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
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 widget business 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 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](http://resources.arcgis.com)
    - documentation, forums, samples
  - [http://links.esri.com/flex](http://links.esri.com/flex)
  - [http://links.esri.com/flexviewer](http://links.esri.com/flexviewer)

- **Adobe**
Esri training for Web developers

- [http://www.esri.com/training](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
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

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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

  First Offering ID:  662
  Second Offering ID:  1934