

Picking the Right RIA Technology

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Devnexus conference, Atlanta '09
www.myflex.org/presentations/PickingRightRIA_Atlanta.pdf

Farata Systems: What do we wo

Consulting and training (\$\$)

Software development (for free)

(see open source project Clear Toolkit on Sourceforge.net)

Write tech. books and articles on Java and Adobe Flex
(from \$0 to \$1 per hour)

theriabook.com, safaribooksonline.com

RIA Choices circa March 11, 2009

- AJAX
- Adobe Flex 3.3 and AIR 1.5
- Microsoft SilverLight 2.0
- JavaFX 1.1

RIA run on the client PC in VM or scripting engines

The trend: Declarative GUI programming backed by another programming language (MXML/ActionScript, JavaFX/Java, XAML/C#)

Smaller RIA players: [Curl](#), Open Laszlo

Today's Enterprise RIA tools require

- Seamless deployment on the client
- High penetration of the runtime environment
- Web browser independence
- Fast client-server communication protocols
- Robust security

2009: Adobe Flex meets these criteria

2010: Microsoft Silverlight will start competing

2010: Sun's JavaFX Script might start competing

AJAX – no page refreshes

```
<html lang="en" dir="ltr">
```

```
<head>
```

```
<title>Ajax sample application</title>
```

```
<script type="text/javascript">
```

```
var myXHR= new XMLHttpRequest();
```

```
function goGetIt() {
```

```
    myXHR.open("GET", "/theriabook/hello.txt",true);
```

```
    myXHR.onreadystatechange=updateTheData;
```

```
    myXHR.send();
```

```
}
```

```
function updateTheData() {
```

```
    if (myXHR.readyState==4) {
```

```
        myForm.someText.value=myXHR.responseText;
```

```
    }
```

```
}
```

```
</script>
```

```
</head>
```

```
<body>
```

```
<p>Click on <a href="javascript:goGetIt()"> this link</a> to populate the text area  
below from the server side text file without the entire page refresh
```

```
<form name="myForm">
```

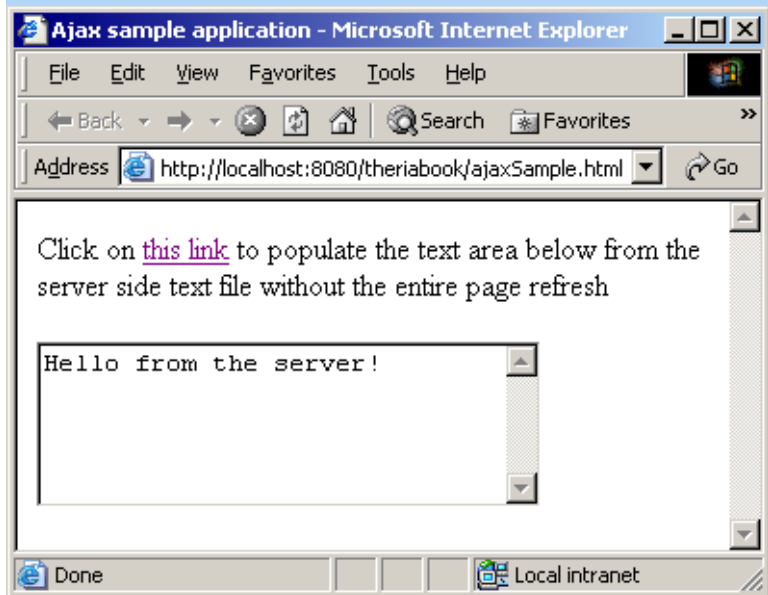
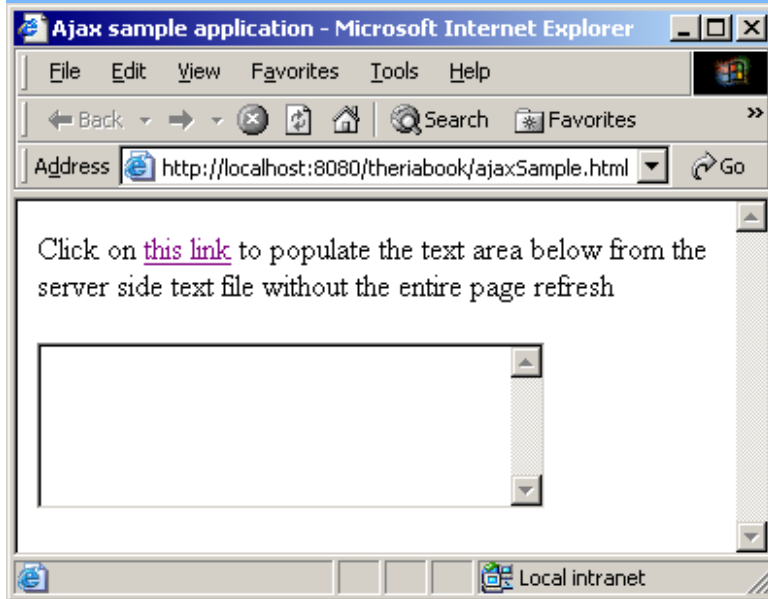
```
    <textarea name="someText" rows="5" cols="30">
```

```
    </textarea>
```

```
</form>
```

```
</body>
```

```
</html>
```



Enterprise AJAX: Pros and Cons

Pros

No deployment is required – major browsers support DHTML and XMLHttpRequest

There is 120+ AJAX frameworks

<http://ntt.cc/2008/02/13/the-most-complete-ajax-framework-and-javascript-libraries-list.html>

No need to purchase software licenses

Cons

AJAX applications are Web browser dependent

There is 120+ AJAX frameworks

AJAX projects are expensive due to long development cycles. Highly skilled developers demand top rates

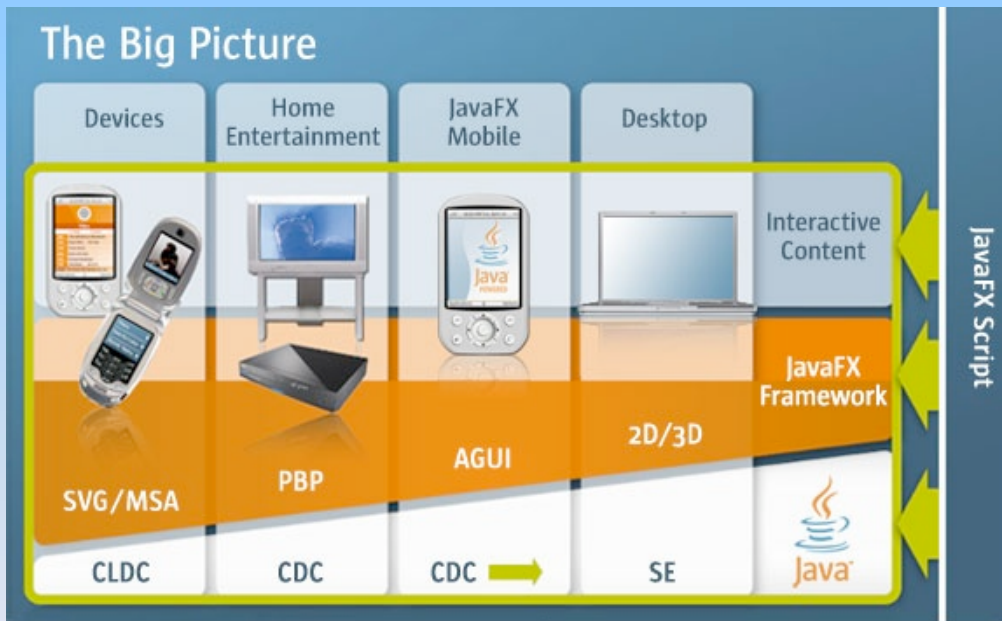
JavaScript is an interpreted language. Tons of source code travel over the wire
Right-click on the page, View Source...

Web browsers are very forgiving – if the code does not arrive...it's OK

Bringing 5K rows of data to the client is a slow process.

JavaFX 1.1 (Script and Mobile)

- Object-Oriented Java Scripting Language from Sun Microsystems
- Declarative Syntax, Data Binding
- Uses Java Swing 2D
- There are JavaFX plugins for NetBeans and Eclipse (kinda)



Starting with Java 6 Update 10 developers can add the following to the Web page:

```
<script src="http://someserver.sun.com/deploy.js">  
Deploy.applet("myapp.jar","com.me.MyApp","1.5+");  
</script>
```

The client's JRE will be tested and installed or upgraded if need be. Then Sun's server-side script will generate the Applet tag and download the Web app.

Sample JavaFX calculator

This code is taken from an article published at

<http://www-128.ibm.com/developerworks/java/library/j-javafx/>



```
Frame { menubar: MenuBar
  { ... }
  //text displayed in title bar
  title: "Calculator"
  //size of frame height: 200
  width: 200
  //begin content layout
  content: GridBagPanel { ... }
  visible: true
}
```

```
menubar: MenuBar {
  menus: Menu {
    text: "File"
    //first item in the menu
    items: MenuItem {
      text: "Exit"
      //on-click operation
      action: operation() {
        //exit the application
        System.exit(0);
      }
    }
  }
}
```

```
content: GridBagPanel
{
  border: EmptyBorder
  {
    ...
  }
  cells: {
    ...
  }
}
```

```
cells:
  [ GridCell {
    anchor: WEST
    fill: HORIZONTAL
    //horizontal grid
    position
    gridx: 0
    //vertical grid
    position
    gridy: 0
    //column span
    gridwidth: 4
    content: textfield
  }, GridCell {
    anchor: WEST
    fill: HORIZONTAL
    gridx: 0
    gridy: 1
    gridwidth: 2
    content: Button {
      text: "Back"
      ...
    }
  }, GridCell {
    anchor: WEST
    fill: HORIZONTAL
    gridx: 2
    gridy: 1
    gridwidth: 2
    content: Button {
      text: "Clear"
      ...
    }
  }
], GridCell {
  anchor: WEST
  fill: HORIZONTAL
  gridx: 0
  gridy: 2
  content: Button {
    text: "7"
    ...
  }
}, GridCell {
  anchor: WEST
  fill: HORIZONTAL
  gridx: 1
  gridy: 2
  content: Button {
    text: "8"
    ...
  }
}
];
```

```
var textField =
TextField {
  //default value
  value: ""
  horizontalAlignment:
  TRAILING
  onChange:
  operation(s:String) {
    ...
  }
};
```

Pet Store with JavaFx

Home **Catalog** Search Tags Add New

Select category to navigate to



Hairy Cat



Grey Cat



Medium Dogs



Small Dogs



Parrot



Exotic Birds



Slithering Reptiles



Crawling



Small Fish



Large Fish

(c) Farata Systems - www.faratasystems.com

Home Catalog Search Tags Add New



Name : White Fluffy Cat

Price : \$307.50

This fluffy white cat looks like a snowball. Plus, she likes playing outside in the snow and it looks really cool to see this snowball cat run around on the ski slopes. I hope you have white carpet as this cat sheds lots of hair.



(c) Farata Systems - www.faratasystems.com

Pet Store Code Fragments

```
public class DataGrid extends CustomNode {
    public var selection: Map on replace old{
        if (selection != old) {
            if (onItemSelected != null) {
                onItemSelected(selection);
            }
        }
    }
;
    public var height: Integer = 150;
    public var width: Integer = 250;
    public var onItemSelected: function(row:Map):Void;
    var modelA: DataCursor = new DataCursor();

    var table: JTable=new JTable(modelA);
    ...
}
```

```
public class Link extends SwingLabel {
    var fg:Color = Color.YELLOW;
    override var foreground = bind fg;
    override var cursor = Cursor.HAND;

    public override var onMouseEntered = function(e:MouseEvent) {
        fg= Color.ORANGE;
    }
}
```

```
VBox {
    spacing:15
    visible: bind (page == 1)
    translateY:20
    content:[
        fldUpload = FieldUpload {
            caption:"Picture"
            width: app.contentWidth
        }
        SwingButton {
            width:app.contentWidth
            text:"Send"
            onMouseClicked: function(e) {
                var params:Map = new HashMap();
                params.put("name", fldName);
                params.put("descr", fldDescr);
                params.put("price", fldPrice);
                params.put("product", fldProduct);
                params.put("tags", fldTags);

                println('fldUpload.file{fldUpload.file}');
                app.doMultiPartRequest(
                    "{app.baseUrl}add_new.jsp"
                    , processItems
                    , params
                    , fldUpload.file
                );
            }
        }
    ]
}
```

Microsoft Silverlight

Silverlight is a client-side runtime that enables you to design, develop, and deliver rich, interactive experiences over the Internet. **Windows, Mac OS**

Silverlight 1.0 has been released in 2007, but it was not competitive – it's good for media streaming only.

XAML (Extensible Application Markup Language)

Pros: Video supports up to 720p - HD video through the Web browser

Cons: No controls for business applications, no layout managers, no CSS support

Microsoft Silverlight 2.0

- **WPF UI Framework:** graphics, animation engine, controls, layout management, data binding, styles, template skinning
- **Rich Controls:** panels, grids, DataGrid, Slider, Calendar, DatePicker, etc.
- **Rich Networking Support:** REST, SOAP, RSS, HTTP, sockets
- **Rich Base Class Library:** includes .Net base class library (collections, generics, threading, XML, JavaScript integration). The .Net API is a subset of .Net framework

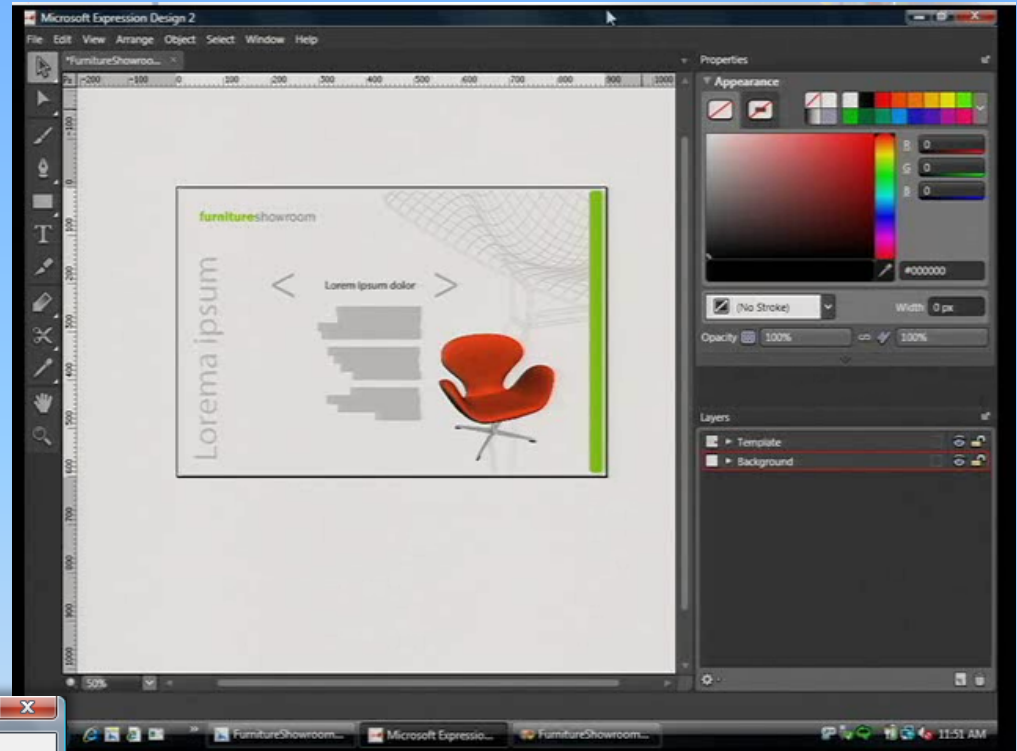
Microsoft Silverlight 2.0 (cont.)

Tooling: Expression Design, Expression Blend, Visual Studio 2008, Eclipse4SL.

Microsoft aims at both developers and visual designers (Web designers, Advertising agencies)

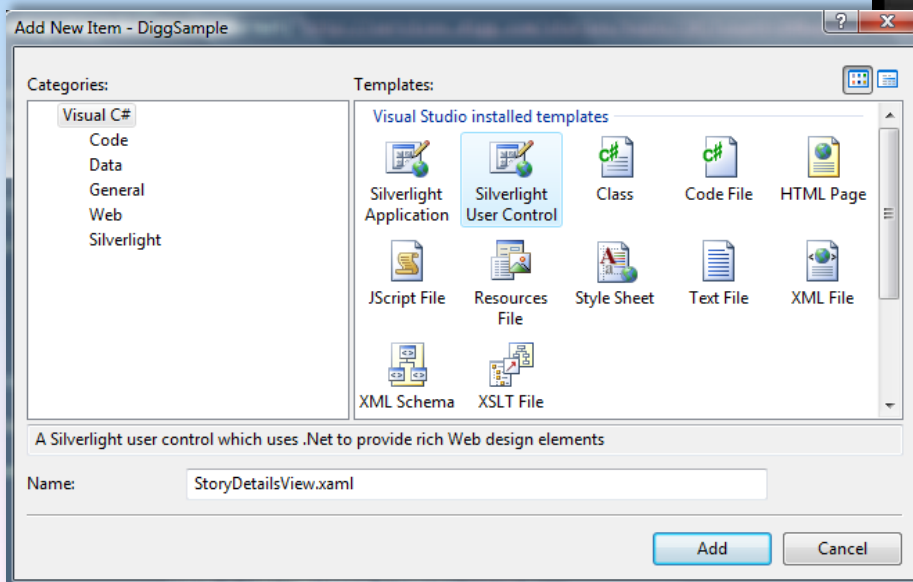
Supports Servers: Internet Information Server 7, Windows Communication Server, MS SQL Server

Dynamic Language Runtime (DLR):
IronPython, IronRuby



Silverlight 2.0 runtime is 4.3Mb,
installation is fast on the client PC.

Silverlight 3.0 will be released
next week in Las Vegas



Silverlight Code Sample

These code samples are taken from Scott Guthrie blog:

<http://weblogs.asp.net/scottgu/archive/2008/02/22/first-look-at-silverlight-2.aspx>

```
<Data:DataGrid x:Name="StoriesList" Grid.Row="1" Margin="5" AutoGenerateColumns="True">
</Data:DataGrid>
```

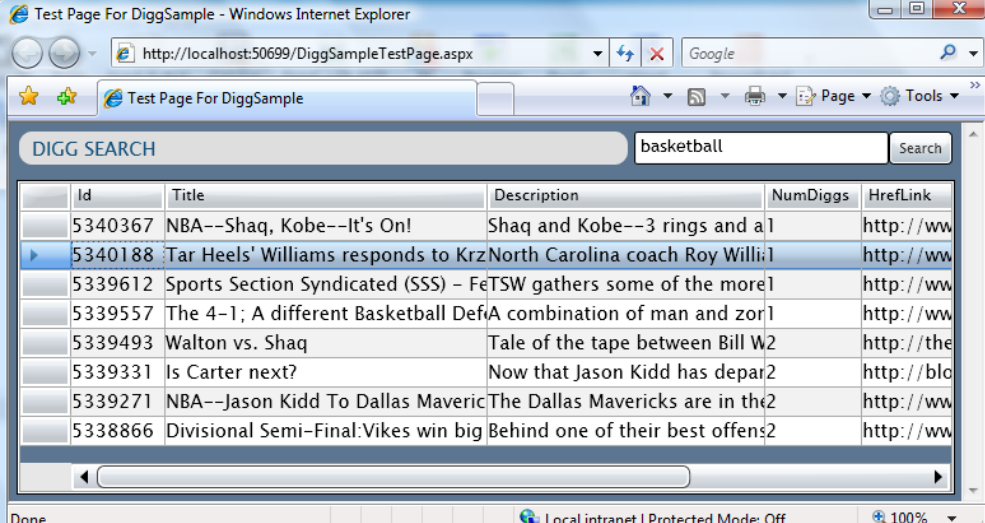
```
<Border Grid.Column="0" CornerRadius="10" Background="#FFDEDE" Margin="0,0,5,0">
  <TextBlock Text="DIGG SEARCH" Foreground="#FF14517B" Margin="10,3,0,0" />
</Border>
```

```
void DiggService_DownloadStoriesCompleted(object sender, DownloadStringCompletedEventArgs e)
{
    if (e.Error == null)
    {
        DisplayStories(e.Result);
    }
}

void DisplayStories(string xmlContent)
{
    XDocument xmlStories = XDocument.Parse(xmlContent);

    var stories = from story in xmlStories.Descendants("story")
                  where story.Element("thumbnail") != null
                  select new DiggStory
                  {
                      Id = (int)story.Attribute("id"),
                      Title = (string)story.Element("title"),
                      Description = (string)story.Element("description"),
                      Thumbnail = (string)story.Element("thumbnail"),
                      HrefLink = (string)story.Attribute("link"),
                      NumDiggs = (int)story.Attribute("diggs")
                  };

    StoriesList.ItemsSource = stories;
}
```



The screenshot shows a web browser window titled "Test Page For DiggSample - Windows Internet Explorer". The address bar shows the URL "http://localhost:50699/DiggSampleTestPage.aspx". The search bar contains the text "basketball". Below the search bar is a table of search results with the following columns: Id, Title, Description, NumDiggs, and HrefLink. The table contains several rows of data, including "NBA--Shaq, Kobe--It's On!", "Tar Heels' Williams responds to KrzNorth Carolina coach Roy Willi:", "Sports Section Syndicated (SSS) - FeTSW gathers some of the more", "The 4-1; A different Basketball DefA combination of man and zor", "Walton vs. Shaq", "Is Carter next?", "NBA--Jason Kidd To Dallas MavericThe Dallas Mavericks are in the", and "Divisional Semi-Final:Vikes win big Behind one of their best offens;".

Id	Title	Description	NumDiggs	HrefLink
5340367	NBA--Shaq, Kobe--It's On!	Shaq and Kobe--3 rings and a1		http://ww
5340188	Tar Heels' Williams responds to KrzNorth Carolina coach Roy Willi:	North Carolina coach Roy Willi:1		http://ww
5339612	Sports Section Syndicated (SSS) - FeTSW gathers some of the more	FeTSW gathers some of the more1		http://ww
5339557	The 4-1; A different Basketball DefA combination of man and zor	A combination of man and zor1		http://ww
5339493	Walton vs. Shaq	Tale of the tape between Bill W2		http://the
5339331	Is Carter next?	Now that Jason Kidd has depar2		http://blo
5339271	NBA--Jason Kidd To Dallas MavericThe Dallas Mavericks are in the	The Dallas Mavericks are in the2		http://ww
5338866	Divisional Semi-Final:Vikes win big Behind one of their best offens;	Behind one of their best offens;2		http://ww

Developers are from Mars, Designers are from Venus

The trend: Developer's art does not cut it anymore. Hire professional Web designers

Adobe is trying to win developers

Microsoft is trying to win designers

Both parties hope to breed a new creature:

d-e-s-i-g-n-o-p-e-r

FHM Magazine: 100 sexiest women 2008



09 ANGELINA JOLIE

Child catcher
Debatably, she's the world's most physically faultless female, from her vivid bottle-green eyes to those flawless curves (recall her as Lara Croft?). And then there's her weakness for swinging both ways. "Am I bisexual?" she smiles. "Absolutely. Yes."

MORE ANGELINA

ANGELINA JOLIE IN *WANTED* - AWESOME NEW TRAILER
ANGELINA JOLIE - 100 SEXIEST HALL OF FAME - 2007

Adobe's Tools for RIA Development

Adobe's Technology Platform for RIAs

RIA Tooling



Creative Suite



Dreamweaver



Flex Builder



Thermo

RIA Programming Languages and Frameworks

Fx

Ajax

HTML

JS / AS

MXML

RIA Runtimes



Services and Server Technologies



LiveCycle



ColdFusion



Flash Media Server



Acrobat Connect



Flash Cast



Scene7

What is Flex 3?

MXML – an XML-based declarative programming language for creating GUI

ActionScript 3.0 – an object oriented language very similar to Java

Command line compilers and debugger

Flex Builder is an Eclipse based IDE. IntelliJ IDEA 8 supports Flex.

HelloWorld.mxml → HelloWorld.as → HelloWorld.swf (byte code) → HTML Wrapper

Flash Player 9 (and 10)– is a virtual machine that runs swf files:
(HelloWorld.swf → JIT compiler → machine code)

LiveCycle Data Services ES -a Web application deployed in J2EE server (\$\$\$\$)

BlazeDS – an alternative to LiveCycle Data Services is open source and free

A quick and dirty way to facelift your JSP app

Just put a pretty Flash Player's face on your JSP/ASP/PHP... application using HTTP protocol

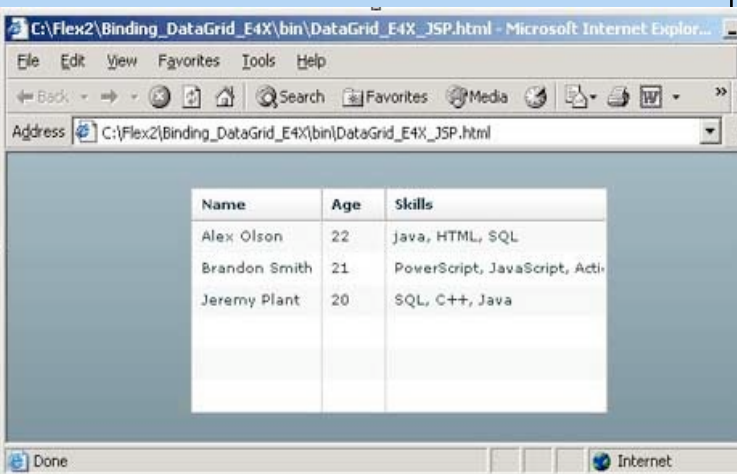
XML

```
<people>
  <person>
    <name>Alex Olson</name>
    <age>22</age>
    <skills>java, HTML, SQL</skills>
  </person>
</people>
```

JSP

```
<% out.println("<?xml version=\"1.0\" encoding=\"UTF-8\"?
><people><person><name>Alex Olson</name><age>22</
age><skills>java, HTML, SQL</skills></person><person><name>Brandon
Smith</name><age>21</age><skills>PowerScript, JavaScript,
ActionScript</skills></person><person><name>Jeremy Plant</
name><age>20</age><skills>SQL, C++, Java</skills></person></
people>"); %>
```

Flash Player in HTML



MXML

```
<?xml version="1.0" encoding="utf-8"?>
<mx:Application xmlns:mx="http://www.adobe.com/2006/mxml"
  applicationComplete="employees.send()">
  <mx:HTTPService id="employees"
    useProxy="false" method="POST"
    url="http://localhost:8080/test/employees.jsp" />
  <mx:DataGrid dataProvider="{employees.lastResult.people.person}">
    <mx:columns>
      <mx:DataGridColumn dataField="name" headerText="Name"/>
      <mx:DataGridColumn dataField="age" headerText="Age"/>
      <mx:DataGridColumn dataField="skills" headerText="Skills"/>
    </mx:columns>
  </mx:DataGrid>
</mx:Application>
```

Flex to Java Connectivity

- RPC with POJO via AMF protocol
- Messaging w/out JMS via AMF or RTMP protocol
- Web Services
- HTTP with remote URLs w/out proxying

To support AMF and/or RTMP protocols deploy one of the following Web applications in your servlet container:

- BlazeDS (AMF, open source from Adobe)
- LCDS (AMF, RTMP, commercial)

Our recent Flex/Java Enterprise apps.

Mercedes Benz USA (www.mbusa.com): [demo](#)
www.mbusa.com

Logistic company: [demo](#)

Productivity Flex/Java Eclipse Plugins

Clear Toolkit 3.1

Library of Components clear.swc

Clear Data
Builder

DTO2Fx

Log4Fx

Fx2Ant

AIR/BlazeDS Data Synchronizaton

<http://sourceforge.net/projects/cleartoolkit>

Clear Toolkit is an open source framework, that includes a set of Eclipse plugins and extended Flex components.

Web Reporter: ClearBI

http://localhost:8080/test/CDBEP%20(Flex)/ClearBIEUditorSampleApp.html - Windows Internet Explorer

http://localhost:8080/test/CDBEP%20(Flex)/ClearBIEUditorSampleApp.html

Composition: Report:

Emp Id	Manager Id	First Name	Last Name	Street	Salary	City	Zip Code
State: MA							
Department: Shipping							
1615	703	Sheila	Romero	1 Oakview Terrace	\$27,500.00	Bedford	01730
703	902	Jose	Martinez	123 Washington Street	\$61,050.88	Westwood	02090
Totals for department Shipping					\$330,046		
Totals for state MA					\$3,182,510		
State: TX							
Department: R&D							
958	501	Thomas	Sisson	54 School Street	\$42,100.00	Houston	77079
1090	501	Susan	Smith	177 Johnson Street	\$51,411.00	Houston	77079
862	501	John	Sheffield	45 Belleview Drive	\$87,900.00	Houston	77079
Totals for department R&D					\$181,411		
Department: Sales							
667	902	Mary	Garcia	98 Purvis Street	\$39,800.00	Houston	77079
467	902	James	Klobucher	18 Corning Street	\$49,500.00	Houston	77079
Totals for department Sales					\$89,300		
Totals for state TX					\$270,711		
Grand Total for the Enterprise:					\$3,727,511		

ClearBI will be included in Clear Toolkit this summer.

Who's da man in a RIA project?

Jessica, End-User



Steve, User Experience Designer



Yakov, Front-End Developer



Mary, Back-End Developer



Who's da man in a RIA project?

Jessica, End-User



Steve, User Experience Designer



Napkin on the knee is back and it works

Yakov, Front-End Developer



Mary, Back-End Developer



Who's da man in a RIA project?



Dear user, I'm your friend again!
What do you want me to change?

You can run from RIA, but you can't hide!

- **Email**

yfain@faratasystems.com

- **Web sites**

www.faratasystems.com

flexblog.faratasystems.com

[https://sourceforge.net/
projects/clear toolkit/](https://sourceforge.net/projects/clear toolkit/)

www.theriabook.com

