Introduction

This document was created to standardize tool or widget submissions to EnviroAtlas. Numerous process steps must be followed and completed before widgets can be published in EnviroAtlas. Once the widget code and documentation is received following the procedures outlined below, the EnviroAtlas Data Submission Group will review and test the widget for publishing in EnviroAtlas. Communication regarding status and completeness of widget submitted will be ongoing throughout the process of publishing the code into the existing EnviroAtlas mapping application.

EnivroAtlas Hosting Environment and Software

Flex:

Esri (http://www.esri.com) has three platforms from which they have developed Application Programming Interfaces (API): Flex, JavaScript, and Siverlight. EnviroAtlas develop the EnviroAtlas Interactive Map application with the Adobe Flex Software Development Kit (SDK) (http://www.adobe.com/products/flex.html) and used Esri's ArcGIS Viewer for Flex application as the basis for development. Adobe Flash player was widely available for users in web browsers and associated Flex development environment provided a method to customize the application.

For more information about Esri's latest ArcGIS Viewer for Flex application, follow this link: http://resources.arcgis.com/en/communities/flex-api/ .

JavaScript:

While the current application is coded with Flex, future versions will be recoded and changed to JavaScript because of changes in the Esri API development process. Esri has stopped updates to both Flex and Silverlight and is moving towards JavaScript-based web application builders and customized JavaScript applications. Because of these changes, EnviroAtlas requests any application additions be discussed with the EnviroAtlas Data Submission Group. This is necessary to ensure the widget being developed aligns with the conversion from Flex to JavaScript.

EPA GeoPlatform:

EnviroAtlas is currently hosted in the EPA GeoPlatform Hosting Environment which has strict security and firewall rule restrictions which cannot be easily modified. The current security restrictions do not allow additional software installation - including .NET code - to the EnviroAtlas coding framework. Applications for use are limited to those available with the installation of the enterprise version of ArcGIS 10.2.x or 10.3 software (i.e., ArcGIS Server, Desktop). Other software included with the ArcGIS installation includes PostgreSQL and Python (ArcPy). With prior approval by EnviroAtlas Data Submission Group (which includes additional approval from the EPA GeoPlatform Hosting Environment administrators), Python libraries may be implemented and installed. The servers used by EnviroAtlas are Windows Server 2008 R2 Virtual servers using IIS 7.

Widgets and tools added to EnviroAtlas should be efficient and not cause undue or excessive resource use in the EPA GeoPlatform Hosting Environment. Testing of the submitted resources in the (internal EPA) development environment will be completed to verify potential issues with resource sharing.

EnviroAtlas uses a modified version of the base Esri ArcGISViewer Flex version 3.4. Major modifications to the original code which affect widgets include the Header Controller Widget. Most of these changes are cosmetic and do not change the basic functionality of the Header Controller Widget code. For specific EnviroAtlas-related EPA GeoPlatform questions, please contact the EnviroAtlas Data Submission Group and place "FLEX Code" at the beginning of the email subject line.

EnviroAtlas web services:

EnviroAtlas includes web services created from data submitted for the application. Currently, the EPA GeoPlatform Hosting Environment is using ArcGIS Server 10.2.x. Plans to migrate services to ArcGIS 10.3 are being formulated for the EnviroAtlas Hosting Environment. An attempt to maintain stable EnviroAtlas web services will be made, however, because EnviroAtlas is in development, the structure and layers within each service may change at any time.

If you access any of the current EnviroAtlas web services, please document the resources (service name and layers) used in your widget/tool.

Development Software used for EnviroAtlas:

The following specifications describe the versions of software used to configure the EnviroAtlas mapping application and web development environment within the EPA's intranet. Testing for actual minimum requirements has not been conducted. US EPA does not endorse or recommend any commercial products. Use of any software by EnviroAtlas is not an endorsement of the software.

Adobe Flash Builder 4.6 Premium (build 4.6.0.328916) or 4.7
(http://www.adobe.com/products/flash-builder.html)

Flex SDK 4.6.0
(http://opensource.adobe.com/wiki/display/flexsdk/Flex+SDK)

ArcGIS API for Flex 3.4
(library file, agslib-3.4-2013-06-03.swc, are included in the project files)
(http://www.esri.com/apps/products/download/index.cfm?fuseaction=download.all)

git (Any version after version1.7.8)
(http://git-scm.com/)

ESRI git repository used as basis for project (based on the ArcGIS for Flex 3.4 API):
https://github.com/EsriGithub?tab=repositories (login to ESRI using free global account is needed)

Details on submitting Flex widgets for EnviroAtlas

The following information describes general guidelines for adding widgets - including access to the EnviroAltas application's web services, the preferred location for placing newly-created widgets in the Flex project, notes about the current iteration of EnviroAtlas, required content, and contact information.

Web Services: All current EnviroAtlas web services are available for viewing/access at: http:/enviroatlas.epa.gov/ArcGIS/rest/services. Because of the continuing development of EnviroAtlas, these services are based on the current configuration of EnviroAtlas and are subject to modification or deletion.

Widget Placement: In the Flex project, all EPA-updated or created widgets are stored in the folder "widgets_epa" under the src, bin-debug, and (compiled) bin-release folders. Any new widget and associated files should be created beneath this folder. A folder for images resides in assets.images - this location can be used to store any new image or icon files and can be referenced (and documented) as such.

All tools and widgets are initiated in the config.xml file. Please document information to be updated in the config.xml for each submitted widget.

Placement of widgets within the application page is at the discretion of EnviroAtlas.

Notes about EnviroAtlas code:

- A geoprocessing web service will be created for accessing data for the downloadable data tool ("Clip N Ship" functionality). Other geoprocessing services will be created as needed to access specific datasets for added widgets.

- EPA has a current license key for Bing access and also has an Esri geometry web service incorporated into the EnviroAtlas Flex code. This will supersede any other service calls in submitted code. For reference, please note in your documentation if these services are employed by the widget.

- Currently, the Table of Contents (TOC) used by EnviroAtlas does not "play well" with the MapSwitcher widget. While this may not be an issue for most web tools, avoiding any potential issues is preferred. Because of this, we ask developers of new widgets to not employ the MapSwitcher widget in their tools. EnviroAtlas team is currently updating the application to modify this code so in the future all Esri ArcGIS Viewer for Flex tools are available without issue.

For developers within the EPA, a github repository has been set up for internal EPA use only. A login and password are needed to access the latest version of the EnviroAtlas web page and the interactive map code. To request access, please contact the EnviroAtlas Data Submission Group. This code is being updated and all attempts are made to keep the repository up to date with the internal EPA (intranet) version of the "Current Development" site. "Pushing" information back to the original github repository is not allowed at this time.

For developers internal or external to EPA, a clone copy of this repository is not necessary to complete additional widget code - only a clone of the Esri ArcGIS Viewer for Flex (v3.1) code is needed. At the discretion of the EnviroAtlas Data Submission Group, a copy of the github repository may be provided upon request.

Required Content: When providing a new widget for the EnviroAtlas, send a copy of the compiled widget, all source code, documentation, and instructions for implementing the widget in the EnviroAtlas Interactive Map Viewer to the EnviroAtlas Data Submission Group.

Widgets submitted to the EnviroAtlas Data Submission Group must include the following information in the delivery package:

- Source code and compiled files for separate widgets components. Compiled files (SWF for Flex widgets) may contain added libraries. Libraries files should be included in the source code package. If the library product is licensed, the ability to recompile should available - without license - to the EPA. Documentation should be included to describe the function and, if necessary, licensing agreement of associated libraries.
- Thorough documentation for installing the widget into the EnviroAtlas Flex application. Any additional packages or libraries needed for debugging must be included and documented.
- Descriptive text and documentation, used as "Help" for the widget, should be included as an information/help button on the widget and included as an additional section of the installation documentation.
- Any data not included in existing EnviroAtlas web services must be supplied and follow the guidelines for EnviroAtlas Data Submission - which includes acceptable metadata. Please contact the EnviroAtlas Data Submission Group for a copy of these guidelines or go to the "Information for Collaborators" section of the EnviroAtlas web site.
- All ArcGIS Server services (i.e., map or geoprocessing) created for the widget must be documented in the ArcMap Document (mxd) and service with layer or process descriptions.
- Any scripting used for geoprocessing services must be submitted and documented.

Details on Submitting Web Services for EnviroAtlas

If separate ArcGIS Server web services (e.g., dynamic, feature, geoprocessing, or query) need to be implemented and hosted in the EPA Geoplatform Hosting Environment for the submitted widget, prior approval (completed by submitting a detailed description and process diagram to the EnviroAtlas Data Submission Group) should be obtained by the widget developer. Approval is dependent on database size, estimated resource use, and performance issues. If possible, a detailed description of this information should be included in the request. Limitations for database size are based on the shared EPA GeoPlatform Hosting Environment resource and current EnviroAtlas stored databases. Along with data, scripts, and/or map documents, thorough documentation is needed to create and test the web services in the EPA GeoPlatform Hosting Environment.

The web service structure in the EPA GeoPlatform Hosting Environment does not allow for user-stored permanent files created as a result of running a widget - only temporary storage created during the course of a user session. If persistent storage is needed, the developer must access another public server location available outside of the EPA GeoPlatform Hosting Environment. Connections to external databases or services must be completed within a geoprocessing service - direct database connections cannot be made inside or outside of the EPA environment. Additional software cannot be added to the EPA GeoPlatform Hosting Environment beyond what has been described above.

Web service delivery should include any necessary data in File Geodatabase format, map documents, scripts, appropriate metadata (which meets the EnviroAtlas and EPA's GeoPlatform guidelines), and installation documentation – including help documentation to describe the function of any web services. The base EPA GeoPlatform Hosting Environment data documentation requirements are incorporated into the EnviroAtlas Data Submission Guide. The guidance document for data submission to EnviroAtlas is posted in the same download location as this document and can be used as a template for new data and services. Along with data metadata, appropriate metadata is required for all information posted to the EPA GeoPlatform - this includes complete web service documentation.

The completed metadata for data or for web services will not be submitted to the EPA's Environmental Dataset Gateway (EDG) by the developer, instead, the EnviroAtlas Data Submission Group will review and submit this information before release. We encourage developers to review the appropriate guidelines for details about completing metadata. Questions about the web service platform and metadata procedure for data or web services can be directed to the EnviroAtlas Data Submission Group.

Final web service content structure, as well as web service naming conventions, will be completed by the EnviroAtlas Data Submission Group. Once development map services have been finalized and approved, they will be deployed in the EnviroAtlas application and the EPA GeoPlatform Hosting Environment. As soon as services are deployed in the EPA GeoPlatform Hosting Environment, they also become viewable through the EnviroAtlas interactive map. Metadata will be submitted to the EDG and will be searchable based on content in the metadata record.

If you have additional questions about the mapping application, development environment, github repository, or web services please email the EnviroAtlas Data Submission Group.