

DIGITAL LAND SURVEY: A DIGITAL FORM OF LAND INFORMATION

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**This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering**

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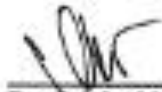


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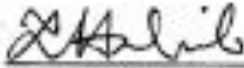
This Project titled **"Digital Land Survey"**, submitted by Abdullah Al Masum, ID No: 152-15-5890, Tauhidul Islam Sohag ID No: 152-15-5601, Nabimur Islam Nabin, ID No: 152-15-5602 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 02-05-2019.

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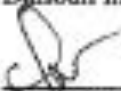
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DECLARATION

In there, we hereby declare that; this project has been done by us under the supervision of Mr. Md Jucal Mia, Lecturer, Department of CSE, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree. Some similar Works has been done but our project is unique to them.

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ABSTRACT

Having a little country with vast population Bangladesh is entered to a developing country. So all the system need to be develop where existing land management and survey system is ancient. So it need to develop to remove peoples hassle. The digital land survey system has become a critical need for this developing country. But it is very unfortunate that the land management and surveying system of our country has lagging on the anciently. Now the system for land management and survey has become a burdening matter towards people. Majority of people make conflicts in rural as well as city areas as a result of the inefficient and corrupted land systems which made long term problems as like murder. The young some researchers have tried their best to figure it out of such project. But they cannot make it out successfully. The implementation and execution has stayed unexplored and has failed to reach its destination. In a word, the land survey is works for the two issues. One is management and another is survey. We have working both of these issues to make the land surveying system fruitfully. In our project we survey the land information like the area of the land, owner of the land, any judiciary problem checking, mapping 360 etc. And on the management, the whole system is managed by the Thana sub-register by web base online platform. By the modern land survey system, we can ensure the security of data and information of the land easily. In addition, a land release of the current GIS 3D artwork and GIS system can do easily. It can ensure by providing and mentioning the land that's is suitable for agriculture/ commercial/residential or government land.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The proportion of land of agricultural is the prime earning source of Bangladesh. Though it is now a developing country yet it cannot prove itself to a industrialization. For this still now our economy is agronomic. Furthermore, the proportion of land is too small. For this, we should utilize this land so technically and a systematic way. We need a productive and effective land survey and management system but unfortunately the system has not build yet. The land survey and management system is now hassling matter of our country. And this is far away from updated technology, modernization. For this corruption is staying in this sector from root to leaf. Its represents the system of land management a slow coach.

The land measurement system by Amen is so ancient, the land information collecting from sub-registry office is a hassling matter. Sometimes it's not only hassling but also money costing. Our work on this section will remove all the hassle of measuring land and managing land by online. The land owner and buyer easily can get information without any hassle. We have thought the core problem of our land management and surveying and working to develop the system.

Actually we were motivated to develop the system as the management of land and survey. In management site we will get the online help and in survey we will get the land physical information.

1.2 Motivation

Still Bangladesh is an agro economic country which has a great impact to our population. In a statistic, still 65% people of our country engaged to agricultural work like cultivation, agro-business, agro-farming etc. But the expansion of industry, capitalization is narrowing our agro-land rapidly. For this we are destroying forest, agro-field and river. So we need the balanced land management system badly. On the contrary, the neediness for agricultural land is increasing day by day towards the lacking of land. And the land area is inadequate for our huge population to satisfy.

So we need the best way of land utilization. So it become a huge challenge to manage the land in a systematic way and survey. But we tried to bring out a solution appropriately. The demands for the agricultural land are rising due to the increasing number of Population.

Moreover, the lacking of land proportionate to people has become the prime reason of, confliction and clashes in our society. At least 70% conflicts and quarrel occurred land related disputing matter, shown in a statistic. So hereby the severe problem of land management and surveying should be resolved by this. This circumstances, there is no other way is reliable in this era of technology to come over the problem successfully. Our project shows a reliable technological progressive solution of this acute problem.

1.3 Objective

Modern Land Survey is such a management that we too by ensuring the security of the complete information of a particular land easily can express In addition, a land release of the current GIS 3D artwork can do. Geography of the land through modern land survey. It can mention the land which is suitable for agriculture/ commercial/ industrial.

1.4 Expected Outcome

Digital Land Survey is an online application and web base platform which is ensure the basicity of the land and reduce time and disturbance. Currently it is about 6 to 10months' time to purchase and sell the given land It is necessary that only the current ownership of the land and all the information about its land are valid Whether Brokers are able to search for information in a lot of time and money Fall into cheating. The government owned land is controlled by the landowner The government is getting away from various revenue revenues. Also the government searched the exact VAT tax information by a single click 2021countries will help to digitize.

The government-owned land is controlled by the landlord; It will be able to detect revenue depreciating.

Digitization of land ministry

Owners' land property information and security ensure

Geographic Location and Government Information (VAT & Tax) Sharing information on agriculture, residential and commercial areas. Land Account for every land owner.

Any judiciary problem of the land.

The land 360 view, mapping, land land whole information will on online. Vat and tax, any advertisement of the land for selling and buying, land information correction can be done by online.

1.5 Report Layout

Chapter 1: Introduction

In the chapter we will discuss about the introduction, motivation, objective and expected outcomes and project layout.

Chapter 2: Background

In this section we will discuss about the paper we have followed for develop our project and the references. We also mention there the literature review, scope of problem and challenges we have face and taken to develop the project.

Chapter 3: Project Methodology

Here we describe about the way and method used to develop our project. in there we describe how we collect data and information, table sets and the developing steps of our project.

Chapter 4: Experimental results and discussion

In this section all the results will be taken by our developed system which would be experimental.

Chapter 5: Conclusions

This chapter gives us the conclusion part and the ideas of further development and implementation.

CHAPTER 2

BACKGROUND STUDY

2.1 Introduction

In this chapter, we discuss on several research work done by researchers in the area of land digitalization. We live in the modern age, we always try to make the expected out come by in a short time. Bangladesh is a developing country with lots of resource. But we don't use those properly. We the team make the idea that's can reduce the land mismanagement hassle. We develop a online base web platform that's ensure the data security also the actual information. Then we contract with RAJUK and our local land survey office to collect the secured information. They are highly appreciated us and provide some facilities. I would like to mention that's we also take perform at ICT innovation project 2019.

2.2 Literature Review

Many researchers of our country have worked on the land management and surveying system from different perspective view. But no One come out with a successful developed figure.

Barkat et al. [1] has done a work suggesting a judiciary proclaimed land or government land which are now under on the land.

Choudhury et al. [2]. Had tried to make a unique land management system by the base of SVG.

Whereas Nepal et al. [3] the degradation of agricultural land is happened for inappropriate land management system.

Hasibur [4] has done a similar type of work where he has studied the adverse effect of human created causes and pollutions in shrinking of the cropped land.

Zulfiqar[5]. Has worked for long time for sustainable land survey, mapping and managing system.

Shoeb[6]. Has identified and research on the corruption of land sectors and landlords.

2.3 Research Summery

Digital Land Survey (DLS) is a web base online service system to manage the land information. it will be helpful for each people to find out any land information by this online platform. For this only they will need to register and access and they will get whole service on online. The land owners a will get well manage- able interface through which they can maintain their land related tasks staying on their residence. As the online system helps the individual land owner opportunity to maintain their land properties in home, the chance of inefficiency and longevity to accomplish the land related task diminishes greatly.

Moreover, online management of the land properties assists to remove the chance of corruption hugely because the tasks are done by the land owners directly. The survey of land is done by GPS which can reduce the chance of occurring errors in measuring the land. And, the automatic draw of land maps gives the accurate mouza map where the current system has a lots of lacking. In a word the DLS system helps the land owner manage the land information and help of correcting and collecting land information of land from anywhere of the universe.

.2.4 Scope of The Problem

Digital land survey system or in short DLS is our model system by which the land areas of any country like Bangladesh can be controlled digitally with the help of modern technologies. The total range of land system tasks starting from the surveying of the land to the land management is managed in new way. It is a new idea of replacing the existing errors and lacking of the current ancient system with a new technology based system. The key features of DLS include GPS based land surveying, auto map drawing and online land management.

2.5 Challenges

To build such a system it required to have a good knowledge about GPS and GIS also the PHP larval 5.7 framework. After developing the web platform it required to collect data is the main challenge for us. We contract Bangladesh innovation forum. Also we contract with RAJUK. They highly appreciated us and provide the Uttara 13 no sector land information also help us to fly the drone to capture the actual view of the land. We also contract with local land survey office to collect the rural land information. We also mention that's we are performing in ICT ministry innovation project.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Land surveying by GPS: The major feature of our project is GPS based land Measurement. By this the Amen can measure the amount of land easily absolutely. The Amen have to put the GPS on four corners and get the point of the GPS value. GPS is the electronic device which can measure the position of place, width and length of the particular land. The device can communicate to satellite to locate the position of the land. By getting the latitude and longitude value we can measure the amount of land.

The land need to measure, the amen will set the GPS to the land and get co-ordinates value .Then he calculate the co-ordinates value using the formulae which we given. In the first category which we discuss those surveys of doing precise Engineering, analytical deformation and geometric dynamic applications.

And category second, we try to implement the mapping, measuring, and online support. Then we concern about holding land information, owner information saving on our database. For this we use GIS stand for Geographical identification system and GPS which stands for Global positioning system.

By the GPS help we can find out the Boundary or co-ordinates of every piece of tiny land. In the database we save the land information like land area, type other the land heather it is residential/agricultural/commercial, any existing judiciary problem of the land, position of the land, recent owners, previous owner, vat and tax information of the land.

The procedure or formulae we have taken to measure the amount of land by amines ,if the four co-ordinates are along with x-axis and y-axis $(x_1,y_1),(x_2,y_2),(x_3,y_3),(x_4,y_4)$.

3.2 Drawing Map:

The most interesting feature of our project is drawing the map automatically when the min will survey the land. In this portion we have taken the help of google map. We have set the Google map to our database. The API of line drawing algorithm has been used here by using co-ordinates. The Four co-ordinates boundary lines drawn by the GPS value and make an image of these co-ordinates. Then we set the information to the database of the land. This whole procedure will be done without any human effort.

3.3 C. Online Land Management:

Lastly the online management feature is added where the whole system will be controlled by online web platform. This feature helps the land owners to buy and sell the land and land related any tasks. There will two admin one is master admin and another is land office side. The management is enable for land office side and for the land owners side. The owner will get the facility of

- **Owners' land property information and security ensure**
- **Geographic Location and Government Information (VAT & Tax)**
- **Sharing information on agriculture, residential and commercial areas.**
- **Land Account for every land owner.**
- **Any judiciary problem of the land.**
- **The land 360 view, mapping, land land whole information will on online.**
- **Vat and tax, any advertisement of the land for selling and buying, land information correction can be done by online.**
- **Buy and sell land advertisement of land**

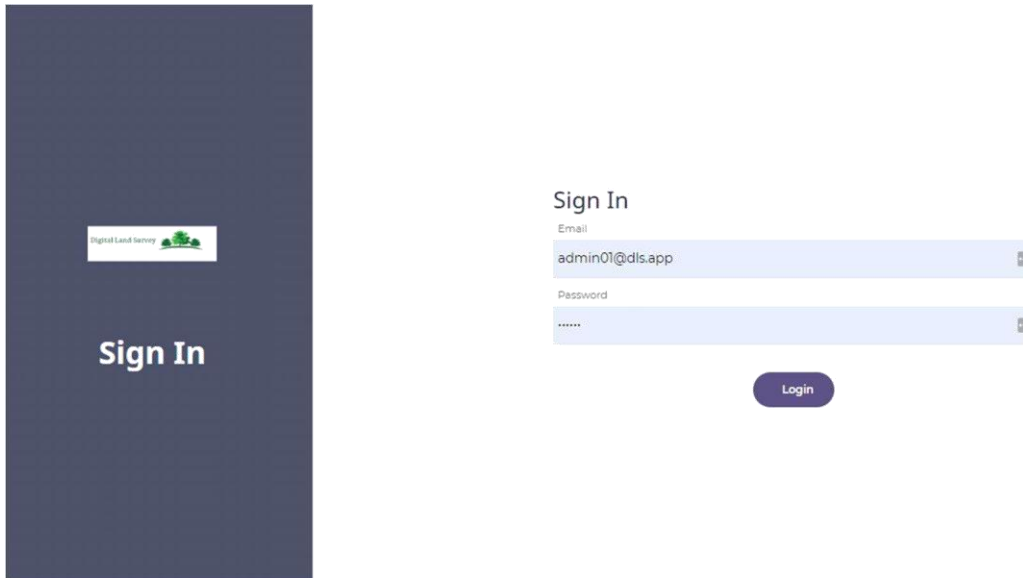


Fig: 3.1 Homepage of DLS Sign In page

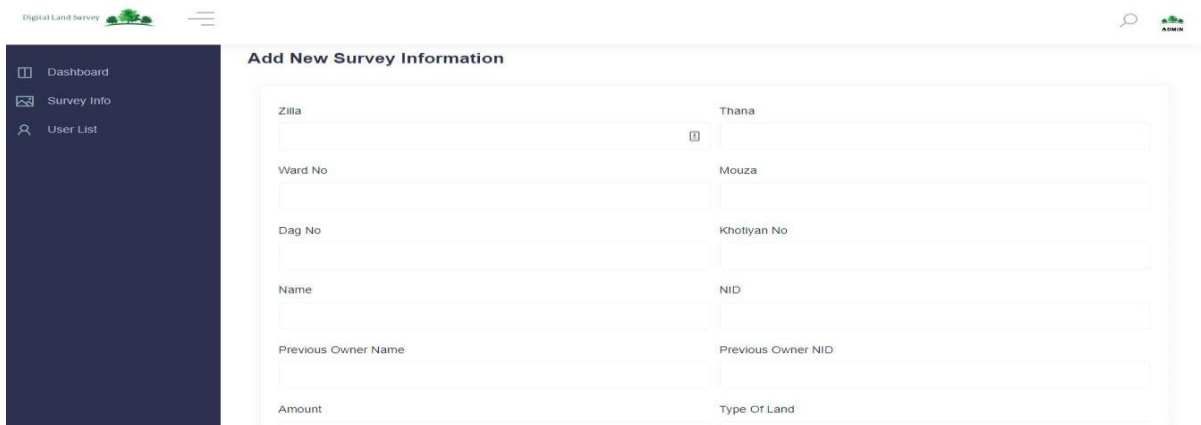


Fig: 3.2 Homepage of DLS Survey information addition

In the office side the master admin will control the whole procedure of online. Every sub-register will have a account to login. Every sub-register will control his work of land of his area. No unauthorized admin cannot logging to the site. The master min will give authorization of sun admin by his employee identification. In the office side the master admin will control the whole procedure of online. Every sub-register will have a account to login. Every sub-register will control his work of land of his area. No unauthorized admin cannot logging to the site. The master min will give authorization of sun admin by his employee identification.

CHAPTER 4

IMPLEMENTATION OF OUR SYSTEM

We the team develop our digital land survey (DLS) a web base project that's can reduce the existing land survey problems. Our web-site (<http://masum.uttbd.com/login>).

We also add digital land map by GPS and GIS that's ensure the identity of the land and the actual view of the current position of the land. Its can ensure the data security as well as the governmental information like vat & Tax info. We also make the visitor and others are strictly restricted. Those Officers can add or delete the info but all those have been checked by the main admin panel. Each admin officer have a unique id that's have been developed by the admin panel. If there have any problems the officer will be under punish for the crime. The officers can share the visible all data to the visitors and make a pdf copy for them.



Fig. 1. Steps of Land Surveying in Bangladesh[1]

THE MAIN KEY FEATURE OF THE DIGITAL LAND SURVEY

By the digitalization of the web base project its ensure the data security also reduce the hassle for buying or selling land. In addition, a land can present the current GIS 3D painting. Geography of the land through modern land survey; It is possible to describe the land as residential / commercial / agricultural.

The Digital Land Survey is an online application and web base platform that ensures basicity of the land, can reduce time and hassle. It will help us to digitize our land ministry and our country. Firstly, the system developer will provide login permission from a local land registrar, through its direct digital NIID and official service number.

After the successful registration of the registration of the Registrar, the register will be able to publish the land related information only in his local area. Wherever the developer has all the information related to the land, such as the owner of the previous land and all his information (NIID, land information, Dag number, Khatian Number, legal complexity related to land) and all information of the current owner will be mentioned

Also via this Digitization of land ministry Owners' land property information and security ensure Geographical location and government information (VAT & tax) Agriculture, residential and commercial areas can publish information.

- 1. Virtual views of the land**
- 2. Total area of the land**
- 3. Previous information of the land**
- 4. Online Google map by GPS**
- 5. Advising for buy or selling**
- 6. Judiciary information**
- 7. Online copy with all information**
- 8. Pay the vat & Tax online**

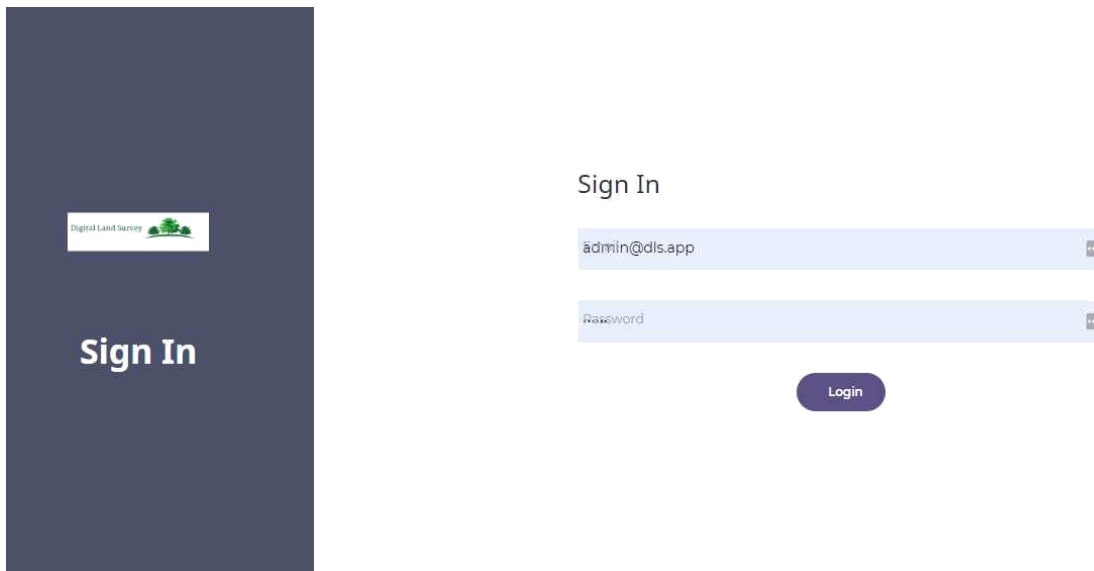


Fig: 4.1 Homepage of DLMS Website

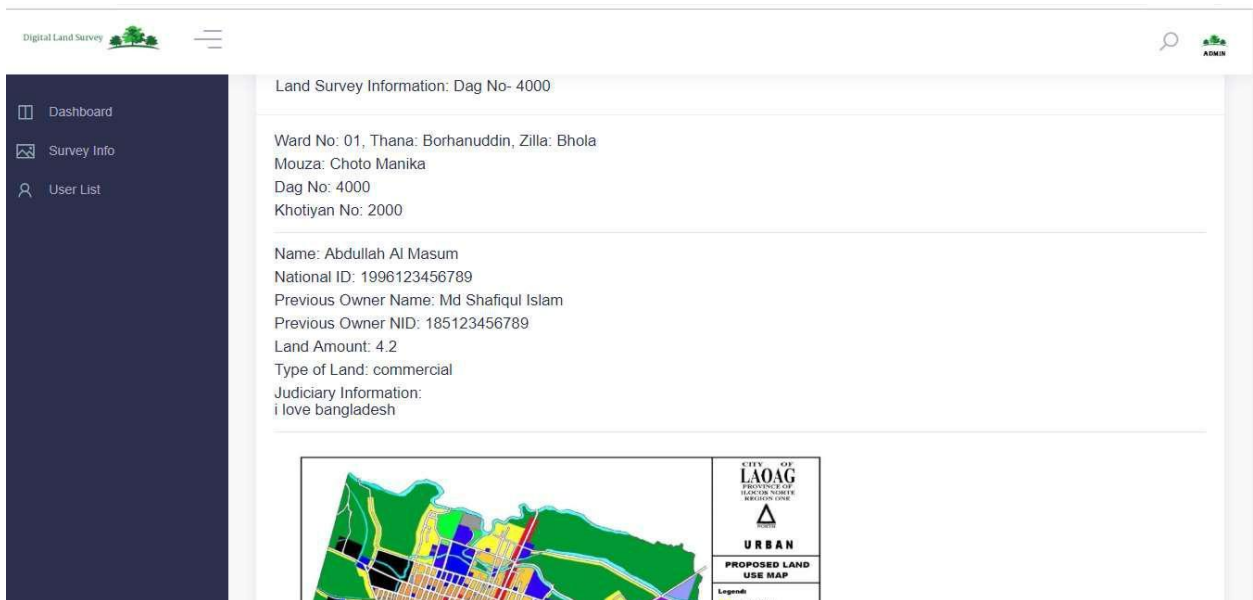


Fig.4. 2 Information's of Land Offices are Shown in Website

It is apposite at this juncture to establish an approximation of the system drawbacks and possible errors. We can start with the surveying of land with the GPS device.

It is not challenging to predict why there rests a possibility of defining the boundary lines and hence to compute the area of any land with this device. For the test info and finding bug we used our own land info to the server and its works properly

For this purpose we used a GPS device having the aptitude of 5 meters preciseness. Consequently, our measured area is not fully precise but contains a small amount of error which is more or less negligible in comparison to the area of the land. From our calculation the error percentage was very negligible in comparison to the size of the lands. Dry air, water vapor,



Fig: 4. 3 The Virtual view of the land by Google map

Total cost of the whole setup of the project

TABLE I
APPROXIMATE COST ANALYSIS FOR SETTING UP ONE LAND OFFICE

Setup Materials	Quantity	Approximate Cost in Taka
Desktop Computer	2	50,000
Modem	2	2,000
Internet Connection	2 PCs	3,000
Training of Staffs	5 Staffs	15,000
GPS Device	2	30,000
Total Cost		1,00,000

Currently only 6 to 10 months is required to buy and sell the said land, only the current ownership of the land and all the information about its land is valid and the information is searched for a lot of time and money is misused by brokers. The Digital Land Survey is an online application and web base platform that ensures basicity of the land and can reduce time and hassle. The government-owned land is controlled by the landlord and it will be able to identify the government being deprived of revenue.

Moreover, in order to fully implement our project at national level, it is necessary to access the National ID Database of the country. The access to National ID Database can help to ensure the security and authenticity of the system. Currently we have no access to National ID Database which is surely an obstacle to check the authenticity of the land owners.

Basically our full project is a online base and a national level project. All the communities of our country will benefit from this project. Because a person can buy or sell his land, through this application the registrar will be able to collect all the information of the land, such as the land owner and all his information (NIID, land information, Dag number, Khatian number, land related legal complications) .

4.4 LIMITATIONS OF DLS SYSTEM

Its a difficult process to collect data from sub register office and make the first identity of the lands. its required a large number of human resource for collecting data at the very beginning. its also required to make high security to preserve data. As the whole system required online base so the high internet also needs at the rural areas

CHAPTER 5

CONCLUSION

The existing land management process of Bangladesh still beyond in the modern technology. Every years a lots of time and money have been lost by the system loss of the land management system. Furthermore there have some corrupted peoples the destroy the total system. Every year's lots of people fall in their life risk and some political violence only by the unprofessional management system. All the existing problems can be reducing by the digital land survey project. That's ensure the data security also reduce the time and money. This system is highly developed with professionalism that's ensuring the modern technology also the data security.

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