Making Maps with Leaflet

Katherine Knowles | Watson Library 455 | 24 September 2025

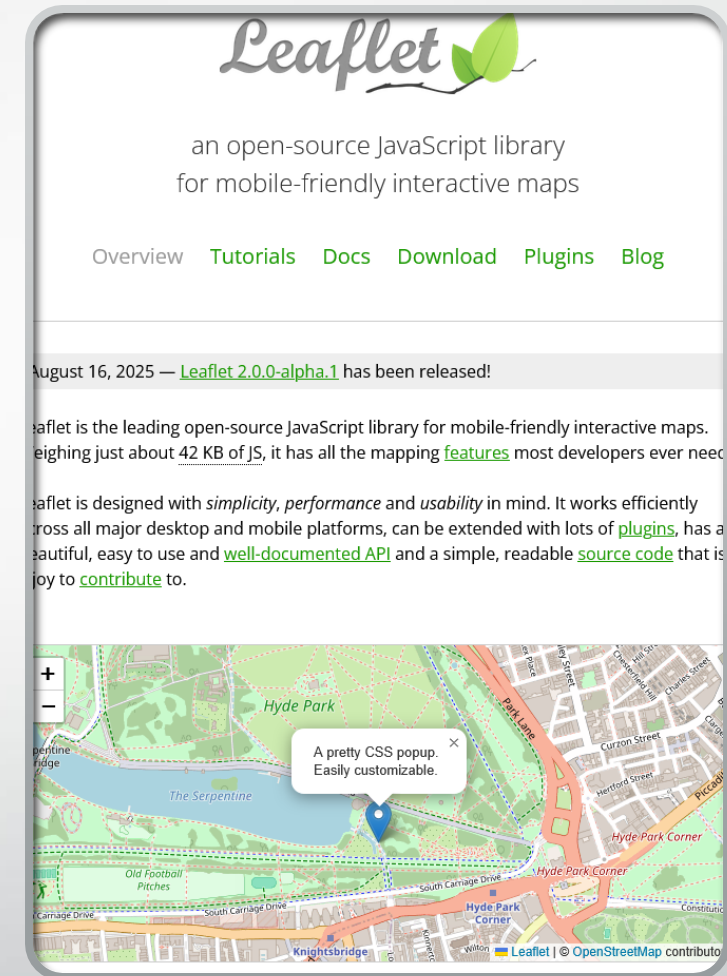Access the slides:

https://bit.ly/idrh-leaflet

Introductions

- Please tell us:
  - Your name
  - Your department
  - A one sentence summary of your mapping project (it's okay if you don't have one and are just curious about the tool!)

Agenda

- What is Leaflet?
- My experience with Leaflet
- Setting up a Leaflet Map
- Customization Possibilities
- Example projects

What is Leaflet?

- Per its website, [Leaflet](#) is an open-source JavaScript library for mobile-friendly interactive maps.

- Leaflet prioritzes simplicity, performance, and usability.

- The Leaflet website, leafletjs.com, has an incredible amount of documentation, including an extraordinarily helpful [Quick Start Guide](#).

My Leaflet Map – The Stratford Heritage Guide

stratfordheritageguide.kiknowles.com
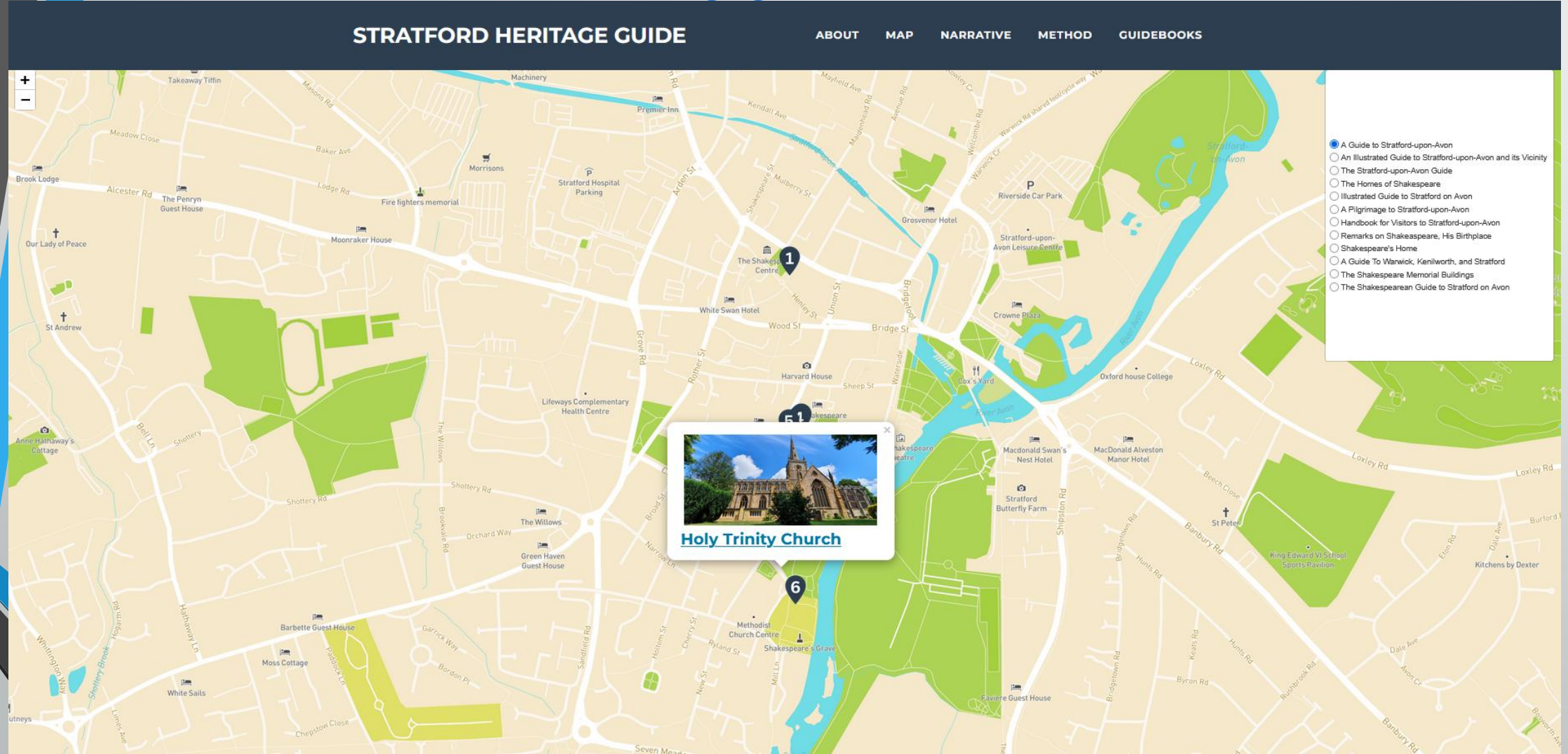
Making a Map with Leaflet

- We're going to try setting up map from the Quick Start Guide, which you can access at https://leafletjs.com/examples/quick-start/

- If you'd prefer to follow along without having to set up your own map, you can view and download my file at https://github.com/katknow/idrh-map-workshop/ (we'll be using index.html)

Set Up Your HTML Document

1. Open Notepad (on Windows) or TextEdit (on Mac), or use your favorite code editor

2. Set the document type

3. Add a head section

4. Add a body section

5. Save your file as an HTML document

```
1    <!DOCTYPE html>
2
3    <head>
4
5    </head>
6
7    <body>
8
9    </body>
10
```

Add Leaflet's CSS & JavaScript Files

Between the head tags in your HTML document, you will now want to add:

- The Leaflet CSS file

- The Leaflet JavaScript file (after the CSS)

```
1    <!DOCTYPE html>
2    <head>
3     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.9.4/dist/leaflet.css"
4          integrity="sha256-p4NxAoJBhIIN+hmNHrzRCf9tD/miZyoHS5obTRR9BMY="
5          crossorigin=""/>
6     <script src="https://unpkg.com/leaflet@1.9.4/dist/leaflet.js"
7          integrity="sha256-20nQCchB9co0qIjJZRGuk2/Z9VM+kNiyxNV1lvT1ZBo="
8          crossorigin=""></script>
9    </head>
10
11   <body>
12
13   </body>
14
```

You can copy and paste these from the Leaflet Quick Start Guide. Make sure you are closing all tags correctly!

Add a Div for Your Map

- Now you will want to add a div for your map—make sure you place it between the body tags of your html document!

```
1    <!DOCTYPE html>
2
3    <head>
4     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.9.4/dist/leaflet.css"
5          integrity="sha256-p4NxAoJBhIIN+hmNHrzRCf9tD/miZyoHS5obTRR9BMY="
6          crossorigin=""/>
7     <script src="https://unpkg.com/leaflet@1.9.4/dist/leaflet.js"
8          integrity="sha256-20nQCchB9co0qIjJZRGuk2/Z9VM+kNiyxNV1lvTlZBo="
9          crossorigin=""></script>
10   </head>
11
12   <body>
13    <div id="map">
14   </div>
15   </body>
16
```

Define Your Map's Height

- You'll want to define the height of your map using CSS.

- If your map exists in a larger website, you may want to edit your bigger CSS file. For this workshop, we're going to add a "style" tag to our document head.

- In the style tag, define how big you want your map to be. I want mine to fill the screen, so I'm setting it to 100%. You can also define a specific height in pixels.

```
 9      <style>
10      html,body {
11      height: 100%;
12      margin: 0;
13      }
14      #map {
15      height: 100%;
16      width: 100%;
17      }
18      </style>
19      </head>
```

Initialize Your Map

- Now, we'll want to add a basic map to start from to your HTML document.

- In the body section, we'll set the view of your map based on a set of coordinates and adjust the zoom.

- The Quick Start Guide has it set to London, I have my map set to KU's campus (you can pull whatever coordinates you want from Google Maps!).

- Note: you'll want to put this information inside a script tag!

```
20
21    <body>
22     <div id="map">
23     </div>
24    <script>
25    var map = L.map('map').setView([38.9547302792848, -95.25518411352884], 16);
26    </script>
27    </body>
28
```
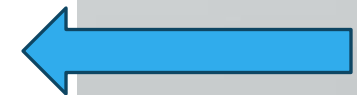
Add Your Tile Layer

- Next, inside that same scrip tag, you'll want to import your tile layer.

- Make sure all this code comes after your div tag for the map!

```
21    <div id="map">
22    </div>
23    <script>
24    var map = L.map('map').setView([38.9547302792848, -95.25518411352884], 16);
25    L.tileLayer('https://tile.openstreetmap.org/{z}/{x}/{y}.png', {
26        maxZoom: 19,
27        attribution: '&copy; <a href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>'
28    }).addTo(map);
29    </script>
30    </body>
```

Creating & Using Map Tiles

- Leaflet is "provider-agnostic," meaning you can import your map tiles from anywhere.

- Regardless of where you get your map tiles, be sure to include the appropriate attribution (the default is OpenStreetMap, which requires a specific attribution per the copyright notice).

- You can also use providers such as Mapbox, Stamen, or Thunderforest, as long as you include the correct attribution!

- For my project that I showed you earlier, I created my tiles using Mapbox.

Adding Markers

- To add markers to the map, we'll continue editing inside the same script tag in the body of your document.

- In addition to the marker code provided in the Leaflet documentation, you'll just need whatever coordinates you wish to use.

- The Quick Start Guide placed a market near Borough in London, my code marks Watson Library.

```
23    <script>
24    var map = L.map('map').setView([38.9547302792848, -95.25518411352884], 16);
25    L.tileLayer('https://tile.openstreetmap.org/{z}/{x}/{y}.png', {
26        maxZoom: 19,
27        attribution: '&copy; <a href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>'
28    }).addTo(map);
29    var marker = L.marker([38.95681241602244, -95.24479365020387]).addTo(map);
30    </script>
31    </body>
```

Creating Popups

- If you'd like content to be affiliated with your marker, you can bind it with a popup!

- Let's bind a popup to our existing marker with a bit of text:

```
23    <script>
24    var map = L.map('map').setView([38.9547302792848, -95.25518411352884], 16);
25    L.tileLayer('https://tile.openstreetmap.org/{z}/{x}/{y}.png', {
26        maxZoom: 19,
27        attribution: '&copy; <a href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>'
28    }).addTo(map);
29    var marker = L.marker([38.95681241602244, -95.24479365020387]).addTo(map);
30    marker.bindPopup("<b>Hello IDRH Community!</b><br>We are in Watson for a workshop.");
31    </script>
32    </body>
33
```

- Note: you can bind popups to polygons and circles as well, or you can have a popup work on its own stand-alone layer.

Now, you should have something like this:

Code

```
1    <!DOCTYPE html>
2    <head>
3     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.9.4/dist/leaflet.css"
4         integrity="sha256-p4NxAoJBhIIN+hmNHrzRCf9tD/miZyoHS5obTRR9BMY="
5         crossorigin=""/>
6     <script src="https://unpkg.com/leaflet@1.9.4/dist/leaflet.js"
7         integrity="sha256-20nQCchB9co0qIjJZRGuk2/Z9VM+kNiyxNV1lvTlZBo="
8         crossorigin=""></script>
9    <style>
10   html,body {
11   height: 100%;
12   margin: 0;
13   }
14   #map {
15   height: 100%;
16   width: 100%;
17   }
18   </style>
19   </head>
20   <body>
21    <div id="map">
22   </div>
23   <script>
24   var map = L.map('map').setView([38.9547302792848, -95.25518411352884], 16);
25   L.tileLayer('https://tile.openstreetmap.org/{z}/{x}/{y}.png', {
26       maxZoom: 19,
27       attribution: '&copy; <a href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>'
28   }).addTo(map);
29   var marker = L.marker([38.95681241602244, -95.24479365020387]).addTo(map);
30   marker.bindPopup("<b>Hello IDRH Community!</b><br>We are in Watson for a workshop.");
31   </script>
32   </body>
33
```

Map
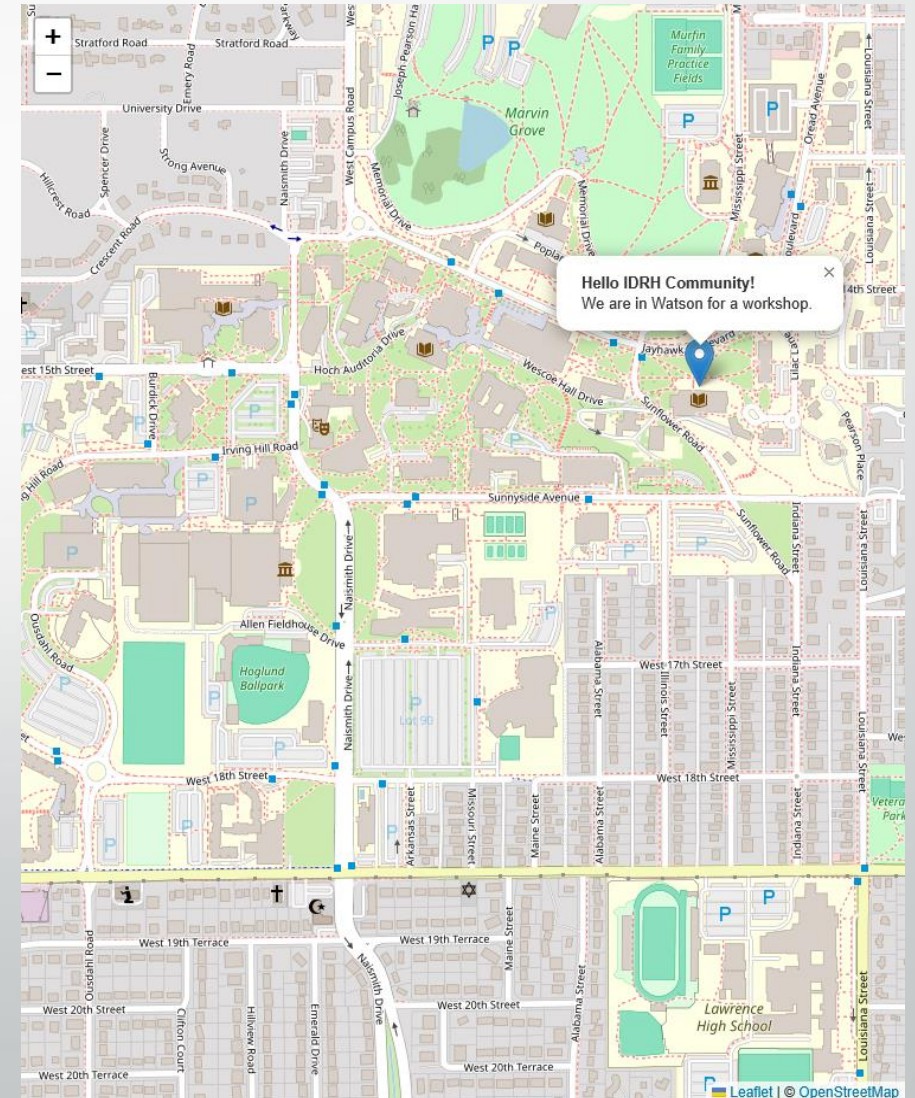
Styling and Customization

- You can change colors and styles of map tiles, popups, markers, and more
- You can also change the size of markers and create custom icons
- You can add additional layers to your map and create layer controls
- You can adjust the transparecy of different components to show overlapping layers and/or data
- You can specifically adjust your map to work on mobile or meet a variety of accessibility needs

Plugins

- Leaflet has a variety of plugins that you can incorporate into your map, and they've divided them into the following categories:
  - Tile & image layers
  - Overaly display
  - Map interaction
  - Overlay data
  - Overlay interaction
  - Integration with other systems
  - Miscellaneous

Digital Project Examples

- [Birds'-Eye Views of America: An Interactive Map](#)

- [Bomb Sight: Mapping the WWII Bomb Census](#)

- [Immigrec](#)

- [North Pacific Seabird Data Portal](#)

- [Urban Layers](#)

Upcoming Events

- Public Talk: "Humanities of the Future" - Dr. Ruha Benjamin
  - September 30th, 7 PM, Liberty Hall
  - "Afterwords" discussion October 1st, 10 AM, Hall Center for the Humanities
- Public Talk: "Listeners Like Who?" - Dr. Laura Garbes
  - October 1st, 1 PM, Burge Union Forum A
- Digital Jumpstart Workshops
  - October 17th, 9:30 AM – 5:30 PM, Clark Instruction Center (Watson Library)
    - 10:30 AM – Making Interactive Websites in the Classroom, Dr. John McEwan
    - 12:00 PM – Digital Mapping for Social Justice, Dr. Katie Knowles
    - 1:30 PM – Using Digital Tools for Student Projects, Dr. Maggie Unverzagt Goddard
    - 3:00 PM – Ethics of AI, Dr. Katie Conrad
- Workshop: Social Network Visualization for Humanities Research – Dr. John McEwan
  - November 19th, 12 PM, Watson Library 455

Thank you!
Any questions?

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