



# Enterprise Mashups

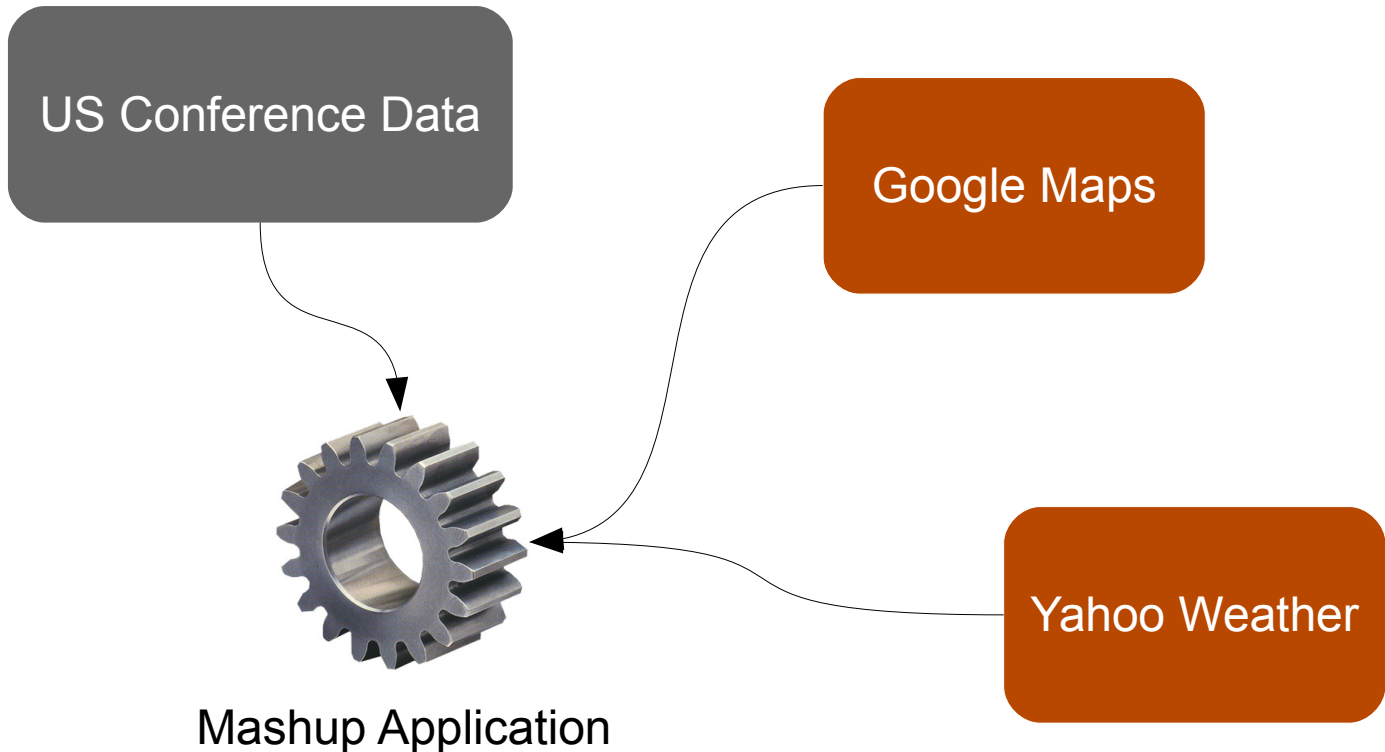
with RESTful Web Services and jQuery



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## solutionsfit Consulting Services

- Align business and development
- Enable IT organizations to maximize efficiency
- Develop custom software solutions
- Provide architectural guidance and insight
- Train organizations on technology and methodology

# What will you see today?



-  Internal service
-  External service

## What will you see today?

- HTML and JavaScript
- RESTful services
- JSON and JSONP
- jQuery Simplicity
- Plug-and-play Portability

<http://solutionsfit.com/examples/conferences/>

# What is a Mashup?

- Wikipedia
  - In Web development, a mashup is a Web page or application that uses and combines data, presentation or functionality from two or more sources to create new services.

“  
”

# Mashup Examples

- Customer Service
  - Mashup your call center application with package tracking
- Client Prospecting
  - Mashup your sales prospects with external news, stock and company information
- Human Resources
  - Mashup your internal job postings with external resume services

Source: [jackbe.com](http://jackbe.com)

## Enterprise Web Services: Got REST?

- Simplifies requests
- Readable URL
- Variety of data formats (e.g. JSON)
- Embraces HTTP protocol
  - GET                      Read
  - POST                     Update
  - PUT                        Create
  - DELETE                  Delete

`http://solutionsfit.com/examples/services/conferences/us.json`

## The Java Approach

- Simple to support JSON with JAX-RS
- JAX-RS implementations: RESTEasy and Jersey
- HTTP Accept header determines media type

Accept: application/json



```
@GET
@Produces("application/json")
public String doGetAsJSONResult() {
    // generate JSON result for request
}
```

# Why JSON when you have XML?

<http://solutionsfit.com/examples/services/conferences/us.json>

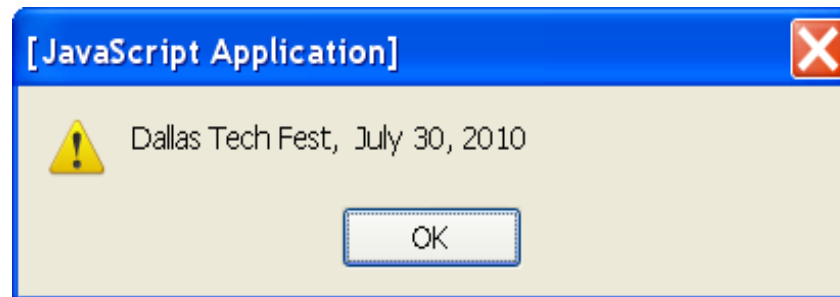
```
{
  'conferences': [{
    'name': 'Dallas Tech Fest',
    'url': 'http://dallastechfest.com/',
    'date': 'July 30, 2010',
    'venue': 'The University of Texas at Dallas',
    'city': 'Richardson',
    'state': 'TX',
    'longitude': '-96.748077',
    'latitude': '32.978122'
  },
  // ... ..
  ]
}
```

# Why JSON when you have XML?

- What is the first conference from the service?

## JavaScript

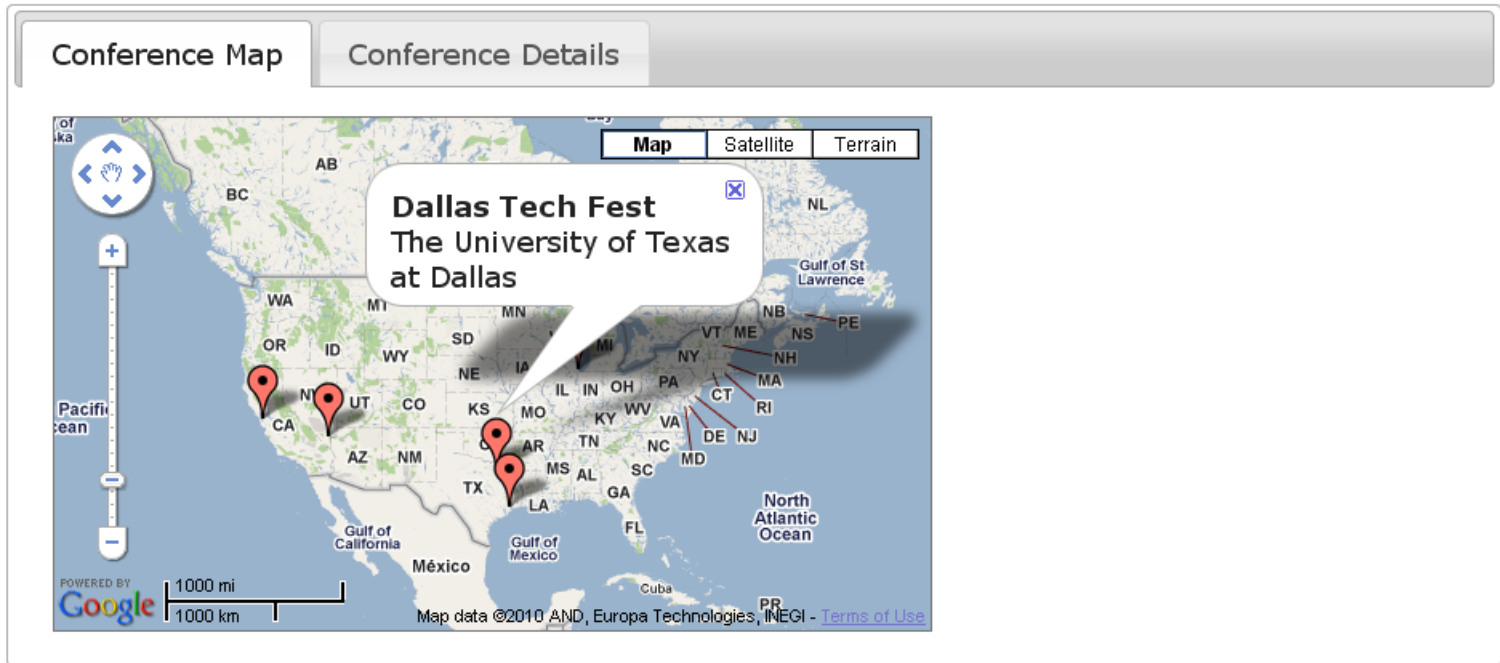
```
jQuery.getJSON(  
  
'http://solutionsfit.com/examples/services/conferences/us.json',  
  function(data) {  
    var conference = data.conferences[0];  
  
    alert(conference.name + ', ' + conference.date);  
  }  
);
```



# The Mashup Application

## US Software Conferences

Takes a list of software conferences in the US from JSON input. Maps those conferences across a US map and generates a list of information with current weather conditions.



The screenshot shows a web application interface with two tabs: "Conference Map" (selected) and "Conference Details". Below the tabs is a Google Maps interface showing a map of the United States with several red location pins. A callout box is open over the Dallas area, displaying the text "Dallas Tech Fest" and "The University of Texas at Dallas". The map includes standard Google Maps controls like a compass, zoom in/out buttons, and a scale bar. The map data is attributed to Google and other providers.



Conference Map = US Conference Data + **Google Maps**

# The Mashup Application

## US Software Conferences

Takes a list of software conferences in the US from JSON input. Maps those conferences across a US map and generates a list of information with current weather conditions.

Conference	Date	Venue	Current Weather
<a href="#">Dallas Tech Fest</a>	July 30, 2010	The University of Texas at Dallas	Richardson, Texas Weather :: 84F Overcast
<a href="#">JavaOne</a>	September 19-23, 2010	Hotel Nikko	San Francisco, California Weather :: 59F Overcast
<a href="#">Houston Techfest</a>	October 9, 2010	University of Houston	Houston, Texas Weather :: 86F Mostly cloudy
<a href="#">SpringOne 2GX</a>	October 19-22, 2010	JW Marriott	Chicago, Illinois Weather :: 85F Mostly cloudy
<a href="#">TSSJS 2011</a>	March 16-18, 2011	Caesars Palace in Las Vegas	Las Vegas, Nevada Weather :: 84F Clear



Conference Details = US Conference Data + **Yahoo Weather**

# Basic Libraries

- jQuery Core
- jQuery UI
- Prototype JS

# Creating our Event Class

## JavaScript

```
var ConferenceAction = Class.create({
  onLoad: function() {
    var self = this;

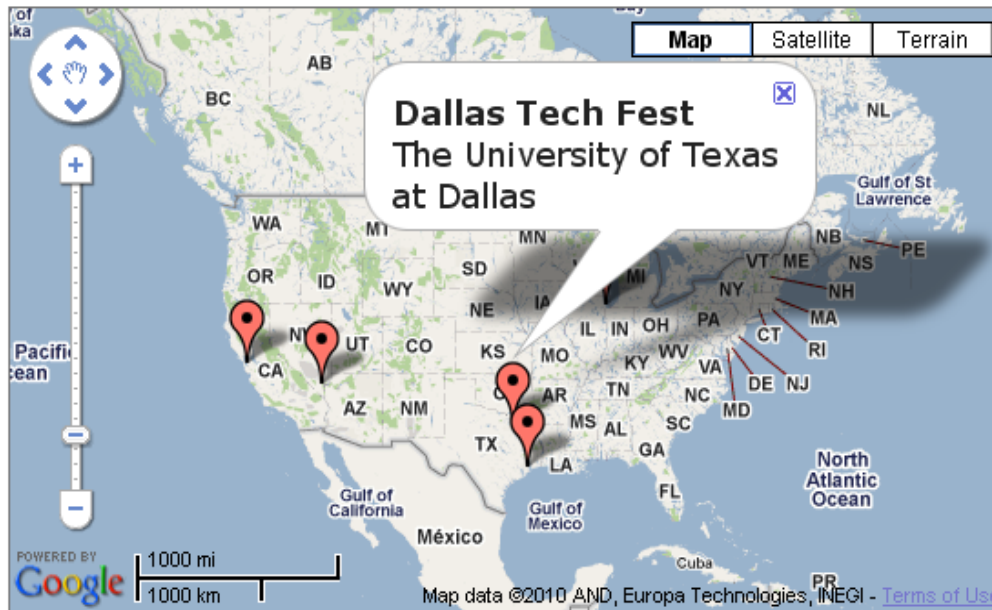
    jQuery.getJSON("/examples/services/conferences/us.json",
      function(data) {
        var conferences = data.conferences;

        self.renderMap(conferences);
        self.renderConferenceTable(conferences);
        self.renderTabs();
      });
  },
  // ... ..
});

window.onload = function() {
  var conferenceAction = new ConferenceAction();

  conferenceAction.onLoad();
};
```

# Mapping the Conference Data



# Mapping the Conference Data

**Note:** You must have an App key

## Google Maps API

```
<script src="http://maps.google.com/maps?
  file=api&v=2&sensor=true_or_false&
  key=[insert-app-key-here]"
  type="text/javascript"></script>
```

## GMap JQuery Plugin

```
<script src="lib/jquery.gmap-1.1.0-min.js"
  type="text/javascript"></script>
```

## HTML Container

```
<div id="conferenceMap">
  <div id="map" class="mapStyle"></div>
</div>
```

# Mapping the Conference Data

## JavaScript

```
renderMap: function(conferences) {
    var markers = [];

    jQuery.each(conferences, function(i, conference) {
        markers.push({
            "longitude": conference.longitude,
            "latitude": conference.latitude,
            "html": "<strong>" + conference.name +
                "</strong><br/>" + conference.venue
        });
    });

    jQuery("#map").gMap({
        "zoom": 3,
        "markers": markers
    });
}
```

# Displaying the Conferences

Conference	Date	Venue	Current Weather
<a href="#"><u>Dallas Tech Fest</u></a>	July 30, 2010	The University of Texas at Dallas	Richardson, Texas Weather :: 84F Overcast
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# Displaying the Conferences

## HTML Container

```
<div id="conferenceList">
  <table>
    <thead>
      <tr>
        <th>Conference</th>
        <th>Date</th>
        <th>Venue</th>
        <th>Current Weather</th>
      </tr>
    </thead>
    <tbody id="conferenceTableBody">
      <!-- Insert dynamic content here -->
    </tbody>
  </table>
</div>
```

# Displaying the Conferences

## JavaScript

```
renderConferenceTable: function (conferences) {  
    var self = this;  
    var conferenceTableBody = jQuery("#conferenceTableBody");  
  
    jQuery.each (conferences, function (i, conference) {  
        conferenceTableBody.append(  
            '<tr><td><a href="' + conference.url + '>' +  
                conference.name + '</a></td>' +  
            '<td>' + conference.date + '</td>' +  
            '<td>' + conference.venue + '</td>' +  
            '<td><div id="weather' + i + '></div></td></tr>');  
  
        self.generateCurrentWeatherContent (conference.city,  
            conference.state, jQuery('#weather' + i));  
    });  
}
```

# Current Weather Conditions

Conference	Date	Venue	Current Weather
<a href="#"><u>Dallas Tech Fest</u></a>	July 30, 2010	The University of Texas at Dallas	Richardson, Texas Weather :: 84F Overcast
<a href="#"><u>JavaOne</u></a>	September 19-23, 2010	Hotel Nikko	San Francisco, California Weather :: 59F Overcast
<a href="#"><u>Houston Techfest</u></a>	October 9, 2010	University of Houston	Houston, Texas Weather :: 86F Mostly cloudy
<a href="#"><u>SpringOne 2GX</u></a>	October 19-22, 2010	JW Marriott	Chicago, Illinois Weather :: 85F Mostly cloudy
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# Current Weather Conditions

- Requires cross-domain communication



## US Software Conferences

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<a href="#">Houston Techfest</a>	October 9, 2010	University of Houston	Houston, Texas Weather :: 86F Mostly cloudy
<a href="#">SpringOne 2GX</a>	October 19-22, 2010	JW Marriott	Chicago, Illinois Weather :: 85F Mostly cloudy
<a href="#">YSSIS 2011</a>	March 16-19, 2011	Caesars Palace in Las Vegas	Las Vegas, Nevada Weather :: 84F Clear

<http://solutionsfit.com/examples/conferences/>

jQuery.ajax



<http://weather.yahooapis.com/forecastrss>

Disallowed by same-origin policy



## Current Weather Conditions

- JSONP provides a solution
- `jQuery.getJSON` with `callback=?` param
- Wraps JSON with a function call
- Yahoo Pipes provides JSONP support

```
http://pipes.yahoo.com/pipes/pipe.run?_id=2B0SG8523BGUyxzgjUnRlg  
&_render=json&textinput2=Dallas&textinput3=TX&_callback=?
```

Only use JSONP with services you trust!

# Current Weather Conditions

## JSON Result

```
jquery12345({
  "count": 3,
  "value": {
    "title": "RSS Weather App",
    // ... ..
    "items": [{
      "description": "90F Mostly cloudy",
      "title": "Dallas, Texas Weather :: 90F Mostly cloudy",
      // ... ..
    }]
  }
});
```

# Current Weather Conditions

## JavaScript

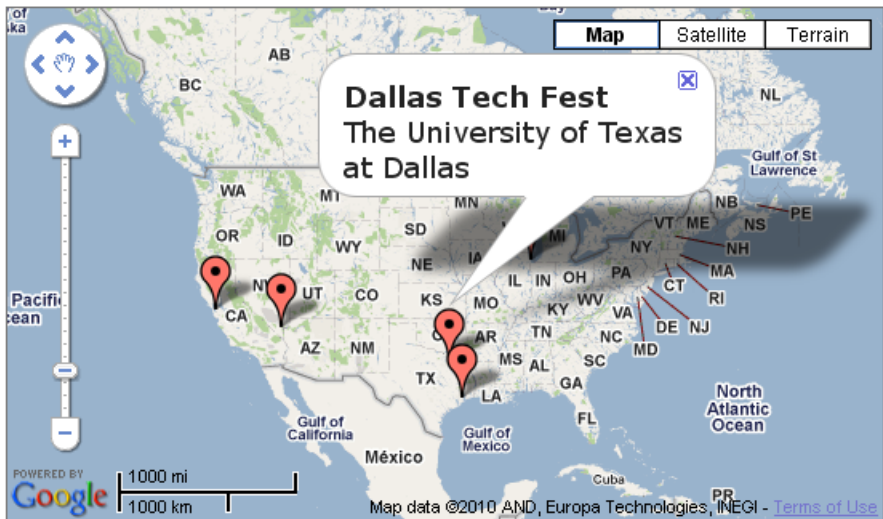
```
generateCurrentWeatherContent: function(city, state, element) {  
    jQuery.getJSON("http://pipes.yahoo.com/pipes/pipe.run" +  
        "?_id=2B0SG8523BGUyxzgjUnRlg&_render=json&textinput2=" + city +  
        "&textinput3=" + state + "&_callback=?",  
        function(weatherData) {  
            var currentWeather = weatherData.value.items[0].title;  
  
            element.html(currentWeather);  
        });  
}
```

# Pretty it up with jQuery UI

## US Software Conferences

Takes a list of software conferences in the US from JSON input. Maps those conferences across a US map and generates a list of information with current weather conditions.

Conference Map Conference Details



**Dallas Tech Fest**  
The University of Texas at Dallas

Map data ©2010 AND, Europa Technologies, INEGI - [Terms of Use](#)

# Enhance the UI with jQuery

## HTML Container

```
<div id="tabContainer">
  <ul>
    <li>
      <a href="#conferenceMap">
        <span>Conference Map</span>
      </a>
    </li>
    <li>
      <a href="#conferenceList">
        <span>Conference Details</span>
      </a>
    </li>
  </ul>
  <div id="conferenceMap">
    <!-- map content -->
  </div>
  <div id="conferenceList">
    <!-- conference list content -->
  </div>
</div>
```

# Enhance the UI with jQuery

## JavaScript

```
renderTabs: function() {  
    jQuery("#tabContainer").tabs();  
}
```

Yes, it's that simple.

## Can this be Portable?

- Nothing but HTML, JavaScript, and CSS
- Embed as a component in:
  - Web application (pick your language)
  - Portal
  - SharePoint
  - Even a static HTML page

# Mashup Containers

- iGoogle, Shindig, and JackBe Presto ®
- Use XML specifications
- `<body>` content in a separate HTML file
- Piece together application

## Portability Tricks

- Mimic a gadget with a few tricks
- Keep in mind same-origin policy
- Load HTML with `jQuery.load`

# Portability Tricks

## JavaScript

```
onLoad: function() {  
    var self = this;  
  
    jQuery('#mashupBody').load('html/app.html', function() {  
        // rendering logic  
    });  
}
```

## HTML Container

```
<div id="mashupBody"></div>
```

# Authentication and Authorization

- HTTP authentication recommended
- Browser handles negotiation
- SSO solution simplifies this consideration
- REST service for retrieving user roles

# Error Handling

- Use error callback in jQuery.ajax API

```
jQuery.ajax({
  type: "GET",
  url: requestUrl,
  data: data,
  success: function(data){
    // handle request
  },
  error: function(XMLHttpRequest, textStatus, errorThrown){
    alert("Sorry, an error occurred");
  }
});
```

## Error Handling

- JSONP requests fail silently
- Consider use of timeouts on JSON requests
- JSONP jQuery plugin

# Questions



# References

- Mashup Example
  - <http://solutionsfit.com/examples/conferences/>
  - Download: [http://solutionsfit.com/examples/enterprise\\_mashups.zip](http://solutionsfit.com/examples/enterprise_mashups.zip)
- JAX-RS
  - <http://jboss.org/resteasy>
  - <https://jersey.dev.java.net/>
- jQuery
  - <http://jquery.com>
  - <http://jqueryui.com/>
- Prototype JS
  - <http://www.prototypejs.org/>
- Google Maps
  - <http://code.google.com/apis/maps/index.html>
  - <http://plugins.jquery.com/project/gmap>
- Yahoo Weather
  - <http://developer.yahoo.com/weather/>
  - <http://pipes.yahoo.com/pipes/>