

Overview

In this guide, you will learn about the Web AppBuilder for ArcGIS. The Web AppBuilder allows you to create Web apps without writing any code, using an online "What-You-See-Is-What-You-Get" builder application. In addition, you can download the Web AppBuilder for ArcGIS Developer Edition, which allows you to customize your apps using your own HTML, CSS, and JavaScript.

Learning Outcomes

- Build a Web map using ArcGIS Online
- Build a Web app using the ArcGIS Online version of the Web AppBuilder for ArcGIS
- Create a custom widget using the Web AppBuilder for ArcGIS Developer Edition

Introduction

In the Esri Canada GIS Centres of Excellence App Challenge, one platform available to you for app development is the [Web AppBuilder for ArcGIS](#). This document provides additional guidance around creating Web AppBuilder apps, including the use of the [Web AppBuilder Developer Edition](#).

Please note that you are not required to use the Web AppBuilder for your App Challenge submission.

Depending on the purpose and intended use case of your app, you may find it more suitable to build an app using a different platform such as the [AppStudio for ArcGIS](#) (cross-platform native mobile apps), or to create an entirely custom app using the [ArcGIS API for JavaScript](#) or any of the ArcGIS software development kits ("SDKs" – e.g., for [Android](#), [iOS](#), [Windows](#), [Java](#), etc.). Or, you might choose to use the [configurable app templates](#) in ArcGIS Online, such as [Map Styler](#), [ArcGIS StoryMaps](#), or the [Classic Story Maps](#) templates.

For more information about the requirements of the ECCE App Challenge, as well as overviews of various app-development options, please see the [ECCE App Challenge 2019 YouTube playlist](#) and the [ECCE Web site](#).

Part 1: Introduction to ArcGIS Online Web mapping

In the Web AppBuilder for ArcGIS, apps you develop can be built around Web maps created in **ArcGIS Pro**, in **ArcGIS Online**, or in an **ArcGIS Enterprise** portal hosted at your institution. While you can also create Web maps manually using JavaScript – i.e., writing lines of code to add layers to the map and customize the layers' display options and symbology – it is often easier to create Web maps using one of the map editors listed above, since they offer a WYSIWYG ("what-you-see-is-what-you-get") editing experience.

Before continuing, make sure you have an ArcGIS Online account, such as an **organizational account** created by your university or college. With an organizational account, you sign in at [https://\[organization\].maps.arcgis.com](https://[organization].maps.arcgis.com). Alternatively, if you do not have an organizational account, you can create a free **ArcGIS for Developers** account at <https://developers.arcgis.com> – these accounts can be used for custom app development, but are more limited overall.

Note that if you create an account at <https://www.arcgis.com> instead (e.g., signing up using a Facebook or Google account), this will work for the purposes of Part 1 of this guide, but will not allow you to use the Web AppBuilder in Parts 2 and 3. Hence, **it is highly recommended that you use your school's organization account for following the content of this guide.**

Once you have an ArcGIS Online account and have signed in successfully, you can create a basic Web map. For an introduction, see the following tutorial developed by the Education and Research Group at Esri Canada:

- Introduction to ArcGIS Online:
<https://hed.esri.ca/resourcefinder/#/title=Introduction%20to%20ArcGIS%20Online>
 - Video version: <https://www.youtube.com/watch?v=N-5FCICaMyM>

Once you are familiar with the ArcGIS Online interface and creating a Web map, feel free to experiment with your own maps. For example, you can upload your own datasets from existing ArcGIS Pro or ArcMap projects, or datasets that you have downloaded from Open Data sites. For more information, please see the following videos from the ECCE App Challenge YouTube playlist:

- Creating feature layers using the ArcGIS for Developers site:
<https://www.youtube.com/watch?v=qwMJ7uXDRIM>
- Publishing feature layers from a geodatabase:
<https://www.youtube.com/watch?v=JtmvCg2w9AM>
- Open spatial data sources:
<https://www.youtube.com/watch?v=OC1XcCzTi0c>

Part 2: Introduction to the Web AppBuilder for ArcGIS

Now that you've become familiar with the ArcGIS Online interface and created some Web maps, you can start to share these maps using Web applications. ArcGIS Online contains a set of **configurable app templates** that allow you to build applications quickly without writing any code. Many of the templates are tailored to a particular type of visualization or workflow, and each template contains a selection of **widgets**. Each widget is designed for a certain task, such as editing features on the map, querying features, viewing elevation profiles, or generating driving directions.

Beyond the configurable app templates, the **Web AppBuilder for ArcGIS** offers a greater level of customization, since it offers a large selection of widgets that can be inserted into one of several templates ("**themes**"). Each theme, in turn, can be configured with a selection of **layouts** and colour schemes. You can modify these options without the need to write any code.

You can build Web AppBuilder apps using either the version of the Web AppBuilder available on ArcGIS Online, or the Web AppBuilder Developer Edition. Using the Developer Edition, you can also export your apps' HTML, CSS, and JavaScript code, modify the code manually, and host the apps on your own Web server. The Developer Edition is described in Part 3 below.

- For a brief overview of the Web AppBuilder (including an introduction to the Developer Edition), please see this video from the ECCE App Challenge YouTube playlist:
<https://www.youtube.com/watch?v=efoqsf479Ns>
- To learn more about the widgets available in the Web AppBuilder:
<https://doc.arcgis.com/en/web-appbuilder/create-apps/widget-overview.htm>

- For an overview of the themes available in the Web AppBuilder:
<https://doc.arcgis.com/en/web-appbuilder/create-apps/themes-tab.htm>

Part 3: Web AppBuilder for ArcGIS (Developer Edition)

Now that you have experimented with the online version of the Web AppBuilder and its interface for creating and configuring Web applications, you can move on to the **Developer Edition**, which can be downloaded from the [ArcGIS for Developers](#) Web site. For an introduction to the Developer Edition, please see the following tutorial from the Education and Research Group at Esri Canada. This tutorial will walk you through the code needed to create a custom Web AppBuilder widget to show 2016 air-quality indicator data from across Canada.

- Web AppBuilder for ArcGIS (Developer Edition):
[https://hed.esri.ca/resourcefinder/#/title=Introduction%20to%20Web%20AppBuilder%20\(Developer%20Edition\)](https://hed.esri.ca/resourcefinder/#/title=Introduction%20to%20Web%20AppBuilder%20(Developer%20Edition)) (see "Intro-to-WebAppBuilderDev.pdf" inside the downloaded zip archive)

Note that the steps in this tutorial show you how to build a new Web AppBuilder app from the ground up in the Developer Edition, and add layers to the Web map using JavaScript, as opposed to the workflows from Parts 1 and 2 above. When developing your own apps after the tutorial, you can import existing Web AppBuilder apps from your ArcGIS Online account using the **Import** tool on the Developer Edition home page. (Once imported, this becomes a separate version of the app that exists only on your local computer – that is, changes you make to the app in ArcGIS Online will not be reflected in the copy in the Developer Edition, and vice versa.) As well, if you are building a new Web AppBuilder app in the Developer Edition, instead of using the ArcGIS Online Web AppBuilder, you can still include a map from your ArcGIS Online account by going to the **Map** panel in the Web AppBuilder editor interface.

The tutorial contains code snippets that can be copied and pasted into files from the Web AppBuilder's "Demo" widget. You can edit JavaScript files using simple text editors such as Notepad and TextEdit, as well as more developer-oriented editors such as [Notepad++](#), [Atom](#), and [Visual Studio Code](#). When copying and pasting code from the tutorial PDF, make sure not to overwrite any brackets or braces in the original Widget.js that aren't also in the code you are copying.

Each code snippet in the tutorial contains comments explaining the code. Since Web AppBuilder widgets use the **ArcGIS API for JavaScript**, you can also view information about each part of the API using the [online API Reference](#).

Happy developing!

Related Resources

- [Esri Canada Higher Education Resource Finder](#)
Downloadable resources and online videos for topics such as ArcGIS Online, ArcGIS Desktop, ArcGIS developer technologies, and ArcGIS Server.
- [Esri Canada GIS Centres of Excellence: Resources](#)
A comprehensive list of resources for Esri development technologies, as well as many other websites of interest to university GIS students.

- **[Esri Canada Centres of Excellence YouTube Channel](#)**
Contains video recordings of webinars offered by the Education and Research Group at Esri Canada, as well as [a playlist of videos for the ECCE App Challenge](#).
- **[ArcGIS for Developers - Web AppBuilder for ArcGIS \(Developer Edition\)](#)**
Download the developer edition of the Web AppBuilder here - this version allows you to create custom widgets and themes. This Web site also contains documentation, code samples, and tutorials.
- **[ArcGIS.com - Web AppBuilder for ArcGIS](#)**
Contains documentation for the What-You-See-Is-What-You-Get version of the Web AppBuilder, as accessed through ArcGIS Online or ArcGIS Enterprise.
- **[Esri Canada Learning Framework - ArcGIS API for JavaScript](#)**
Learn how to build and customize your own Web apps with interactive tutorials for the ArcGIS API for JavaScript. Web apps built using the Web AppBuilder for ArcGIS use this API, and knowing the API itself allows you to customize your Web apps more thoroughly and create custom Web AppBuilder widgets. There are also introductory tutorials for HTML, CSS, and JavaScript.
- **[Learn ArcGIS](#)**
Guided tutorials for the ArcGIS platform, including ArcGIS Online and the Web AppBuilder.
- **[GeoNet](#)**
The online community for Esri software users, with discussion boards and social networking. Check out the [Web AppBuilder](#), [Web AppBuilder Custom Widgets](#), [ArcGIS API for JavaScript](#), and [ArcGIS Online](#) groups.
- **[Codecademy](#)**
Want to brush up on your [HTML](#), [CSS](#), and [JavaScript](#) skills? Try out the interactive tutorials and quizzes at Codecademy.com.
- **[Mozilla Developer Network - Web technologies for developers](#)**
Tutorials and reference materials for HTML, CSS, JavaScript, and other Web technologies such as WebGL.

<https://ecce.esri.ca>

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