Survey of Syntactic and Semantic Web API Description Languages - Master Thesis
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Internet and Web

- Internet = infrastructure

- Web = service that uses the internet as infrastructure to transfer websites
  - Uses the HTTP Protocol

Vision of the Web

- Resources identified by Uniform Resource Identifiers (URI)

- Protocols support interaction between agents (HTTP)

- Formats represent information resources (HTML)

Uniform Resource Identifiers (URI)

- Definition Resource: A resource is an abstract notion for things of discourse, be they abstract or concrete, physical or virtual

- A single global system of identifiers: each URI ideally identifies a single resource in a context-independent manner
- URIs act as names and addresses

Hypertext Transfer Protocol (HTTP)

- Stateless transaction consisting of:

  - Connection

  - Request from the User Agent

  - Response from the Server

  - Close
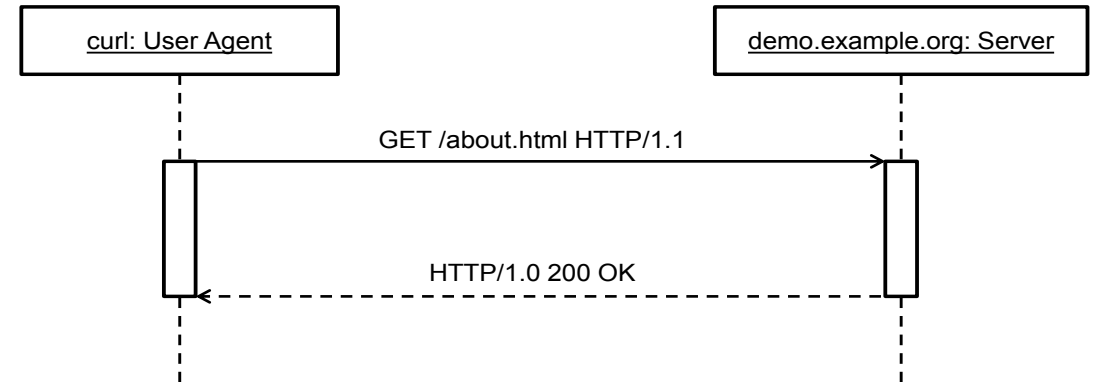
- User Agents can be: web browsers, but also household appliances, cars, internet radio devices or command line programs

- Servers can be: traditional large-scale web servers of commercial companies, but also devices that offer access to data or functionality

curl: User Agent		demo.example.org: Server

GET /about.html HTTP/1.1

HTTP/1.0 200 OK

HTTP

- Verbs
  - HEAD
  - GET
  - POST
  - PUT
  - DELETE
  - TRACE
  - OPTIONS
  - CONNECT

Status Codes

Status code classification		
1xx	Informational	provisional response
2xx	Successful	request successfully received, understood, and accepted
3xx	Redirection	further action needs to be taken by user agent to fulfil the request
4xx	Client Error	client erred
5xx	Server Error	server encountered an unexpected condition

Web Services

- Service Orientation
  - Implemented in distributed systems (SOA) to automate business logic
  - Separation of concerns by services
- Publish-Find-Invoke paradigm
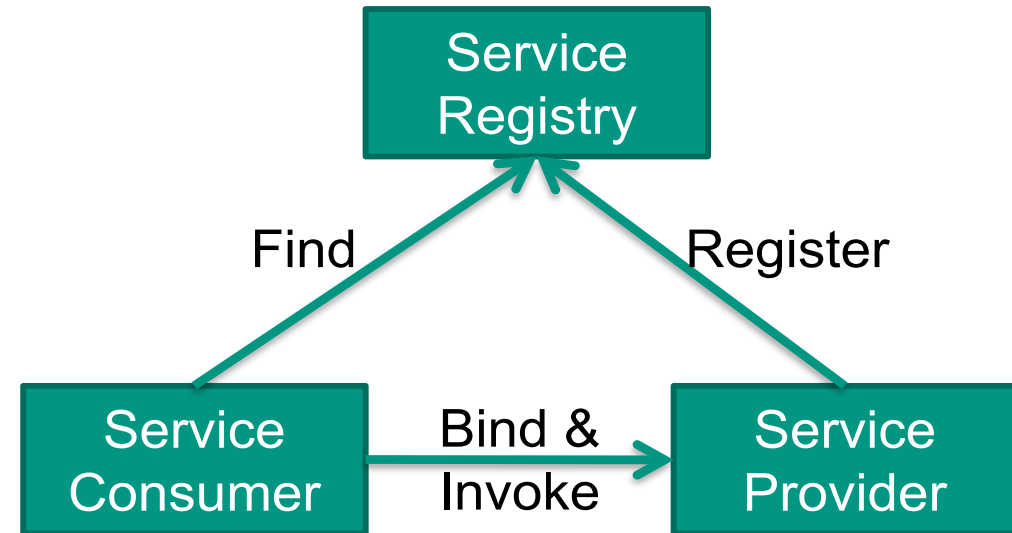
Web Service Classification

- REST-compliant Web Services:
  - Primary purpose: manipulate XML representations of Web resources
  - Using a uniform set of "stateless" operations

- SOAP (WS-*) Web Services: arbitrary Web services, in which the service may expose an arbitrary set of operations

REST

Aspect	REST
Resource addressing	Every resource has its own URL
URL	Used to address individual resources
Data presentation	All encodings defined by HTTP (XML, text, JSON, JPG, etc.)
Use of HTTP	Actions on resources (CRUD) mapped to HTTP methods (PUT, GET, POST, DELETE)
State	Stateless (requests are "self-contained", no context saved on server)
Registry / Service Description	No registry No standard description

Service Description

- Describe what to expect from a service
  - What a service does
  - Legal aspects
  - How to get help
  - Functional specifications
  - Budgetary policies / Cost constraints
  - Technical specifications
  - Security policy
  - Service compliance

Motivation for the Experiment

- Aim: test the acceptance of the description languages
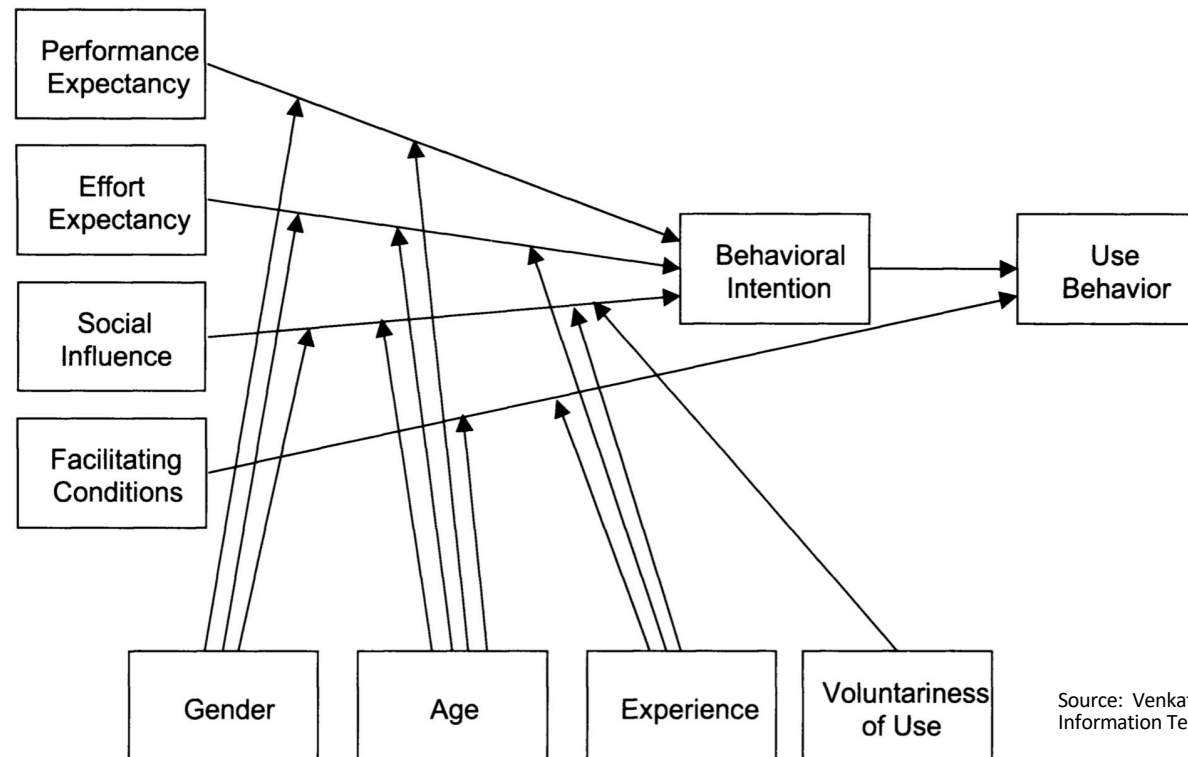
Source: Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. User Ac- ceptance of Information Technology: Toward a Unified View. MIS Quarterly 27, 3 (2003), 425–478.

Questions