

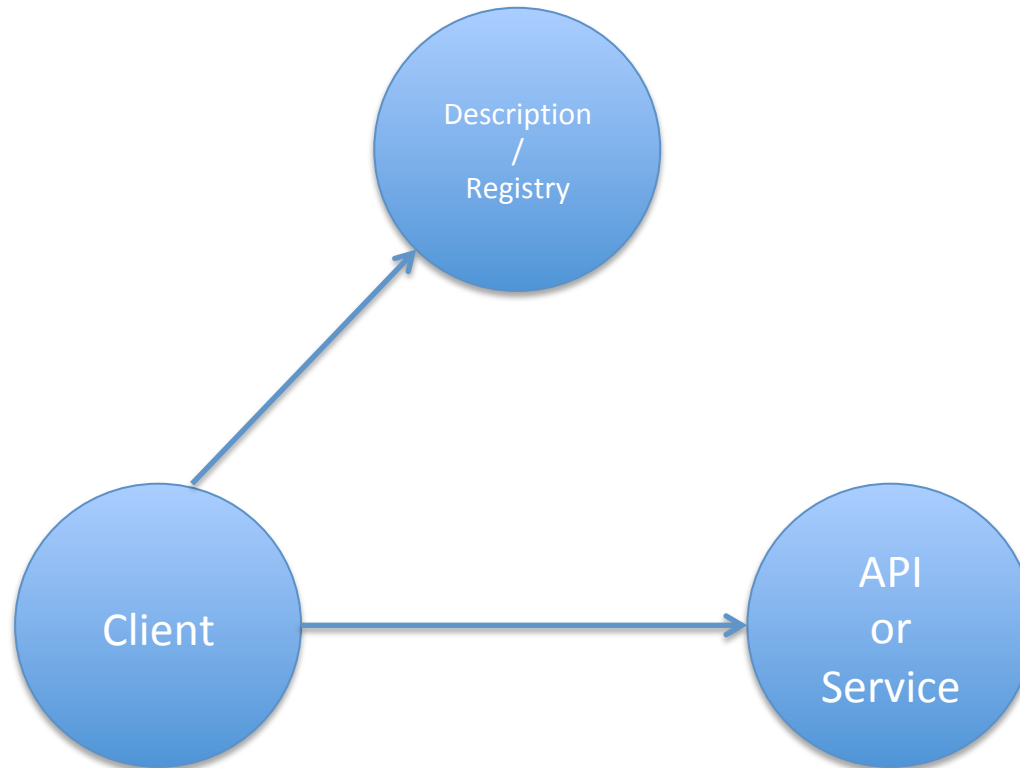
REST description

Oxford University
Software Engineering
Programme
January 2018



© Paul Fremantle 2016 except where credited elsewhere. This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License
See <http://creativecommons.org/licenses/by-nc-sa/4.0/>

SOA contracts



SOAP + WSDL

- Enabled a lot of tooling
- Very powerful
- Built in from day 1
- Not perfect
 - WSDL 1.1 vs 2.0, doc/lit, rpc/lit, rpc/encoded
 - Not always interoperable



REST description

- Do we need it?



2007

Q: Does REST need a description document?

A: No.

Joe Gregorio, REST proponent, bitworking.org



More info

Debate: Does REST Need a Description Language?

by **Arnon Rotem-Gal-Oz** on Jun 06, 2007 | **7** Discuss

Share  |      

Following up on the debate of REST vs. WS-* that has [yet again, been discussed here last week](#) , it is interesting to note a debate on the topic of contracts for RESTful services that has been picking up pace over the last few days. The question that emerged was whether REST needs contracts (a la WSDLs) and even more fundamentally whether REST with contracts was still REST. It started when [Aristotle Pagaltzis asked "Does REST need a service description language"](#): To which [Paul Mueller responded](#) [Mark Baker followed up](#), agreeing with Aristotle that

"The other day, someone posted on rest-discuss to ask whether there was a standard way to describe a REST service. This question resurfaces from time to time (and usually draws a pointer to the [WADL](#) effort as a response), which seems to indicate a popular misunderstanding of REST. I think describing a RESTful service with a WSDL-like language is a contradiction in terms..."

<https://www.infoq.com/news/2007/06/rest-description-language>



© Paul Fremantle 2016 except where credited elsewhere. This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License
See <http://creativecommons.org/licenses/by-nc-sa/4.0/>

RELATE

The F
to Bui

The S
Micro

Creati
Swag

Spring
Hvner

The world has moved on

- WADL (pretty much dead)
- RAML
 - www.raml.org
- Swagger (aka OpenAPI)
 - www.swagger.io
 - <https://github.com/OAI/OpenAPI-Specification>
- API Blueprint
 - www.apiblueprint.org



Top down or bottom up

- Just like WSDL, we can use these for design as well as description
- Language neutral way of creating prototype interfaces
- More in the API management section



RAML



For every API, start by defining which version of RAML you are using, and then document basic characteristics of your API - the title, baseURI, and version.



Create and pull in namespaced, reusable libraries containing data types, traits, resource types, schemas, examples, & more.



Annotations let you add vendor specific functionality without compromising your spec



Traits and resourceTypes let you take advantage of code reuse and design patterns



Easily define resources and methods, then add as much detail as you want. Apply traits and other patterns, or add parameters and other details specific to each call.



Describe expected responses for multiple media types and specify data types or call in pre-defined schemas and examples. Schemas and examples can be defined via a data type, in-line, or externalized with !include.



Write human-readable, markdown-formatted descriptions throughout your RAML spec, or include entire markdown documentation sections at the root.

```
1 title: World Music API
2
3 baseUri: http://example.api.com/{version}
4 version: v1
5
6 uses:
7   Songs: !include libraries/songs.raml
8
9 annotationTypes:
10   monitoringInterval:
11     parameters:
12       value: integer
13
14 traits:
15   secured: !include secured/accessToken.raml
16
17 /songs:
18   is: secured
19   get:
20     (monitoringInterval): 30
21     queryParameters:
22       genre:
23         description: filter the songs by genre
24   post:
25     /{songId}:
26       get:
27         responses:
28           200:
29             body:
30               application/json:
31                 type: Songs.Song
32               application/xml:
33                 schema: !include schemas/songs.xml
34                 example: !include examples/songs.xml
```

Songs Library

```
1 #%RAML 1.0 Library
2 types:
3   Song:
4     properties:
5       title: string
6       length: number
7   Album:
8     properties:
9       title: string
10      songs: Song[]
11   Musician:
12     properties:
13       name: string
14       discography: (Song | Album)[]
```

songs.xml

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
3   elementFormDefault="qualified" attributeFormDefault="unqualified">
4   <xs:element name="song">
5     <xs:complexType>
6       <xs:sequence>
7         <xs:element name="title" type="xs:string">
8           </xs:element>
9         <xs:element name="artist" type="xs:string">
10          </xs:element>
11       </xs:sequence>
12     </xs:complexType>
13   </xs:element>
14 </xs:schema>
```

RAML

- YAML language
 - Easy
- Industry support
 - Basically a Mule project, with some supporters
- API console, tooling, etc
 - All good



Swagger

SWAGGER TOOLS & RESOURCES

TOOLS



SWAGGER UI

Use a Swagger specification to drive your API documentation. [Demo](#) and [Download](#).



SWAGGER EDITOR

An editor for designing Swagger specifications from scratch, using a simple YAML structure. [Demo](#) and [Source](#).



SDK GENERATORS

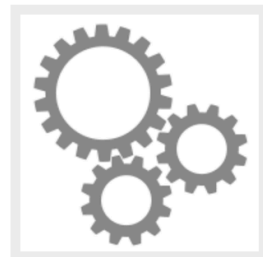
Turn an API spec into client SDKs or server-side code with [Swagger Codegen](#).

RESOURCES



SERVER INTEGRATIONS

Dozens of integration options for putting Swagger in your API, from both SmartBear and the community. Pick your language, framework and [get started!](#).



SERVICES

From API management to Platform as a Service, there are a number of services tightly integrated with Swagger. [See more](#).

Swagger

- JSON format is the standard
- Now supports YAML too
- Now the OpenAPI Initiative
- Much wider industry support
- Nice editor for design first
- *Admission: this is the choice of WSO2*



Swagger Editor

File Preferences Generate Server Generate Client Help

Processed with no error

```
1 swagger: '2.0'
2 info:
3   version: 0.0.0
4   title: Course Booking Service
5 paths:
6   /courseInstances:
7     get:
8       description: |
9         Gets all `CourseInstance` objects for all courses.
10        Optional query param of size determines
11        size of returned array. Typically you would use
12        GET `/course/{courseId}/courseInstances` instead to get
13        the list of instances for a particular course
14      parameters:
15        - name: size
16          in: query
17          description: Size of array
18          required: false
19          type: number
20          format: double
21        - name: expand
22          in: query
23          description: expand objects or not
24          required: false
25          type: boolean
26      responses:
27        '200':
28          description: Successful response
29          schema:
30            title: ArrayOfCourseInstances
31            type: array
32            items:
33              $ref: '#/definitions/CourseInstance'
34      post:
35        description: Creates a new `CourseInstance` object
36        parameters:
37          - name: courseInstance
38            in: body
39            required: true
40            schema:
41              $ref: '#/definitions/CourseInstance'
42          - name: expand
43            in: query
```

Course Booking Service

Version 0.0.0

Paths

/courseInstances

GET /courseInstances

Description

Gets all **CourseInstance** objects for all courses. Optional query param of **size** determines size of returned array. Typically you would use GET **/course/{courseId}/courseInstances** instead to get the list of instances for a particular course

Parameters

Name	Located in	Description	Required	Schema
size	query	Size of array	No	⇔ number (double)
expand	query	expand objects or not	No	⇔ boolean

Responses

Code	Description	Schema
200	Successful response	⇔ ArrayOfCourseInstances [CourseInstance { }]

Try this operation

POST /courseInstances



Editor features

- YAML based
- Allows you to dynamically design APIs / RESTful services
- Creates skeleton projects in many languages
 - including Node and JAX-RS
- Creates clients in many languages
 - Too many to list
- Import/export JSON



Swagger UI

 **swagger**

http://petstore.swagger.io/v2/swagger.json

Authorize

Explore

Swagger Petstore

This is a sample server Petstore server. You can find out more about Swagger at <http://swagger.io> or on [#swagger">irc.freenode.net, #swagger](irc.freenode.net). For this sample, you can use the api key `special-key` to test the authorization filters.

Find out more about Swagger

<http://swagger.io>

[Contact the developer](#)

[Apache 2.0](#)

pet : Everything about your Pets

Show/Hide

List Operations

Expand Operations

POST /pet

Add a new pet to the store

Parameters

Parameter	Value	Description	Parameter Type	Data Type
body	(required)	Pet object that needs to be added to the store	body	Model Example Value
Parameter content type: application/json				<pre>{ "id": 0, "category": { "id": 0, "name": "string" }, "name": "doggie", "photoUrls": ["string"], "tags": [{ </pre>

Questions?



© Paul Fremantle 2016 except where credited elsewhere. This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License
See <http://creativecommons.org/licenses/by-nc-sa/4.0/>