

# Comet: Making The Web a 2-Way Medium

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# What is Comet?

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Long lived HTTP connections

- Low latency data
- For events outside the browser

The background of the slide is a long, dark tunnel with a road stretching into the distance. The walls of the tunnel are lined with lights, and there are bright, colorful light trails (red, orange, and yellow) on the road surface, suggesting motion or a long-exposure photograph. The overall atmosphere is mysterious and futuristic.

# Agenda:

Use Cases

Techniques

Technologies

Demos

# Why?

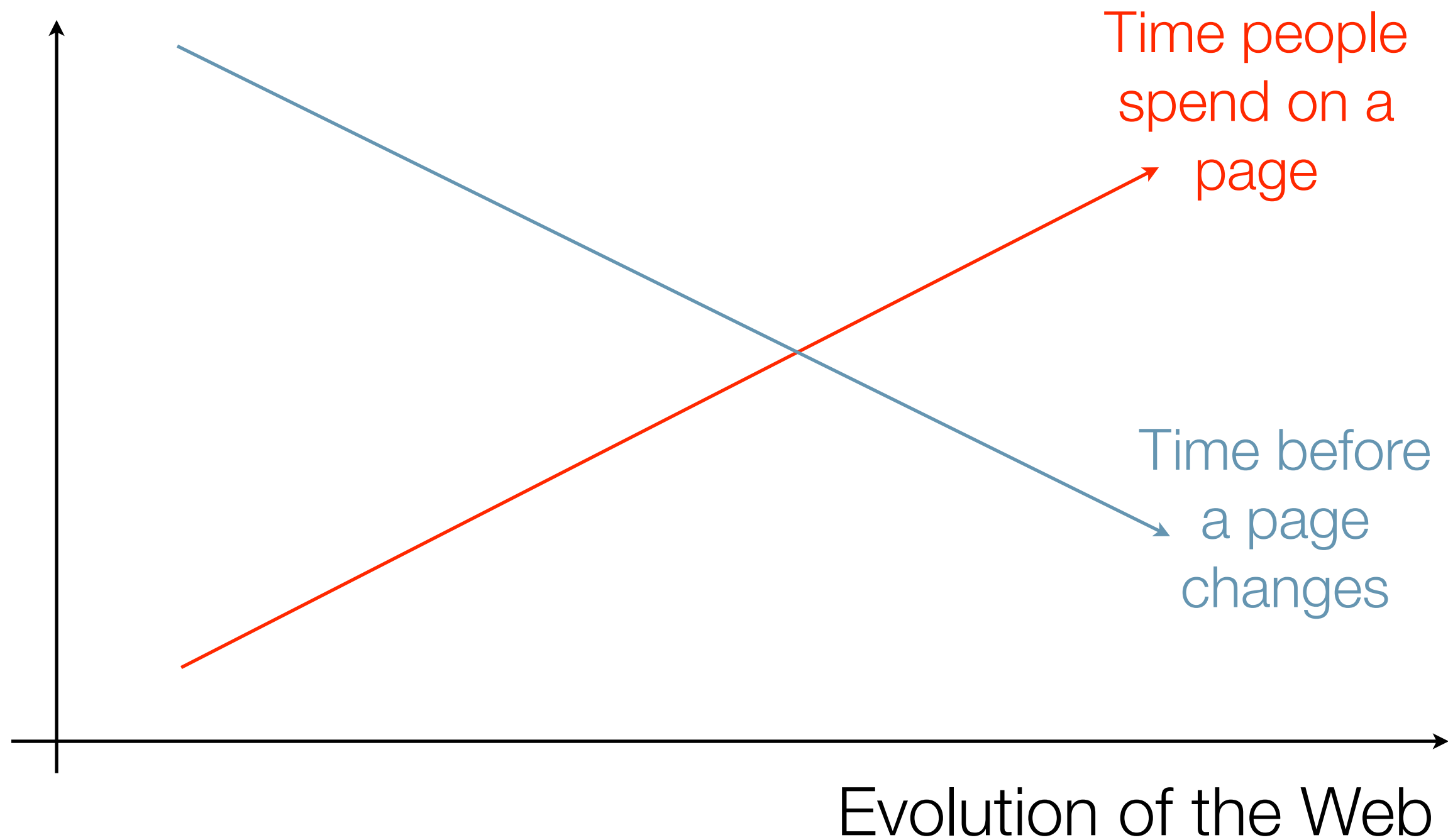
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Ajax made individual pages interactive places to explore

More and more of the data on the web is social and therefore changing

# Why?

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# Why?

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Simply keeping a page up to date is easy: poll

But polling kills servers

Comet keeps pages up to date \*efficiently\*

# But ...

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It's a hack - the web is biased against it

# Does that stop us?

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Ajax is also a hack, but that hasn't stopped it

And Comet does work



# Examples of Comet

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Chat is everywhere: GMail, Meebo, Yahoo Mail, etc.

GMail uses it to update email conversations

Google Docs uses it to show you other collaborators actions

yes.com uses it to track radio station playlists

Polar Rose are using it for delayed photo recognition

GPokr is using it for online gaming

etc...

The background of the slide is a long, dark tunnel with a road stretching into the distance. The walls of the tunnel are covered in a dense, blue, fibrous or crystalline material. The floor is a smooth, light-colored surface. On the left side of the road, there are several bright, wavy light trails in orange and red, suggesting motion or energy. The overall atmosphere is mysterious and futuristic.

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# Client Tricks

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Maximum of 2 connections per browser per host

- Coordination using `window.name` in the client
- or cookies using a server
- or use multi-home DNS

HTTP streaming is download only (chunked mode)

TCP connections are kept alive under HTTP 1.1

Server detection of failed connections

# Client How-to: Forever Frame

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Client posts an iframe which doesn't close quickly

- Send text/plain and poll in browser (not IE)
- Send text/plain with 4k whitespace to flush IE
- Flush with a `<script>` tag for each data block

The iframe will need killing and restarting to avoid memory leak

But IE clicks when iframe starts

# Client How-to: Long Polling

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Client makes an XHR request which does not return immediately

IE disallows reading `XHR.responseText` until connection is closed

Although you can keep XHR frames open forever, generally you poll

# Client How-to: htmlfile

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‘htmlfile’ is an ActiveX control like XHR:

```
htmlfile = new ActiveXObject("htmlfile");  
htmlfile.open();  
htmlfile.write("<html><iframe src='javascript:void(0) ' "  
              "onload='cleanup();'></iframe></html>");  
htmlfile.close();  
htmlfile.parentWindow.dwr = dwr;
```

Avoids ‘clicking’, but doesn’t work in IE/Server 2003

Not supported in Firefox, Safari, Opera, etc.

# Client How-to: Callback Polling

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Create `<script>` blocks pointing to any domain

Create new script block when last completes

# Client How-to: Other Options

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## Mime Messaging:

- Uses Multipart Mime in HTML: x-multipart-replace
- Not in IE
- Excellent performance

## Flash

- We probably have enough other options that we don't need to get into plugins



# Server Tricks

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Watch out for stream-stoppers

- Apache: mod\_jk
- Buggy network proxies
- Various application firewalls

Watch out for thread starvation

The background of the slide is a long, dark tunnel with a road stretching into the distance. The walls of the tunnel are lined with lights, creating a sense of depth and perspective. The floor of the tunnel is dark, and the ceiling is also dark. The overall atmosphere is mysterious and futuristic.

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# Saving you the Pain

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## On the Server:

- Jetty, Twisted Python, Grizzly, Lighttpd, Perbal

## Event Buses

- Cometd, mod\_pubsub, mod\_repubsub, Lightstreamer, KnowHow, HAppS

## Frameworks

- DWR, Juggernaut, Nevow

# Bayeux

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Standard Protocol for Interoperable Comet

Supported by:

- Cometd, Jetty, Dojo, DWR and servers in development from BEA, IBM and Sun

# Bayeux on the Client via Cometd

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Dojo client implementation:

```
dojox.cometd.init(serverUrl);  
dojox.cometd.publish("/topic", { /* payload */ });  
dojox.cometd.subscribe("/topic", function() { /* ... */ });
```

# Bayeux on the Server

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```
package dojox.cometd;

public interface Bayeux
{
    Client newClient(String idprefix, Listener listener);

    void publish(Client fromClient, String toChannel,
                 Object data, String msgId);

    void subscribe(String toChannel, Client subscriber);

    ...
}
```

# DWR

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Reverse Ajax == Comet + Polling + Piggyback  
(It's just a configuration option)

Allowing the server to easily manage groups of users

# DWR, Reverse Ajax

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DWR calling remote Javascript

```
Collection sessions = context.getScriptSessionsByPage(url);
```

```
ScriptProxy proxy = new ScriptProxy(sessions);  
proxy.addFunctionCall("updateCallers", calls);
```



# DWR, Reverse Ajax

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DWR calling remote Script.aculo.us

```
Collection sessions = context.getScriptSessionsByPage(url);
```

```
Effect e = new Effect(sessions);  
e.fade("client-id");
```

# DWR, Reverse Ajax

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DWR calling remote TIBCO GI

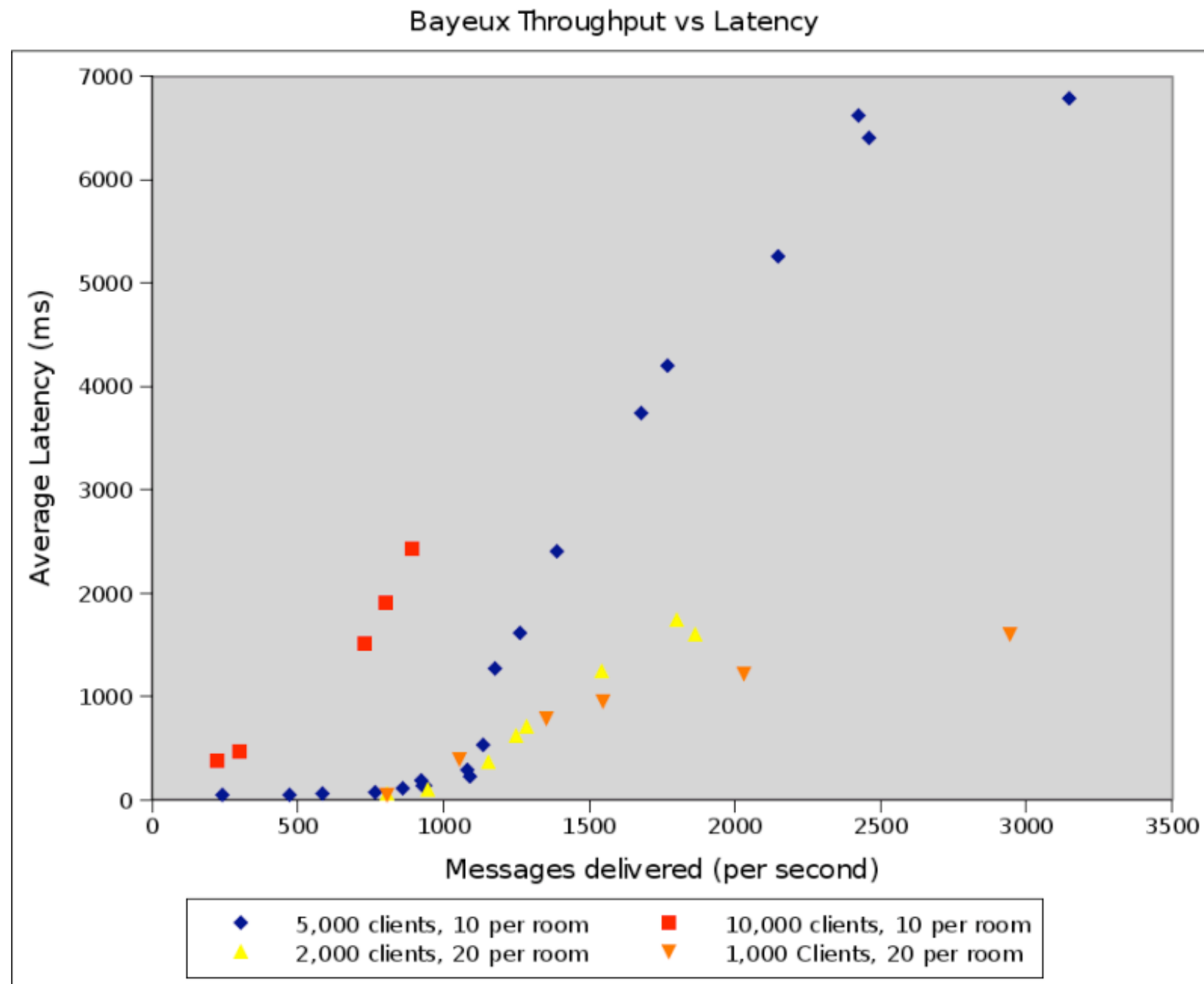
```
Collection sessions = context.getScriptSessionsByPage(url);
```

```
Server server = GI.getServer(sessions, "appname");
```

```
Button button = server.getJSXById("button", Button.class);
```

```
button.setEnabled(Form.STATEDISABLED, true);
```

# Bayeux Performance





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# Demo

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<http://www.webtide.com/sessionRater/>

Conference Sessions (scroll down to live sessions)				
Welcome and Test Topic 0 <i>John D0</i>				★ ★ ☆ ☆ ☆
Welcome and Test Topic 1 <i>John D1</i>				★ ★ ★ ★ ☆
Copy isInterface <i>Erika Hall</i> [Business Track] 04/Oct/07 15:45 BST	9:37:56			☆ ☆ ☆ ☆ ☆
Comet: Making the Web a 2-Way Medium <i>Joe Walker</i> [Developer Track] 04/Oct/07 15:45 BST	9:37:56			☆ ☆ ☆ ☆ ☆
Quintura <i>Quintura</i> [Showcase Track] 04/Oct/07 15:45 BST	9:37:56			☆ ☆ ☆ ☆ ☆

# Demo

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Waiting	▼ Number	Name	H	S
13:30	+1 (166) 261 - 7232	Jim Wilkinson		
6:50	+44 (0) 1685 740402	Luke MacDonald		
5:10	+44 (0) 1575 041468	Jack Wilson		
4:20	+44 (0) 1301 471586	Leanne Daniels		
3:50	+1 (413) 075 - 4162	?		
3:50	+1 (608) 834 - 8372	?		
2:30	+44 (0) 1506 764215	?		
1:30	+44 (0) 1245 835054	?		
0:40	+1 (251) 772 - 0160	?		
0:30	+1 (308) 318 - 0737	?		

Phone:

Name:

Address:

Event:

Payment:

Notes:

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# Questions?

<http://cometdaily.com/>

<http://cometd.com/>

<http://getahead.org/blog/joe/>

<http://directwebremoting.org/>

