

# **Video Streaming Solution for Organization Work Process Streamline**

Name: Yanendra Weerakkody

Index Number: 139186X

Name of the Supervisor: Mr. Saminda Premaratne

Faculty of Information Technology

University of Moratuwa

December 2016

LB/DSN/29/2017

LIBRARY  
UNIVERSITY OF MORATUWA, SRI LANKA  
MORATUWA

# Video Streaming Solution for Organization Work Process Streamline

Name: Yanendra Weerakkody

Index Number: 139186X

Name of the Supervisor: Mr. Saminda Premaratne

Dissertation submitted to the Faculty of Information Technology,  
University of Moratuwa, Sri Lanka for the partial fulfillment of the  
requirements of the Master Degree of Science in  
Information Technology

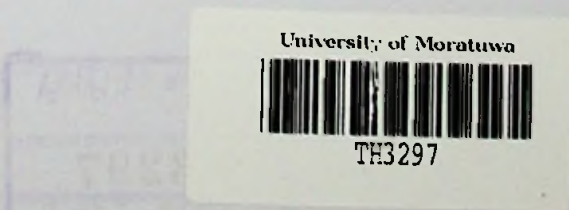
Faculty of Information Technology

University of Moratuwa

December 2016

004"16"  
004 (043)

TH 3297  
+ DVD-ROM



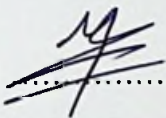
TH 3297

## Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

Name of the student: Yanendra Weerakkody


Index Number: 139186X

Signature of the Student:  .....

Date: 21/12/2016 .....

Supervised by

Name of the Supervisor: Mr. Saminda Pamarathna

Signature of the Supervisor:  .....

Date: 21/12/2016 .....

## **Dedication**

This Dissertation is dedicated to my loving wife and my little son for being part of me  
and encouraging me always being by my side.

And

My sincere gratitude to SriLankan Airlines IT Systems



## Acknowledgements

First I express my heartfelt appreciation and gratitude to my supervisor Mr.Saminda Premaratne for his most valued guidance, commitment and kind support to make this research success.

Special thanks go to SriLankan Airlines IT Network operation (IT NOP) division for the great effort given me to do this research in a successful manner

Also sincere appreciation is extended to all the staff in Aircraft Engineering Division at SriLankan Airlines for their valuable support and encouragement given to me in this endeavor

It's my pleasure to thank you all of family members for the tremendous support giving me throughout the success of research operation.

It is my great pleasure to thank all the other Senior lecturers, Lecturers, Instructors, and staff members who helped us in many ways to make this research. The guidance and support received from all the members who contributed and who are contributing to this project, was vital for the success of the Research. I am grateful for their constant support and help

Then I would like to thank my all the batch mates of the M.Sc in Information Technology batch 7 in faculty of Information Technology for their various help and support. And also other friends of the faculty as well as friends for outside who gave me support and encourage me with their best wishes

## Abstract

Video is the important media for communications and entertainment for many years. Initially video was captured and transmitted in analog form and the receiving end it downloads and watched. The advanced digital integrated circuits and computers can lead to the digitization of video, and the digital video technology enabled a revolution of the compression and communication of video.

Video streaming is a most popular trend to transmit the video as per the requirement. In traditionally video file access method is download and watch it, but it has limitation and lot of barriers. This research mainly focusses on how video streaming effectively use for Aircraft Engineering industry for streamline the work process. The objective of this project is use the video streaming effectively for address the barriers in Aircraft engineering field. The technical staff in Aircraft engineering field have to access lot of video materials for their day to day function, but the traditional video file accessing method have lot of issues and wasting of human time unnecessary when they are working on field. Here it suggests a solution for this issue and saving their time and build up a satisfaction of their work.

The solution builds up with video streaming for access the video type supporting material while engineers are working in the field. This is more usable system for busy environment that work in field operation. Here it used video streaming server, web server, database system and wireless network for implement this project propose system. The database system for store the reference data and media server will use for streaming the video files over the network, in client side user can access the video file from their own mobile device and the connectivity will be maintaining by wireless network on the field.

Using the Mobile App/browser installed in mobile phone this system can be access while working in operation field. It has many more features that serving better experience to user. This is amazing and simple for users that help lot of operation to complete.

# Table of Contents

Declaration .....	i
Dedication .....	ii
Acknowledgements .....	iii
Abstract.....	iv
List of Tables .....	viii
List of Figures.....	ix
Chapter 1 .....	1
Introduction.....	1
1.1 Background and Motivation .....	1
1.2 Aims and Objectives .....	2
1.3 Research Plan .....	4
1.4 Summary.....	5
Chapter 2 .....	6
Review of Other's work.....	6
2.1 Introduction.....	6
2.2 Previous research about the video streaming solution .....	6
2.3 Limitation of earlies studies .....	9
2.4 Summary.....	10
Chapter 3 .....	11
The existing environment how Manuals store.....	11
3.1 Introduction.....	11
3.2 The traditional file sharing system background .....	11
3.3 The current systems for data sharing .....	12
3.4 The existing data management systems and usage .....	12
3.4.1 AirN@v (ADOC N@vigator) data management system by Airbus .....	12
3.4.2 AirNav server application content management.....	14
3.4.3 Digital publication data accessing system .....	16
3.5 The propose system comparison.....	18
3.6 Summary.....	19
Chapter 4 .....	20
The Technology adapted for the Research .....	20
4.1 Introduction.....	20
4.2 Technology that current system use .....	20
4.3 The features available for the propose system .....	20

4.4 The technology adopted with the propose system .....	20
4.4.1 The streaming server technology .....	21
4.4.2 The web server technology .....	22
4.4.3 The encoder technology .....	22
4.4.4 Wireless network connectivity .....	22
4.5 Full functional system for user end .....	22
4.6 Summary.....	23
<b>Chapter 5 .....</b>	<b>24</b>
<b>The correct approach for the Research .....</b>	<b>24</b>
<b>5.1 Introduction .....</b>	<b>24</b>
<b>5.2 The system process identification and technology approach .....</b>	<b>24</b>
<b>5.3 How technology use for develop the desire system .....</b>	<b>24</b>
<b>5.4 Summary.....</b>	<b>26</b>
<b>Chapter 6 .....</b>	<b>27</b>
<b>Analysis and Design .....</b>	<b>27</b>
<b>6.1 Introduction .....</b>	<b>27</b>
<b>6.2 The top level designed of the System .....</b>	<b>27</b>
<b>6.3 The components that use in design architecture .....</b>	<b>28</b>
6.3.1 Downloaded video files .....	28
6.3.2 File storage server .....	28
6.3.3 Video streaming server .....	28
6.3.4 Web hosting server / Database server .....	29
6.3.5 Network components .....	34
6.3.6 Wireless access point.....	34
6.3.7 Mobile devices .....	34
6.3.8 Live Video Camera .....	35
6.3.9 Live Video Encoder.....	35
<b>6.4 The design architecture of the video streaming system .....</b>	<b>36</b>
<b>6.5 Summary.....</b>	<b>36</b>
<b>Chapter 7 .....</b>	<b>37</b>
<b>Implementation of the propose system.....</b>	<b>37</b>
<b>7.1 Introduction.....</b>	<b>37</b>
<b>7.2 Hardware resources that use for the system.....</b>	<b>37</b>
<b>7.3 Software that use for the system .....</b>	<b>38</b>
<b>7.4 Network architecture of the Video streaming solution .....</b>	<b>39</b>
<b>7.5 Implementation and configuration of the component .....</b>	<b>40</b>



7.6 Video On Demand (VOD) streaming implementation .....	41
7.7 Live video streaming implementation .....	42
7.8 Multitask handling of this video streaming .....	42
7.9 Summary.....	43
<b>Chapter 8 .....</b>	<b>44</b>
<b>The Evaluation of the Research work.....</b>	<b>44</b>
8.1 Introduction.....	44
8.2 Achievements of the system objectives.....	44
8.3 Evaluate of beneficial features in the propose system .....	45
8.4 Summary.....	45
<b>Chapter 9 .....</b>	<b>46</b>
<b>Conclusion &amp; Further work.....</b>	<b>46</b>
9.1 Introduction.....	46
9.2 Overall achievements of the project.....	46
9.3 Success of the project objectives .....	47
9.4 Limitation of the system .....	48
9.5 Further work of the system .....	48
9.6 Summary.....	48
<b>Reference .....</b>	<b>49</b>
<b>Appendix A.....</b>	<b>52</b>
<b>Web portal interface and Data base access .....</b>	<b>52</b>
<b>Appendix B.....</b>	<b>54</b>
<b>Source code of the web portal.....</b>	<b>54</b>
<b>Appendix C.....</b>	<b>59</b>
<b>Questionnaire .....</b>	<b>59</b>

# List of Tables

1. Table 2.1 – Limitation of earlies studies.....	08
2. Table 3.1 – Features comparison chart.....	18
3. Table 7.1 – Hardware resource that use for the system.....	37
4. Table 7.2 – Software use for the system.....	38
5. Table 8.1 – Feature tested table.....	44

# List of Figures

1. Figure 3.1 – AirNav Login window.....	13
2. Figure 3.2 – AirNav Publication List.....	14
3. Figure 3.3 – Administration Console.....	14
4. Figure 3.4 – Control button of AirNav system.....	15
5. Figure 3.5 – Digital Publication login window.....	16
6. Figure 3.6 – Digital Publication section category.....	17
7. Figure 4.1 – Wowza streaming server 4 variety of services to any devices.....	20
8. Figure 6.1 - Top level designed of the System.....	26
9. Figure 6.2 - Wowza Streaming Engine 4 admin center.....	28
10. Figure 7.1- Network architecture of the Video steaming solution.....	39
11. Figure 6.3 – Login page.....	29
12. Figure 6.4 – Home page after login.....	30
13. Figure 6.5 – Control panel of the portal.....	30
14. Figure 6.6 – Content management page.....	31
15. Figure 6.7 – View point of the streaming video.....	31
16. Figure 6.8 – Landing gear pdf file access.....	32
17. Figure 7.1- Network architecture of the Video steaming solution.....	39