International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 08 | Aug - 2021 ISSN: 2582-3930

HERE Map Product Portfolio Operations and Spatial Solutions

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Abstract

Every location-based system requires a framework consisting of addresses, house numbers, postal codes, name of the places, roads, etc. HERE technology is no different, it uses road connectivity, various attributes such as postal codes, addresses and other essentials tools. To make the HERE platform more efficient and reliable we worked on upgrading the network connectivity by working on a variety of location attributes. One way to improve these attributes, we used a HERE tool called the HERE Map Creator tool. This HERE map creator tool is a live editing tool which has more than 45 highlights, addresses and walkaways and all that is required in order to use this HERE map tool creator is a laptop along with a good internet connection. In order to enrich and enhance the HERE platform further, we have developed a web scraper using Python. This web scraper scrapes of the data from the input web page and collects the data in bulk, which then only has to be added on the HERE maps thus reducing the time consumption and easing the availability of the data and thus helping in making the platform more precise.

Keywords— HERE Map Creator tool, POIs- Places of interest, PAs- Place attribute,web scraper, GIS- graphical information system

1. INTRODUCTION

1.1 About HERE Map Creator Tool

HERE Map Creator is the map editor of the HERE technology. It enables the signed in authorities to make edits to the map and allows them to add content to the HERE location platform. One can add, update or delete roads connectivity, POIs, and Pas in several countries. In order to use the HERE map creator, one needs to follow a set of procedure that is explained later in this paper. To ensure the accuracy and precision of HERE maps platform, all content is verified by HERE's Geo-expert before it gets updated into the actual data base. There are a variety of roads, pedestrian walkways and trails. It is of utmost importance to define the types of the road alongside their characteristics. Apart from roads, the HERE map tool creator can also mark and add the POIs. POIs are the places which people often visit for a variety of purposes. There are about a hundred categories of POIs on HERE map, which in turn helps the users to locate and visit the places.

Besides, we have also built a web scraping program in Python language to extract the content from a webpage and export it in a 'csv' file, and then this data is to be added to the Here map.

1.2 Workspace of HERE Map Creator Tool

Figure 1.1 Workspace of HERE Map Creator Tool

Graphical Information System

A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. By relating seemingly unrelated data, GIS can help individuals and organizations better understand spatial patterns and relationships. The Geospatial data is viewed, edited and analyzed by an open sourced QGIS. some key features of the QGIS-

1. It supports both raster and vector layers.
2. It supports various formats like shaping files, Dxf, MapInfo, and many others.

It also has a large number of modules used for performing the Geoprocessing function

The system has been developed using the database of HERE Maps which has been practiced and expanded by us using the map creator tool. HERE Map creator is a live map editing tool which has more than 45 features across 5 map categories and these categories are roads, bike lanes, walkways, POIs, and addresses. No installation is required to use this tool as it is a web-based tool that requires a stable internet connection. We have used HERE Map creator tool for three main features: Identifying and marking missing roads: In HERE maps, there are different kinds of road, right through to pedestrian walkways and trails. While marking roads, HERE map creator provides a set of various roads attributes which helps in providing useful information about that road in HERE maps.

Places of interests: Apart from roads, the HERE Map creator tool can also mark and add places of interest. Places of interests are the places which people visit often or the places having some significance. There are more than 100 categories of POIs just in HERE Map Creator tool which provides ease to the developers to add places as well as the customers to find and visit places.

Point addressing: We also built a web scraping program in python to extract content from a webpage and export it in a "csv" file

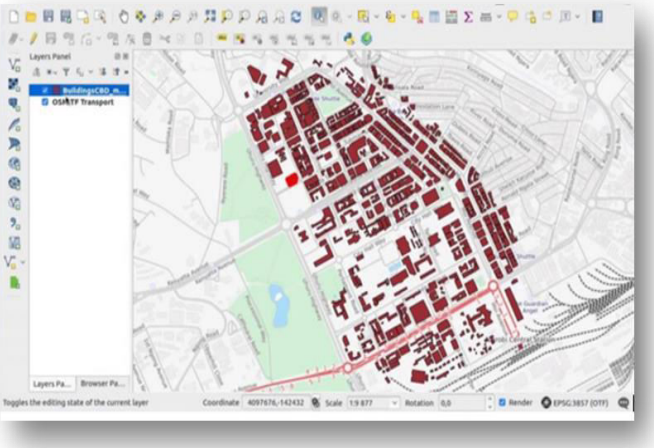

Fig 1.2 Graphical Information System

During the ongoing pandemic, the e-commerce companies boomed to great heights but this major growth in the industry was unexpected and as a result there was lack of road connectivity, places of interest and the point address on the HERE Map platform. Thus the companies using this platform were not efficient and running late to deliver the customers. The need of the hour was how to help the company retain their customers and hike their profits. We as a team also built a web scraper solution in Python to scrape location data from website and store it as an output on "csv" file. Web scraping is the process of using program to extract content and data from a website. Web scraping is about downloading structured data from the web, selecting some of that data, and passing along what you selected to another process. We tried to show how our scraper works and help us out and how data will be useful.

2. Literature Review

Paper Name	Author Name	Conclusion
1).The use of web scraping software in grey literature	**Neal Haddaway.**	In this paper, the author has tried to emphasize on the use of patterned data and how it can be used for various literature activities such as semantic review. He also mentions how the data has been used by private sector for business purposes along with its substantial benefits.
2.)Crossing the urban data layer: Mobility as a data generating activity	**Herman Donner And Michael Steep.**	This paper explains how location based services enable a company to set demand and prefernces in geographical context.It also talks about how movement creates context-based-intelligence when it becomes possible to adjust advertisement and offers based on location, activity and social-context.

3. TOOLS AND TECHNIQUES

3.1 Operations Perform on MAP CREATOR TOOL

3.1.1 Add

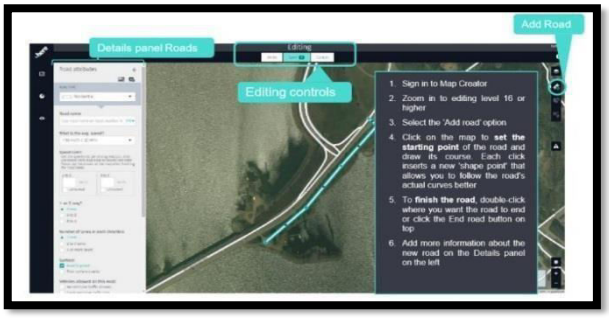

Fig 3.1.1 Add

3.1.2 Modify

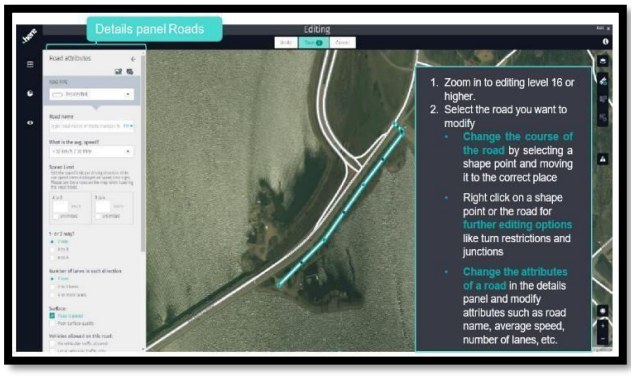

Fig 3.1.2 Modify

3.1.3 Verify

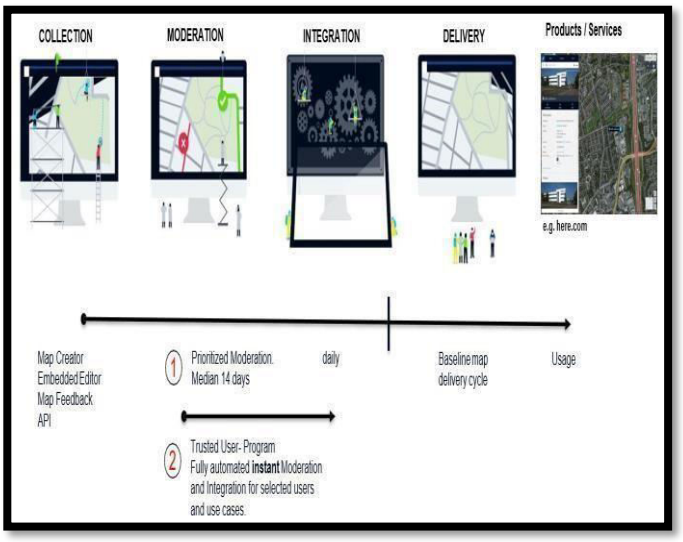

Fig 3.1.3 Verify

3.1.4 Your Stuff

- It shows total statistics represented to date and last accessing.
- Your feed shows the list of total edits.
- Watchlist showing keeping track of your map Feedbacks and specific edits Collections HERE WeGo book maps for places on the map.

3.1.5 Edit

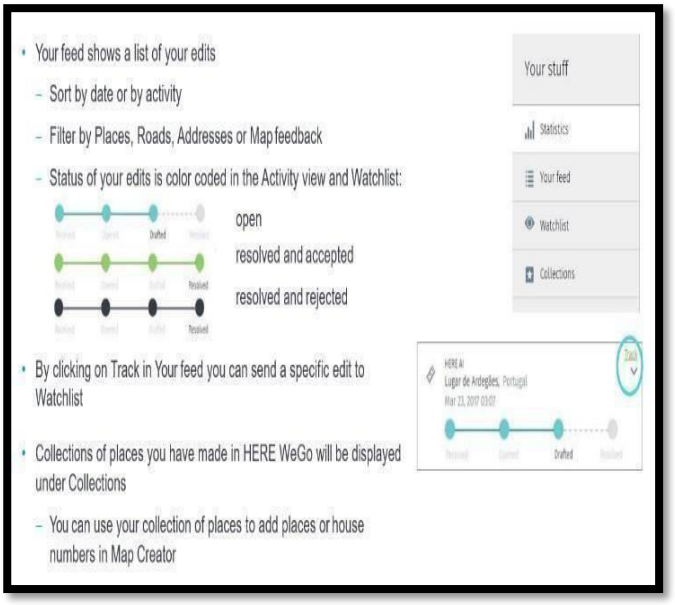

Fig 3.1.5 Edit

3.1.6 Places General Information

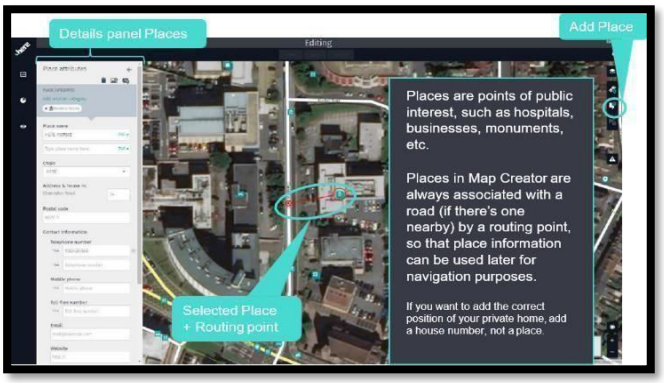

Fig 3.1.6 Places General Information

3.1.7 Places Attributes

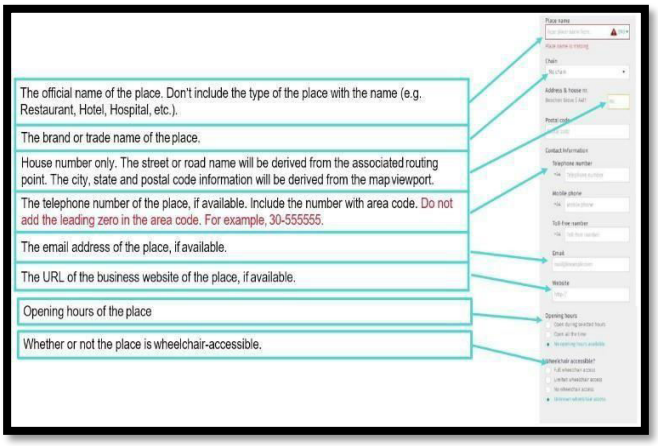

Fig 3.1.7 Places Attributes

4. Speed up validation

- When adding or updating a POI, you will find yellow highlighted fields in the details panel. The highlights indicate which information is required to add the place to our database.
- The required information is related to the place categories, so it varies from one category to another.
- A POI can be saved if not all the required information is completed, BUT before the edit can be added to our database, all the missing required information must be completed.

5. How to add a Place

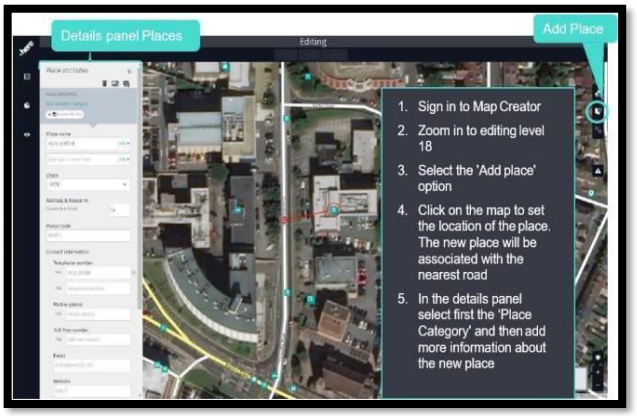

Fig 5.1 How to add Place

Apart from the task of marking roads on HERE map creator, we were also given the task of building a web scraping program that helps us scrape and store location data from different web pages. In order to achieve our aim, we have used python programming language and used various python libraries like BeautifulSoup, urllib, csv, etc. Now let us look at the steps that were involved in building up the algorithm.

• This project has four parts that are put together to form a fully working system. Once we've established our goal, we then need to identify an efficient set of pages to scrape.

• We want to find a combination of pages that requires a relatively small number of requests. A request is what happens whenever we access a web page. We 'request' the content of a page from the server. The more requests we make, the longer our script will need to run, and the greater the strain on the server. In this case we are scraping our data from Vymaps.com.

•Second part involves understanding the HTML structured of the required webpage and using BeautifulSoup library to parse the HTML content. All the pages we want to scrape have the same overall structure. This implies that they also have the same overall HTML structure. So, to write our script, it will suffice to understand the HTML structure of only one page. To do that, we'll use the browser's Developer Tools. To parse our HTML document and extract the 50 div containers, we'll use a Python module called BeautifulSoup, the most common web scraping module for Python.

• Third part involves extracting the content from the HTML page from different containers to get the place name, place address and place co-ordinates and store it in python lists and combine it to make a dictionary.

• Fourth part involves using these extracted data from dictionaries and making data frames and displaying then checking it and finally extracting it as a neat CSV with three columns place name, place address and place coordinate.
In order to achieve our aim, we've used Python programming language and used various python libraries.

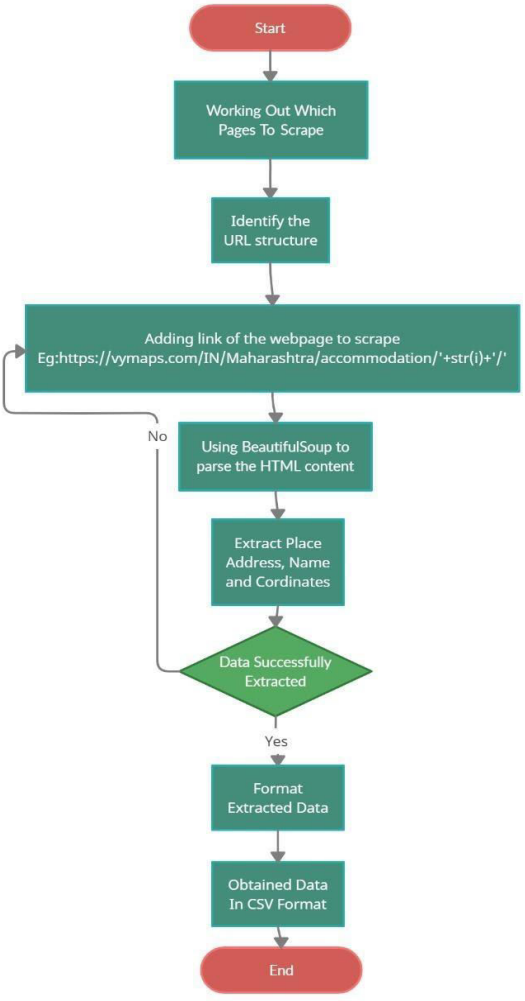

Fig 5.3 Flowchart of Web scraper

6. Conclusion

To conclude it all, we have created over 4000kms of roads, added around 5000 POIs and approximately 4000 PAs on the Here map platform, thus making it a more enriching and enhanced experience for the users. Besides this, we have also built a web scraper in order to scrape the data from identified pages, which is in HTML format of the webpage, then it is extracted and cleaned. It also sends request to the web server of the site it is using. There is a room for improvement for increasing accuracy and noise which is to be researched further.

7. References

[1] Sawers Paul (4 October 2018). "Here launches XYZ, ageo spatial data management and mapping platform". VentureBeat. Retrieved 30April 2020.

[2] Bonetti, Pino (13 November 2012). "HERE: the nextgeneration of location services". Nokia Conversations Blog. Nokia. Archived from the original on 25 July 2013. Retrieved 18 June 2013.

[3] "HERE – the leading offline navigation app – now oniOS". "Nokia Shows Off the Future of Maps With 'HERE'". Mashable. 13 November 2012. Retrieved 18 June 2013.

[4] "Nokia's 'HERE' Maps Will Power Microsoft, Facebook, Amazon". Talking Points Memo. 15 November 2012. Retrieved 18 June 2013.

[5] Find your way indoors, with HERE". Nokia Conversations Blog. Nokia. 25 June 2013. Archived from the original on 28 June 2013. Retrieved 25 June 2013.

[6] Bergen, Mark (21 February 2018). "Nobody Wants to Let Google Win the War for Maps All Over Again - Bloomberg". Bloomberg.com. Retrieved 12 July 2018