

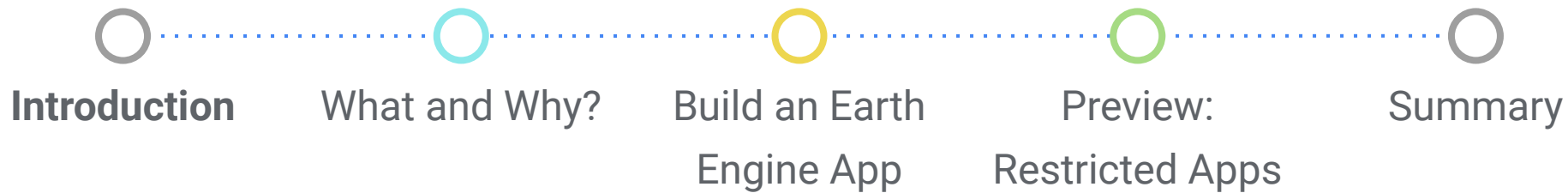


# Make your own Earth Engine App

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Ben Galin / September 18, 2019

# Agenda



# Code Editor: [code.earthengine.google.com](https://code.earthengine.google.com)

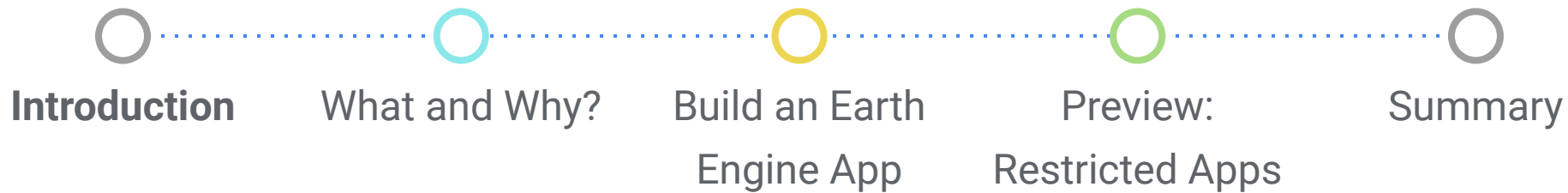
The screenshot shows the Google Earth Engine Code Editor. The top bar includes the Google Earth Engine logo, a search bar, and navigation links. The left sidebar contains a 'Scripts' panel with a list of scripts, including 'Doy Series'. The main editor area displays a JavaScript code snippet for creating a chart. The right sidebar shows the 'Inspector' and 'Console' panels. The 'Inspector' panel displays a chart titled 'Band mean by day of year across years' with a line graph showing the mean of three bands (B1\_mean, B2\_mean, B3\_mean) over 360 days. The 'Console' panel shows the output of the code, including the creation of a chart and the addition of a layer to the map. The bottom panel shows a map of the world with a rectangle drawn over a region in the western United States.

```
0 var forest = ee.Feature( // Tahoe National Forest...
1   ee.Geometry.Rectangle([-121.39, 39.4, -120.99, 39.45]),
2   {label: 'Forest'});
3 var desert = ee.Feature( // Black Rock Desert...
4   ee.Geometry.Rectangle([-119.02, 39.95, -119.41],
5   {label: 'Desert'});
6 var westernRegions = new ee.FeatureCollection([city, forest,
7   forest, desert]);
8 var landsat8Toa = ee.ImageCollection('LANDSAT/LC08/C01/T1_TOA'
9   .filterBounds(westernRegions));
10 landsat8Toa = landsat8Toa.select(['B1-T1']);
11 // Create a chart using a sequence of arguments.
12 var bands = ui.Chart.image.doySeries(landsat8Toa, forest, null,
13   print(bands));
14 // Create a chart using a dictionary of named arguments.
15 var years = ui.Chart.image.doySeriesByYear({
16   imageCollection: landsat8Toa,
17   bandName: 'B1',
18   region: forest,
19   scale: 200
20 });
21 print(years);
22 // Create a chart using a dictionary of named arguments.
23 var regions = ui.Chart.image.doySeriesByRegion({
24   imageCollection: landsat8Toa,
25   bandName: 'B1',
26   regions: westernRegions,
27   scale: 500,
28   seriesProperty: 'label'
29 });
30 print(regions);
31 Map.addLayer(westernRegions);
32 Map.addLayer(westernRegions);
33 Map.addLayer(westernRegions);
34 Map.addLayer(westernRegions);
35 Map.addLayer(westernRegions);
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40 Map.addLayer(westernRegions);
41 Map.addLayer(westernRegions);
```

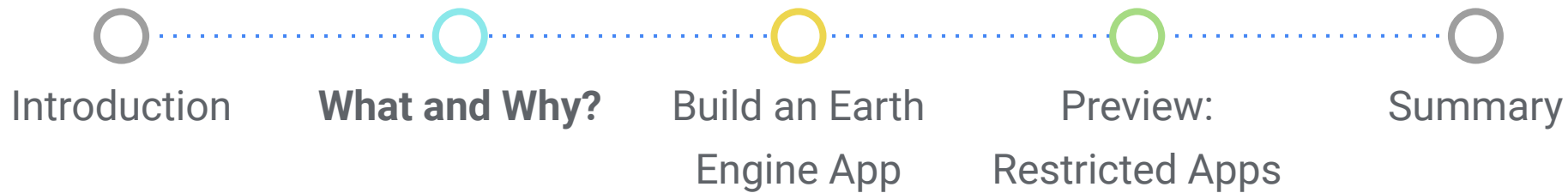
## EE Apps: [earthengine.app](https://earthengine.app)

The screenshot shows the Earth Engine Apps interface. The top bar includes the 'Earth Engine Apps' logo, a search bar, and navigation links. The main area displays a map of the world with a rectangle drawn over a region in the western United States. The right sidebar shows a 'Choose an image to visualize' panel with a date selector set to '2018-07-21'. The bottom panel shows a map of the world with a rectangle drawn over a region in the western United States.

# Agenda



# Agenda



What  $\Rightarrow$  Why

Why  $\Rightarrow$  What



# Why Earth Engine Apps



EE Apps are for **sharing** your work

Get Link ▼

Share Repo: users/my/repo

me@example.com Owner ▼

Email or domain Reader ▼ Add

# Why Earth Engine Apps



## EE Apps are for **sharing** the **output** of your work

### App Engine & Earth Engine Overview

[Google App Engine](#) lets you build and run your own custom applications on Google's servers. App Engine applications are easy to create, maintain, and scale as your traffic and data storage needs change. You simply upload your application source code and it's ready to go. If you're new to developing for App Engine, be sure to check out the App Engine [Python](#) or [Node.js](#) quickstart before proceeding.

Earth Engine and App Engine can be used together to build scalable geospatial applications. Typically, your App Engine code includes the [Earth Engine Python client library](#) and makes requests to the Earth Engine backend using a [service account](#). This is advantageous because it allows anyone to use your app without logging in or being a registered Earth Engine user. Note that the standard Earth Engine [usage limits](#) apply to each service account. If you expect your application to be popular and approach the usage limits, please contact the Earth Engine team ([earthengine@google.com](mailto:earthengine@google.com)) before launching the application.

#### Contents

##### Deploying App Engine apps with Earth Engine

1. Create your own project
2. Set up credentials
3. Set up the local development environment
4. Run locally

# Why Earth Engine Apps



EE Apps are for **easily sharing** the **output** of your work

# Why Earth Engine Apps



EE Apps are for **publishing** your work

# What are Earth Engine Apps



Examples: <https://google.earthengine.app/>

# What are Earth Engine Apps



Example: <https://www.intertidal.app/>

(...which is in fact a Google Site webpage that is embedding  
<https://michael.users.earthengine.app/view/intertidal>)

# What are Earth Engine Apps



"Earth Engine Apps are dynamic, publicly accessible user interfaces for Earth Engine analyses. With Apps, experts can use simple UI elements to leverage Earth Engine's data catalog and analytical power, for experts and non-experts alike to use."

– <https://developers.google.com/earth-engine/apps>

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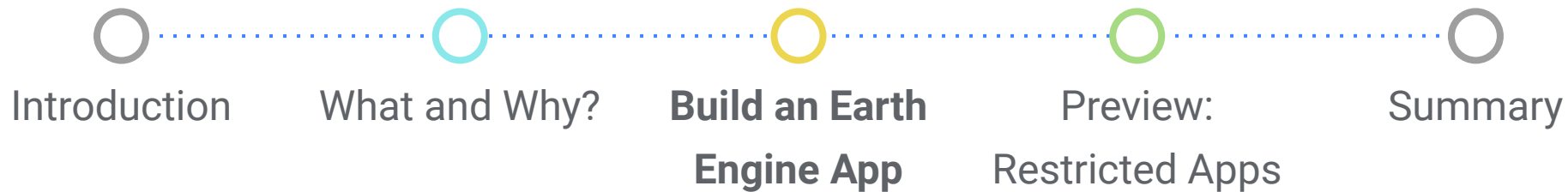
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# Build an Earth Engine App



We will build an app version of **Nightlight Trends** (aka **Zoom Box**)

<https://code.earthengine.google.com/>

(Googlers: [https://code.earthengine.google.com/?as\\_external](https://code.earthengine.google.com/?as_external))

**The only code you'll need to write:**

```
Map.centerObject(geometry, 7)
```

**and**

```
ee.data.copyAsset('users/bengalin/g4g', 'users/<me>/g4g')
```

# Build an Earth Engine App



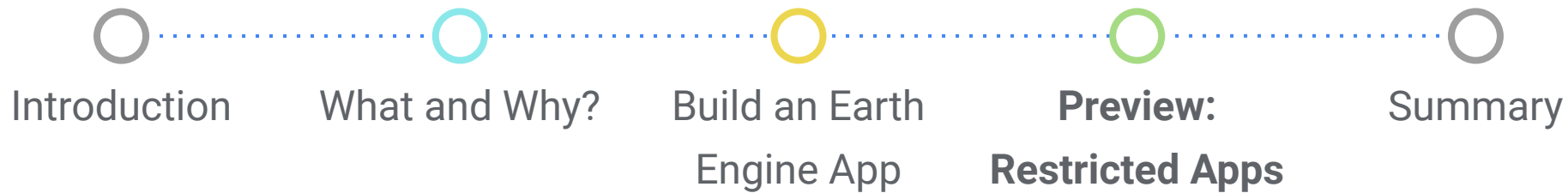
- Identify your app with an API Key
- Feature your app in a Gallery
- Access your app
- Share assets publicly
- Update your app's code

# Build an Earth Engine App



- Build a [Google Sites \(sites.google.com\) webpage](https://sites.google.com) around your app
- [Create a custom domain](#)

# Agenda



## Preview: restricted apps



A **restricted app** version of **Nightlight Trends** (aka **Zoom Box**)

<https://code.earthengine.google.com/> (not launched yet)

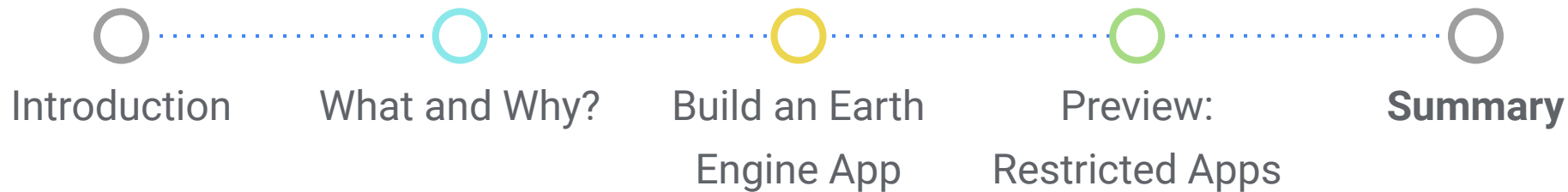


## Preview: restricted apps



- Identify the app
- Restrict access to app
- Share assets with app

# Agenda



Thank you!

