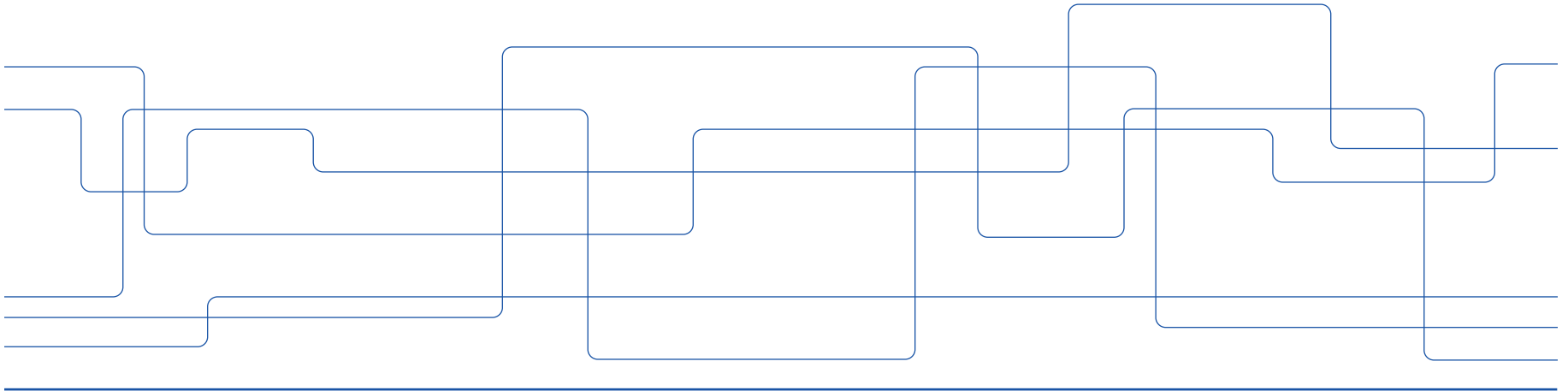




Web services and Mashups

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Web Service Definition [1]

- Examples of ICT services
 - Cloud computing
 - Cloud service
 - Software as a service (SaaS)
 - Internet-based game
- A web service is
 - An invocation described in standard machine readable syntax (XML, JSON, ...)
 - Reachable via standard Internet protocols
 - With a description, including at a minimum the allowed input and output messages

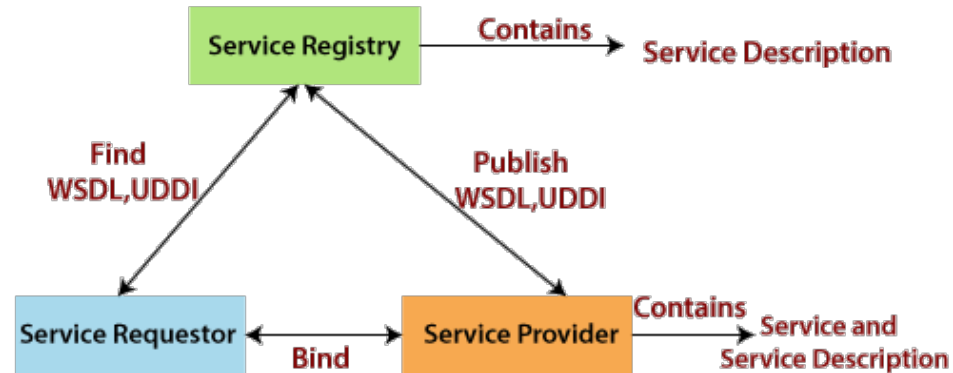


Types of Web Service

- Simple web service
 - Only simple request/response
- Complex web service
 - Implement coordination between inbound and outbound operations
- Stateless web service
 - State and context do not need to be preserved between request
- Stateful web service
 - The context need to be preserved between requests

Web Service Architecture [2]

- A group of web services collaborating to accomplish the tasks of an application
 - The architecture of such an application is a Service Oriented Architecture (SOA)



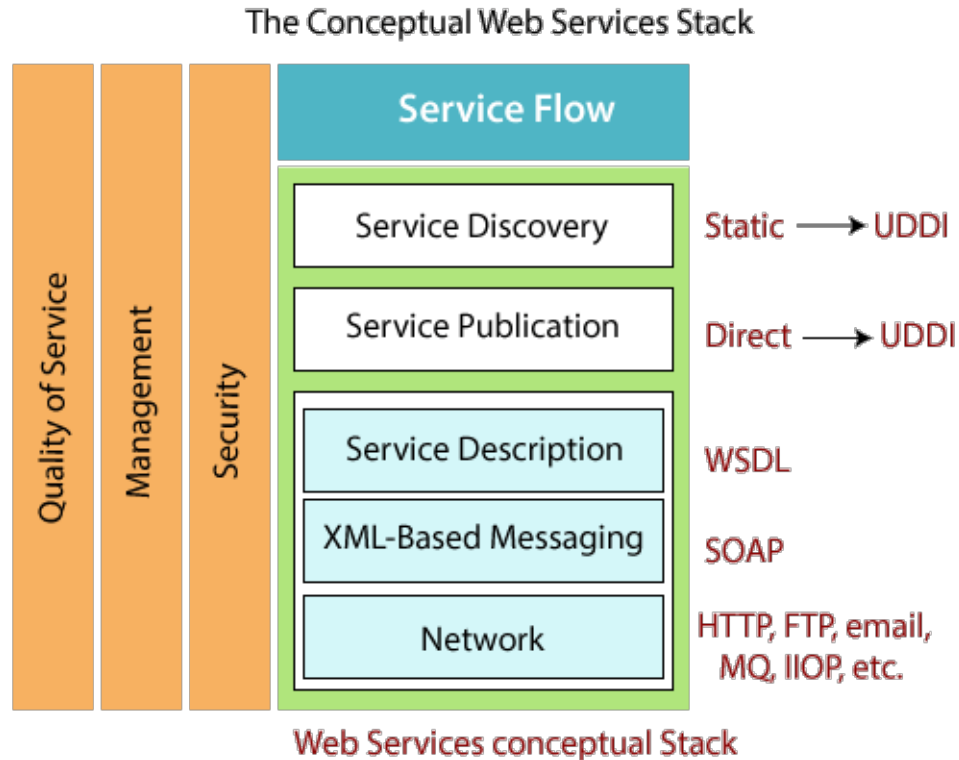
Web Service Roles, Operations and Artifacts



Actors [2]

- **Service Provider**
 - From an architectural perspective, it is the platform that hosts the services.
- **Service Requestor**
 - Service requestor is the application that is looking for and invoking or initiating an interaction with a service. The browser plays the requester role, driven by a consumer or a program without a user interface.
- **Service Registry**
 - Service requestors find service and obtain binding information for services during development.

Web Service Technologies [2]





Types of Web Service [2]

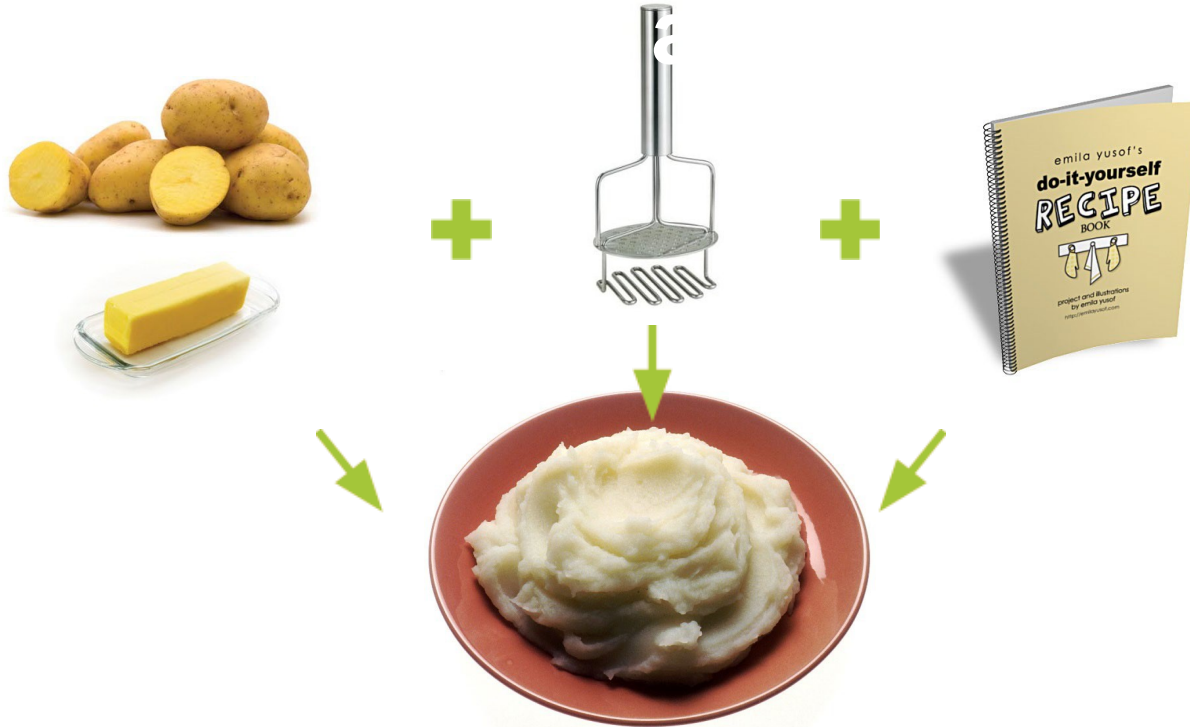
- RESTful web service (REpresentational State Transfer)
 - Is an architectural approach
 - No strict data exchange format, but JSON is the most popular data exchange format
 - No standard definition language
 - Uses HTTP protocol
 - Easier to implement than SOAP
 - RESTful web services uses JAX-RS-API
- SOAP web service (Simple Object Access Protocol)
 - Is a protocol
 - Uses XML
 - Uses WSDL
 - HTTP or MQ
 - SOAP web services uses JAX-WS-API

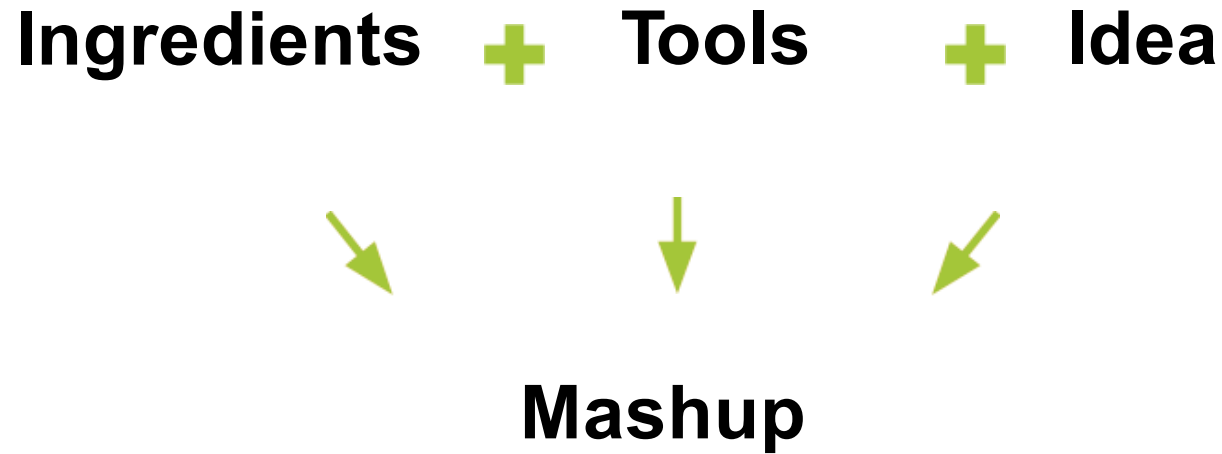


Web Service Composition

- Orchestration
 - Describes how a number of services, two or more, cooperate and communicate to
 - Achieve a common goal
 - Only orchestration coordinator is aware of the composition
- Choreography
 - Describes the external visible behavior of services
 - Each service knows when to execute its operation and whom to interact with
- Mashups
 - Uses content from more than one source to create a single new service

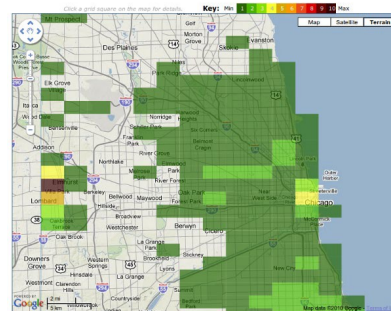
What is a Mashup?





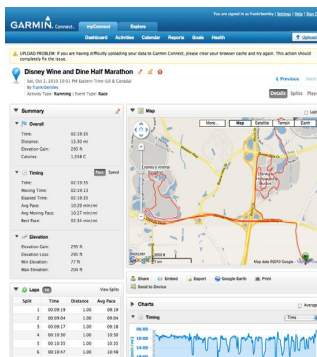
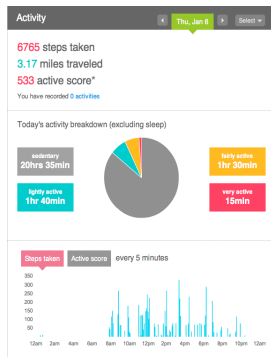
Chicago crime

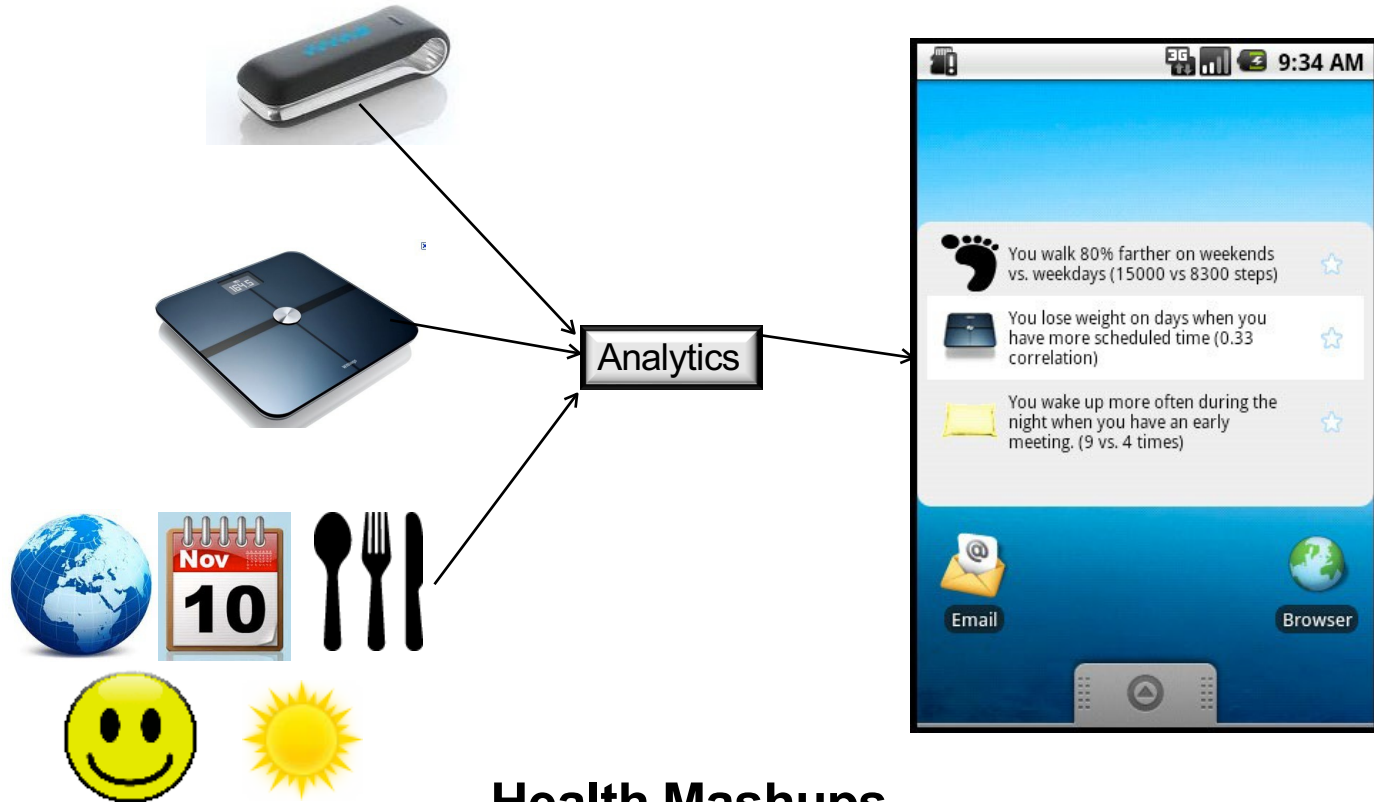
Google™
Maps



Wellbeing Sensing Today

Sensing devices are common, but mostly disconnected silos





Health Mashups



APIs Descriptions

<http://www.programmableweb.com/>



Deutsche Bank
PrivatKredit

Wünsche erfüllen. Mit dem flexiblen
PrivatKredit der Deutschen Bank.

Jetzt

Hot APIs » Twitter YouTube Facebook Google Maps Flickr LinkedIn More »

Latest news

Home | API News | API Directory | Mashups | Community | How-to | S

Mashups Directory

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All

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search (1080)
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mobile (474)
messaging (443)
reference (405)
news (386)
visualization (339)
fun (325)
telephony (294)
sports (292)
realestate (252)
microblogging (251)
widgets (224)
[View as Tag Cloud]

Hide Filters Sort **Name** Date All Time Popular Recent Popular

APIs

Tags

Date **All**


Type ☒ Mashups ☐ Source Code and Other Resources

☒ Any ☐ Mashup of the Day

Search

1 to 20 of 7308 mashups

« Previous **1** 2 3 4 ... Next »

Name	Description	APIs
	Cloud Elements- Documents Hub Cloud Elements is a cloud-to-cloud integration service that uses uniform APIs ("one-to-many") to connect your application with entire categories of services. Our Documents Hub connects you to Box, Dropbox, Google Drive, Microsoft SharePoint and Skydrive through a single API.	GoogleDrive, Dropbox Box
<i>Added: 2014-02-05</i>		
	Facebook Sentiment Analysis Tool This tool is written in PHP and it performs Sentiment Analysis on Facebook posts by using the Datumbbox API 1.0v.	Datumbbox, Facebook FacebookGraph

European word translator

Using the Google Translate API, this web app shows translations of any English word into over 30 European languages, on a map.

- APIs:
 - Google Translate
 - Google Maps

UK Data Explorer

European word translator

Enter one or two lower-case English words to see translations from Google Translate.

Examples: banana the cat she runs

Random words: extension support

A few things to keep in mind:

- Translations are generated by Google Translate. Some may be inaccurate or use non-European (e.g. Brazilian Portuguese) words.
- Just one translation is provided for each word; watch out for words with multiple meanings!
- Google can't yet translate into all [European languages](#).
- If Google Translate cannot find a translation, it simply shows the English word.

This page was inspired by the [etymology maps](#) by Bezbojnicul on reddit (which are much more informative than this map). It was built using [D3.js](#) maps from [Natural Earth](#), and the Google Translate API. Contact [James Trimble](#).



<https://ukdataexplorer.com/european-translator/>

Types of mashups: Data mashups

- Combine multiple data sources of similar types into a single representation
- Creates a new distinct web service

The image shows a screenshot of the Skyscanner flight search website. The header includes the Skyscanner logo and the text 'flight search'. Below the header, there is a navigation bar with links for 'Home', 'Select destination', 'Select dates', and 'Select flights'. The main content area displays 'Cheap flights from Paris PAR to London LON'. A search bar shows the route 'Paris PAR to London LON' and a price of '114 €'. Below the search bar, there are tabs for 'Filters', 'Airlines + Airports', and 'Booking Information'. The 'Airlines + Airports' tab is selected, showing a list of airlines and airports. The airlines list includes Aer Lingus, Air Berlin, Air France, Airline combinations, British Airways, Brussels Airlines, easyJet, Flybe, KLM.com, and Lufthansa. The airports list includes Paris (CDG, ORY) and London (LCY, LGW, LHR, LTN, STN).

skyscanner flight search

Home > Select destination > Select dates > Select flights

Change Search

Thu 22 Jul Mon 26 Jul 1

Cheap flights from
Paris PAR to London LON

Book with confidence – no commission to pay. **Expedia** 114 €

Filters Airlines + Airports Booking Information

Airlines select all | clear all

direct flights | indirect flights

<input type="checkbox"/> Aer Lingus 731 €	<input checked="" type="checkbox"/> British Airways 129 €	<input type="checkbox"/> Flybe
<input type="checkbox"/> Air Berlin 591 €	<input type="checkbox"/> Brussels Airlines 623 €	<input type="checkbox"/> KLM.com 458 €
<input checked="" type="checkbox"/> Air France 126 €	<input checked="" type="checkbox"/> easyJet 114 €	<input type="checkbox"/> Lufthansa 200 €
<input type="checkbox"/> Airline combinations 284 €		

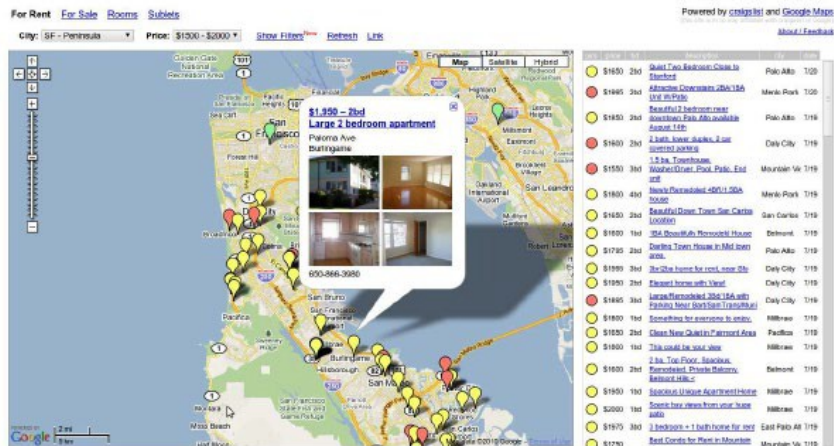
Airports reset

Paris	London
<input checked="" type="checkbox"/> CDG	<input checked="" type="checkbox"/> LCY
<input checked="" type="checkbox"/> ORY	<input type="checkbox"/> LGW
	<input checked="" type="checkbox"/> LHR
	<input checked="" type="checkbox"/> LTN
	<input type="checkbox"/> STN

Skyscanner data mashup - provides flight tickets from 9 different airlines

Types of mashups: Consumer mashups

Combine many sources of different types into a visual representation





+

Powered by


HousingMaps - Combines information of houses to rent from Craigslist with GoogleMaps

Types of mashups: Business mashups

Similar to consumer Mashups with aim to solve business problem
Introduce other aspects

- security, QoS, level of sophistication, etc.



Business mashup PivotalTracker



Service Providers

Some APIs



WIKIPEDIA
The Free Encyclopedia



facebook

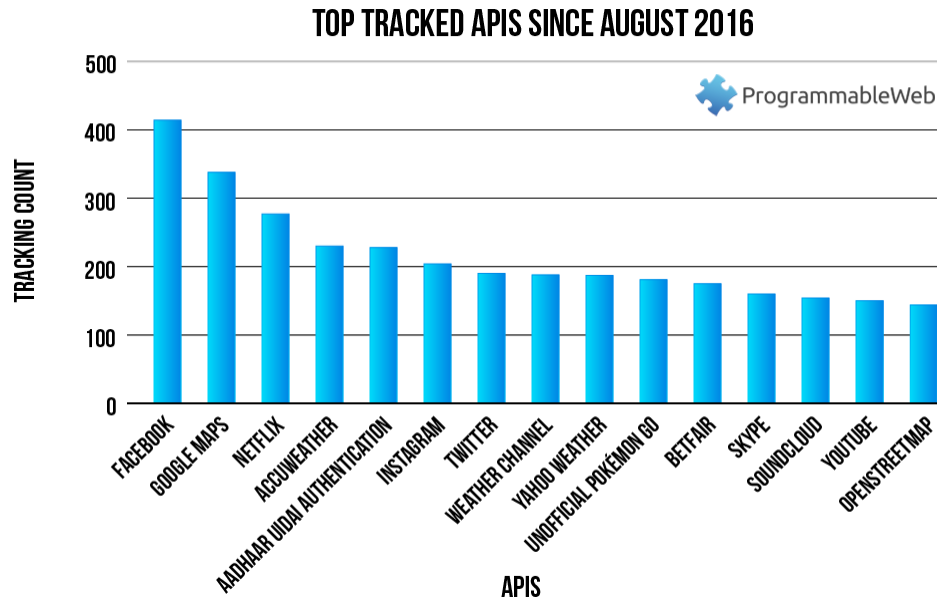


Web scraping



2900+ Apis

Developers favorite APIs [2]



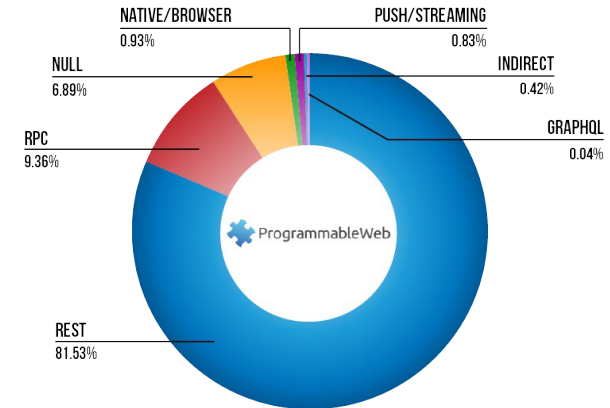
<https://www.programmableweb.com/news/which-are-developers-favorite-apis/research/2019/10/24>

Protocols / Formats

XML vs JSON as Percentage of New APIs (2013)



ARCHITECTURAL STYLES RECORDED IN PROGRAMMABLEWEB DIRECTORY



<https://www.programmableweb.com/news/which-api-types-and-architectural-styles-are-most-used/research/2017/11/26>



Data format: XML [4]

- `<?xml version= "1.0" encoding= "UTF-8"?>`
- `<email>`
 - `<to>Konrad</to>`
 - `<cc>Pavan</cc>`
 - `<cc>Pietro</cc>`
 - `<from>Alisa</from>`
 - `<subject>XML example</subject>`
 - `<body>Hope this is self-explanatory!</body>`
- `</email>`

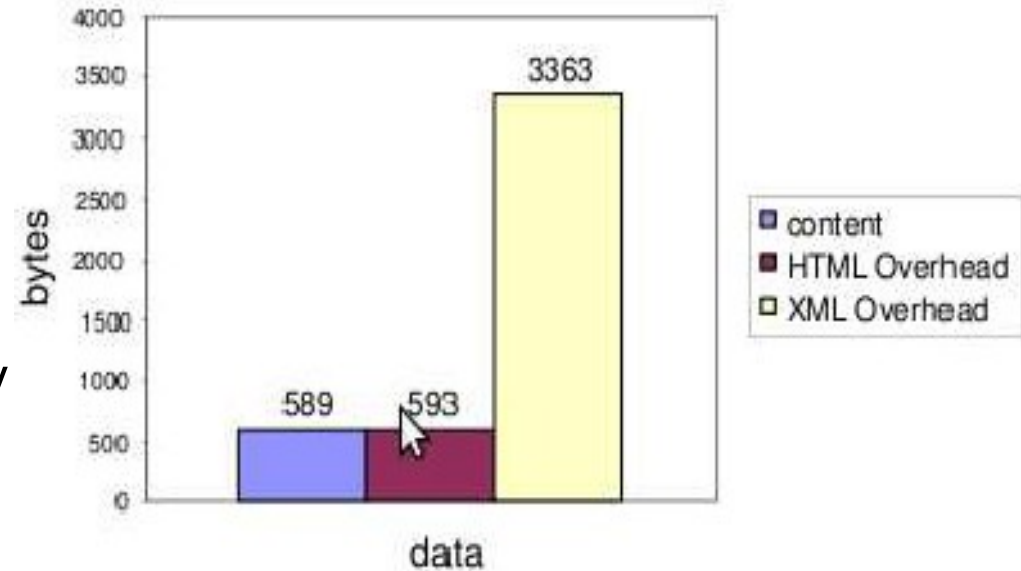


Data format: JSON [4]

```
{ "email" : {  
    "to" : "Konrad",  
    "cc" : { "Pavan", "Pietro" },  
    "from" : "Alisa", "subject"  
    : "XML example",  
    "body" : "Hope this is self-  
explanatory!"  
}}
```

Data format: JSON [4]

- 10x faster parser
- Smaller messages
- Maps into JS objects
- JSONP – possible work around for same origin policy

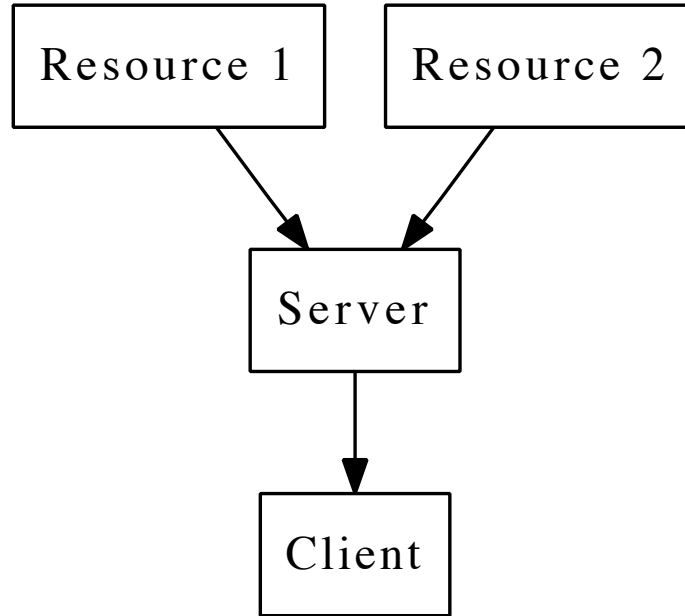




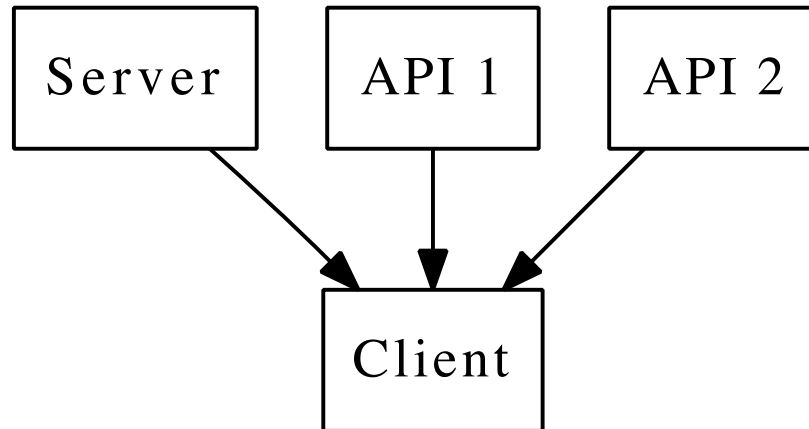
Mashup Architectures [4]

Server-based	Information gathered and processed in the server
Client-based	Executed within the client's browser
Mobile	A combination of Client and Server-based architectures

Server based [4]



Client based [4]

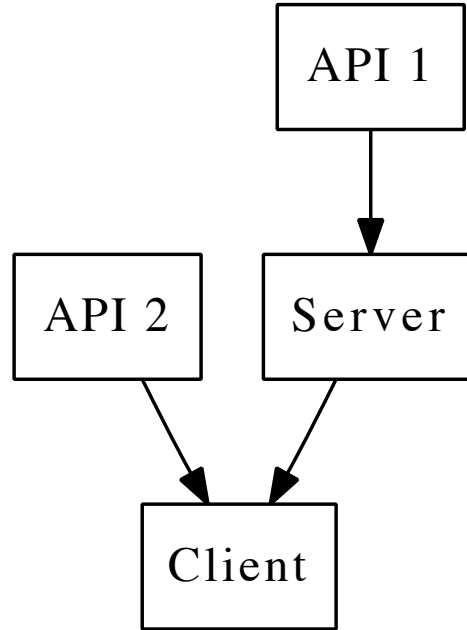




Comparison [4]

Server-based	Client-based
Several libraries	Easier to implement
Security	No server-code required
Concurrent and asynchronous calls	No bottleneck
Pre-process the data	Better performance
Cache information	Avoid server load
More computational power	

Mobile [4]





Links

<http://www.w3schools.com/json/default.asp>

https://en.wikipedia.org/wiki/Same-origin_policy

<https://en.wikipedia.org/wiki/JSONP>

<https://github.com/google/gson>

<https://nodejs.org/en>

<https://www.npmjs.com/>

<http://expressjs.com/>

<http://www.tutorialspoint.com/nodejs/index.htm>

<http://cwbuecheler.com/web/tutorials/2013/node-express-mongo/>

<https://www.meteor.com/>

<https://cloud.google.com/solutions/mobile/mobile-firebase-app-engine-flexible>

<https://firebase.google.com/docs>

<https://github.com/cviedmai/SoundSquare>

<https://github.com/cviedmai/Antipodes>

2020-02-10



References

- [1] Petrie, C.J., Web Service Composition, Springer, 2016.
- [2] RESTful Web Services, <https://www.javatpoint.com/restful-web-services-what-is-web-services>, retrieved 2021-02-14
- [3] Tollmar, K., Slides from ID2216-VT20 lecture 5
- [4] Viedma C., Mobile Web Mashups, MSc thesis, KTH, 2010, <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.463.6607&rep=rep1&type=pdf>, retrieved 2021-02-17