

Advanced Gadget and UI Development Using Google's AJAX APIs

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Agenda

- The Application Concept
- Basic Building Blocks
- The Google AJAX APIs
 - Background
 - Google AJAX Search API
 - Google AJAX Feed API
 - Google AJAX Language API
- Goals
 - Utilize the Raw AJAX APIs and advanced features
 - Show how Reader and Google CSE are utilized
 - How to wrap the application as a gadget



The Application Concept

- Showcase the content on all of Google's Blogs
- Provide a tag cloud view for categories
- Also a hierarchical view of all blogs grouped by tag
- Allow search over all blogs
- Provide language translation where applicable
- Deploy as an iGoogle gadget



The Basic Building Blocks

- HTML/DOM
- CSS
- Javascript
- Tools
 - Editor
 - Debugger - Firebug
 - Performance - YSlow
- The Google AJAX Apis
 - Search
 - Feed
 - Language
- Google Reader (www.google.com/reader)
- Google Custom Search Engines (www.google.com/cse)
- iGoogle



Tools

Firefox and Firebug (<http://www.getfirebug.com/>)

Don't develop without them!



Google AJAX APIs

Delivering the Web to Your Applications (Search, Feeds, Language)



- RESTful data access layer
 - JSON/JSON-P
- JavaScript Runtime
 - Designed for ease of use
- JavaScript Controls and UI elements
 - Custom integration and styling



Google AJAX Search API

- Web
- Video
- News
- Image
- Local
- Book
- Blog

The screenshot shows a Google search for the term "Google". The search bar at the top contains "Google" and a "Search" button. Below the search bar, the results are organized into several categories, each with a dropdown arrow and a "powered by Google" logo:

- Local:** Shows a result for "Google" located at "1600 Amphitheatre Parkway, Mountain View, CA" with the phone number "(650) 253-0000" and a link to "directions".
- Web:** Shows a result for "Google" with the description "Enables users to search the Web, Usenet, and images. Features include PageRank, caching and translation of results, and an option to find similar pages." and the URL "www.google.com".
- Video:** Shows a result for "secret images of google earth" with a video thumbnail, the description "Watch part 2 of this video, BOOK OF THE DEAD SECRET IMAGES in my video Responses above." dated "Dec 12, 2006", and the URL "www.youtube.com".
- News:** Shows a result for "Inside Microsoft's War Against Google" from "BusinessWeek" dated "1 hour ago". The description mentions "With Yahoo off the table, Microsoft plans to challenge Google's online-ad juggernaut alone. A behind-the-scenes look at its provocative strategy by Jay ..." and includes a link to "Related Articles >".
- Image:** Shows two image results. The first is the "Google" logo with the text "How dominant is Google" and "1197 x 478" and the URL "blog.agoracom.com". The second is a map of the UK with the text "Map of Book Britain" and "884 x 883" and the URL "www.nearby.org.uk".
- Book:** Shows a result for "Google: The Missing Manual" by Sarah Milstein, Jude Biersdorfer, and Matthew MacDonald, published in 2006, with 463 pages, and the URL "books.google.com".



Google AJAX Feed API

- Load
- Find
- Lookup



Google AJAX API

[Google I/O developer conference: Now with more A...](#)

by Brandon Badger - May 05, 2008

With Google I/O just a few weeks away (May 28 - 29), if you haven't already registered then now is the time. There are now ...

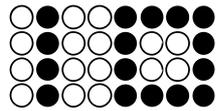
- ▶ [Google I/O developer conference: Now with more AJAX](#)
[Flash and Server Side Access](#)

[Come Meet the AJAX API Team Engineers at Google I/O on I](#)
[Introducing the AJAX Language API - Tools for Translation a](#)



The Application Prototype





Prototype Demo

What we saw

- The tag cloud view
- A detail entry/snippet view
- The hierarchical blog view
- Search control and results
- Translation capabilities



How do we build it?

- Building Blocks
 - Google Reader (content feeds)
 - Custom Search Engine
 - AJAX APIs (Feed, Search, Language)
- Getting Started
 - Build standalone HTML/CSS/JS
 - `google.load()`
 - `google.setOnLoadCallback()`
- Putting it all together
 - Application details
- Making an iGoogle Gadget
 - Wrapping things into iGoogle



Building The Application

Building Blocks - Google Reader - www.google.com/reader

- Subscriptions
 - Blog management
- Tags
 - Grouping Subscriptions/Blogs
 - Tag based pages
 - Tag based feeds
- Tag Cloud
 - All blogs top 20
- Hierarchical View
 - All categorized blogs



Building The Application

Building Blocks - Google Reader - www.google.com/reader

Tags and Categorization

The screenshot displays the Google Reader interface. On the left, there is a navigation sidebar with links for Home, All items (933), Starred items, Trends, Your stuff, and Friends' shared items (27). Below this is a green 'Add subscription' button and a 'Discover' link. The main content area shows a list of items from the 'officialgoogleblogs-all' feed. The list includes items from various Google-related blogs such as 'Google SketchUp Blog', 'Inside AdSense - 中文', 'Official Google Blog - Aust', 'Official Google Blog - 中国', 'Google LatLong', 'Inside AdWords - 日本', 'Google Open Source Blog', 'Google Desktop API Blog', 'Google Research Blog', 'Official Google Website O', 'Inside AdWords-Português', 'Blogs of Note-Español', and 'Official Google Reader Blo'. Each item has a star icon and a title. The interface also features a search bar, a dropdown menu for 'All items', and buttons for 'Mark all as read' and 'Refresh'.



Building The Application

Building Blocks - Google Reader - www.google.com/reader

Tags and Sharing Feeds

The screenshot shows the Google Reader Settings page. At the top, there's a navigation bar with 'Settings' and a link to 'Back to Google Reader'. Below this are tabs for 'Preferences', 'Subscriptions', 'Tags', 'Goodies', 'Import/Export', and 'Friends'. The 'Tags' tab is active. The main content area shows a list of tags with checkboxes, a sharing status (private/public), a trash icon, and links to 'view public page' and 'email a link'. The tags listed are: 'Your starred items' (private), 'Your shared items' (public), 'ads' (public), 'Ads Verticals' (public), 'adsense' (private), 'Advertisers' (public), 'Advertising' (public), 'AdWords' (public), 'adwords' (private), 'Analytics' (public), 'api' (private), 'APIs' (public), and 'Apps for Users' (public). At the top of the tag list, there are options to 'Select: All 57 tags, None, Public, Private', a 'Change sharing...' dropdown, and a 'Delete selected' button.

Tag Name	Sharing Status	Actions
<input type="checkbox"/> Your starred items	private	
<input type="checkbox"/> Your shared items	public	view public page email a link
<input type="checkbox"/> ads	public	view public page email a link
<input type="checkbox"/> Ads Verticals	public	view public page email a link
<input type="checkbox"/> adsense	private	
<input type="checkbox"/> Advertisers	public	view public page email a link
<input type="checkbox"/> Advertising	public	view public page email a link
<input type="checkbox"/> AdWords	public	view public page email a link
<input type="checkbox"/> adwords	private	
<input type="checkbox"/> Analytics	public	view public page email a link
<input type="checkbox"/> api	private	
<input type="checkbox"/> APIs	public	view public page email a link
<input type="checkbox"/> Apps for Users	public	view public page email a link



Building The Application

Building Blocks - Google Reader - www.google.com/reader

Tags and Sharing Feeds - Ads Verticals Example

<http://www.google.com/reader/shared/user/X/label/Ads%20Verticals>



A beginner's guide

via [Google Grants Blog](#) by Google Grants Team Member on 5/8/08

Posted by Jessica, Google Grants Team

When we discussed [getting started with Google Grants](#) back in February, we got a lot of great response from grant recipients looking for details about managing their Google Grants accounts.

With this feedback, we compiled information, tips and tools into a master guide, [The Beginner's Guide](#), which you can use as a reference to make the most of your grant. Of course, if you've had a grant for a while and want a Google Grants handbook or an [AdWords](#) refresher, this guide can also help you.

The guide has four sections that focus on the nitty gritty details of each topic:



Building The Application

Building Blocks - Google Reader - www.google.com/reader

Tags and Sharing Feeds - Ads Verticals Feed

<http://www.google.com/reader/public/atom/user/X/label/Ads%20Verticals>

```
- <entry gr:crawl-timestamp-msec="1210288824791">
  <id gr:original-id="tag:blogger.com,1999:blog-4584377711308369562.post-5581781267319011282">t
  <category term="AdWords Basics" scheme="http://www.blogger.com/atom/ns#" />
  <title type="html">A beginner's guide</title>
  <published>2008-05-08T22:22:00Z</published>
  <updated>2008-05-08T22:24:39Z</updated>
  <link rel="alternate" href="http://feeds.feedburner.com/~r/GoogleGrantsBlog/~3/286392348/beginners-
+ <content xml:base="http://googlegrants.blogspot.com/" type="html"></content>
- <author>
  <name>Google Grants Team Member</name>
  </author>
- <source gr:stream-id="feed/http://googlegrants.blogspot.com/feeds/posts/default">
  - <id>
    tag:google.com,2005:reader/feed/http://googlegrants.blogspot.com/feeds/posts/default
  </id>
  <title type="html">Google Grants Blog</title>
  <link rel="alternate" href="http://googlegrants.blogspot.com/" type="text/html" />
  </source>
</entry>
```



Building The Application

Building Blocks - Custom Search - www.google.com/cse

- CSE
 - Custom Search Engine
 - Better alternative than site restriction for large # of sites
 - Enables search of all blogs
 - All Google Blogs > 100 blogs
 - Integrates directly with AJAX WebSearch



Building The Application

Building Blocks - Custom Search - www.google.com/cse



Custom Search Engine

Have a website or collection of sites you'd like to search over? With Custom Search Engine, you can harness the power of Google to create a search engine tailored to your needs.

Create a search engine tailored to your needs

- Include one website, multiple websites, or specific webpages
- Host the search box and results on your own website
- Customize the colors and branding to match your existing webpages
- Learn more with our [featured examples](#), [developer documentation](#), and [FAQs](#)

Create a Custom Search Engine

Or, [manage your existing search engines](#).

Select some sites

Specify a list of websites to search. You'll be able to edit this list and add more sites later. [+ Tips on formatting URLs.](#)

Sites to search:

List one URL per line

Building The Application

Building Blocks - The Google AJAX APIs

- Feed API
 - Utilize Google Reader's tag based feeds
 - Mixed Format (XML and JSON) for tag cloud
 - FeedControl for HTML generation
- Search API
 - Blog or Web Search
 - Customer Search Engine
 - Why not Blog Search?
- Language API
 - Detecting non-native languages
 - Allow translation



Building The Application

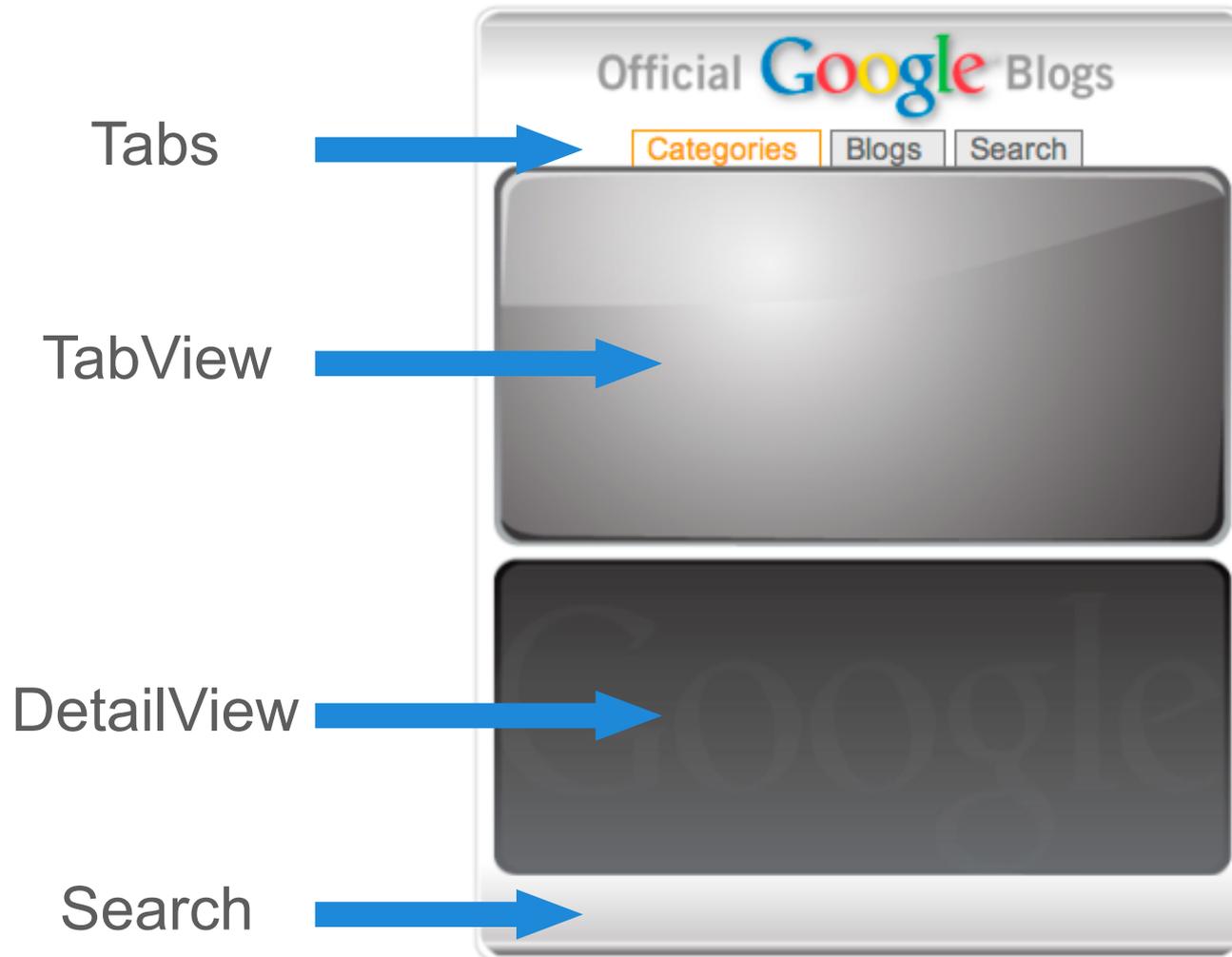
Getting Started - The HTML and CSS

```
<div id='container' class='container'>
  <div id='tabs' class='tabs'>
    <div id='categories' class='tabHeader tabActive'>
      Categories
    </div>
    <div id='blogs' class='tabHeader tabInactive'>
      Blogs
    </div>
    <div id='search' class='tabHeader tabInactive'>
      Search
    </div>
  </div>
  <div id='tabView' class='tabView'>
    <div id='tabContentFrame' class='tabContentFrame'></div>
  </div>
  <div id='feedView' class='feedView'>
    <div id='feedContentView' class='feedContentView'></div>
  </div>
  <div id='searchView' class='searchView'></div>
</div>
```



Building The Application

Getting Started - The HTML and CSS



Building The Application

Getting Started - The Google AJAX APIs

- Bootstrapping the APIs and the application

```
<script src="http://www.google.com/jsapi" type="text/javascript">
</script>

<script type="text/javascript">

  google.load('feeds', '1');
  google.load('search', '1');
  google.load('language', '1');
  google.setOnLoadCallback(ogbInit);

</script>
```



Building The Application

Getting Started - The Google AJAX APIs

- Initializing the application

```
function ogbInit() {  
  initData();  
  hookUI();  
  bootTagWeights();  
};
```

- Boot the top articles over all blogs using Google Reader Tag
 - Reader tag ‘officialgoogleblogs-all’
 - Utilize mixed format (XML and JSON) for source identifier
 - Generate tag weights based on time and number of entries



Building The Application

The Google AJAX Feed API

- The top entries for tag cloud generation

```
function bootTagWeights() {
  var url = urlFromLabel('officialgoogleblogs-all');
  var feed = createFeed(url, google.feeds.Feed.MIXED_FORMAT);
  feed.load(tagWeightsLoaded);
};

function createFeed(url, opt_format) {
  var format = (opt_format || google.feeds.Feed.JSON_FORMAT);
  var feed = new google.feeds.Feed(url);
  feed.setResultFormat(format);
  feed.setNumEntries(30);
  return feed;
};
```



Building The Application

The Google AJAX Feed API

- tagWeightsLoaded callback

```
function tagWeightsLoaded(result) {  
  
    ...  
    // Pull out source from top blog entries..  
    var ns = 'http://www.w3.org/2005/Atom';  
    var entries = result.feed.entries;  
    for (var i=0; i <entries.length; i++) {  
        var e = entries[i];  
        var sns=google.feeds.getElementsByTagNameNS (e.xmlNode, ns, 'source') ;  
        var ins= google.feeds.getElementsByTagNameNS (sns[0], ns, 'id') ;  
        var id = ins[0].firstChild.nodeValue;  
  
        ...  
    }  
    ...  
};
```

Building The Application

The Google AJAX Feed API

- tagWeightsLoaded callback - source

```
- <entry gr:crawl-timestamp-msec="1210288824791">
  <id gr:original-id="tag:blogger.com,1999:blog-4584377711308369562.post-5581781267319011282">t
  <category term="AdWords Basics" scheme="http://www.blogger.com/atom/ns#"/>
  <title type="html">A beginner's guide</title>
  <published>2008-05-08T22:22:00Z</published>
  <updated>2008-05-08T22:24:39Z</updated>
  <link rel="alternate" href="http://feeds.feedburner.com/~r/GoogleGrantsBlog/~3/286392348/beginners-
+ <content xml:base="http://googlegrants.blogspot.com/" type="html"></content>
- <author>
  <name>Google Grants Team Member</name>
  </author>
- <source gr:stream-id="feed/http://googlegrants.blogspot.com/feeds/posts/default">
  - <id>
    tag:google.com,2005:reader/feed/http://googlegrants.blogspot.com/feeds/posts/default
  </id>
  <title type="html">Google Grants Blog</title>
  <link rel="alternate" href="http://googlegrants.blogspot.com/" type="text/html"/>
  </source>
</entry>
```

Building The Application

The Tag Cloud and Tag selection

TagView



Building The Application

The Google AJAX Feed API

- Loading and Displaying the Blog Feeds

```
function ogbShowFeed(url) {
    showStatus('Loading...');
    var feed = createFeed(url);
    feed.load(function(result) {
        feedLoaded(result, url);
    });
};

function feedLoaded(result, url) {
    var entries = result.feed.entries;
    for (var i=0; i <entries.length; i++) {
        feedControl.createHtml(entries[i]);
        if (entries[i].html) {
            feedView.appendChild(entries[i].html);
        }
    }
};
```



Building The Application

The Google AJAX Feed API - FeedControl

- The FeedControl and HTML generation
- Change JSON entry into standardized HTML nodes
- HTML attached to the JSON entry
- Applicable CSS classes

```
function feedLoaded(result, url) {  
    var entries = result.feed.entries;  
    for (var i=0; i <entries.length; i++) {  
        feedControl.createHtml(entries[i]);  
        if (entries[i].html) {  
            feedView.appendChild(entries[i].html);  
        }  
    }  
};
```

Building The Application

The Google AJAX Feed API - FeedControl

HTML



Building The Application

The Google AJAX Feed API - FeedControl

- Override the default CSS class rules
- Base Structure

```
<!-- One .gf-result per entry -->

<div class="gf-result">
  <!-- Hyperlinked Entry Title -->
  <div class="gf-title">
    <a class="gf-title"></a>
  </div>
  <!-- Author (Only if entry.author is present -->
  <div class="gf-author"></div>
  <!-- Published Date (Only if entry.publishedDate is present -->
  <div class="gf-relativePublishedDate"></div>
  <!-- Snippet entry.contentSnippet -->
  <div class="gf-snippet"></div>
</div>
```

Building The Application

The Google AJAX Feed API - FeedControl

- Override the default CSS class rules

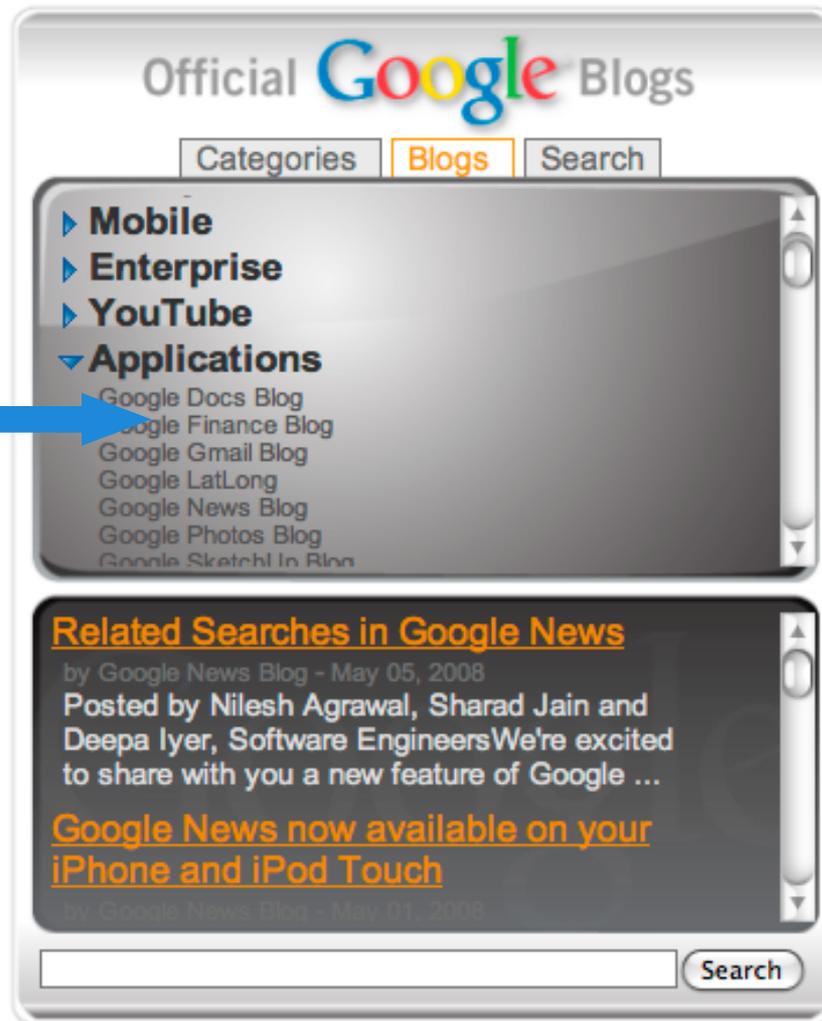
```
#feedContentView .gs-title {
  text-decoration : none;
}
#feedContentView .gf-result, #feedContentView .gs-result {
  padding-bottom : 8px;
  width : 90%;
  overflow : hidden;
}
#feedContentView .gf-title a, #feedContentView .gs-title a {
  font-size : 16px;
  color : #DD8800;
}
#feedContentView .gf-snippet, #feedContentView .gs-snippet {
  color : #DDDDDD;
  padding-left : 5px;
}
```



Building The Application

The Blogs View

Blogs



Building The Application

The Blogs View

- Custom JSON Objects
 - Maps all blogs to tags
 - Build view based on all tags and corresponding blogs
 - Tag selection and blog selection both generate detail view

```
var blogs = [  
  {  
    'id': 'feed/http://feeds.feedburner.com/GoogleAdSenseChinaBlog',  
    'title': 'AdSense-\u4e2d\u6587',  
    'alternate': {  
      'href': 'http://adsense.googlechinablog.com/',  
      'type': 'text/html'  
    },  
    tags : ['publishers']  
  },  
  ....  
];
```

Building The Application

The Google AJAX Search API



Building The Application

The Google AJAX Search API

- Search Control
 - Place into DIV
- Searcher
 - CSE
 - searchComplete callback

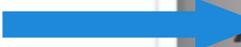
```
// Generate Search Form and Searcher
searchForm = new google.search.SearchForm(false, searchView);
searchForm.setOnSubmitCallback(null, searchSubmit);

searcher = new google.search.WebSearch();
searcher.setResultSetSize(google.search.Search.LARGE_RESULTSET);
searcher.setSiteRestriction('000333901043914979043:yiaplyr6ps0');
searcher.setSearchCompleteCallback(null, searchComplete);
```

Building The Application

The Search Results View

Search Results



Official **Google** Blogs

Categories Blogs **Search**

- ▼ **APIs (3)**
 - AJAX Search API Blog (3)
- ▼ **Search (3)**
 - AJAX Search API Blog (3)
- ▼ **Applications (1)**
 - Google Photos Blog (1)

Google AJAX Search API Blog
... visit the Slide Show Programming Guide. And as always, let us know what you think in the developer forum. Posted by **Derek Collison**, Software Engineer ...
googleajaxsearchapi.blogspot.com

Google Photos Blog: Tune into Picasa Web Albums on Tivo®

Derek Collison Search



Building The Application

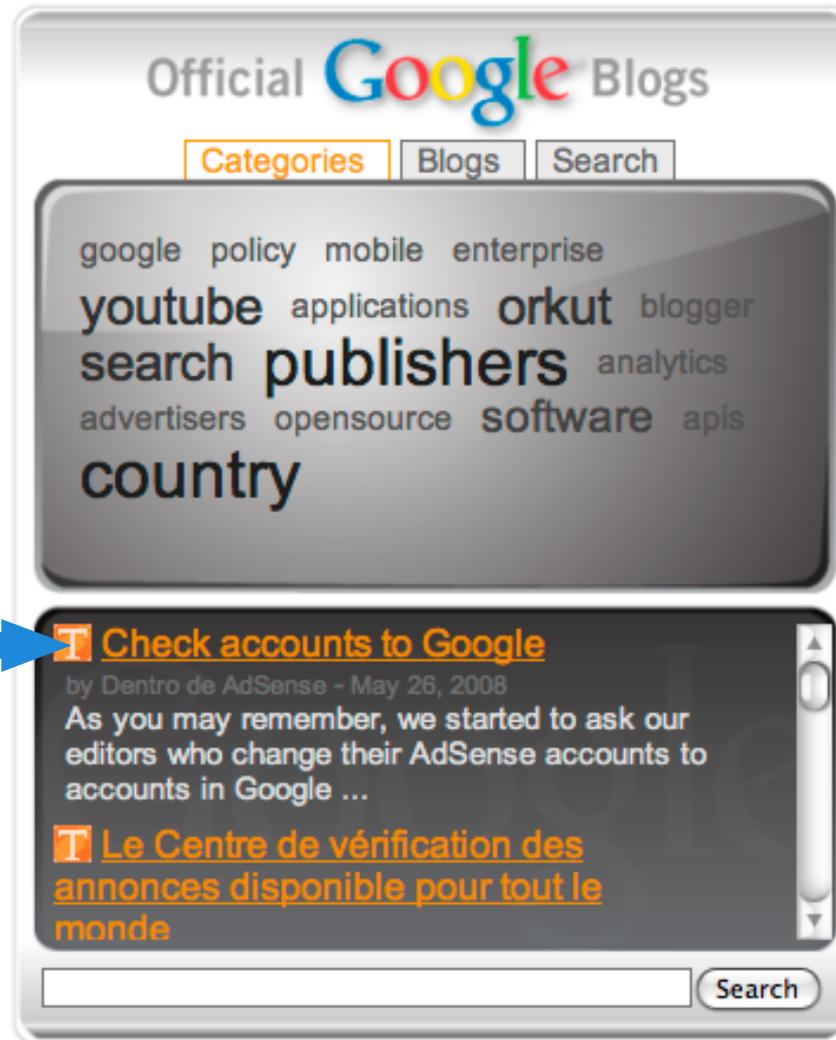
The Google AJAX Language API - Translation

Original →

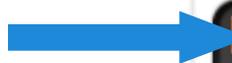


Building The Application

The Google AJAX Language API - Translation



Translated



Building The Application

The Google AJAX Language API - Translation

- Detecting Language
 - Load feed and then detect language of each entry
 - If not equal to CurrentLocale, add Translate icon

```
{  
  feedControl.createHtml(entries[i]);  
  feedView.appendChild(entries[i].html)  
  var cb = detectCallbackFunction(url, i);  
  // Check for translation by detecting snippet  
  google.language.detect(entries[i].contentSnippet, cb);  
}
```

```
function detectCallback(result, url, i) {  
  var entry = feedView.entries[i];  
  if (result.language != google.language.CurrentLocale) {  
    log('Entry can be translated');  
    addTranslateIcon(entry);  
  }  
};
```

Building The Application

The Google AJAX Language API - Translation

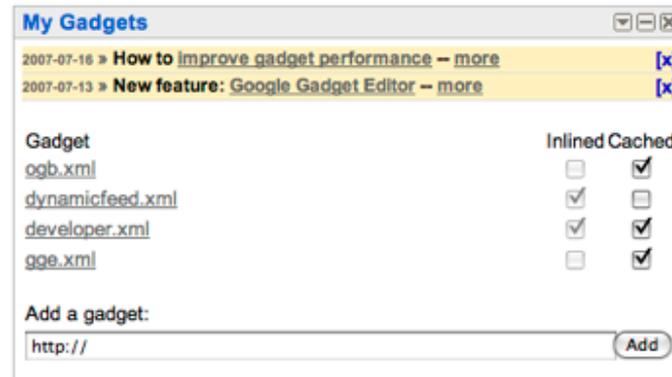
- Translating an entry
 - Translate icon triggers translation of title and snippet
 - Callback will replace contents appropriately
 - Icon will toggle back and forth

```
function processTranslation(index, elementId, result) {  
  // Grab the correct item and replace..  
  var entry = feedView.childNodes[index];  
  var node;  
  if (elementId == 'title') {  
    node = entry.title();  
  } else {  
    node = entry.snippet();  
  }  
  node.innerHTML = result.translation;  
};
```



Building The iGoogle Gadget

iGoogle Gadget



Building The iGoogle Gadget

The template

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs
    title="All Google Blogs"
    directory_title="All Google Blogs"
    title_url="http://googleblog.blogspot.com"
    author="Derek C."
    author_affiliation="Google"
    author_location="Bay Area, CA"
    author_email="googlemodules+ogb@google.com"
    scrolling="false"
    category="tools"
    height="450" >
  </ModulePrefs>
  <Content type="html"> <![CDATA[
    <<HTML version inserted here>>
  ]]>
</Content>
</Module>
```



Building The iGoogle Gadget

Assets and absolute paths

- All iGoogle gadgets run through intermediary hosts
 - gmodules.com
 - Assets, like backgrounds and images and JS files, need to be accessible.

```
.container {  
  width:360px;  
  height:450px;  
  margin-top : 5px;  
  margin-left : auto;  
  margin-right : auto;  
  position:relative;  
  
  background:transparent url(background.png); ==>  
  
  background:transparent url (http://foo.com/googleio/background.png) ;  
}
```



Reference

- General Documentation
 - <http://code.google.com/apis/ajaxsearch>
 - <http://code.google.com/apis/ajaxfeeds>
 - <http://code.google.com/apis/ajaxlanguage>
- FeedControl
 - <http://code.google.com/apis/ajaxfeeds/documentation/reference.html#FeedControl>
- Development Tools
 - Firebug
 - <http://getfirebug.com>
 - Firebug Tutorial
 - <http://code.google.com/support/bin/answer.py?answer=94630&topic=11530>



GOOGLE

