REST-ful in Practice

SPRINT3R

Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

REST ?

REpresentational **S**tate **T**ransfer

Resource-based

Architectural style for design distributed system

Not a standard, but a **set of constraints**

Not tied to HTTP, but associated with it !!

Resource-based

Identified by URI

Many URIs may refer to same resource

Separate from their representation

Representation

How resources get manipulated ?

Part of resource state

Transferred between client and server

Popular format => **JSON**, XML

Example

Resource : person (UP1)

Service : contact information (HTTP GET)

Representation :

name, address, mobile number

JSON or XML format

REST Constraints

1. Uniform Interface
2. Stateless Interaction
3. Cacheable
4. Client-Server
5. Layered System
6. Code on Demand

Uniform Interface

Defines the **interface** between client and server
Simplifies and decouples the architecture
Fundamental to RESTful design

??

HTTP verbs : GET, DELETE, PUT, POST

URI : Resource name

HTTP response : status and body

Uniform Interface

Guidelines than **Rules**

Identification of resources
Manipulation of resources
Self-Descriptive of messages
Hypermedia as the Engine of Application State

HTTP’s Uniform Interface

URI’s identify resources

HTTP verbs describe a set of operations that used to manipulate a resource

Header help to describe the message

URI vs URL ?

HTTP Verbs

GET

DELETE

PUT

POST

less used other verbs

GET

Use to retrieve information
Must be safe and idempotent/repeatable
No side effect
GET can be conditional or partial

GET /games/1

DELETE

Request that a resource be removed

The resource **doesn’t** to be removed Immediately

Removal may be a long running process

DELETE /games/1

PUT

Request that have entity
Entity passed by stored at the URI
Entity called **PAYLOAD**
Use to create new entity
Use to modify and existing one

PUT /games/1/doors/2
{ “status” : “SELECTED” }

POST

Request that the resource at URI do **something**

Something is could be **Create**, **Modify**

POST /games/

PUT vs POST ?

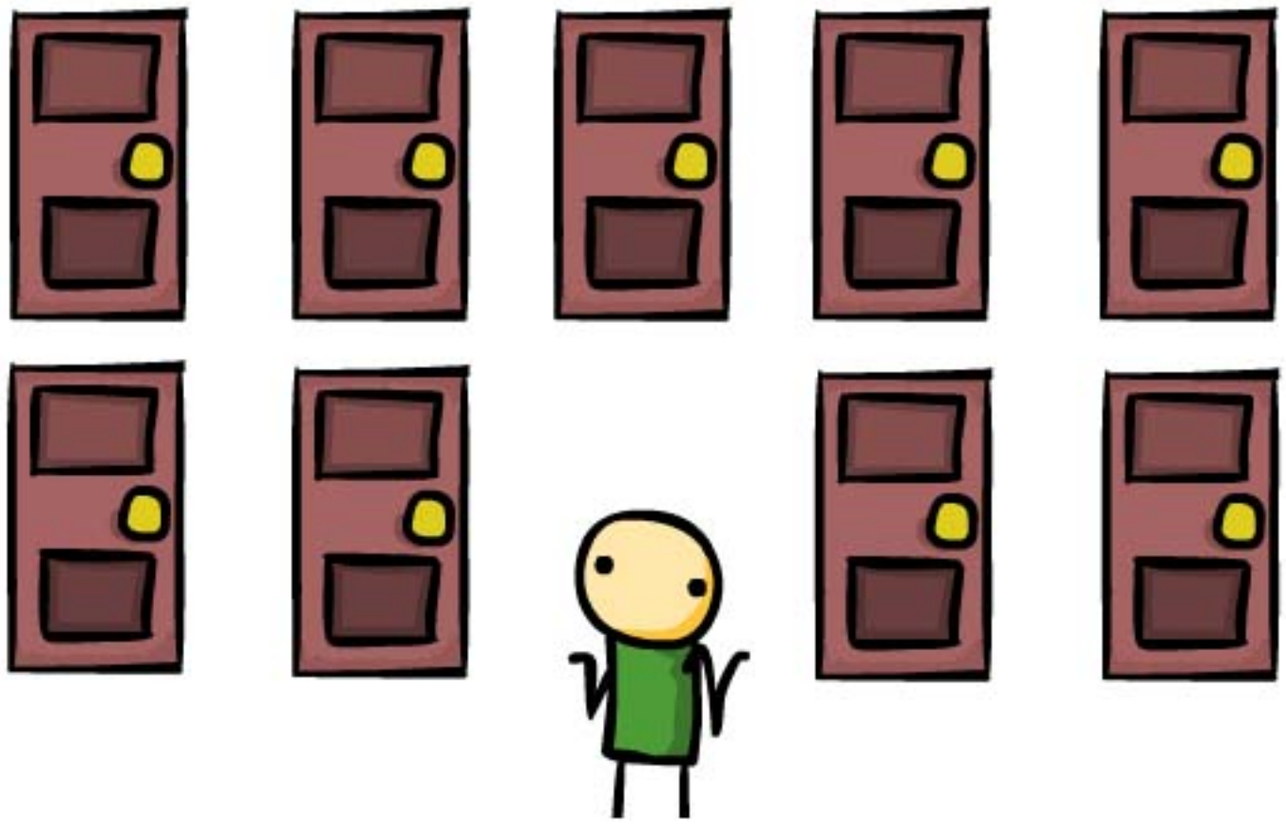
Design REST APIs

SPRINT3R

Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

Door Game

One of the doors lead to yayness, the rest lead to death. Good luck!



Interaction model ?

SPRINT3R

Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

Interaction model

Create new game
List current state of all doors
Select a door
Open a door
List the final state of the game
Delete game
...

Create new game

First endpoint of system !!

Doesn’t require any input

Need to return us a resource identifier (URI)
of the new created game

HTTP Verb and URI ?

Create new game

First endpoint of system !!

Doesn’t require any input

Need to return us a resource identifier (URI) of the new created game

POST /games

List current state of all doors

Need to return a collection of door's state

Design doesn't specific number of door !!

HTTP Verb and URI ?

List current state of all doors

Need to return a collection of door’s state

Design doesn’t specific number of door !!

GET /games/0/doors

[{ “status” : “CLOSED” }, { “status” : “OPEN”, { … } }]

Select a door

No SELECT in HTTP verb !!

How to represent the selection of a door ?

HTTP Verb and URI ?

Select a door

No SELECT in HTTP verb !!

How to represent the selection of a door ?

PUT /games/0/doors/2

{ “status” : “SELECTED” }

Open a door

Like select a door !!

Use same endpoint !!

HTTP Verb and URI ?

Open a door

Like select a door !!

Use same endpoint !!

PUT /games/0/doors/2

{ “status” : “OPEN” }

List final state of the game

Need to return an object that represent
the state of the game

HTTP Verb and URI ?

List final state of the game

Need to return an object that represent
the state of the game

GET /games/0

{ “status” : “WIN” }

Delete the game

No input required

No output required

HTTP Verb and URI ?

Delete the game

No input required

No output required

DELETE /games/0

Develop REST APIs

SPRINT3R

Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

Framework with Java ?

spring boot

Java Servlets

REST Easy

Spring HATEOAS

Spark

Jersey

RESTful Web Services in Java.

DROPWIZARD

Make features not WAR

rest.li

HTTP status code

Indicator of the result of the server's attempt to satify the request

Main category of status code ::

1xx : Informational

2xx : Success

3xx : Redirection

4xx : Client error

5xx : Server error

Success status code

200 OK

201 Created

202 Accepted

Client error status code

400 Bad Request

401 Unauthorised

403 Forbidden

404 Not Found

406 Not Acceptable

409 Conflict

Workshop :: Develop APIs

SPRINT3R

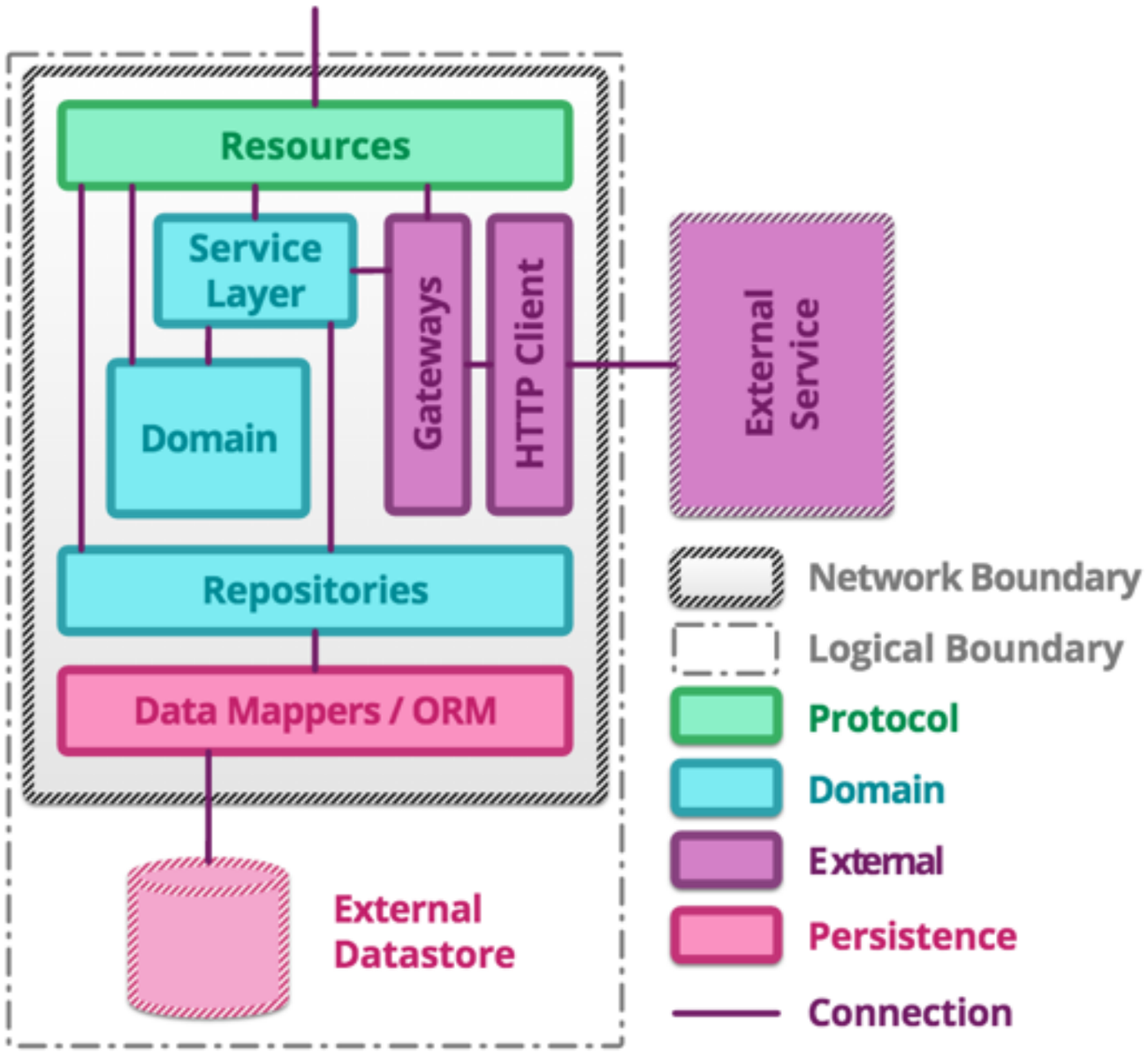
Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

Testing REST APIs

SPRINT3R

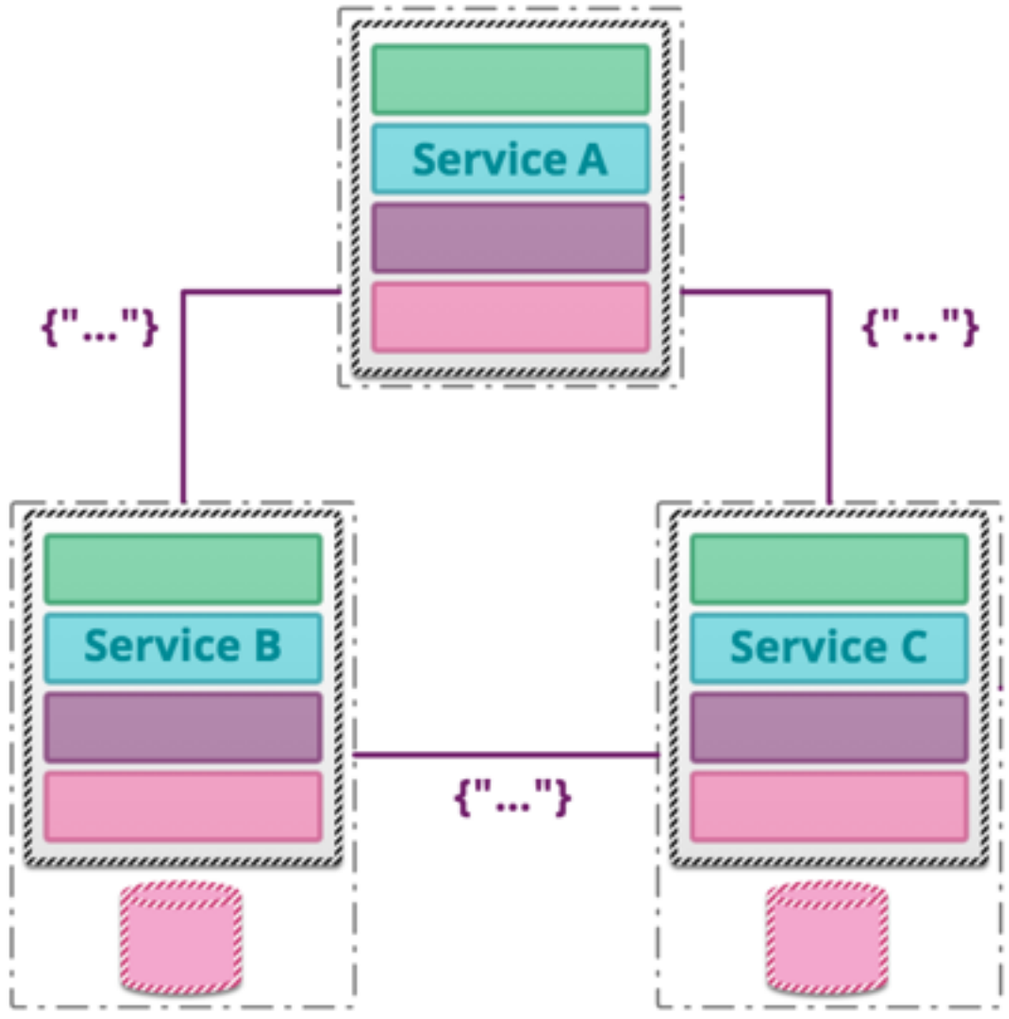
Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

Service



http://martinfowler.com/articles/microservice-testing

Multiple service

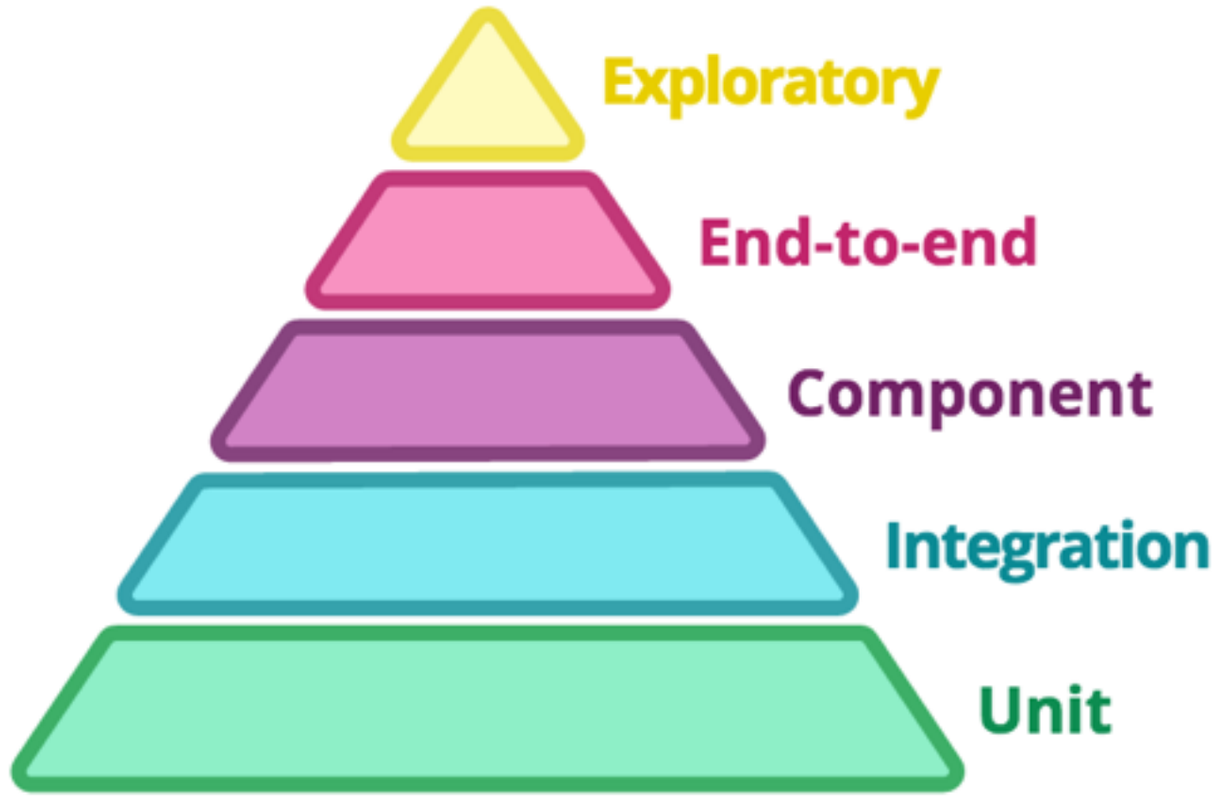


http://martinfowler.com/articles/microservice-testing

How to test the service ?

Testing

Testing web's APIs isn't easy



http://martinfowler.com/articles/microservice-testing

Testing

Testing web's APIs isn't easy

End-to-End testing ?
Contract testing ?
Component testing ?
Integration testing ?
Unit testing ?

http://martinfowler.com/articles/microservice-testing

Workshop :: Testing APIs

SPRINT3R

Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

https://github.com/up1/course-rest-in-practice