

An Introduction To Apache Flex

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Who am I?

- Programming for 25 years
- Developing and creating web applications for 15 years
- Apache Flex PMC member and committer
- Release manager for Apache Flex 4.9.0



What is Apache Flex?

- Application framework
- Developer friendly
- Designer friendly
- Targets a wide range of platforms
- Currently uses the Flash or AIR runtimes
- Adobe continues to provide support and resources to Apache Flex



Apache Flex Framework

- Provides application architecture
- Set of common UI components
- Rapid cross platform application development
- Easy Integration with back end services
- Easy to create mobile applications
- Aimed at enterprise style applications



Current Status

- Top level Apache project (mid December)
- Apache Flex 4.9 released
- Installer to help users install SDK
- New shinny web site - <http://flex.apache.org>
- Action Script to Javascript cross compiler



ActionScript Overview

- Based on JavaScript with Java/C features
- Open source specification, compiler and VM
- Class based not prototype based
- Package and namespace support
- Strongly typed (mostly)
- Both compile time and run time type checking
- Event handling based on DOM events



Compared to Java

- Dynamic - flexibility when you need it
- No difference between functions and variables
- Setters and getters show as properties
- No method overloading
- Functions can have default parameters
- XML is a native type
- Fully featured arrays, collections and vectors



MXML

- XML UI markup language
- Used to create flexible and simple layout
- Can nest files / reuse components
- Supports binding and event handlers
- Include optional code blocks
- Treated as an ActionScript class



MXML Snippet

```
<s:FormItem label="Name">  
  <s:Label text="{person.name}" />  
</s:FormItem>  
<s:FormItem label="Email">  
  <s:Label text="{person.email}" />  
</s:FormItem>  
<s:FormItem label="Apache ID">  
  <s:Label text="{person.apacheID}" />  
</s:FormItem>
```



Components

- Breaks up complex UI into bite size pieces
- Components can be reused
- Components can be MXML or ActionScript
- Components can be used in MXML or ActionScript
- Components communicate with each other via variable binding and dispatching/listening for events



Using MXML Components

```
<s:Application  
xmlns:components="components.*">  
  <components:SelectPerson  
people="{people.people}"  
selectPerson="changePerson(event)" />  
  <components:PersonDetails  
person="{currentPerson}" />  
  
</s:Application>
```



Binding

- Watch for changes of value to a variable and updates anything bound to that variable
- Can be implemented in MXML or ActionScript
- [Bindable] metadata and { } set up binding
- Commonly used to update UI
- Commonly used to bind component properties



MXML Snippet

```
[Bindable] public var person:Person;
```

```
<s:FormItem label="Name">  
  <s:Label text="{person.name}" />  
</s:FormItem>  
<s:FormItem label="Email">  
  <s:Label text="{person.email}" />  
</s:FormItem>
```



Events

- Dispatched via user interaction with your application OR when something occurs in your application
- Register interest in an event by either writing an event handler OR by listening for an event
- Can bubble
- Can create / dispatch your own custom events
- One way to reduce dependancies / loosely couple components



Event Handlers

- Method called when an event occurs
- Take an event (or subclass of event) and return void
- Can cancel, prevent default behaviour or stop events propagation



Event Handler

protected function

```
onChangePerson(event:IndexChangedEvent):void
```

```
{
```

```
    var person:Person =  
    (event.target as List).selectedItem;
```

```
    var personEvent:PersonEvent = new  
    PersonEvent(PersonEvent.SELECT_PERSON, person, true);
```

```
    dispatchEvent(personEvent);
```

```
}
```

```
<s:List dataProvider="{people}"  
    change="onChangePerson(event)" labelField="name" />
```



MVC for free!

- Custom components are your view
- Have your view bind to simple ActionScript classes (your model)
- Dispatch custom event for loose coupling to tell application (your controller) to update model
- Update model and views automatically change (no code required) via binding



Browser Applications

- Runs in Flash Player virtual machine in the browser
- JavaScript/HTML target is being actively worked on



Desktop Applications

- Runs in the AIR runtime
- AIR runtime can be packaged with application
- Browser to Desktop just change Application to WindowsApplication
- Also supports application updates, file access, web view, SQLite, native windows, menus and lots more



Mobile Applications

- Runs in AIR runtime but compiled into native applications for IOS and Android
- Can deploy applications in app stores
- Application structure slightly different need to use View's and Navigator to move between them
- UI components optimised for mobile and touch
- Support gestures, notifications and other mobile specific functionality
- Native extensions



Many More Features

- Skinning and styling
- Advanced debugger and profiler
- Unit testing frameworks
- Datagrid UI control
- Item editors and item renderers
- RSLs/modules
- CSS support
- I18n and L10n support



Get Involved

- Download and have a play give us feedback
- Sign up and contribute to the mailing list
- Look through JIRA there's fair amount of simple issues to fix
- We're fairly new to this so need help with things not Flex related



Links

- Apache Flex site
<http://flex.apache.org>
- Mailing list sign up
<http://flex.apache.org/community-mailinglists.html>
- Apache Flex mail archives
<http://markmail.org/search/+list:org.apache.incubator.flex-dev>
- Apache Flex JIRA
<https://issues.apache.org/jira/browse/FLEX>
- Apache Flex SVN viewer
<http://svn.apache.org/viewvc/flex/sdk/trunk/>



Adobe White Papers

- Adobe Flex white paper:
<http://www.adobe.com/devnet/flex/whitepapers/roadmap.html>
- Adobe Flash white paper and roadmap:
<http://www.adobe.com/devnet/flashplatform/whitepapers/roadmap.html>



Questions?

Ask now, see me after the session,
follow me on twitter @justinmclean
or email me at justin@classsoftware.com.

Slides can be found at Google Docs
[https://docs.google.com/file/d/
0B3cTQYHN73CEeHRyZjVNBWpLMTA/edit](https://docs.google.com/file/d/0B3cTQYHN73CEeHRyZjVNBWpLMTA/edit)

Code can be found at GitHub
[https://github.com/justinmclean/
ApacheConFlexExample](https://github.com/justinmclean/ApacheConFlexExample)

