Esri International User Conference
San Diego, California

Technical Workshops | July 27, 2012

ArcGIS Viewer for Flex – Advanced Topics

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Before we begin…

- Who are we?
  - Bjorn Svensson
    - Twitter: @Bjorn_Svensson
  - Lloyd Heberlie
    - Twitter: @lheberlie
- Who are you?
  - Viewer source code
  - Selfish developer
  - Social developer

Agenda

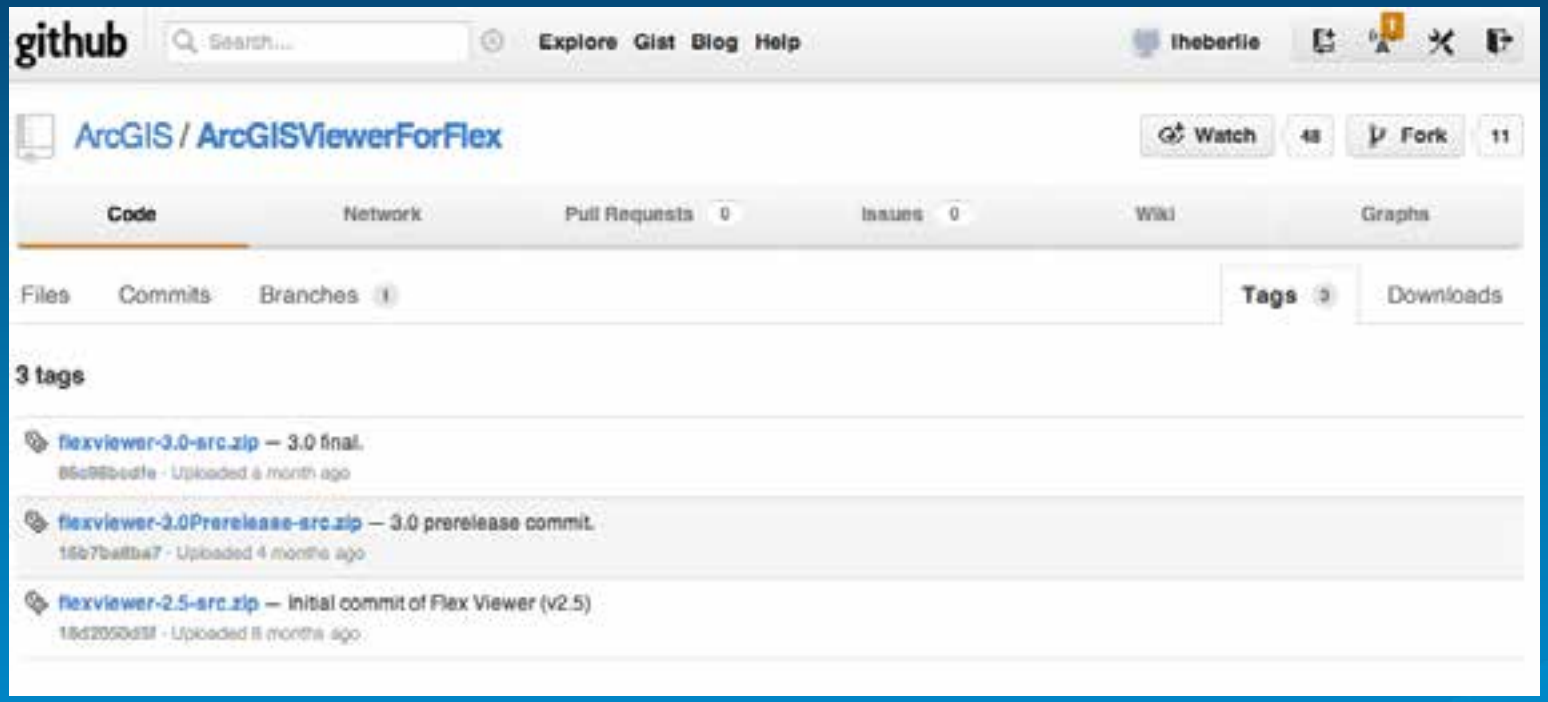
- Introduction
- Developer overview
- Core Viewer widgets
- Custom widgets overview
- Creating custom widgets
- Packaging custom widgets for Application Builder
- Road ahead
- Additional resources

Introduction

Future of Flash runtimes and Flex SDK?

- Adobe continue to monetize Flash / AIR
  - Adobe Flash Player
  - Adobe Flash Builder
  - Donated Flex SDK to Apache
  - Adobe Flex SDK 4.6.0
- Apache Foundation
  - Apache Flex 4.8.0 SDK
    - feature parity of Adobe Flex SDK 4.6.0
  - Apache Flex 5.0 SDK …
  - Spoon Project (July review)

ArcGIS Viewer for Flex and Github



- https://github.com/ArcGIS/ArcGISViewerForFlex/tags

Resource Center and Github

Demo

Developer overview

Developing for ArcGIS Viewer for Flex

Setting up your development environment

- Flex SDK 4.6.0 or higher
- Flash Player 11.1 or higher
  - Debug version
- Adobe Flash Builder 4.6
  - Recommended
- Local web server
- ArcGIS Viewer 3.0 for Flex
  - API not included
- ArcGIS API 3.0 for Flex

Developing for ArcGIS Viewer for Flex

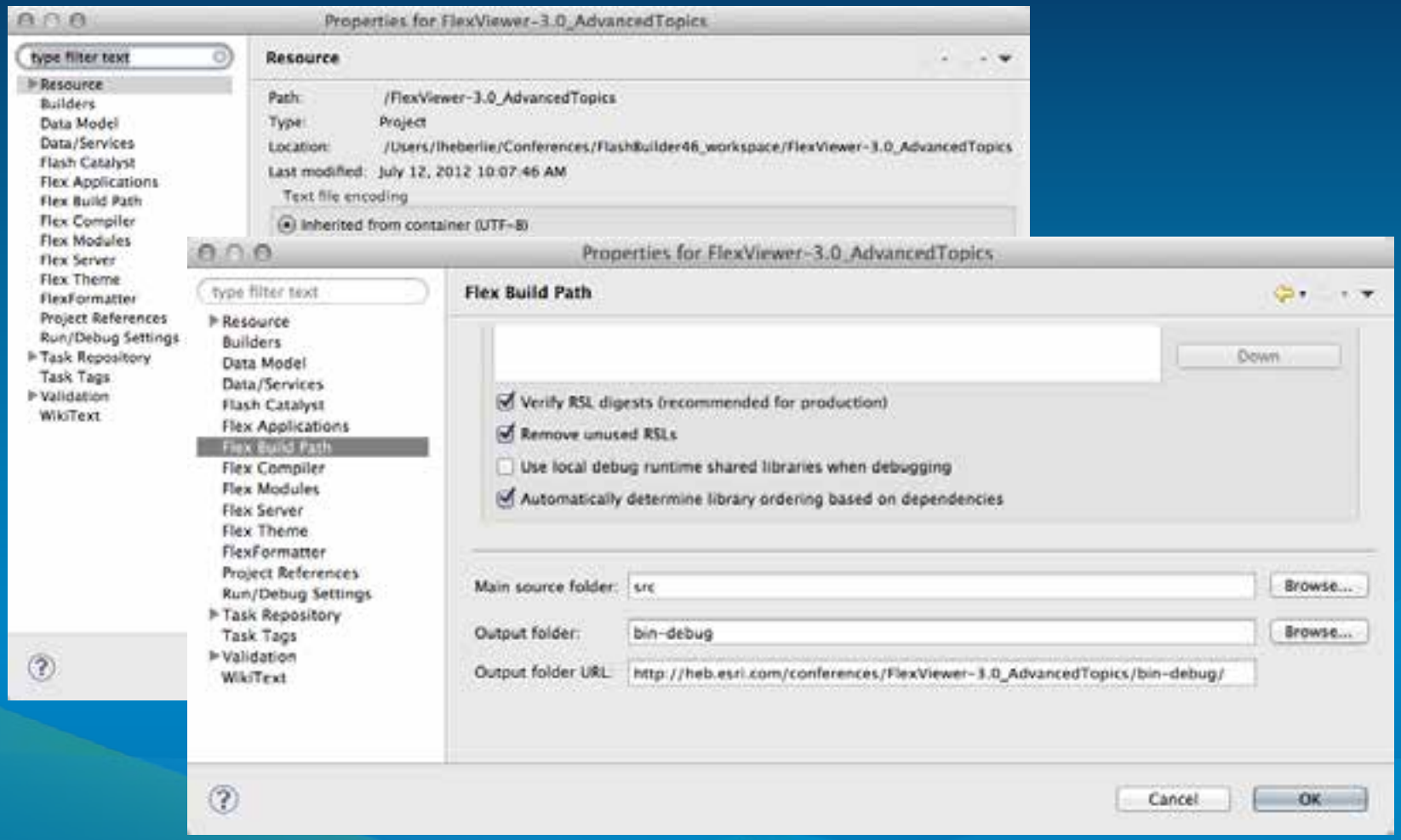
Programming requirements and recommendations

- Comfortable programming with Flex SDK
  - Component architecture
  - Framework lifecycle
  - Events
  - States, Skinning
  - Modules
- Understanding the Viewer architecture and configuration
- Comfortable with ArcGIS API for Flex
- Comfortable with ArcGIS for Server web services

Understanding Viewer architecture

- Main application
  - index.swf
- Widgets are optimized for the main application
  - Smaller footprint for faster downloads
- Widgets are Flex modules
  - No support for mobile applications
- Widgets are only loaded when requested
  - Never unloaded

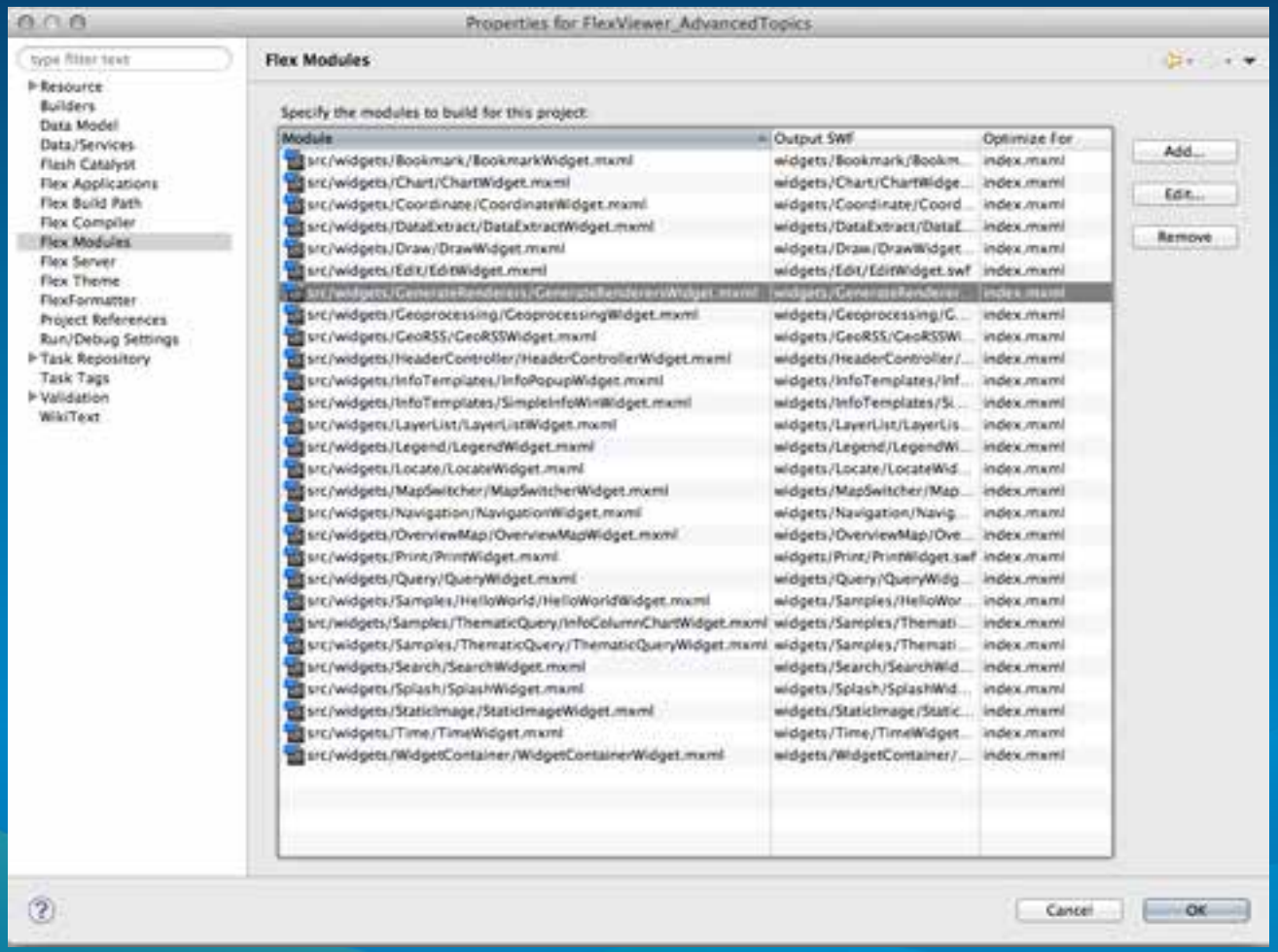
ArcGIS Viewer for Flex and Adobe Flash Builder



What are Flex modules?

- SWF files that can be loaded and unloaded by an application
- Let you split your application into several pieces, or modules
- Allows main application to dynamically load/unload what it requires, when it needs functionality
- Allows you to split application into functional pieces

ArcGIS Viewer for Flex widgets and Flex modules



Resource Center and Flash Builder

Developer overview summary

- Widgets are compiled and run within the main Viewer application context
- Widgets are optimized for the main application
- Flex modules don’t meet Apple iOS development requirements
- Always export release build for production
- Developer’s Guide -> Application architecture
- Tip: Only compile the widgets that you are using

Core Viewer widgets

Types of Viewer widgets

- Managed widgets
  - Listed in the widget tray of the Header Controller
  - Can be minimized, opened, and closed
  - Children of <widgetcontainer> in the main config
  - Your custom widgets will be here generally
- Unmanaged widgets
  - UI components
  - Typically always visible
  - Children of <configuration> tag in main config
  - Header controller, overview map, map switcher, etc

Custom widgets overview

Widget overview

- Viewer provides a framework for building modular and extensible widgets
- Widgets are actually Flex modules
- Perspective on Widgets
  - Source code (src/widgets/MyWidget/*)
    - MyWidget.mxml, MyWidget.xml
  - Visual assets (src/assets/images)
  - Compiled binary (bin-release/widgets/MyWidget/*)
    - MyWidget.swf, MyWidget.xml
  - Viewer main configuration for a widget

Creating custom widgets for ArcGIS Viewer for Flex

Programming requirements and recommendations

- Knowledgeable about ArcGIS Viewer for Flex
- Knowledgeable about ArcGIS API for Flex
- Comfortable programming with Flex SDK
- Compile the core Viewer without any errors

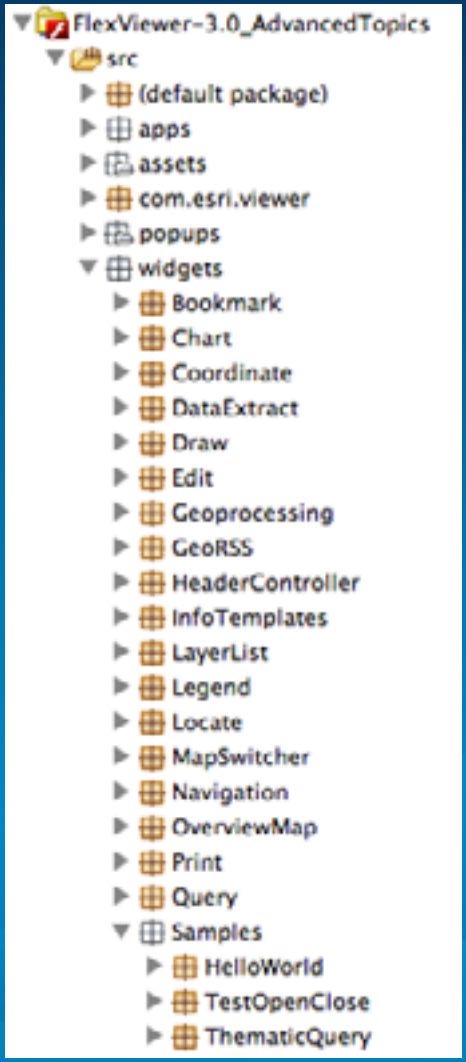
Typical custom widget workflows

Managed widgets

- Modify an existing widget from Code Gallery
- Modify an existing core Viewer widget
- Create a new widget from an existing core Viewer widget
- Write a new widget from API samples
- Write a new widget from scratch

Widget samples

- HelloWorld
- TestOpenClose
- ThematicQuery



Creating custom widgets

Before you begin

- Why are you building this thing?
- Storyboard
- Define requirements
- Create your ArcGIS web services
- Is there any code you can reuse?
  - Widgets, API samples, code gallery
- Prototype a standalone API application

Creating your widget

- Widget naming conventions
  - Create a directory named MyCustomName with
    - MyCustomNameWidget.mxml
    - MyCustomNameWidget.xml
- Define the configuration file
- Define the business logic
- Define the User Interface
- Also see: Developer guide -> Creating widgets

Most widgets will have the same patterns

- Extend Base Widget
  - Handle widgetConfigLoaded event
  - Read the viewer's main config file
    - configData
  - Read your widget's config file
    - configXML
- Add WidgetTemplate
  - Implement closed, open, minimized event handlers
- Create the UI
- Create states and transitions for your widget

Steps to create a custom widget

Demo overview

- Step 1: Create widget folder
  - “GenerateRenderers”
- Step 2: Create widget (module)
  - GenerateRenderersWidget.mxml
- Step 3: Create widget configuration file
  - GenerateRenderersWidget.xml
- Step 4: Add assets to widget folder
- Step 5: Add widget to main configuration file
- Step 6: Compile and debug (bin-debug)
- Step 7: Export release build (bin-release)

Creating a custom widget

Demo

Steps to create a custom widget from a sample

Demo overview

- Step 1: Add widget variables
- Step 2: Add any Declarations
- Step 3-4: Add/Replace UI mainState and settingsState
- Step 5: Get configuration from widget config
  - configXML, configData, map
- Step 6-7: Handle WidgetTemplate events
- Step 8: Add widgetbusiness logic
- Step 9: Compile, debug, test
- Step 10: Prepare for Application Builder packaging
  - Compile with no local, Export release build

Using an API sample to build a custom widget

Demo

Packaging custom widgets for Application Builder

Packaging requirements

- File naming conventions
- Meta.xml
- Compiling the widget source with no locale

Compiling widgets for Application Builder

- Default Flex Compiler arguments
- -locale en_US -source-path=locale/{locale} -keep-all-type-selectors=true

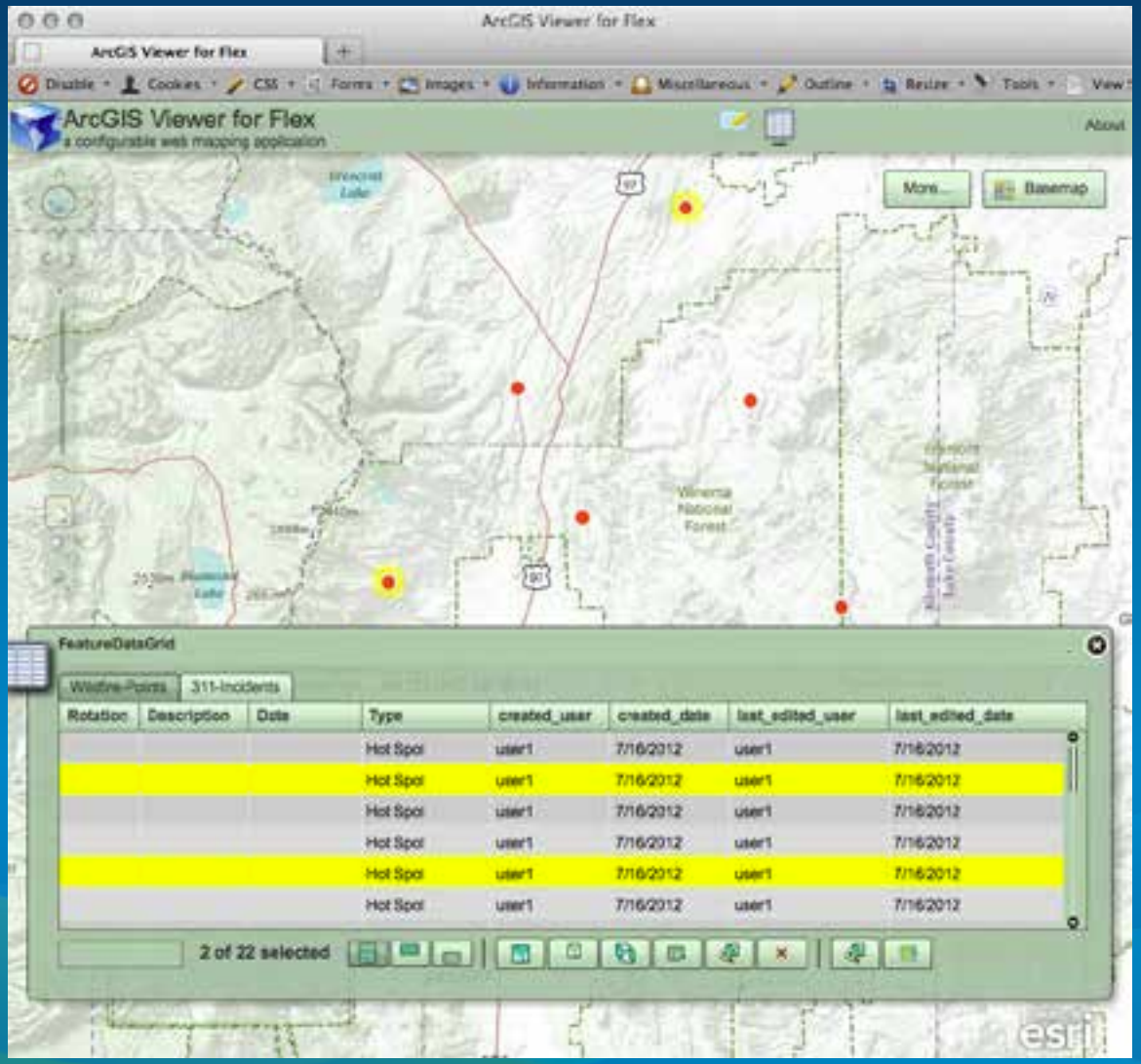
- Modified for Application Builder packaging
- -locale= -source-path=locale/{locale} -keep-all-type-selectors=true

Packaging Custom Widgets for Application Builder

Demo

Road Ahead

Coming in 3.1: FeatureDataGrid widget



Coming in 3.1: Locator search in the header

Additional resources

More information

- Esri
  - http://resources.arcgis.com
    - documentation, forums, samples
  - http://links.esri.com/flex
  - http://links.esri.com/flexviewer
- Adobe
  - http://www.adobe.com/devnet/flex.html
  - http://www.adobe.com/devnet/flex/videotraining.html
  - http://www.adobe.com/devnet/flex/tourdeflex.html

Esri training for Web developers

- ***http://www.esri.com/training***
- **Instructor-Led Courses**
  - **Building Web Applications Using the ArcGIS API for Flex (3.0)**
  - **Introduction to ArcGIS Server (10.1)**
  - **ArcGIS for Server: Sharing GIS Content on the Web (10.1)**

- **Online Training Seminars**
  - **Free, one-hour presentation and demos by Esri technical experts**
  - **Live seminar broadcast on a new topic every month**

UC Agenda: Flex Technical Sessions

Tuesday

03:15 – 4:30 ArcGIS Viewer for Flex – An Introduction Room 02

Wednesday

8:30 – 9:45 ArcGIS API for Flex – Advanced Topics Room 32 B

10:15 – 11:45 ArcGIS API for Flex – An Introduction Room Ball 6E

3:15 – 4:30 ArcGIS Viewer for Flex – Advanced Topics Room 02

Thursday

10:15 – 11:30 ArcGIS API for Flex – Advanced Topics Room 32 B

10:15 – 11:30 ArcGIS Viewer for Flex – An Introduction Room 02

Friday

9:00 – 10:15 ArcGIS Viewer for Flex – Advanced Topics Room 04

UC Agenda: Other sessions and info

Tuesday

12:00 – 1:00 Flex Developer Special Interest Group Room 28A

12:00 – 12:30 Mind Control, Big data, Hadoop and lots more Esri Labs Exhibit Hall B

Wednesday

12:00 – 1:00 Killer Apps: Flex and HTML5 Room Ball 6E

3:00 – 3:30 Reinventing the Feel: Building Impressive HTML User Experiences Esri Labs Exhibit Hall B

Esri Showcase schedule

- Tuesday 9 – 6
- Wednesday 9 – 6
- Thursday 9 – 1:30

Summary

- Introduction
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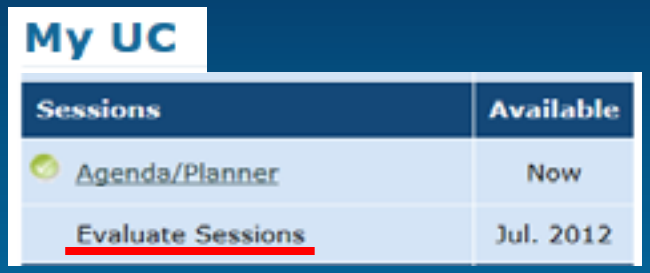
Steps to evaluate UC sessions

- My UC Homepage >
  "Evaluate Sessions"



- Choose session from planner

OR

- Search for session

www.esri.com/ucsurveysessions

- Thank you for attending
- Have fun at UC2012
- Open for Questions

- Please fill out the evaluation:

www.esri.com/ucsessionsurveys

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