INFO5992 Introduction to IT Innovations

Week 6

Tutorial 6: Understanding the Innovation and Business model of Map Web APIs

Map companies such as Microsoft's Bing Maps, Google Maps, and Here Maps all rely on Web API calls as their core business model.

In this tutorial, we will study couple of Map APIs, including OpenStreetMaps (Open source that rely on user contributions). We will also experiment with manipulating a popular mapping 'Web API' to analyse the simplicity and its potential for use to innovate.

Activity 1. Understanding the Innovation and Business model of the Map Web APIs

Within your group, discuss and answer the following questions:

1. What are the **Distributed Innovation concepts** employed by mapping API companies? Does the model of OpenStreetMap differ from the paid APIs? We have studied the following concepts in the past two weeks:
    a. Product platforms
    b. Web APIs
    c. Crowdsourcing innovation / Crowdfunding Innovation
    d. Releasing data sets "Open data."
    e. Free and Open Source Software
    f. User innovation

2. The Map API has created an extensive and powerful Value Network. In our case study today, we learned about several companies based upon the freely available OpenStreetMap. Can you add more examples to the Value Network (services, categories of services etc)

3. Comparing the OpenStreetMap to others, they embrace 'user innovation' and 'crowdsourcing innovation' as their core differentiator. What is your view of this and its long-term potential? Could they become at the level of Wikipedia i.e., the dominating service?

4. [Optional / Homework] Map Web APIs has had a huge impact in many industries e.g., shopping, Airbnb, ride sharing, navigation, etc. Would you consider Map APIs to be a destructive innovation? Has it created its own Value Chain and also created a New Market? Would you consider Maps to be in an Era of ferment, where we are seeing incremental innovations, and therefore it is prime for a new disruption? What would that look like and is there companies/research targeting this change?

[Optional] Activity 2. Running 'Here WeGo' maps in jsFiddle

1. Here WeGo Map – https://here.com/
An alternative to Google and Bing Maps. It is created together with major automobile manufacturers.

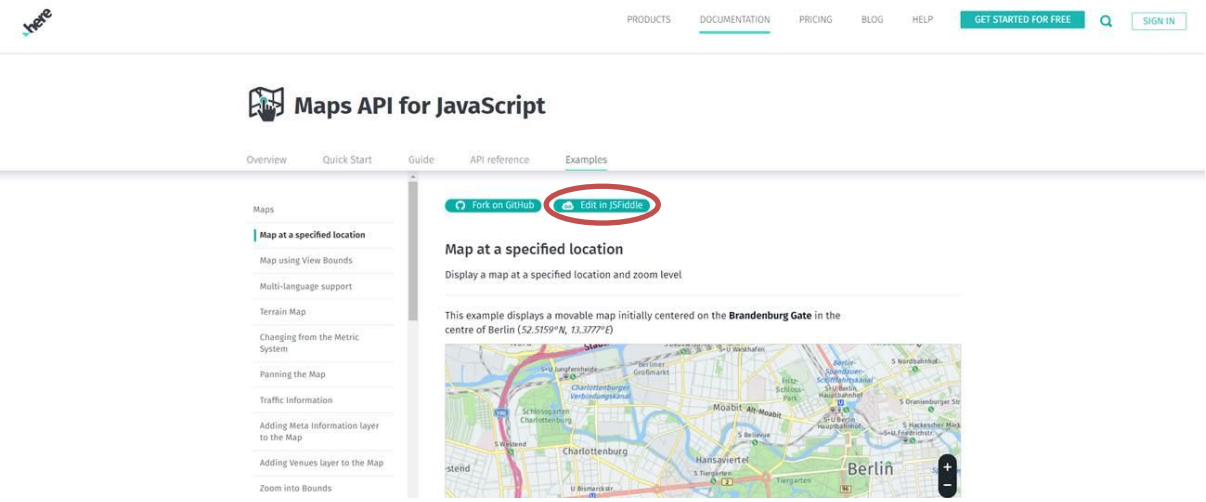
2. jsFiddle – https://jsfiddle.net/
An online sandbox for your JavaScript, HTML, CSS codes. It lets you run your web developments without a server for rapid prototyping and testing.

All activities have been tested for the Lab PCs; you can also run it on your own PC if you have the necessary software. Optional materials are for you to do on your own – you may discuss with your tutors to help you setup the necessary development environment.

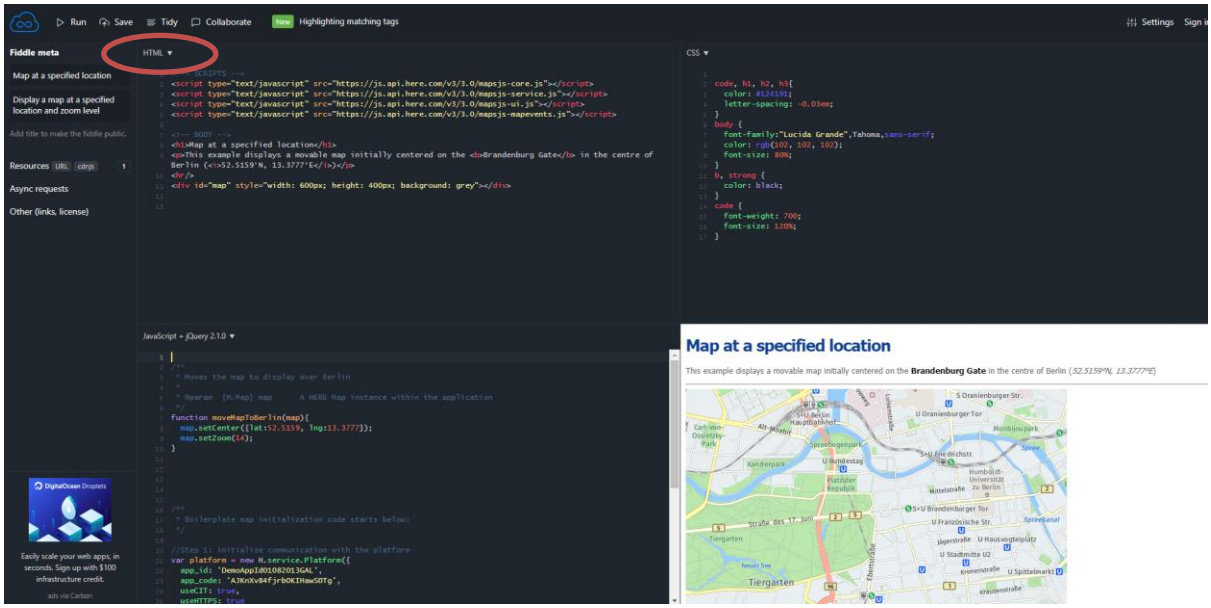
This lab activities will benefit from a basic understanding of HTML and Javascript. For an explanation of the code used, you may ask your Tutor. There are many tutorials on this topic you may wish to explore, e.g., http://www.w3schools.com/

For this activity, we will learn the basics of running a web service.

1. Click on the link to go to the developer site of here maps: https://developer.here.com/api-explorer/maps-js/v3.0/maps/map-at-specified-location, which is to display a map centred on a specific location of 'Brandenburg Gate in the centre of Berlin' (52.5159°N, 13.3777°E).



2. Click on button "Edit in JSFiddle", you should see a map being rendered. If you look at the HTML code, the key function is, starting from line 26 from the HTML box (top-left quadrant):
function moveMapToBerlin(map){
map.setCenter({lat:52.5159, lng:13.3777});
map.setZoom(14);
}



This function sets the location of the map using GPS coordinate (latitude and longitude), and also the zoom level of the map. You can play with these parameters. For example, coordinates for Sydney is lat:-33.8688, lng:151.2093

There are many different ways to find GPS coordinates. A simple method is to use Google Maps. https://www.google.com.au/maps/ You can go to any location, then right click on a point and select 'What's here' which will prompt its coordinate.

3. You can run any sample code from the developer site, including 'Taking a snapshot of the Map' and 'Traffic information'. The Traffic information is a good example of pulling information from a different Web API service (another API call!). It calls line 20

   enableTrafficInfo(map);

   Which is a function in Here WeGo that pulls trafficinfo. More information of the traffic info can be found in https://company.here.com/enterprise/location-content/here-traffic/

There are many powerful manipulations that can be done with Maps. In this activity, we will play with adding 'geoshapes' in the maps. This is somewhat similar to what Pokemon Go does with its maps, except that it is automated and very pretty.

1. Copy the code ('JS + HTML') from the link below into jsFiddle and press the 'run' button, which will render a polygon on the map.

   https://developer.here.com/api-explorer/maps-js/v3.0/geoshapes/polygon-on-the-map

2. The code to render the polygon is, starting from line 27:

   function addPolygonToMap(map) {

   var geoStrip = new H.geo.Strip(

   [52, 13, 100, 48, 2, 100, 48, 16, 100, 52, 13, 100],

   'values lat lng alt'

   );

```
 map.addObject(
  new H.map.Polygon(geoStrip, {
   style: {
    fillColor: '#FFFFCC',
    strokeColor: '#829',
    lineWidth: 8
   }
  })
 );
}
```

From the code, we can see the main parameters, including ‘fillColor’, ‘strokeColor’ and ‘lineWidth’ which changes the visual properties of the polygon. You can change these numbers and see the effect on the map. Colors can be found in http://www.w3schools.com/colors/colors_names.asp

To change the transparency of the color, you can replace

‘fillColor’ '#FFFFCC' with

‘fillColor: 'rgba(0, 128, 0, 0.7)' // Color of the circle

Where the rgba function accepts 3 color values, followed by level of transparency.

Similarly, you can manipulate the polygon, as well as the location and zoom level of the map (Activity 1).

3. You can play with many other features, including ‘Info Bubbles’ etc.