

# Common Resource Model and Transfer Layer for the Web of Things

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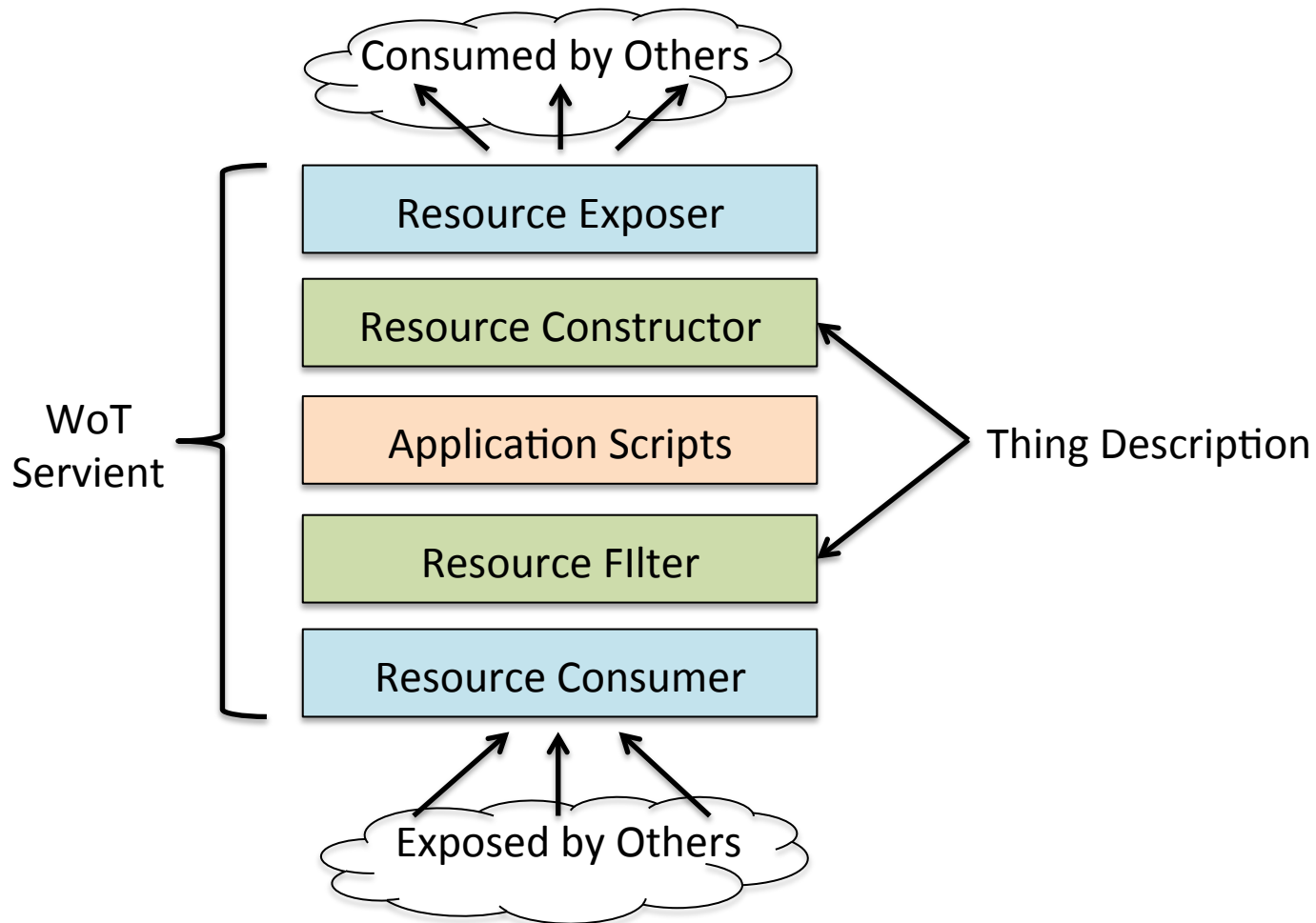
# Problems being solved

- Implementation of WoT Web Interface, Abstract Transfer Layer and Common Resource Model
- Resource design patterns for Events, Actions, and Properties
- Asynchronous communication for RESTful systems

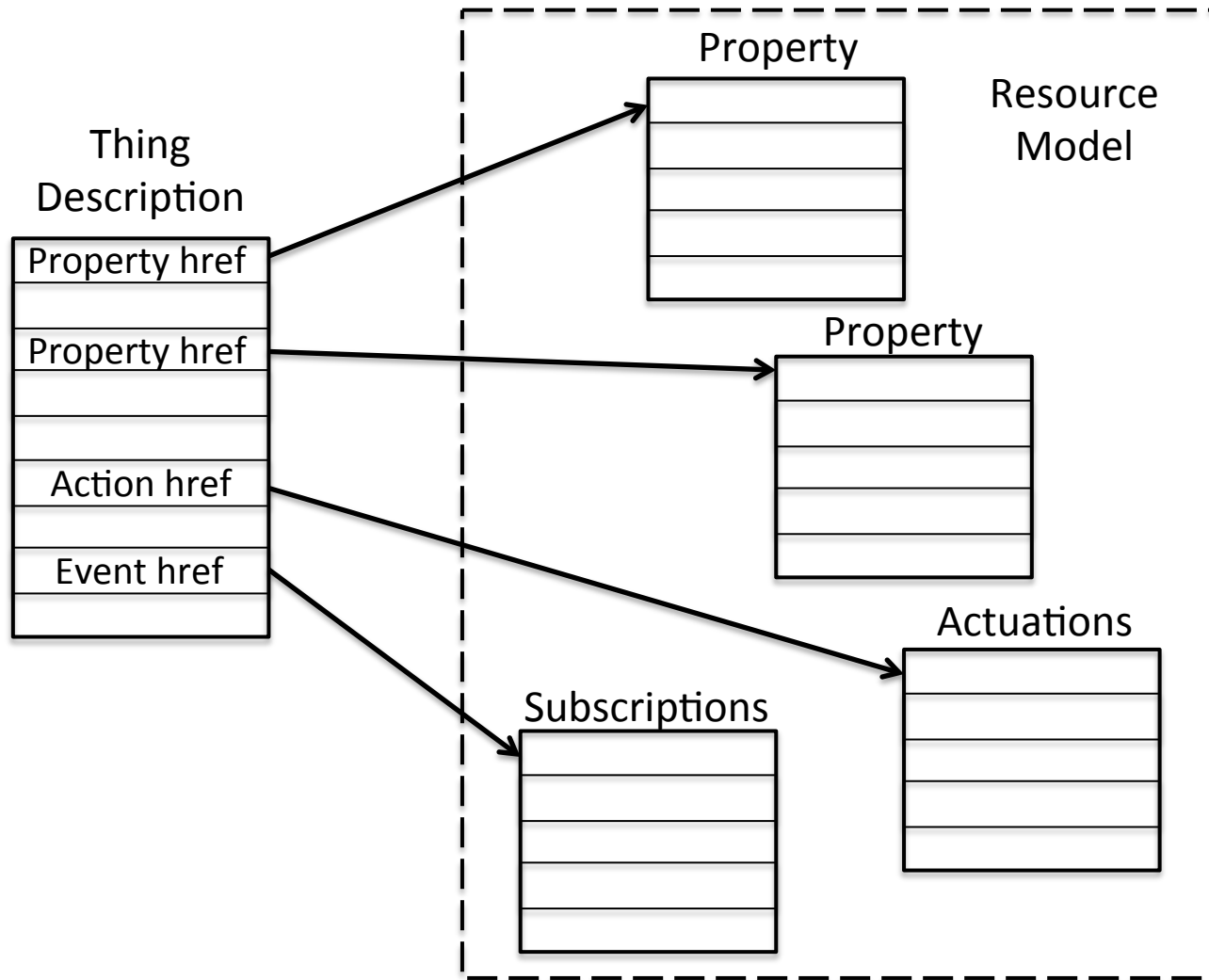
# Scope

- Provide a consistent resource interaction model exposed by the "hrefs" of an event, action, or property – Data at rest
- Abstract transfer layer mapping to common protocols CoAP, HTTP, MQTT, Websockets using protocol bindings - Data in motion
- Implement the WoT servient pattern using Thing Description for resource construction, discovery, and application interaction

# WoT Servient Use Case



# Resource Model Scope



# Transfer Layer

Layer	Description
Application	Scripts that expose and consume resources, execute the "business logic" of things
Things	Thing Description, Stateful Resources
Transfer	REST, Pub-Sub: HTTP, CoAP, MQTT
Transport	UDP, TCP
Network	Ethernet, WiFi, 6LoWPAN, Thread

# Common Transfer Semantics

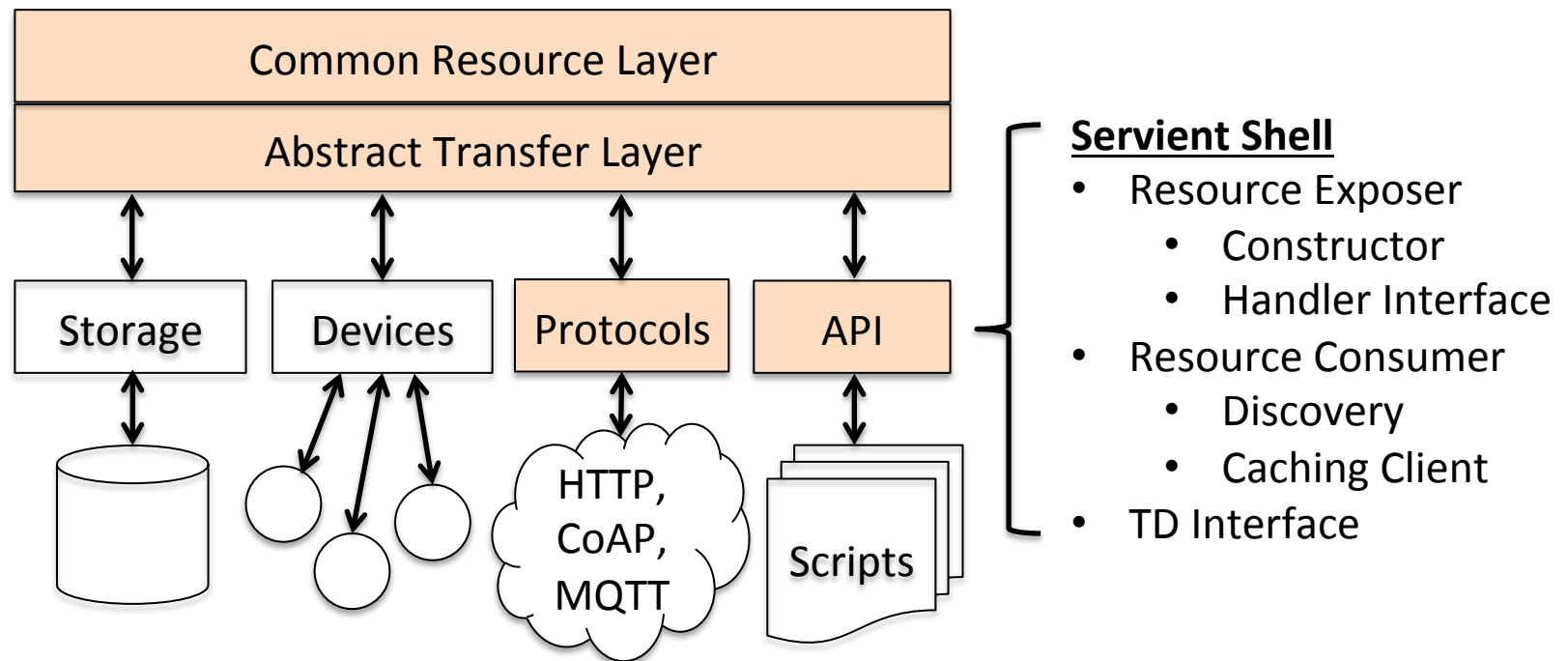
- Define REST + Pubsub based transfer semantics for a common resource interaction model exposed by the "hrefs" pointed to in TD
- One model to map to HTTP, CoAP, MQTT using protocol bindings
- Instances of Events, Actions, Properties, and other entity classes in TD point to resources with well defined transfer semantics

# Example Abstract Transfer Layer

Abstract Transfer	Pubsub	CoAP	HTTP
Create	(Publish)	POST	POST
Retrieve	Subscribe (with retain)	GET	GET
Update	Publish	PUT	PUT
Delete	N/A	DELETE	DELETE
Observe	Subscribe	GET with OBS option	GET text/stream, TE=chunked (SSE)
Notify	Notify Client (onMessage)	Response with OBS option	SSE chunk Response



# Architecture



# Milestones

- Define resource layer format – T2TRG draft
- Define transfer layer format – T2TRG draft
- Construct and expose WoT Interface resources using a TD template
- Discover and consume WoT Interface resources using a TD template
- Demonstration of control and orchestration of connected things through WoT Servients

# Working Documents

<https://github.com/hyperstate/hyperstate-docs>