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Google™

Google™



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# Building a Gadget

## South Africa Gadget Competition

David Harper  
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### Special Thanks:

Yotam Aviv  
Ran Tavory  
Oren Naim  
Sascha Häberling



- Intro to iGoogle and Gadgets
- Developing a Gadget – The Gadget API (Legacy/Old)
- More on Gadget Development
- IGoogle V2 – OpenSocial & Canvas View
- Development Tools

- **iGoogle** is Google's personalized homepage
  - Users customize the page to fit their needs and interests
  - Can choose from more than 30,000 different gadgets to display
  - Millions of users every day
- **Gadgets** are like small web pages
  - Consisted of HTML, JavaScript, CSS, Flash, etc.
  - Anything possible in a web page is possible in a gadget
  - Write once, run anywhere
- **Try to use iGoogle and consider:**
  - Which gadgets grab your attention?
  - Which gadgets are nice to keep around?
  - Do any truly inspire you?

# Gadgets on iGoogle

# iGoogle

Google Search | I'm Feeling Lucky

Search:  the web  pages from South Africa

[Advanced Search](#)  
[Search Preferences](#)  
[Language Tools](#)

Home ▾ Add a tab

Get artist themes | Select theme | Add stuff »

## Calendar

[Advance Your Career](#) (US applicants only)

Jul 2008							Aug 2008							Sep 2008						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5			1	2			1	2	3	4	5	6		
6	7	8	9	10	11	12	3	4	5	6	7	8	9	7	8	9	10	11	12	13
13	14	15	16	17	18	19	10	11	12	13	14	15	16	14	15	16	17	18	19	20
20	21	22	23	24	25	26	17	18	19	20	21	22	23	21	22	23	24	25	26	27
27	28	29	30	31			24	25	26	27	28	29	30	28	29	30				

### Inbox (1)

One of Your Friends Has Sent You an IQ Quiz to Take!

Ads by Google

## HIV and TB

HIV | TB

### HIV 101

HIV Was Invented to Get Rid of Black People and Homosexuals - Is a MYTH!

101 testing & treatment tips for living

## National Geographic POD



[POD Archive](#) - Durian Fruit, Borneo, Indonesia, 1997

### Inbox (1)

One of Your Friends Has Challenged You to an IQ Test!

Ads by Google

## Wikipedia

Wen

## South African Slang

### Piss-cat

Take a guess

- A cat that is the runt of the litter.
- A habitual drinker.
- A vehicle that requires large amounts of fuel.

## South African Proverbs

Proverb

Submit a Proverb

### South African Proverb:

Monamolomo o na le malome-agwe / Senamolomo se na le malome a sona.

### English Translation:

He who has a mouth has an uncle.

### English Meaning:

## Google Translate

Enter text to translate here

English  French



# Examples of Google Gadgets



**Calvin and Hobbes (Unofficial)**

- Calvin and Hobbes for May 24, 2007
- Calvin and Hobbes for May 23, 2007
- Calvin and Hobbes for May 22, 2007

**PacMan v2.4**

www.neave.com/games

**Popout and play in window**

**Unicycle Rider**

Unicycle Challenge:

Try to balance your unicycle while avoiding the juggling balls that those pesky jugglers keep dropping...

**Instructions**

Brought to you by [www.gettalk.com](#)

**Daily Horoscope for Gemini**

A subtle shift of energy at work is already underway, but you may not feel the full ramifications of your current actions for a while. It may appear as if everything is moving right along, but now undercurrents can be set into motion by suppressed feelings. If you have something to say, you better get it out into the open before the ripples of frustration build into larger waves.

Thursday, May 24, 2007  
[more from tarot.com >](#)

**Stock Market**

GOOG	473.97	-1.89 (-0.40%)
MSFT	30.58	-0.11 (-0.36%)

Delayed at least 15 minutes unless otherwise indicated.  
 Disclaimer

**Sudoku**

www.countonline.com game 54459

2	1				8			
4	3	8		6	7	9		1
			8	9			6	
6	7	9	4	5	1	2		
2			9					
5	4	1		8	3	7		6
7	6	5	3			8	4	
3		2	6				5	7
1	4		2	6	3			

your content below for \$1

**A New Way To Trade Forex**  
 Say Yes or No. Earn \$100; if you are right. 30 days - No  
[www.hedgestreet.com](#)  
 Count To Nine

**Interesting Items For You**

Searches Pages Gadgets Videos News

New! Add the Recommendations Tab

Recent top queries related to your searches:

- google trends
- vizio vx32i
- safari 2.0
- gmail notifier firefox
- nokia 8600
- popfly
- feedburner
- starcraft os x
- just in time debugger
- railsconf 2007

**Google Finance**

Market summary - hide

Dow	13,525.65	-14.30 (-0.11%)
Nasdaq	2,577.05	-10.97 (-0.42%)
S&P 500	1,522.28	-1.84 (-0.12%)

My Portfolio - hide

GOOG	473.97	-1.89 (-0.40%)	Mkt Cap	147.66B
------	--------	----------------	---------	---------

Enter symbol  Add

Quotes delayed up to 20 minutes. Disclaimer

**To-Do List**

New Item:  Add

**Date & Time**

Thu MAY 24

S	M	T	W	T	F	S
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

**Daylight Map**

Map Sat

POWERED BY Google

DaylightMap - Terms of Use

**Weather**

San Mateo, CA

54°F Clear

Today Fri Sat

Wind: W at 8 mph  
 Humidity: 75%

74° | 52° | 70° | 51° | 69° | 50°

**Wikipedia**

Wen  Go Search

**Google Map Search**

San Francisco District Chatown  
 Richmond District  
 San Francisco  
 101  
 2007-04-24 Google - Map data ©2007 NAVTEQ - Terms of Use

**My Gadgets**

2007-04-24 > New features and updates: Flash, Set Title, Image Caching

Gadget Inlined Cached

**Funny Eyes**

**The Advocates Legal Jobs**  
 New Jobs Daily. Attorneys, legal secretaries, paralegals, and more.  
 Ads by Google

**Quotes of the Day**

The Constitution gives every American the inalienable right to make a damn fool of himself.  
 - John Clardi

There is no human problem which could not be solved if people would simply do as I advise.  
 - Gore Vidal

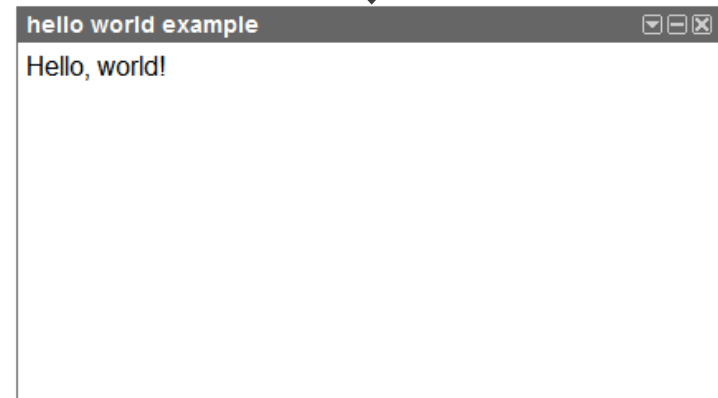
Devotees of grammatical studies have not been distinguished for any very remarkable felicities of expression.  
 - Amos Bronson Alcott



# So, what exactly are Gadgets?

- **HTML** inside an **XML** wrapper
- **Mini web pages**: HTML, JavaScript, CSS, Flash, Silverlight, ...
- **Anything** you can do on a web page, you can do inside a gadget
- **Google Gadgets API** – Gives you an interface to easily accomplish many common task (saving state, UI, remote content, etc.)
- Gadgets are **easy** to develop!
  - Google Gadget Editor
- Write once, runs **everywhere**
- **Free** hosting and bandwidth
- **Hundreds of thousands** of page views each week

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs
    title="hello world example" />
  <Content type="html">
    <![CDATA[
      <b>Hello world!</b>
    ]]>
  </Content>
</Module>
```



# Where do Google Gadgets live?



- iGoogle homepage
- Third-party websites (Syndication not Google.)
- Google Desktop (Windows, Mac OS X)
- Mac OS X Dashboard
- Windows Vista Sidebar
- IBM WebSphere Portal

# iGoogle homepage...



Web [Images](#) [Video](#) [News](#) [Maps](#) [Gmail](#) [more ▾](#)

[dannlee@gmail.com](#) | [Classic Home](#) | [Web History](#) | [My Account](#) | [Sign out](#)

# iGoogle

Google Search I'm Feeling Lucky

Advanced Search  
Preferences  
Language Tools

Home Dev Fun Daily News Videos

Select theme Add stuff >

### Google Videos

Search powered by Google

tag this search

whatshot surfing comedy mtv christina jessica vwgti musicvideos  
whatsnew fl mytruck googlepicks nascar ads  
[edit tags](#) [upload your own video](#)

### Date & Time

S M T W T F S .  
6 7 8 9 10 11 12  
13 14 15 16 17 18 19  
20 21 22 23 24 25 26  
27 28 29 30 31

### Water Tracker

You drank 4 / 8 cups today.  
[Show Info](#) | [Show Stats](#) | [Reset Stats](#)

### To-Do List

New Item:  Add

- high pay cable bill
- high email Amy about dinner
- med clean the apartment
- low take out the trash

### Wikipedia

Wen  Go Search

### Daily Horoscope for Capricorn

You might feel like someone is placing subtle pressure on you to change your perspective, yet you are resisting their efforts. It's difficult to know whether this is really happening or if it's all within the realm of your fearful imagination. Direct confrontation probably won't help; it will just drive denial deeper. Remain flexible, knowing that the obstacles will eventually yield.

Tuesday, May 22, 2007  
[more from tarot.com >](#)

### TV Watch

Tonight Recaps News

The "Heroes" season finale: Dropping the bomb  
Peter and Sular square off in the long-awaited climax

The "24" season finale: Jack deals with Dad  
Our hero tries to prevent his nephew's abduction and destroy the component

"Dancing With the Stars": One last free-for-all  
A combination of judges' choice and freestyle spins out of control

[EW.com More TV recaps >](#)

### Gmail

Inbox (5) Hide preview Compose Mail

Sharyn - Hello - Hello, I was wondering if you had received an email 11:05am  
Remember The - Welcome to Remember The Milk! - Hello dann, The 10:25am  
me - Jinah - Eun (7) - First oral surgery - Gross man! You should pu 8:32am  
Washington - A New Statement is Ready - To ensure that messages 12:27am  
Amy - FW: Offer letter - Open the attachment! Amy Kuo, RN CDI Coor May 21

### Google Map Search

Example Searches: Hotels in New York City Search

### Weather

Mountain View, CA

81°F Clear  
Wind: N at 13 mph  
Humidity: 20%

Today	Wed	Thu	Fri
84°   48°	87°   51°	81°   51°	79°   51°

Bethpage, NY

63°F Clear  
Wind: S at 10 mph  
Humidity: 67%

Today	Wed	Thu	Fri
66°   52°	65°   54°	78°   58°	80°   59°

### Movies

Showtimes for 94040 >

Shrek the Third 1hr 33min - Rated PG  
★★★★ 13 reviews

Spider-Man 3 2hr 20min - Rated PG-13  
★★★★ 38 reviews

Georgia Rule 1hr 53min - Rated R  
★★★★ 11 reviews

Done



# Third-party websites...



GOOGLE GADGET TRYOUT

Google Gadgets

TUESDAY, JANUARY 09, 2007

**I had to do something**

So I increased the size of the sidebar to accommodate the Google gadgets.

POSTED BY DEREK ANDERSON AT 6:02 AM 0 COMMENTS LINKS TO THIS POST

WEDNESDAY, OCTOBER 04, 2006

**I have just done something...**

I am not employed with, nor am I affiliated in any way with Google (I don't get any of their cash) But, yet I have managed to do something that none of their thousands of (paid more than me) employees managed to do.

**Actually try this out on their software and view the results.**

**Hmmm.....consulting fees???**

POSTED BY DEREK ANDERSON AT 5:16 AM 0 COMMENTS LINKS TO THIS POST

Screen shot of the joke gadget settings.

```
<script
src="http://gmodules.com/ig/ifr?url=http://
```

<http://gadgetryout.blogspot.com>

www.puertovallarta.net - home

One Click Away - The top Puerto Vallarta Web Site

May 22, 2007 04:29 PM (CST)

**Puerto Vallarta .net**  
One Click Away

From USA & Canada call: 1 888 247 8081  
From Mexico call: 01 800 908 1230  
International: + 52 (322) 223 4267

Accommodations | What to do | Fast Facts | Map | Images | Events | News | Groups | Links | Interactive PV

Your Options

- Interactive PV
- Announcement list
- Puerto Vallarta Forum
- Vallarta Web Cam
- E-postcards
- Vallarta Personals
- P.V. Guestbook

HOME

- Accommodations
- Tours & Activities
- Vacation Rentals
- Car Rentals
- Real Estate
- PV Web Cam
- Puerto Vallarta Forum
- Timeshares in PV
- Groups & Meetings
- Weddings
- Restaurants
- Local Services
- Vallarta City Info
- Announcement list
- Vallarta eCards
- Weather
- Exchange Rate

**Puerto Vallarta Web Cam**  
Puerto Vallarta WebCam

**Hotel Reservations**

Location: All Locations

Class/Rating: All

Property Name:

Arrival Date: 23 May 2007

Nights: 2 Rooms: 1

Adults: 2 Children: 0

Search Now

Amend/Cancel Reservation

NEW YORK - TEL AVIV  
from \$ **1164** per  
taxes and surcharges included

**GO TO ALITALIA.COM**

**Going to Puerto Vallarta?**  
Get Tips, Itineraries, Things to Do & Travel Deals for Puerto Vallarta  
[www.ExpediaGuides.com](http://www.ExpediaGuides.com)

**Puerto Vallarta Specials**  
\$67 All-Inclusive Puerto Vallarta Beachfront Resort  
Save 20% Off  
[www.PuertoVallarta.BookIt.com](http://www.PuertoVallarta.BookIt.com)

<http://www.puertovallarta.net>

# Google Desktop...



My Computer, Google Talk, Internet Explorer, Mozilla Firefox 2.0.0.1, My Network Places, SlickEdit, Internet Explorer 3.0, Recycle Bin, Calculator, Internet Explorer 4.01, My Documents, refman-5.1-..., Internet Explorer 5.01, Home, GIMP 2, Internet Explorer 5.5, Microsoft Office Outl..., putty.exe, Internet Explorer 6.0, Cricket, Cygwin, Aptana, Oracle Calendar, php\_manual..., RegEx Eval, WordPad, Mozilla Firefox 1.5.0.9, Notepad, Script Documenta..., Mozilla Firefox 1.0.7, The Proximotron, whositswhe..., Opera, vnc-4\_1\_2-...

**John's Pizzeria**  
278 Bleecker St  
New York, NY  
(212) 243-1680  
Get directions: [To here](#) - [From here](#)

A subtle shift of energy at work is already underway, but you may not feel the full ramifications of your current actions for a while. It may appear as if everything is moving right along, but now undercurrents can be set into motion by suppressed feelings. If you have something to say, you better get it out into the open before the ripples of frustration build into larger waves.

Thursday, May 24, 2007  
[more from tarot.com >](#)

Thu  
MAY  
24

S	M	T	W	T	F	S
		1	2	3	4	6
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

start | The GIMP | Desktop >> gadgets | 12:39 AM

# Instant Dashboard Capabilities

- Going from this:

Google Trends LABS    
Tip: You can compare searches by separating with commas.

### Trend history

● penguin ● platypus

Search volume

News reference volume

All regions  All years

Regions	Cities	Languages
1. <a href="#">Australia</a>	1. <a href="#">Sydney</a> , Australia	1. <a href="#">English</a>
2. <a href="#">New Zealand</a>	2. <a href="#">Melbourne</a> , Australia	2. <a href="#">Spanish</a>
3. <a href="#">United Kingdom</a>	3. <a href="#">Brisbane</a> , Australia	3. <a href="#">French</a>
4. <a href="#">Canada</a>	4. <a href="#">Manchester</a> , United Kingdom	4. <a href="#">German</a>
5. <a href="#">United States</a>	5. <a href="#">Brentford</a> , United Kingdom	
6. <a href="#">France</a>	6. <a href="#">London</a> , United Kingdom	
7. <a href="#">Germany</a>	7. <a href="#">Birmingham</a> , United Kingdom	
	8. <a href="#">New York</a> , NY, USA	
	9. <a href="#">Los Angeles</a> , CA, USA	
	10. <a href="#">Chicago</a> , IL, USA	

Rank by  [Learn more](#)

**A** [Gay Penguin Book Shakes Up Ill. School](#)  
Bismarck Tribune - Nov 17 2006

**B** [Is The Penguin Listening?](#)  
CRN - Feb 26 2007

**C** [Penguin heritage listing rejected](#)  
ABC Regional Online - Mar 26 2007

**D** ["Surf's Up" directors catch the movie-penguin wave](#)  
Entertainment Weekly - Jun 8 2007

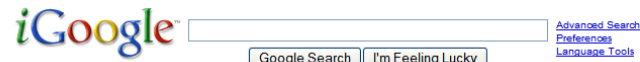
**E** [Buff. 5-Foot Prehistoric Penguin Found](#)  
Discovery Channel - Jun 25 2007

**F** [US considers penguin protection](#)  
Monsters and Critics.com - Jul 12 2007

[More news results »](#)

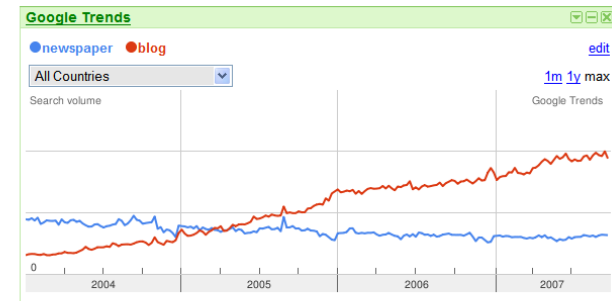
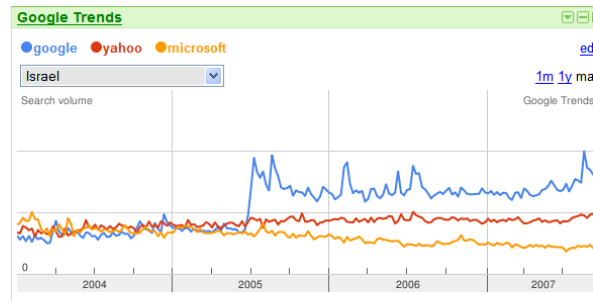
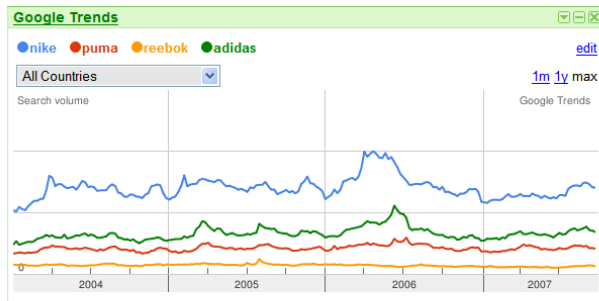
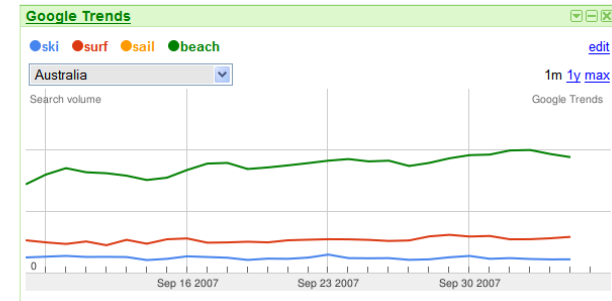
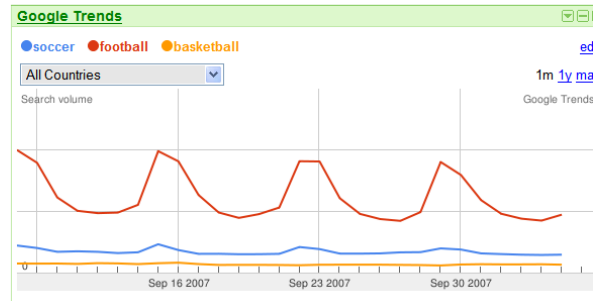
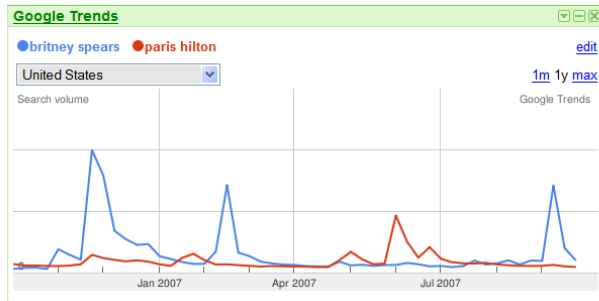
# Instant Dashboard Capabilities

- to this:



Home work Add a tab

Select theme | Add stuff



**Google Trends** [edit] [1m 1y max]

Google Trends

Enter up to five topics separated by commas and see how often they've been searched on Google over time

# Full Application (Gadget Interaction)



iGoogle  [Advanced Search](#) [Preferences](#) [Language Tools](#)

You have been signed out. [Sign in](#) to see your stuff.

(Don't have an iGoogle page? [Get started.](#))

**Google Finance Portfolios**

[Market summary](#) · [hide](#)

<a href="#">Dow</a>	13,870.26	+63.56	(0.46%)
<a href="#">Nasdaq</a>	2,817.44	+13.25	(0.47%)
<a href="#">S&amp;P 500</a>	1,540.98	+5.70	(0.37%)

You can use Google Finance to maintain your portfolios. [Sign in.](#)

**Top Movers**

Price Mkt Cap Vol \$Vol Popularity

**Gainers**

<a href="#">CTC Media, Inc.</a>	25.72	+4.14	(19.18%)
<a href="#">Winn-Dixie Stores, I...</a>	22.17	+3.55	(19.07%)
<a href="#">Suntech Power Holdin...</a>	62.18	+7.02	(12.73%)
<a href="#">American Axle &amp; Manu...</a>	26.58	+2.85	(12.01%)
<a href="#">Nissan Motor Co., Lt...</a>	22.57	+2.30	(11.35%)

**Losers**

<a href="#">Schnitzer Steel Indu...</a>	65.76	-12.01	(-15.44%)
<a href="#">Office Depot, Inc.</a>	17.43	-2.86	(-14.10%)
<a href="#">Key Energy Services...</a>	13.51	-1.39	(-9.33%)
<a href="#">WellCare Health Plan...</a>	28.62	-2.74	(-8.74%)
<a href="#">Fomento Economico Me...</a>	34.90	-3.15	(-8.28%)

**Company Overview**

Symbol:   Sync

[Overview](#) ([Full View](#))

Google Inc. maintains an index of Websites and other content, and makes this information freely available to anyone with an Internet connection. Its automated search technology enables people to obtain nearly instant access to relevant information from its online index. Google generates revenue by delivering online advertising. Businesses use its AdWords program to promote their products and services with targeted advertising. In addition, the third-party Websites that comprise the Google Network use the Company's AdSense program to deliver relevant advertisements that generate revenue. In August 2006, it acquired Neven Vision, an online photo-search company. On October 10, 2006, it acquired the online video company, YouTube. In October 2006, it also acquired JotSpot. JotSpot applications are delivered as Web-based services. In March 2007, the Company acquired Adscape Media Inc., a company that makes technology to deliver advertising over the Internet for placement within videogames.

[Site Links](#)

**Google Finance: GOOG**

Symbol:   Sync

**679.23**

+4.63 (0.69%)

Delayed: Oct 29, 4:00PM ET

Open: 677.46  
High: 680.00  
Low: 672.09  
Vol: 3.07M  
MktCap: 212.01B

**Related Companies**

Symbol:   Sync

[Companies related to GOOG](#)

<a href="#">Yahoo! Inc.</a>	31.79	-1.84	(-5.47%)
<a href="#">Microsoft Corporatio...</a>	34.57	-0.46	(-1.31%)
<a href="#">Baidu.com, Inc. (ADR...</a>	365.50	+12.11	(3.43%)
<a href="#">Time Warner Inc.</a>	18.10	-0.25	(-1.36%)
<a href="#">LookSmart, Ltd.</a>	2.71	+0.08	(3.04%)
<a href="#">Verizon Communicatio...</a>	45.99	+0.39	(0.86%)
<a href="#">eBay Inc.</a>	36.65	+0.01	(0.03%)
<a href="#">Answers Corporation</a>	8.02	+0.30	(3.89%)
<a href="#">priceline.com Incorp...</a>	91.18	+4.94	(5.73%)
<a href="#">CNET Networks, Inc.</a>	7.99	-0.20	(-2.44%)

**Company Sector/Industry**

Symbol:   Sync

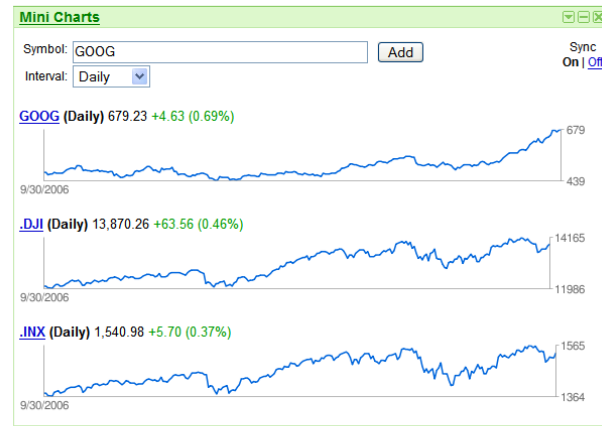
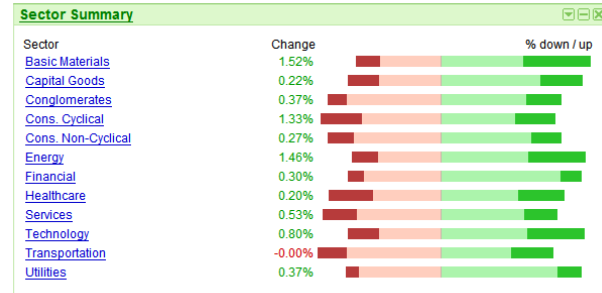
Sector: [Services](#) > Industry: [Communications Services](#)

**Gainers**

<a href="#">Winn-Dixie Stores, I...</a>	22.73	4.11	(22.07%)
<a href="#">CTC Media, Inc.</a>	25.42	3.84	(17.79%)
<a href="#">Limelight Networks...</a>	13.55	1.33	(10.88%)
<a href="#">Dover Downs Gaming &amp;...</a>	12.02	1.04	(9.47%)
<a href="#">Learning Tree Intern...</a>	22.60	1.91	(9.23%)

**Losers**

<a href="#">Progressive Gaming L...</a>	3.98	-0.85	(-17.60%)
<a href="#">Morton's Restaurant</a>	14.38	-2.83	(-16.44%)



- <http://googlefinanceblog.blogspot.com/2007/10/api-gadgets-and-tabs-oh-my.html>



# Why Use Gadget Technology?



- Standard Web technologies
- Scalable
- Cross platform
- Flexible (Syndication)

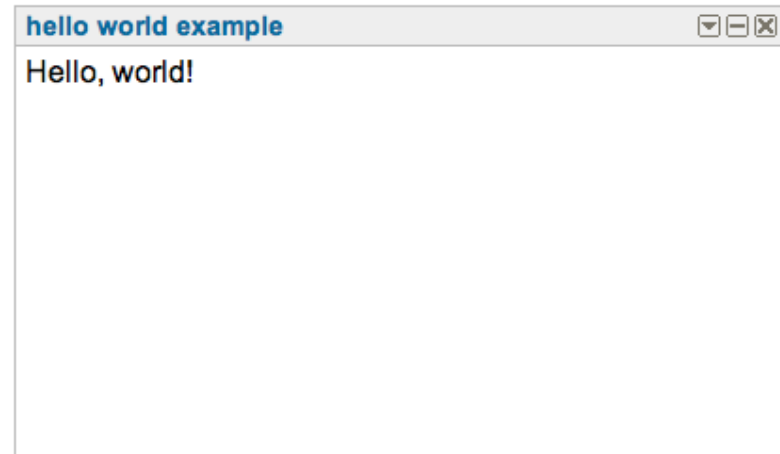
## Extra services...

- Caching
- User Prefs (State)
- Internationalization
- Gadget Ads
- Tabs, Drag n' Drop, Analytics, Flash, etc...

# Step 1: Hello World Example



```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs title="hello world example" />
  <Content type="html">
    <![CDATA[
      Hello, world!
    ]]>
  </Content>
</Module>
```



**Demo:** Google Gadget Editor & Developer Gadget

<http://code.google.com/apis/gadgets/docs/gs.html#GGE>

# Anatomy of a Gadget

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
<Module>
```

```
<ModulePrefs title="My First Gadget"
  description="This gadget prints hello world."
  height="50"
  author="Daniel L."
  author_email="my.email@gmail.com"
  author_location="Madrid, Spain"
  category="tools" />
```

## Gadget directory meta-data

### My First Gadget

Category: [Tools](#)

This gadget prints hello world.

Daniel L. - Madrid, Spain



[Add it now](#)

[Send to a friend](#)

[Contact the developer - View source »](#)

```
<UserPref name="Color" datatype="string" default_value="red" />
<UserPref name="Toggle" datatype="bool" default_value="true" />
<UserPref name="Locations" datatype="list" />
```

## User-configurable preferences

**My First Gadget** [Close] [Refresh] [Help]

Color

Toggle

Locations  [Add](#)

- Bethpage, NY
- Madrid, Spain
- Sydney, Australia

[Save](#) [Cancel](#)

```
<Content type="html"><![CDATA[
  <b style="color: red">hello world!</b>
]]></Content>
```

hello world!

## Gadget content

```
</Module>
```

# Look at existing gadgets



- You can take a look at the source code of existing gadgets

## For webmasters

[Place an "Add to Google" button »](#)

[Embed this gadget »](#)

[View source »](#)

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs title="hello world example" />
  <Content type="url" href="http://mypage.com/mygadget.html" />
</Module>
```

- Limitation: `_IG_Fetch_...` functions won't work.

# Step 2: Your details

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
<Module>
```

```
  <ModulePrefs
```

```
    title="Fibonacci take 1"
```

```
    author="Yotam Aviv"
```

```
    author_email="...@google.com"/>
```

```
  <Content type="html">
```

```
    <![CDATA[
```

```
      Hello, world!
```

```
    ]]>
```

```
  </Content>
```

```
</Module>
```



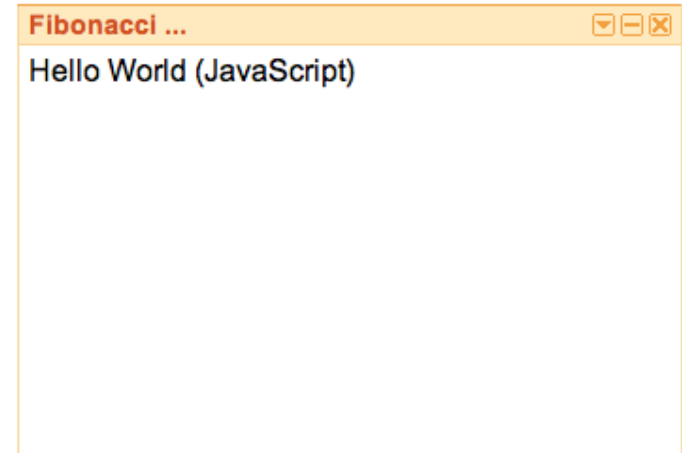
- <http://code.google.com/support/bin/answer.py?answer=55128&topic=12391&ctx=sibling>
- <http://www.google.com/ig/submit>

# Step 3: Try out some Javascript



```
<?xml version="1.0" encoding="UTF-8"?>
<Module>
<ModulePrefs
  title="Fibonacci ..."
  author="Yotam Aviv"
  author_email="aviv@google.com"
/>
<Content type="html"><![CDATA[
<script>
  function myFunction() {
    return "Hello World (JavaScript)";
  }

  document.write(myFunction());
</script>
]]></Content>
</Module>
```



# Step 4: Implement Fibonacci



```
...  
<script>  
  function fibs(n) {  
    var out = [];  
    for(var i = 1; i <= n; i++) {  
      out[i - 1] = fib(i);  
    }  
    return out;  
  }  
  
  function fib(i) {  
    if (i <= 2) {  
      return i;  
    } else {  
      return fib(i - 1) + fib(i - 2);  
    }  
  }  
  
  document.write(fibs(9));  
</script>  
...
```

Fibonacci take 1  
1,2,3,5,8,13,21,34,55



# Step 5: Simple Formatting

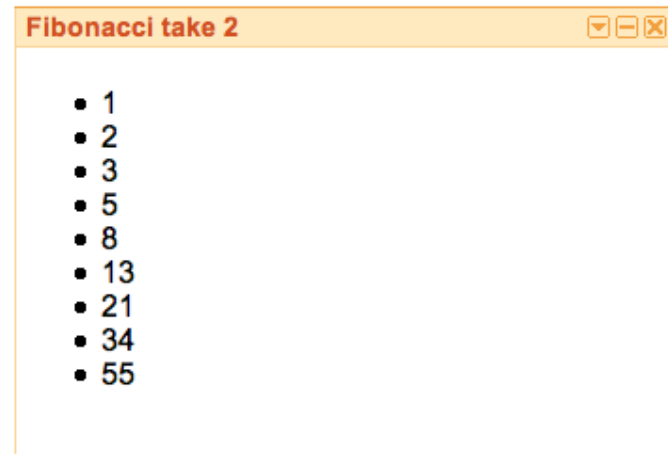
```
<script>
```

```
...
```

```
function formatFibs(results) {  
    var html = [];  
    html.push('<ul>');  
    for (var i = 0; i < results.length; i++) {  
        html.push('<li>' + results[i] + '</li>');  
    }  
    html.push('</ul>');  
    return html.join('');  
}  
document.write(formatFibs(fibs(9)));
```

```
</script>
```

```
...
```

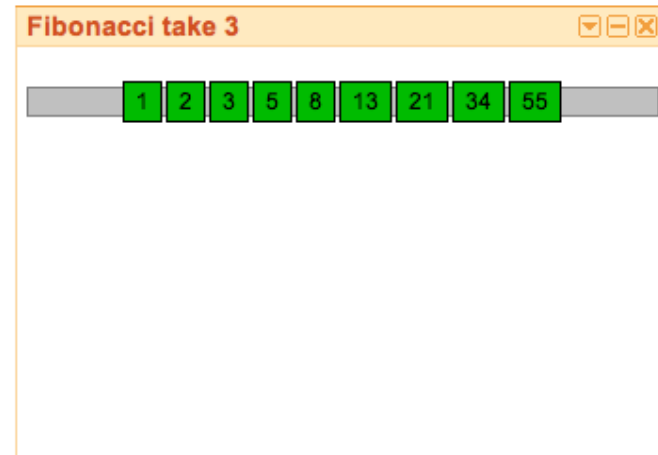


(use `scrolling="true"` if content is too large to fit)

# Step 6: Advanced Formatting - CSS



```
...
<style type="text/css">
ul {
  background-color: silver;
  border: 1px solid gray;
  margin-left: 0pt;
  padding-left: 0pt;
  text-align: center;
}
li {
  background-color: #00BB00;
  border: 1px solid black;
  display: inline;
  list-style-type: none;
  padding: 0.25em 0.5em;
  font-size: 12px;
  margin: 1px;
}
</style>
...
```

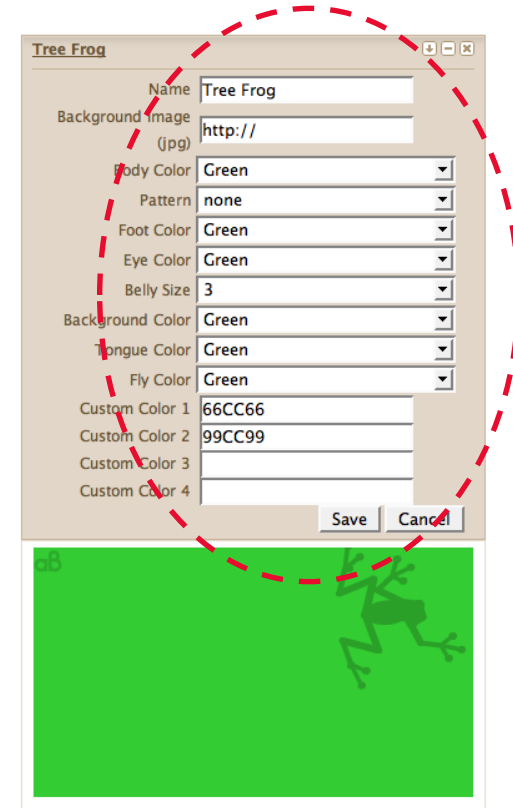
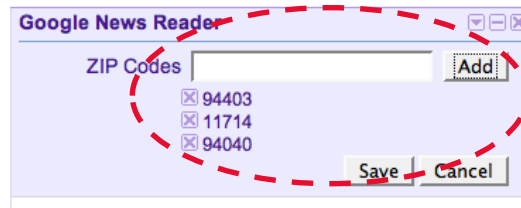


- <http://www.w3schools.com/css/default.asp>
- <http://www.csszengarden.com/>

# Storing State : Gadget UserPrefs



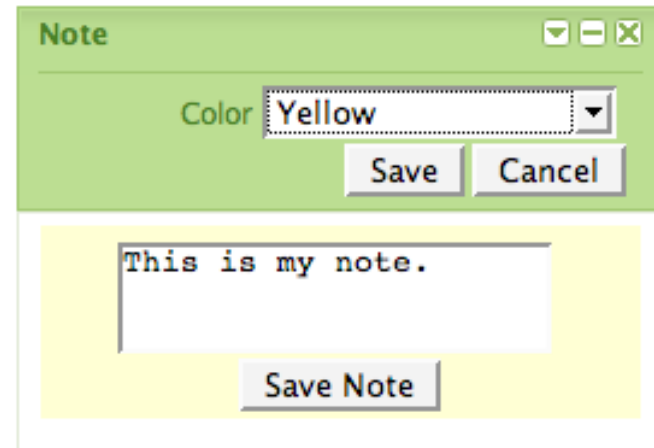
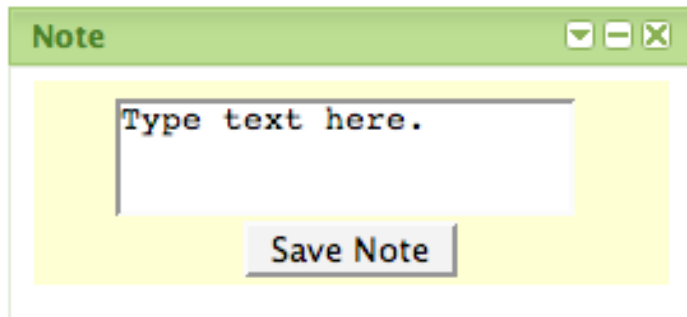
- Allows users to configure your gadget
- Multiple types:
  - Checkboxes
  - Dropdowns
  - Text input
  - Lists
- Use “hidden” UserPrefs to store data inside your gadget



```
<UserPref name="saved" datatype="hidden" default_value="0" />
```

# Storing State...

- Example: **Simple Notes Gadget**
- User creates notes and saves them in iGoogle
- Remember user's notes whenever coming back to the page.
- Let the user set a different background color for the gadget



# Using special Gadget features



- Add `<Require feature="..."/>` tags to use our libraries
- <http://code.google.com/apis/gadgets/docs/reference.html>

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs ...>
    <Require feature="tabs"/>
    <Require feature="flash"/>
    <Require feature="dynamic-height"/>
    <Require feature="minimessage"/>
    <Require feature="analytics"/>
    <Require feature="setprefs"/>
    <Require feature="drag"/>
    <Require feature="grid"/>
    <Require feature="sharedmap"/>
  </ModulePrefs>
  <Content.../>
</Module>
```

# Storage Demo



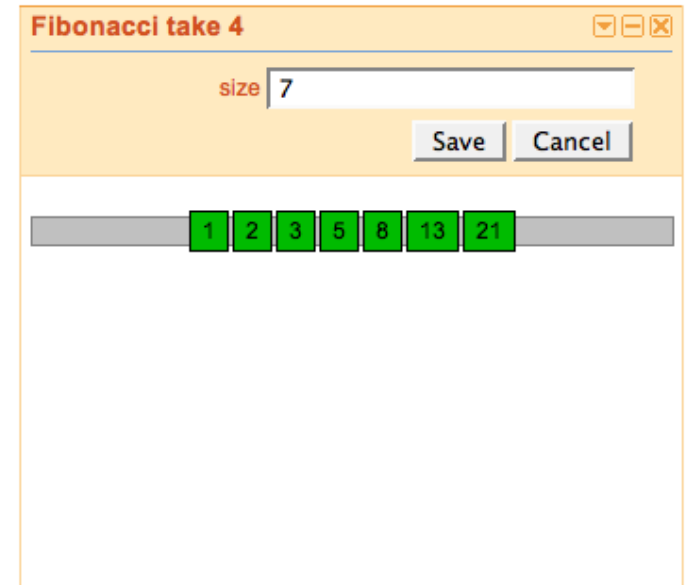
- Using UserPrefs
- Use of datatype="hidden"
- Not stored in local cookie

# Step 7: State - UserPrefs

```
<?xml version="1.0" encoding="UTF-8"?>
<Module>
  <ModulePrefs
    title="Fibonacci take 4"
    author="Yotam Aviv"
    author_email="aviv@google.com">
    <Require feature="setprefs"/>
  </ModulePrefs>
  <UserPref name="size" default_value="10" />

  <Content type="html"><![CDATA[
...
<script>
...
    document.write(format(fibs(__UP_size__)));
...

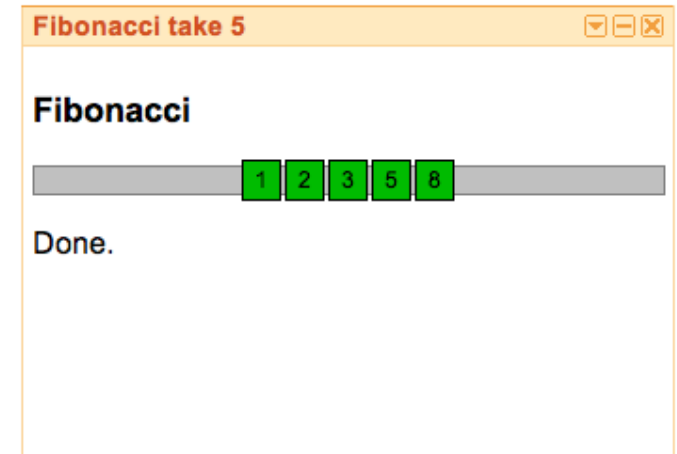
```



# Step 8: Document Object Model

```
<script>
  function myOnload() {
    var html = format(fibs(__UP_size__));
    var domElement = _gel('fib_out');
    domElement.innerHTML = html;
  }

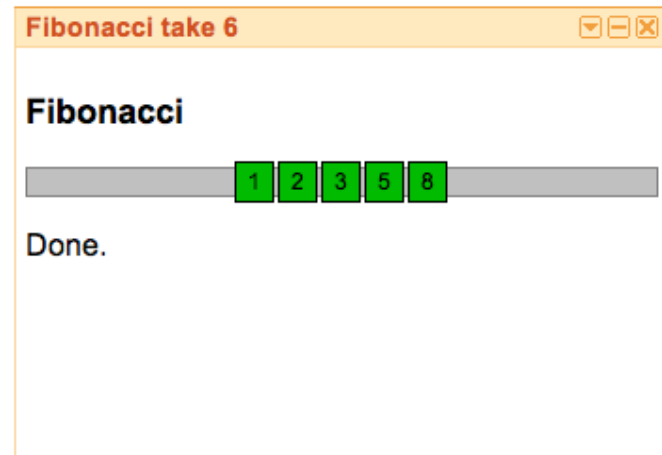
  _IG_RegisterOnloadHandler(myOnload);
</script>
...
<h3>Fibonacci</h3>
<div id="fib_out">Should go here</div>
Done.
]]></Content>
</Module>
```





# Step 9: DOM ...

```
<script>
...
function myOnload() {
  var array = fibs(__UP_size__);
  var list = document.createElement('ul');
  for (var i = 0; i < array.length; i++) {
    var node = document.createElement('li');
    node.innerHTML = array[i];
    list.appendChild(node);
  }
  var dest = _gel('fib_out');
  dest.removeChild(dest.childNodes[0]);
  dest.appendChild(list);
}
_IG_RegisterOnloadHandler(myOnload);
</script>
...
<h3>Fibonacci</h3>
<div id="fib_out">Should go here</div>
Done.
]]></Content>
</Module>
```



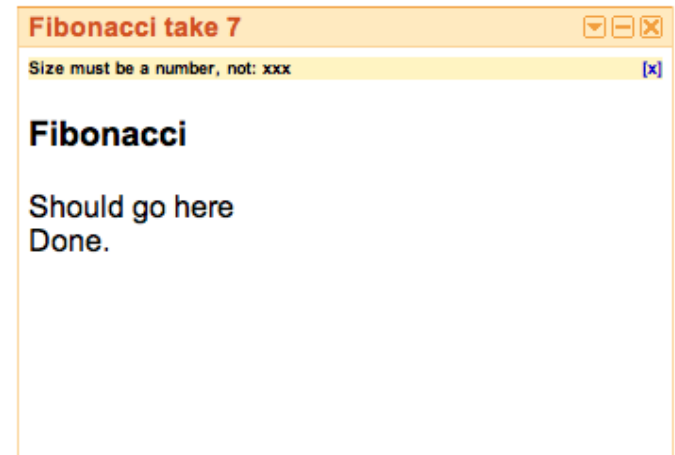
# Step 10: Feature: MiniMessage

```
<Require feature="setprefs" />  
<Require feature="minimessage" />  
</ModulePrefs>
```

...

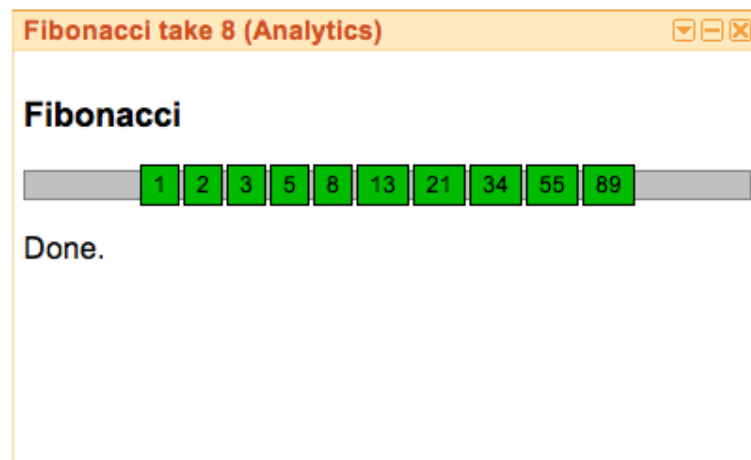
```
function myOnload() {  
    if (isNaN(parseInt('__UP_size__'))) {  
        var mini = new _IG_MiniMessage(__MODULE_ID__);  
        mini.createDismissibleMessage(  
            'Size must be a number, not: ' +  
            '__UP_size__');  
        return;  
    }  
    var array = fibs(__UP_size__);
```

...



# Step 11: Feature: Analytics!

```
<Require feature="setprefs" />
<Require feature="analytics" />
</ModulePrefs>
<script>
...
  reportEvent( 'load' );
...
  function reportEvent(event) {
    _IG_Analytics( 'UA-3738979-1',
      '/yotamaviv-gadgets/' + event );
  }
</script>
...
```



# Provided Analytics

- Weekly pageviews are displayed in the Google Gadgets for Your Page directory.

**Wikipedia** [edit](#) [x](#)

W<sub>en</sub>

**Wikipedia**  
Category: [Tools](#)  
A Wikipedia Search and Go widget. Language choice.  
[Benno Kruit - Delft, The Netherlands](#)

Gadget pageviews\* per week: 32,284,820.

[Contact the developer](#) - [View source](#) »

[http://www.google.com/ig/directory?synd=open&url=<gadget\\_url>](http://www.google.com/ig/directory?synd=open&url=<gadget_url>)

- Internationalize!
- Comments, Formatting, Tips
- Tabs
- RemoteRequests
- Caching
- Gadget-to-Gadget Communication
- IGoogle V2
- Development Tools

# Internationalize!

- Support multiple languages in a single gadget
- Increase success in other countries
- Specify supported languages in your gadget XML and iGoogle automatically loads the right one



hello.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs title="__MSG_title__">
    <Locale lang="en" messages="en.xml" />
    <Locale lang="ja" messages="ja.xml" />
  </ModulePrefs>
  <Content type="html"><![CDATA[
    __MSG_hello__
  ]]></Content>
</Module>
```

en.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<messagebundle>
  <msg name="title">Title</msg>
  <msg name="hello">Hello, World!</msg>
</messagebundle>
```

ja.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<messagebundle>
  <msg name="title">題名</msg>
  <msg name="hello">こんにちは世界</msg>
</messagebundle>
```

- **Message Fallback**

```
<Locale messages="http://x.com/ALL_ALL.xml"/>
<Locale lang="de" messages="http://x.com/de_ALL.xml"/>
<Locale lang="de" country="DE"
  messages="http://x.com/de_DE.xml"/>
<Locale lang="de" country="US"
  messages="http://x.com/de_US.xml"/>
```

- **Bi-Directional Languages**

```
<Locale lang="iw" messages=".../iw_ALL.xml"
  language_direction="rtl"/>
<Locale lang="ar" messages=".../ar_ALL.xml"
  language_direction="rtl"/>
```

...

```
<div style="margin-__BIDI_START_EDGE__:30px;">
  <h2>__MSG_hello_world__</h2>
</div>
```

## HTML:

```
<html>
  <body>
    <h1>Enter your name:</h1>
    <!-- I'll use id "name" to get
         this DOM Element later. -->
    <input type="text" id="name" />
  </body>
</html>
```



## Formatting, Comments, and Alerts

```
// This function computes the Fibonacci  
// number of n recursively (by calling  
// itself for smaller values.
```

```
function fibs(n) {  
  var out = [];  
  for (var i = 1; i <= n; i++) {  
    // TODO: Remove after development.  
    alert(`i=` + i); // blocks  
    console.log(`i=` + i); // Firebug  
    out[i] = fib(i);  
  }  
  return out;  
}
```


# Fetching Remote Content

**TV Watch**

Tonight   Recaps   News

MON TUE WED THU FRI SAT SUN

**Monday, May 21**

 9-10:05PM NBC, TV-14-V  
**SEASON FINALE-PREVIEW [Heroes](#)** NBC's biggest freshman success in years has built a rabid following, and after 22 cliff-hangers, it's also built to one hell of a finale. We know who's got the power to go all bomby: Zachary Quintos' Sylar and/or Milo Ventimiglia's Peter. (Sorry, Ted.) And we know where it's gonna blow: in the heart of New York City. All the players have met, the prophecies been fulfilled, so the only question left is this: Anyone feel like saving the world already? — *Whitney Pastorek*

8-10PM Fox, TV-14-V  
Season Finale [24](#) We'lllll...yeah, a couple of thousand people died, but we got rid of Pres. Palmer, so on balance? Good day.

8-9PM ABC [Dancing With the Stars](#) Laila, Apolo and Joey battle it out on the dance floor.

[EW.com More of tonight's best TV »](#)

**Feeds in Tabs**

Gadgets API   Google Code   **Dev Events**   Google Blog

**Dev Events** by Google Developer Calendar  
The calendar contains information about upcoming developer conferences at which Google will be speaking, along with other developer-related events.

---

[Where 2.0 Conference](#)  
When: Tue May 29, 2007 to Wed May 30, 2007

Where: San Jose, CA  
Event Status: confirmed  
Event Description: John Hanke, Chris Jones of Google will be speaking at the Where  
*[Wed May 9 13:23:57 2007]*

---

[Salesforce Dev Conference - Talk on Google Apps/Calendar/Spreadsheets](#)  
When: Mon May 21, 2007

Where: Santa Clara, CA  
Event Status: confirmed  
Event Description: Jeff Ragusa of Google will be speaking on Google Apps, Calendar and Spreadsheets at the  
*[Wed May 9 13:19:26 2007]*

---

[GWT Talk @ SEAJug](#)  
When: Tue May 15, 2007

Where: Redmond, WA 98052  
Event Status: confirmed  
Event Description: Bob Vawter of Google, will present on the Google Web Toolkit at the Seattle Area Java  
*[Wed May 9 13:13:31 2007]*

Fetching remote content is powerful, convenient, and easy!

- Text/HTML, XML, RSS/Atom feeds
- Cached by default to prevent overloading servers
- Built-in RSS/Atom parser outputs in JSON
- <http://code.google.com/apis/gadgets/docs/remote-content.html>

Three methods available:

- **\_IG\_FetchFeedAsJSON(url, callback, entries, summaries)**  
*Fetch RSS/Atom feeds. Returns simple JSON object:*
  - Useful when you need general data from the feed:
    - per feed: URL, Title, Description, Link, Author
    - per entry: Title, Link, Summary, Date
- **\_IG\_FetchXmlContent(url, callback)**  
*Fetch XML content. Returns response as XML object.*
  - Useful when fetching XML feeds with no standard format.
  - Extract any data that you need.
- **\_IG\_FetchContent(url, callback)**  
*Fetch content. Returns response as text.*
  - Useful when fetching and screen-scraping HTML from the response

# Fetching Remote Content...

```
<div id="container"></div>
<script>
  function callback(response) {
    // Iterate through each entry and generate HTML to be inserted
    var html = new Array();
    for (var n = 0; n < response.Entry.length; n++) {
      var entry = response.Entry[n];
      html.push('<a href="' + entry.Link + '">' + entry.Title + '</a>' +
        '<div>' + entry.Summary + '</div>');
    }
    _gel('container').innerHTML = html.join('<hr>');
  }

  // Fetch 3 entries from Google News Atom feed and include summaries
  _IG_FetchFeedAsJSON("http://news.google.com/?output=atom", callback, 3, true);
</script>
```


<http://news.google.com?output=atom>

```
<?xml version="1.0" encoding="UTF-8"?>
<feed version="0.3" xml:lang="en"
xmlns="http://purl.org/atom/ns#">
  <generator>NFE/1.0</generator>
  <title>Google News</title>
  ...
</feed>
```



Test feed reader

[Celebrate Memorial Day with local VFW - Smoky Mountain Sentinel](#)

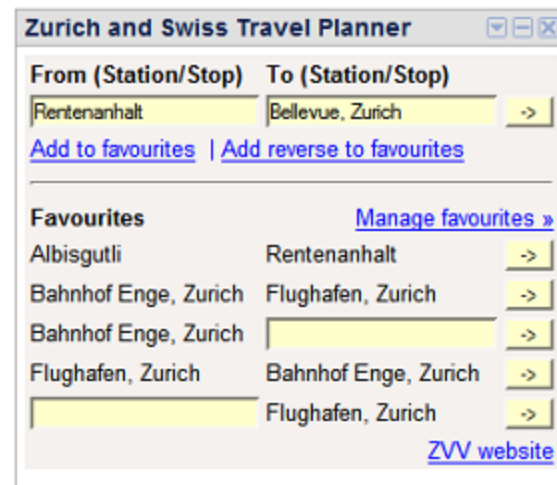


Home | Evening Tribune

**Celebrate Memorial Day with local VFW**  
Smoky Mountain Sentinel - 19 hours ago  
The Allison-Bristol VFW Post 6812 would like to invite the public to help us celebrate Memorial Day on Saturday May 26, at 1 pm on the town square.  
[Memorial Day weekend services and events](#) Green Bay Press Gazette  
[Memorial Day weekend services are everywhere](#) Bridgeton News  
[Centre Daily Times - Citizens Voice - Muncie Star Press - Aurora Beacon News](#)  
[all 38 news articles](#)

# A Useful Gadget?

- Travel Planner Gadget
- Adds value to [www.zvv.ch](http://www.zvv.ch), a travel planning site: allows a user to save favourite trips
- Points to note
  - UI design
  - User Prefs to store favourite trips
  - Gadget **constructs** URL `www.zvv.ch?<lots of parameters>`
  - Calls the constructed URL and pops up travel results in a separate window
  - Internationalized and localized: German, English



# What makes a good gadget?

- Provides **useful** information or actions
- **Extends** functionality or information already provided by web property/site.
- Satisfying **user experience** given gadget constraints
- **Localized** (assumes good internationalization of gadget)
- **Customized** to locality (where appropriate)

# Caching External Resources



- Facts:
  - Google caches all gadget XML files
  - Google caches all requests going through `_IG_Fetch...()` methods.
  - Gadgets receive tons of traffic (ok, opinion;)
- Remaining Problem:
  - Gadgets often embed external resources hosted on third-party servers, e.g. images, Flash
  - Hosting servers melt down because they cannot handle all the requests
- Solution:
  - Use API methods to cache all embedded resources on iGoogle
    - `_IG_GetImage(url)` - Returns HTML image fetched from the cache
    - `_IG_GetImageUrl(url)` - Returns URL used to fetch the image via cache
    - `_IG_GetCachedUrl(url)` - Returns URL used to fetch the resource via cache

# Caching External Resources...



## Caching images

```
<img id="goImg" src="" width=100 height=150 />
<script>
  _gel("goImg").src = _IG_GetImageUrl("http://domainA.com/go.gif");
</script>
```

## Caching Flash

```
<div id="container"></div>
<script>
  var cacheUrl = _IG_GetCachedUrl('http://mydomain.com/flashvideo.swf');
  _IG_EmbedFlash(cacheUrl, 'container', { width: 300, height: 250 });
</script>
```



- Subscribe to agreed upon UserPref variables.
  - “lat”, “long”
  - “rawquery”
  - “finance\_symbol”
- Publish changes
- Pub/Sub, Easy, Powerful.
- *Demo: “Google Finance”.*
- <http://www.google.com/apis/gadgets/pubsub.html>

- <http://www.google.com/ig/sandbox> (externally)
- **Canvas View (Maximized View)**  
`<Require feature="views"/>`  
`<Content type="html" view="home"> ...`  
`<Content type="html" view="canvas"> ...`
- **OpenSocial Sandbox**  
<http://code.google.com/apis/opensocial/>
  - People- and Friends Data API
  - Activities Data API
  - Persistence Data API



## Web browsers

- Designed to view the web, not for WebApps
- Errors... Debugging...
- Make sure to test on Firefox, IE, Safari, Opera

## In order to develop

- Be mindful of this.
- There are lots of great development tools (different from browsing tools.)

## I use and recommend:

- Firefox  
<http://www.mozilla.org/>
- Firebug  
<http://www.getfirebug.com/>
- W3CSchools  
<http://www.w3schools.com/>

Web Developer Toolbar

<https://addons.mozilla.org/en-US/firefox/addon/60>

*Demos...*

# Want to Know More?



- Competition website

[google.co.za/gadgetcomp08](http://google.co.za/gadgetcomp08)

- Email alias for student questions on competition and gadgets (but look at the handout, website and documentation first)

[Zagadgetcomp08@google.com](mailto:Zagadgetcomp08@google.com)

- Google Gadgets API Docs

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

- Google Gadgets For Your Webpage

<http://www.google.com/ig/directory?synd=open>

- Top Gadget Authors

<http://www.google.com/ig/authors>

- Discussion Group

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

- FAQ / Knowledge Base

<http://code.google.com/support/bin/topic.py?topic=10027>

- Publishing Your Gadget

<http://code.google.com/apis/gadgets/docs/publish.html#Syndication>

- Google Distribution Guidelines

<http://www.google.com/webmasters/gadgets/guidelines.html>