

Google & the Cloud

GData, Mashup Editor, AppEngine



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Web 2.0 – From the Horse’s (Tim’s) Mouth

1. Web as Platform
2. Harnessing Collective Intelligence
3. Data is the next Intel Inside
4. End of the Software Release Cycle
5. Lightweight Programming Models
6. Software Above the Level of a Single Device
7. Rich User Experiences



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Services in the Cloud

Application Services	Sales Force	Accounting
	Social NW	Photo
Core Business Services	Calendar	Geo
	Mail	Spreadsheet
	Currency	Payment
Presentation & Transformation	Mashup Editor	Transformation
	Scraping	Aggregation
Infrastructure Services	Storage	Indexed Data
	Computing	Queue
	Relay	Pub-Sub




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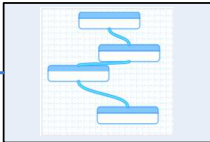


Mashup Anatomy

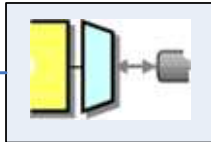
Front-End



Transform / Aggregate



Data Sources / Adapters




- Google Mashup Editor
- QED Wiki
- JavaScript Libraries
- Microsoft Popfly

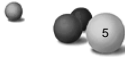
- Yahoo! Pipes
- Snaplogic
- Microsoft Popfly
- IBM Damia

- Dapper
- Openkapow
- Snaplogic

(not meant to be complete nor a recommendation)



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Google's Entries into the Game

Front-end

Data Sources

Google Mashup Editor


AJAX development framework and a set of tools that enable developers to quickly and easily create simple web applications and mashups.

Google Data API's


Standard protocol for reading and writing data on the web, base on Atom 1.0 and RSS 2.0 syndication formats, plus the Atom Publishing Protocol.

AppEngine

Google App Engine lets you run your web applications on Google's infrastructure.



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Google Data API's

- Atom and RSS
- Atom Publishing Protocol
- Google GData extensions
- Optimistic concurrency based on version numbers
- AuthSub authentication scheme

Google Apps
 Google Base
 Blogger
 Google Calendar
 Google Code Search
 Google Contacts
 Google Health
 Google Notebook
 Google Spreadsheets
 Picasa Web Albums
 Google Documents List
 YouTube



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Google Data API's

- Example: Simple Calendar Feed
(next)
- Neat example: Google Spreadsheet as database
(article by Jeff Scudder in Python Magazine)
- Client Libraries: Java, .Net, PHP, Python, Objective-C, JavaScript
(<http://code.google.com/apis/gdata/clientlibs.html>)



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Calendar Feed

Google Calendar

Gregor's Conferences Details

Calendar Name: Gregor's Conferences

Description: My public speaking engagements

Location:

Calendar Address

Please use the following address to access your calendar from other applications. You can copy and paste this into any feed reader.

<http://www.google.com/calendar/feeds/6bneimmjueQr1ts6Bfrku6@group.calendar.google.com/public/basic>

Auto-accept invitations

Auto-accept invitations that do not conflict

Automatically add all invitations to this calendar.

Do not show invitations.

Calendar Address: [XML](#) [HTML](#) [JSON](#)

Private Address: [XML](#) [HTML](#) [JSON](#) [Reset Private URLs](#)

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Calendar Feed

```
<entry>
  <id>http://www.google.com/calendar/feeds/...</id>
  <published>2007-08-19T19:29:25.000Z</published>
  <updated>2007-09-28T17:56:20.000Z</updated>
  <name>Gregor's Conferences</name>
  <gd:comments>
    <gd:feedLink href='http://www.google.com/calendar/feeds/...'/>
  </gd:comments>
  <gd:eventStatus value='http://schemas.google.com/g/2005#event.confirmed'/>
  <gd:transparency value='http://schemas.google.com/g/2005#event.transparent'/>
  <gd:when start='2007-10-23' end='2007-10-27'/>
  <gd:who rel='http://schemas.google.com/g/2005#event.organizer'
    valueString='Gregor's Conferences'
    email='...@group.calendar.google.com'/>
  <gd:where valueString='Keystone Resort, Colorado'/>
</entry>
```

Google Mashup Editor

- AJAX development framework
- Rich rendering off data feeds using templates
- Tags Library for data display and entry:
 - List, map, calendar, template
- Browser-based IDE
- One click deployment
- Event model for rich user interactivity
- Feeds or user entered data (by application / by user)



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Simple GME Example

Google Mashup Editor ghohpe@gmail.com | Help | Sign out

index.gml in mashup-ghohpe-confmapnew

Editor Feed Browser **Sandbox** Published Apps

Reload Clear Google Gadget Popup

[View source](#) | [Sign in](#)

Gregor's Conference Travel

QCon London
APSEC Patterns Workshop
Colorado Software Summit
OOPSLA (Workshops)
ICSOC
DEBS - Distributed Event-based Systems
W-Jax
SD West
TSSJS Europe
W-Jax
Munich, Germany

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Mashup Editor Application Source

```

<gm:page title="Where is Gregor?" authenticate="false">
<h1>where is Gregor?</h1>
<table width="900">
  <tr valign="top">
    <td width="300">
      <gm:list id="myList" "... " sort="title">
        <gm:handleEvent src="myMap"/>
        <gm:sort name="title" ref="atom:title"/>
      </gm:list>
    </td>
    <td class="mainPanel">
      <gm:map id="myMap" data="{myList}" infoTemplate="itemTemplate"
        geolocationref="gd:where/@valuestring">
        <gm:handleEvent src="myList"/>
      </gm:map>
    </td>
  </tr>
</table>
<gm:template id="itemTemplate">
  <div>
    <b><gm:link ref="atom:content" labelref="atom:title"/></b><br/>
    <gm:text ref="gd:when/@startTime"/><br/>
    <gm:text ref="gd:where/@valuestring"/>
  </div>
</gm:template>
</gm:page>

```



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Google AppEngine

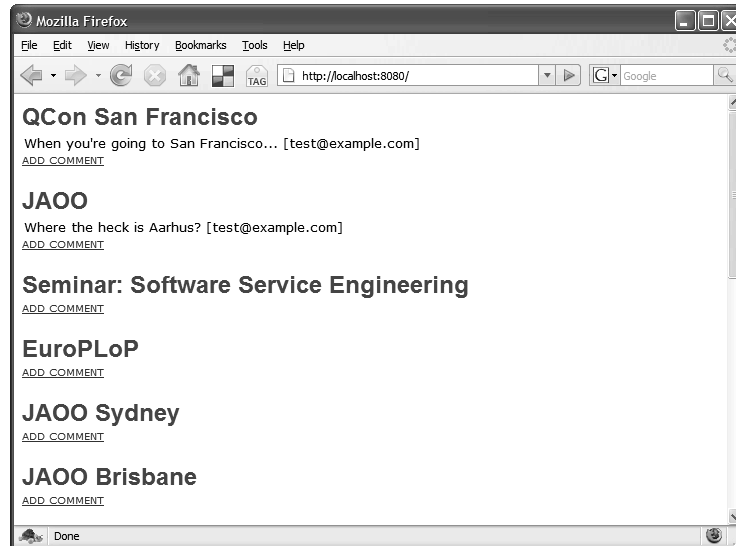
- Your code on Google infrastructure
- Python source code
- Develop locally, deploy to Cloud
- API support for
 - User login and identity
 - Persistent state
 - URL Fetch
 - Mail
 - Python libraries
 - Django Templates
- <http://appgallery.appspot.com/>



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Demo App: Event Feedback



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CGI Handlers

- Webapp - WSGI library (Web Server Gateway Interface)
- Register handlers for URLs

```
def main():
    application = webapp.WSGIApplication(
        [('/', MainPage),
        ('/form', CommentForm),
        ('/add', AddComment)
        ],
        debug=True)
    wsgiref.handlers.CGIHandler().run(application)
```

fetcher.py

```
application: fetcher
version: 1
runtime: python
handlers:
- url: /stylesheets
  static_dir: stylesheets
- url: /*
  script: fetcher.py
```

app.yaml

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Data Access

- Models (≈schema) and Entities
- No RDBMS, but SQL-like syntax

```
class Comment(db.Model):
    author = db.UserProperty()
    eventkey = db.StringProperty()
    comment = db.StringProperty(multiline=True)
    date = db.DateTimeProperty(auto_now_add=True)
```

Declare

```
comments = db.GqlQuery(
    "SELECT * FROM Comment WHERE eventkey='%s'" % id)
for c in comments:
    if c.comment:
        self.response.out.write(c.comment)
```

Query

```
comment = Comment()
comment.author = users.get_current_user()
comment.comment = self.request.get('content')
comment.eventkey = self.request.get('id')
comment.put()
```

Insert /
Update

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Templates

- Outputting HTML with code is tedious and ugly
- Based on Django

```
<html>
<body>
    {% for greeting in greetings %}
        {% if greeting.author %}
            <b>{{ greeting.author.nickname }}</b> wrote:
        {% else %}
            An anonymous person wrote:
        {% endif %}
    {% endfor %}

    <a href="{{ url }}">{{ url_linktext }}</a>
</body>
</html>
```



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Some Reflection

- New Programming Models
 - Declarative within HTML DOM tree
 - Data pipeline (Yahoo! Pipes)
- New era of Copy-paste development
- If it does not have a URL, is not cool
- Development as a social network
- Some problems not (yet) going away
 - Encodings, Unicode, entities
 - XPath lurking behind
 - Authentication schemes



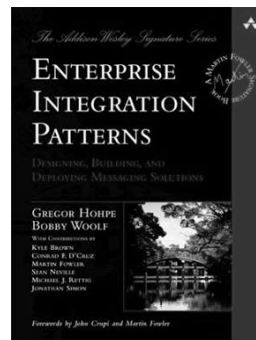
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More Info

- Products
 - code.google.com/apis
 - code.google.com/gme
 - code.google.com/appengine
 - pipes.yahoo.com
- Market Watch / Directories
 - programmableweb.com
 - readwriteweb.com
- Events
 - Google Developer Day
 - Mashup Camp
- Blog
 - www.eaipatterns.com/ramblings.html
 - googledataapis.blogspot.com/



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Bobby Woolf

Addison-Wesley 2003



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