

**A GEO-SPATIAL ANALYSIS OF TRANSMISSION
COVERAGE OF SRI LANKA RUPAVAHINI
CORPORATION NETWORK IN KANDY DISTRICT**

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DECLARATION OF THE CANDIDATE

I do hereby declare that work described in this thesis was carried out by me under the supervision of Prof. G. M. Bandaranayake and Mr. Prabath Malavige and report on this thesis have not been submitted in whole or in part to any University or any other institution for another Degree/Diploma.

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ABBREVIATIONS

ABU - Asia Broadcasting Union
ADA - Audio Distribution Amplifier
ASO - Analogue Switch Off
AV - Audio and Video
BBC - British Broadcasting Corporation
BPF - Band Pass Filter
CATV - Cable Television
CCA - Climate Change Adaptation
CRT - Cathode Ray Tube
CNN - Cable News Network
CVI - Cumulative Viewshed Index
DEM - Digital Elevation Model
DLP - Digital Light Processing
DRRM - Disaster Risk Reduction and Management
DSD - Divisional Secretary Division
DSO - Digital Switch Over
DTTB - Digital Television Terrestrial Broadcasting
DVB - Digital Video Broadcasting
DVD - Digital Versatile or Video Disc
FCC - Federal Communications Commission
FM - Frequency Modulation
FPU - Field Pickup Units
GIS - Geographic Information System
HBBTV - Hybrid Broadcast Broadband Television
HDTV - High Definition Television
HPA - High Power Amplifier
IF - Integrated Frequency
IPTV - Internet Protocol Television
ITN - Independence Television Network
ITU - International Telecommunication Union
LCD - Liquid Crystal Display

LED - Light-Emitting Diode
LOS - Line-of-Sight
MCR – Main Control Room
MTV - Maharaja Television
NTV - Nethra Television
OB - Outside Broadcasting
OGC - Open Geospatial Consortium
OLED - Organic Light-Emitting Diode
OTS - Overseas Telecommunications Services
RFID - Radio Frequency Identification
RS - Remote Sensing
RX - Receiver
SCPC – Single Channel Per Carrier
SDTV - Standard Definition Television
SHF - Supper High Frequencies
SLBC - Sri Lanka Broadcasting Corporation
SLRC - Sri Lanka Rupavahini Corporation
STL - Studio to Transmitter Link
SingTel - Singapore Telecommunications Limited
TP - Transponder
TV - Television
TVRO - Television Receiving Only
TX - Transmitter
UHF - Ultra High Frequencies
VDA - Video Distribution Amplifier
VHF - Very High Frequencies
VHS – Video Home System
VOA – Voice of America
WNBC - World Network Business Club
WRGB - Walter Ransom Gail Baker

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ABSTRACT

The Sri Lanka Rupavahini Corporation (SLRC) operates as the National Television Broadcaster in Sri Lanka with the prime objectives of providing education, entertainment & information to a multi ethnic & multi religious Sri Lankan society.

The method of transmitting the amplitude modulated picture signal is similar to the more familiar system of radio broadcasting. In both cases, the amplitude of an RF carrier wave is made to vary with the modulating voltage. The modulation is the base band signal. For television, the base band signal is a composite video signal. Television broadcasting is really like a radio system, but it includes both picture and sound. The associated sound is transmitted by frequency modulation (FM) on a separate carrier wave in the same broadcast channel as the picture signal.

In recently years, Geographic Information System (GIS) has a high-speed development and has made a great progress in its own field. This thesis applies geographic information system tools and techniques highlighting the potential to TV transmission of Sri Lanka Rupavahini (TV) Corporation Transmission Network having the purpose of expanding visibility of Area.

Transmitting stations manage reception of TV signal data. GIS, combining with the theory of radio waves transmission, simulates transmission and coverage of radio waves in the real world. From a GIS Analyze on Spatial Coverage of Sri Lanka Rupavahini (TV) Corporation Transmission Network, we can easily identify prevailing issues in the existing solution. And specially according to the present day context it is also very helpful to the Satellite Television and Internet Protocol Television (IPTV) service providers to enhance their facilities. It is also considered the alternatives for the weak TV signal areas.

TV transmitting frequency programming and it uses GIS spatial database to help TV Broadcasting departments manage TV station data. Spatial analysis helps to TV station position programming, and spatial visualization can visually reflect programming result.

All of them can provide scientific assistant over the decision-making for TV Broadcasting frequency programming.

There are several countries around the world that have adopted Dolby Digital as the sound format for digital television, using true digital 5.1 channel audio. It is a technological environment complicated by legacy issues, competing acquisition and transmission formats, revolutionary new methods of content creation and delivery, as well as whole host of emerging content consumption structures that threaten the established order of television communication.

Present work concluded the successful development of GIS based Television broadcasting network demonstrating the potential of Geographic Information System tools and techniques. The solution enables decision making authorities to expand the broadcasting tower network through new additions and moving of existing towers incorporating new findings were developed using ArcGIS.

Key Words: Sri Lanka Rupavahini Corporation, Frequency Modulation, Geographic Information System, Satellite Television, Internet Protocol Television, ArcGIS

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Rupavahini in Sri Lanka was introduced under a government act on January 23, 1982 and established on February 14th the same year. Rupavahini began broadcasting on February 15, 1982, one day after it was established, with an opening speech from His Excellency J. R. Jayewardene, Sri Lanka's President at the time, after being donated by the Japanese government. Both Transmitters were built and installed by Japanese technicians.



Figure 1 - Main Control Room

In 1986, Rupavahini expanded their facilities and, in 1998, rehabilitated most of the original equipment using digital technology under three grant aid projects from the Government of Japan. Its studio complex is situated in Colombo, the commercial capital of Sri Lanka. The complex comprises a Master Control room, four studios, two dubbing studios, a Digital Post Production unit, two Analogue Post production units, several editing suites including Non Linear Editing and four Outside Broadcast vehicles.

Rupavahini 2 launched in April 1999 before it changed its name to the current name of Channel Eye in August 2000. Channel Eye is the English Channel, On January 1,

2008, Channel Eye became a timeshared channel, altering with the newly created Nethra TV is the Tamil channel. The channel focuses on Tamil culture and customs with original and acquired programming. It also airs an amount of religious programming, especially programming for the religious minorities. In December 2014, the main channel was made available via satellite to Europe (via Eutelsat 70B), prompting the channel to temporarily go 24/7 (still doing the formal start and end of transmission routines) in order to alleviate time zone differences. Due to unknown reasons, the channel was removed. The channel now starts shortly before 04:00 and ends shortly after midnight.



Sri Lanka Rupavahini (TV) Corporation
THE NATIONAL TELEVISION OF SRI LANKA



Figure 2 - Rupavahini Logo and Premises

Rupavahini's logo is a bird, more specifically a hill mynah carrying a message in gold on a red TV screen. It is generally accompanied by the channel's name in Sinhala, Tamil and a transliteration of Sinhala, with macrons (RUPAVAHINI). The leaf was incorporated into NTV's previous symbol and is also being incorporated into trophies held at award shows organized by the corporation, the Ape Gamana logo and the SLRC's news operation. Currently the SLRC operates three channels over two frequencies.

Sri Lanka Rupavahini (TV) Corporation, the State Television stands for the benefit of all Sri Lankans. They do recognize the people's diversity of expectations, values, Interests and needs. They were reached their target groups in Sinhala, Tamil and English languages. Sri Lanka Rupavahini Corporation (SLRC) was created by an Act of Parliament on 23rd January 1982, established on 14th February 1982 and commissioned transmission on 15th February 1982. SLRC aims to provide the best possible programmes to satisfy the needs of its viewers for informative, educational and family oriented entertainment.

The Sri Lanka Rupavahini Corporation, the National Television Network was commissioned on 15th February 1982, expanded its studio and transmission facilities in 1986 and rehabilitated most of the original equipment using digital technology in 1998 under three grant aid projects from the Government of Japan. Its studio complex is situated in Colombo the commercial capital of Sri Lanka. The complex comprises of Master Control Room, four Studios, two Dubbing Studios, Digital Post Production Unit, two Analogue Post Production Units, several editing suites including Non Linear Editing and four Outside Broadcast vehicles.

With commitment and unity, creating timely, meaningful and intuitive programmes rich in knowledge, entertainment and education and disseminating them chiseled with state-of-the-art technology exceeding the expectations of Sri Lankans everywhere. Key Goals Improving the attractiveness, variety and meaningfulness of television programmes through changes to the format of the programme.

Geospatial analysis is an approach to applying statistical analysis and other analytic techniques to data which has a geographical or spatial aspect. Such analysis would typically employ software capable of rendering maps processing spatial data, and applying analytical methods to geographic datasets, including the use of geographic information systems and geomatics. Geospatial analysis, using GIS, was developed for problems in the environmental and life sciences, in particular ecology, geology and epidemiology. It has extended to almost all industries including defense, intelligence, utilities, Natural Resources, social sciences, medicine and Public Safety, disaster risk reduction and management (DRRM), and climate change adaptation (CCA).