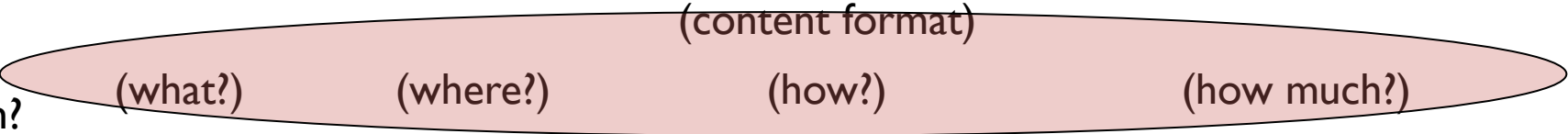
PUT   /temp   CBOR   189 756

4.00 Bad Request

How does the client know the schema of the data? How to handle collections? …

SEMANTICS

Why?
When?

(content format)

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

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

CoMI/YANG

/a1
/a2

/b1
/b2

A → ← B

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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