



The Iam Lotus User Group

Developing a World Class Web 2.0 Application with XPages

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About Me

- **My name is Matt White**
- **Based in London, England**
- **A Notes, Domino, and Java Developer since 1996**
- **Worked on Web applications ranging in size from 20 to 20,000 users**
- **Lead developer for ideajam.net**



Introduction

- **XPages are the biggest change in Domino development in a decade**
- **They bring Domino up to the level of .NET or J2EE**
 - ◆ In terms of functionality and speed of development
 - ◆ And make our lives easier
- **XPages are a dramatic change in how we develop**
 - ◆ This session will show you
 - ▶ What you need to think about before coding
 - ▶ How to develop a new application
 - ▶ Tips and Tricks for XPages development

What We'll Cover ...

- **What is a Web 2.0 application?**
- **What are XPages?**
- **Planning before coding your XPages application**
- **Displaying data in an XPage**
- **Creating and editing data in an XPage**
- **Writing advanced features in an XPage application**
- **Wrap Up**

What is a Web 2.0 Application?

- **Simple to use**
- **No training required**
- **Nice to look at**
- **Some good examples include:**

- **Flickr**
- **Digg**
- **Del.icio.us**
- **37 Signals**
- **Writeboard**
- **Google Apps**
- **Facebook**
- **LinkedIn**
- **Last.fm**
- **SocialText**
- **StumbleUpon**
- **YouTube**

TaskJam - Our Demo Application

- **We wanted to develop a simple Web-based task management application that allowed us to:**
 - ♦ Easily create tasks
 - ♦ Share tasks with others
 - ♦ Assign due dates
 - ♦ Prioritize
 - ♦ Organize with tags
- **To do this we needed to use**
 - ♦ Validation
 - ♦ Pager controls
 - ♦ Tag clouds
 - ♦ Type ahead

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What are XPages?

- **New server task that is part of HTTP**
 - ◆ But as developers who really cares about admin tasks? ;-)
- **An XPage is a Java Server Face J2EE application**
 - ◆ But you are completely separated from that (if you want to be)
 - ◆ You don't need to know any Java to use XPages
- **In Domino Designer for Eclipse (DDE) there are three new design elements**
 - ◆ XPage
 - ◆ Custom Control
 - ◆ Server Side JavaScript Library

What are XPages (cont.)

- **All code is written in JavaScript**
 - ♦ **Case sensitivity and syntax are now very important**
 - ▶ `@Dblookup(“”:”NoCache”; @Dbname; “myview”; “thekey”; 1)`
 - ♦ **becomes**
 - ▶ `@DbLookup(@DbName(), “myview”, “thekey”, 1)`
 - ♦ **Most other code uses the same object model as Java**
 - ♦ **You can also call Java in your JavaScript**
 - ▶ `var myVector = new java.util.Vector();`

What are XPages (cont.)

- To debug your XPages turn on the debugger
 - ◆ Application Properties → XPages → Display Default Error Page

The image shows two screenshots from the IBM WebSphere Application Server interface. The left screenshot is the 'Errors and Timeouts' configuration page for XPages. It includes fields for 'Application timeout' and 'Session timeout' (both in minutes), a checked checkbox for 'Display default error page', and a dropdown menu for 'Error page' set to 'Server Default'. Below this is a navigation bar with tabs for 'Basics', 'Launch', 'Design', 'XPages', and 'Advanced'. The right screenshot is the 'Unexpected runtime error' console view. It displays the message: 'The runtime has encountered an unexpected error.' Under 'Error source', it shows 'Page Name: /home.xsp' and 'Property: beforePageLoad'. Under 'Exception', it states: 'Error while executing JavaScript action expression: Script interpreter error, line=1, col=29: Reference error: 'NonExistantObject' not found'. The 'Javascript code' section shows two lines: '1: var thisisajavascripterror = new NonExistantObject();' and '2: thisisajavascripterror.doSomething();'. A 'Stack Trace' link is visible at the bottom.

The XPage Design Element

- **Closest match in “classic” Notes is the form**
 - ♦ But an XPage is just used as a Web interface onto your database
- **Is really a container for Custom Controls**
 - ♦ Generally not much coding is done in the XPage
 - ♦ You just drag and drop content into the XPage to be displayed to the browser

The Custom Control Design Element

- **Closest match in “classic” Notes is the sub form**
- **The real programming with XPages is done in Custom Controls**
 - ♦ **Re-use is key**
- **Generally you’ll separate function from UI**
 - ♦ **One Custom Control will handle layout**
 - ♦ **Others will handle data binding and business processes**

The Server Side JavaScript Library Design Element

- **There are now two types of JavaScript**
 - ◆ Client side – Will run out on the browser
 - ◆ Server side – Will run on the server
- **Server-side JavaScript can do almost everything that LotusScript or Java can do**
 - ◆ Except for UI classes
 - ◆ Always runs in the context of the user executing it
 - ▶ You can run agents on the server to execute code as the server rather than the current user.

The Benefits of XPages

- **Getting rid of the last ten years of “hacks”**
- **Lots of functions are available “out of the box”**
 - ♦ **Pager controls**
 - ♦ **Ajax**
 - ♦ **Nice looking views**
 - ♦ **Merging data from different documents, views, and databases**
 - ♦ **Rich text editing**
 - ♦ **Type ahead**
 - ♦ **Native CSS design**
 - ♦ **Proper HTML (XHTML)**
- **Bringing the ease of Notes client development to the Web**
- **You can write an entire application without writing much code**

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Some General Best Practices

- **Use a CSS Framework**
 - ◆ YUI / 960 Grid System / Blueprint
 - ◆ Font CSS – Provides consistent fonts across browsers
 - ◆ Grids CSS – Layout made easy for all “Class A” browsers
- **Simple to use**
 - ◆ Use a single page to do most things
- **Don't restrict the user into task categories**
 - ◆ Set them free to add on the fly
- **Don't add too much validation**
 - ◆ It makes the application harder to use

Some General Best Practices (cont.)

- **Make sure agent and XPage signing is set up in the server document**
 - ♦ “Sign agents or XPages to run on behalf of the invoker”
 - ♦ “Sign or run unrestricted methods and operations”
- **The “print” statement is also your friend**
 - ♦ It will print to the server console
 - ♦ Or have a look at our “OpenLogXPages” script library if you use OpenLog
 - ▶ **Use OpenLog with all of your applications**
(<http://openntf.org>)

Designing TaskJam

- **The Layout Custom Control**
 - ◆ Making use of YUI
 - ◆ Separating out UI from functionality
- **The repeating TaskRow Custom Control in Home XPage**
 - ◆ Scope variables
 - ◆ Simple view data binding
- **The Task Custom Control**
 - ◆ Binding a classic Notes form to a Custom Control
 - ◆ Validation
 - ◆ Type ahead
- **Advanced coding**
 - ◆ Tag cloud

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Creating Views in XPages

- **Basic layout using YUI**

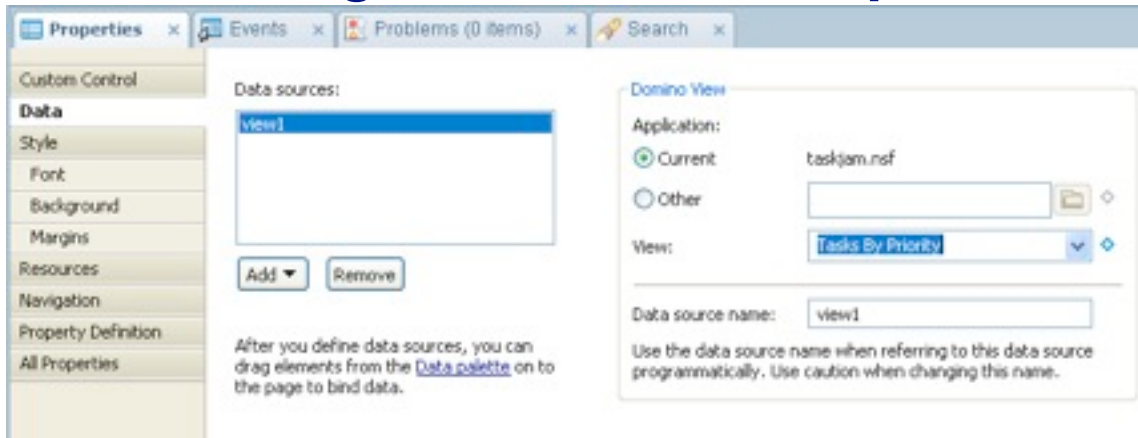
- ♦ Import CSS and include on the Custom Control
- ♦ Add second CSS file that we'll manage from a document
- ♦ Paste YUI HTML into Custom Control source XML

The screenshot shows the IBM WebSphere Designer interface. On the left, the 'Properties' window is open, displaying the 'Resources' section. It includes buttons for 'Add Style Sheet...', 'Add Script Library...', and 'Remove'. Below these buttons is a table with columns for 'Type' and 'Name'. The table contains two entries: a 'Style Sheet' named 'reset-fonts-grids.css' and another 'Style Sheet' named '#(javascript:)/wvCSS/ + getControlPanelSetting(CONST_STYLESH...'. On the right, the 'Source' view shows the XML code for the custom control. The code is as follows:

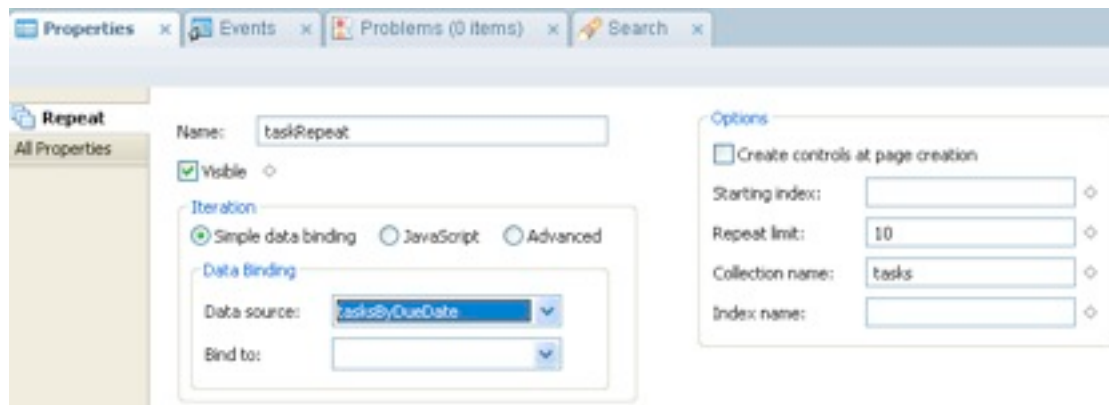
```
17 <div id="doc2" class="yui-t5">
18 <div id="hd">
19 <xc:layout_header></xc:layout_header>
20 </div>
21 <div id="bd">
22 <div id="yui-main">
23 <div class="yui-b">
24 <div class="yui-g">
25 <xc:Welcome>
26 <xc:this.rendered><![CDATA[#{javascript:UserN
27 </xc:Welcome>
28 <xp:callback facetName="facet_1" id="callback1">
29 </xp:callback>
30 </div>
31 </div>
32 </div>
33 <div class="yui-b">
34 <xc:layout_sidebar></xc:layout_sidebar>
35 </div>
36 </div>
37 <div id="ft">
38 <xc:layout_footer></xc:layout_footer>
39 </div>
40 </div>
41 </xp:view>
```

Creating Views in XPages (cont.)

- Data binding for a view is simple



- Then you can use the data source in a view control or repeat control

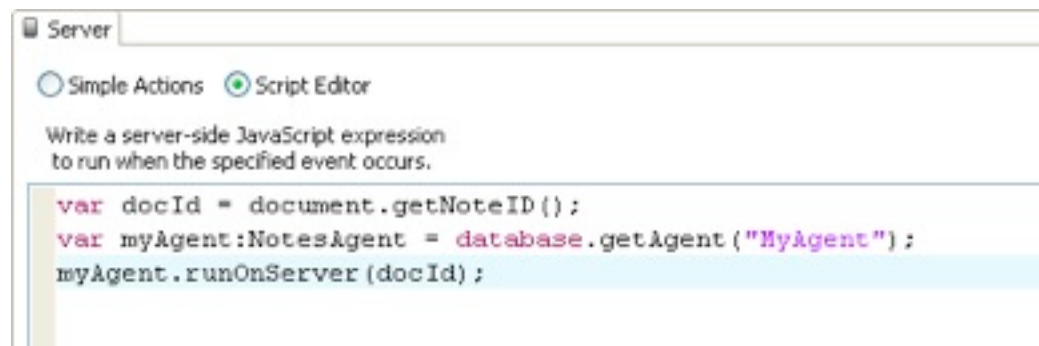


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Creating and Editing Data in an XPage

- **Forms are now “data schemas” that describe the fields**
 - ♦ But you can re-use a lot of existing code by using `ComputeWithForm`
 - ♦ You don't have to have every form field on your XPage
- **WebQuerySave agents can be ported to be used in XPages easily**
 - ♦ Generally I would recommend rewriting them in server-side JavaScript for performance reasons
 - ♦ To call an agent use code like this:



```
Server
Simple Actions Script Editor
Write a server-side JavaScript expression
to run when the specified event occurs.
var docId = document.getNoteID();
var myAgent:NotesAgent = database.getAgent("MyAgent");
myAgent.runOnServer(docId);
```

Creating and Editing Data in an XPage (cont.)

- **Most functions are available with simple @Formulae**
 - ◆ Type-ahead
 - ◆ Validation
- **Adding fields to an XPage can be done in two ways**
 - ◆ Drag and drop a control and then manually bind
 - ◆ Drag and drop the field name from the data binding pane and choose the type for each one
- **Rich text can be “classic” or “real”**
 - ◆ Classic is still a text area, no significant changes
 - ◆ The new Dojo rich text editor offers round tripping of MIME rich text
 - ▶ **Not full fidelity but much better than we're used to**

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Adding the Tag Cloud

- **The Discussion template has a great example**
- **We need to use scoped variables ...**
 - ♦ **requestScope stores information about each page request**
 - ♦ **sessionScope stores information about each user**
 - ♦ **applicationScope stores information that can be re-used across the whole application**
- **... and a repeat control**
 - ♦ **Repeats can work on anything that can be iterated over, not just a view**
- **The tag cloud is built in a Server Side script library**

Adding the Tag Cloud (cont.)

- **To get to URL parameters use the xpCGIVariables library**
 - ◆ Not standard, but one version in Discussion template, my version is in TaskJam
 - ◆ A great way of finding out how to get into the nuts and bolts of each page request
- **There is no recycling like in Java**
 - ◆ But it is important to “null” variables when you’re done with them
- **When clicking a tag we need to filter the view**
 - ◆ categoryFilter is the same as “Show Single Category” in “classic” Domino

Internationalization

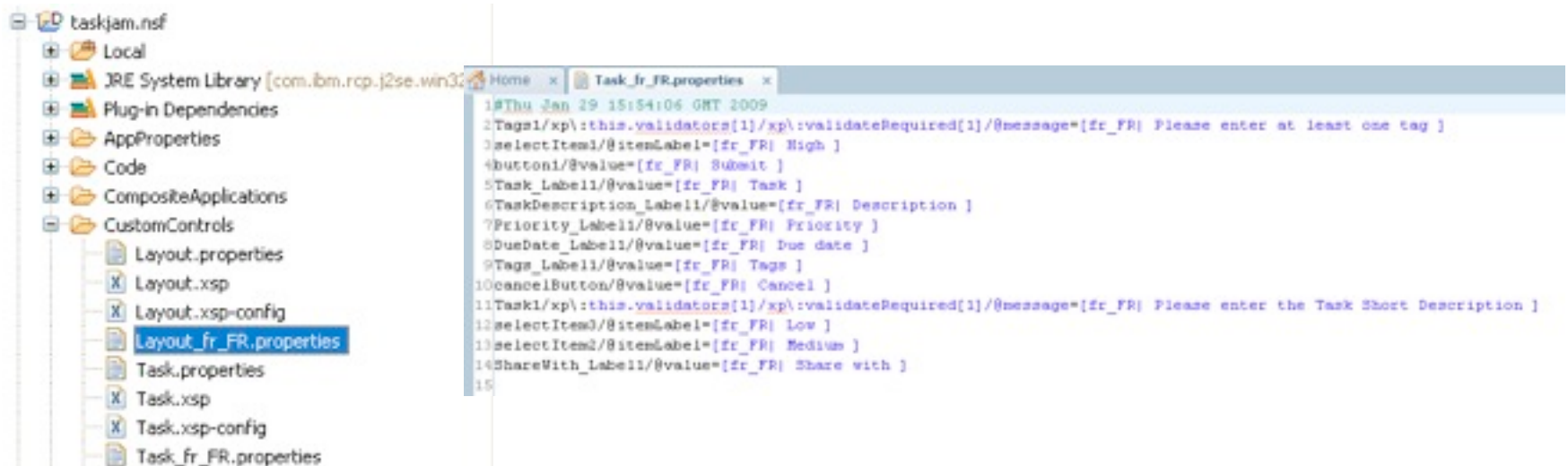
- **Is provided out of the box in Application Properties**
- **Don't start until you've finished coding**
 - ◊ **Every time you make a design change you'll need to re-import your translated strings**
- **You can decide what languages will be offered**
- **But you'll need to “switch perspectives” to the Java view of DDE**

Internationalization (cont.)

- First go to Application Properties → XPages

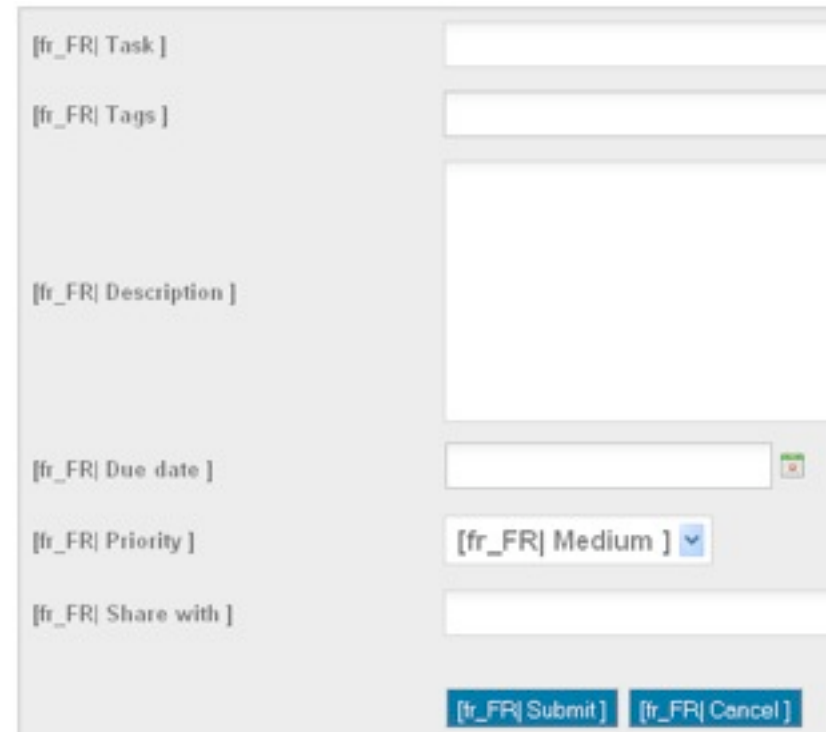


- Then Window → Open Perspective → Other... → Java



Internationalization (cont.)

- Then when you switch languages in your browser you will see different languages



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Resources

- www-10.lotus.com/ldd/ddwiki.nsf
 - ♦ Really good examples and extra documentation about XPages
- xpagesblog.com
 - ♦ 9 of the top XPages developers each adding articles, tips and tricks
- planetlotus.org
 - ♦ Lots of people are blogging about XPages some of the best are:
 - ▶ **Search the site for “XPages” for article**
- OpenNTF.org
 - ♦ XPages Wiki Template
- taskjam.net
 - ♦ To download the sample database from this session

Q & A

taskjam.net

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