UNIVERSITI TEKNOLOGI MALAYSIA

INDIVIDUAL REPORT:

DIGITAL MAPPING USING SOUTH SIMULATED VIRTUAL REALITY (VR)

SURVEY EQUIPMENT

PREPARED BY:

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1.0   INTRODUCTION

Since the establishment of SOUTH Surveying and Mapping Technology Co.Ltd, it has grown as a provider of GIS solutions that are integrated with Research and Development (R&D), production, sales, and services. South company is constantly working to improve industry information and the value of GIS applications. Their services include survey equipment, accurate measurement systems, data processing projects, GIS systems, and smart city applications, among other things. As always, the company is dedicated to the geo-information industry and also rejuvenating their national industry. South achieved localization for survey equipment, such as total stations, GNSS products, theodolite, and distance meters, and climbed to the top of the Chinese survey equipment manufacturing industry.

On 17th February 2022, the students who enrolled in integrated GIS Training Camp were honored to be the first participants from Malaysia to experience the virtual reality software of survey training that has been developed by SOUTH company. Mr. Jason Yap from JSY Solutions briefly introduced the company to the students followed by his colleague from GuangZhou, Jackie Cheung demonstrating the process to operate the software.

2.0   OBJECTIVES

The objective of this virtual reality training are:

1.   To introduce the VR software to the students and the University to carry out the virtual survey and mapping work.

2.   To train the students to use the provided equipment in the virtual reality simulated survey training system.

3.   To encourage the students to be confident in using the survey equipment.

2.0   PROCEDURE AND METHOD

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┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ Download and     │ ───► │ Open the VR      │ ───► │ Base set up at   │
│ install software │      │ Digital Mapping  │      │ known point      │
└──────────────────┘      └──────────────────┘      └──────────────────┘
                                                              │
                                                              ▼
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ Collect control  │      │                  │      │ Open new project │
│ point in the     │ ◄─── │ Rover set up     │ ◄─── │ in Controller    │
│ survey area      │      │                  │      │                  │
│ (road & building)│      └──────────────────┘      └──────────────────┘
└──────────────────┘
         │
         ▼
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ Export the       │ ───► │ Convert .dat     │ ───► │ Convert .csv to  │
│ project data     │      │ file to .csv     │      │ .dxf in TOPCON   │
│                  │      │                  │      │ Link software    │
└──────────────────┘      └──────────────────┘      └──────────────────┘
                                                              │
                                                              ▼
                                                   ┌──────────────────┐
                                                   │ Digitize the     │
                                                   │ data in QGIS     │
                                                   │ software         │
                                                   └──────────────────┘
```
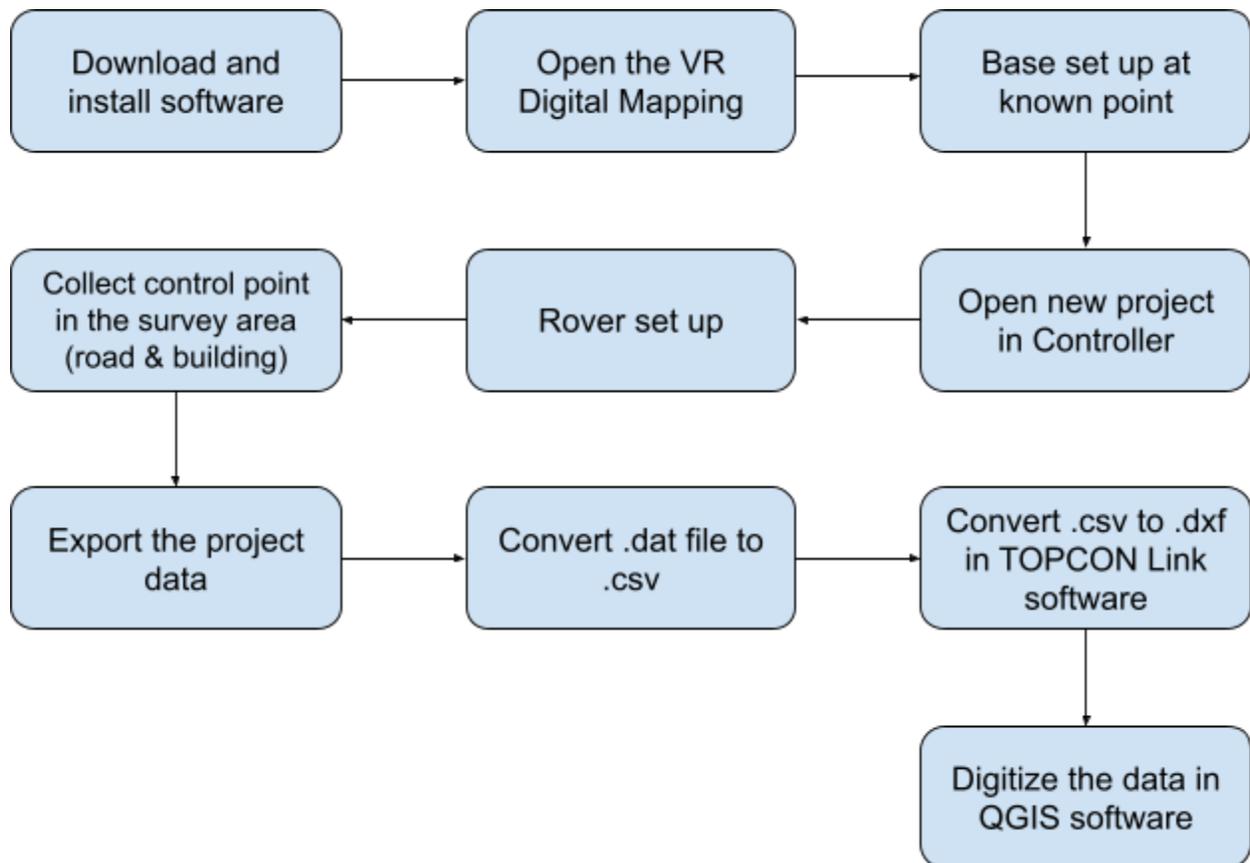
The students were required to download and install the provided software on their own devices. The ID and password are provided by the SOUTH company that gives exclusive license excess for one month. Press the start key to open the survey site and the map can be viewed at the menu. Students then choose their own site preference to set up the base at the known point. When the base is ready, create a new project in the controller to connect them. Set up the rover and connect to the controller. Data were collected using the connected rover in the survey area. Save the project and export the data, then it is converted to a csv file in Microsoft Excel. Using TOPCON Link software, the data will convert into a dxf file that is supported in digitizing software. I personally prefer QGIS software to digitize the retrieved data.

Figure 1: Survey site map
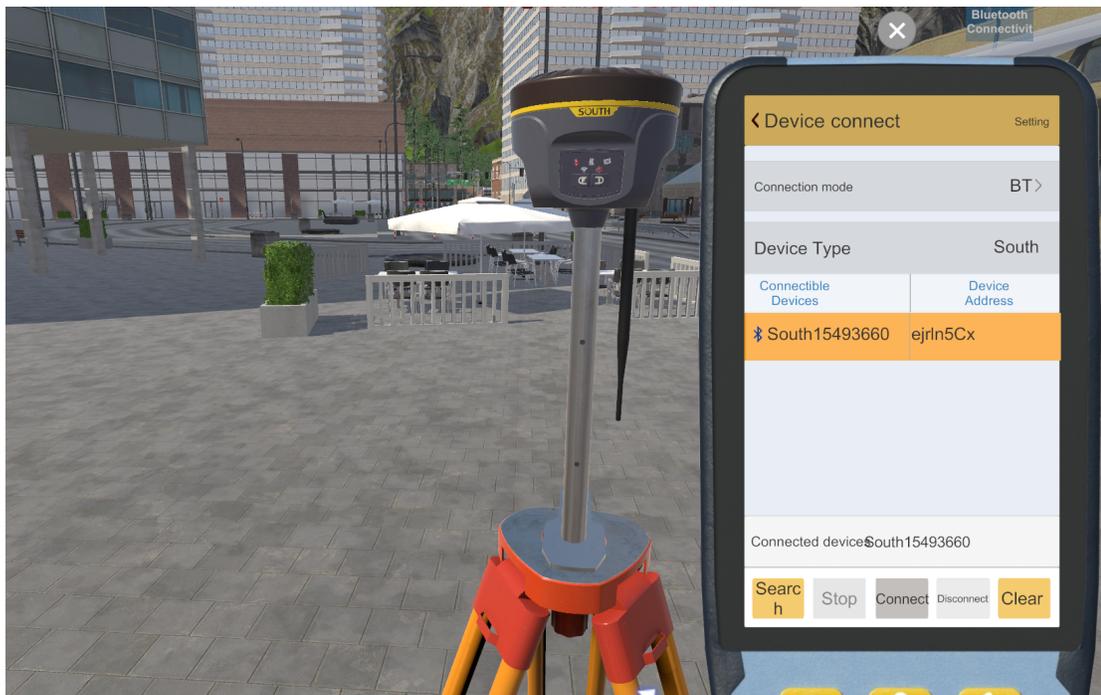
Figure 2: Base is connected to the controller
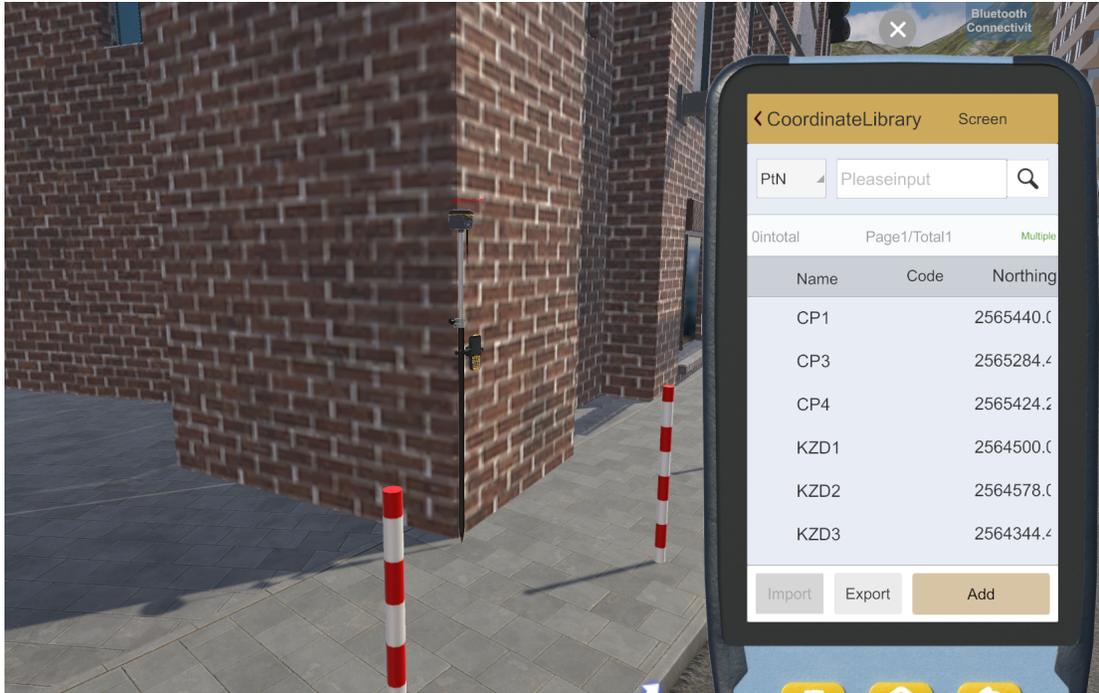
Figure 3: Rover is connected to controller during survey work
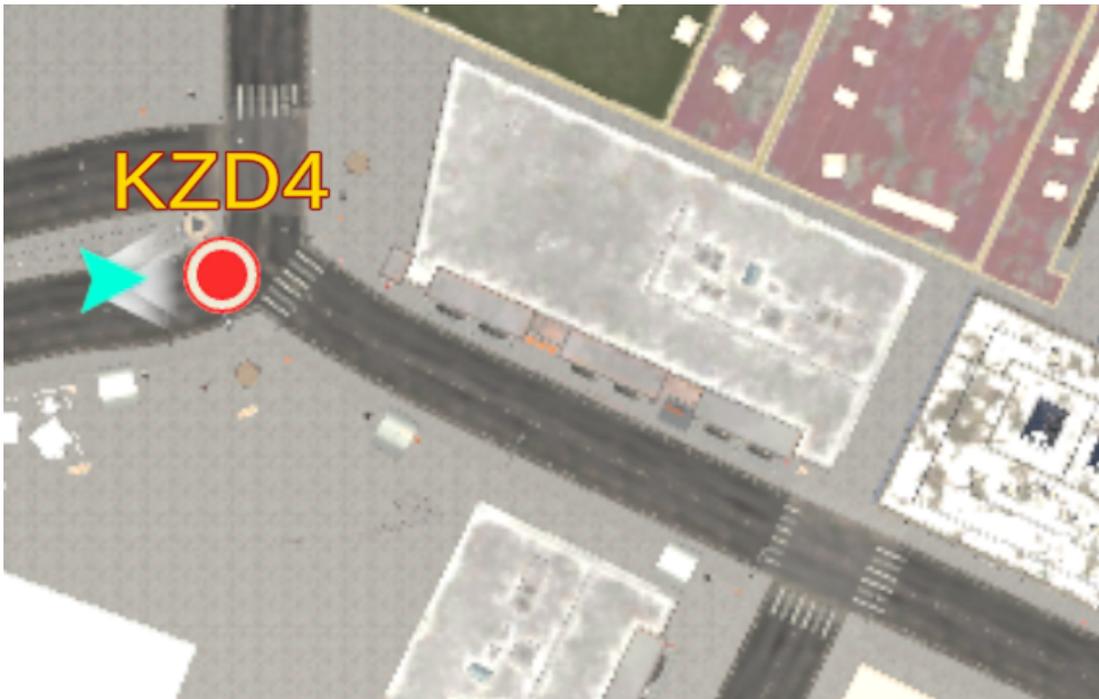
Figure 4: Survey area near to the known point (KZD4)

## 3.0   RESULT AND DISCUSSION
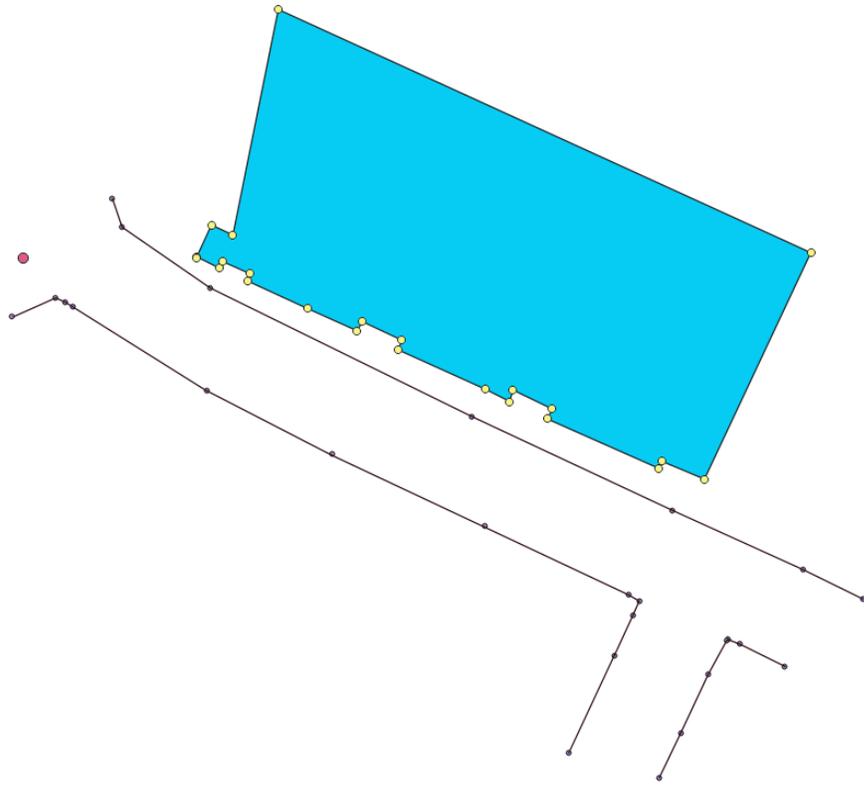
Figure 5 shows the digitizing result for the surveyed building and road in the VR software. The simple digitizing process was done in QGIS Software as it is most convenient to operate. The points and coordinates were stored neatly and placed according to the real world presentation.

5.0   CONCLUSION

The students could practice the surveying techniques using this latest virtual reality simulation as it will stimulate their interest and overall view of the surveying works. They will also be given the advantages to explore the virtual world while doing surveying work which is such an interactive learning method to be practiced by the lecturers. This software could be widely used as a learning tool in physical and online classes for survey and mapping subjects as it can deliver the objective of the surveying and provide an interesting experience for the students.