INTRO TO MAPBOX

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WEB MAPPING / MAPBOX HISTORY (2005-)

- (By no means exhaustive, but provides a bit of context for Mapbox's entry)

- Pre-slippy days: Static maps being served from rendering engines as large images. Very little interactivity.

- Google Maps (~2005): Introduced the first "slippy" maps, where maps were comprised of many small tiles (128x128, 256x256, 512x512 pixels) and retrieved asynchronously. Provided an early Javascript API to customize and add behavior to user maps

- Out of this effort came many advances including tiling address schemes, rendering engines to create very small image tiles, more advanced user interactivity

WEB MAPPING / MAPBOX HISTORY (2005-)

- Many companies/organizations in this realm including a number of open source libraries, e.g. MapQuest, OpenLayers, Bing Maps, CartoDB, Mapzen, etc …

- Mapbox started in 2010 as an offshoot of a non-governmental organization called Development Seed and has made numerous innovations in the web mapping realm

- Initially self-funded up through 2013 and have received $62M in venture capital funding since then.

- Business model: Most code is free and open source, users pay for tiered access to tile hosting (mostly focused on larger organizations)

MAPBOX TECHNOLOGIES

- Custom map making software: First TileMill, now Mapbox Studio

- Most map data comes from OpenStreetMap and many Mapbox employees are tasked with creating content for OSM. Created iD editor for OSM editing.

- MBTiles format for storing tiles efficiently

- UTFGrids for user interaction at image pixel scale

- Vector tiles! (https://www.mapbox.com/blog/vector-tiles/)

USER GALLERY USING MAPBOX STUDIO

- Mapbox gallery: https://www.mapbox.com/gallery/#map-0

- Lon Phelps blog on 'Parchment' style: https://www.linkedin.com/pulse/creating-style-mapbox-studio-lon-phelps

MAPBOX ACCOUNT SETUP

- Starter account: 50,000 map views/month, 600 geocode requests, 250MB dataset storage, 20 Mapbox Studio styles

- Link for plans and pricing

- Link to sign up

- Once signed in, you will receive a default public token that will be used to track your usage. This code (or another that you generate) needs to be used in all web applications

INTRODUCTION TO MAPBOX STUDIO

- Outstanding manual for Mapbox Studio

- General flow of publishing a map is:
  - Create content (work from existing data sources or bring your own in)
  - Style content (use Mapbox Studio to add style rules to individual content
  - Add map behavior (define user interaction through web application)
  - Should sound familiar to folks familiar with web development …

- We'll be working through the custom style tutorial (~15 minutes)

- Look at different export options (web preview, ArcGIS Online, ArcGIS, static, geojson)

ADD CUSTOM DATA TO MAPBOX STUDIO

- Working from Tutorial #2 – Add points to a web map (25 minutes)

- Make sure to add one or two new parks to the dataset by searching for "parks" before exporting to tile dataset

DEVELOPING WITH MAPBOX GL JS

- Javascript library that leverages WebGL to render map content using tilesets and style specifications on the client

- Allows for continuous zooming (as opposed to discrete zoom levels)

- Incorporates common map controls (zoom/pan, geolocate, tilt/rotate, etc.) and provides extensive functionality for styling map layers

- Excellent API and examples section: https://www.mapbox.com/mapbox-gl-js/api/

CREATE INTERACTIVE WEB APPLICATION

- Working from [Build a store locator using Mapbox GL JS](#) (25 minutes)

- Many of the instructions here expect you know *where* to copy/paste. Yell out if you need a hand.

EXAMPLES USING MAPBOX GL JS

- [Add GeoJSON polygon](#) (outside of Mapbox Studio)

- [Layer color switcher](#) (changing map layer styles through code)

- [Swipe between maps](#)

- [Story maps](#) (example of dynamic fly-to functionality based on story location)

- [Video(!) on maps](#)

- [Time animation slider](#)

- [Animated earthquakes](#) (inspired by http://misterfresh.github.io/mapbox-animation/)

NEW PROJECTS ON THE HORIZON

- Mapbox Unity SDK (https://www.mapbox.com/unity/)
  - Unity is a game engine development platform allowing possibilities for VR/AR applications
  - Mapbox content is directly translated into Unity meshes
  - Blog post (https://www.mapbox.com/blog/launching-mapbox-unity-sdk/)
- Mapbox / ThreeJS integration
  - Three.js – Javascript framework for WebGL
  - Leverages Mapbox tilesets and elevation services
  - Demo: https://www.mapbox.com/blog/3d-terrain-threejs/