

**Geographic Information System to Manage the
Communication Cable Network in Sri Lanka Air Force Base
Katunayake**

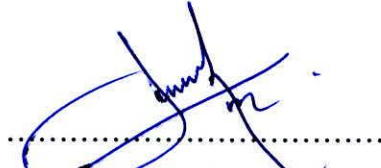
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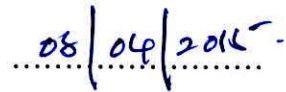
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**Thesis submitted to the University of Sri Jayewardenepura for
the award of the Degree in Master of Science in Geographic
Information Systems and Remote Sensing on 18 August 2014**

DECLARATION

The work described in this thesis was carried out by me under the supervision of Ven. Dr. Pinnawala Sangasumana and Mr Prabath Malavige and a report on this not been submitted in whole or in part to any university or any other institution for another Degree/Diploma.


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DECLARATION OF SUPERVISORS

We certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation.

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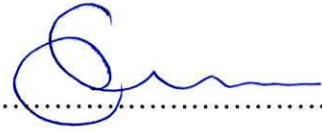
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ACKNOWLEDGEMENT

I have completed my research study as fulfilment of requirement of the academic activities of Master of Science in Geographic Information Systems and Remote Sensing degree programme of University of Sri Jayewardenepura in field of communication cable management projects. This accomplishment was a possibility because my commitment was supplemented by the contribution of few others, whose expertise and guidance I used during the pursuit of the study.

At first I would like to place on record my gratitude to my supervisor, Ven. Dr. Pinnawala Sangasumana (Head/Geography, Coordinator- M.Sc. in GIS & RS), Academic staff of M.Sc. in GIS & RS for generously sharing his expertise and experiences with me during the research study. Further I wish to express my especial thanks and sincere gratitude to Mr Prabath Malavige, Academic staff of M.Sc. in GIS & RS for his invaluable guidance, encouragements, patience and precious time that he offered to me. And, I was guided step by step from the beginning and I am deeply impressed with his wealth of knowledge and dedication to academic research.

I thank Prof. Krishan Deheragoda who motivated me towards this endeavour by extending his valuable guidance during reviews from the inception.

I am deeply grateful to the Commanding Officer, Electronics and Telecommunication Engineering Wing, Sri Lanka Air Force Base, Katunayake for granting authority to

study about the present underground caballing systems to making this project activity a possibility.

I also wish to make special mention of all those, who have helped me in numerous ways, especially in conducting the field research, obtaining cable paths and in preparing primary data and so on. The list is too long to mention here. They have really kept me at easy to attend my research work.

Finally, thanks to my beloved wife and two daughters for their continual support not just throughout this project, but throughout my education as well.

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LIST OF ABBREVIATIONS

1	Air Force Headquarters	-	AFHQ
2	Binary Large Objects	-	BLOB
3	Environmental Systems Research Institute	-	ESRI
4	Common Gateway Interface (CGI)	-	CGI
5	Global Positioning System	-	GPS
6	GPS Exchange Format	-	GPX
7	Hypertext Mark-up Language	-	HTML
8	Information Technology	-	IT
9	Institute of Electrical and Electronics Engineers	-	IEEE
10	Joint Photographic Experts Group	-	JPEG
11	Local Area Network	-	LAN
12	Red Green Blue	-	RGB
13	Relational Database Management System	-	RDBMS
14	Royal Air Force	-	RAF
15	Shortest Path Analysis	-	CPA
16	Sri Lanka Air Force	-	SLAF
17	Structured Query Language	-	SQL
18	Tagged Image File Format	-	TIF
19	Uniform Resource Locator	-	URL
20	Wide Area Network	-	WAN
21	World Wide Web	-	WWW

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ABSTRACT

The purpose of this research study is to analyse the management issues and threats involvements for the underground cables of existing Local Area Network (LAN) system in the Sri Lanka Air Force Base Katunayake. During the study the researcher has found the drawbacks of the present manual management system and the difficulties that the staff faces in carrying out day to day duties. Furthermore the researcher has being able to analyse and propose an improved and high sophisticated model with Geographic Information System (GIS). This will eventually enhance the capabilities of the network management and thereby maintain the entire network with minimum downtime.

At present the Sri Lanka Air Force (SLAF) has interconnected all the Air Force establishments scattered around the country to an Intranet. All of these Air Force establishments have their own local area network to connect each and every user to SLAF Intranet. The scope of this research was limited to the SLAF Base Katunayake due to the complexity of the area of interest and the time restrictions. However, considering the similarity between the other SLAF establishments' LANs, the proposed GIS model can be utilized as a prototype to implement GIS based network management system. Furthermore the proposed GIS model can be utilized in the other service establishments such as Sri Lanka Army, Sri Lanka Navy and Sri Lanka Police.

CHAPTER 1

1 INTRODUCTION

1.1 Background

Sri Lanka Air Force (SLAF) is a large scale service organisation established to protect sovereignty, integrity and independence of Sri Lanka. During the period of colonization and when the country was under the ruling of British, the air force operated in Ceylon was a part of Royal Air Force (RAF). The SLAF was established in 1951 subsequent to the independence in 1948. The SLAF used to continue with the administrative setup and infrastructure build by British while continuing improvements to meet demanding needs.

The Sri Lanka Air Force Base Katunayake is the largest Air Force Base in Sri Lanka with having approximately 1000 acres of land coverage. It was established in 1940 as a Royal Air Force Base and used as a transit base by the RAF and other commonwealth countries. The Base was handed over to the Royal Ceylon Air Force on the 02nd of March 1951.

The SLAF Base Katunayake consists of 26 lodger formations including four flying formations and other supporting formations. This Base has been the hub of providing Administrative, Logistics and Engineering services to all other Bases, Stations, Units and Formations in the north and east in their formative stage and continues to provide the bulk of operational requirements and engineering support up to date.



Figure 1 - 1: Main entrance of the SLAF Base Katunayake

1.1.1 SLAF Communication Network

The SLAF consist of an Air Force Headquarters (AFHQ) and 27 other SLAF establishments around the country. All of these Air Force establishments are interconnected through the microwave telecommunication links using modern communication technology equipment.