Google Developer Day2009

The Google Wave APIs

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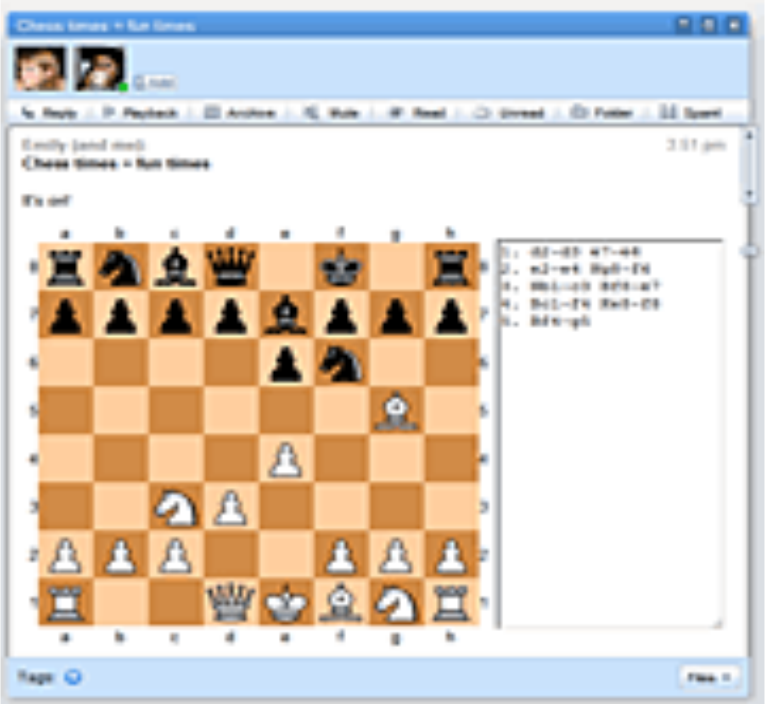
June 5th, 2009

Google
Developer
Day2009

Overview

- Learn about the Google Wave Sandbox.
- Embedding waves in your site.
- Extending functionality with OpenSocial Gadgets.
- Creating robotic participants.
- Distributing your extensions.



Emily (and me)

Chess times = fun times

It's on!

[illegible]

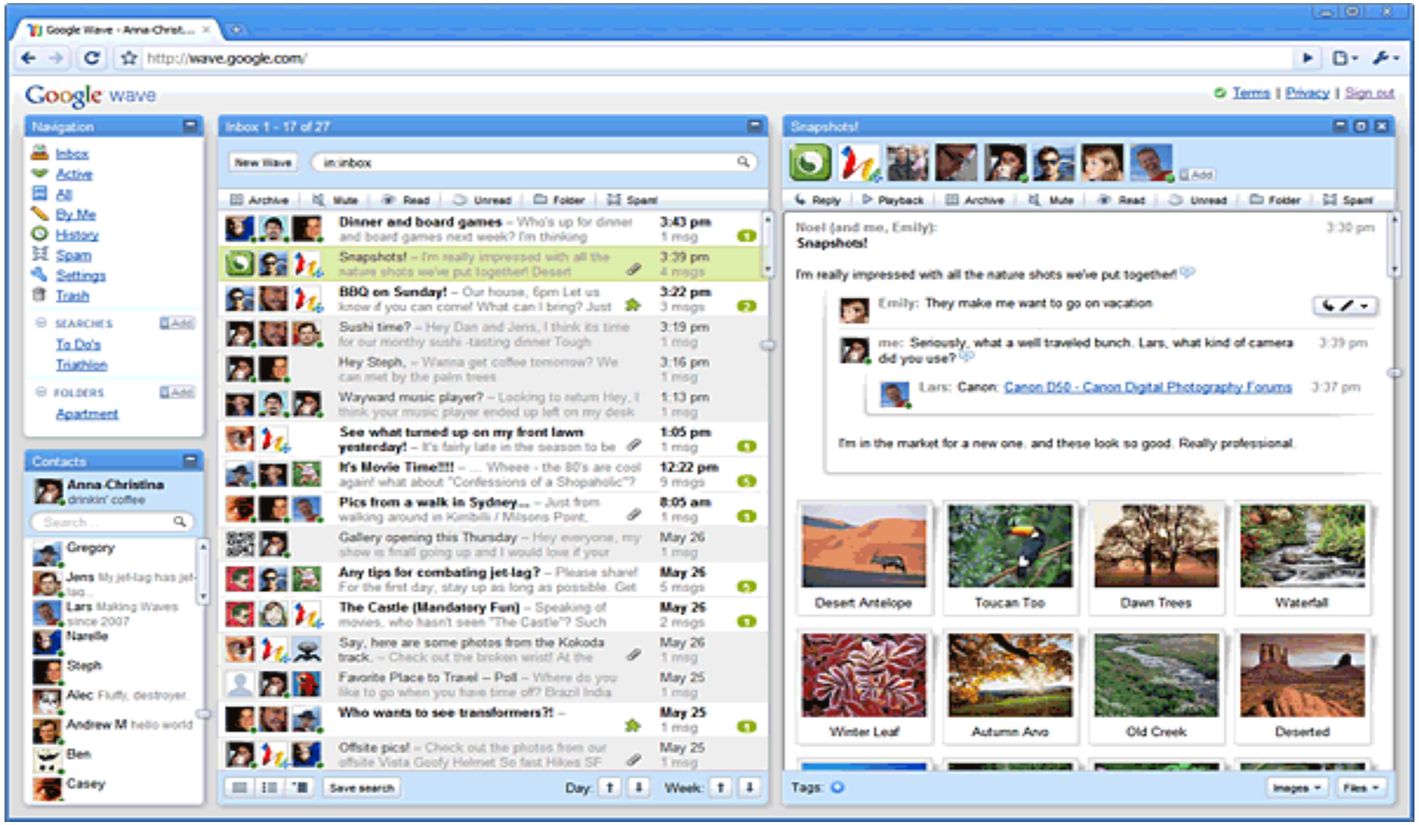
Google Wave Sandbox

Introducing the Wave Sandbox

- Developer accounts initially on wavesandbox.com.
  http://wave.google.com/a/wavesandbox.com/
- Explore the docs on Google Code site.
  http://code.google.com/apis/wave/
- Check out the new Google Wave blog site.
  http://googlewavedev.blogspot.com/
- You will get an email inviting you to sign up.
- Complete the form to pick your desired user name.
- Accounts will be created soon... details coming!

Notes on the API

- Google Wave is currently in preview form.
- Slated to be released later this year.
- APIs are in 0.1 form and subject to change.



in:inbox

Anna-Christina drinkin' coffee

Gregory

Jens My jet-lag has jet-lag...

Lars Making Waves since 2007

Narelle

Steph

Alec Fluffy, destroyer.

Andrew M hello world

Ben

Casey

Dinner and board games – Who's up for dinner and board games next week? I'm thinking 3:43 pm 1 msg

Snapshots! – I'm really impressed with all the nature shots we've put together! Desert 3:39 pm 4 msgs

BBQ on Sunday! – Our house, 6pm Let us know if you can come! What can I bring? Just 3:22 pm 3 msgs

Sushi time? – Hey Dan and Jens, I think its time for our monthy sushi -tasting dinner Tough 3:19 pm 1 msg

Hey Steph, – Wanna get coffee tomorrow? We can met by the palm trees 3:16 pm 1 msg

Wayward music player? – Looking to return Hey, I think your music player ended up left on my desk 1:13 pm 1 msg

See what turned up on my front lawn yesterday! – It's fairly late in the season to be 1:05 pm 1 msg

It's Movie Time!!!! – ... Wheee - the 80's are cool again! what about "Confessions of a Shopaholic"? 12:22 pm 9 msgs

Pics from a walk in Sydney... – Just from walking around in Kirribilli / Milsons Point. 8:05 am 1 msg

Gallery opening this Thursday – Hey everyone, my show is finall going up and I would love if your May 26 1 msg

Any tips for combating jet-lag? – Please share! For the first day, stay up as long as possible. Get May 26 5 msgs

The Castle (Mandatory Fun) – Speaking of movies, who hasn't seen "The Castle"? Such May 26 2 msgs

Say, here are some photos from the Kokoda track. – Check out the broken wrist! At the May 26 1 msg

Favorite Place to Travel – Poll – Where do you like to go when you have time off? Brazil India May 25 1 msg

Who wants to see transformers?! – May 25 1 msg

Offsite pics! – Check out the photos from our offsite Vista Goofy Helmet So fast Hikes SF May 25 1 msg

Noel (and me, Emily): 3:30 pm

Snapshots!

I'm really impressed with all the nature shots we've put together!

Emily: They make me want to go on vacation

me: Seriously, what a well traveled bunch. Lars, what kind of camera did you use? 3:39 pm

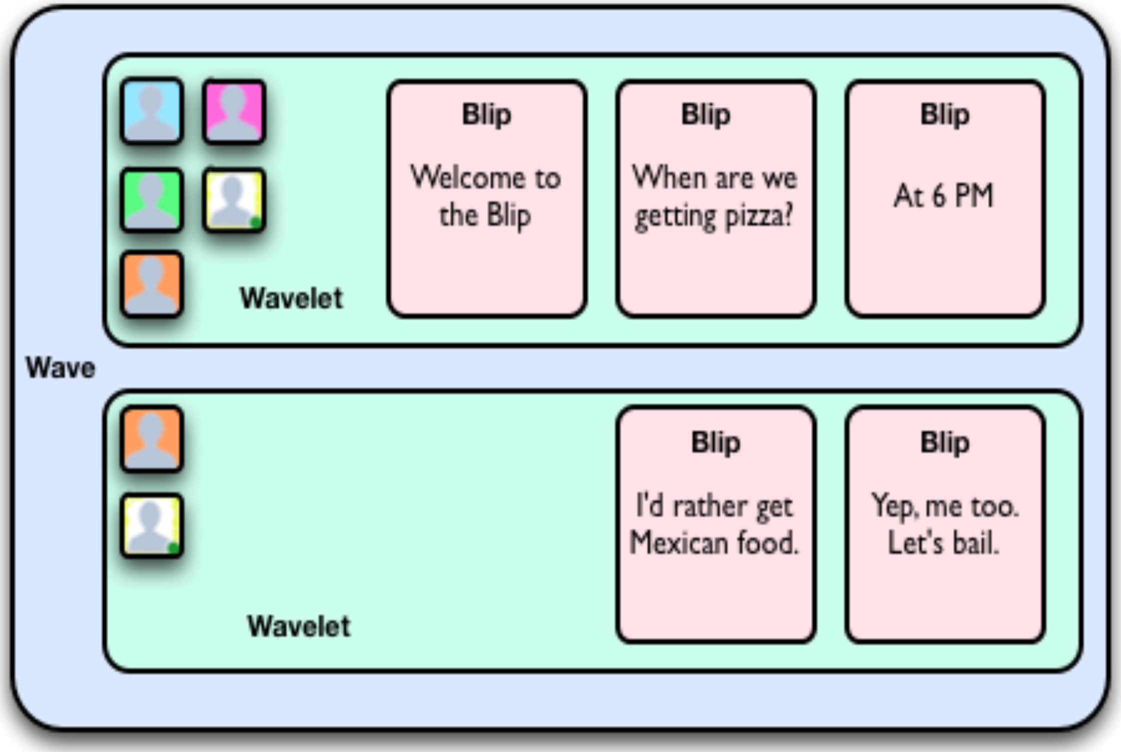
Lars: Canon: Canon D50 - Canon Digital Photography Forums 3:37 pm

I'm in the market for a new one, and these look so good. Really professional.

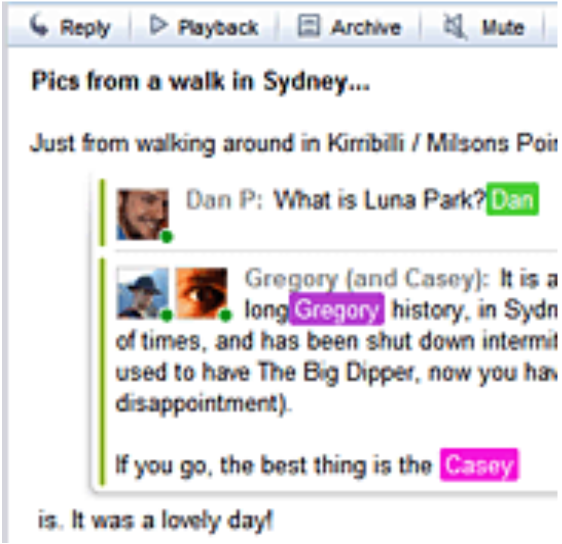
Wave Building

Anatomy of a Wave

Waves, wavelets, participants and blips



- A wave can be considered the root container.
- Waves contain wavelets.
- Wavelets contain blips.
- Permissions are applied at the wavelet level.



Pics from a walk in Sydney...

Just from walking around in Kirribilli / Milsons Poi

Dan P: What is Luna Park? Dan

Gregory (and Casey): It is a long Gregory history, in Sydn of times, and has been shut down intermi used to have The Big Dipper, now you ha disappointment).

If you go, the best thing is the Casey

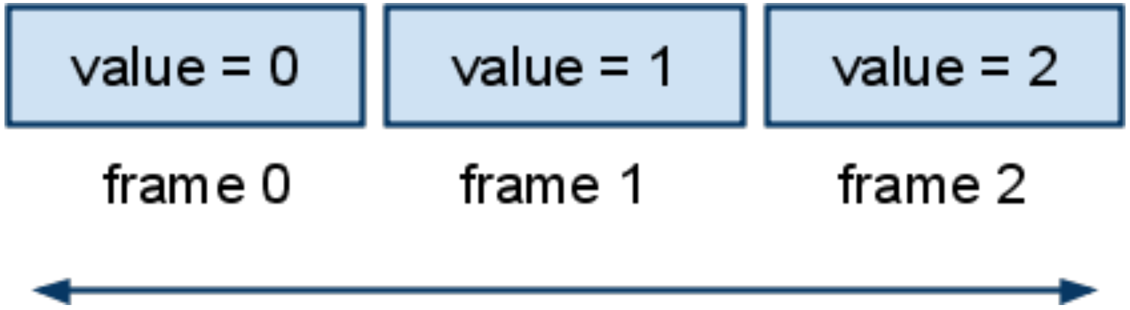
is. It was a lovely day!

<demo>private replies</demo>

Historical data storage

Data is stored over time, with playback.

- Data is stored in frames for every update.
- Bi-directional playback of frames.
- Random access to frames.



value = 0

value = 1

value = 2

frame 0

frame 1

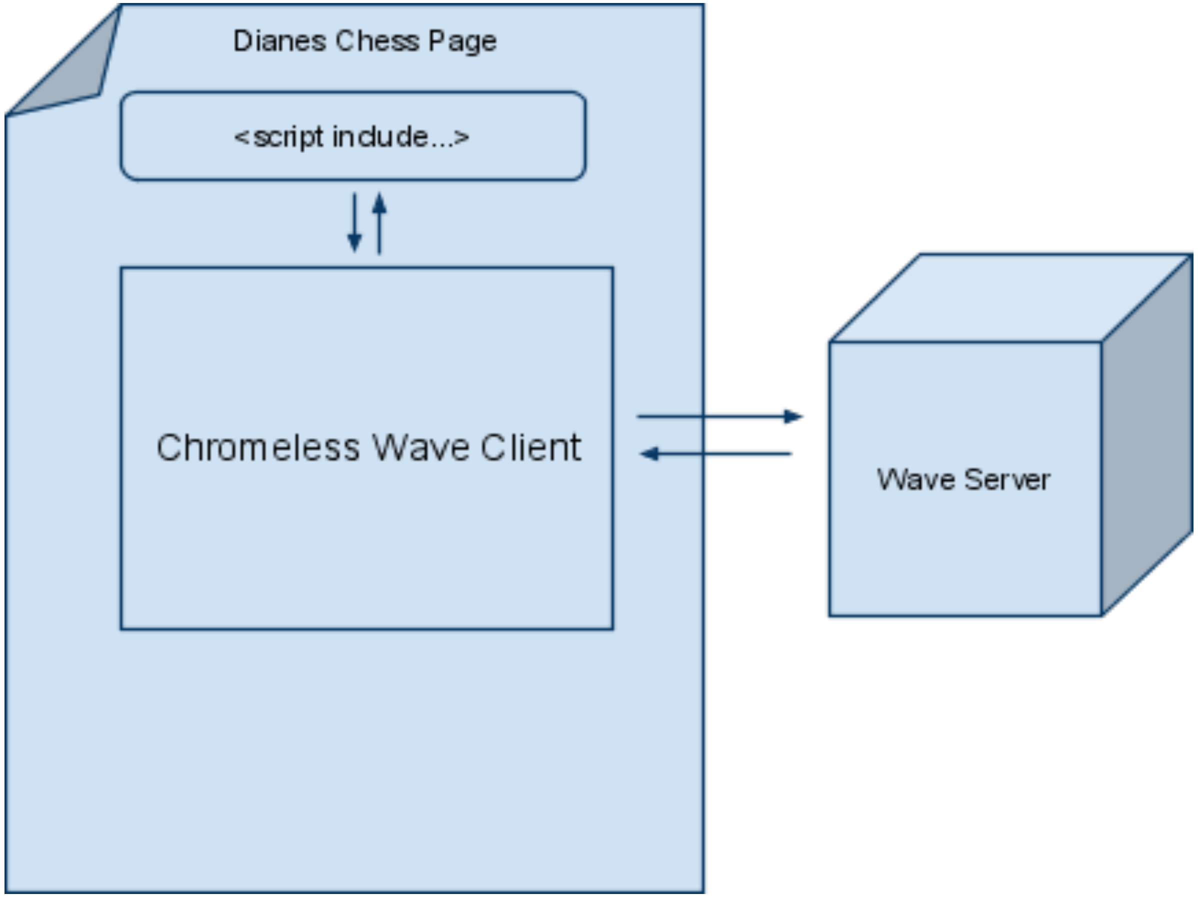
frame 2

<demo>playback</demo>

Embedding

Embedding Architecture

- As simple as a JavaScript include!
- Site owner includes script and configures the look and feel.



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Embedding API

Methods overview

```
/** Loads a wave. */
Wave.loadWave(waveId)

/** Displays the loaded wave in the iframe. */
Wave.init(frameElement)

/** Sets up style settings. */
Wave.setUIConfig(css)
/** Inserts a blip reply. */
Wave.addReply()

/** Adds this user as a participant of the Wave. */
Wave.follow()
```

Embedding Example Code

Embedding a wave without customization

```
<div id='waveframe' style='height:500px;width:100%'/>
<script type='text/javascript'
    src='http://wave-api.appspot.com/public/embed.js'>
</script>
<script>
  var wavePanel = new WavePanel(
        'http://wave.google.com/a/wavesandbox.com/');
  wavePanel.loadWave('wavesandbox.com!w+PfYnNrZk%1');
  wavePanel.init(document.getElementById('waveframe'));
</script>
```

Customizing the UI

Example of using setUIConfig and addReply

```
<div id='waveframe' style='height:500px;width:100%'/>
<button type="button"
        onclick="wavePanel.addReply()">
    Add comment</button>
<script type='text/javascript'
    src='http://wave-api.appspot.com/public/embed.js'>
</script>
<script type='text/javascript'>
  var wavePanel = new WavePanel(
        'http://wave.google.com/a/wavesandbox.com/');
  wavePanel.setUIConfig('red', 'black', 'courier new', '18px');
  wavePanel.loadWave('wavesandbox.com!w+PfYnNrZk%1');
  wavePanel.init(document.getElementById('waveframe'));
</script>
```

<demo>embedding</demo>

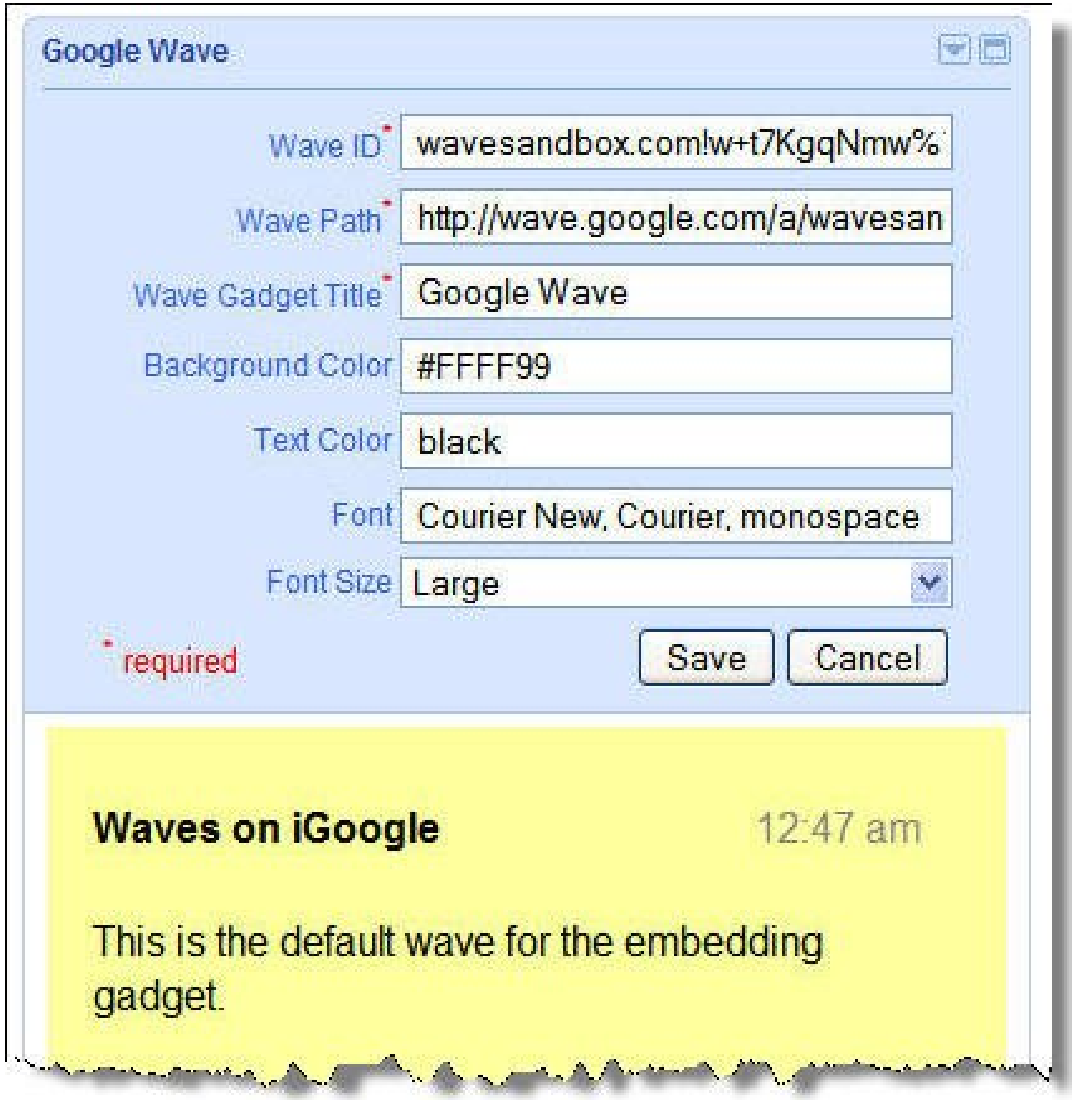
Embedding within an OpenSocial Gadget

Example to embed a wave in iGoogle or other gadget conainers.

```
<ModulePrefs title="Google Wave" height="600" ../>
<UserPref name="waveID" display_name="Wave ID" required="true"
    default_value="wavesandbox.com!w+t7KgqNmw%1"/>
<UserPref name="font" display_name="Font" required="false"
    default_value=""/>
...
<Content type="html" view="home,canvas,default,profile">
<![CDATA[
<div id='waveframe' style='height:650px; width:100%;'></div>
<script type='text/javascript'
    src='http://wave-api.appspot.com/public/embed.js'></script>
<script type="text/javascript">
  var wavePanel =
      new WavePanel("http://wave.google.com/a/wavesandbox.com/");
  wavePanel.loadWave("__UP_waveID__");
  wavePanel.setUIConfig('__UP_bgcolor__', '__UP_color__',
      '__UP_font__', '__UP_fontsize__');
  wavePanel.init(document.getElementById('waveframe'));
</script>
]]>
</Content>
</Module>
```

Wave Embed Gadget Settings

Users don't have to copy any code



Google Wave

Wave ID*	wavesandbox.com!w+t7KgqNmw%
Wave Path*	http://wave.google.com/a/wavesan
Wave Gadget Title*	Google Wave
Background Color	#FFFF99
Text Color	black
Font	Courier New, Courier, monospace
Font Size	Large

* required

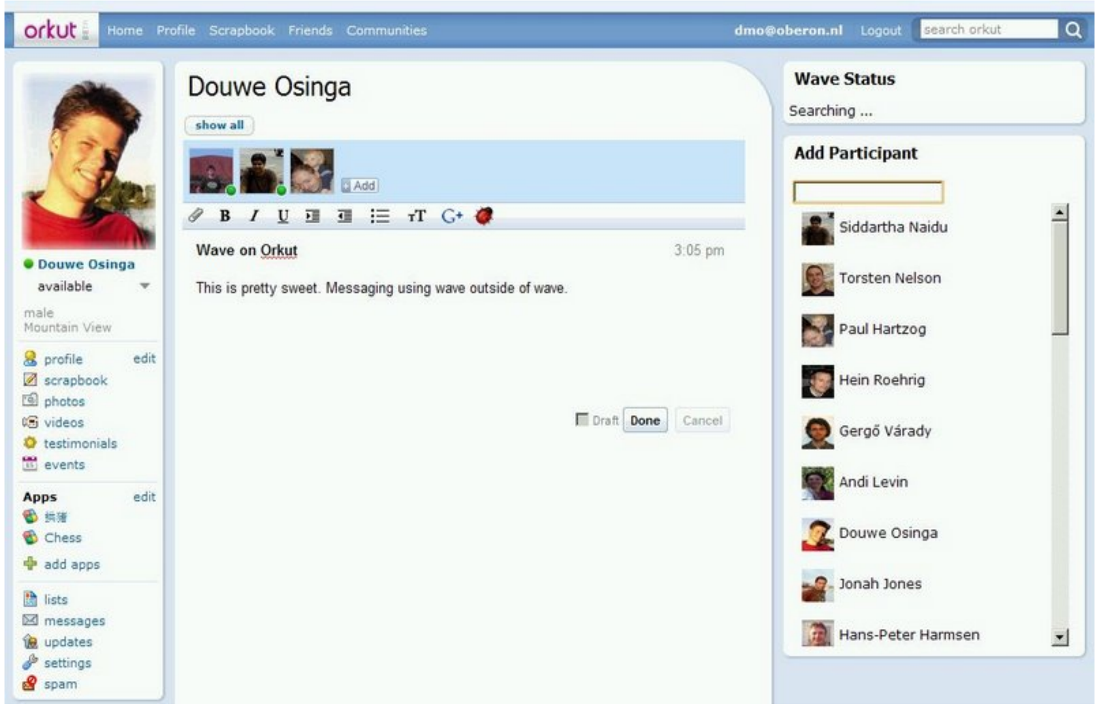
Waves on iGoogle 12:47 am

This is the default wave for the embedding gadget.

- Users can change settings without knowing JavaScript or HTML.
- Allows waves to be on gadget containers that don't allow raw scripts.

Future Plans for Embedding

An overview of potential future enhancements



Douwe Osinga

Wave on Orkut 3:05 pm

This is pretty sweet. Messaging using wave outside of wave.

Wave Status

Searching ...

- Anonymous Access
- More UI parameters
- Supplied Participants
- and more...

Extensions: Gadgets and Robots

Intro to Gadgets and Robots

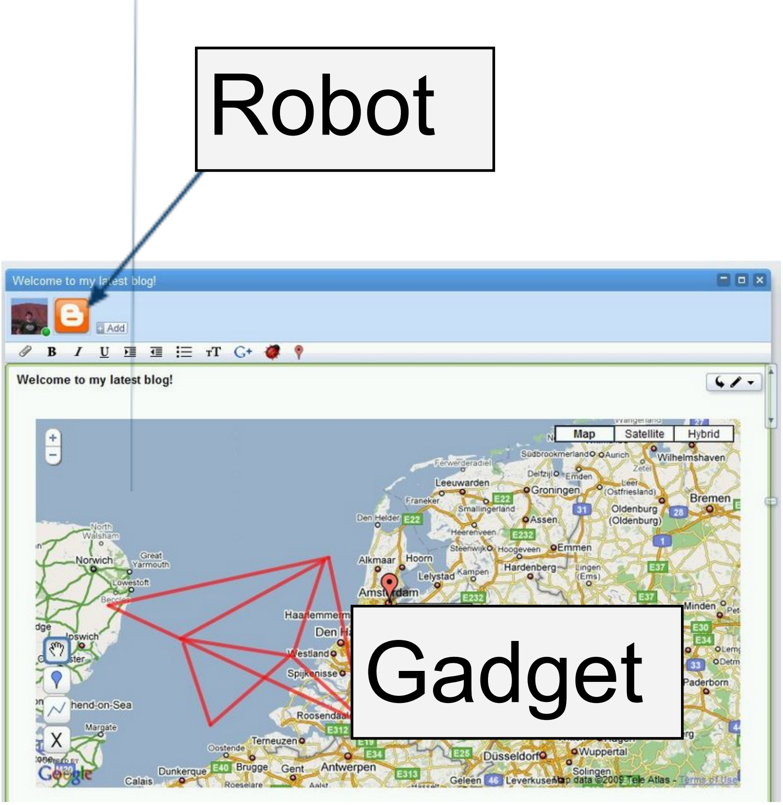
Differences between Gadgets and Robots

Robot

- Wave participant
- Runs in the cloud
- Interacts with the wave
- Complete view of the wave, modifies the wave

Gadget

- Wave element
- Runs on the client
- Interacts with the user
- Has limited view of the wave, modifies its own state



Welcome to my latest blog!

Gadgets Deep Dive

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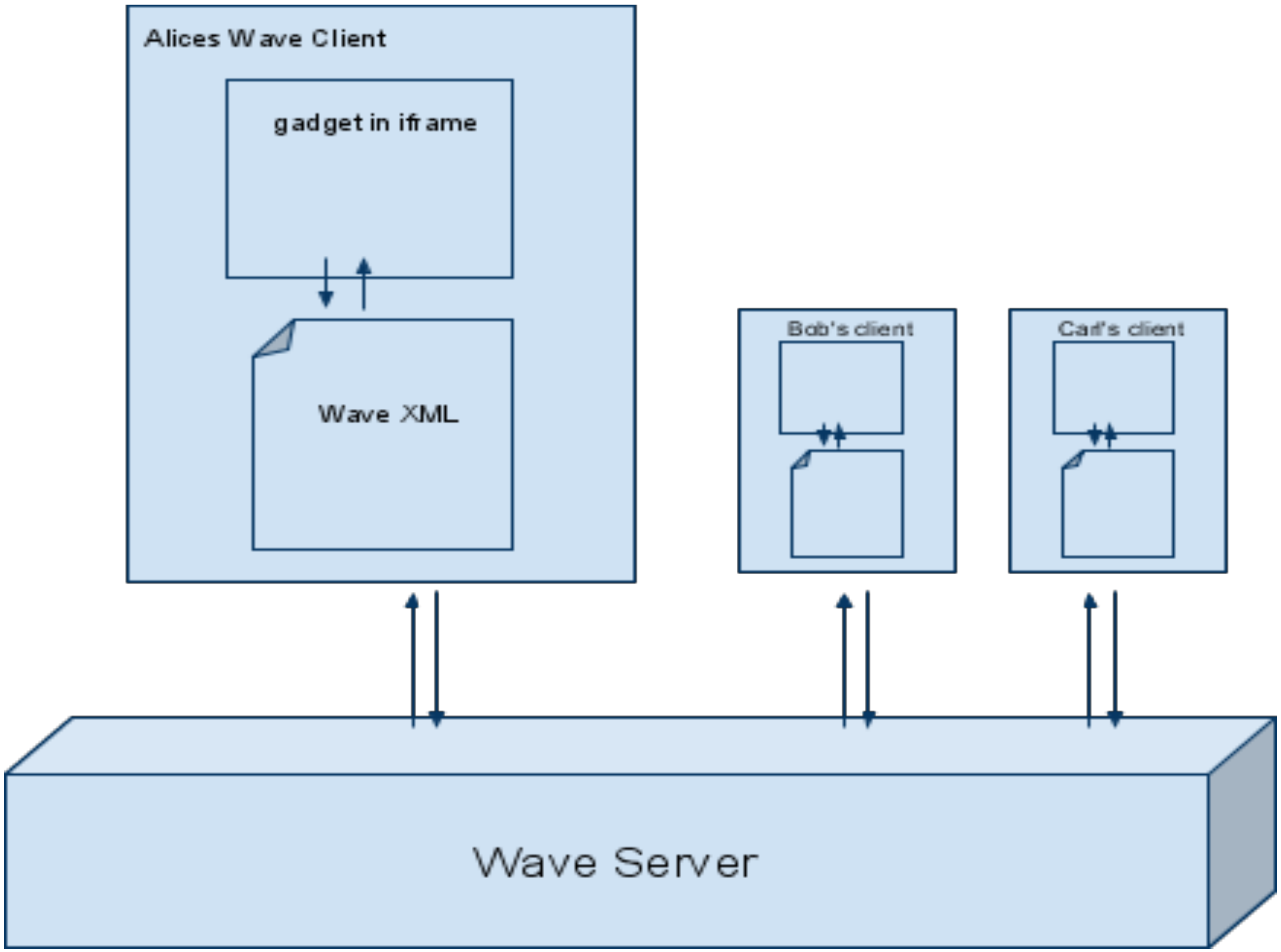
Gadgets Architecture

Multiple clients talking to the wave Server using Wave XML



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Wave Gadget API

Interacting with wave participants and state

```
Wave.getParticipants()

Wave.getState()

/** Playback, view or edit. */
Wave.getMode()

/** Get the current time. */
Wave.getTime()

Wave.getViewer()

/** Embedding participant. */
Wave.getHost()

Wave.setParticipantCallback()

Wave.setStateCallback()
```

```
State.getKeys()
State.submitDelta(delta)
State.submitValue(key, value)
State.get(key, opt_default)
```

```
Participant.getId()
Participant.getDisplayName()
Participant.getThumbnailUrl()
```

Hello World Gadget

Bare bones gadget

```
<Module>
  <ModulePrefs title="Basemap" height="400" ../>
    <Require feature="rpc"/>
  </ModulePrefs>
  <Content type="html">
    <![CDATA[
      <script type="text/javascript"
        src="http://wave-api.appspot.com/public/wave.js">
      </script>
      <div>Hello Wave</div>
    ]]>
  </Content>
</Module>
```

<demo/>

Adding a Map

Paste in standard Google Map API example

```
 ...
  <script type="text/javascript">
    var map;
    function main() {
      map = new GMap2(document.getElementById("map_canvas"));
      map.setCenter(new GLatLng(35, 135), 2);
    }
    gadgets.util.registerOnLoadHandler(main);
  </script>
  <div id="map_canvas" style="width: 100%; height: 100%">
  </div>
  ]]>
  </Content>
</Module>
```

Making the map shared

Using Wave API methods

```
...
function stateChanged() {
  var state = wave.getState();
  map.setCenter(
      new GLatLng(state.get('lat', 35),
                  state.get('lng', 135)), 2);
  }

function main() {
  if (wave && wave.isInWaveContainer()) {
    wave.setStateCallback(stateChanged);
  }
  ...
  GEvent.addListener(map, "dragend", function() {
    wave.getState().submitDelta({
        lat: map.getCenter().lat(),
        lng: map.getCenter().lng()
    });
  });
```

<demo>mappy</demo>

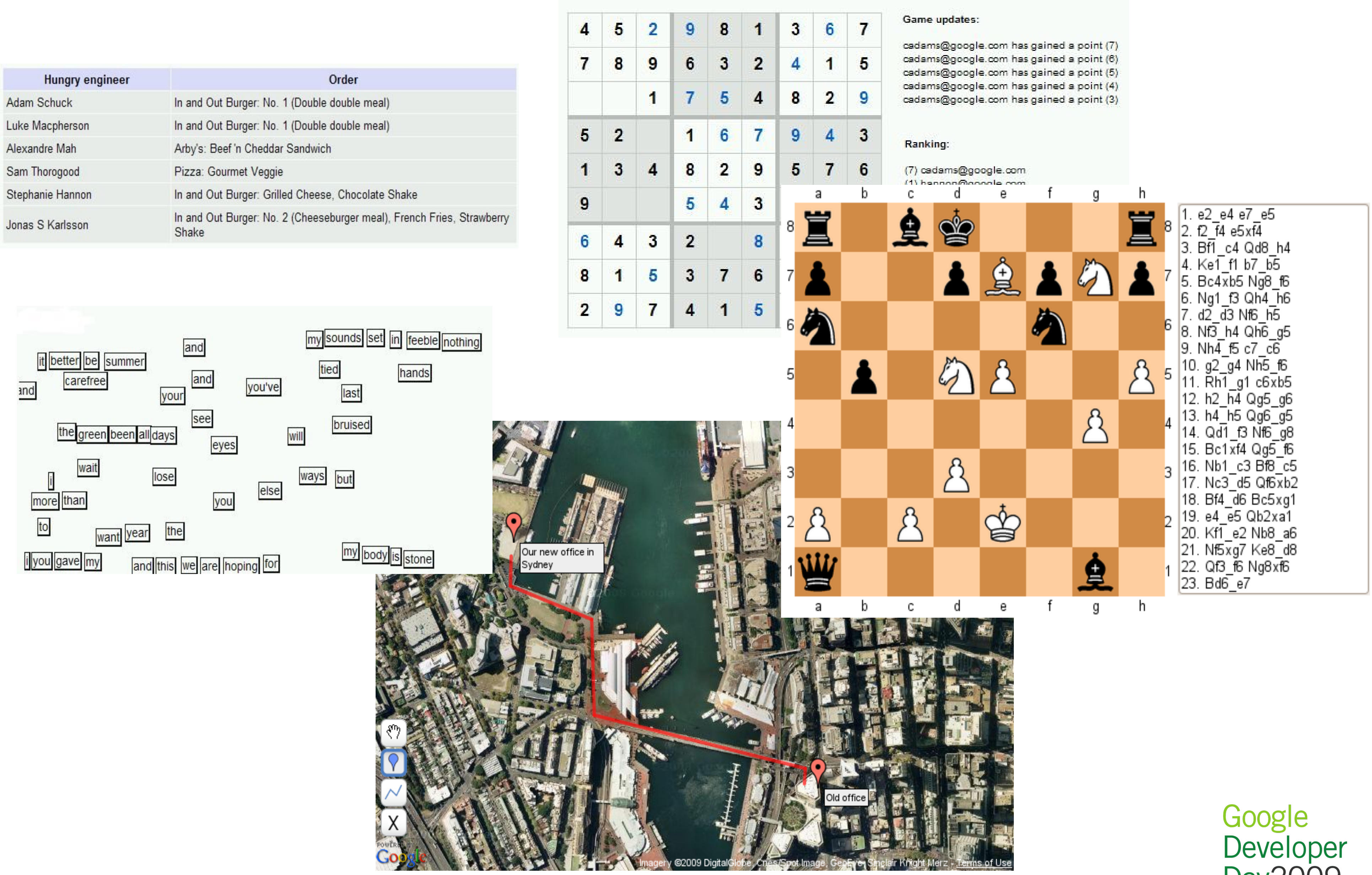
Adding Avatars

Making the gadget "useful"

```
var participants = wave.getParticipants();
for (var i = 0; i < participants.length; ++i) {
  var p = participants[i];
  var ploc = state.get(p.getId(), i * 2 + '|' + i * 2).split('|');
  var lat = parseFloat(ploc[0]);
  var lng = parseFloat(ploc[1]);
  var Icon = new GIcon();
  Icon.image = p.getThumbnailUrl();
  var marker = new GMarker(new GLatLng(lat, lng),
      {draggable:true, icon:Icon});
  map.addOverlay(marker);
  if (p.getId() == wave.getViewer().getId()) {
    marker.pid = p.getId();
    GEvent.addListener(marker, "dragend", function() {
      var d = {}
      d[this.pid] = this.getLatLng().lat() + '|' +
          this.getLatLng().lng();
      wave.getState().submitDelta(d);
  });
}
```

Other Examples of Gadgets

Games, polls, puzzles and more!



Hungry engineer	Order
Adam Schuck	In and Out Burger: No. 1 (Double double meal)
Luke Macpherson	In and Out Burger: No. 1 (Double double meal)
Alexandre Mah	Arby's: Beef 'n Cheddar Sandwich
Sam Thorogood	Pizza: Gourmet Veggie
Stephanie Hannon	In and Out Burger: Grilled Cheese, Chocolate Shake
Jonas S Karlsson	In and Out Burger: No. 2 (Cheeseburger meal), French Fries, Strawberry Shake

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

Game updates:

cadams@google.com has gained a point (7)
cadams@google.com has gained a point (6)
cadams@google.com has gained a point (5)
cadams@google.com has gained a point (4)
cadams@google.com has gained a point (3)

Ranking:

(7) cadams@google.com
(1) hannon@google.com

1. e2_e4 e7_e5
2. f2_f4 e5xf4
3. Bf1_c4 Qd8_h4
4. Ke1_f1 b7_b5
5. Bc4xb5 Ng8_f6
6. Ng1_f3 Qh4_h6
7. d2_d3 Nf6_h5
8. Nf3_h4 Qh6_g5
9. Nh4_f5 c7_c6
10. g2_g4 Nh5_f6
11. Rh1_g1 c6xb5
12. h2_h4 Qg5_g6
13. h4_h5 Qg6_g5
14. Qd1_f3 Nf6_g8
15. Bc1xf4 Qg5_f6
16. Nb1_c3 Bf8_c5
17. Nc3_d5 Qf6xb2
18. Bf4_d6 Bc5xg1
19. e4_e5 Qb2xa1
20. Kf1_e2 Nb8_a6
21. Nf5xg7 Ke8_d8
22. Qf3_f6 Ng8xf6
23. Bd6_e7

Our new office in Sydney

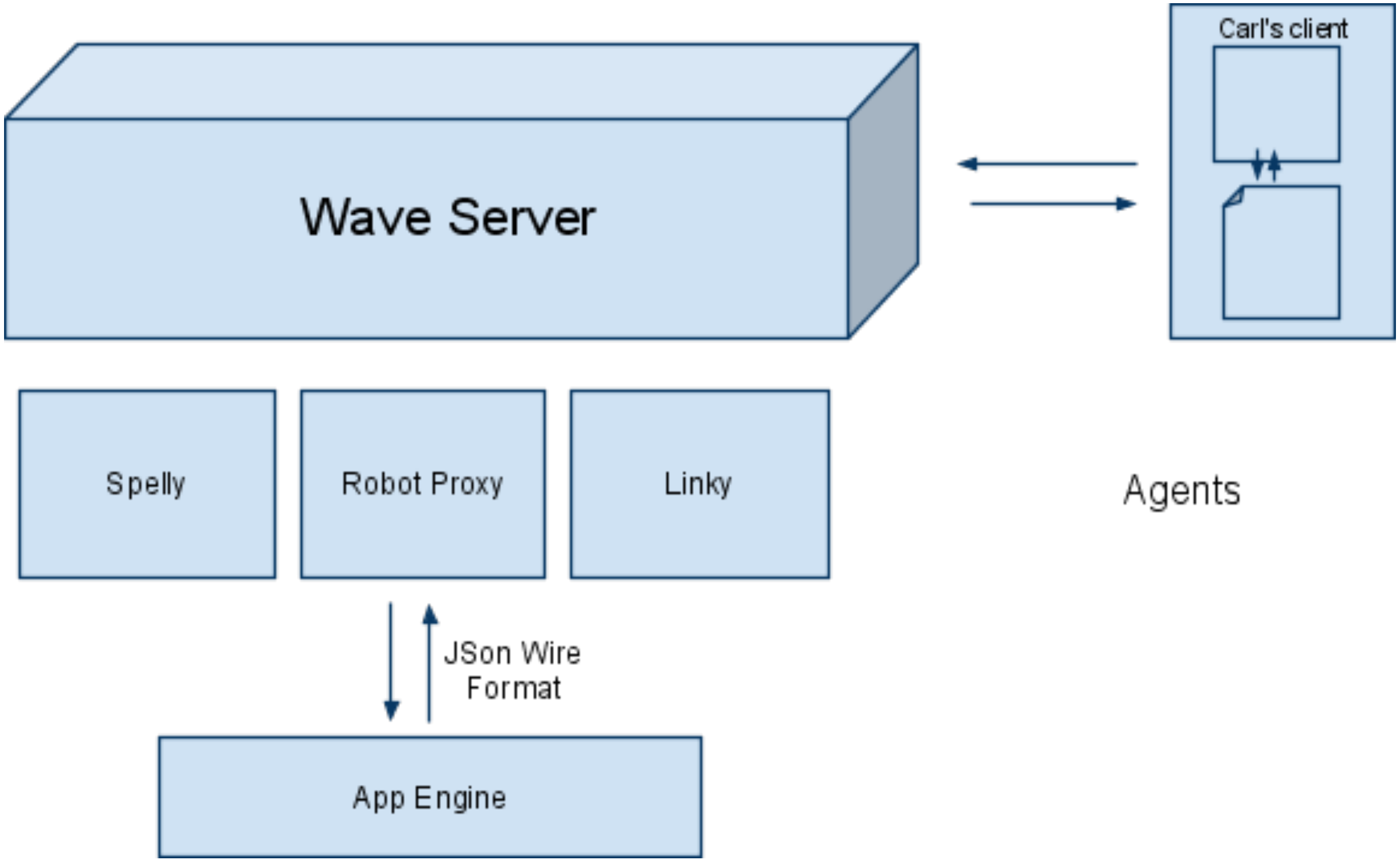
Old office

<demo>are you in?</demo>

Robots Deep Dive

Robot Architecture

How robots interact with clients and the Wave Server

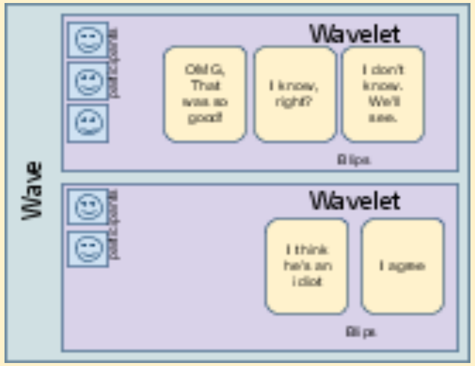


* All robots run on App Engine today but that will be opened up

Wave Robot API

Overview of the model, events, and operations

Model



TextView
GadgetView
FormView

Events

Wavelets: BlipCreate, ParticipantChanged, TitleChanged
Blips: ContributorsChanged, Deleted, Submitted, DocumentChanged
Form: ButtonClicked

Operations

Wavelet: AppendBlip, AddParticipant, Create, RemoveSelf, SetDataDoc, SetTitle, CreateBlip
Blip: CreateChild, Delete
Annotation: Delete, Set
Document: Append, AppendStyled, Insert, Delete, **Replace**, Elements, InlineBlip

Simple Robot

Example of Smiley, the emoticon robot

```
"""Smiley: Yet another smiley robot."""

from waveapi import events
from waveapi import robot

def OnBlipSubmitted(properties, context):
  blip = context.GetBlipById(properties['blipId'])
  contents = blip.GetDocument().GetText()
  contents = contents.replace(':-(', unichr(0x2639))
  contents = contents.replace(':-)', unichr(0x263A))
  blip.GetDocument().SetText(contents)

if __name__ == '__main__':
  smiley = robot.Robot('Smiley')
  smiley.RegisterHandler(
      events.BLIP_SUBMITTED, OnBlipSubmitted)
  smiley.Run()
```

<demo>smiley</demo>

Complety Robot

Using the Google Search API and a wave robot

```
if '???' in contents:
  q = '"%s"' % contents.replace('???', '*').replace('"', ' ')
  start = 0
  res = {}
    for i in range(6):
      url = ('http://ajax.googleapis.com/ajax/services/search/web',
         '?v=1.0&start=%d&q=%s') % (start, urllib.quote(q))
      js = urlfetch.fetch(url=url).content
      data = simplejson.loads(js)
      for fragment in data['responseData']['results']:
        for m in re.findall('\<b\>([^\<]*)', fragment['content']):
          m = m.lower()
          if m == '...':
            continue
          res[m] = res.get(m, 0) + 1
      start += 5
    if res:
      res = res.items()
      res.sort(lambda a,b: -cmp(a[1], b[1]))
      blip.GetDocument().SetText(res[0][0])
```

<demo>complety</demo>

More Example Robots

Some sample robots written to demo the API

- Polly
  - handles the flow of polling
  - demonstrates forms within a wave
  - uses waves as the data store
- Bloggy
  - publishes waves to a blog
- Buggy
  - connects wave to Issue Tracker
- Searchy
  - does the heavy lifting for... web search
- Tweety
  - syncs between waves and Twitter

<demo>searchy</demo>

Extensions Distribution

Extensions API

Extending the Google Wave client

Hooks

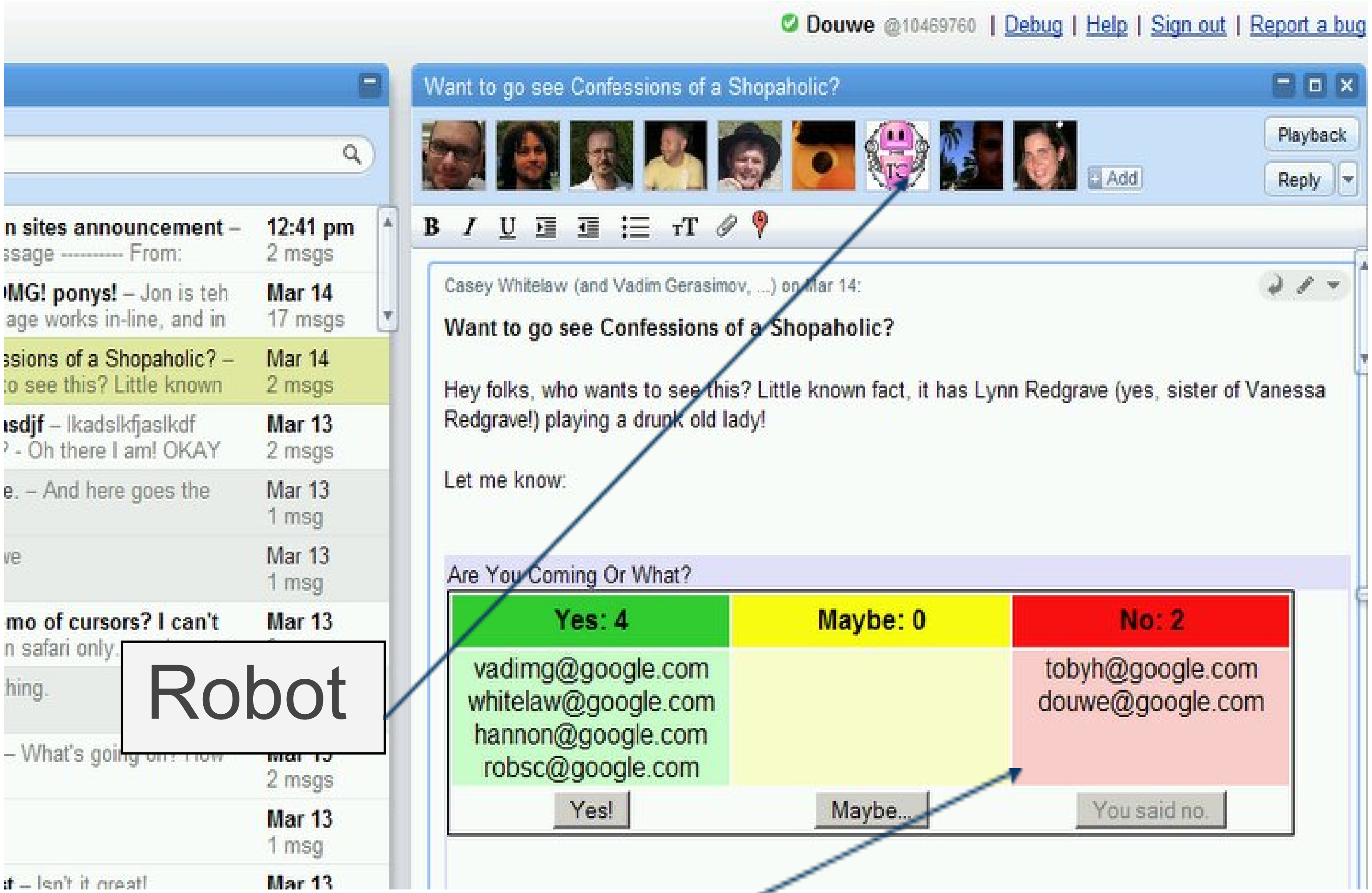
- New Wave
- Toolbar Menus
- Keyboard shortcuts
- Macros
- etc

Actions

- Insert Gadget
- Add Participant
- Create New Wave
- Apply Annotation
- etc

Integrating Extensions

Extensions allow easy access to robots and gadgets



Douwe @10469760 | Debug | Help | Sign out | Report a bug

n sites announcement – 12:41 pm
ssage ---------- From: 2 msgs

MG! ponys! – Jon is teh Mar 14
age works in-line, and in 17 msgs

ssions of a Shopaholic? – Mar 14
o see this? Little known 2 msgs

sdjf – lkadslkfjaslkdf Mar 13
? - Oh there I am! OKAY 2 msgs

e. – And here goes the Mar 13
1 msg

ve Mar 13
1 msg

mo of cursors? I can't Mar 13
n safari only.

hing.

– What's going on? How
2 msgs

Mar 13
1 msg

t – Isn't it great! Mar 13

Want to go see Confessions of a Shopaholic?

Add

Playback

Reply

Casey Whitelaw (and Vadim Gerasimov, ...) on Mar 14:

Want to go see Confessions of a Shopaholic?

Hey folks, who wants to see this? Little known fact, it has Lynn Redgrave (yes, sister of Vanessa Redgrave!) playing a drunk old lady!

Let me know:

Are You Coming Or What?

Yes: 4	Maybe: 0	No: 2
vadimg@google.com whitelaw@google.com hannon@google.com robsc@google.com		tobyh@google.com douwe@google.com
Yes!	Maybe...	You said no.

Robot

Gadget

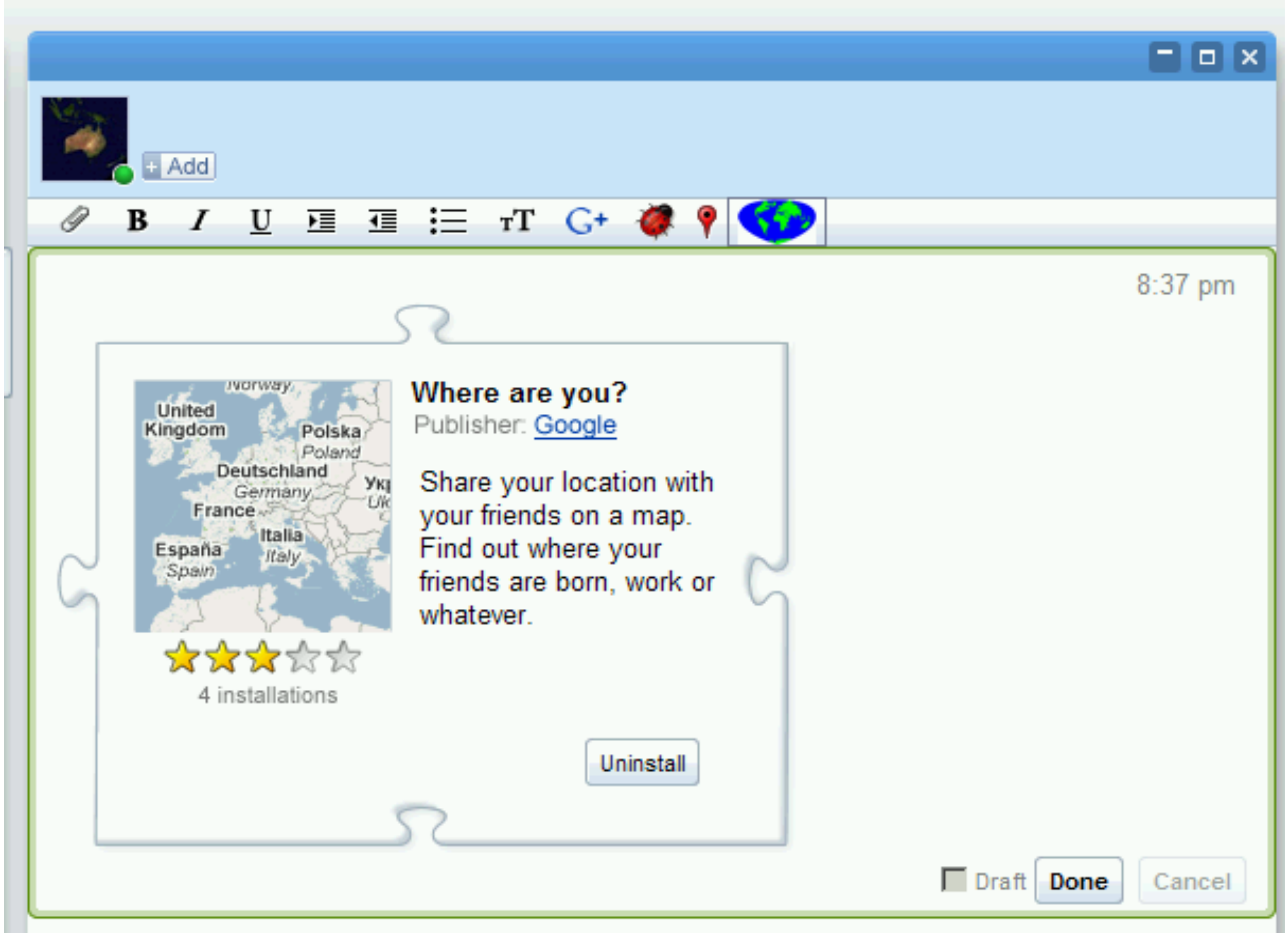
Example Extension Installer

New Menu button for participant showing map gadget

```
<extension location="Toolbar">
  <info id="where-are-you-gadget"
        text="Where Are You?"
        description="Insert the Where Are You? gadget."
        imageUrl="http://wave-api-dmo.appspot.
com/public/simplemap/whereicon.png"/>
      <insertGadget
        url="http://wave-api-dmo.appspot.
com/public/simplemap/participantmap.xml"/>
</extension>
```

Extension Installer Screen Shot

Installer shows install state for current user


Where are you?

Publisher: Google

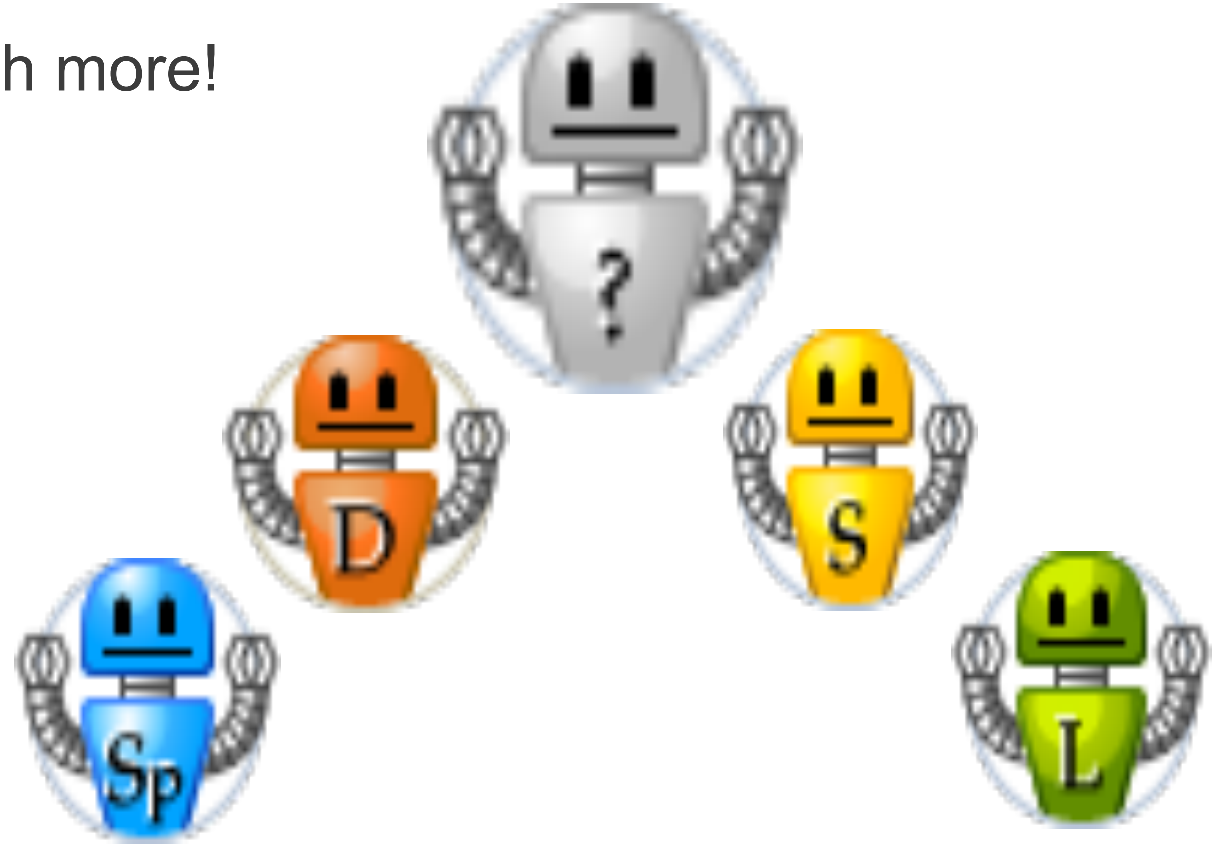
Share your location with your friends on a map. Find out where your friends are born, work or whatever.

4 installations

<demo>where are you extension</demo>

Future Plans

- GData APIs with OAuth support
- Authenticated Robots
- Client-side Robots (Zombie API)
- and much more!



<demo>spelly</demo>

Thank You!

Thanks for listening and be sure to check out the code site!

For more info:
http://code.google.com/apis/wave/

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