



اونيورسيتي مليسيا قهغ السلطان عبدالله
UNIVERSITI MALAYSIA PAHANG
AL-SULTAN ABDULLAH

INDUSTRIAL TRAINING REPORT

I NET SPATIAL SDN BHD

NG JIE HAO
SD20036

BACHELOR OF APPLIED SCIENCE IN DATA ANALYTICS WITH HONOURS
Centre for Mathematical Sciences
UNIVERSITI MALAYSIA PAHANG AL-SULTAN ABDULLAH

January, 2024

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to everyone at I Net Spatial Company for providing me with an enriching and valuable internship experience. This journey has been a tremendous learning opportunity, and I am grateful for the support and guidance I received throughout.

First and foremost, I extend my heartfelt thanks to my Mr Mohd Radhie, dedicated and insightful supervisor. Your mentorship and unwavering support played an important role in shaping my understanding of spatial technologies and their practical applications. Your expertise and willingness to share knowledge have been instrumental in my professional growth during this internship.

I am also grateful to my colleagues and teammates at I Net Spatial Company. Working alongside such a collaborative group of individuals has been an inspiring experience. I appreciate the camaraderie and the shared passion for innovation that made each day both enjoyable and educational.

A special note of appreciation goes to my fellow interns who became not just colleagues but friends. Our collective efforts and shared challenges made this internship period memorable and rewarding. I am thankful for the camaraderie we built together. Additionally, I would like to express my gratitude to our academic tutor, Dr Mohd Khairul Bazli, for his guidance and support throughout this internship journey.

Finally, I want to express my gratitude to the leadership of I Net Spatial Company for providing me with this opportunity. It has been an honor to contribute to the innovative work that your team is doing. Thank you once again to everyone at I Net Spatial Company. I am excited to carry the skills and knowledge gained during this internship into the next phase of my professional journey.

TABLE OF CONTENTS	
ACKNOWLEDGEMENTS	2
TABLE OF CONTENTS	3
CHAPTER 1: COMPANY BIOGRAPHY	5
1.1. Company background	5
1.2 Organization structure	7
1.3 Industry Coach detail	8
1.4 Period and Job Scope of Industrial Training	9
1.5 Company details	10
 CHAPTER 2: TRAINING	 11
2.1 Activity and responsibilities	11
2.2 List of Workshop attended	11
2.3 New Tools and Technology	12
2.3.1 ArcMap	12
2.3.2 Karta View	13
2.4 Other activities	14
 CHAPTER 3: INDUSTRY PROJECT	 15
3.1 Grab 360 Karta Cam Street view data collection (Grab Taxi Singapore)	15
3.1.1 Problem statement	15
3.1.2 Objective of project	15
3.1.3 Methodology	15
3.1.4 Results	16
3.1.5 Conclusion	16
 3.2 Sime Darby Palm Oil Plantation Tree Counting	 17
3.2.1 Problem statement	17
3.2.2 Objective of project	17
3.2.3 Methodology	17

3.2.4 Results	17
3.2.5 Conclusion	18
3.3 Tenaga Nasional Berhad (TNB) Low Voltage asset mapping using 360 Street view	19
3.3.1 Problem statement	19
3.3.2 Objective of project	19
3.3.3 Methodology	20
3.3.4 Results	21
3.3.5 Conclusion	22
CHAPTER 4: CONCLUSION	23
4.1 Personal Experience during IT	23
4.2 Suggestions for the Improvement of Training	23
4.3 Some problems in industry that you cannot solve	23

CHAPTER 1: COMPANY BIOGRAPHY

1.1. Company background

I Net Spatial Sdn. Bhd. was incorporated under SSM in January 2016 at Johor Bahru. I Net Spatial is a multi-disciplinary company focuses on consultancy and supply. They provide services in the following fields such as Geographic Information Systems (GIS), Surveying, Remote Sensing, Real Estate, Information Technology (IT), Networking, Internet of Things (IoT), Environmental Science, and Hydrology.

1.1.1 Mission

1. To provide effective consultancy services in GIS, IT, Networking, Cartographic, Remote Sensing, Real Estate, Environment and Hydrological fields.
2. Able to deliver up-to-date technologies of hardware, network, security, software, device, instrument and system.
3. To conduct related research trends and needs of the client while transferring the knowledge as one of the output of the services.

1.1.2 Objectives

To establish a leading position as a trusted consultancy service provider by consistently meeting and exceeding client needs and satisfaction. This objective will be achieved by leveraging our expertise and adopting the latest technologies to deliver professional, innovative, and tailored solutions.

1.1.3 Achievements

2020

- GIS Dashboard for Water-Assest Management at Ranhill Water Services
- Blending DTM (DEM + Bathymetry) for Sg Kelantan new Bridges Study
- Sime Darby QAQC Palm Oil Tree Counting
- Grab POI data collection for Johor Bahru and Ipoh
- Utility Detection Mapping Kg Melayu Majidee, Johor
- 3D-Smart Cadastre Project for Greater KL (Subcon) , Nov 19 – July 2021
- Peta Bandar Feature Extraction product (Subcon)
- DTM hydro-flattened and Hydro Product for Kota Belut LiDAR
- Utility Detection Mapping for FAMA, Tampoi, Johor
- Utility Detection Mapping for Kg Petani, Batu Pahat, Johor
- Utility Detection Mapping for Kg Pasir Putih, Pasir Gudang, Johor

2019

- Providing Updated 4m DEM for Ranhill Water Services
- Postgre Database Training for MPAJ

- Appointed as GIS Facilitator for Dealing with Construction Permit (DCP) by Malaysian Productivity Corporation (MPC) as for World Bank Ranking on Easiness for Doing Business (country)
- Appointed as Authorized distributor for GIS Online Map Publisher, Geomap

2018

- GIS-based Industrialized Building System (IBS) Supplier Selection System, CREAM – CIDB as GIS consultant and Developer – Completed
- Hydro Products Services for Sarawak LiDAR JPS Unit Mesra Alam (Sub Consultant Map2U Sdn Bhd). – Completed Digitizing Current & Future Landuse of Kuala Terengganu (PWM Sdn Bhd). – Completed
- MyClaim System for FAMA (FAMA-MyMit) as Sub Consultant. – Completed
- Pengerang Disaster Management System, PDMS (PBT Pengerang-UTM, 2017-2018) as GIS consultant and Developer – Completed

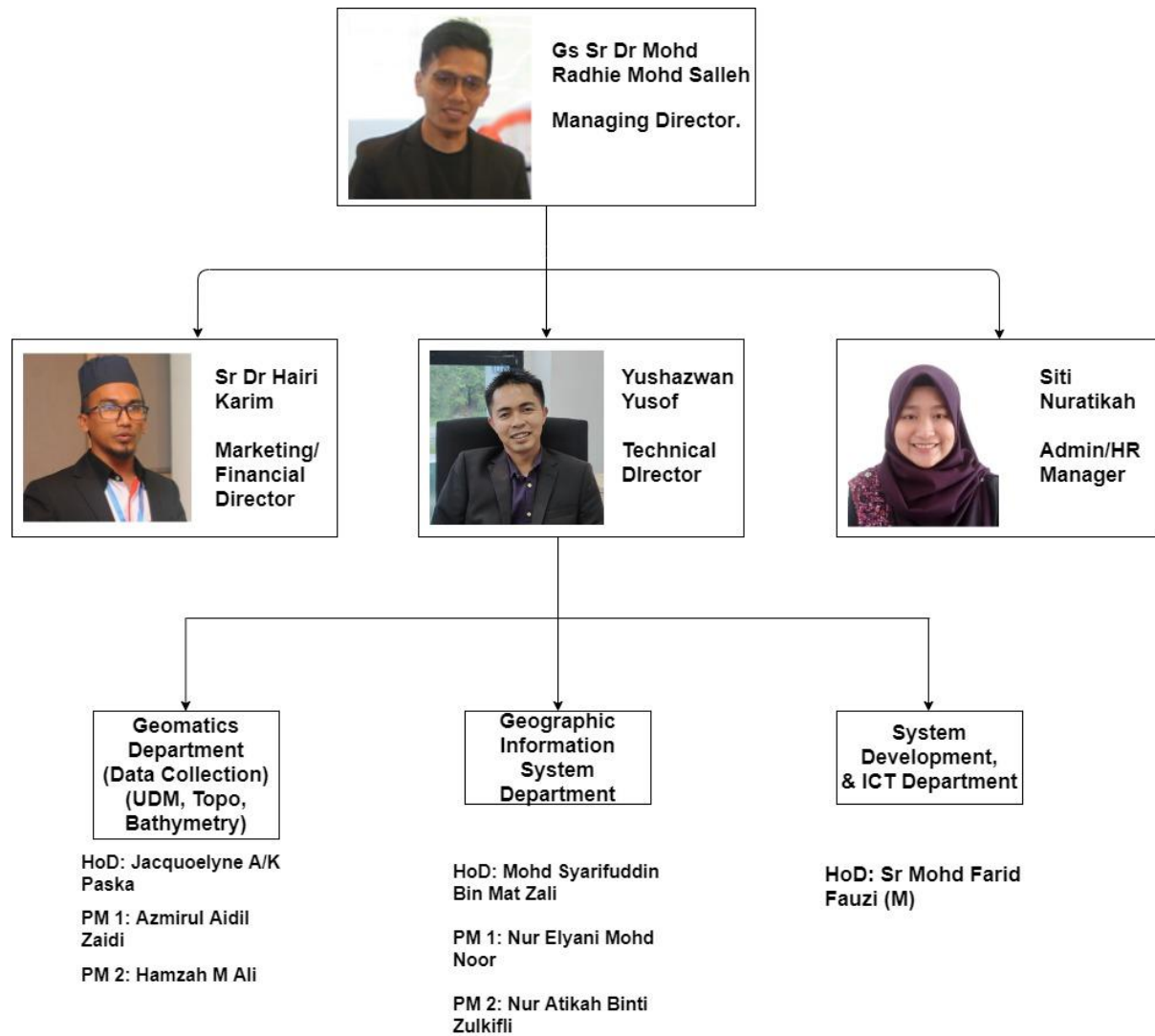
2017

- Sg. Segget Mapping and Hydrological Modelling (IRDA-UTM) as GIS Consultant – Complete
- Real Estate Liveable Index (Research Grant UTM) as GIS Consultant
- Palm Oil Tree Counting Services (Prestige Geomatic Resources) as Consultant
- Engineering Survey – realignment of road as Surveyor
- ArcGIS Workshop Application 2017 as Speaker and co-corganizer

2016

- Landslide Susceptibility Mapping and Analysis in Padang, Indonesia (PhD Research Grant, 2015 - 2016) as project leader
- Bathymetry Data Collection and Collation for Sg. Kelantan Riverbed (2016) as project leader
- Flood Hazard Map for Terengganu River Catchment (2016) as GIS Executive
- Social Study on Flood Impact in Kota Tinggi & Segamat, Johor (UTM-MIT Research Grant, 2016) as project leader.

1.2 Organization structure



1.3 Industry Coach detail



Gs Sr Dr Mohd Radhie Mohd Salleh

Managing Director - CEO

PhD Candidate (GIS, UTM)

MPhil. Geoinformatics (GIS, UTM)

B.Sc. Geoinformatics (GIS, UTM)

mradhie@inetspatial.com

Experienced Managing Director (I Net Spatial Sdn. Bhd.) with a demonstrated history of working in the higher education industry. Skilled in GIS Application and Remote Sensing. Strong business development professional with a Master's Degree focused in GEOINFORMATICS from UTM.

1.4 Period and Job Scope of Industrial Training

I undergo this industrial training for 1 year. There are three projects that we did throughout this industrial training period. The majority of the projects I've been given I'll complete with my partner, who works for the same internship company as myself. We have been assigned with the main project which is the **Grab 360 Karta Cam Street view data collection, Sime Darby Palm Oil Plantation, and TNB Low Voltage asset mapping using 360 Street view.**

Some of the Job scope are:

1. Cartography and Map Production - Designing and creating maps for many uses, such as topographic maps.
2. Software Proficiency - Improving skills in tools like ArcGIS, ArcMap or other pertinent GIS software platforms.
3. Fieldwork - Taking part in activities for gathering data in the field that may require using GPS or mobile GIS software.
4. Professional Development: - Making the most of the internship as a chance to learn and develop your GIS expertise.
5. Data collection: - Engaging in various methods of data collection, which might involve utilizing GPS devices and remote sensing technologies to gather spatial information.

1.5 Company details

I Net Spatial Sdn Bhd

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admin@inetspatial.com



CHAPTER 2: TRAINING

2.1 Activity and responsibilities

Data Collection and Management: Collect, organize, and manage spatial data from various sources. Ensure the accuracy and completeness of GIS datasets through regular quality checks.

Mapping and Visualization: Assist in creating maps and visualizations using GIS software. Work closely with the GIS team to generate maps that effectively communicate spatial information.

Data Analysis: Conduct data analysis to derive meaningful insights from geospatial data. Collaborate with team members to develop analytical workflows and models.

Fieldwork Support: Support field data collection activities by providing technical assistance and troubleshooting. Utilize GPS and other field equipment to collect accurate location data.

Software Utilization: Proficiently use GIS software (e.g., ArcGIS, QGIS) for data manipulation, analysis, and map creation. Stay updated on the latest GIS tools and technologies to enhance workflow efficiency.

Collaboration: Collaborate with cross-functional teams to integrate GIS solutions into broader projects. Communicate effectively with colleagues to understand their spatial data needs.

Training and Support: Provide training and support to colleagues on GIS tools and best practices. Assist in developing training materials for GIS users within the organization.

2.2 List of Workshop attended

2.2.1 Open Drone Demonstration

Objective: The Open Drone Demonstration, organized by I Net Spatial, aimed to empower participants with essential skills in utilizing drones for spatial analysis. The workshop focused on teaching participants how to effectively use drones and import the captured data into ArcGIS, leveraging advanced software tools and techniques for efficient data extraction, mapping, and interpretation from drone imagery.

Results: As an active participant in the Drone Processing Workshop, I acquired a solid understanding of the fundamentals involved in utilizing drones for spatial analysis. The workshop comprehensively covered topics such as drone operation, data capture, and importing data into ArcGIS for further analysis.

2.3 New Tools and Technology

2.3.1 ArcMap

ArcMap is a component of the ArcGIS suite, a geographic information system (GIS) software developed by Esri. It is used primarily to view, edit, create, and analyze geospatial data. ArcMap allows the user to explore data within a data set, symbolize features accordingly, and create maps.

Map creation and editing:

ArcMap allows users to create, edit, and manage maps. It provides a variety of tools to add layers, symbols, labels, and other elements to maps.

Geospatial Analysis:

It offers a wide range of geospatial analysis tools for performing spatial analysis, including buffer creation, overlay analysis, spatial statistics, and more.

Data Management:

User can manage different types of geographic data including raster, vector, and tabular data. It allows importing, exporting, querying, and managing data from various sources.

Cartography and Visualization:

Users can design and create visually appealing maps with various cartographic elements, layouts, symbology, and labelling options.



ArcMap

2.3.3 Karta View

Karta View formerly called OpenStreerView and OpenStreetCam, is a project to collect crowdsourced street-level photographs for improving OpenStreetMap operated by Grab Holding. Karta View might refer to a specific feature, component, or software related to maps or geographic information, although it's not widely recognized in common GIS or mapping tools.

Map Viewing and Navigations:

Tools allowing users to view maps, navigate through different geographic areas, and zoom in/out for detailed exploration.

Geospatial Data Visualization:

Displaying various types of geospatial data such as points, lines, polygons, imagery and more on the map interface.



2.4 Other activities

Hari Raya Feast at I Net Spatial Office

Description:

Our Hari Raya Feast is a special gathering that brings together the entire I Net Spatial family to commemorate the joyous occasion of Hari Raya. This celebration is not only an opportunity to savor delicious traditional dishes but also a time to strengthen bonds, express gratitude, and engage in meaningful moments of celebration.

Through our Hari Raya Feast, I Net Spatial not only celebrates the joyous traditions of Hari Raya but also reinforces our commitment to social responsibility and creating a workplace culture that values diversity, inclusivity, and shared moments of happiness.



CHAPTER 3: INDUSTRY PROJECT

3.1 Grab 360 Karta Cam Street view data collection (Grab Taxi Singapore)

3.1.1 Problem Statement

The existing mapping platforms lack comprehensive, street-level imagery for accurate and detailed mapping, hindering the quality and completeness of geographical information available to users. This gap in street-level data necessitates a solution that crowdsources street photographs to enhance mapping accuracy and detail.

3.1.2 Objective of project

The Karta View project aims to bridge the gap in street-level mapping data by collecting crowdsourced images. The primary objectives include improving OpenStreetMap with detailed and up-to-date information and providing a platform for contributors to share street-level photographs.

3.1.3 Methodology

1. Ensure the camera has good condition, resolution, wide-angle capabilities, and suitable for outdoor use.
2. Determine the ideal position for the camera on your car, typically on the roof for the best view.
3. Use a secure and stable mount to fix the camera on the car. Suction cup mounts or purpose-built camera mounts work well. Ensure it's firmly attached to withstand vibrations and movement.
4. Open the camera and connect to your phone's hotspot. Check the camera angles, stability of the mount, power supply reliability, and video recording quality.
5. Start recording once everything is set up.
6. Then drive according to the mapped routes and information generated from the uploaded data on Karta View.



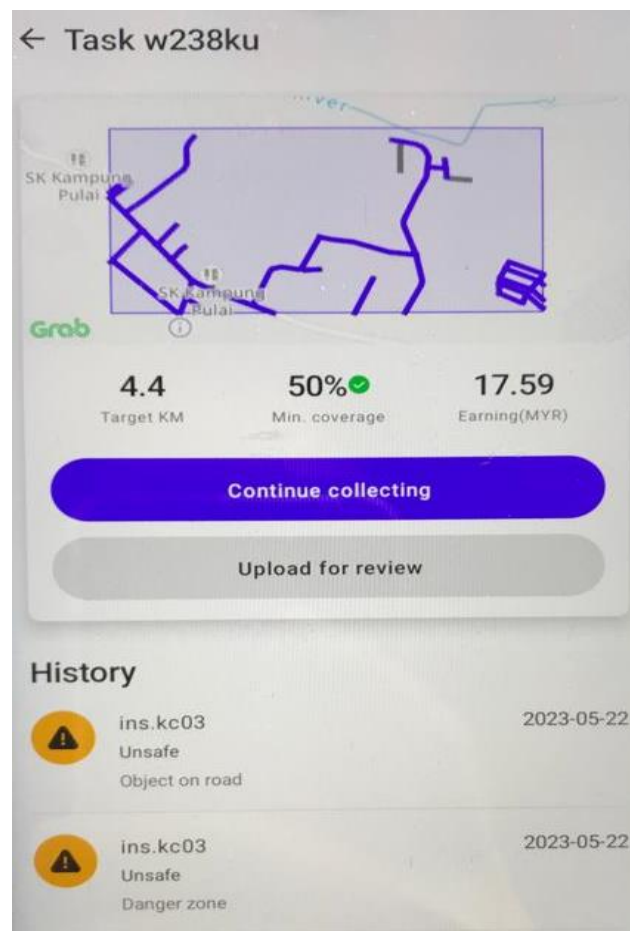
3.1.4 Result

Collect the street view mapping

- Vehicles equipped with camera might need to drive at 30km/h to capture detailed street-level imagery for mapping services like Google Street View.

Data Upload to Karta View

- After capturing street views based on the mapped routes, upload the recorded video data to Karta View.



3.1.5 Conclusion

The results of the Karta View project include a robust collection of street-level images contributed by users. These images significantly improve the quality and detail of OpenStreetMap, up-to-date, and comprehensive geographical information. The project's success is measured by the increased richness of mapping data, user engagement, and the platform's contribution to enhancing navigation and location-based services.

3.2 Sime Darby Palm Oil Plantation Tree Counting

3.2.1 Problem Statement

Quality checks need to be performed on oil palm tree plantations in ArcGIS, aiming to count a targeted number of oil palm trees in a given area. The goal is to correct and remove any points that do not align with the specified grid, with a target of 70 grid per day.

3.2.2 Objective of project

Ensure that the points are accurately positioned above the trees. These tree points will be utilized for various purposes such as tree counting, replanting, disease detection, etc., by Sime Darby.

3.2.3 Methodology

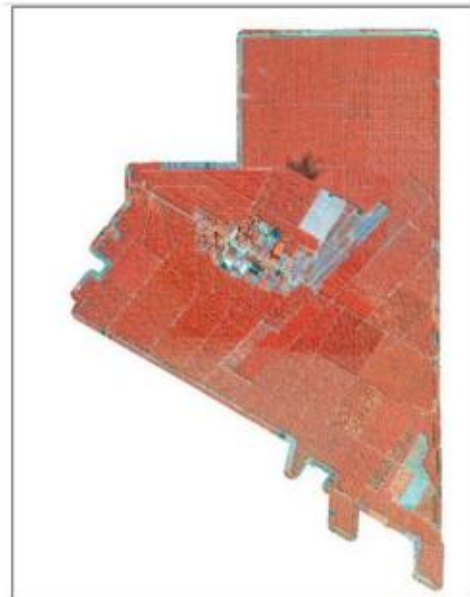
1. Add the assigned oil palm region, boundary, grid and point shapefile into the ArcGIS.
2. Change the band of the oil palm region into Band 4, 2, 3, choose Percent Clip/Standard Deviation/Histogram Equalize as Type. Adjust the brightness and contrast of the image according to our comfort.
3. Add/delete/recenter point of the palm oil tree. 4. Recheck and submit.

3.2.4 Result

Refined Tree Points: The edited points represent the precise locations of oil palm trees, ensuring they align with the specified grids.



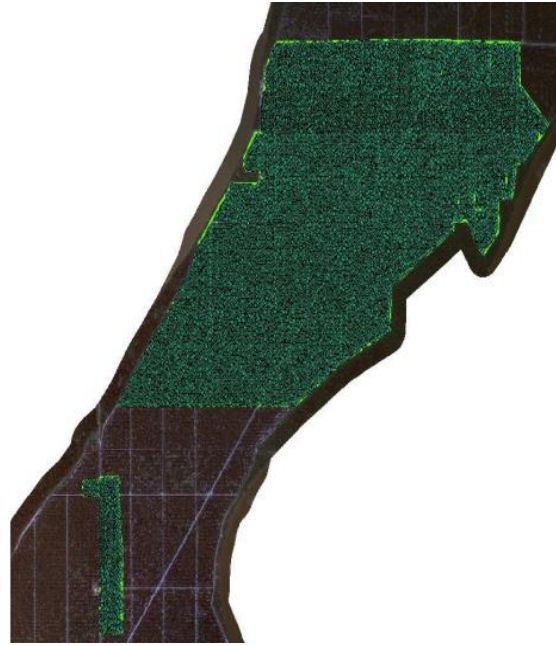
Point on oil palm tree



Durian Tunggal



Sepang



Bukit Kerayong

3.2.5 Conclusion

The project successfully achieves its objectives by providing accurate geospatial data and ensuring the precise location of oil palm trees. The refined tree points can be used for various purposes, contributing to more effective plantation management by Sime Darby. The quality checks and verification steps help ensure the reliability of the data for further analysis and decision-making in palm oil plantation management.

3.3 Tenaga Nasional Berhad (TNB) Low Voltage asset mapping using 360 Street view

3.3.1 Problem Statement

To better manage TNB's digital assets, it is imperative to integrate TNB assets into ArcGIS, a robust geospatial platform that pledges improved efficiency and enhanced decision-making capabilities.

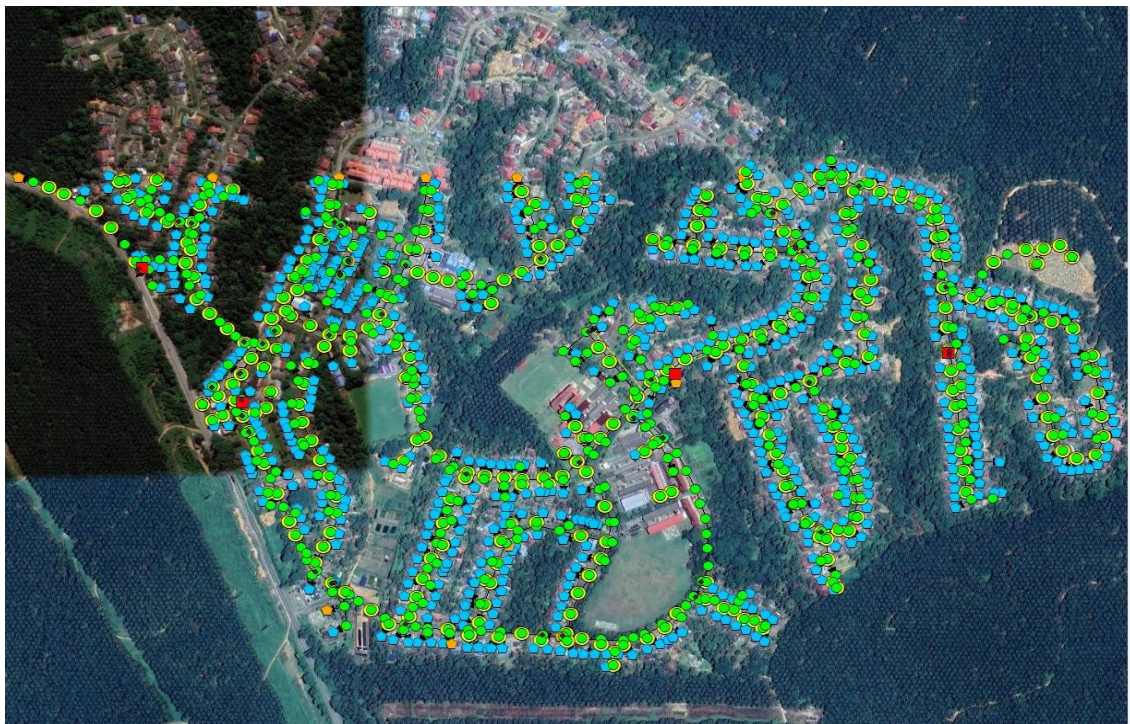
3.3.2 Objective of project

The primary objectives of the project are center around the seamless integration of TNB's digital assets into ArcGIS, aligning with the broader goals of efficient data migration and adherence to GIS standards.

3.3.3 Methodology

1. ArcMap Setup:

- Open ArcMap and import the assigned shapefiles (Demand_Point, LV_Cable, LV_Fuse, LV_OH_Conductor, LV_UH_Conductor, LVDB_FP, Manhole, Pole, Street_Light, Structure_Duct).
- Import Google Maps Imagery from the portable basemap server to ArcGis



2. Spatial Adjustment:

- Zoom into the selected area. Add, delete, or recenter points and lines of TNB assets as required.

3. Validation and Error Reporting:

- Conduct validation of digitized assets.
- Generate an error report for any inaccuracies.



1.67673335, 104.03196718
Wrong cable type.
GDS6341ohc11397449
(DONE CHECKED)



1.67798260, 104.02077216
adjust street light angle
GDS6341pol11397194
(DONE CHECKED)

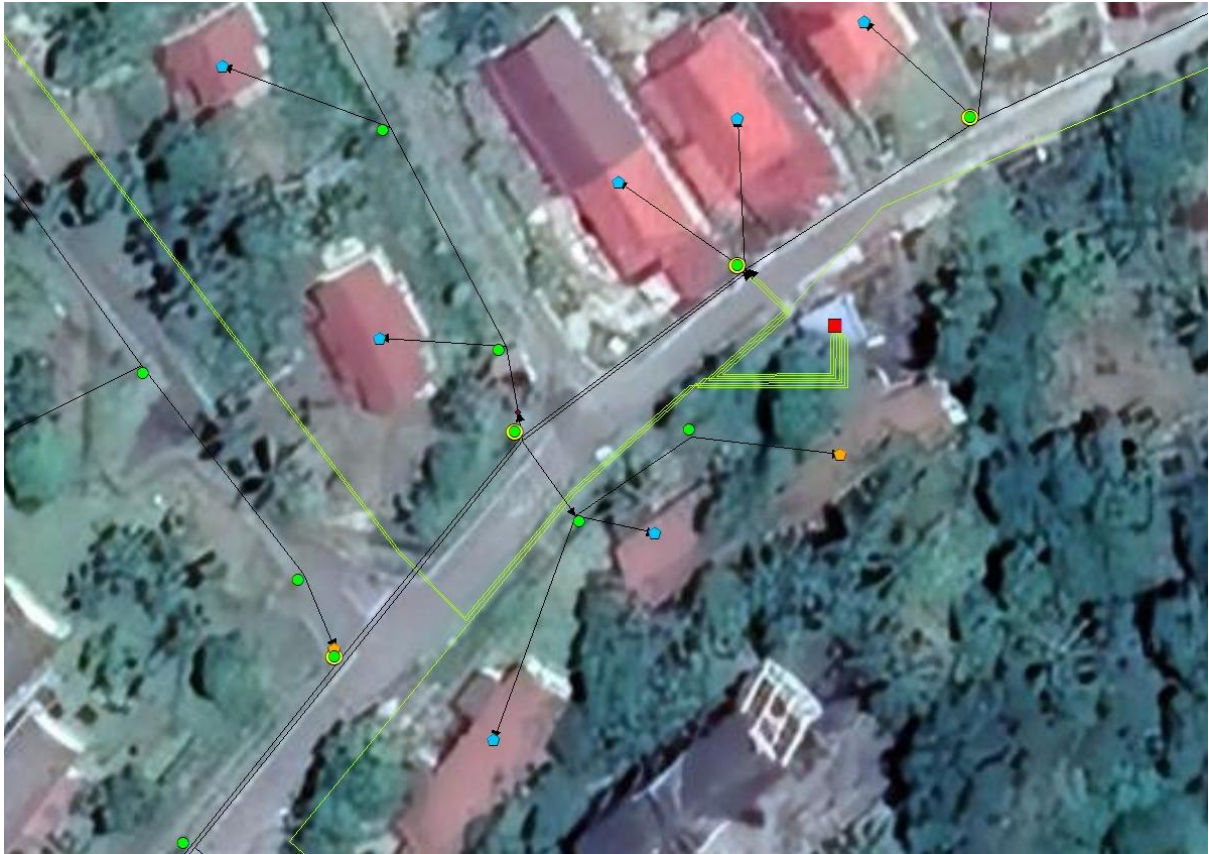
4. Quality Assurance:

- Perform a comprehensive quality check on the digitized assets to ensure conformity with TNB GIS standards.
- Recheck and submit the error report.

3.3.4 Results

The results encompass the successfully digitized TNB assets adhering to GIS standards. These results will provide a comprehensive and accurate representation of TNB's assets in a digital format, ready for utilization in various applications.





3.3.5 Conclusion

The completion of the TNB Asset 360 Mapping project marks a significant milestone in establishing a robust digital representation of TNB's assets. Adherence to GIS standards ensures data integrity and compatibility for future use. The comprehensive methodology employed, including spatial adjustment and rigorous validation, guarantees the reliability of the digitized assets. This project lays the foundation for improved asset management, operational efficiency, and data-driven decision-making within Tenaga Nasional Berhad.

CHAPTER 4: CONCLUSION

4.1 Personal Experience during IT

The most memorable experience for me was when I was capturing street maps using Karta view and got arrested and taken to the police station. At that time, due to a case occurring near the administrative area close to Sultan, Maisarah and I were implicated. We waited there for Encik Yus to come and explain to the police on our behalf. Eventually, we ended up at the police station where we stayed for three hours before completing our statements and being released.

4.2 Suggestions for the Improvement of Training

Provide hands-on experience based on data analysis.

- Implement project-based learning: Assign participants projects where they can apply their newly acquired data analysis skills to solve real-world problems, such as analysing a company's annual income or customer segmentation analysis. This will help their understanding and gain experience in data analysis.

Offer training in data analysis tools.

- Introduce participants to tools like Python and data visualisation tools (Tableau, Power BI) specifically used in data analysis.
- Empowering our team with essential data analysis skills through industry certifications available on leading online platforms like Coursera and Udemy.
- My suggestion is an IBM Data Analyst Professional Certificate and a Google Data Analytics Professional Certificate for the industry student before completing the industry training in 1 year.

4.3 Some problems in industry that you cannot solve

- Inet Team's shortage of experienced data analysts restricts the opportunity for industry training student to learn from professionals, compelling them to rely solely on self-learning methods.