


# MAX 2006 Beyond Boundaries

## Accessible RIA Development with Adobe Flex

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## Agenda

- Introductions
- 3-minute accessibility primer
- Overview of accessible Fidelity Talent Management application
  - Planning for accessibility
  - Best Practices for Flex
  - Techniques
  - Applied to Talent Management Application
- External Resources
- Q&A

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## Introductions

**Bob Bisantz**



- Architect in Enterprise Architecture at Fidelity Investments

**John Bennett**

- Architect, Adobe Consulting

**Andrew Kirkpatrick**


- Adobe Corporate Accessibility Engineering Lead

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## About Fidelity Human Resources Services (FHRS)

- Full service outsourcing for Benefits and Human Resource Services
- Targeted to US Fortune 500 firms
- Standardized, best-practice solutions
- Over 169 client relationships
- Over 4.8 million employees serviced
- Innovative leader for service quality and decision support




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## FHRS Products: Positioned to Meet Customer Needs

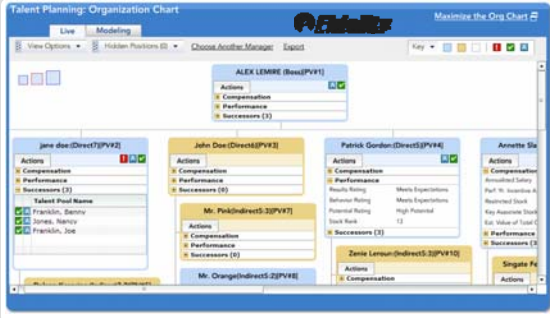
<b>Total Retirement</b> <i>"Retirement Readiness"</i> <ul style="list-style-type: none"> <li>Defined Contribution and Defined Benefit Administration</li> <li>Non-qualified Administration</li> <li>Stock Plan Administration</li> <li>Communications, Advice &amp; Guidance</li> </ul>	<b>Health &amp; Welfare</b> <i>"Health Meets Wealth"</i> <ul style="list-style-type: none"> <li>Record keeping &amp; Administration</li> <li>Health Guidance</li> <li>Health Savings Account</li> </ul>	<b>HR Outsourcing</b> <i>"HR Effectiveness"</i> <ul style="list-style-type: none"> <li>Workforce Administration</li> <li>Talent Management</li> <li>Workforce Intelligence</li> </ul>
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Better Decisions ← Better Results



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## Talent Planning Application Demonstration (Full View)



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### Talent Planning Application Demonstration (Zoomed In)

### Talent Planning Application Demonstration (Heatmap view)

### Importance of Accessibility?

- Accessibility is the right thing to do
- Aging population
- Customer requirements
- Improves application use
- Satisfies customer preferences
- Legal mandates
- User Experience

### Understanding Users

- An accessible application requires an understanding of the needs of users
- User-Centered Design
  - Understand current and potential users of site
  - Users goals and tasks
  - Product functions and features
  - Information needed and format of information
- User Experience (UX) at Adobe Consulting

### Understanding Users


Visual	Hearing	Mobility	Cognitive
<ul style="list-style-type: none"> <li>• Blind               <ul style="list-style-type: none"> <li>• Uses a screen reader</li> <li>• Generally do not use a mouse</li> </ul> </li> <li>• Low Vision               <ul style="list-style-type: none"> <li>• Uses a screen magnifier or large font settings</li> <li>• May rely heavily on the keyboard</li> </ul> </li> <li>• Color Blindness               <ul style="list-style-type: none"> <li>• Requires sufficient contrast in color combinations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Deaf</li> <li>• Hard of Hearing               <ul style="list-style-type: none"> <li>• Requires captions for narrative audio content</li> <li>• Requires equivalents for important sound effects</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Quadriplegia</li> <li>• RSI               <ul style="list-style-type: none"> <li>• May not use a mouse</li> <li>• May use devices that utilize the keyboard interface</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Memory</li> <li>• Perception</li> <li>• Problem-solving               <ul style="list-style-type: none"> <li>• Requires simple, intuitive layouts</li> </ul> </li> </ul>

### Understanding Users

- Tasks must be achievable without using a mouse
- Can not assume that screen reader users have zero vision

## Planning for Accessibility


- Organizational commitment
- Customer requirements
- Accessibility 101 – team orientation
- Defining accessibility features
- Development and test plan implications
- Cost
  - Less if designed in early



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## Best Practices for Flex Accessibility

- Keyboard Access and Focus Management**
- Using Accessible Components**
- Conveying Relationships**
- Provide Help**
- Use Color Wisely**
- Provide Captions**




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## Keyboard Access and Focus Management

**Providing Keyboard Access is a critical first step**

- Screen reader users are keyboard users
- Many other possible keyboard users
- Implementing keyboard access in Talent Planning application



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## Using Accessible Components

**Utilize framework accessibility features**

- Discussion of component accessibility
- Talent Management
  - What did we get for free in components
  - Custom container – focus management.
- Flex components – extra work for custom controls
- Adobe PDF – take advantage of PDF's accessibility features



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## Using Accessible Components

**26 Accessible Flex 2 Components**


- Accordion
- Alert
- Button
- CheckBox
- ComboBox
- DataGrid
- DateChooser
- DateField
- Form
- Image
- Label
- LinkButton
- List
- Menu
- MenuBar
- Panel
- RadioButton
- RadioButtonGroup
- TabNavigator
- Text
- TextArea
- TextInput
- TitleWindow
- ToolTipManager
- Tree
- Validator

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## Conveying Relationships

**Help users understand visual relationships**

- Communicating what is going on in an application is largely a design issue.
- Assistance can be provided within the application, in the form of a "accessibility information" screen.
- Identifying issues is the most significant challenge.
- Talent Planning : How was this solved?
  - Talent planning makes heavy use of visual cues



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## Provide Help

**Provide information to assist users**

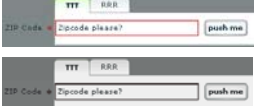
- Use a Help or Site Info screen to provide information about the purpose of the application and accessibility specific instructions
- Provide detail about how to use controls created using components
- Use the following page as reference
  - <http://www.adobe.com/macromedia/accessibility/features/flex/components.html>
- Some applications require training
  - For all users, not just disabled users

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## Use Color Wisely

**Ensure colors are viewable by individuals who are color blind**

- Avoid red – green color combinations
- Use redundant text indicators
- Ensure contrast of foreground and background combinations
- Talent Planning demonstration




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## Provide Captions

**Provide captions for narrative audio content**

- Use captioning tools such as HiCaption SE, MAGpie, or Captionate
- Flash can parse XML caption data for display



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## Testing Flash Content

**Testing Strategies**

- Test with the keyboard
  - Microsoft Active Accessibility
- Test with MSAA Inspector tools
- Test with assistive technologies
- Test with users

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## Testing Flash Content

**Test with the keyboard**

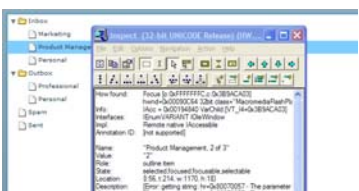
- Tabbing through controls is a good start
- Make sure to shift+tab backwards
- Learn about expected control behaviors
  - Flex 2.0 Documentation (link to be updated after Flex 2.0 release: <http://livedocs.macromedia.com/labs/1/flex20beta3/00001046.html>)
  - Controls: <http://msdn.microsoft.com/library/en-us/dnwue/html/ch08c.asp>
  - Guidelines for Keyboard User Interface Design: [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnacc/html/ATG\\_keyboardShortcuts.asp](http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnacc/html/ATG_keyboardShortcuts.asp)

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## Inspect32 Demo

**Test with MSAA Inspector Tools**

- Quick tool for identifying role and state info




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## Using JAWS for RIA applications

**Test with Assistive Technologies - JAWS Forms Mode**


- Screen readers rely on arrow keys to read line by line
- In order to enter data into form fields the user must enter a "Forms Mode"
- Press Enter to go into forms mode on form controls
- This also impacts components such as accordion pane, tree control that require system focus
- Submitting the form will cause the screen reader to exit forms mode
- To manually exit, press Numpad+Plus to exit forms mode. This is not a common use case. (on a laptop you can either use the integrated keyboard or set JAWS up for "laptop" layout and use Caps Lock + semi-colon)

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## Test with Users


**User feedback is the final test**

- Regular users of assistive technologies will provide the most accurate information
- An accessible application is not necessarily usable – allow time for user testing
- User expectations are a possible issue
  - Many users are not familiar with using RIAs
  - User training may be beneficial

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## Deploying Accessible Flex Applications


- Info about compiling
  - Switch for accessibility
    - mxmmlc -compiler.accessible c:/dev/myapps/mywar.war/appl.mxml
  - SWF load times
- Impact on HTML embedding
  - Don't use:
    - Flash Satay
    - wmode="opaque"
    - wmode="transparent"
  - Delivering alternative version
    - Possible to query for a screen reader in use

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## Flex and AJAX

**Flex provides an unparalleled level of accessibility support**

- Flex and AJAX face similar issues
  - HTML enjoys solid support by assistive technologies, but this is not automatically inherited by AJAX applications.
- Limitations of AJAX
  - Lack of standards for JavaScript accessibility
  - Weak assistive technology support
  - Few existing AJAX libraries deal with keyboard access
  - Few existing AJAX libraries deal with screen reader support


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## Standards related to Accessibility



**W3C Web Accessibility Initiative**

- <http://www.w3.org/TR/WCAG10/>
- Guideline 8
  - Ensure direct accessibility of user interfaces




**Section 508 Standards**

- <http://www.section508.gov>
- § 1192.22m
  - When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).

**JIS Standards**

- Japanese Industrial Standard
- Part 3: Web content (JIS X8341-3)
- <http://www.webstore.jsa.or.jp/webstore/JIS/SearchEn.jsp?lang=en>

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## Q&A

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