

Assignment 2

by Essam Alghzee

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2018

ASSIGNMENT 2

LOCATION INTELLIGENCE (LBI)

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ESSAM

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Module Title & Code: Geographical Information Systems (M6X01098).
Task Description: GIS MMR.

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1 – Introduction

Location Based Services are services presented over a mobile phone and take under consideration the device's geographical location data to control features. This service allows consumers to look at any nearest services such as health, entertainment, indoor object search, work, stores and more [1] [2]. Creating LBS will benefits community such as (maps & navigation, tracking services, information Services and Application) [3]. Furthermore, this service has many advantages as follow:

- Business fields: where businesses can get more customers using these services.
- Education fields: many students can locate the nearest stores, shops and more.
- Personal use: many people can benefit from these services such as transport guides (Train timetable, bus timetable or taxi office places and more).
- Government organizations: is critical to different organizations to show the true insight from a specific data that tied to a particular location where activities happen.

Subsequently, Location intelligence discussion.

2 - Build GIS techniques

Building GIS required various steps, techniques and functions. Below an explanation of how this service was built:

Firstly, preparing the maps that will include all the features such as places, locations, creation points and information related to the locations. Referring to MMR2 assignment 1 where Wales health boards, Swansea and Swansea 31 areas map were considered in order to figure out the different percentage of each area.

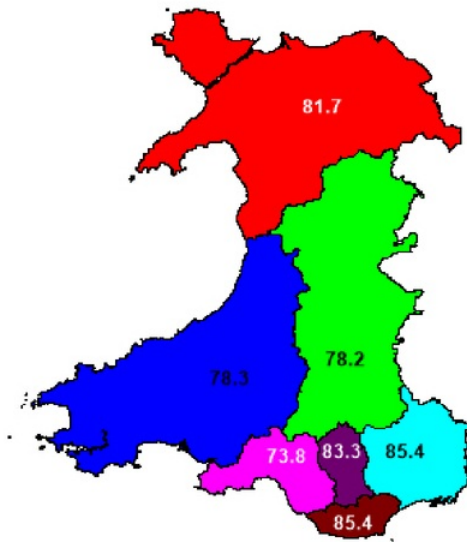


Figure 1 Wales Health Boards.

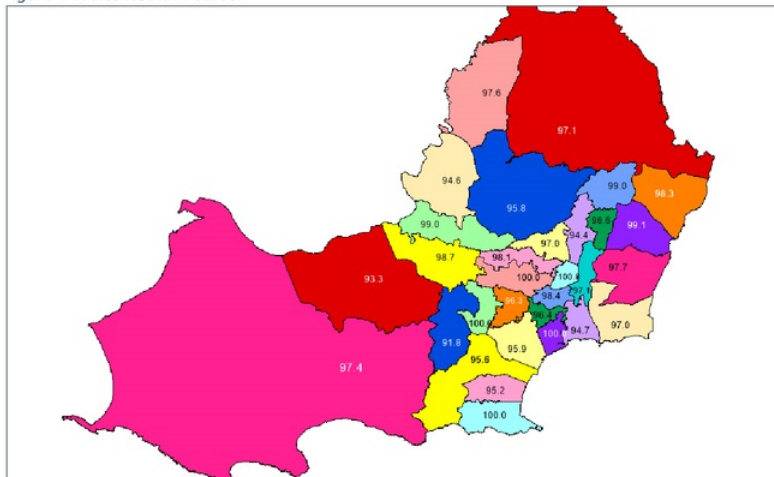


Figure 2 Swansea 31 Areas.

Secondly, the maps downloaded to MapInfo software in order to add many layers that include many functions. Thirdly, creating points on the maps required some of the data that was taken from Digimap data website.

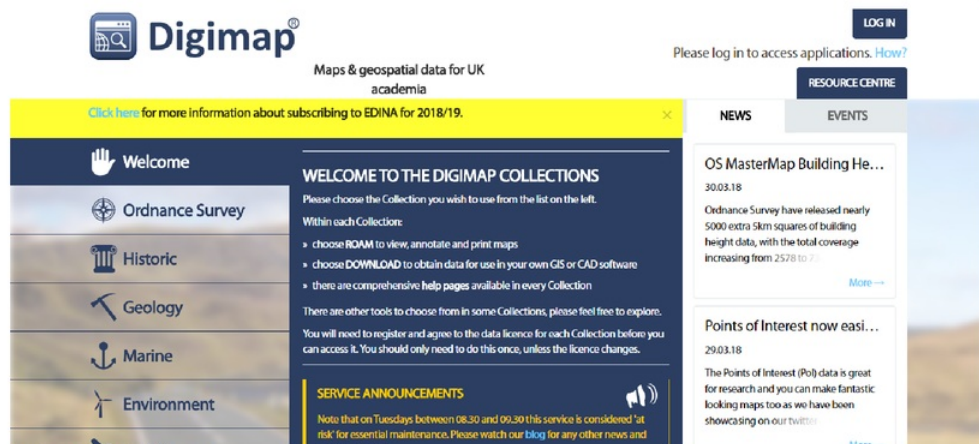


Figure 3 Digimap Website.

The data were collected for four different hospitals in order to have more details about hospitals' services. Below is the hospitals' name:

- Morriston Hospital.
- Neath & Port Talbot hospital.
- Princess of Wales hospital.
- Singleton Hospital.

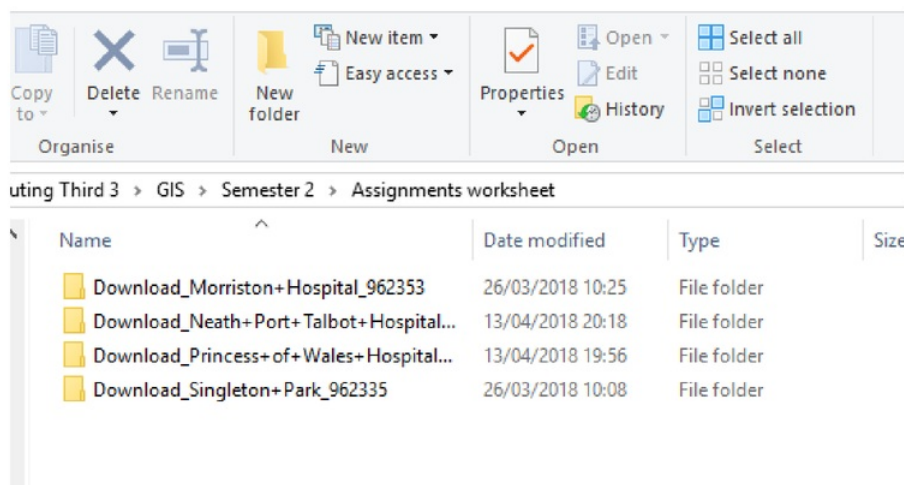


Figure 4 Data collected in order to create points.

Fourthly, gather another data that related to hospitals such as if they accept A & E or not and hospitals opening time and more from different resources. This will help users to know all the hospitals in Swansea or near Swansea city what types of service or cases they accept.

	A	B	C	D	E
1	Hospital Names	Latitude	longitude	Address	Contact Number
2	1 - Singleton hospital	51.610502	-3.985654	Sketty Ln, Sketty, Swansea SA2 8QA	01792 205666
3	2 - Morriston hospital	51.684307	-3.934039	Heol Maes Eglwys, Morriston, Cwmthdyceirw, Swansea SA6 6NL	01792 702222
4	3 - Princess of Wales Hospital (Bridgend)	51.517538	-3.572397	60 White Ct, Bridgend CF31 1LD	01656 752752
5	4 - Neath Port Talbot Hospital	51.599335	-3.800379	Baglan Way, Port Talbot SA12 7BX	01639 862000
6					
7					
8					
9					
10					
11					

Figure 5 Hospitals information Part 1.

F	G	H
Hospital details	Open Times	Emergency
Singleton Hospital is a 550-bed hospital located in Sketty Lane,	24 Hours	No
Morriston Hospital is one of the largest in Wales, and has around 750 beds. It provides acute general medical / care of the elderly beds, (including medical sub-specialties) facilities; it has a well developed trauma and orthopaedic service and a range of surgical / urological specialties. Morriston also has one of the busiest Emergency Department (A&E) in Wales.	24 Hours	Yes Accident & Emergency
The Princess of Wales Hospital, based in Bridgend, Wales, is a major acute secondary care district general hospital	24 Hours	Emergency Only Accidents to go to Neath Port Talbot Hospital
Neath Port Talbot Hospital is a non acute secondary care 270-bed hospital located in Port Talbot, Wales	7:30am to 11pm	Minor Injury Unit, open 7.30am - 11pm, seven days a week

Figure 6 Hospital information part2.

Finally, narrow the scope and collect data for the top 11 secondary schools in Swansea with their details in order to select the top one and choose the nearest hospital and GPs to the top one school [4]. This feature will help users to give more details about hospitals, secondary schools and GPs.

	A	B	C	D	E	F	G	H	I	J	K
1	Secondary Schools Names	Latitude	longitude	Ranked	Score	Ages	A level				
2	1- Birchgrove Comprehensive School	51.67094	-3.872339	3	11	11 to 16	Yes				
3	2- Bishop Gore School	51.61545	-3.988968	3	6	11 to 18	Yes				
4	3- Bishop Vaughan RC School	51.661591	-3.938874	3	8	11 to 18	Yes				
5	4- Bishopston Comprehensive School	51.58422	-4.049408	5	2	11 to 16	No				
6	5- Cefn Hengoed Comprehensive School	51.644641	-3.905211	4	4	11 to 16	No				
7	6- Dylan Thomas Community School	51.633985	-3.983318	3	9	11 to 16	No				
8	7- Gowerton Comprehensive School	51.64298	-4.037156	5	3	11 to 18	Yes				
9	8- Morriston Comprehensive School	51.681736	-3.926727	3	7	11 to 18	Yes				
10	9- Olchfa School	51.618796	-4.005443	5	1	11 to 18	Yes				
11	10- Pentrehaafod Comprehensive School	51.63816	-3.940766	3	10	11 to 16	No				
12	11- Penyrheol Comprehensive School	51.67538	-4.04198	3	5	11 to 16	No				

Figure 7 Top 11 Schools in Swansea.

GPs near OLCHFA school was selected and gathered data as shown in figure 8, as well as, more details were collected about OLCHFA school showed in figures 9 and 10. This help parents and students to have more information about the top secondary school in Swansea.

	A	B	C	D	E	F	G	H	I
1	GP Near Olchfa School	Latitude	longitude	Open times	Address	Contact Number			
2	Killey Medical Centre	51.617888	4.022426	Every day 8:15 AM to 6 PM except Sat, Sun	2 Gwentre Fawc Rd, Killey, Swansea SA2 7QP	01792 201181			
3	Sketty Medical Centre	51.61652	-3.985281	Every day 8:00 AM to 6 PM except Sat, Sun	43 Du-La-Boche Rd, Sketty, Swansea SA2 9EA	01792 206962			

Figure 8 GPs information.

	A	B	C	D	E	F	G	H	I
1	school name	Pupils	Ages	Gender	Type	GCSE points score	Pupils achieving Level 3 threshold (A level) (age 17)	A level points score	National support category Green, yellow, amber or red
2	Olchfa	1788	11 to 18	Mix	Secondary	389.3	1	758.7	Green

Figure 9 OLFA School information part 1.

Autosave Copy of OLFA School Excel - Excel Essam Alghone (P147174)

File Home Insert Page Layout Formulas Data Review View Help Search

Clipboard Font Alignment Number Styles

11 National support category Green, yellow, amber or red

	M	J	K	L	M
1	A level points score	National support category Green, yellow, amber or red	Language of the school	Pupils eligible for free school meals	Pupils achieving the core subject indicator (GCSE)
2	758.7	Green	English medium	0.069	0.84
3					

Figure 10 OLFA School information part2.

3 - Create Points

Firstly, in order to develop a GIS to be used on the website, various techniques could be used such as create points on a map for four different hospitals.

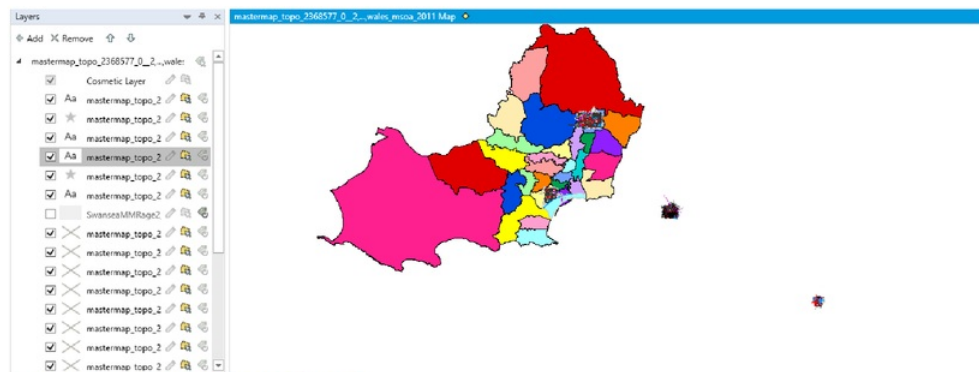


Figure 11 Create Points for the four hospitals.

Secondly, create points for some secondary schools in Swansea and around Swansea with some details on the map.

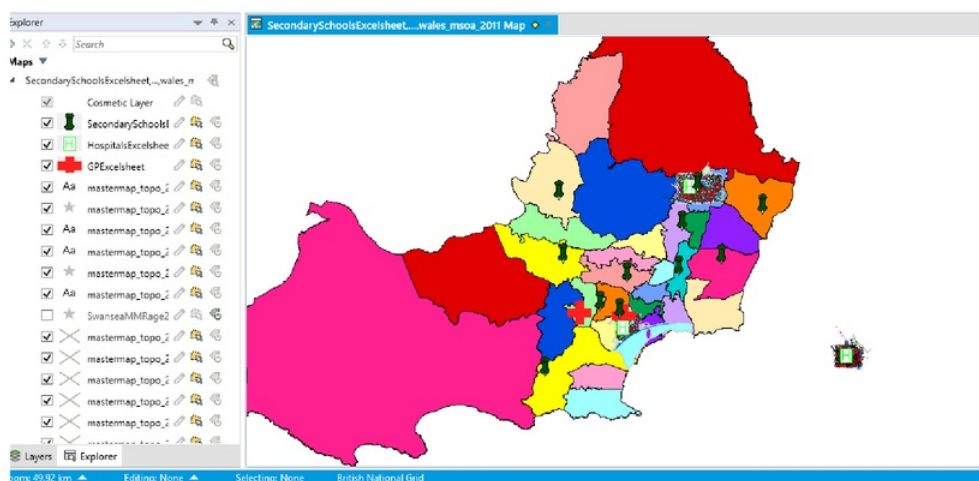


Figure 12 Secondary schools in Swansea

Thirdly, create a point for singleton hospital on the map in order to know the school near the hospital.

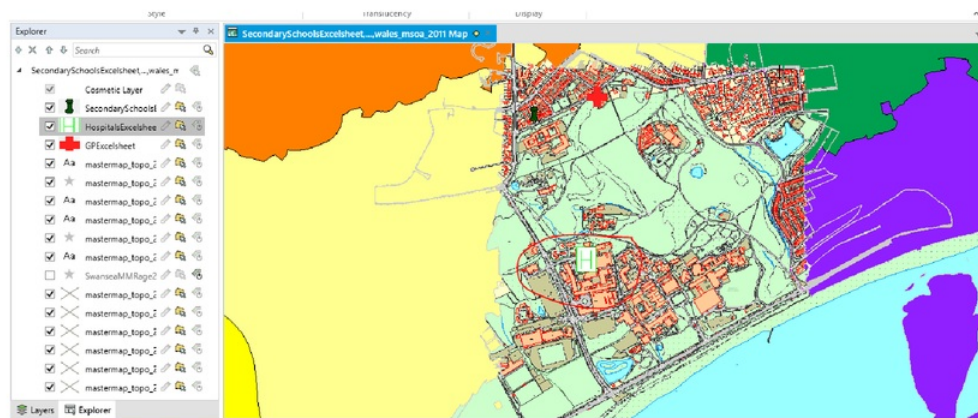


Figure 13 Singleton hospital point.

After creating the hospital point, secondary schools near to Singleton hospital were considered in order to find its information.

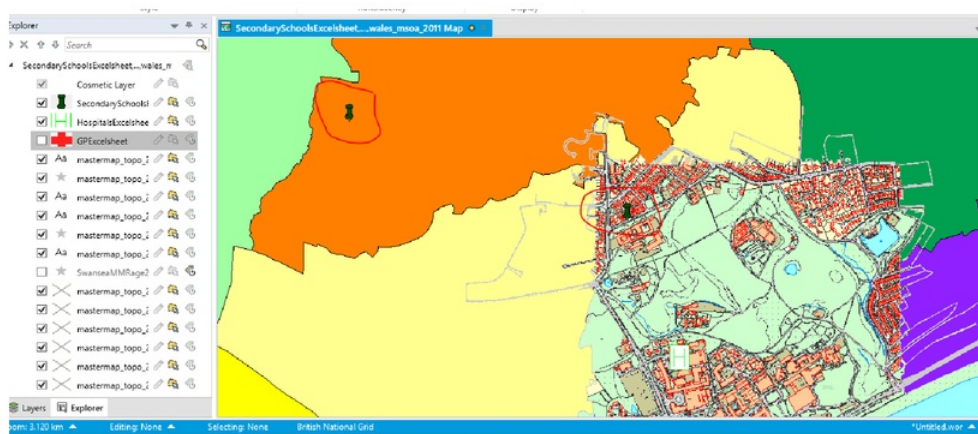


Figure 14 Schools near Singleton hospital.

Finally, create points for GPs with its information near to the schools selected earlier.

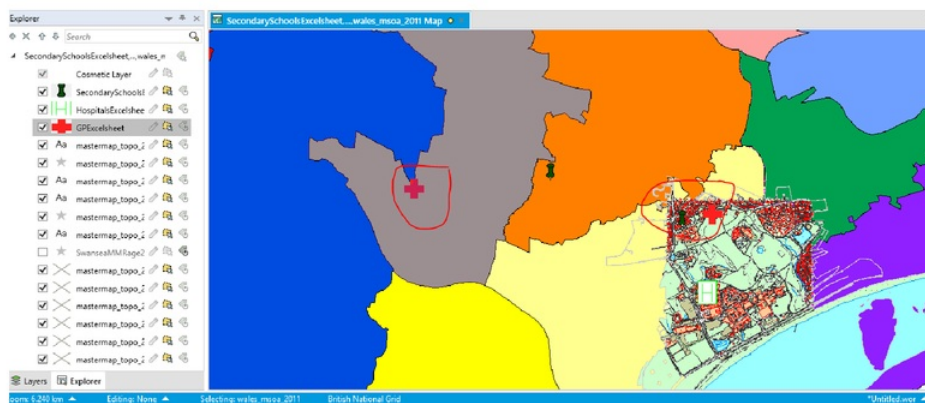


Figure 15 GPs near to schools and hospital.

4 - Generating Html Page

When all data were set up, a supported file needed in order to generate the web page. The file was downloaded online.

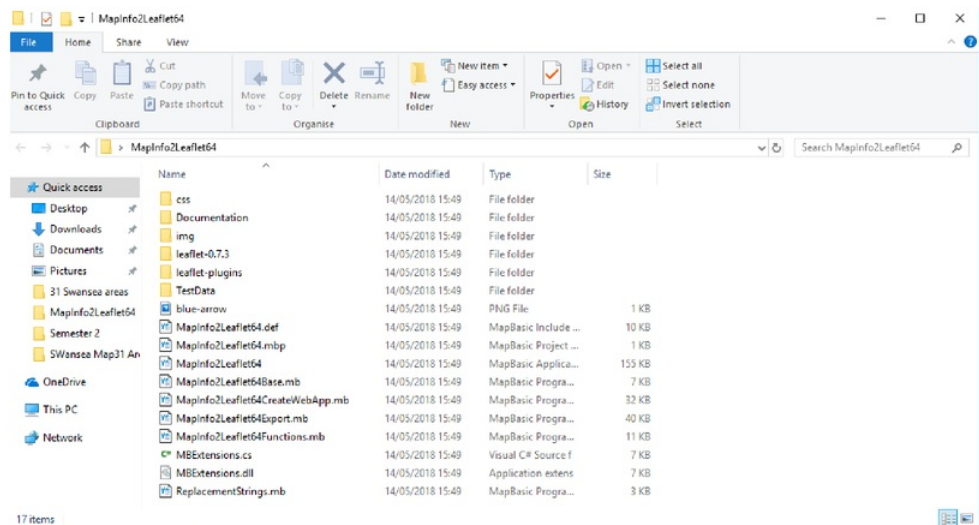


Figure 16 File supported.

After the file was downloaded, open MapInfo software and choose Home, then Tool extensions in order to select options and then run program. This lead to generate a web page icon which can be used to generate the website. Below figure 17 showed the web page.

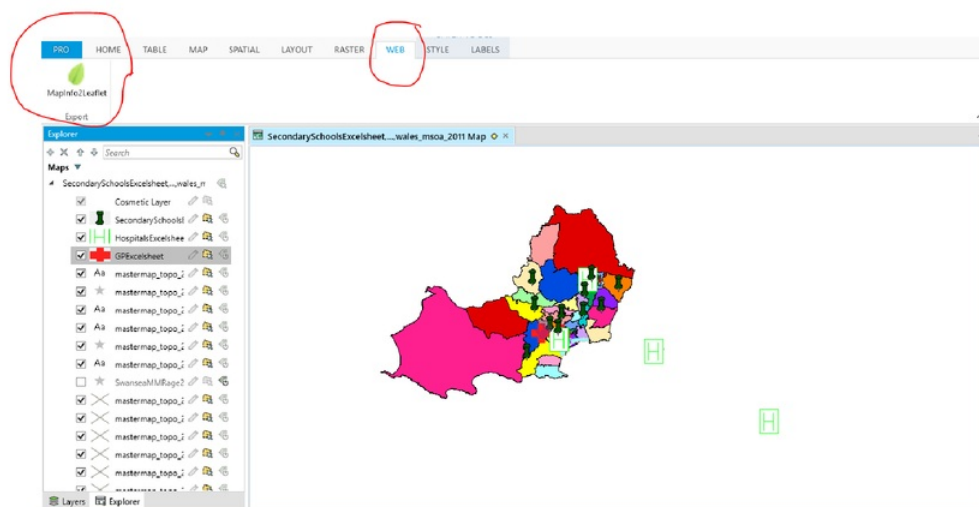


Figure 17 Generate Web page.

In order to generate the map, specific data should be selected. Below is secondary school data were selected for the purpose of demonstration. Another data could be selected instead of schools, such as GPs or Hospitals.

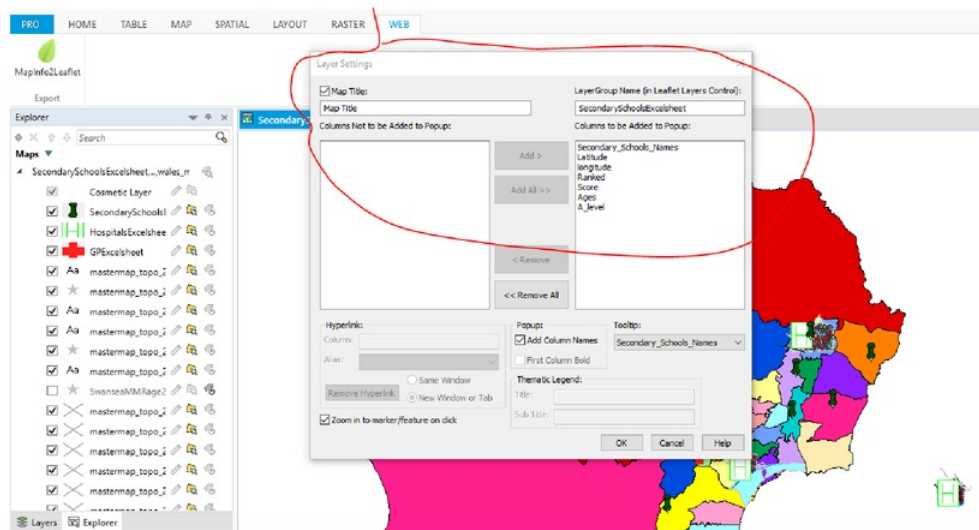


Figure 18 Some data were selected to generate a map.

The data is ready to be generated. Figure 19 showed the data type was selected.

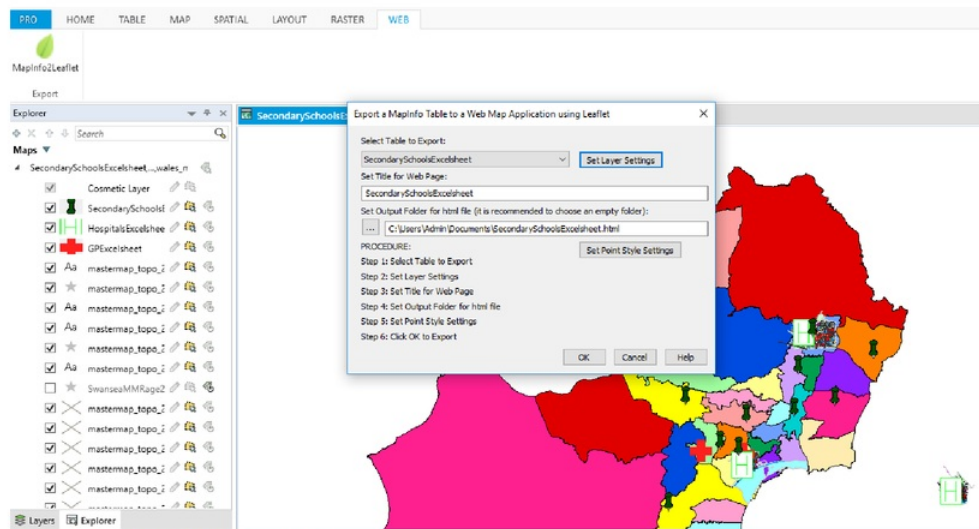


Figure 19 Data is ready to be generated.

With all the previous steps, the web page map is ready to be launched. The map contains 11 secondary schools and each school has some information about it. Figure 20 showed all the secondary school in Swansea area.

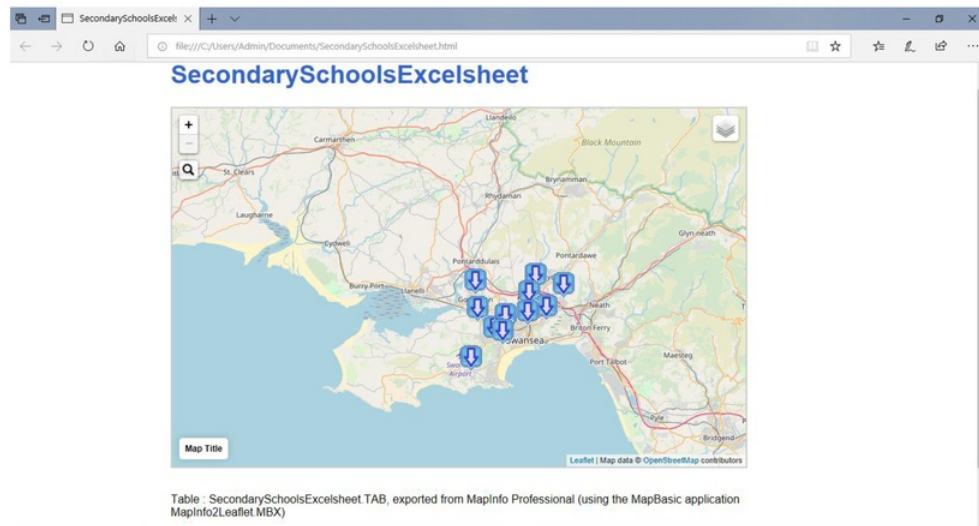


Figure 20 Secondary school map.

As mentioned earlier, OLCHFA school were selected to display its information. Figure 21 showed OLCHFA school information.

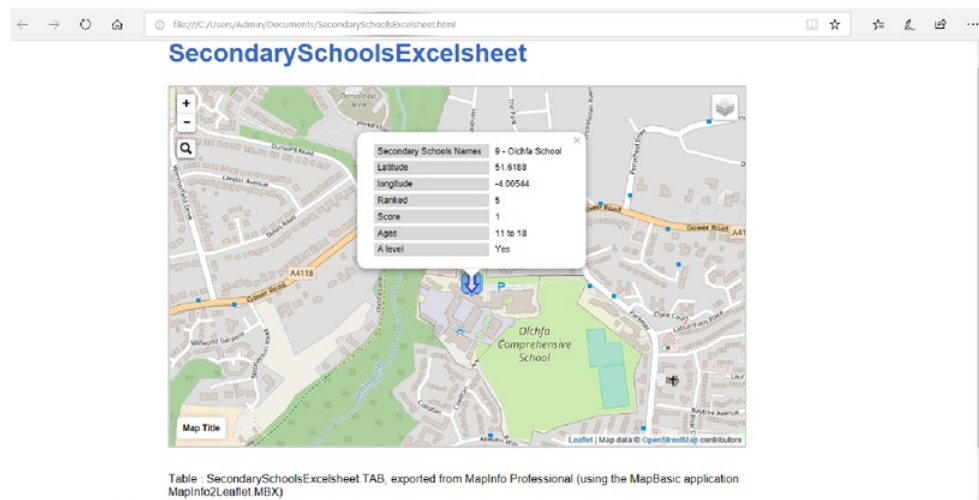


Figure 21 OLCHFA school data.

Additionally, hospitals data was shown on the map with its information. Figure 22 showed the four hospitals after the web page was generated. Figure 22 displayed the four hospitals.

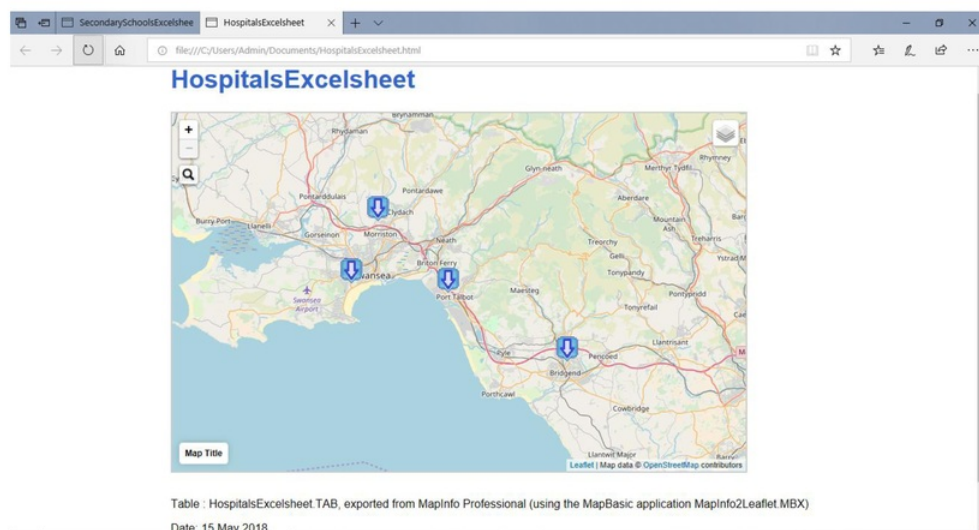


Figure 22 Hospital on the map.

As mentioned earlier, Singleton hospital was selected with some details. Figure 23 showed Singleton hospital.

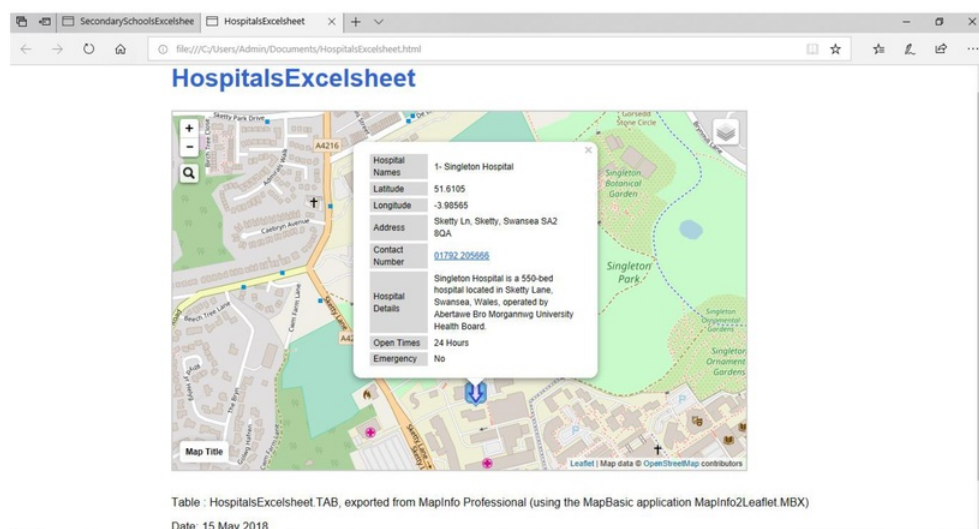


Figure 23 Singleton Hospital.

Furthermore, GPs near to singleton hospital and OLCHFA school were selected. Figure 24 and 25 showed GP near to the school.

GPExcelsheet

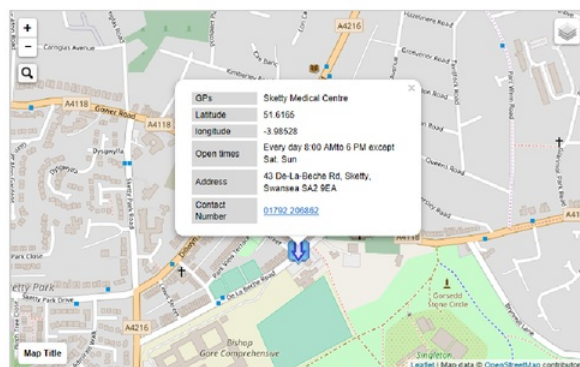


Table : GPExcelsheet TAB, exported from MapInfo Professional (using the MapBasic application MapInfo2Leaflet.MBX)

Date: 15 May 2018

Figure 24 SKETTY Medical Centre near OLCCHA school.

GPExcelsheet

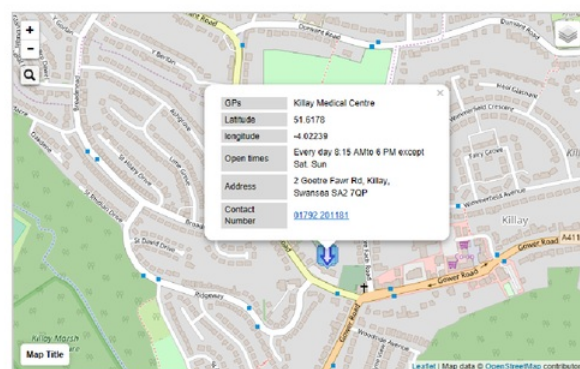


Table : GPExcelsheet TAB, exported from MapInfo Professional (using the MapBasic application MapInfo2Leaflet.MBX)

Date: 15 May 2018

Figure 25 KILLAY Medical Centre near OLCCHA school.

Overall, there were achievements and problems during build the LBI system as follow:

1. Achievements:

- The map web page was created step by step as expected.
- Uploading all the data to MapInfo software in order to add layers to the map.
- Showing the power of GIS by showing how data is displaying on the map.
- Finally, generate the map web page.

2. Problems:

- While collecting the data an extra data was collected for OLCCHA school in order to help parents and students to know more about the top one school in Swansea. The problem occurs when trying to link the extra data for OLCCHA school map.

5 - Conclusion

Location based services have moved forward in the past view years to be the point where they are now. Location based services help users find more information for any data related to location. With the power of location-based services locating area with its information become easier for users. Thus, creating web page that contains data about hospitals, schools and GPs can benefit different users and in order to do that different steps were achieved. These steps are the key finding to create LBS system and could be explained as follow:

- Downloading the maps need it for a specific area. The maps were downloaded in this report are swansea maps and surrounded area.
- Starting by gathering the data.
- Organize the data in order to be uploaded to MapInfo software.
- Create many layers that display each map data seperately.
- Generate the web page in order to have maps with some data.

6 - References

- [1] R. Goodrich, "Location-Based Services: Definition & Examples," Business, 30 October 2013. [Online]. Available: <https://www.businessnewsdaily.com/5386-location-based-services.html>. [Accessed 30 October 2018].
- [2] S. M. Ryschka, M. D.-V. M. Murawski and M. P. D. Bick, "Location-Based Services," *ProQuest*, vol. 58, no. 3, pp. 233-237, 2016.
- [3] O. H. O. Eneh Joy Nnenna, "Location Based Service (LBS) Provision: Concept, Benefits and Future Challenges," *International Journal of Scientific & Engineering Research*, vol. 3, no. 12, pp. 1 - 5, 2012.
- [4] schoolguide.co.uk, "Secondary League Table for Swansea," School, 01 03 2018. [Online]. Available: <https://www.schoolguide.co.uk/secondary-schools/Swansea>. [Accessed 14 May 2018].

Assignment 2

GRADEMARK REPORT

FINAL GRADE

66/100

GENERAL COMMENTS

Instructor

Discussion / Brief report on LBS in relation to the provision of the student facilities and transport guides (CA 1) 20

A suitable but brief discussion on LBS. Perhaps a description of how they would be beneficial with the datasets that you are going to use.

Data collection and entry to the system (CA2)20

What have you included in your data that will enhance that users experience with the GIS/LBS (CA 2)

You have explored the available data well and developed a comprehensive set of layers. You have looked into additional datasets to build the LBS.

Description of the spatial data sets (CA3)20

A suitable description of the datasets has been provided in your documentation you have described your data collection methods well.

How you developed the layers within the system (CA 4)35

Functionality of system GIS and Website (CA 4)

Data has been used appropriately to build a suitable web site highlighting the possible uses of LBS.

Documentation / Report including: (CA5)5

A well presented report with suitable referencing.

12/14/14/22/4 66%

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