

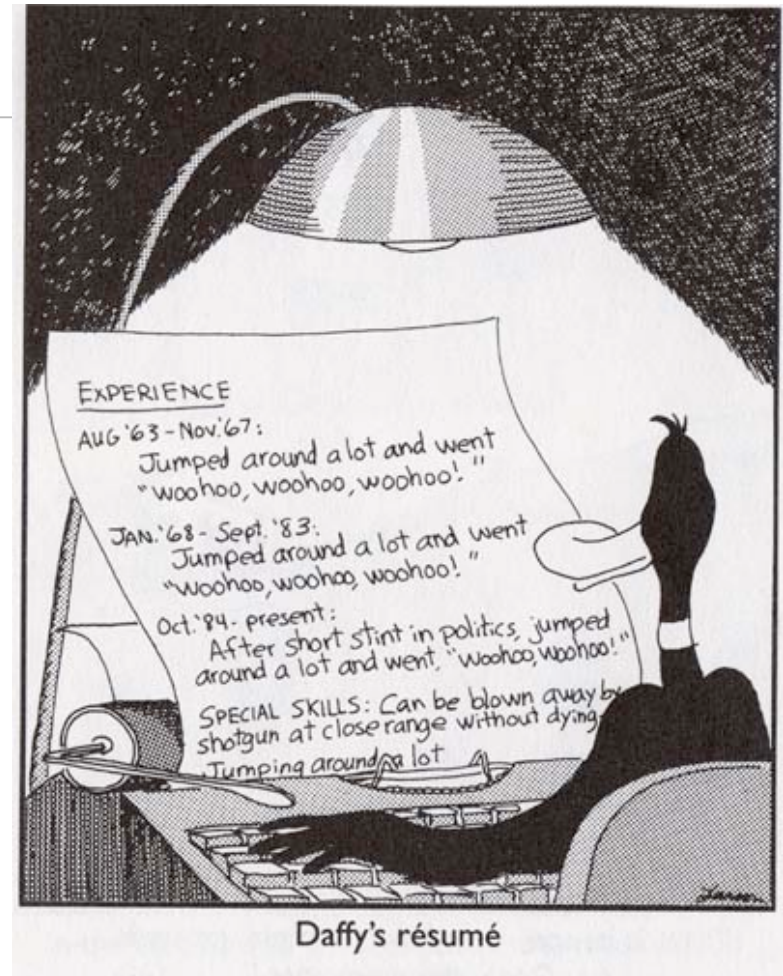
Google APIs: Search, Advertising and Commerce

What, Where, When, Advertising, Commerce



P@ in a slide

- API Evangelist - Google Checkout
- Software plumber
- Family man: married, 3 kids
- Java geek... in scripting rehab: Ruby, JavaScript, PHP, Python
- Open Source: ROME, AdWords (java, C#, ruby)
- Sun: Blogs, Portals, eCommerce
- Netscape/AOL: LDAP, Calendar, App Servers, CMS, MyNetscape (RSS)
- More on my blog
<http://wordpress.chanezon.com>



- API: Platforms and Bridges
- API technologies: SOAP, REST and Ajax
- What: Google Ajax Search API
- Where: Google Maps API (Ajax)
- When: Google Calendar Data API (REST)
- Advertising: Google AdWords API (SOAP)
- Commerce: Google Checkout API (REST)

Why are we doing do it?

- Our mission: “Organize the world’s information and make it universally accessible and useful”
 - We can’t organize it all ourselves

14 Google APIs on <http://code.google.com>... and counting!

- Google Data API
- Calendar API
- Maps API
- AdWords API
- Blogger API
- Data APIs
- Desktop SDK
- Earth (KML)
- Enterprise APIs
- Homepage API
- Related Links
- Sitemaps
- Talk (XMPP)
- Toolbar API
- Web Search API

API Metaphor: Platforms



One stop shop, soup to nuts



API Metaphor: Platforms

Islands of data



API Metaphor: Platforms

Build tall structures on top



API Metaphor Bridges



User - Search results (Ajax Search)

Ajax

User - Maps (Maps)

User - Data (Gdata)

REST

Buyers - Sellers (Checkout)

Advertiser Ads (AdWords)

SOAP

Publishers - Ads (AdSense)



API Metaphor Bridges



User - Search results (Ajax Search)

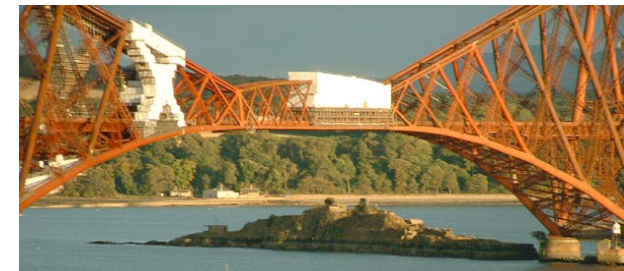
Ajax



User - Maps (Maps)

User - Data (Gdata)

REST



Buyers - Sellers (Checkout)

Advertiser Ads (AdWords)

Publishers - Ads (AdSense)

SOAP

API Metaphor Bridges



User - Search results (Ajax Search)

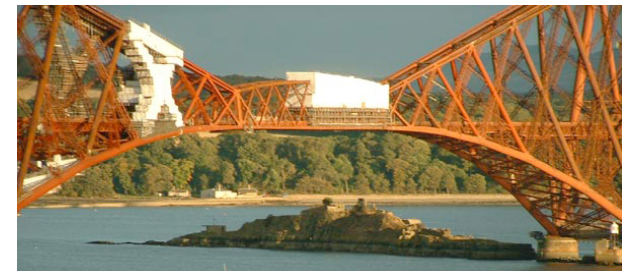
Ajax



User - Maps (Maps)

User - Data (Gdata)

REST



Buyers - Sellers (Checkout)

Advertiser Ads (AdWords)

Publishers - Ads (AdSense)

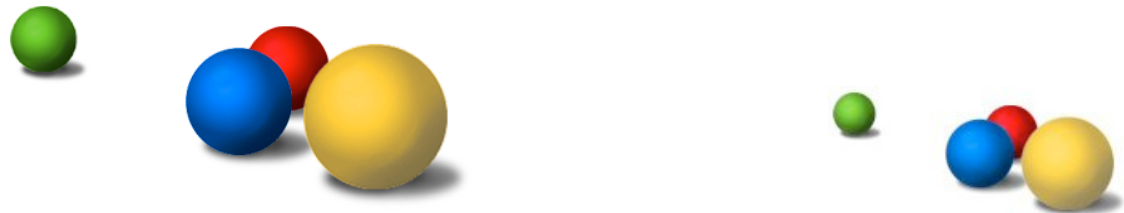
SOAP





The Google AJAX Search API

Mark Lucovsky
Technical Director, Engineering
Google Inc.
July 2006



Google AJAX Search API



Easy way to add Google search to your page

Parallel search over Web, Local Listings,
Google Video, and Blogs

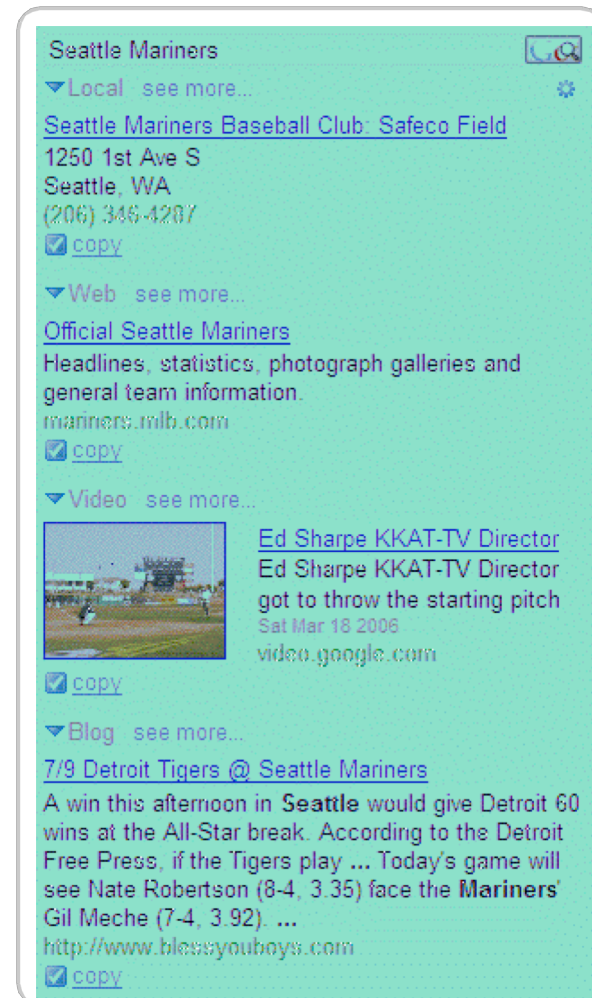
Supports “Clipping” of Search Results

Buzzword Soup Compliant

- AJAX
- JSON
- HTML Microformats...
- Free

Sample to right is:

- ~9 Lines of JavaScript
- ~10 Lines of HTML

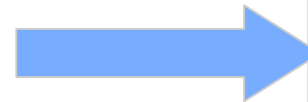


“Hello World”



```
function OnLoad() {  
    var sc = new GSearchControl();  
    sc.addSearcher(new GlocalSearch());  
    sc.addSearcher(new GwebSearch());  
    sc.addSearcher(new GvideoSearch());  
    sc.addSearcher(new GblogSearch());  
  
    sc.draw(searchContainer);  
    sc.execute("Seattle Mariners");  
}
```

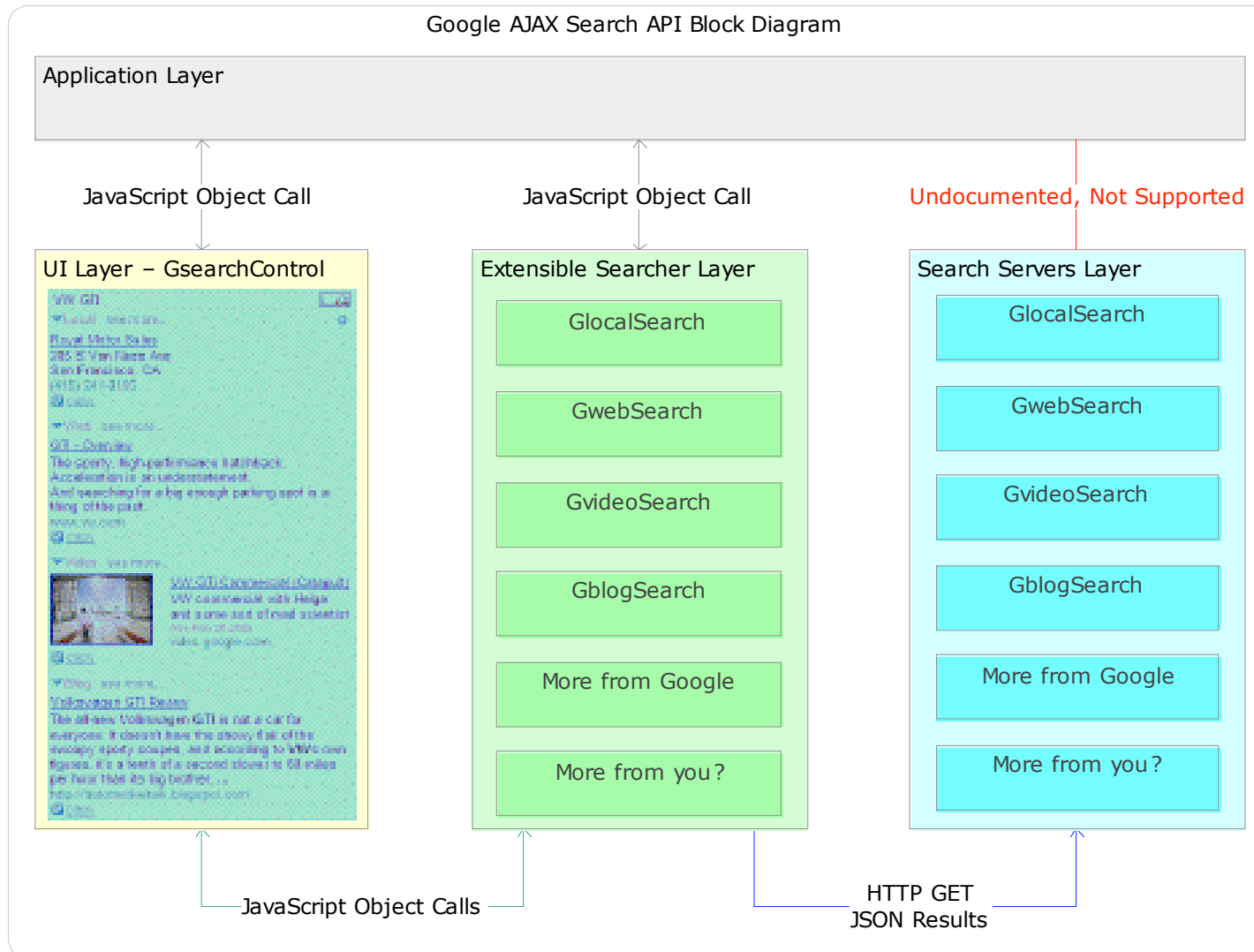
```
<body onload="OnLoad()">  
    <div id="searchContainer"/>  
</body>
```



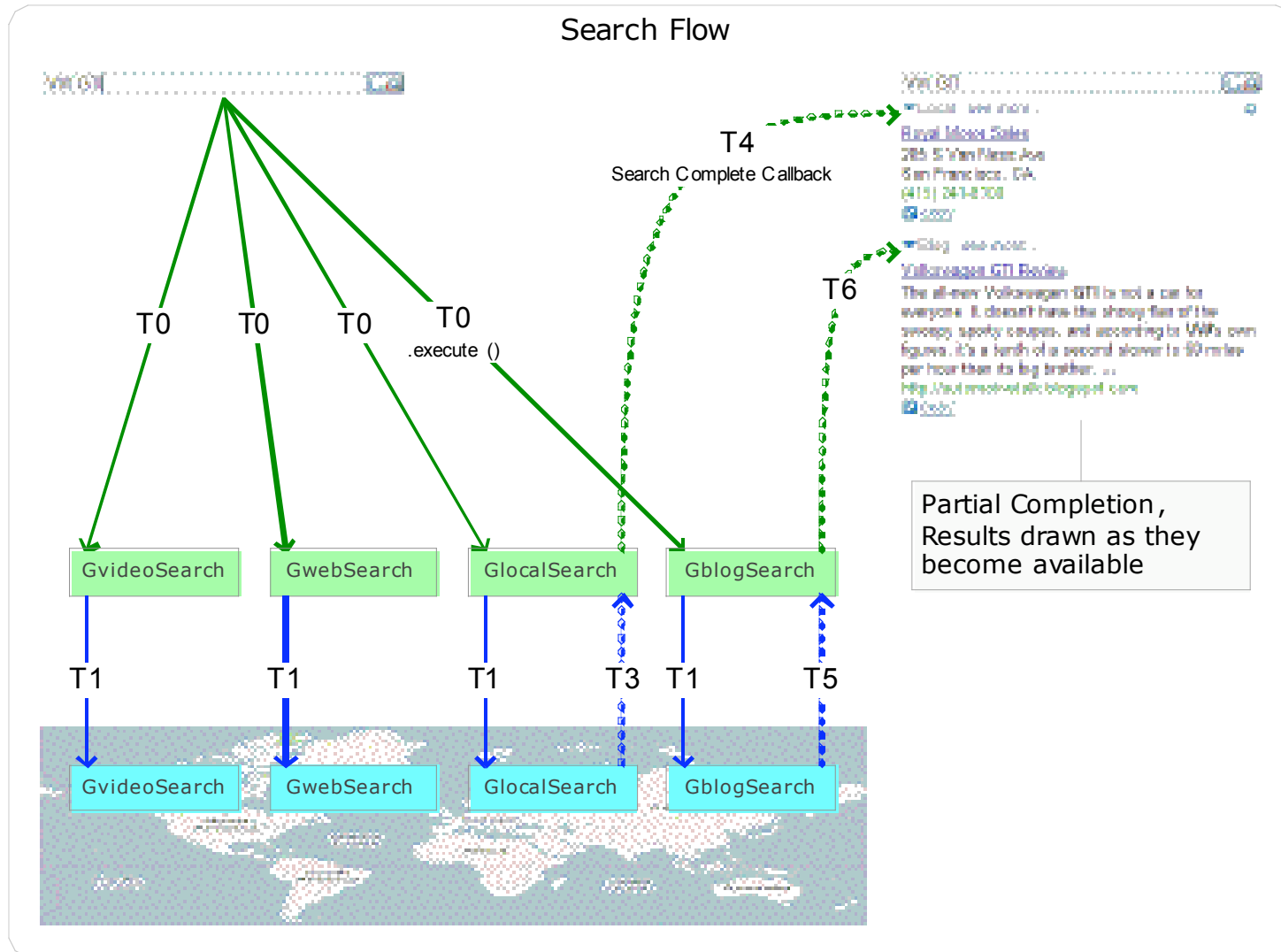
The screenshot shows a Google search interface with the following sections:

- Local** section: "Seattle Mariners Baseball Club: Safeco Field" with address "1250 1st Ave S, Seattle, WA" and phone "(206) 346-4287". A "copy" button is visible.
- Web** section: "Official Seattle Mariners" with a description: "Headlines, statistics, photograph galleries and general team information." and URL "mariners.mlb.com". A "copy" button is visible.
- Video** section: A video thumbnail showing a baseball game. The title is "Ed Sharpe KKAT-TV Director Ed Sharpe KKAT-TV Director got to throw the starting pitch" with date "Sat Mar 18 2006" and source "video.google.com". A "copy" button is visible.
- Blog** section: "7/9 Detroit Tigers @ Seattle Mariners" with a description: "A win this afternoon in Seattle would give Detroit 60 wins at the All-Star break. According to the Detroit Free Press, if the Tigers play ... Today's game will see Nate Robertson (8-4, 3.35) face the Mariners' Gil Meche (7-4, 3.92). ..." and URL "http://www.blessyouboys.com". A "copy" button is visible.

Architecture Block Diagram



Execution Timeline



“Keep Handling” – How do I do it?



```
function OnLoad() {
    var sc = new GSearchControl();
    ...
    // establish keep handler
    sc.setOnKeepCallback(this, MyKeepHandler);
    ...
}

function MyKeepHandler(result){
    // clone the .html property
    var node = result.html.cloneNode(true);

    // append into my document
    savedResults = document.getElementById("saveArea");
    savedResults.appendChild(node);
}
```


Building a “Lead List” using Search



Lead Management Sample - powered by The Google AJAX Search API

	A	B	C	D	E	
1	Client Name	Contact	Potential clients Address	Phone	Lead Date	view more
2	Breed James DDS		1315 State St # 2b, Santa Barbara CA	(805) 963-4913	4/30/04	
4	White Stewart E DDS		15 E Arrellaga St # T, Santa Barbara CA	(805) 962-7441	5/30/04	
5	Michael R Cooper Inc		29 W Anapamu St # 511, Santa Barbara CA	(805) 966-6325	4/30/04	
6	California Periodontics		3 W Carrillo St # 214, Santa Barbara Co	(805) 962-7144	4/30/04	
7	Stumbach Marc H MD		9 E Pedregon St, Santa Barbara CA	(805) 969-1828	4/30/04	
8	Dr S Puri DDS Inc		129 MA St, Oxnard CA	(805) 483-9837	4/30/04	
9	Cohen R Gabriel DDS MD		126 Decker Ave, Oxnard CA	(805) 983-0717	4/30/04	
10	Douglas Douglas MD		428 W Michelobana St, Santa Barbara CA	(805) 963-1546	4/30/04	<div style="border: 1px dashed gray; padding: 2px;"> Physicians </div> <div style="border: 1px dashed gray; padding: 2px;"> Local </div> <p>Douglas Douglas MD 428 W Michelobana St Santa Barbara, Ca (805) 963-1546 add to spreadsheet</p> <p>Mystic Medical Clinic 428 W Michelobana St Santa Barbara, CA (805) 963-1546 add to spreadsheet</p> <p>Misty May MD 428 W Michelobana St Santa Barbara, Ca (805) 963-1546 add to spreadsheet</p> <p>Cohen Gerald MD 115 W Arrellaga St Santa Barbara, Ca (805) 967-0123 add to spreadsheet</p>
11	Cohen Gerald MD		115 W Arrellaga St, Santa Barbara Ca	(805) 967-0123	4/30/04	

<http://www.google.com/uds/samples/random/lead.html>

Third Party App, Favorite Places List



Google AJAX Search API Sample - My Favorite Places

This sample application is designed to show how the Google AJAX Search API could be used to construct and share a collection of favorite places.

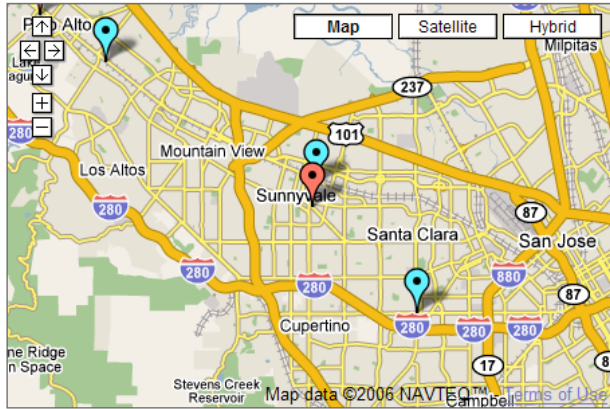
Local Results

[BMW of Mountainview](#)
205 E Washington Ave
Sunnyvale, CA
(408) 737-6100
remember this

[Stevens Creek BMW](#)
4343 Stevens Creek Blvd
Santa Clara, CA
(408) 249-9070
remember this

[Lamborghini Palo Alto](#)
3045 Park Blvd
Palo Alto, CA
(650) 324-4488
remember this

BMW of Mountainview Find on map



Map Satellite Hybrid

Related Results

Web

[BMW of Mountain View](#)
allison **bmw** home page. no hassle prices and real inventory.
www.allisonbmw.com

[California BMW Triumph Motorcycles: Motorcycle](#)
Order Your Motorcycle Parts and Accessories Online at California **BMW** Triumph ...
Mountain View, California Telephone 650.966.1183 | Fax 650.966.8340 ...
www.calbmwtriumph.com

[San Jose Mercury News | San Jose - - BMW of](#)
Shop online at San Jose stores. Save time and money by shopping from home with San Jose newspaper ads online. Quickly search print ads for jobs, cars, ...
newspaperads.mercurynews.com

[The Unofficial Guide - Businesses](#)
BMW of Mountain View. standard. Address1: 150 E El Camino Real **Mountain View** 94040 Phone: (877) 554-9798 Fax: (650) 943-1064 ...
unofficial.stanford.edu

My Favorite Places

[BMW of Mountainview](#) edit delete
150 E El Camino Real
Mountain View, CA
(650) 943-1000
clipped from Google - 5/2006
hide related search result details
[BMW of Mountain View](#)
allison **bmw** home page. no hassle prices and real inventory.
www.allisonbmw.com
clipped from Google - 5/2006
delete

[P F Chang's China Bistro](#) edit delete
900 Stanford Shopping Ctr
Palo Alto, CA
(408) 991-9078
clipped from Google - 5/2006
show related search result details
Welcome to PF Chang's China Bistro
[PF Chang's China Bistro - Wikipedia, the free encyclopedia](#)

<http://www.google.com/uds/samples/places/index.html>

Google Code

- <http://code.google.com/>

AJAX Search API Documentation and Samples

- <http://code.google.com/apis/ajaxsearch/>
- <http://code.google.com/apis/ajaxsearch/samples.html>

Search API Blog

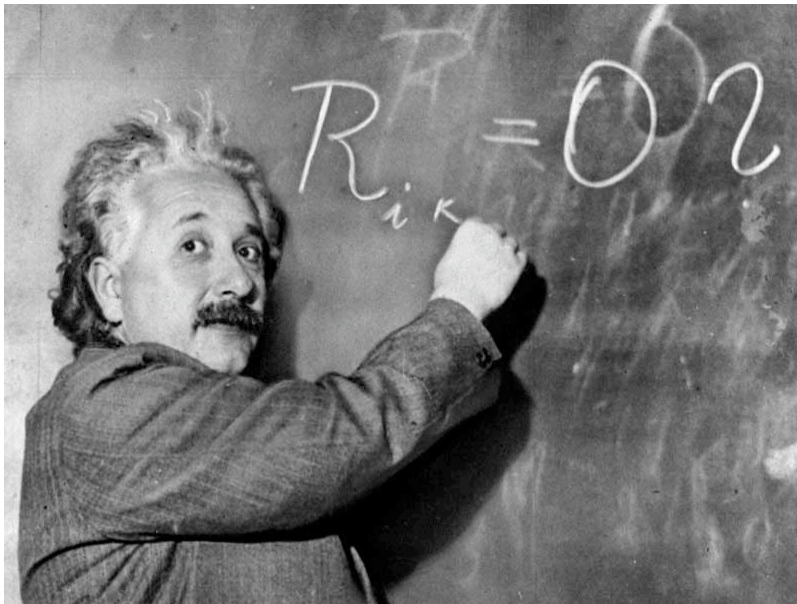
- <http://googleajaxsearchapi.blogspot.com/>

Search API Developer Forum

- <http://groups.google.com/group/Google-AJAX-Search-API>

Space and Time

- 2 important dimensions to organize and present information

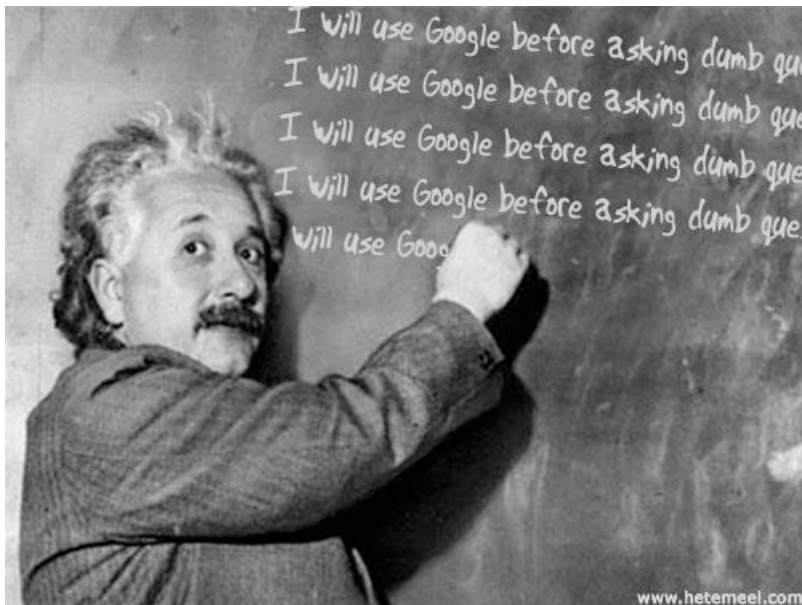


"Space and time are not conditions in which we live; they are simply modes in which we think."

Albert Einstein

This is fine and dandy but how do I use that in my webapp?

- APIs = Plumbing



"If I had my life to live over again, I'd be a plumber."

Albert Einstein

Google Maps API

- Triggered the Ajax revolution
- Now everybody's doing it

Google Maps API

- HTML, JavaScript, (XML)

Google Calendar

- An Ajaxy Calendar

Calendar APIs

- REST is the best: HTTP verbs for the rest of us
- Atom syntax: GET
- Atom Publishing Protocol: POST, PUT, DELETE
- Calendar is the first Google Data API

What's in a name?



AJAX

- Asynchronous
- JavaScript
- XML

... but

- Only the second part (JavaScript) is really used in Google Maps
- All are completely independent
- All existed in browsers for years before Suggest, Gmail, and Maps
- XML? A data format decision that is completely unimportant relative to the other two
- But a bad name is better than no name!
- Ajax is a great Meme: thanks Jesse James Garrett!

What makes an AJAX Application?



Classic web application

- User clicks on a link / submits a form
- HTTP request
- HTTP response **replaces** the document

AJAX web application

- User triggers an event (mouse click, keyboard click, etc)
- Event invokes scripted event handler
- Event handler *may* initiate a data transfer
- Event handler or data transfer callback **updates** the document

Sophisticated user interaction

- Display can be partially updated, modified, or animated
- Complex manipulations of page state and UI are possible

Client-side session state

- Transient session state stored on the client
- Persistent user state stored on the server
- *Enables a much more natural architecture for applications*

DOM – Document Object Model

- API for structured text

CSS – Cascading Style Sheets

- Defines visual layout properties, etc.

JavaScript

- Flexible scripting language that is both powerful and fragile

HTTP

- Transport for background data transfer
- Typically done with IFRAME elements or XMLHttpRequest

Transfer Data Format

- JavaScript object literals (JSON) or XML

Illustration: XML vs. JSON – Text Format



XML

```
<data>
<location lon="13.4156" lat="52.5206"/>
</data>
```

```
var data = {
  location: {
    lon: 13.4156,
    lat: 52.5206
  }
};
```

XML (DOM)

```
var lon =  
datanode.firstChild.getAttribute('lon');
```

XML (E4X)

```
var lon = data.location.@lon;
```

JSON

```
var lon = data.location.lon;
```

But E4X only in Firefox and Flash

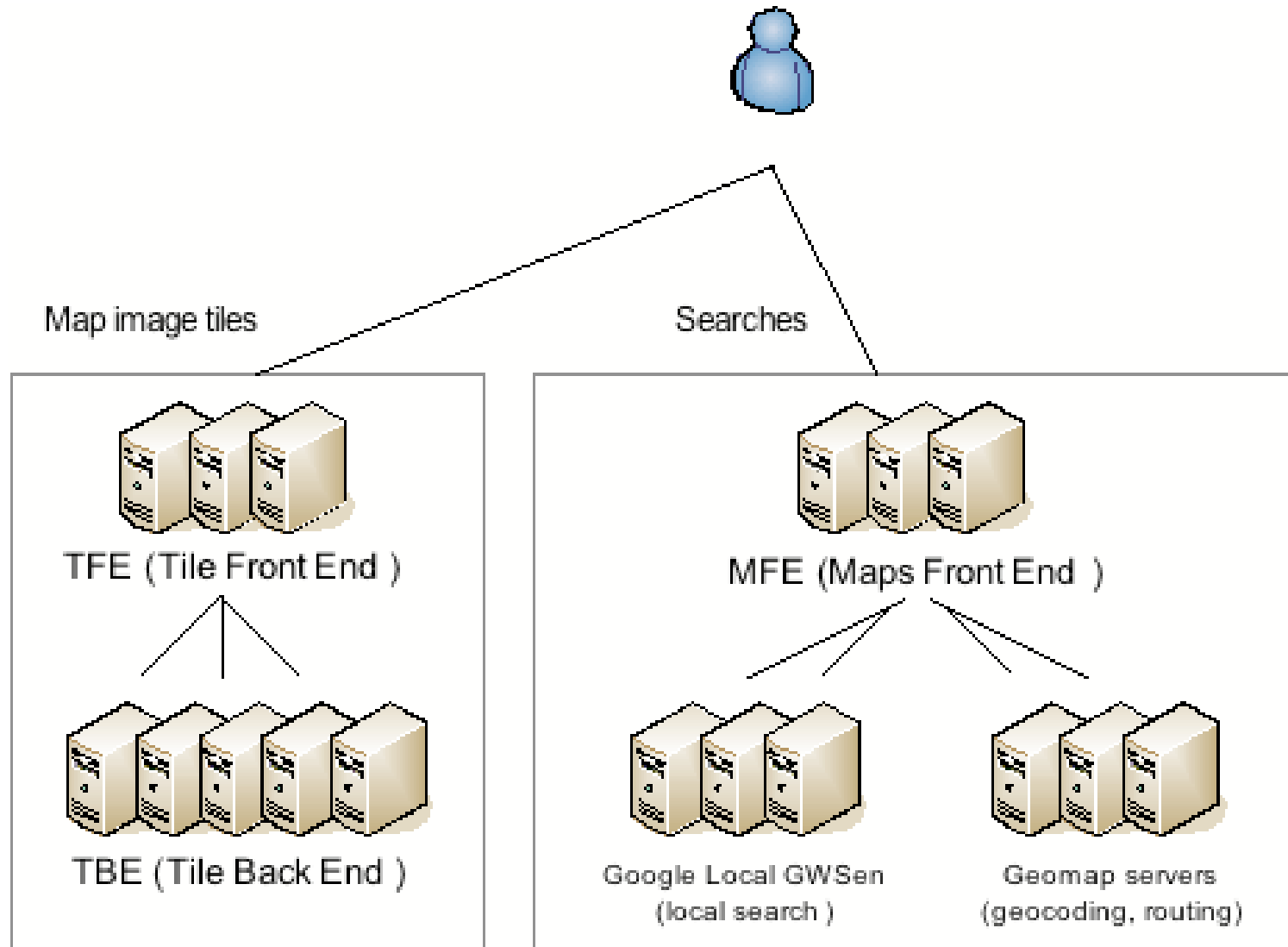
AJAX is a collection of successful technologies being used for things they were never intended for... like the web itself

- The HTML Document Object Model (DOM) was designed for textual documents, not rich graphical interfaces
- XMLHttpRequest was introduced to Internet Explorer by the Microsoft Outlook team to solve a specific problem for Outlook Web Access

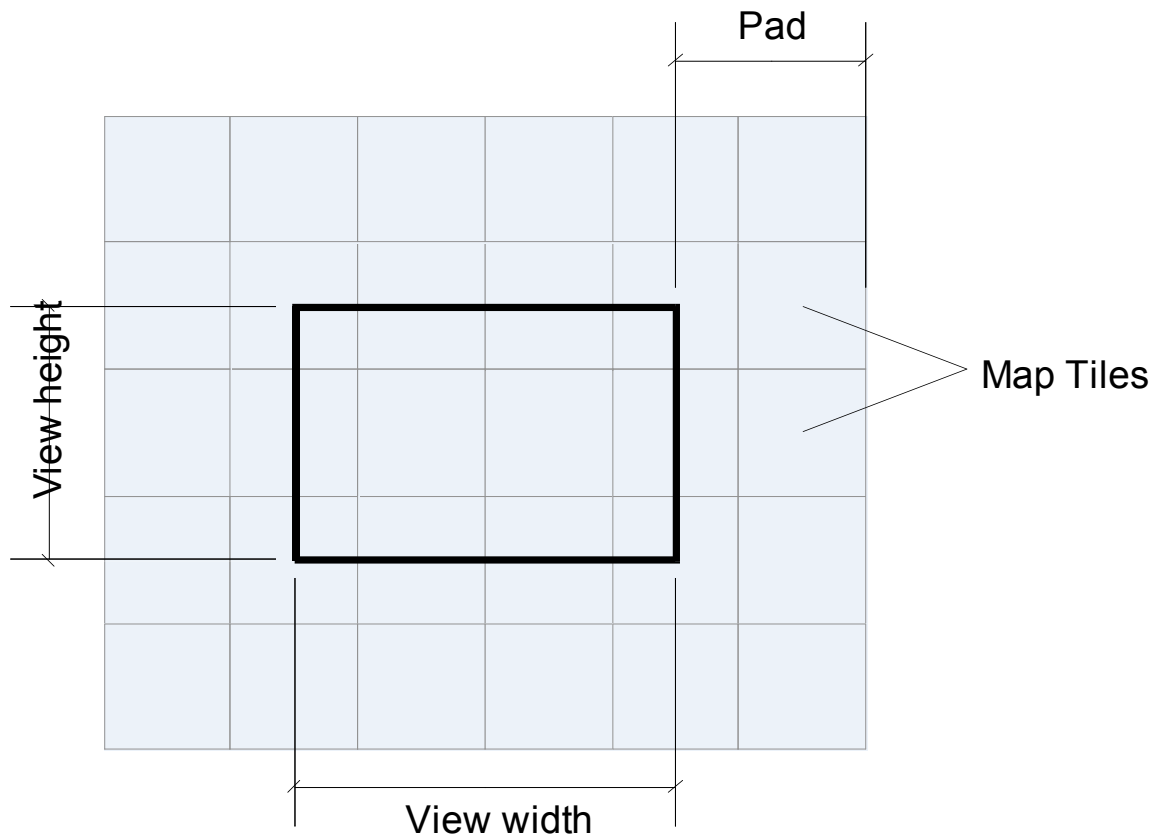
Each component has several implementation differences across browsers and platforms

- AJAX Developer is typically synonymous with PhD in Browser Quirks
- See <http://www.quirksmode.org/>

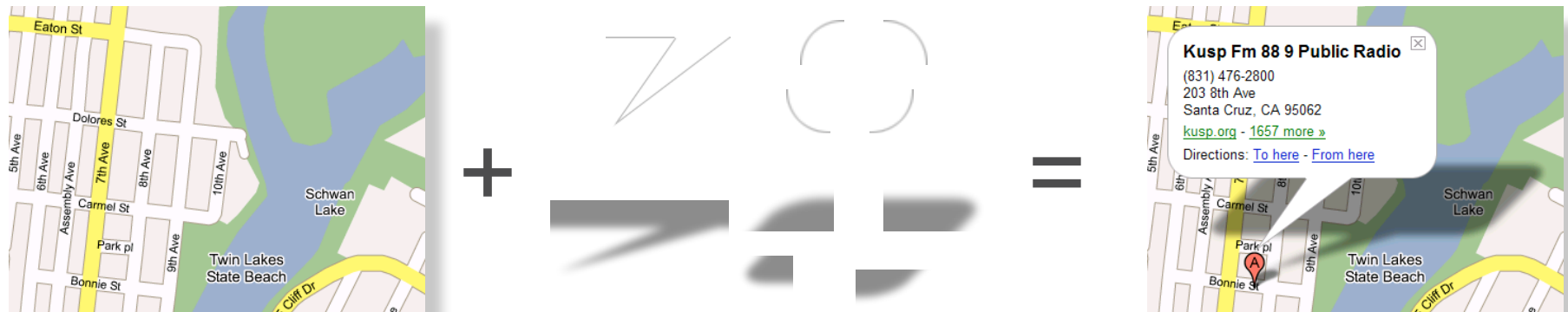
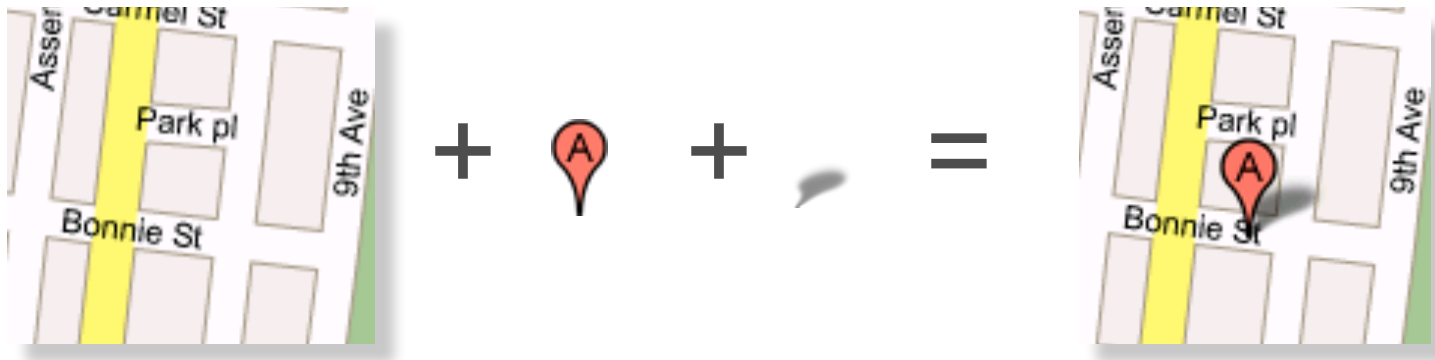
So how does Maps do work?



CSS positioned map tiles with a cropped at the map border



Maps JavaScript architecture



What is it?

- Put Google Maps on your site for free, just like Frappr.com, housingmaps.com and chicagocrime.org
- Overlay custom content, write custom functionality
- Free to all web sites that are free to consumers (including commercial web sites)
- Less than 1 year old: V1 in june 2005, V2 in April 2006

Switch between maps

- “Map”, “Satellite” and “Hybrid” modes supported by default

Overlays

- Markers
 - Custom icons, shapes, etc
- Polylines
 - e.g., driving directions lines
- Custom overlays

“Info window”, tabbed

- You know, that cool window with the shadow underneath it

Customizability

- Custom map controls, overlays, and map types

Overview map

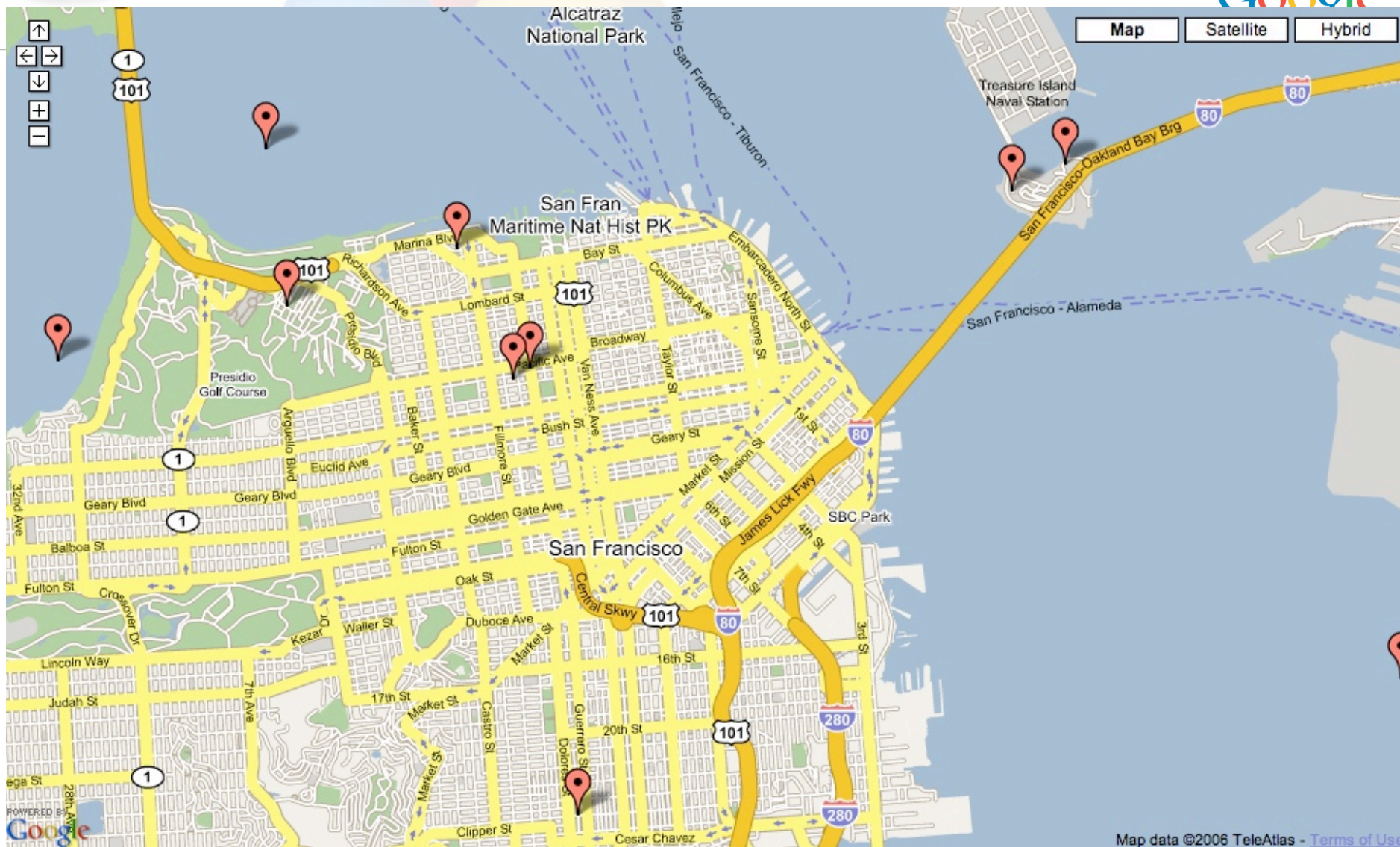
- New `GOverviewMapControl` control displays an attractive and collapsible map in the corner of the screen

Support for a subset of KML (Google Earth data format)

Emphasis on Simplicity



```
// Center the map on Westin Hotel in San Francisco
var map = new GMap2(document.getElementById("map"));
map.addControl(new GSmallMapControl());
map.addControl(new GMapTypeControl());
map.setCenter(new GLatLng(37.787742,-122.408295), 13);
// Add 10 markers to the map at random locations
var bounds = map.getBounds();
var southWest = bounds.getSouthWest();
var northEast = bounds.getNorthEast();
var lngSpan = northEast.lng() - southWest.lng();
var latSpan = northEast.lat() - southWest.lat();
for (var i = 0; i < 10; i++) {
    var point = new GLatLng(southWest.lat() + latSpan * Math.random(),
        southWest.lng() + lngSpan * Math.random());
    map.addOverlay(new GMarker(point));
}
```



A few cool Google Maps applications



Useful/Cool

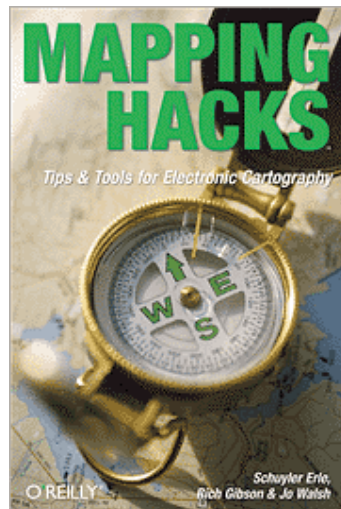
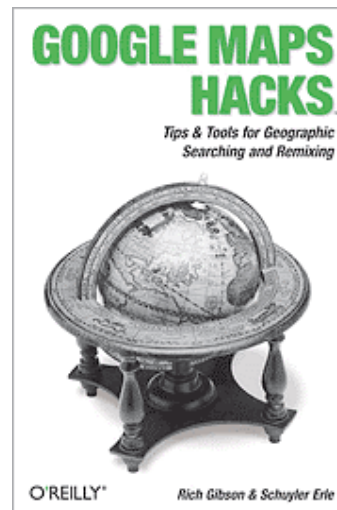
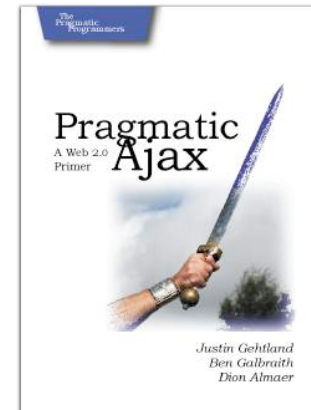
- <http://del.icio.us/chanezon/ajaxian+google+maps+app+cool>

Technically interesting

- <http://del.icio.us/chanezon/ajaxian+google+maps+app+tech>

- <http://code.google.com/>
- <http://www.google.com/apis/maps>
- Google-Maps-API Developer Forum:
<http://groups.google.com/group/Google-Maps-API?Ink=li>
- Maps API blog: <http://googlemapsapi.blogspot.com/>
- Mike William's tutorials: <http://www.econym.demon.co.uk/googlemaps/>
- <http://del.icio.us/chanezon/google+maps>

- The Ajaxians book: Pragmatic Ajax
 - implement your own Map UI in a day... then you have to do the server side:-)
- The O'Reilly ones:
 - Google Maps Hacks
 - Mapping Hacks



REST API, Based on Atom and the Atom Publishing Protocol



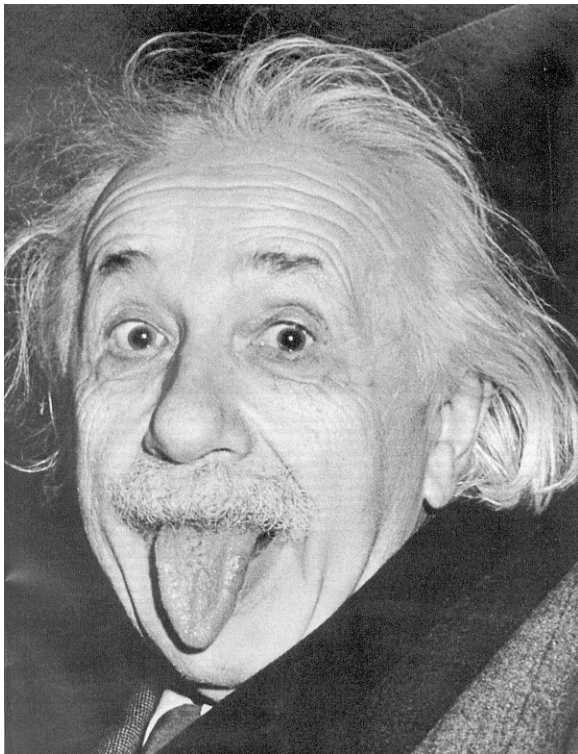
"The release of atom power has changed everything except our way of thinking..."

Albert Einstein

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GET, POST, PUT, DELETE Calendar Entries

Released in April 2006



"...the solution to this problem lies in the heart of mankind. If only I had known, I should have become a watchmaker."

Albert Einstein

frank mantek (fmantek@google.com)



Adam Bosworth on a bike

“'Google Data APIs Protocol' is a horrible name. You can tell that ex-Microsoft employees had a hand in this effort. :)”

Dare Obasanjo
(Microsoft)

“The benefit is that you'd have a single API that could be used to query, update, and index structured data on the web--anywhere on the web. It's a pretty powerful vision and something I didn't expect to see for a couple more years” - **Jeremy Zawodny (Yahoo)**

ODBC

OLEDB

(P@: In my case JDBC, EJB and Hibernate... but same feeling)

Remoting technologies

XML

SOAP, WSDL

WS_* specs to your hearts content...



Google

- lot of APIs available
- some are SOAP based (AdWords API)
- some are somewhat REST based
- ... all are somehow different

What do we need?

- simple data protocol
- query? Sure, i just love queries...
- updates - there is no point getting data if you can not mess with it....

REST style of design...

- data format should be easy to understand
- easy to consume by existing tools

And the winner is...

- the Syndication format (Atom 1.0 and RSS 2.0).

in the simple case



I just enter a URI, like:

- <http://www.google.com/calendar/user/public/full>
- and get an Atom feed of my calendar data


```
<feed>
  <id>
http://www.google.com/calendar/feeds/user/public/basic
  </id>
  <updated>2006-05-05T14:22:41.000Z</updated>
  <title type="text">Frank Mantek</title>
  <subtitle type="text">Frank Mantek</subtitle>
  <link rel="http://schemas.google.com/g/2005#feed" type="application/atom+xml"
href="http://www.google.com/calendar/feeds/fmantek%40gmail.com/public/basic/">
  <link rel="self" type="application/atom+xml"
href="http://www.google.com/calendar/feeds/fmantek%40gmail.com/public/basic?max-results=25/">
  <link rel="next" type="application/atom+xml"
href="http://www.google.com/calendar/feeds/fmantek%40gmail.com/public/basic?start-index=26&max-results=25/">
    <author>
      <name>Frank Mantek</name>
      <email>fmantek@gmail.com</email>
    </author>
    <generator version="1.0" uri="http://www.google.com/calendar">Google Calendar</generator>
    <openSearch:itemsPerPage>25</openSearch:itemsPerPage>
  </feed>
```

the result, again...



data comes in standard Atom or RSS format

some namespaced extensions are used to identify semantic entities and data items not mappable in Atom and RSS

google extensions are in their own namespace

- [xmlns:gd=http://schemas.google.com/g/2005](http://schemas.google.com/g/2005)

we have **types**

and there are **kinds**

- semantic grouping of types

so, what about types?



types can appear anywhere in the document

they do not have semantic meaning by themselves

e.g. a <who> element can appear in any document, but that does not make it a contact

The Calendar defines

- Contacts
- Events
- Messages

example: an event



```
<entry xmlns:gd="http://schemas.google.com/g/2005">
  <category scheme="http://schemas.google.com/g/2005#kind" term="http://schemas.google.com/g/2005#event"/>
  <id>http://mycal.example.com/feeds/jo/home/full/e1a2af06df8a563edf9d32ec9fd61e03f7f3b67b</id>
  <published>2005-01-18T21:00:00Z</published>
  <updated>2006-01-01T00:00:00Z</updated>
  <title>Discuss BazMat API</title>
  <content>We will discuss integrating GData with BazMat.</content>
  <author>
    <name>Jo March</name>
    <email>jo@example.com</email>
  </author>
  <gd:when startTime='2005-01-18T21:00:00Z' endTime='2005-01-18T22:00:00Z'>
    <gd:reminder minutes='15'/>
  </gd:when>
  <gd:where valueString='Building 41, Room X'/>
  <gd:eventStatus value="http://schemas.google.com/g/2005#event.confirmed"/>
  <gd:visibility value="http://schemas.google.com/g/2005#event.public"/>
  <gd:transparency value="http://schemas.google.com/g/2005#event.transparent"/>
</entry>
```

example: an event



```
<entry xmlns:gd="http://schemas.google.com/g/2005">
  <category scheme="http://schemas.google.com/g/2005#kind" term="http://schemas.google.com/g/2005#event"/>
  <id>http://mycal.example.com/feeds/jo/home/full/e1a2af06df8a563edf9d32ec9fd61e03f7f3b67b</id>
  <published>2005-01-18T21:00:00Z</published>
  <updated>2006-01-01T00:00:00Z</updated>
  <title>Discuss BazMat API</title>
  <content>We will discuss integrating GData with BazMat.</content>
  <author>
    <name>Jo March</name>
    <email>jo@example.com</email>
  </author>
  <gd:when startTime='2005-01-18T21:00:00Z' endTime='2005-01-18T22:00:00Z'>
    <gd:reminder minutes='15'/>
  </gd:when>
  <gd:where valueString='Building 41, Room X'/>
  <gd:eventStatus value="http://schemas.google.com/g/2005#event.confirmed"/>
  <gd:visibility value="http://schemas.google.com/g/2005#event.public"/>
  <gd:transparency value="http://schemas.google.com/g/2005#event.transparent"/>
</entry>
```

REST filter model

- categories - part of the path
<http://test.com/-/xtech/talks>
- full text - the **q** parameter
<http://test.com?q=GData>
- author - the **author** parameter
<http://test.com?author=Frank Mantek>
- **updated-min/max** parameter
<http://test.com?updated-min=2006-01-01&updated-max=2006-12-31>

<http://test.com/-/xtech/talks/2006?author=frankmantek&q=GData&updated-min=2006-01-01&updated-max=2006-12-31>

each entry contains a “self” URI

- `<link rel="self" href="http://test.com/feeds/talks/idforthis"/>`

using that gives you just this entity

Updates are based on the Atom Publishing protocol draft

- <http://www.ietf.org/internet-drafts/draft-ietf-atompub-protocol-11.txt>
Proposed as a standard in May
- Updates are done using optimistic concurrency

Insert a new entry in a feed

- POST to the feed's **service.post** URI

Delete an entry

- DELETE to the entries **edit** URI

Update an entry

- PUT to the entries **edit** URI

just released one property supporting the Data API

- Google calendar was well received since its April 12th launch date
- more Google properties will support this API over time



Support?



Language libraries for Java & C#, including documentation

Active community at code.google.com

Support for other languages (PHP, Javascript) is in the works



more quotes...



“I think GData is hot. I'd like us to use this as a building block for some of the developer platform stuff we are doing for Windows Live” - **Dare Obasanjo (Microsoft)**

“The next logical questions, for me at least, are:

1. Will MySQL add native GData support to the server anytime soon?
2. Should Yahoo begin to enable a GData API on our data stores?

I hope the answer to #1 is "yes, they should" and suspect the answer to #2 is "probably--at least for some of them." - **Jeremy Zawodny (Yahoo)**

ClientLogin: Account Authentication for Installed Applications

- programmatic login
- CAPTCHA
- But username/password stored by the application: Bad

AuthSub: Account Authentication Proxy for Web Applications

- Connects the user to a Google service that requests credentials
- The service then returns a token that the web application can use
- Google (rather than the web front end) securely handles and stores the user's credentials.

Outlook sync

- Daniel Tiles, RemoteCalendars

Cell Phone Sync

- Thomas Oldervoll's Gcalsync, J2ME midlet

RDFCalendar XVCD

- By Justsystems Corporation: Google, eventful, upcoming

- <http://code.google.com/>
- <http://code.google.com/apis/gdata/overview.html>
- <http://code.google.com/apis/gdata/calendar.html>
- Google Calendar Data API Developer Forum:
<http://groups.google.com/group/google-calendar-help-dataapi?Ink=li>
- <http://del.icio.us/chanezon/gdata>

AdWords API

- Lets you write software that interacts programmatically with the AdWords service
- Bid management, Reporting/Analytics, Creative generation

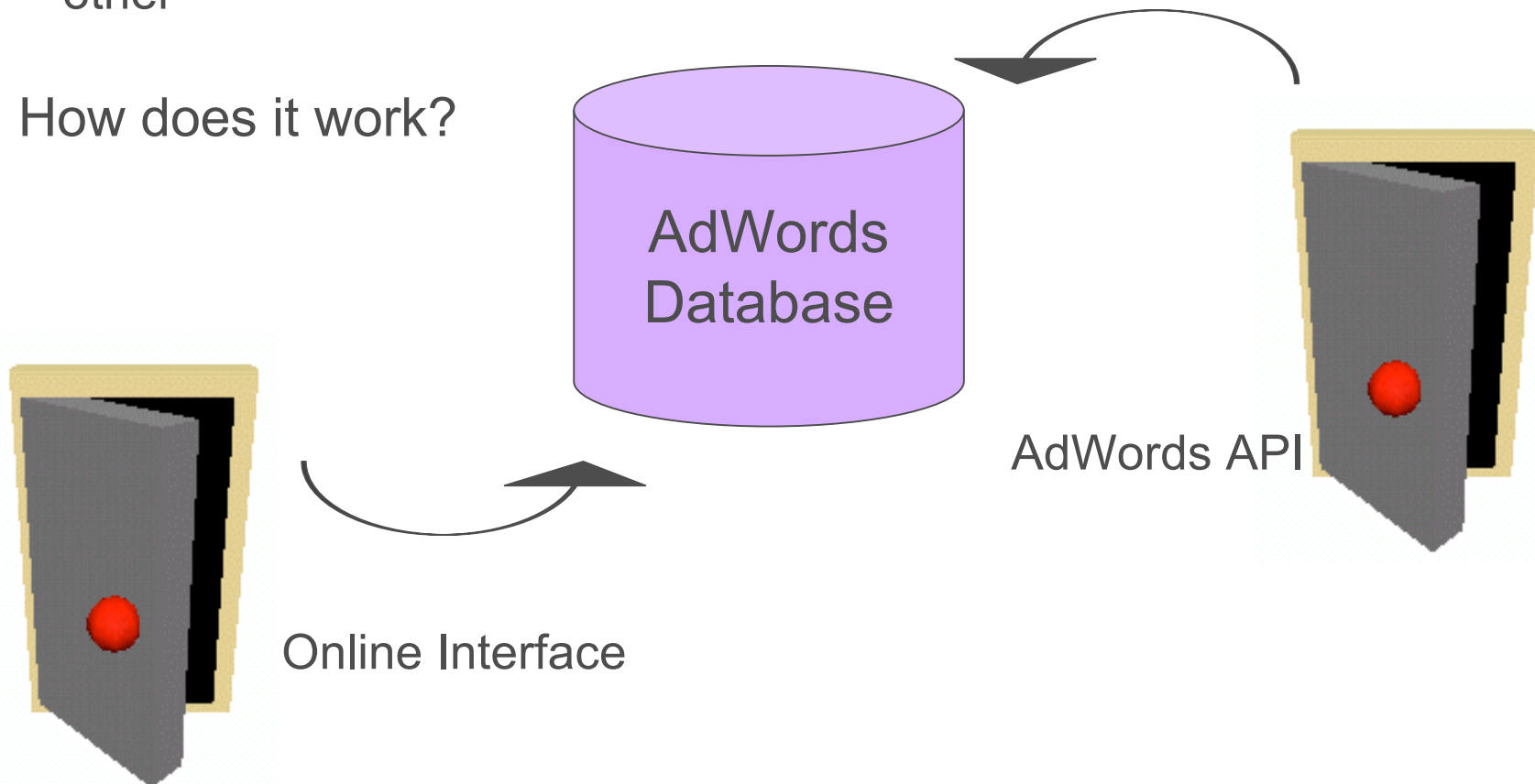
SOAP/WSDL web services API

- Standards based
- Tools available for these standards in most languages
- Doc/literal encoding

What is it?

- A-P-I stands for Application Programming Interface
- It is a platform that permits two systems to talk efficiently to each other

How does it work?



The AdWords API enables anyone to integrate and extend the functionality of AdWords

Users can write programs and applications to perform functions in each of these five areas:

- **Account management** – change user preferences such as email address, password and more at the account level
- **Campaign management** – manage bids, update creative and other campaign operations
- **Reporting** – generate reports to integrate directly into local databases
- **Traffic estimation** – receive traffic estimates for individual keywords
- **Keyword generation** – generate keywords from a base keyword or a web page

Product overview: AdWords API Center



Google AdWords My Client Center | Jump to client

My Client Center | Client Reports | My Account

Billing Preferences | Account Preferences | Access | AdWords API Center

AdWords API Center

API Usage Show usage in: Oct 2006 Go

Quota units used:	0
Purchasable quota units remaining:	250,000

Usage data is not in real time (updated daily).

Rate and Budget [edit]

Rate:	USD \$0 per 1000 quota units
Monthly budget:	\$1.00

Your Developer Token [reset]

abcdefghijklmnopqrstuvwxyz

Your Application Tokens [add] [label]

abcdefghijklmnopqrstuvwxyz

▸ [Details](#)

Developer Details [edit]

Company information:	Independent software developer Google http://google.com 501+ employees chanezon@gmail.com
----------------------	---

Each API user is assigned a unique developer token which is linked to the user's My Client Center account.

Quota costs \$0.25/1000 quota units, billed to a developer token

Application token is specific to the application you develop

Users can access information about their API usage via the AdWords API Center under "My Account" tab within My Client Center.

In the AdWords API Center, users can:

Generate, view, or reset their developer token

Check their quota allocation and quota units consumed

The AdWords API is designed to be a do-it-yourself program.* Using the Developer Website, developers can find valuable resources to help them create applications.

Google AdWords AdWords API

AdWords API Home

Overview
[Quota & Usage](#)
[Terms & Conditions](#)
[Featured Use Cases](#)
[Developer Registration](#)

Documentation
[Developer's Guide](#)
[Sample Code](#)

Support
[FAQ](#)
[Developer Forum](#)
[AdWords API Blog](#)

Toolbox
[SOAP Toolkits](#)

[Sign in to your AdWords API Center](#)

Introduction
Google's free AdWords API service lets developers engineer computer programs that interact directly with the AdWords server. With the applications created, advertisers can more efficiently - and creatively - manage their large AdWords accounts and campaigns.

Limitless Functionality
What can you do with the AdWords API? This all depends on your programming genius and clients' advertising needs. Some possibilities might include:

- Generating automatic keyword, ad text, URL, and custom reports
- Integrating AdWords data with databases, such as inventory systems
- Developing additional tools and applications to help you manage AdWords accounts

Multi-Language Compatibility
To make your programming environment even easier, the AdWords API supports a growing number of languages - including Java, PHP, Perl, Java, C#, and XML. The API abides by SOAP and WSDL standards.

Simple and Speedy Signup
All you need to get started is an active [My Client Center](#) account. If you don't currently have a My Client Center, you can create one in the next step. After signup, you'll be given a [developer token](#) and [operations quota](#) so you can begin writing programs immediately.

Ready to sign up? [Click here.](#)

Because AdWords API is a free beta, the online documentation is available in English only. However, all API services are compatible with any language and currency.

Sign in to your AdWords API Center
Haven't registered yet? [Click here to sign up.](#)

Sample Code
Learn from sample code, available in five programming languages:
[Java](#) - [.NET](#) - [Perl](#) - [PHP](#) - [XML](#)

Support
[AdWords API FAQ](#)
Search or browse the FAQ for answers to common questions.
[Ask Other Developers](#)
Find answers, or post questions for the Developer Forum

©2005 Google - [AdWords Home](#)

Key components:

Developer's Guide

Developer Forum

Frequently Asked Questions

Sample Code

Blog

<http://www.google.com/apis/adwords>

* AdWords API is available globally, but sign-up and documentation is in **English only**

Open Source client libraries and samples

PHP, Java, .NET, Ruby, Perl, OCAML (!)

Samples only: Python

See <http://www.google.com/apis/adwords/samplecode.html>

Register for a developer token

- You will need to create a MCC account

Get your credentials ready

- developerToken: provided during registration, quota attached to it
- applicationToken: specific to an application
- User agent: a String you provide in your program
- Login email: of your MCC account
- Password: of your MCC account
- clientEmail: (optional) of your customers

Production

- Go to <http://www.google.com/apis/adwords/>
- Enter your account email address and password.
- Your “umbrella” MCC account will be created.
- Developer and application tokens will be generated. These tokens are used in each API call to Google.
- Set a limit for API quota: you pay for quota.
- Visit the [API website](#) to view more information including documentation, sample code, and the Developer Forum.
- You’re all set! You can access your AdWords account with the API immediately.

Sandbox

- For development create a sandbox account
- No quota cost there

Client libraries have an option to dump the xml

- Can be useful in case of issues

```
<?xml version="1.0" encoding="utf-8" ?>
<env:Envelope xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <env:Header>
    <developerToken env:mustUnderstand="0">your_dev_token
  </developerToken >
    <applicationToken env:mustUnderstand="0">your_app_token
  </applicationToken >
    <useragent env:mustUnderstand="0">P@ playing with the API from PHP
  </useragent>
    <password env:mustUnderstand="0">your_password
  </password>
    <email env:mustUnderstand="0">toto@example.com
  </email>
  </env:Header>
  <env:Body>
    <estimateKeywordList xmlns="https://adwords.google.com/api/adwords/v4">
      <keywordRequests>
        <maxCpc>50000</maxCpc>
        <text>flowers</text>
        <type>Broad</type>
      </keywordRequests>
    </estimateKeywordList>
  </env:Body>
</env:Envelope>
```

Anatomy of an AdWords API SOAP Response



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <soapenv:Header>
    <responseTime soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0"
xmlns="https://adwords.google.com/api/adwords/v4">1999</responseTime>
    <operations soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xmlns="https://adwords.google.com/api/adwords/v4">1</operations>
    <units soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xmlns="https://adwords.google.com/api/adwords/v4">25</units>
    <requestId soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0"
xmlns="https://adwords.google.com/api/adwords/v4">e701e5123f82cd5888f611eb97230579</requestId>
  </soapenv:Header>
  <soapenv:Body>
    <estimateKeywordListResponse xmlns="https://adwords.google.com/api/adwords/v4">
      <estimateKeywordListReturn>
        <id>-1</id>
        <lowerAvgPosition>7.0</lowerAvgPosition>
        <lowerClicksPerDay>111.112045</lowerClicksPerDay>
        <lowerCpc>50000</lowerCpc>
        <upperAvgPosition>10.0</upperAvgPosition>
        <upperClicksPerDay>167.89006</upperClicksPerDay>
        <upperCpc>50000</upperCpc>
      </estimateKeywordListReturn>
    </estimateKeywordListResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

Java and .NET excellent: all code generated, interception structure to log and transform requests, mature

- Gotcha: `<valueType>Specified = true` necessary for value types in .NET

Ruby: soap4r doc/lit support used to be buggy but many improvements this year.

- Still difficult to map to our own package, but hack in adwords4r

PHP:

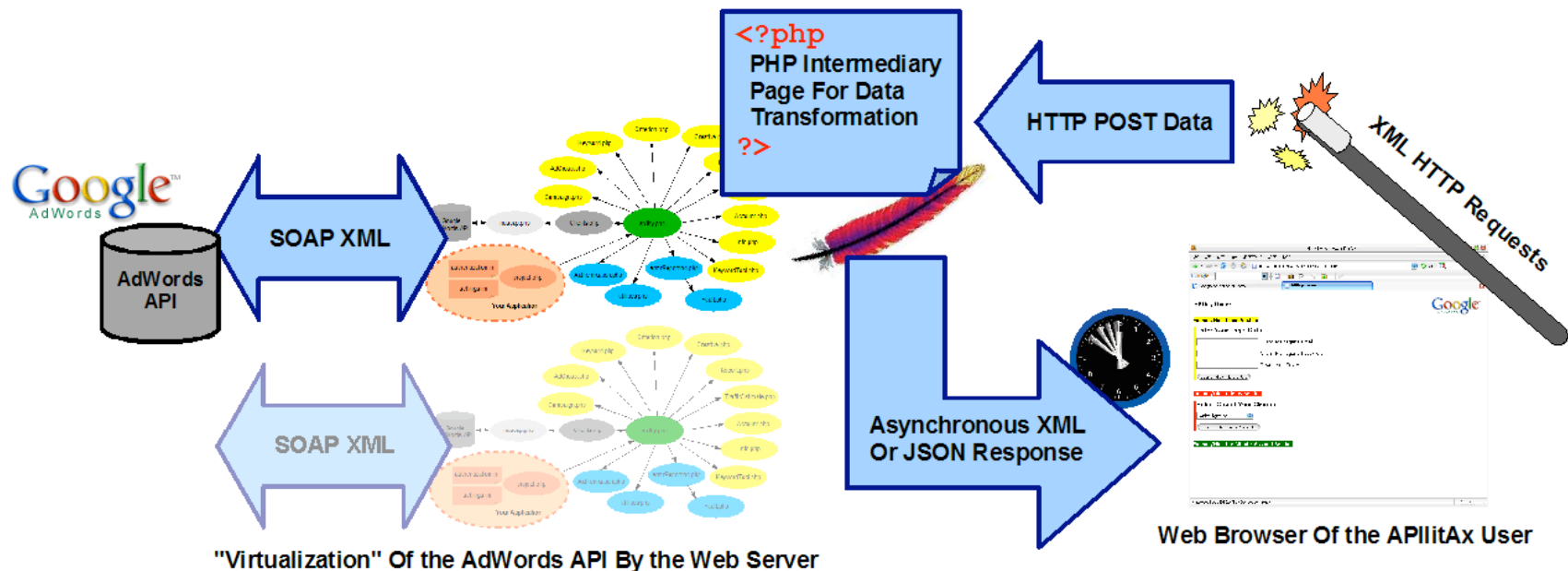
- PHP4 NuSoap: slow, manual xml, but deployed everywhere
- PHP5 Pear: native, fast, but PHP 5 only
- APllity uses NuSoap

Perl:

- waiting for new release of SOAP::Lite from Byrne Reese
- CPAN module, not complete yet

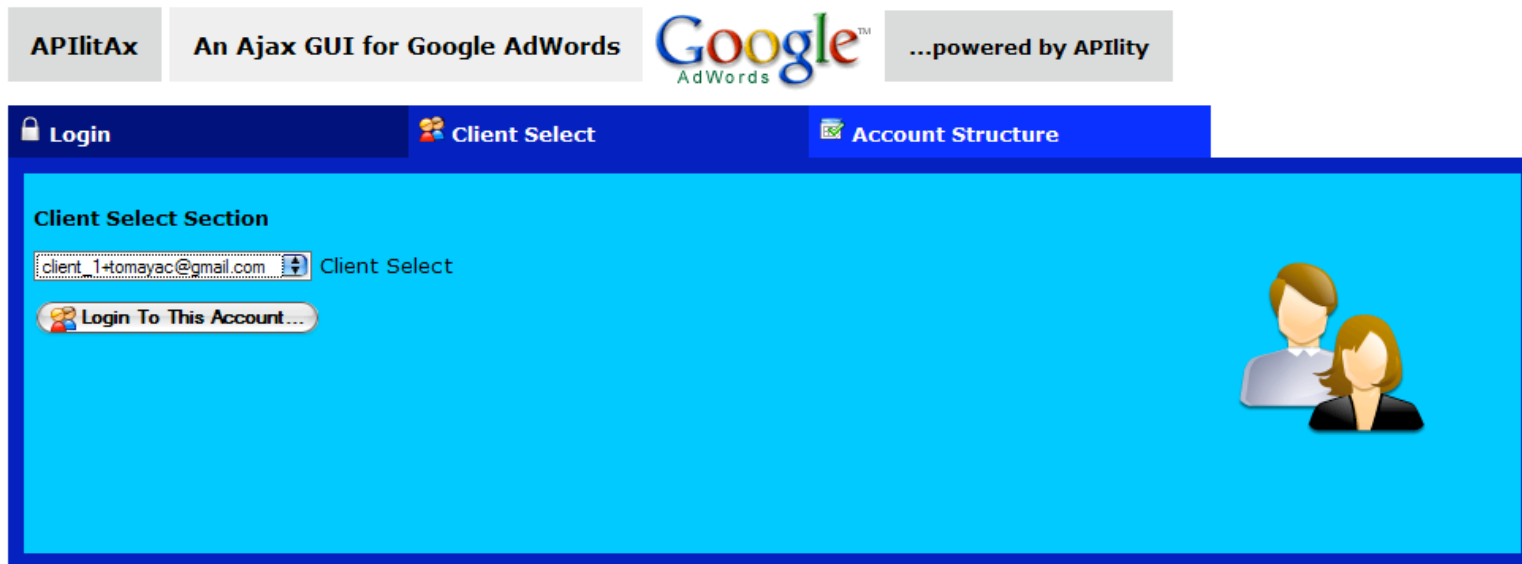
Principle

- JavaScript XML HTTP requests from a web application access intermediate local PHP files communicating via HTTP POST data
- PHP files make the APIity API calls, running on the local server
- Asynchronous responses are translated back into JavaScript

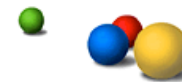


What does it look like?

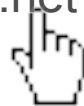
– Client Select section:



APIlitax is an open source project released under the [BSD license](#). It is hosted on [SourceForge](#) and provided "as is" without any warranty. Graphics based on Everaldo's [Crystal icon theme](#).



→ <http://apilitax.sourceforge.net>



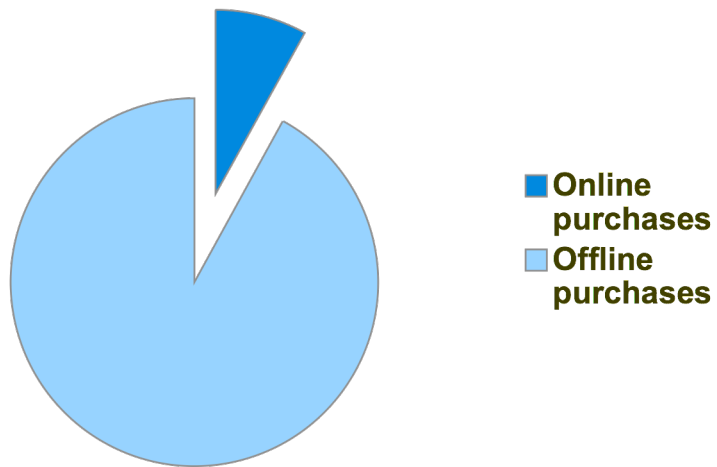


Fast, secure checkout across the Web



Only 8% of all retail purchases are expected to occur online in 2006*

2006 Consumer Purchases by Channel



* 2006 State of Retailing Online, Shop.org/Forrester

Problem: Discovery, Checkout

- Difficult to find trustworthy sellers
- Long, repetitive, checkout processes
- 63% of shopping carts are abandoned after beginning checkout*

* Online Customer Experience Survey, Allurent, February 2006

Opportunity: Search, Convenience

- 37% of online purchases start with search*
- 25% of search queries result in a purchase directly related to the query**
- Fast checkout can improve conversion

* 2005 Online Holiday Mood Study, Shop.org/BizRate Research

** The Role of Search in Consumer Buying, comScore/Google

Google Checkout is an alternative checkout process that provides a fast, secure way to buy and sell online.

Shoppers

- Easily identify Checkout merchants on Google with the Checkout badge
- Conveniently make purchases with a single login/password
- Review and manage purchases from various merchants in one central location

Merchants

- Acquire more leads by displaying the Checkout badge
- Convert more sales by offering a streamlined checkout process
- Lower costs with free transaction processing based on your AdWords spend

retailco

(fictitious company used for illustrative purposes)

Shoppers use Google to **search** for items to buy.



Shoppers look for the Google Checkout badge to find merchants to buy from.

The screenshot shows a Google search results page for the query "black handbags". The search bar at the top contains the text "black handbags" and a "Search" button. Below the search bar, the page displays several search results. A prominent feature is a large, semi-transparent box overlaid on the first few results, containing the text "Find the Perfect Black Handbag Fabulous & Unusual Styles. Great Customer Service & Free Shipping!" and the URL "www.RetailCo.com". This box is a callout for a specific merchant. The search results include:

- Handbags at Coach.com**: A result from Coach.com with a description: "Find New & Stylish Coach Designs... Online Now at the Official Site".
- Black Handbags**: A result from www.blackhandbags.com.au/ with a description: "My name is Stacey Leigh Black, I am 27 and live in Bredbo NSW. Like most girls, I have a deep obsession for handbags, which I change as often as my shoes. ...".
- black : handbags shop by color: women's : JCPenney**: A result from JCPenney with a description: "Women's, Handbags Shop By Color, Black. ... 'Call Me' Leather Handbag · St. John's Bay Woven Double Handle Shopper · St. John's Bay Woven Double Handle ...".
- Handbags Purses - Designer Handbags Discount**: A result from www.alternative-beautv.com/handbags/black.html with a description: "Black Handbags, leather handbags, designer purses and designer wallets inspired by top designers like Louis Vuitton, Prada, Coach, Gucci and more! ...".



On the right side of the page, there are "Sponsored Links" for:

- Designer Handbags Online**: "All Major Brands. Huge Selection. Free Shipping. Order Now! Zappos.Com".
- Black Purses**: "Compare Prices on a Wide Variety of Apparel and Save Money. PriceGrabber.com".
- Find the Perfect Black Handbag**: "Fabulous & Unusual Styles. Great Customer Service & Free Shipping! www.RetailCo.com".
- Women's Handbags**: "Spring Sale: Up To 50% Off Select Styles and \$5 Standard Shipping. www.AnnTaylorLoft.com".
- Find the Perfect Handbag**: "Fabulous & Unusual Styles. Great Customer Service & Free Shipping! www.eBags.com".

To **buy**, shoppers need only click Google Checkout and enter their username/password.

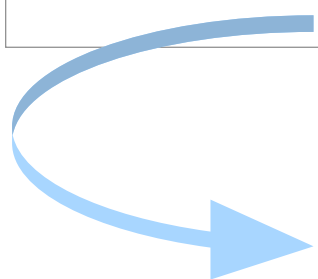
retailco myaccount | shoppingbag | help

Review Your Shopping Bag

Product Description	Price	Qty	Total	Remove
 Kate Landry Fur-Trim Footed Bag	\$29.50	1	\$29.50	

Tax: \$2.43
Subtotal: \$31.93

[Go back and continue shopping.](#) **Checkout** or **Google Checkout**
Fast checkout through Google

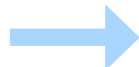


Or sign in
If you already have a **Google Account**

Email:

Password:

[Forgot your password?](#)



retailco Google Checkout

Review and place order

Order Details - RetailCo, Inc., 100 Las Vegas Blvd South, Las Vegas, NV 89109, 800-253-1000

Qty	Item	Price
1	Kate Landry Fur-Trim Footed Bag	\$29.95
	Shipping & handling (CA) <input type="text" value="Media.Mail (\$1.49)"/>	\$1.49
	Tax (CA)	\$2.47
Total:		\$33.46

Keep my email address confidential
Google will forward all email from Cooking.com to jemes@gmail.com. [Learn more](#)

I want to receive promotional email from retailco.com.

Ship to: **Todd Jackson** - [Change](#)
Google, Inc.
1600 Amphitheatre Pkwy
Mountain View, CA 94043

Pay with: **Visa xxx-1234** - [Change](#)

[Edit order](#)

Google Checkout users can easily **manage** all of their purchases in a central location.

Purchase History

Default shipping address
Todd Jackson
Google Inc
1600 Amphitheatre Pkwy
Mountain View, CA 94043
[Edit shipping addresses](#)

Default payment method
Visa xxx-1234
Expires 04/07
Todd Jackson
1600 Amphitheatre Pkwy
Mountain View, CA 94043
[Edit payment methods](#)

[See all sellers I've rated](#)

Orders					1 - 20 of 35 orders	Next »
Order Date	Item	Seller	Status	Amount		
May 30, 2006	Kate Landry Fur-Trim Footed Bag	retailco.com	In progress	\$99.16		
May 18, 2005	Alice in Wonderland Book	Bill's Books	In progress	\$2.45		
Sep 14, 2005	Chocolate Chip cookies	Jane's Cookies	Ready for pickup	\$1.50		
Sep 2, 2005	Michael Jackson	Google Video	Credit card declined	\$27.34		
Sep 2, 2005	Tiger Woods highlights	Google Video	Completed - Rate this seller	\$5.95		
Dec 14, 2004	Tree landscape	Smith Photography	Cancelled Refund - Dec 15, 2003	\$15.34 (\$15.34)		
Dec 14, 2004	Fruit in bowl still life	Smith Photography	Shipped	\$47.50		

1 - 20 of 35 orders [Next »](#)

① Search

② Find

③ Buy

For Buyers...

Convenience

- Google Checkout badge helps identify merchants to buy from
- One place to track purchases

Speed

- Single log in for easy buying across the web

Confidence

- Credit card number concealment
- Fraud protection
- Email forwarding

For Merchants...

More Leads

- Google Checkout badge helps attract more customers

More Conversions

- Streamlined checkout process increases conversions

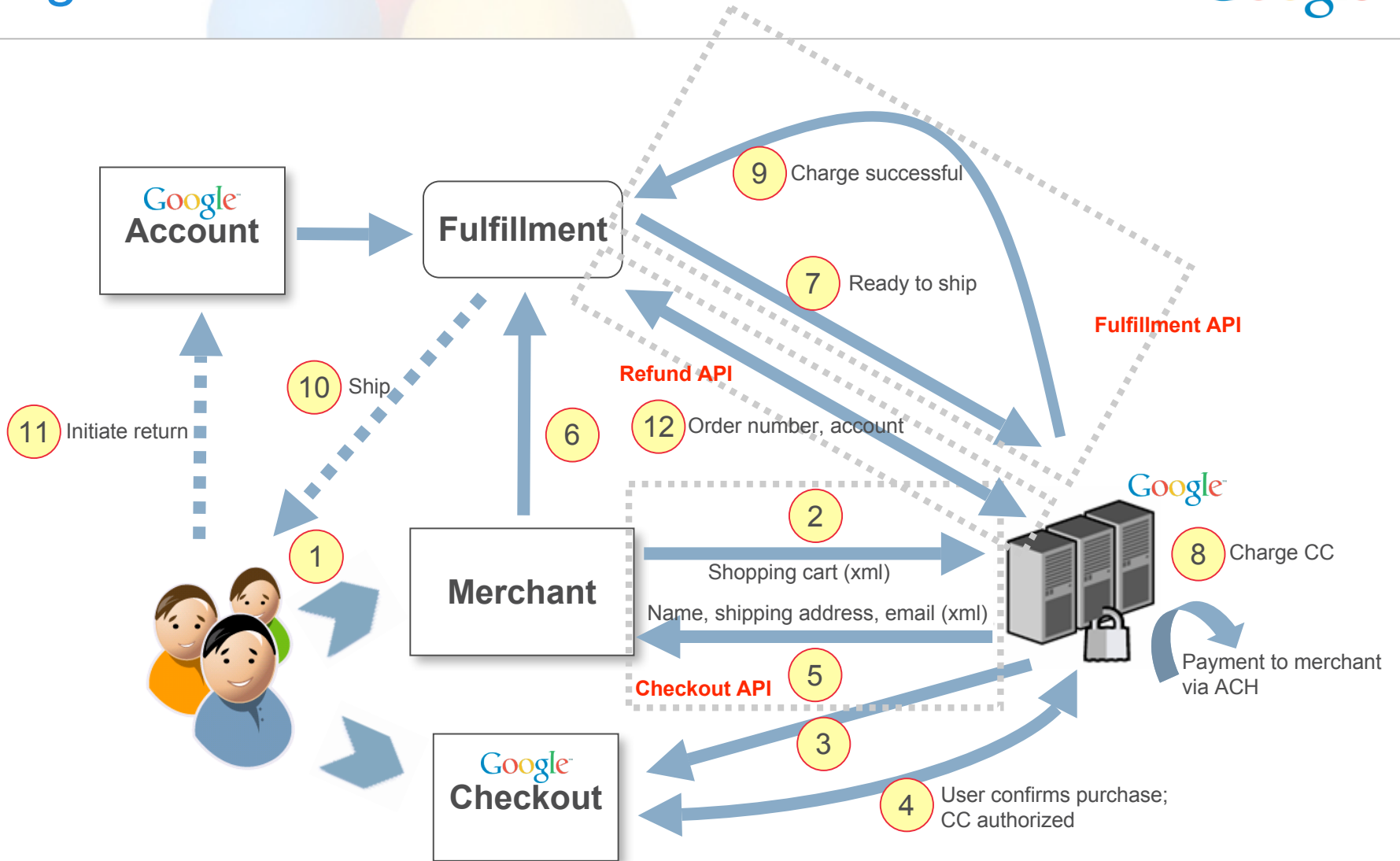
Lower Costs

- Free transaction processing for sales up to 10X AdWords spend
- Low 2% + \$0.20 per transaction fee for all other sales
- Fraud protection

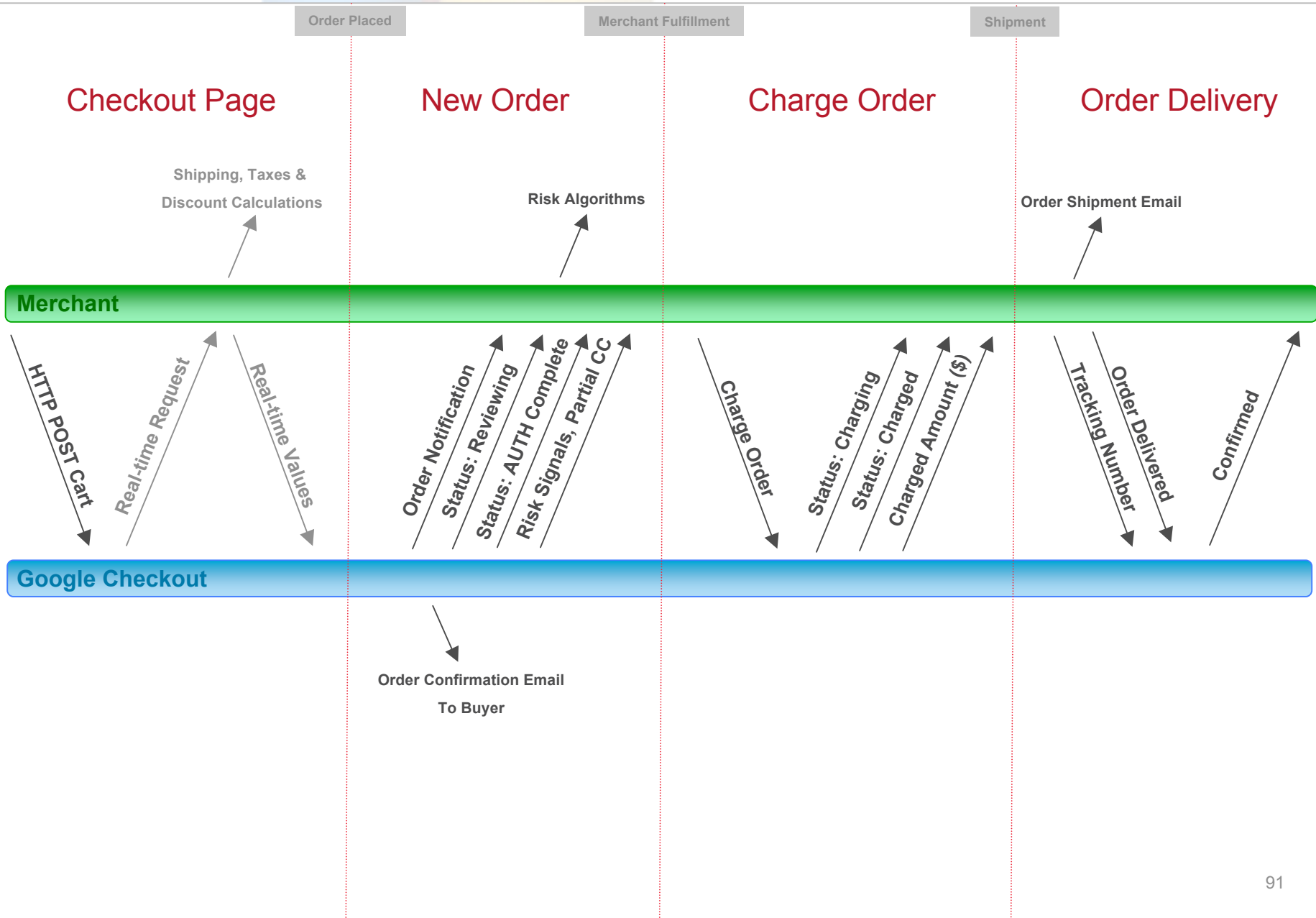
AdWords and Google Checkout work together to increase sales and lower costs.



Google Checkout Transaction Flow



Order Flows: Typical



Google Checkout Integration Options

- Buy Now buttons
- e-commerce partners
- Name/Value pair API
- Google Checkout XML API
- Systems Integrators specialized in Checkout

<http://checkout.google.com/seller/developers.html>

For Developers: bonuses for bringing Google Checkout to your merchants

https://services.google.com/inquiry/checkout_ecommerce

Holiday promotions

- Free processing for merchants during holiday season
- \$10 off \$30 purchase for buyers

Google Checkout API

2 levels of integration

- Level 1: post shopping carts (taxes, shipping, coupons)
- Level 2: merchant calculations, order management, 2 ways API

REST API

- XML over HTTP
- XML Schema
- Synchronous / Asynchronous (notifications)
- HMAC-SHA1 for signature, Basic auth over SSL
- Samples and Libraries in many environments
 - PHP, Java, Windows Classic ASP (COM), .NET
 - OsCommerce

Google Checkout API Level 1

Easy Static Checkout Buttons



Form with hidden fields

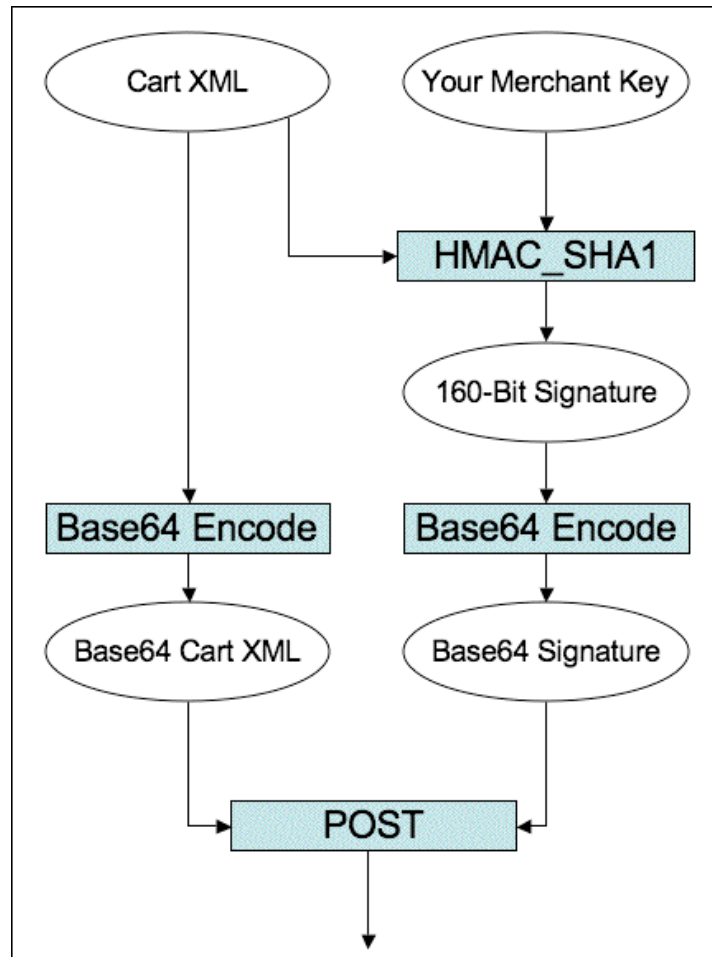
```
<form method="POST"
action="https://sandbox.google.com/cws/v2/Merchant/12
34567890/checkoutForm"
  accept-charset="utf-8">
  <input type="hidden" name="item_name_1"
value="Peanut Butter"/>
  <input type="hidden" name="item_description_1"
value="Chunky peanut butter."/>
  <input type="hidden" name="item_quantity_1"
value="1"/>
  <input type="hidden" name="item_price_1"
value="3.99"/>
  <input type="hidden" name="_charset_"/>
  <input type="image" name="Google Checkout"
alt="Fast checkout through Google"

src="http://sandbox.google.com/buttons/checkout.gif?m
erchant_id=1234567890

&w=180&h=46&style=white&variant=text&loc=en_US"
height="46" width="180"/>
</form>
```

Google Checkout API Level 1

Post Cart XML + Signature



- Main site: <http://checkout.google.com>
- Google Checkout Video / Demo:
<https://checkout.google.com/seller/demo.html>
- Places to Shop: <http://www.google.com/buy/m.html>
- Developers Center:
<https://checkout.google.com/seller/developers.html>
- Google Checkout API Center:
<http://code.google.com/apis/checkout/>
- Developer's Guide:
<http://code.google.com/apis/checkout/developer/index.html>

Demo

Fully Buzzword Compliant:-)

- PHP, SOAP, REST, Ajax, Business Mashup, Google

Sample: shows how to integrate AdWords and Checkout in your PHP application

Open Source soon

SOAP vs REST

	+	-
SOAP	<p>Client toolkits: most code can be generated from WSDL</p> <p>Batch support: you batch inside of request</p>	<p>Doc/Lit support uneven</p>
REST	<p>url for resources</p> <p>Can use http libraries, no need SOAP client lib</p> <p>Caching</p> <p>Can load balance without parsing xml based on url components (like checkout API does)</p>	<p>Less code generation: xsd -> lang OK but still need to do http work</p> <p>No agreement on batch (cf Atom PaceBatch discussion)</p>

“S for Simple”: Recent blog thread summarized by Tim Bray

- <http://www.tbray.org/ongoing/When/200x/2006/11/16/WS-Socratic>

“Why SOAP sucks” Nelson Minar, ex-Google, designer of early Google APIs SOAP Search and AdWords

- <http://www.somebits.com/weblog/tech/bad/whySoapSucks.html>

“There's an amusing dialogue floating around about how simple SOAP is. As someone who bears some past responsibility for well used SOAP services (Google's APIs for search and AdWords) let me say now I'd never choose to use SOAP and WSDL again. I was wrong.”

“Truly, none of this protocol fiddling matters. Just do something that works.”

Verbose: in order to update a field you must PUT the whole entry

Batch semantics controversial (Google rolled its own)

Tool support OK but less mature than SOAP

Many bridges, using different technologies

- No new SOAP API planned
- REST for data and message APIs
- Ajax to surface customizable controls

Exposing many Google services... and more to come: give it a try!

- What: Ajax Search
- Where: Maps
- When: Calendar
- Advertising: AdWords
- Commerce: Checkout

This presentation is a mashup of presentations by many
Googlers

Mark Lucovsky

Technical Director, Engineering

Bret Taylor

Product Manager

Steffen Meschkat

Software Engineer

Frank Mantek

Software Engineer

Thomas Steiner, Google intern, tsteiner@google.com

Intern AdWords API

Jacob Moon, Google, jacobm@google.com

Checkout API support

