RESTful Web Services

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What is a Web Service?

- W3C: "A software system designed to support interoperable machine-to-machine interaction over a network."
- A web service is just a web page meant for a computer to request and process.
- Web APIs

REST is a style.

- REST is short for REpresentational State Transfer.
- REST is a style of software architecture for distributed hypermedia systems.
- Roy Fielding's Doctoral Dissertation in 2000.

REST style – Constraints

- Client-Server
- Stateless
- Cacheable
- Uniform interface
- Layered System

REST for Web Service

- The largest known implementation of a RESTful style system is World Wide Web.
- Why is the World Wide Web so prevalent and ubiquitous?
- What makes the Web Scale?
- Can I develop my applications by using this style of architecture?

Principles of REST Web Services

- Identification of Resources. Give every thing an ID.
- Link things together
- A Uniform Interface
- Resource with multiple representations
- Stateless Communication

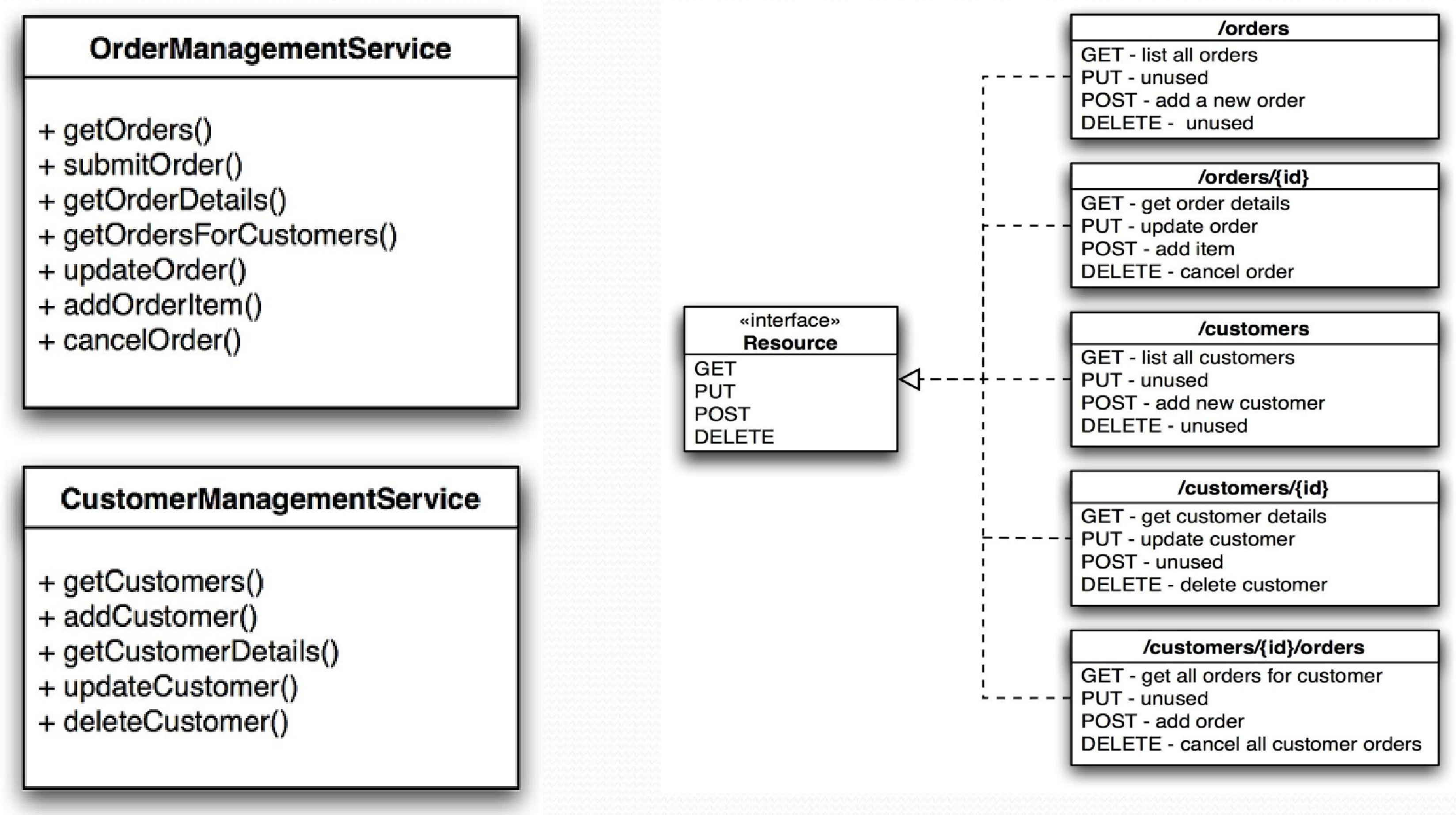
Use URIs to identify everything

```
http://example.com/customers/1234
http://example.com/orders/2007/10/776654
http://example.com/products/4554
http://example.com/processes/salary-increase-234
```

Link things together

```
<order self='http://example.com/customers/1234' >
   <amount>23</amount>
   <product ref='http://example.com/products/4554' />
   <customer ref='http://example.com/customers/1234' />
</order>
```

Use Standard Method



Resources with multiple representations

```
GET /customers/1234 HTTP/1.1
Host: example.com
Accept: application/vnd.mycompany.customer+xml
```

```
GET /customers/1234 HTTP/1.1
Host: example.com
Accept: text/x-vcard
```

Communication statelessly

– This does not mean an application cannot have state.
– REST mandates that state be either turned into resource state, or kept on the client.

Advantages of REST

- Language and platform agnostic
- Separates server implementation from the client’s perception of resources.
- Supports large numbers of clients.
- Unlimited size and type of data transfer.
- Human readable results.
- Lightweight

Public Implementation

- Atom Publishing Protocol for publishing to blogs
- Sun's Cloud API
- Open Service for Lifecycle Collaboration
- Microsoft's Windows Azure Platform

Thank you