Video Streaming Solution for Organization Work Process Streamline

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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 Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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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

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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.

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Chapter 1

Introduction

1.1 Background and Motivation

The technology is changing rapidly and new innovation and more featured systems introduce day by day, even more new facilities are available the human expectation never satisfied, that's why the point of new idea generate and new innovation come to this world.

The organizations can scale small level, mid-range level & large level categories. According to the section spreading among different level we can categorize as it is. When an organization spread in enterprise level it become a large organization, when an organization is large and spread among various location there are different sections and different department should have collaboration and team work together, therefore productivity can increase and lot of benefit can achieve to the organization, to collaborate their work they have to maintain common shared resources for the day to day function, due to that they have to access the share resources and connect with different resources simultaneously.

There are lot of engineering sections has introduced to the world, among them Aircraft engineering [1] take very special place and high rank, because of its complexity and high standards follow up process it keeps the highest position. The Airline industry is very closed market and there are only two Aircraft manufactures are considering as giant in the world. They are Airbus Industries [2] and Boeing aircraft manufactures [3] Aircraft engineering always follow-up the standards and recommendation procedure [4], it always keeps the soft document and hard document for future reference. When build up a new aircraft in manufacture plant there are lot of trouble shooting & supporting materials keep with it and the bulky documents, images, video, simulators etc. should be hand over to buyer.

The Airline industry is most critical and always consider the safety of passenger, therefore they have to maintain their fleets with standards level. To maintain these fleets, the Aircraft engineers should have to refer the standards manual and supporting

materials always, therefore there are large number of data stored in the servers and they will access those in time to time. The Airline industry huge data storing and accessing process heavily doing by Aircraft engineering division, they have large number of supporting material data for each and every aircraft, so they have to access those data while working on the field. There is different type of data they have to access, the document file can view and can get a print out, but how about the video material access while working in the field...

This research is based on how overcome this problem and it is going to innovate a solution for that. The area is Aircraft engineering division of our national air transportation carrier of SriLankan Airlines Ltd. When the engineers are working it is observed the difficulties that they are facing on day to day work behaviors.

SriLankan Airlines Ltd [5] is the national air transport carrier in SriLanka, so they already have dedicated Aircraft Engineering division [6] and various type of aircraft will be maintaining on every day. SriLankan Airlines has two huge Hanger [7] area and lot of staff are working on it that attach to different department. It is notice that they are accessing various type of trouble shooting materials while working on their busy time schedule, they have facility to access the pc in hanger and can check the documents files and multimedia files form those pc, but they don't have a facility to access the trouble shooting documents and video files while they are working on the fields. Here try to give a solution for that and it will more useful to maintain easy life while working.

1.2 Aims and Objectives

Aircraft engineering filed is very busy environment and it has very tight schedule for each and every aircraft maintenance within short time period, when an aircraft requires to maintain the qualified engineers they should follow all the maintenance instruction that given by the aircraft manufacture [4], there are huge no of instruction manuals along with the aircraft and it has paper base manual and digital publication base manuals.

- The aircraft manufacture has given a copy of all the paper base manual and that will refer for the guide line of maintenance, in digital base manuals are given as document files, video files, audio files, simulator systems [10].
- These manuals may be varying according to the aircraft model, number and type so it is requiring to maintain large number knowledge base article and video

library for this requirement. According to the number of aircraft fleets this supporting materials and manuals may increase and it became a challenging that the accessing methods.

- It is noticed that the most of the engineers are working of inside of aircraft and they don't have facility to access the pc for each time of their trouble shooting mechanism, it is difficult to go out and access the office pc and come back to operation. They don't have time to spend in front of the pc.
- They are very busy with tight schedule task, that's why they require to access the trouble shooting video guide very quickly while working on their operation.
- The video guide is more effective and efficient rather than use of paper base documents, it is environment friendly and more information can deliver within few time period,
- But the problem is how access the video while working in the middle of the large hanger area. That's the thing notice lot of people have to come and go to hanger control room for access the PC.
- When we consider that time it is very high considerable human man hours are wasting for walking in the hanger. This research is given a solution for minimize this wastage and get the maximum output from Aircraft engineering.
- Another thing notice that the different team have to work in different sections of the aircraft, so when they work they have to access different materials in different time slots.
- So some time it takes some struggle to access the limited number of PC in hanger control room, so always it has to wait some time period for access the information.
- Sometime the already opened document may have closed by others when comeback to access it. Its wasting the time again and again open the same document and finding the last read section.
- The beauty of this propose system is it has a features of video streaming [8], pdf type document access and it can watch live streaming broadcast [9].
- The live streaming is very useful when an event is held in another location and the staff can watch the event in live via their desktop pc or mobile devices while working in the field.

According to this kind of observation the innovate solution require for minimize the wasting of human man hours and get the maximum out comes for increase the productivity of Aircraft maintenances in SriLankan Airlines Engineering section.

1.3 Research Plan

This research is mainly focus on video streaming [8] solution implement for accessing the video file for mobile users, the research is ongoing in Aircraft Engineering division of Airbus hanger in SriLankan Airlines Ltd at Katunayake. The related servers and network equipment will be installed in IT datacenter and wireless network will configure in Airbus hanger area for related to this project.

The server operating systems use as windows server 2012R2 [12] and the Hyper-V [13] feature enable for host server infrastructure, on top of that host server the virtual machine will crate, The Wowza streaming engine 4 [14] is the streaming server application and WAMP server application [15] will use as the web server component for this project. The adobe live media encoder [16] software uses for the encoding of live feed from received camera and it will transmit to the video streaming server. The web browser URL use for access to the video portal and through pc it can access, the mobile devices should connect with the Wi-Fi network and the throughout the mobile web browser can access this video portal.

The digital multimedia storage and streaming server will accommodate the broadcasting method for video file [9]. The video App/browser installed in user device will do access the relevant Audio/Video/Live streaming session through Mobile devices while they are working on large yard/ Hanger without going to in front of PC.

The solution providing way is use the mobile device for access the central data stored location, it is saving time, money and lot of benefits for the engineers while they work on the busy schedule. This project will be showing how to win this barrier with video streaming solution and how implement this solution in real environment.

The demonstration test bed with all functioning showcase as explaining in next chapters. The real environment has built up with small instance in the laptop for the demonstration purpose only.

1.4 Summary

This section contains about the introduction of research project and what is the back ground that involve to do this kind of video streaming research project, and also it has mention the aims and objectives what it is focusing for the development and given the solution for the issues. The situation briefly explaining and the solution path just introduced. In the next chapter contain of the earliest studies and what are the limitation of those.

Chapter 2

Review of Other's work

2.1 Introduction

The chapter 1 consist of the back ground and motivation for doing this research and also the aim and objectives that doing this kind of research. This section going to describe what are the purpose of this study is to identify previous researches done about the video streaming solution and what are the benefit that achieved from them. The propose system implement with the new features that improved solution and designing.

2.2 Previous research about the video streaming solution

There are lot of researches have been done from different perspective use like this video streaming solution. The outcomes and objectives were slightly differing to get better result of them.

One of the research is the Evolution of Video Streaming and Digital Content Delivery [17] by Mr. Darrell M. West. This research basically targets the connectivity and development of the video streaming and digital content delivery systems. It focusing what are the effort for people, business and industries to get help for video streaming solution [8]. The main concern of this research is the video streaming now moving beyond the entertainment area into education and business industries for the world, now it majority use for provide the valuable information for learning part and industry work process stream line with the production output. The mobile accessing and anywhere any time accessing method is vital for industry experience.

This research has collected the data that from telecommunication ISP level how video streaming infrastructure configuration and how users are use the Wi-Fi network. The sample group selected and study their usage of the video streaming solution that entertainment purpose and the educational purpose, and also get the information about how industry level adoption for this technology.

There are key finding on this research that new world trend is going to use video streaming of the biggest growth area in IT communication. There is an interest from

consumers in watching movies on-demand and viewing video content on every device that as television, video players, desktops, laptops, tablets, and smartphones. The user may use the any device anywhere any time, but it should be a compatibility for every access method. The main challenge for the video solution technology implementation is network bandwidth limitation and cost for network infrastructure reediness for all users. There are various services can offer through data centers and cloud computing [18], those kind of industry firms will categorize as Software Defined Networking(SDN) [19] and Network Function Virtualization Infrastructure(NFVI) [20]

There is another research work also conducted for Video Streaming Over Wireless Network [21] by Xiaoqing Zhu and Bernd Girod. This research contains of the overview of the technical challenges of video streaming transmit over wireless networks. It has technically described the situation of how data can be transmit over the various type of wireless transmission network [22]. The research paper is indicating that the wireless streaming issues of increasing complexity, ranging from the simple situation of delivering a single video stream over a single wireless link [23] ,The sharing a wireless multi-access channel with multiple video streams [24] and also the general case of multiple streams sharing a mesh network [25].

The research used the high-definition (HD) video streaming over 802.11a networks as a concrete example. As the wireless links are warrying time to time the video transmission rate also needs to be adapted accordingly. The data rate of the bit batten changing occurrences will monitor and prepare a report for each transmission how can it go over the Wi-Fi network. The data packet simulator generates the packet for the transmission of a single video stream over an otherwise idle 802.11a wireless link [26], with a nominal link speed of 54 Mbps and a much slower transmission rate of 6 Mbps for MAC-layer headers and control packets.

The key area of this study is streaming over a single wireless link method measurements take as the packet transmission delays in the MAC layer are used to select the optimal bit rate for video, and the effect of enforced by a transcoder. The effective maximal throughput is about the 40Mbps for the HD video sequence. The encoding is H.264/AVC reference code. The UDP protocol is use for effective video streaming connectivity and maximum utilization of the link capacity. The streaming over single-hop networks it considers the situation where multiple video streams of time-share the

same network over single-hop wireless network connections and the different link speeds. Channel time allocation of the streams needs to maximize overall received video quality. The optimization can be performed by the joint central controller when all the video streams originate from the same wireless node. This method has two scenarios one is Centralized channel time allocation [27] and other is Distributed channel time allocation. Even in the centralized control, optimal channel time allocation with multiple streams is a non-trivial task because of the wireless transmission experiencing different condition on different transmission speed, due to centralize time allocation some portion of video streaming over wireless method has some packet loss during transmission. The distributed channel allocation has more challenging mechanism and, it can be observed that the allocated channel rate fulfills by the distributed scheme of the centralized solution, leading to similar HD video qualities. the wireless link speed, bandwidth of the transmission link approached the overall video quality and video streams improvements, while the quality is maintaining. The streaming over mesh networks is facing additional challenging that multi hops trying to transmit on same time, therefore it going to over utilize within few time periods. To flexibility offered for the network that implement the design of Joint optimization of power allocation at the physical layer, link scheduling at the MAC layer, network layer flow assignment and transport layer congestion control has been implemented.

There is a little bit similar research has conducted as Aircraft Cabin Wireless System for Games and Video Entertainment [28] by team of authors Dwayne Folden, Trent Jackson, Michael Panique, Rianon Tiensvold, Richard S. Wolff, Todd Howard, Eric Julian, Levi Junkert, David Lopez, Michael J. Oudshoorn

This research is focusing to feasibility of implementing a wireless network to functioning of video streaming to Aircraft cabin passengers. It can reduce cabin wiring and reconfiguration costs for engineering and to provide passengers with a high-quality entertainment experience, with personalized video and audio to their seats. The design constraints imposed by the aircraft cabin environment and the bandwidth demands of streaming video for wireless network. According to this research is focusing to new aircraft that will come in the future, The cabin area should define to highly comfortable to passenger hence this research is focusing the key area of how develop the system with connect with the wiles technology and video streaming should do over that small wireless network on the space.

This research was conducted in the Boeing Cabin System by Montana State University, Bozeman. The researches have design the hardware and software requirement with the standard of the Boeing aircraft manufactures. The equipment was installed in the cabin area and check video streaming functionality of each passenger seat installed flat display. The client machine access the wireless network and the back end monitoring system established for get the result of accessing method of client devices. The measurements will capture and analyze by the monitoring software. The video streaming use in video on demand state and it will use for provide the video stream as per passenger request

The monitoring results show that for a multiplayer game, the typical client-generated traffic is in the range of 10 to 20kb/s, and a server generates about 15 to 20kb/s per client. The video stream is continuously received for the client end and there is no buffer for user end devices. The centralized server architecture is designed to have most of the processing power in a central streaming server location, with only minimal processing and storage functionality at the passenger devices. The Windows and Linux operating systems use for the backend and all the streaming functioning work acceptable level in both OS. The video streaming over the wireless network is use the load balancing technic before produce the client request to streaming server, due to that server performance and capacity load balance can be offer on keeping the client side performance.

2.3 Limitation of earlies studies

Limitation	Study
Limitation of the wireless data transfer	[22]
Less feedback from client side	[21]
Technology adopt for air craft engineering field very less	[28]
New feature demonstration very limited	[27]

Table 2.1 – Limitation of earlies studies

2.4 Summary

This chapter included the research have been done from previous studies of what they have done and what they have find from their research. When consider above earlies studies there is no directly similar research for this propose section. The two researches have done for the monitoring and analyzing of the wireless network video streaming performance. The third research slightly little bit similar to this research that video streaming to aircraft cabin entertainment enhancements, but this research is going to establish a video streaming solution to Aircraft Engineering division for work process stream line.

This chapter included the literature review and the importance of earlies studies and identified drawbacks of those studies. Next chapter will describe the technology adapted for the analysis.

Chapter 3

The existing environment how Manuals store

3.1 Introduction

The previous chapter describe the literature review of previous studies done by other researches. It mentioning the important of the video streaming solution for apply in the world scenarios. The purpose of this section is study the existing environment and what are the features available with those and why this research is most important rather than the existing systems.

3.2 The traditional file sharing system background

In large organization different sections has different tasks so their work related supporting materials are containing in huge amount of files and it should be accessible to everyone, now a day lot of materials are paper base and the digital base supporting materials also available. The paper base document can store in the cupboard and any one can access it without using the high tech component but how about digital base data accessing method? so most of the organization use file server for store the digital data. The file server should have high end processing capability and it should serve the services for large no of users and it should have store capability to huge no of various files, but most of the time it uses for store the document files. The documents can easily store and manage with traditional most famous way is get the print out and keep it in the relevant box file and keep it in the cupboard but however the paper base document store is out of dated, the digital library system use for store the digital files in central file location and access from user end from specific software. It generally calls as Document Management System and the user end it use for access the saved document through digital readers.

The central file store system most suitable for document files but how about the access of video files, Webinars session, search trouble shooting video guide etc... these days' video tutorials, video session, simulations [10] video clips are very famous materials than paper base documents. The video lessons are easy to understand and friendly usage with user level. Therefore, it is more populate and future trend is increasing the access

of video guide from various supporting level. However, the trend variation is going on there should be a method for accessing the video file without any issues with the user experience. The video files normally have high data capacity, therefore the user end it should handle with extra high tech component usage, otherwise it become headache for the user.

3.3 The current systems for data sharing

Currently there are two type of data management systems are using in SriLankan Airlines, those have limited and basic functionality. They are hosted in data center servers and it can access via client end software and web base accessing method from user end. They mainly focusing on document files sharing and accessing through the pc level. There is no feature for mobile users accessing the systems. The systems developed by the Airbus industries [2] and some parts were developed and integrated by IT in-house development team, due to limitation of the current system there are some user requirement cannot be achieved and hence user satisfaction rate is in low level. However, the any limitation on this system the aircraft maintenance technical staff require to access this system and get printout in some important area therefore getting printout also added to the extra cost for the department and it also negatively effect to the company finance. In some situation windows file sharing method also used and due to that scenario some additional requirement also fulfills with same system.

3.4 The existing data management systems and usage

The current systems use for day to day functions and it is more vital system for engineering, before fix the issue in aircraft the technical person should have full awareness about his duties and how it doing. To gain knowledge for that this system refer and capture the required information.

3.4.1 AirN@v (ADOC N@vigator) data management system by Airbus

AirN@v (ADOC N@vigator) [29] is a web base and client software base data accessing system introduce by Airbus industry. It has introduced long time ago and now a day also this system very heavily uses in Aircraft Engineering Division. This is also design for the document base data assessing library system. This server hosted in data center and it should up and running 24Hr of the day. When a new aircraft introduces to the fleet collection there are lot of relevant materials should upload to the systems. The AirNav server version installed on Windows server 2008R platform and it can manage

with administration staff who relevant to manage and upload the content. Data in the AirNav server saved in the folder structure as reference by the administrators and users. The user is the end client and they have to refer those content before start his work on aircraft. There should be a pc and it should connect with the SriLankan active directory domain for access this system, the authenticated user only can access the system and authenticate is handle by the Domain controller of domain.

This system most useful when other airline fleet information store in the system. When other airline come to SriLanka their ground handling [30] and engineering task done by the SriLankan Airlines Engineering division, so their fight related information store in this system, due to that this server content is very large and simultaneously lot of users were accessing this system from different location. Therefore, this server is very critical for aircraft engineering and the server administrators will work 24hr to maintain the server health.

This system can handle the .pdf/ .doc file format documents and those are stored in the central server location, the users are log in to this system from client pc and access those files on file reading software plugin. This has print option to get print out in relevant page or section, in most of the time lot of persons get print out for their relevant task hence lot of papers are used in this section and it is a major cost in the department finance information sheet.

Advantage:

1. User friendly interface for end users
2. Easy to content management administration
3. Optimize search field
4. Lot of data can access from single window
5. User base authentication enabled
6. Different aircraft information saved in one place
7. Simultaneous user access allowed

Drawback:

1. Only can access the document files
2. Video/Audio file not supported
3. Pc base environment only

4. Mobile streaming not available
5. Getting print out more cost to the department
6. Application server administration little bit complex
7. Huge load should mange by one server, no load balancing mechanism
8. No cache hold mechanism, always access the original file for reading
9. Server administration is very critical
10. Difficult to access in very rush area

3.4.2 AirNav server application content management

The AirNav server has the different application installed on windows server 2008R2 platform, hence administration functions can manage by the graphical user interface.

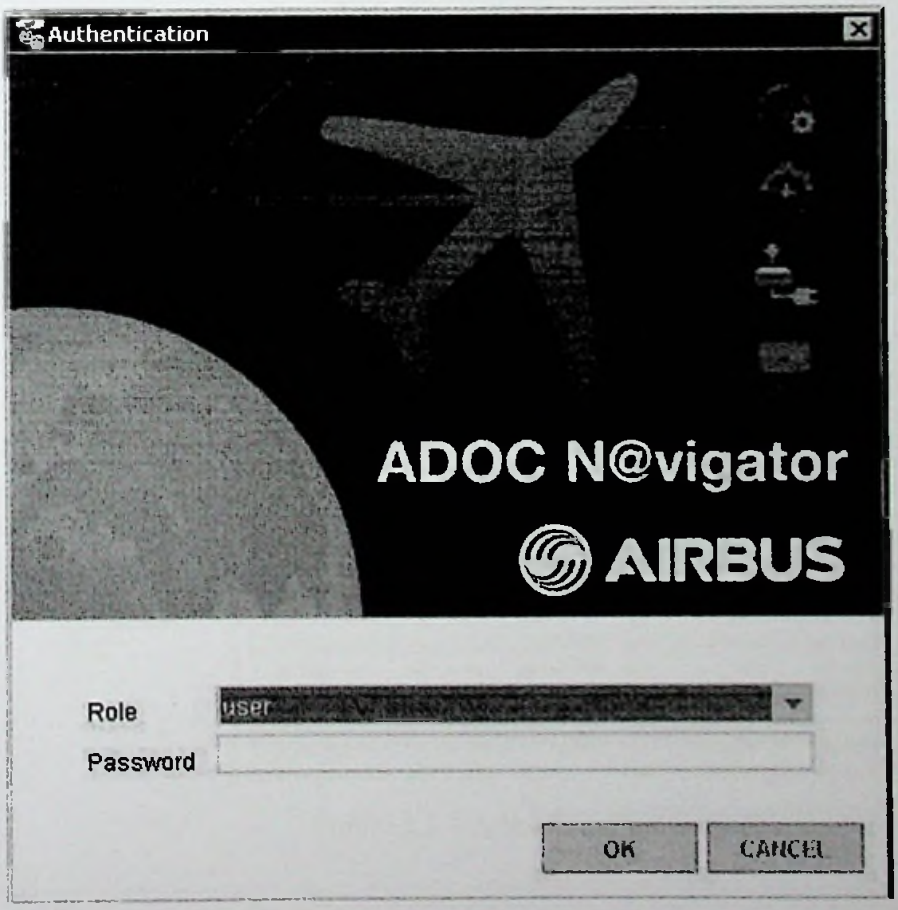

Figure 3.1 – AirNav Login window

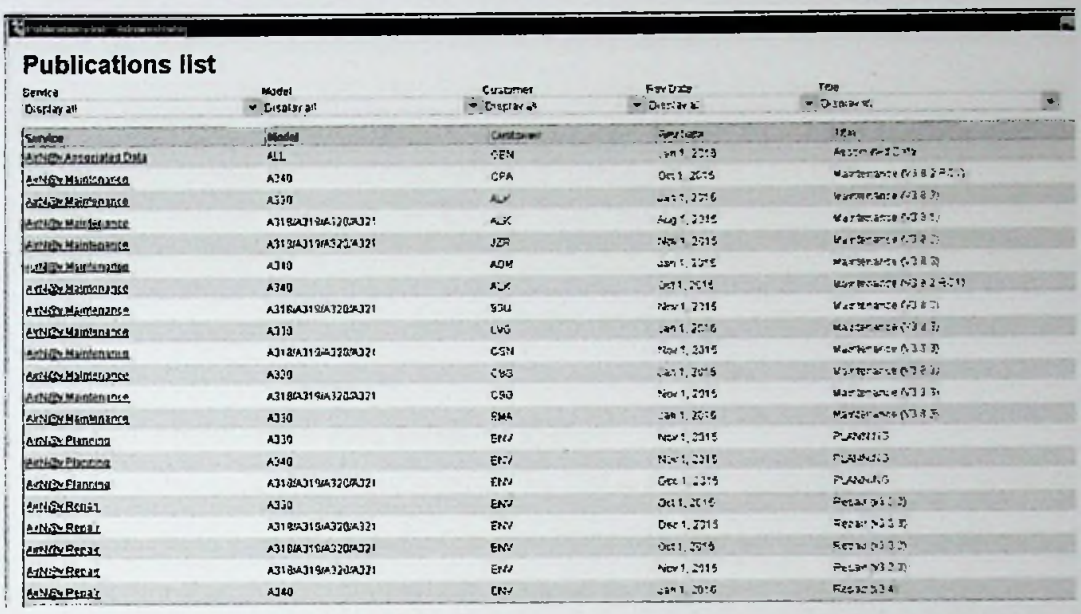

Figure 3.2 – AirNav Publication List

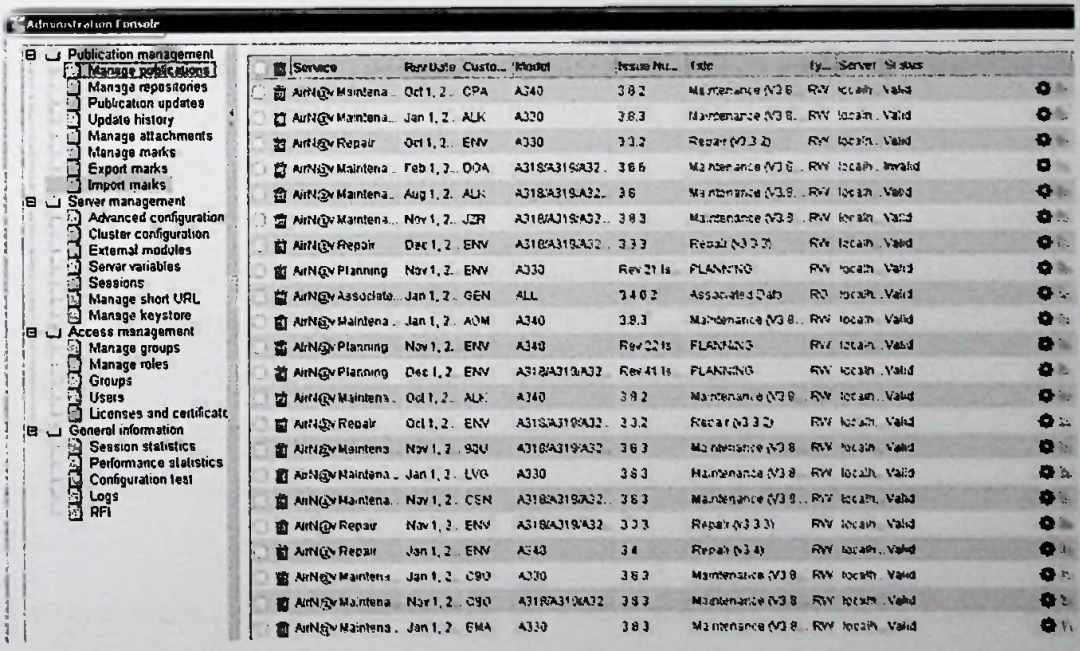

Figure 3.3 – Administration Console

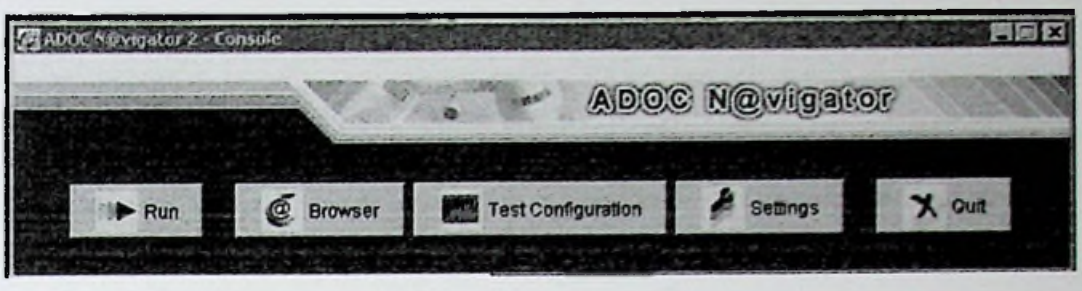

Figure 3.4 – Control button of AirNav system

3.4.3 Digital publication data accessing system

This is an in house development software by SriLankan IT System and it also working on web base environment. This system also hosted in data center and dedicated server infrastructure use for facilitating the services for the users. There are large no of manuals, letters, broachers, diagrams, plans etc.. stored in this system and data in the server will be accessing through the common interface from PC web browser. This is very popular system among staff and all the document base criteria stored in here. This system uses for store the aircraft related data belong to SriLankan Airlines Ltd, currently there are 22 fleets available for SriLankan Airline and all the engineering related manuals and diagram store in this system, when staff require to maintain some engineering task, the staff have to study these document before start their work. Therefore this system is mostly use in Engineering hanger area. When the new aircraft added to the existing fleet there are lot of manuals deliver along with it, so the content upload administrator should download all of those from Airbus world secure web site and those should upload to the Digital publication document management system, after that the end users can access those relevant file that related to their work load. The administrator will update the file system and client side it will accessing through web client.

This system can work on document base file system and multimedia files, it can deliver the require data within few processing periods. There are some limitation and more useful functionalities also available in this system.

Advantages:

1. Web base client access method
2. User friendly interface
3. Document base and multimedia base file can be access

4. Data categorize structure
5. Content upload and central administration possible
6. AD authentication enabled

Draw backs

1. PC base environment only
2. Mobile accessing not support
3. Additional file server requires to store the data files
4. No additional resources availability and no recommended selection
5. When access the video file it may require to waiting for finish the download before access the file
6. The considerable time wasting occur when access the multimedia file
7. If data corrupted while downloading it require to restart from beginning
8. No search option

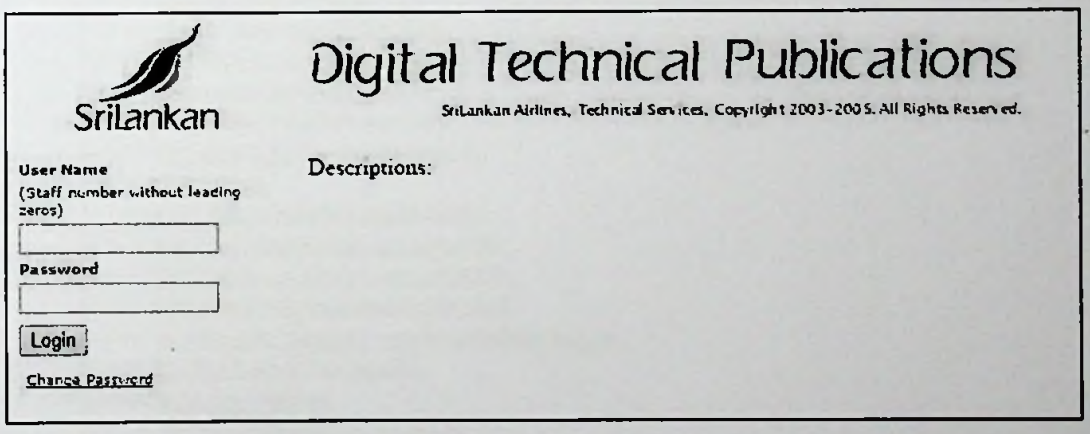

Figure 3.5 – Digital Publication login window

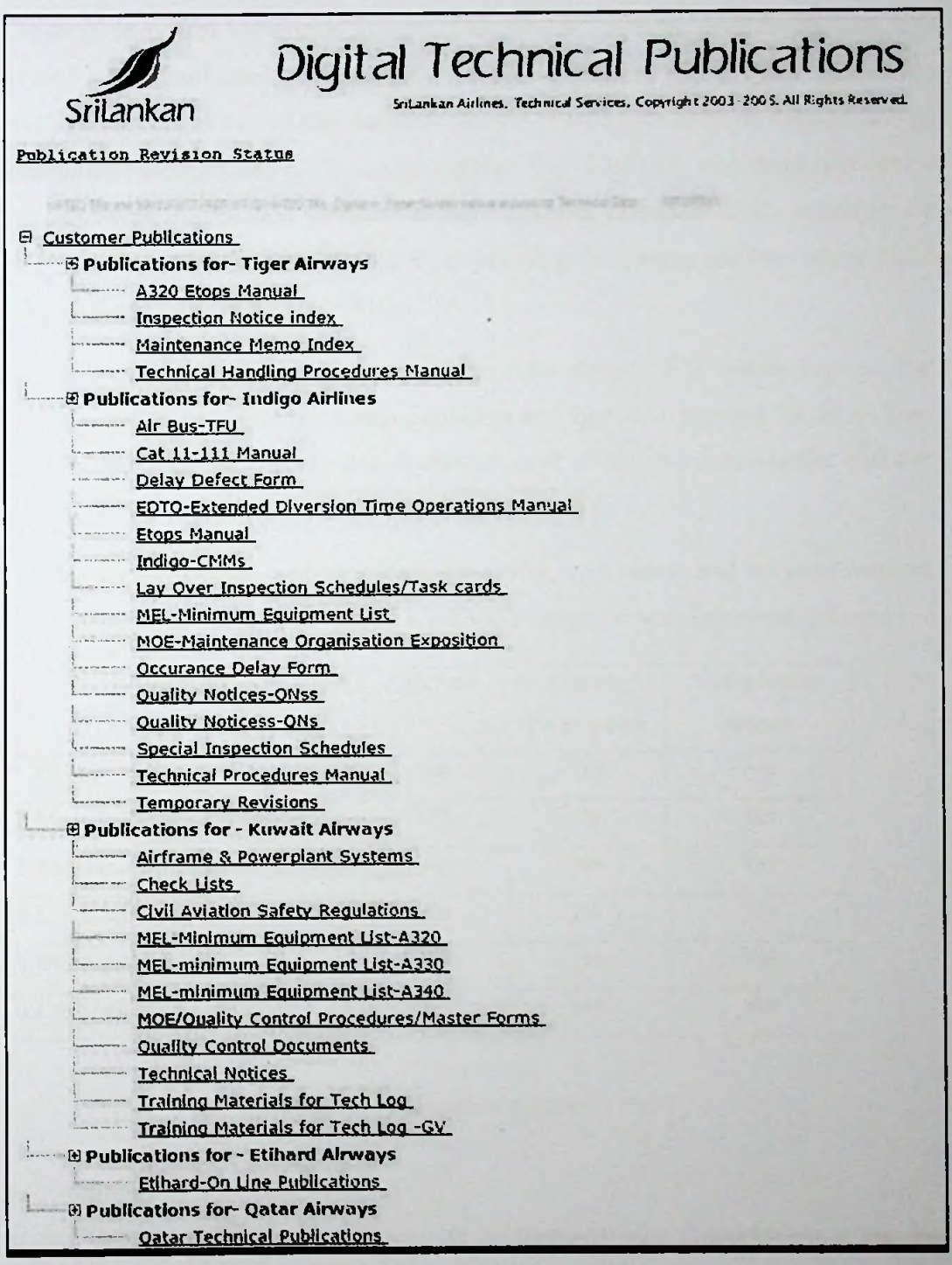

Figure 3.6 – Digital Publication section category

3.5 The propose system comparison

The propose system development for overcome the lot of issues in existing setup. There are several function limitations available in current existing systems so there is a requirement for address the current issues and give a proper solution for that.

The propose system has several advanced integrations with the multimedia files, it is beyond to the traditional multimedia file accessing method. The propose system has multitasking capability and simultaneous session handling features, so it has improved technology used for video file accessing method. The video file come to the user device through streaming solution therefore if there any data corrupted while watching the video it can simply start from middle, no require to go beginning and start whole video download and wait for the lost section.

This propose system mainly focusing for the video streaming to mobile devices, that facility does not have in other existing solution and they have planned for the pc base environment only, but due to this limitation most of the end users suffer and this solution will give them a best satisfaction for their work.

This system configured with the streaming server, web server and wireless network component, this can use in enterprise level and configured with minimum resources.

Features	AirNav	Digital Publication	The propose system
1.PC base access	Yes	Yes	Yes
2.Mobile device access	NO	No	Yes
3.Streaming feature	No	No	Yes
4.Load balancing	No	No	Yes
5.Document access	Yes	Yes	Yes
6.Central administration	Yes	Yes	Yes

Table3.1 – Features comparison chart

3.6 Summary

In this chapter explain about the current system and how it works, what are the limitation that they have and how the features work. The propose system showing how overcome the barrier in current system and what are the new features available in it. The features comparison table simply showing how differ the existing one and the propose system. The next chapter will introduce the technology adopted for research.

Chapter 4

The Technology adapted for the Research

4.1 Introduction

The last chapter consist with review of other systems and comparisons with propose system. This section describe the technologies identified for conduct the research, how to develop the process, which content should be negotiating with current system.

4.2 Technology that current system use

The current systems mostly use web base approach and it can deliver the document base files, because they use that file base technology, it's a method when develop these systems on few years ago. The mainly focusing on web base development of system and it can easily access via any web browser that installed in the client PC. There are some limitation and basic functionalities available on those systems. However, this is very easy to access and no expert knowledge to use for the accessing method. Due to limitation of features the employees are requesting more function like video file access capability over the mobile devices, because they are working on the field.

4.3 The features available for the propose system

The propose system mainly focusing for the video file streaming to mobile devices over the Wi-Fi network. The users are mostly preferring to access the video file rather than the document files.

There is nice feature also include with this system, the live event streaming also intergraded with here. It is most important to SriLankan Airlines because lot of event are organizing out of the headquarters and the staff can watch it as live while they are working in the field.

4.4 The technology adopted with the propose system

The technology behind this scene is the video streaming over the network. The video file stored in the central location and as per the end user's request this file will streaming to user device. The website has created for this video display and accessing mechanism. The user should browse the website and click on the video.

When search the relevant video in on perm server it gives the recommended video from internet, and other feature of the user review calculate and most relevant video will show as top level. The user accessing video history also available in this portal. Those are the new feature that existing environment not available.

4.4.1 The streaming server technology

The streaming server here used the Wowza streaming engine 4 application server [14], it is a full capability streaming server application that can be used in commercial and enterprise level. This server has lot of features of any media to any device anywhere, simplified, flexibility and control, engaging view experiences, high performance and scalability, multiple levels of content security, Cost-Effective Scalability, Efficient Load Balancing, Video on Demand Scalability, Live Streaming Scalability,

Even though this server works as full scale facility here it used VOD (Video On Demand) and Live (Live Video Streaming) features only.

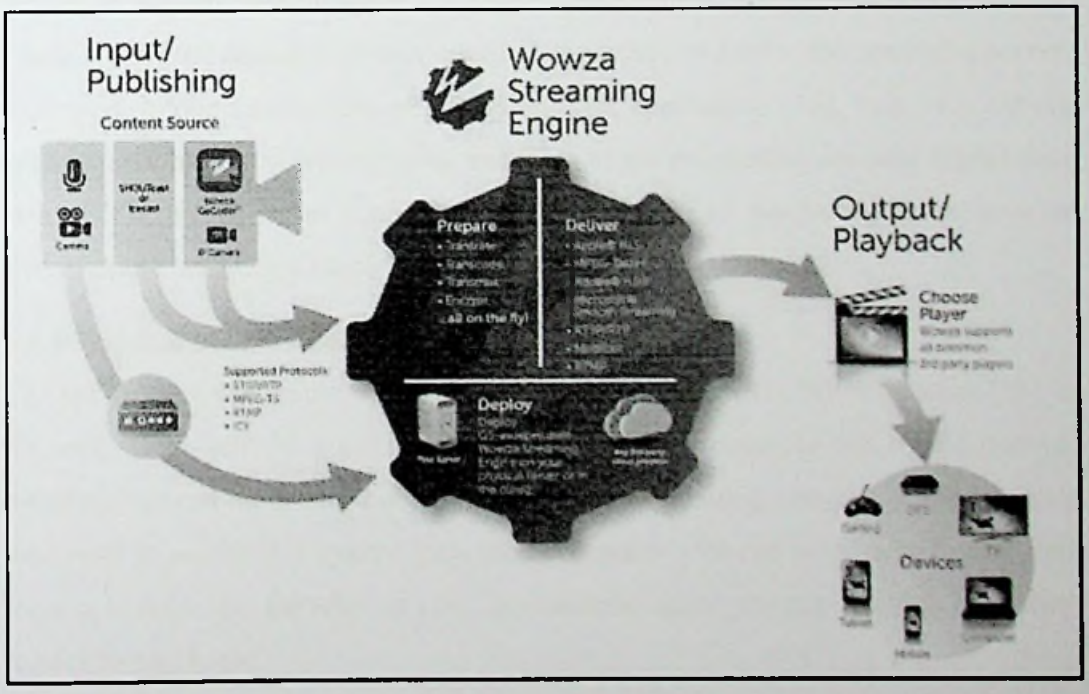

Figure 4.1 – Wowza streaming server 4 variety of services to any devices

The VOD feature is use for the video file streaming to web server to end user devices. When user request the video file through website the streaming session will initiate with the web browser and the streaming server, after negotiation of the device specification the streaming server will serve the video bit stream as bunch of burst to the web player. In simultaneously if some user requests the same video file from another device, that

also serve as the different streaming and that will not interrupt the previous streaming. When user want to stop, pause, fast forward, rewind, starch, skip of the video stream that also available as the feature in control of the web player. The main success of this technology is the user end specification identifies and serve as it is.

4.4.2 The web server technology

The web server here used WAMP server 2 application [15], it is a light weight and but full functional integrated system. It has configured as the web site hosting and Data base build up with the key words. The user access this hosted website using URL and redirect to the website, the search function intergraded with relevant video play back and it can watch the user. The website work as the interface that can serve the service to streaming server and the user devices. The website has created with the responsive play back window type, hence according to the device display size the window will change and it can watch without any difficulties.

4.4.3 The encoder technology

There are several encoders we can use for deliver the live feed to the streaming server, here used Adobe Live media encoder/Wire cast application [16]. It is very simple encoder and the live video capturing encoding to the deliverable encoded digital data stream. The media server connects with this system and via the wired network or wireless network these data can be transmitted.

4.4.4 Wireless network connectivity

The end devices will be connected with the propose system via Wi-Fi network [26] in the area. There will be a different SSID [31] should create for this traffic deliver. therefore, we can minimize the interference with the existing network segment. Once user want to access this system they should connect with the given SSID name and login to it. After that the relevant URL can load and search the relevant video that they require to play back.

4.5 Full functional system for user end

When these technologies use and implement the system with require resources the system is ready to serve it functionality. The website hosted in the web server and using the URL user can access the website, after that user can search the relevant file and click on the thumbnail show in the video play back, then the streaming server serve the video and in mean time the recommended video from the internet will be given as for

the additional resources. That is the beauty of this propose system the Aircraft engineer not bind with the available resources in the on perm server, it will discover the similar keyword in the internet (you tube) and showing what are the recommend video in other domain. It is more vital feature for aircraft technical staff because they always touch with the latest technologies. That available in the world. In this system the person's mind will widely spreading what are new in the world.

The new system more features available than old one. Therefore, it has overcome the user difficulties that related to video access while working. It is a video streaming solution and also better value added service also given to the user.

4.6 Summary

In this section discussed about the technology adopted usage of the propose system, there are value added service also given to the end users that regardless of the search video the recommended video also provide from the internet, it is a best feature in this system with given the solution to mobile video accessing. The next section will discuss about the way of approach for this research.

Chapter 5

The correct approach for the Research

5.1 Introduction

The previous chapter introduce about what are the technologies that used for this research. In this section going to discuss how to approach the describe technologies and methods for succeed the research. The system establishment requirement and the addressing the suitable technologies for this.

5.2 The system process identification and technology approach

The propose system address the issues that most of the filed engineering staff faced. It is a green light to support for their day to day functions. When it finds the research area to the MSc project it could see this burning problem that most of the aircraft engineering staff suffered. Then studied their problem and got the idea about how current system work. It could see there are two systems available and both of them designed as the work from PC base environment only. There are limitations on those systems and users are facing difficulties while working on it.

The propose system based on video streaming technology [8] and mainly focusing on video on demand streaming to mobile devices on field engineering staff. The existing web base data management system does not publish to the Wi-Fi network hence it could not access through mobile. The propose system fully responsive to mobile device display and it can view without painful from user end. The mobile device there is no restriction to access this system and only way is connecting with the company Wi-Fi network SSID [31] for receive the video streaming.

5.3 How technology use for develop the desire system

Here used web technologies for given a solution to users. The web base technology can deliver may features and it is hazard free when accessing from user end. The mainly focus on feature is responsive web site to any devices, hence everyone can access it as simply.

In this propose system work as the hazel free for system administrators and end users. It mainly focusing to web base access users and mobile phone access users. The system basically configures with file server, streaming server, web server, live encoder and Wi-Fi network access point. In enterprise level these component should establish on separately but in this test and demonstration environment these are integrated in the laptop and it act as the simulation of real situation.

The existing systems also working with the web base technology, but they have disadvantage of the video file directly access from file server, In this propose system also can access through web technologies, here used website is act as the interface for the user and the system accessing. That web site is handle the major part as video portal. It has many features that not available in the current system. The system work as the online guide for access the video in on perm servers and internet published resources.

When the user log in to the system firstly he can see what are the videos that he watched in last session. Then given the key word to the search area, the very first result will give from the local server, it showing on hot video section, after that the recommended video will load from the internet that most appropriate to the search key word. This system very special features available because of it has the integration of the relevant document also for the same video. Hence it is not required to use different system for video access and another system for document readers. The other benefit of this system is it is not just limit the criteria that listed in on perm servers, It is little bit intelligent and search from the internet and give a similar word result for further references.

That's why this propose system is more essential and effectively used for the field area. The features are integrated with the one system and no need to use separate system for each process. All in one functions are available on this system and it is easy for use to the user also. The video player developed as the most responsive player method and hence any device it can do on the play back and accessing the video. That is a major advantage for this web technologies.

This system integrated with the live streaming component which does not have this feature in existing system. In SriLankan environment the live streaming currently doing from another system and it also not compatible with the mobile devices and working with windows media player only, hence it has codec issue in lot of PCs and user can not watch the event as expected level. In this propose system it integrated with latest

live streaming solution and all the staff can watch the live video without any pre configuration of the device. It has the feature of several live streaming channels can handle simultaneously, so different department share their live event and present to their specific audience.

5.4 Summary

Here described about the technology adapt for the research, due to new technology there are several features can be introduced and could be give the solution for the existing system limitation. The video streaming technology not more ever use in the existing systems and due to that users are facing lot of difficulties. Using the live streaming could address the user's expectation fulfil and keep the users in happy mode in always. Due to that new technology adoption it can solve the problem that define in earlier. The next section will describe how analysis and design of the propose system in enterprise level environment.

Chapter 6

Analysis and Design

6.1 Introduction

The previous chapter described the technology that can be approached for the propos research and system, It describe how overcome the difficulties and limitation in existing environment. The propose system adapt the new technology and give the proper solution for field users in aircraft engineering. This chapter focus on analysis and design of the new system, this will showing how design the enterprise level architecture and how it should place the component.

6.2 The top level designed of the System

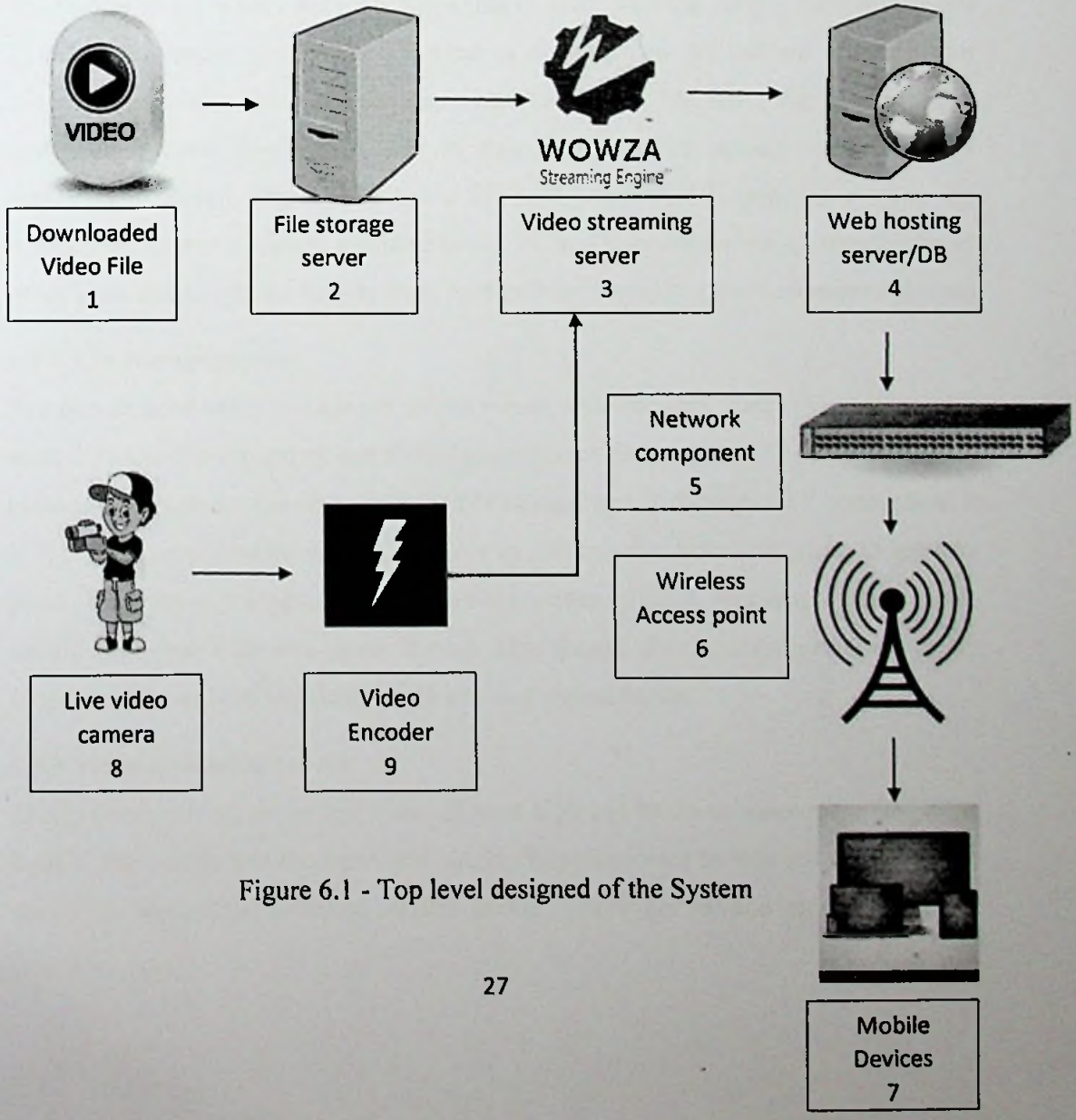

Figure 6.1 - Top level designed of the System

This is a top level system design diagram for live and on demand video streaming over the network. This system design for the enterprise level solution and it can be change according to the usage of the client end connectivity and no of devices that connect with the streaming server.

6.3 The components that use in design architecture

There are several servers / applications and network devices use for this system build up, each and every component functionality is different and it should configure with the proper way to get the maximum output form the user end.

6.3.1 Downloaded video files

When new aircraft purchased from Airbus industries lot of trouble shooting video files received with many DVD disks and it included lot of video files (.mp4 video file) related to that aircraft model, but some time there are more video files can be downloaded from Airbus World website. It should have a member account for access this feature and it is very secure account that connect with the Airbus industries video libraries. SriLankan airline has that kind of account and the content administrator should operate that for download the video/Document file from the internet. The downloaded video file firstly save in this server before upload to the content management server. This can be use a PC with windows 10 operating system, the standard performance should available to this PC and it should have high speed internet connection and download facility from Airbus World website (www.airbusworld.com)

6.3.2 File storage server

The downloaded video file upload to this server with category wise. This will use for store the video file separately and should maintain the file structure. The files uploading mechanism from downloaded server to file storage server through FTP connection, it is more secure and more reliable services to file transfer from one place to another place. This server configured with Windows server 2012R2 operating system and it should have enable the File server feature. This should have standard performance for access the file without any delay. This can be a virtual server

6.3.3 Video streaming server

This is a very critical server and it should have high end hardware resources. This is the heart of the system and the input and output channel control by this server. The video streaming application installed in this server. There are several streaming server

applications available in the world, but here it used Wowza streaming Engine 4 application software [14] for this project. There are several reason behind why chose this Wowza streaming engine 4 for this project. Some reasons are mention below

The functions of Wowza media server

1. Any Media to Any Device streaming solution
2. Flexibility and Control from GUI environment
3. Engaging View Experiences
4. High Performance and Scalability
5. Multiple Levels of Content Security
6. The evaluation level most feature can use for limited time period

The GUI admin center available for this and most of the features can centrally manage

The screen shot of Wowza Streaming Engine 4 admin center

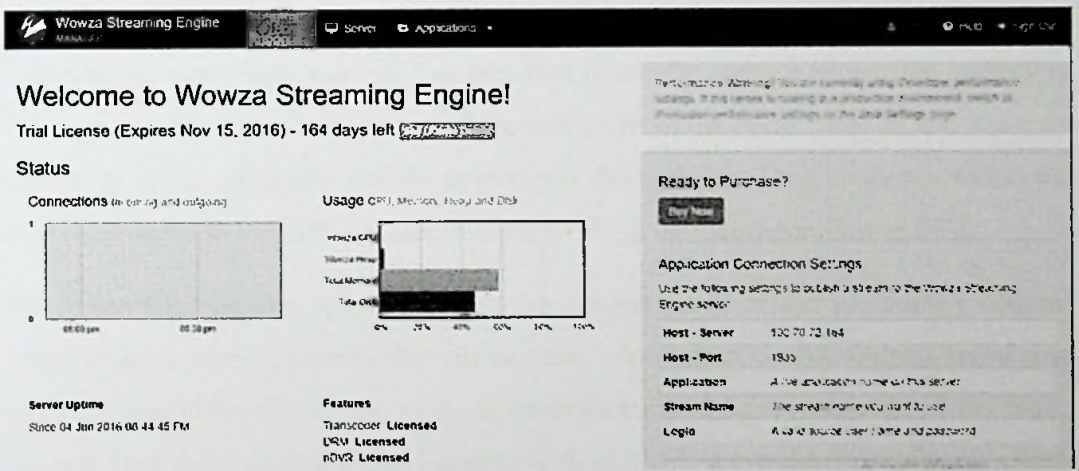

Figure 6.2 - Wowza Streaming Engine 4 admin center

6.3.4 Web hosting server / Database server

This server handles the major part of end user communication. It is the major point that keep the communication between backend infrastructure and the end users. This is the server that hosted the web site of video streaming portal available [15]. The client always get connect with this hosted website, there is an URL publish for this website access, using that url end devices can access this hosted website without any cost when user is in office area Wi-Fi connectivity.

The video portal is the main bridge that created backend servers and the end devices that using in user level. There are different kind of user skills are available in the environment, so that is a challenge to develop the web site that can access and user friendly to the everyone in the environment. This website delivering the utmost process that everyone. This web site consists with an embedded web player and from client side when this page is loading the embedded web player use for video play back.

The website mainly divided on two parts as hot videos and recommended videos. When the user types the keyword in search area the verify firstly it will search on local video portal database and return the available video in local streaming server, it will show on hot video section. The another function of this system the keyword search on the internet and it will return the most recommended video for the recommended video section and other related video also. This is the most valuable feature in this system therefore the user has lot of education resources to verify his knowledge about up to date latest technologies.

This website has a very use full function that it has the component of live streaming video playback, the live event remotely broadcast from the event location and it can be streaming to the end users' mobile devices via this website. Then users can watch the event anywhere in the office location while working on their operation in field.

The video files will be upload through the control panel of the website by content administrator, when administrator fill out the information on file upload panel and submit it, the video file upload to the content location and the meta data of the video file will save in the data base that installed with WAMP. When the user going to search video by keyword the request firstly come to this DB and according given the output.

Screen shots of the video portal website

Figure 6.3 – Login page

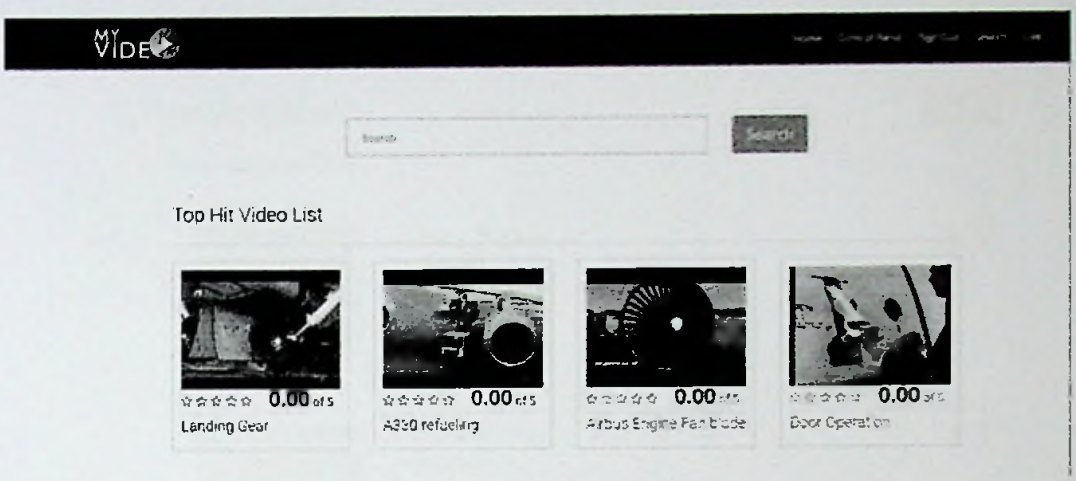

Figure 6.4 – Home page after login

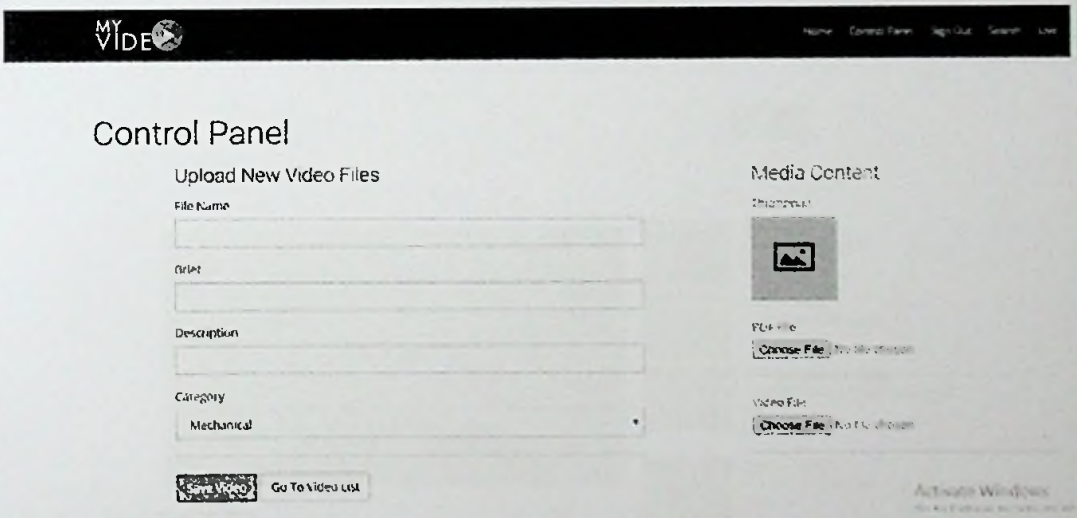

Figure 6.5 – Control panel of the portal

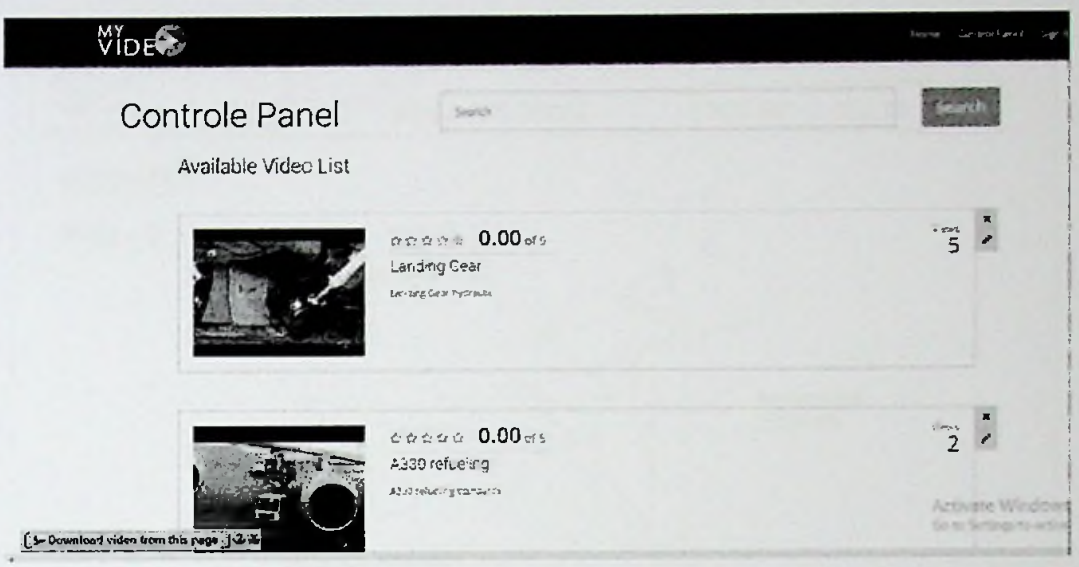

Figure 6.6 – Content management page

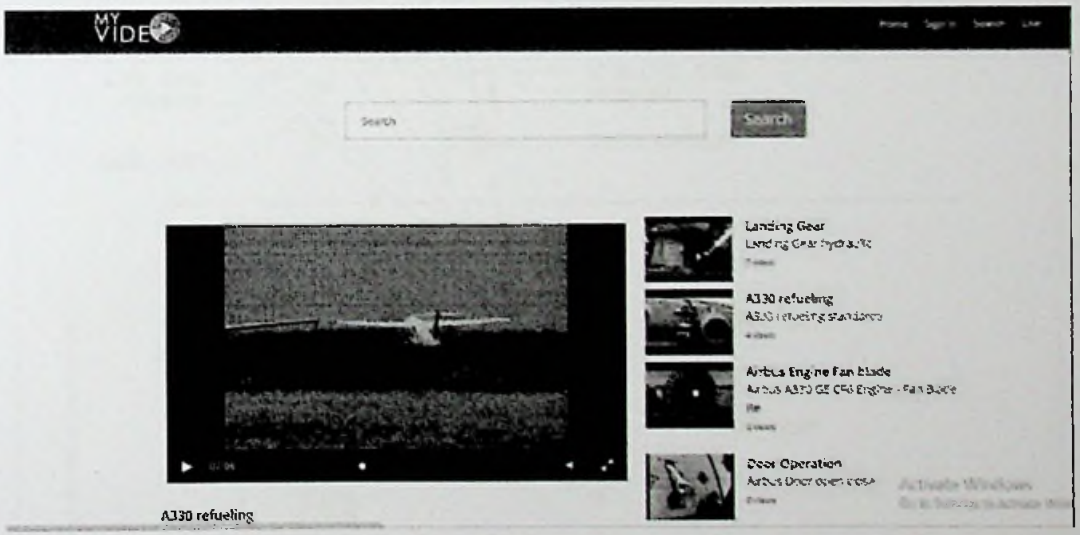

Figure 6.7 – View point of the streaming video

SCHEMATICS

MAIN L/G

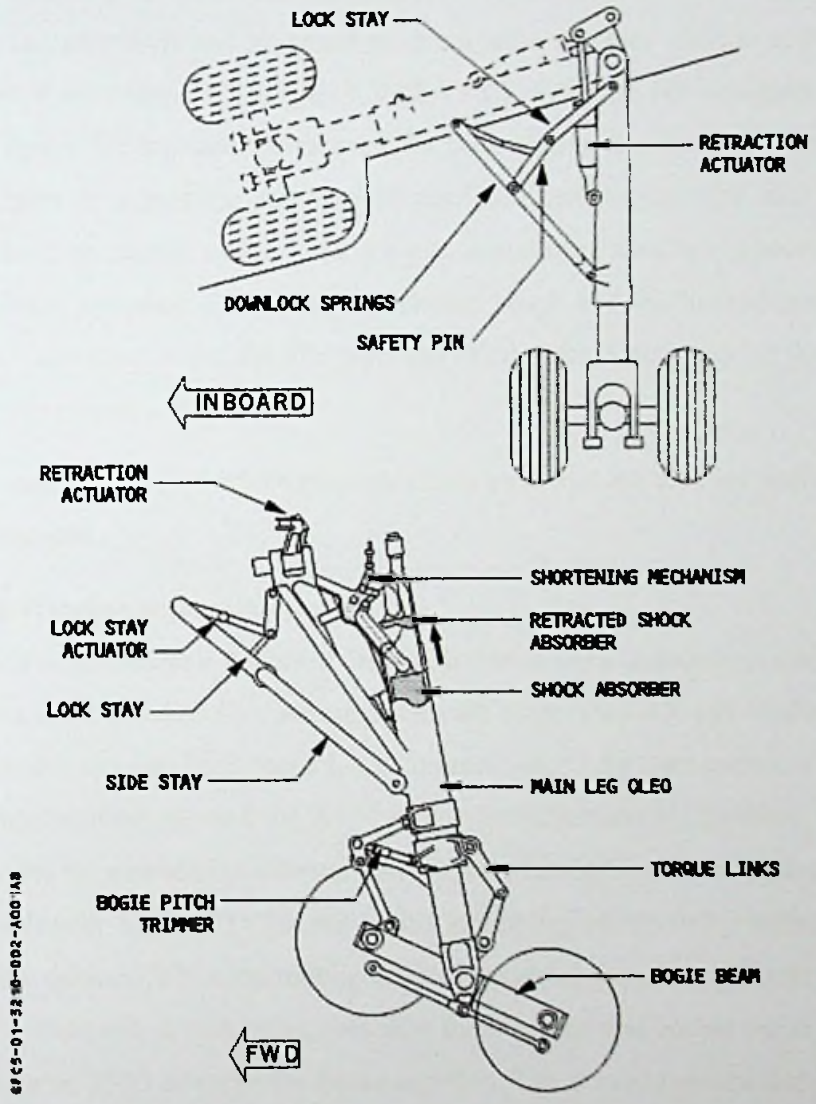

Figure 6.8 – Landing gear pdf file access

6.3.5 Network components

The severs and end users located on different location. All the servers installed in SriLankan data center and users are located in engineering hanger location, there is a fiber connection between those building and the latency of network traffic transmit is very small value. This system server part should connect with the different VLAN in data center switch and it should have routable to users' device access VLAN. The network environment configured with Cisco, Fortinet, HP equipment and all those configured for manage the data traffic flow among the devices. The routing should configure to access the servers and restricted internet through user PC and mobile devices that use this system. The security mechanism should implement from network level that unauthorized web access should block and the limited monitored internet access can use for the specific web site (You Tube/Airbus world) that related to my propose system

This part represented whole network component that use for data traffic traveling over the network.

6.3.6 Wireless access point

This is a most useable and most critical device in the client end environment. If the end device is a PC it directly connected with the corporate LAN and all the features can be accessible through high speed LAN connectivity. If the user connects with the system through wireless network the Wi-Fi access should implement for them. The access point provides the extended of internal LAN segment trough wireless facility and it can serve the different SSID [31] for this video streaming connectivity initiate to end user's mobile devices. When the mobile devices usage increase it is difficult to handle all the traffic from one access point, therefore there are several access point should establish with same SSID to serve the better services. The security mechanism and monitoring purpose this can be configure with the authentication mechanism with username and password.

6.3.7 Mobile devices

These are the endpoint devices that work on mobile platforms like IOS, Android, Windows mobile, Symbian, Linux mobile etc... the users get involved with the system using this kind of devices and they can use varies type of device to access this video web portal. The video portal design as the fully responsive features with any devices,

hence it is more flexible to user to access this web portal without scrolling to get full view. The video streaming system publish through the internal URL and it can be integrated with QR code technology, The QR code can be shown in the engineering division hanger area and any one can scan the QR code and they will connect with the URL link that published the video portal. We can implement a mobile App for access this system and it also distribute through QR code, when it scan the App will download to the mobile device and will install it. Using that App users can very quickly and easily access this web video portal. When the engineering staff working inside of the aircraft if they want to access this web portal they should have follow up the very simple steps to access this.

6.3.8 Live Video Camera

There is a feature available on this propose system that Live event broadcasting. To capture the live event, the video camera will be used. The video camera located in the remote area that the event is going on, then it will capture by video camera and the live feed given to the video encoder system and after that it will process by the system and the live video will come to the user's mobile devices and PC. This live video mechanism can handle by the mobile phone and there is a specific software should use for that.

6.3.9 Live Video Encoder

This is a specific software and hardware appliance that use for the live video encoding mechanism. The live video camera output is an analog signal hence it cannot be transmitting over the digital media, therefore the video analog signal should convert to the digital bit stream and then it can be transmitted to the digital medium. To deliver this kind of encoding mechanism this live video encoder [16] will use for this propose system. Here used "Adobe Flash Media Live Encoder 3.2/Wirecast 6" for this project, there are several consideration subject to select this encoding software. This software installed PC should have high performance resources and it is working on real time environment. This live encoding mechanism work in the smart mobile phone also, there is a mobile App for encoder system called "Go coder" from wowza software system. It requires to download and instilled in mobile phone and the captured live video feed transmit to the live streaming server over mobile phone, after that the internal process the end device users can watch the live video from their device.

6.4 The design architecture of the video streaming system

The video streaming solution is the best innovation idea for this world, due to that concept introduce new features available most useful system to new world. The design of the video streaming server most important of this project, because this server has two model Video on demand (VOD) [32] and Live video (Live) streaming [32]. The VOD feature here most effectively usable and Live mode use for live video broad casting.

6.5 Summary

In this chapter mostly focusing on analysis and design of the propose video streaming solution, here it has included the high level architecture of design diagram and details about the component that use in this design diagram. The component that use in this system require to high performance resource allocation for the smooth operation, because this system working on video streaming and it require high performance hardware resource. The next chapter focusing to implementation of this system and how it establishes on the real world environment.

Chapter 7

Implementation of the propose system

7.1 Introduction

The last section describes the high level diagram of propose system, it describe each component function and why they used in this system, also mentioning in little what are the software that used in this research. In this chapter focusing to how configure the system component and what are the resources should be allocated for hardware, software, technology, network, and the mobile devices

7.2 Hardware resources that use for the system

Video streaming system general idea is it have to use resources hungry servers, that means even the high resources are available in the server side it never satisfies with the available resources. In peak time usage it should more and more resources to deliver the same services without interruptions. Therefore, the resources calculation should be very critical and other wise this system will slow response.

This table describe the resources allocation for the hardware component and this may be varying according to the user capacity and financial budget on real environment

Component	Model	Hardware requirement
High end Server for Media server	HP ProLiant ML350 Gen9 [33]	Processors- Intel® Xeon®/ 8core/ 4.5GHz RAM-128GB HDD-1TB OS-Windows 2012R2
High end Server for Web server	HP ProLiant ML350 Gen9 [33]	Processors- Intel® Xeon®/ 4core/ 4.5GHz RAM-64GB HDD-1TB OS-Windows 2012R2

High end Server for File server	HP ProLiant ML350 Gen9 [33]	Processors- Intel® Xeon®/ 2core/ 2GHz RAM-16GB HDD-4TB OS-Windows 2012R2
High end Laptop for Encoder	HP Elitebook 840 G1	Processors- Intel® Core™ i5 /3GHz RAM-8GB HDD-1TB OS-Windows 10
Wireless Access Point	Cisco Aironet 3700 Series	Supported 802.11a/c/n 4x4 MIMO Dual-band 2.4/5 GHz
High end PC for video download	HP 800G1 SFF	Processor- 3GHz/1core RAM-4GB HDD-500GB OS-Windows10 Internet speed – 12Mbps from ISP
Video Camera	any	any
Mobile Device	any	any

Table 7.1 – Hardware resource that use for the system

7.3 Software that use for the system

There is specific software use for implement this system. The video streaming is working on time consuming platform therefore real time processing is very important on this kind of situation. The software handle the very critical functions and therefore very reputed software should be use in this kind of enterprise level architecture.

Software	Quantity	Use for	Description
Wowza streaming engine 4[14]	1	Video streaming server	That is use for video streaming server application. www.wowza.com

Adobe Live Encoder [15]	1	Video encoder	Live and on demand video feed can encode on real time www.adobe.com/products/flash-media-encoder
WAMP webserver [16]	1	Web site hosting	The player embedded web site hosting and DB maintaining for video file records www.wampserver.com/en
JW Player		Web Video player	The video playback player embedded with the video portal using JW player
You Tube		Resources web site	The recommended video will show from the you tube video category

Table 7.2 – Software use for the system

7.4 Network architecture of the Video streaming solution

The system implementation is little bit complex and it should have the gain knowledge of following area.

1. Windows server 2012R2 installation and configuration
2. Network component installation and configuration
3. Website designing, development and hosting
4. Wowza streaming engine 4 configuration for VOD/Live applications
5. WAMP server configuration and Database system development
6. Adobe live encoder configuration with RTMP protocol

Very firstly it is requiring to collect all the hardware and software resources before start the implementation. Here this is done on the test lab environment hence the above specification not available on test lab server and network configuration, but in production environment these specifications should address and the software should be licensed version only.

Note: In this propose system all the software used in evaluation mode for the research purpose only

The following Visio diagram showing how the network connectivity and server/PC connectivity of the system, for the implementation use this diagram and the description also following with it.

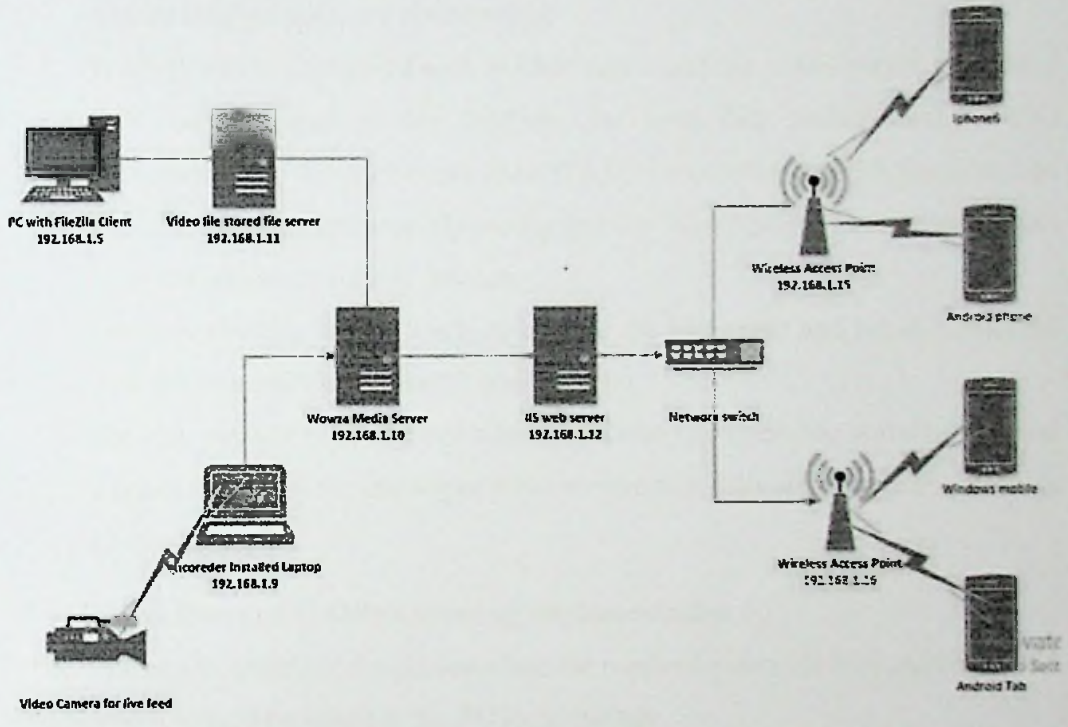

Figure 7.1- Network architecture of the Video steaming solution

7.5 Implementation and configuration of the component

1. All the hardware component installs correctly and operating systems install for PC/ laptop and servers, the windows os should be already activated
2. In this research scenario I used same subnet and the all the component belong to 192.168.1.0 network subnet, but in real world environment the component may be in different subnet, but via the network routing these devices can be communicating with each other and all the required port should be opened through the cooperate firewall
3. In the File server windows file server role is enable and quota management and file access security level should be implement

4. The content administrator used PC connect with the high speed internet and can download the require data video file in the local storage location for temporary basis.
5. The Media server installed with the application of Wowza streaming engine 4, it works as the streaming server and all streaming function enable and the require configuration are already done
6. The web server configures with WAMP server and the media player embedded web site is hosted in this location, the meta data stored database also implementing in this server and when WAMP installation this DB also installed
7. The access points are properly configured for Wi-Fi network range and it can serve the service to mobile devices.
8. The analog video camera ready to capture the live event and it has connected with the live encoder for feed it transmission
9. The live encoder is configured with the Adobe live encoding software 3.2 and it ready to capture the live signal from camera and deliver the output to Wowza streaming engine

7.6 Video On Demand (VOD) streaming implementation

1. The content administrator should download the required video file from Airbus world website and it should be stored in his PC local storage

2. The uploading procedure follow up for upload the file to content location. The administrator should access the video portal web url and log in as the content mange administrator using user name and password.

3. Then he can display the control panel details and he should provide the require information for fill up the forms and brows the related video file, image and pdf document and submit to upload it to the content location

4. The mobile user firstly connected with the Wi-Fi network that available SSID for this video streaming solution, then the video portal url should type on mobile device browser and login to the portal using their user ID.

5. The login page they can see the last history that he visited and if he want to do new search type the keyword in search location and click the search button, The keyword related on perm video data files will search in top priority and the output will show in the hot video category, the related pdf file also displaying on the link and if the user

would like to read that pdf file just click on the pdf link and it will open from the separate browser.

6. This video portal connected with the you tube using specific API and the keyword related video also will search from the internet and the most recommended video will show in this portal under the section of Recommended video

7. If the user wants to click on the other video clips displaying in video portal, the video will play as VOD (Video on Demand) [32] and in the other side according to that video related keyword and description the search criteria implement and the most recommended video also showing in this video portal.

8. The like and dislike buttons are available and views also calculate for serve the better service for users. This web site fully compatible to mobile devices and it is developed as the responsive webpage for video play back, hence without scrolling the video page the whole video can watch.

7.7 Live video streaming implementation

This is a value added feature of this system, this kind of features not available in the existing environment and the current using system. When the live event is ongoing in the remote location it will be captured by the analog cameras but that analog signal cannot directly transmit to this Wowza streaming server hence live encoder should use to encode the camera output and that encoded digital signal should transmit to the streaming server. Here used Adobe Live encoder for this purpose.

The live event capture by the video camera and that feed deliver to the laptop that install the Adobe live encoder software [16], then analog signal encoded as digital signal and that encoded video feed will deliver to the Wowza streaming media server [14] and it will broadcast it to whole other parties that requested the live video [32] from web link. The web page included a separate link for this live event and when the users are open that page through their device they can watch the live event from their mobile/PC/Laptop like that they are participating the live event.

7.8 Multitask handling of this video streaming

This system not only focusing for one function, it has capability to deliver many function at the simultaneous time period that some features are not available in the

existing system. That can handle the multitask at same time. That is a large advantage of this solution in real world scenario.

1. This system provides a trouble shooting video guide access from mobile while working in the field area.
2. If there is a document available to that related video file that also can access through mobile while working in the middle of the Aircraft Hanger.
3. If there any live event broad cast the staff do not want to go the control room for watch it, it is there on their palm and while working under the Aircraft that event can watch.
4. While watching the trouble shooting video and from another tab he can switch to the live event broad casting channel very quickly, so never missed his work duties and all will cover.
5. There is some short period of funny video will store and broadcast through the system, so the users can watch it and get a refresh from their work and continue their task without boring (Eg: Mr. Bean video can access for the short time period and it will refresh the boring mind of the people)

7.9 Summary

This chapter consisted of the implementation of the system. It mentioning the network architecture of the system component and how they configured and where should it installed. The hardware and software configuration also available under this section and all the software use under the evaluation version only for research purpose. The next chapter belong to evaluation of this system and it will discover the achievement of objectives.

Chapter 8

The Evaluation of the Research work

8.1 Introduction

The previous session describes the network architecture and the component installation and implementation of the system. It further discusses the how component configuration details and software requirement. This chapter will cover the evaluation of the system and objectives that can be achieved.

8.2 Achievements of the system objectives

The system was design to help for the Aircraft Engineering field staff and to give a solution for their facing problem. After implement this system they can achieve their target very easily. The main objective of this system is video file streaming to the mobile devices and give an extra value added feature to the user that not available in the existing system. That objective was achieved with the mile stone completed.

This system has implemented in the test lab before move to the production environment, it is the great achieve and the component configuration done as it is requiring to the testing purpose. The test lab environment also part of the production network and it has reachability to the existing environment component. The web site and wowza streaming engine configured on the test lab servers and check the website access from PC / Mobile / IPad devices, The result is success and all the devices website and video streaming working as expected level and full responsive to any devices.

The evaluation result can be representing through the table

	Tested Features	Digital Publication	AirNav	Propose Solution
1	Document access through PC base web	Yes	Yes	Done
2	Document access through Mobile phone	No	No	Done
3	Video file access through PC web	No	No	Done
4	Streaming video accessible from PC	Yes	No	Done
5	Live event remotely watch	No	No	Done
6	Recommended additional information	No	Yes	Done
7	Responsive with any devices	No	No	Done

Table 8.1 – Feature tested table

According to the features tested the propose system passed the all scenarios and it has fully compatible to deliver all the function for new and available in the existing systems.

8.3 Evaluate of beneficial features in the propose system

The available functions and features could be demonstrated and implement on the testing environment and real environment for the showing of usability of this system. The system can be achieved the expected result with guaranteed time period, therefore the accessibility and user attraction is high for this. All the features that available in the existing systems are included in here and also there are lot of new thing also available and included. This has the main features of mobile device capability, it is tested with the IOS, Android, Windows mobile devices and working with the great responsive feature, hence user does not want to scroll the page for watch the whole video.

8.4 Summary

This chapter contain about the evaluation of the project objectives whether its achieve or not. The evaluation result can be summarizing as the table on the above and it shown all the features testing is completed with the propose system rather than the existing system. This system content lot of beneficial features can involve to do better services to users that work in filed. The next chapter reserved for the expression of conclusion and further work of the project. It will conclude the overall operation of the project.

Chapter 9

Conclusion & Further work

9.1 Introduction

The previous chapter consist of the evaluation and achievement of the project objectives. It clearly shows what are the features available for this system and how they comparison with the other existing systems. This chapter contains of quantitatively achievement of the project and limitation of the system. The further work and how do more improvement also considered.

9.2 Overall achievements of the project

The motivation factor for start this project is to find the solution for some problems in working environment. When it find the research area for the completion of MSc project It could observe that given a solution for the real world scenario problem. Then observed in working area and identify the issues and problem that still unsolved. Here after listed those issues and identify the key area that the problem happens. It is understood what are the problem require to involve and categories them as require which kind of involvement need. Then finally recognized the Aircraft engineering field staff are facing lot of issues that their day to day routing and if it can give the support for them it will become a more worth innovation for them. Then studied their operation, aircraft models that they support, what are the reference materials, how they access them etc. It could see they have a problem while working on the field always they have to come to control room for access the reference information, that is wasting the time and it will also discourage the human feeling, so decided to innovate and implement the system that they can be access while working on the field and can be access without any specific hardware devices.

The main idea generated due to this kind of situation, then focus to implement a video streaming solution for these kind of Aircraft engineering users who works in outside the office. There are existing systems also available but it has limitation and difficulties while working on timely critical environment. There are two systems use in currently called Digital Publication and AirNav systems. Those are mainly focus for the PC base

environment only, they do not have capability to provide the services to Mobile devices. The main limitation of that system is it does not support to the video file access mechanism, so lot of staff are facing difficulties of this kind of big issues always their day to day function.

The propose system has overcome the all the barriers and it has given the total solution for all over the environment. The system consists of the features that document type file access, video file access, content management for administrators, live video watch while working on the middle of hanger. That is a great achievement because user does not require to go in front of the PC for every reference access, it's on his palm now... everyone can access the system with their own mobile device, it is BYOD concept and it improve the productivity also. The engineering staff can access their trouble shooting material with video streaming solution powered and access through Wi-Fi network while working on the field. That has excellent value addition features and saving the money and time of the company employee.

9.3 Success of the project objectives

There are lot of objectives consist when start this project in initial stage, mobile device video streaming, search query optimization, the recommended video display, search the video in on perm and outside network, live video broad casting, content upload administration, user friendly environment, etc. so the system achieved the all objectives successfully. It is the great achievement for success the project. Each and every module required to innovate with new model and implement with the available resources. The system should work as the expected level and it should deliver the output result for most optimum method. This system design main objective is deliver the video streaming output for mobile devices over the wireless network, most of the time video streaming is a highly hardware accessing system, but in this system it uses moderate level resources that processing the high value output for end users' equipment. Even though the mobile device resolution level is varying in each device, this system can deliver the suitable video streaming for that. That is the main quality of this system. The video portal design as the fully responsive for any devices that use it, hence end users can watch the video without any difficulties, therefore regardless of the screen size of the device this system work perfectly. The live event access is the great successful objective achievement of this system, it will closer the end user that they also living in the event live.

9.4 Limitation of the system

This system still in the initial stage of the age and it require more improvement for minimize the errors. Therefore, some limitations are still there with this system.

1. System design for internal network use only
2. System security is low
3. Recommended video will deliver from YouTube only
4. Only four recommended video will display to single page
5. In evaluation mode of streaming server only 10 users can get connected

Even though this kind of limitation the system is better than the existing system in the environment because this has value added features that not available on those. The system will more popular than any others.

9.5 Further work of the system

This system developing in some initial stage and it has many new innovation requirements to upgrade the system.

1. Publish to public internet for user access increase
2. This system design to specific target group environment only, require to improve it get the usage of other department
3. System security should be implement
4. Recommended video suggest from different website (currently you tube only)
5. Website response time should have minimum time level
6. Pdf file thumbnail image should display to open the pdf link

Further work is required to development and bug fix for this system. The version should maintain for future deliveries and when complete these further work this system will more feature included one and deliver the more solution

9.6 Summary

This chapter discuss about the initial objectives for design this kind of system and what are the overall achievement form this system. The limitation of the system discussed and most of the thing will have a solution with further development. There are further works also available for this system improvement and these developments will increase the quality of product and efficiency of the final accessing users.

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Appendix A

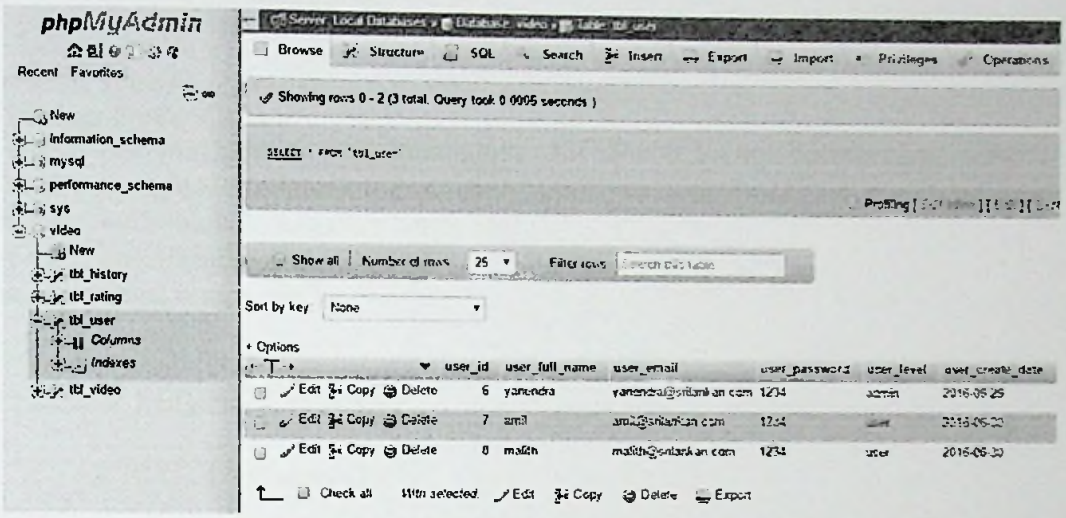
Web portal interface and Data base access

Web portal Interface

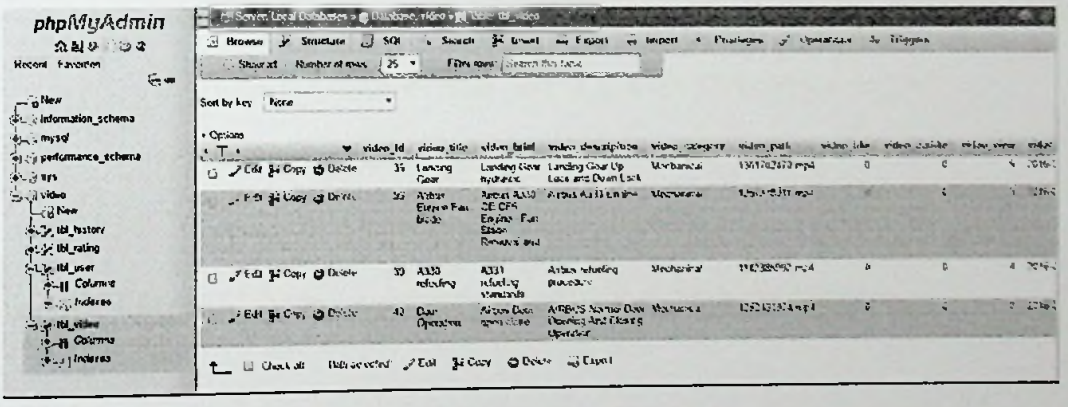
Appendix A Figure 1 – Login page

Appendix A Figure 2 – Home page after login

Data Base Access



Appendix A Figure 3 – Login access allowed users



Appendix A Figure 4 – Uploaded video in shown on the DB

Appendix B

Source code of the web portal

```
<?php
session_start();
//Hedaer Footer Calling
require_once('include/db_connection.php');
require_once('include/functions/user.php');
require_once('include/functions/video.php');
require_once('header.php');
require_once('search.php');

//Handle Empty Search
if(!isset($_REQUEST['search']))
{
        $_REQUEST['search']="";
}

//call local videos
if($_REQUEST['video_type']=="local")
{
                updateVideoViews($con,$_REQUEST['id']);
                $video_row=videoDetailsFromVideoId($con,$_REQUEST['id']);

                if(isset($_SESSION['user_id']) && $_SESSION['user_id']!="")
        {
                insertHistory($con,$_REQUEST['id'],"view_video");
        }

}
else if($_REQUEST['video_type']=="youtube")  //call YouTube Videos
{


$url="https://www.googleapis.com/youtube/v3/videos?id=".$_REQUEST['id']."&key
=AIzaSyDiaLegk0h2cd2reEzj_Ll-
Z82rkaA8yEY&fields=items(id,snippet(channelId,title,categoryId,description),statisti
cs)&part=snippet,statistics";
        $json = file_get_contents($url);
        $data = json_decode($json, TRUE);
}

//Showing Like Dislike
        if(isset($_SESSION['user_id']) && $_SESSION['user_id']!="")
{
        $check=checkLikeDislike($con,$_REQUEST['id']);
}
else
{
```

```
        $check="1000"; // Just to handle a error
}

if((isset($_REQUEST['search']) && $_REQUEST['search']!="") ||
$_REQUEST['video_type']=="local")
{
        //Local Video

        if($_REQUEST['video_type']=="local")
        {
                $video_raw=videoDetailsFromVideoId($con,$_REQUEST['id']);
                $_GET['q']=$video_raw['video_category'];
        }
        else
        {
                $_GET['q']=$_REQUEST['search'];
        }

        //YouTube Realated VIdeo handling

        $_GET['maxResults']=6;

        require_once 'Google/autoload.php';
        require_once 'Google/Client.php';
        require_once 'Google/Service/YouTube.php';

        $DEVELOPER_KEY = 'AIzaSyDiaLegk0h2cd2reEzj_Ll-Z82rkaA8yEY';

        $client = new Google_Client();
        $client->setDeveloperKey($DEVELOPER_KEY);

        // Define an object that will be used to make all API requests.
        $youtube = new Google_Service_YouTube($client);

        try {
        // Call the search.list method to retrieve results matching the specified
        // query term.
        $searchResponse = $youtube->search->listSearch('id,snippet', array(
          'q' => $_GET['q'],
          'maxResults' => $_GET['maxResults'],
        ));

        $videos = '';
        $channels = '';
        $playlists = '';

        //My Code
        $count=0;
        //My Code
```

```
        // Add each result to the appropriate list, and then display the lists of
        // matching videos, channels, and playlists.
                foreach ($searchResponse['items'] as $searchResult) {
                 switch ($searchResult['id']['kind']) {
                        case 'youtube#video':

$youtube_id_array[$count]=$searchResult['id']['videoId'];

$youtube_title_array[$count]=$searchResult['snippet']['title'];
                            break;
                 }
                 $count++;
                }

        }
        catch (Google_Service_Exception $e)
        {

        }
        catch (Google_Exception $e)
        {

        }
}

<!-- Responsive iFrame -->
<script language="javascript" type="text/javascript">
  function resizeIframe(obj) {
    obj.style.height = obj.contentWindow.document.body.scrollHeight + 'px';
  }
</script>


        <div class="gap gap-small"></div>

        <div class="container">
          <div class="row">

              <div class="col-md-12">
                <div class="row">
                  <div class="col-md-1 col-sm-1"></div>
                  <div class="col-md-10 col-sm-10 testClasss">
                    <hr/>

                    <div class="row">
                      <!--top hit video viewer iframe start here
                      ========================================== -->

                      <div class="col-md-7">
                        <div class="row">
```

```
                        <!--<iframe
src="http://player.vimeo.com/video/70388552" frameborder="0"
webkitAllowFullScreen mozallowfullscreen allowFullScreen>
                        </iframe>-->
                        <?php if($_REQUEST['video_type']=="local") { ?>


<!--<video width="100%" controls>

        <source src="<?php echo $video_dir.$video_row['video_path'];?>"
type="video/mp4">

        Your browser does not support HTML5 video.
</video>-->


<?php
        $iPod    = stripos($_SERVER['HTTP_USER_AGENT'],"iPod");
        $iPhone  = stripos($_SERVER['HTTP_USER_AGENT'],"iPhone");
        $iPad    = stripos($_SERVER['HTTP_USER_AGENT'],"iPad");
        $Android = stripos($_SERVER['HTTP_USER_AGENT'],"Android");
        $webOS   = stripos($_SERVER['HTTP_USER_AGENT'],"webOS");
?>

        <?php
        if( $iPod || $iPhone || $iPad){
        ?>

        <iframe width="100%" onload="resizeIframe(this);"
src="test999.php?id=<?php echo $video_row['video_path'];?>" frameborder="0"
allowfullscreen></iframe>
        <?php } else { ?>

<iframe width="100%" onload="resizeIframe(this);"  src="test2.php?id=<?php echo
$video_row['video_path'];?>" frameborder="0" allowfullscreen></iframe>


<!-- YouTUbe embed-->
          <?php } else if($_REQUEST['video_type']=="youtube"){ ?>
          <iframe width="560" height="315"
src="https://www.youtube.com/embed/<?php echo $_REQUEST['id']?>"
frameborder="0" allowfullscreen>
</iframe>

<?php

        if($_REQUEST['video_type']=="local")

                {
```

```
                    $read_more=mysqli_real_escape_string($con,
$video_row['video_descripition']);

                }

                else if($_REQUEST['video_type']=="youtube")

                {


        $read_more=mysqli_real_escape_string($con,$data['items'][0]['snippet']['descr
iption']);

                }


          </script>
          <small class="booking-item-last-booked">
              <div id="des_read_more"> <?php

if($_REQUEST['video_type']=="local") {

        if(strlen($video_row['video_descripition'])>=140){

                    echo substr($video_row['video_descripition'],0,140);

                    echo "<br><br> <a href='#'
onClick='read_more_function()'>Read More</a>";                    }

                else{

                    echo $video_row['video_descripition'];

                }
        }
        else if ($_REQUEST['video_type']=="youtube")  {

                if(strlen($data['items'][0]['snippet']['description'])>=140){

                    echo substr($data['items'][0]['snippet']['description'],0,140);

                    echo "<br><br> <a href='#'
onClick='read_more_function()'>Read More</a>";
}
```

Appendix B Figure 1 – Source code of the video portal web

Appendix C

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: .....

Designation : .....

Division : .....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☐ Digital Publication ☐ AirNav (ADOC N@vigator)

2. **'In which location you always use these systems**

   ☐ 747 Hanger Control Room

   ☐ Airbus Hanger Control Room

   ☐ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

   ☐ Using client on VDI

5. **How you mostly access the AirNav for your day to day work**

   ☐ Using client installed in PC/Laptop

   ☐ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☐ PDF file access from browser and read it
- ☐ Use the search option for find the related documents
- ☐ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☐ User friendly
- ☐ Fast access of the system
- ☐ Effective search feature
- ☐ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

			Yes	No
I.	PDF file fast access	-	☐	☐
II.	Video file access without delay	-	☐	☐
III.	Mobile access method not issue	-	☐	☐
IV.	User friendly interface	-	☐	☐
V.	Can you check your previous history	-	☐	☐

9. **How DPUB accessibility and require features**

			Yes	No
I.	Website load quickly	-	☐	☐
II.	All the content up to date	-	☐	☐
III.	If mobile access integrate will it worth	-	☐	☐
IV.	The external information resource requires	-	☐	☐

10. **If you rate DPUB application useful for Srilankan engineering how about your rate**

- ☐ Most suitable
- ☐ Sometime require

☐ Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

☐ Open PDF in client window and read full screen

☐ Most organize document library

☐ Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☐	☐
II.	Access from any device without high skill	-	☐	☐
III.	Well organize document library	-	☐	☐
IV.	Does it has user friendly interface	-	☐	☐

13. Is AirNav application features enough for Engineering operation

☐ Yes, it is more enough

☐ Either agree or disagree

☐ No, it require more features

14. In which area should improve the AirNav application

☐ Client interface

☐ Response time should minimum

☐ Mobile Accessbility require

☐ Role base user access level require

15. How useful AirNav application for SriLankan Engineering

☐ Most suitable application

☐ Require more improvement

☐ Useless Application

16. If new system introduces to trouble shooting system access, which feature there

☐ Web base access

☐ Video/Document access method

☐ Optimized search feature

- [ ] Mobile device access compatibility
- [ ] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [ ] Extremely Yes
- [ ] May be
- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [ ] Web base access method
- [ ] Client base access method
- [ ] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [ ] Apple IPhone/IPad
- [ ] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [ ] Last history view and access
- [ ] Live / On demand video streaming
- [ ] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: Kuglas Dias.

Designation : Senior Eng. Procurement Assitent

Division : Eng. Procurement & logistics.

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

RECEIPT SECTION
ENGINEERING MATERIALS
A/C PROCUREMENT & LOG.DEPT
SRILANKAN AIRLINES
KATUNAYAKE

5. **How you mostly access the AirNav for your day to day work**

- ☐ Using client installed in PC/Laptop
- ☑ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☐ PDF file access from browser and read it
- ☑ Use the search option for find the related documents
- ☑ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☐ User friendly
- ☑ Fast access of the system
- ☑ Effective search feature
- ☐ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☑	☐
II.	Video file access without delay -	☑	☐
III.	Mobile access method not issue -	☑	☐
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☐	☑

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☐	☑
IV.	The external information resource requires -	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	[x]	[ ]
II.	Access from any device without high skill	-	[x]	[ ]
III.	Well organize document library	-	[x]	[ ]
IV.	Does it has user friendly interface	-	[ ]	[x]

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
- [x] Either agree or disagree
- [ ] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
- [x] Response time should minimum
- [x] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [ ] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [ ] Web base access
- [x] Video/Document access method
- [x] Optimized search feature
- [x] Mobile device access compatibility
- [ ] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [x] Extremely Yes
- [ ] May be
- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [x] Web base access method
- [x] Client base access method
- [ ] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [x] Apple IPhone/IPad
- [x] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [ ] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: H.L.P.D. Liyanage

Designation : Engineering Procurement Supervisor

Division : A/c Procurement

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

   ☑ Using client on VDI

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5. **How you mostly access the AirNav for your day to day work**

- ☐ Using client installed in PC/Laptop
- ☑ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☐ PDF file access from browser and read it
- ☑ Use the search option for find the related documents
- ☑ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☐ User friendly
- ☑ Fast access of the system
- ☑ Effective search feature
- ☐ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☑
II.	Video file access without delay -	☑	☐
III.	Mobile access method not issue -	☐	☑
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☐	☑

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☐	☑
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☑	☐
IV.	The external information resource requires -	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☐	☑
III.	Well organize document library	-	☐	☑
IV.	Does it has user friendly interface	-	☑	☐

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
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14. In which area should improve the AirNav application

- [x] Client interface
- [ ] Response time should minimum
- [x] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [x] Most suitable application
- [ ] Require more improvement
- [ ] Useless Application

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ..A. N. Megodawickrama.....

Designation : Eng. Proc. Supervisor.....

Division : Eng. Procurement.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

   ☑ Using client on VDI

Engineering Procurement & Logistics Manager
Sri Lankan Airlines Limited

5. **How you mostly access the AirNav for your day to day work**

- ☐ Using client installed in PC/Laptop
- ☑ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☑ PDF file access from browser and read it
- ☐ Use the search option for find the related documents
- ☑ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☐ User friendly
- ☑ Fast access of the system
- ☐ Effective search feature
- ☑ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☑	☐
II.	Video file access without delay -	☑	☐
III.	Mobile access method not issue -	☑	☐
IV.	User friendly interface -	☑	☐
V.	Can you check your previous history -	☑	☐

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☑	☐
IV.	The external information resource requires -	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [x] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	[x]	[ ]
II.	Access from any device without high skill	-	[ ]	[x]
III.	Well organize document library	-	[ ]	[x]
IV.	Does it has user friendly interface	-	[x]	[ ]

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
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14. In which area should improve the AirNav application

- [x] Client interface
- [ ] Response time should minimum
- [ ] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [ ] Require more improvement
- [x] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [ ] Web base access
- [x] Video/Document access method
- [ ] Optimized search feature
- [x] Mobile device access compatibility
- [ ] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [ ] Extremely Yes
- [x] May be
- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [x] Web base access method
- [x] Client base access method
- [ ] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [ ] Apple IPhone/IPad
- [x] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [ ] Live / On demand video streaming
- [ ] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: Roshitha Fernando

Designation : Eng Tech. Supervisor

Division : Engineering

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

Engineering Procurement & Logistics Manager
Sri Lankan Airlines Limited

5. **How you mostly access the AirNav for your day to day work**

- [ ] Using client installed in PC/Laptop
- [x] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [ ] PDF file access from browser and read it
- [x] Use the search option for find the related documents
- [x] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [ ] User friendly
- [x] Fast access of the system
- [ ] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☐
II.	Video file access without delay -	☐	☐
III.	Mobile access method not issue -	☑	☐
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☐	☑

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☐	☑
IV.	The external information resource requires -	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
- [ ] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☐	☐
II.	Access from any device without high skill	-	☐	☐
III.	Well organize document library	-	☐	☐
IV.	Does it has user friendly interface	-	☐	☐

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
- [ ] Either agree or disagree
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14. In which area should improve the AirNav application

- [x] Client interface
- [x] Response time should minimum
- [x] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [x] Most suitable application
- [ ] Require more improvement
- [ ] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [x] Web base access
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- [x] Web base access method
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19. Which mobile device are you prefer to access in most time while working

- [x] Apple IPhone/IPad
- [ ] Android Mobile
- [x] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

16. If new system introduces to trouble shooting system access, which feature there

- [x] Web base access
- [ ] Video/Document access method
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20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: R. Ishan Sachitha

Designation : Network Engineer I

Division : IT

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

SRILANKAN AIRLINES LTD.
Network Engineer

5. **How you mostly access the AirNav for your day to day work**

- ☐ Using client installed in PC/Laptop
- ☑ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☐ PDF file access from browser and read it
- ☑ Use the search option for find the related documents
- ☑ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☐ User friendly
- ☐ Fast access of the system
- ☑ Effective search feature
- ☑ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☑
II.	Video file access without delay -	☐	☑
III.	Mobile access method not issue -	☐	☑
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☐	☑

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☐	☑
II.	All the content up to date -	☐	☑
III.	If mobile access integrate will it worth -	☐	☑
IV.	The external information resource requires -	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [ ] Most suitable
- [ ] Sometime require
- [x] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

		Yes	No
I.	Fast access and quick response time -	[x]	[ ]
II.	Access from any device without high skill -	[ ]	[x]
III.	Well organize document library -	[ ]	[x]
IV.	Does it has user friendly interface -	[ ]	[x]

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
- [x] Either agree or disagree
- [ ] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
- [x] Response time should minimum
- [x] Mobile Accessbility require
- [x] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [ ] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [x] Web base access
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17. If new system has video files accessing method, will it be useful to operation

- [x] Extremely Yes
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- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [x] Web base access method
- [ ] Client base access method
- [x] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [x] Apple IPhone/IPad
- [ ] Android Mobile
- [x] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ...Chathura Hapuhotuwa.....

Designation : ...Aircraft Engineer.....

Division : ...Aircraft Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☐ Airbus Hanger Control Room

   ☐ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☑ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

5. How you mostly access the AirNav for your day to day work

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. What are the features that you use when access DPUB system?

- [x] PDF file access from browser and read it
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7. What are the advantage you think for DPUB is require to Engineering operation?

- [x] User friendly
- [ ] Fast access of the system
- [x] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. What are the challenges that face when use the DPUB

		Yes	No
I.	PDF file fast access -	☑	☐
II.	Video file access without delay -	☐	☑
III.	Mobile access method not issue -	☐	☑
IV.	User friendly interface -	☑	☐
V.	Can you check your previous history -	☑	☐

9. How DPUB accessibility and require features

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☐	☑
IV.	The external information resource requires -	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
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12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☐	☑
III.	Well organize document library	-	☑	☐
IV.	Does it has user friendly interface	-	☑	☐

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
- [ ] Either agree or disagree
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14. In which area should improve the AirNav application

- [x] Client interface
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- [ ] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [ ] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

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- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ....Sudath Gunarathna.....

Designation : ....Network Engineer.....

Division : ....Aircraft Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

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3. **Which device mostly use for access these systems**

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   ☐ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

Senior Systems Engineer
SriLankan Airlines Ltd.

5. **How you mostly access the AirNav for your day to day work**

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [x] PDF file access from browser and read it
- [ ] Use the search option for find the related documents
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- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [x] User friendly
- [ ] Fast access of the system
- [x] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☑	☐
II.	Video file access without delay -	☐	☑
III.	Mobile access method not issue -	☑	☐
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☑	☐

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly	☑	☐
II.	All the content up to date -	☐	☑
III.	If mobile access integrate will it worth -	☑	☐
IV.	The external information resource requires -	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

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12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☐	☑
III.	Well organize document library	-	☐	☑
IV.	Does it has user friendly interface	-	☑	☐

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
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14. In which area should improve the AirNav application

- [ ] Client interface
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- [ ] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [x] Extremely Yes
- [ ] May be
- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [x] Web base access method
- [ ] Client base access method
- [x] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [x] Apple IPhone/IPad
- [x] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ..... Udaya Suresh .....

Designation : ..... Multi Task serviceman .....

Division : ..... Engineering .....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☐ Airbus Hanger Control Room

   ☐ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

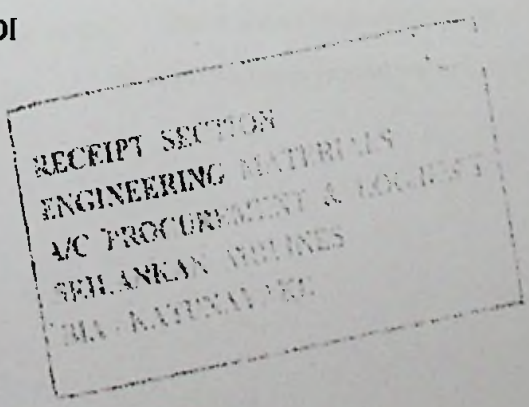
   ☐ Laptops in Hanger Area

   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI



5. **How you mostly access the AirNav for your day to day work**

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [ ] PDF file access from browser and read it
- [x] Use the search option for find the related documents
- [x] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [x] User friendly
- [ ] Fast access of the system
- [x] Effective search feature
- [ ] Accurate of the content
- [x] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☑
II.	Video file access without delay -	☑	☐
III.	Mobile access method not issue -	☐	☑
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☐	☑

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☐	☑
III.	If mobile access integrate will it worth -	☑	☐
IV.	The external information resource requires -	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [ ] Most suitable
- [x] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [x] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	[x]	[ ]
II.	Access from any device without high skill	-	[x]	[ ]
III.	Well organize document library	-	[x]	[ ]
IV.	Does it has user friendly interface	-	[ ]	[x]

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
- [x] Either agree or disagree
- [x] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
- [x] Response time should minimum
- [ ] Mobile Accessbility require
- [x] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [x] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [x] Web base access
- [x] Video/Document access method
- [x] Optimized search feature
- [ ] Mobile device access compatibility
- [x] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [x] Extremely Yes
- [ ] May be
- [x] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [ ] Web base access method
- [x] Client base access method
- [ ] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [ ] Apple IPhone/IPad
- [x] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ....P.A. Jayanth Sasanka.....

Designation : ....Engineering materials Storekeeper.

Division : ....A/c Procurement & Logistics.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☑ Laptops in Hanger Area

   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

Engineering Procurement & Logistics Manager
Sri Lankan Airlines Limited

5. **How you mostly access the AirNav for your day to day work**

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [x] PDF file access from browser and read it
- [x] Use the search option for find the related documents
- [ ] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [x] User friendly
- [x] Fast access of the system
- [ ] Effective search feature
- [ ] Accurate of the content
- [x] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	[x]	[ ]
II.	Video file access without delay -	[ ]	[x]
III.	Mobile access method not issue -	[ ]	[x]
IV.	User friendly interface -	[x]	[ ]
V.	Can you check your previous history -	[ ]	[x]

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	[x]	[ ]
II.	All the content up to date -	[ ]	[x]
III.	If mobile access integrate will it worth -	[x]	[ ]
IV.	The external information resource requires -	[x]	[ ]

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [ ] Most suitable
- [x] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☑	☐
III.	Well organize document library	-	☐	☑
IV.	Does it has user friendly interface	-	☑	☐

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
- [ ] Either agree or disagree
- [ ] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
- [x] Response time should minimum
- [x] Mobile Accessbility require
- [x] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [x] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [x] Web base access
- [x] Video/Document access method
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19. Which mobile device are you prefer to access in most time while working

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20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [ ] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ....Chathura Aloysius.....

Designation : ....Eng. Procurement officer.....

Division : ....Eng: procurement.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

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5. **How you mostly access the AirNav for your day to day work**

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [x] PDF file access from browser and read it
- [ ] Use the search option for find the related documents
- [x] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [ ] User friendly
- [x] Fast access of the system
- [x] Effective search feature
- [ ] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	[x]	[ ]
II.	Video file access without delay -	[x]	[ ]
III.	Mobile access method not issue -	[ ]	[x]
IV.	User friendly interface -	[ ]	[x]
V.	Can you check your previous history -	[x]	[ ]

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	[x]	[ ]
II.	All the content up to date -	[ ]	[x]
III.	If mobile access integrate will it worth -	[x]	[ ]
IV.	The external information resource requires -	[x]	[ ]

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☑	☐
III.	Well organize document library	-	☐	☑
IV.	Does it has user friendly interface	-	☐	☑

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
- [x] Either agree or disagree
- [x] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
- [x] Response time should minimum
- [x] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [ ] Useless Application

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20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: .....S.A.D.L Chamara.....

Designation : .....Technician.....

Division : ...Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☐ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

   ☑ Using client on VDI

5. **How you mostly access the AirNav for your day to day work**

- [ ] Using client installed in PC/Laptop
- [x] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [ ] PDF file access from browser and read it
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- [x] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [ ] User friendly
- [x] Fast access of the system
- [ ] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

			Yes	No
I.	PDF file fast access	-	☑	☐
II.	Video file access without delay	-	☑	☐
III.	Mobile access method not issue	-	☐	☑
IV.	User friendly interface	-	☐	☑
V.	Can you check your previous history	-	☑	☐

9. **How DPUB accessibility and require features**

			Yes	No
I.	Website load quickly	-	☑	☐
II.	All the content up to date	-	☐	☑
III.	If mobile access integrate will it worth	-	☑	☐
IV.	The external information resource requires	-	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [ ] Most suitable
- [x] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☑	☐
III.	Well organize document library	-	☐	☑
IV.	Does it has user friendly interface	-	☐	☑

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
- [x] Either agree or disagree
- [ ] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
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15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [x] Useless Application

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- [x] Optimized search feature
- [x] Mobile device access compatibility
- [ ] Last history view with user login

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- [x] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [ ] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: .....J.A.I.K. Jayasooriya.....

Designation : .....Network Engineer.....

Division : .....Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☐ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

Senior Systems Engineer
SriLankan Airlines Ltd.

5. **How you mostly access the AirNav for your day to day work**

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [x] PDF file access from browser and read it
- [ ] Use the search option for find the related documents
- [x] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [x] User friendly
- [ ] Fast access of the system
- [x] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

			Yes	No
I.	PDF file fast access	-	☑	☐
II.	Video file access without delay	-	☐	☑
III.	Mobile access method not issue	-	☑	☐
IV.	User friendly interface	-	☐	☑
V.	Can you check your previous history	-	☐	☑

9. **How DPUB accessibility and require features**

			Yes	No
I.	Website load quickly	-	☐	☑
II.	All the content up to date	-	☐	☑
III.	If mobile access integrate will it worth	-	☑	☐
IV.	The external information resource requires	-	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [ ] Most suitable
- [x] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
- [ ] Most organize document library
- [x] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	[x]	[ ]
II.	Access from any device without high skill	-	[x]	[ ]
III.	Well organize document library	-	[ ]	[x]
IV.	Does it has user friendly interface	-	[ ]	[x]

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
- [ ] Either agree or disagree
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14. In which area should improve the AirNav application

- [x] Client interface
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- [x] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: Irandi Maduka Pathirana.

Designation : Senior Engineering Procurement.

Division : Engineering Procurement.

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☐ Laptops in Hanger Area

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   ☐ Using client on VDI

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5. **How you mostly access the AirNav for your day to day work**

- [ ] Using client installed in PC/Laptop
- [x] Using ThinApp from VDI /Laptop

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- [x] User friendly
- [x] Fast access of the system
- [ ] Effective search feature
- [ ] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☐
II.	Video file access without delay -	☐	☐
III.	Mobile access method not issue -	☐	☐
IV.	User friendly interface -	☐	☐
V.	Can you check your previous history -	☐	☐

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☐	☐
II.	All the content up to date -	☐	☐
III.	If mobile access integrate will it worth -	☐	☐
IV.	The external information resource requires -	☐	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
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11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

		Yes	No
I.	Fast access and quick response time -	[x]	[ ]
II.	Access from any device without high skill -	[x]	[ ]
III.	Well organize document library -	[ ]	[x]
IV.	Does it has user friendly interface -	[ ]	[x]

13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
- [x] Either agree or disagree
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- [ ] Client interface
- [x] Response time should minimum
- [ ] Mobile Accessbility require
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15. How useful AirNav application for SriLankan Engineering

- [x] Most suitable application
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- [ ] Client base access method
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19. Which mobile device are you prefer to access in most time while working

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- [ ] Last history view and access
- [ ] Live / On demand video streaming
- [ ] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ..... Damitha Ranasinghe .....

Designation : ..... Senior Aircraft Components & Repairs Supervisor .....

Division : ..... CMS .....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☑ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☑ Using URL on intranet

   ☐ Using client on VDI

Engineering Procurement & Logistics Manager
Sri Lankan Airlines Limited

5. **How you mostly access the AirNav for your day to day work**

- ☐ Using client installed in PC/Laptop
- ☑ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☐ PDF file access from browser and read it
- ☑ Use the search option for find the related documents
- ☑ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☑ User friendly
- ☐ Fast access of the system
- ☐ Effective search feature
- ☐ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

			Yes	No
I.	PDF file fast access	-	☐	☑
II.	Video file access without delay	-	☐	☑
III.	Mobile access method not issue	-	☑	☐
IV.	User friendly interface	-	☑	☐
V.	Can you check your previous history	-	☑	☐

9. **How DPUB accessibility and require features**

			Yes	No
I.	Website load quickly	-	☐	☑
II.	All the content up to date	-	☑	☐
III.	If mobile access integrate will it worth	-	☑	☐
IV.	The external information resource requires	-	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [ ] Open PDF in client window and read full screen
- [x] Most organize document library
- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

		Yes	No
I.	Fast access and quick response time -	☐	☐
II.	Access from any device without high skill -	☐	☑
III.	Well organize document library -	☐	☐
IV.	Does it has user friendly interface -	☐	☑

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
- [ ] Either agree or disagree
- [ ] No, it require more features

14. In which area should improve the AirNav application

- [ ] Client interface
- [x] Response time should minimum
- [ ] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [x] Most suitable application
- [ ] Require more improvement
- [ ] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [ ] Web base access
- [ ] Video/Document access method
- [ ] Optimized search feature
- [ ] Mobile device access compatibility
- [ ] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [ ] Extremely Yes
- [ ] May be
- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [ ] Web base access method
- [ ] Client base access method
- [ ] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [ ] Apple IPhone/IPad
- [ ] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [ ] Last history view and access
- [ ] Live / On demand video streaming
- [ ] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ......Dafodil De Silva......

Designation : ......Compound Management Officer......

Division : ......CAG......

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   - [x] Digital Publication
   - [x] AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   - [x] 747 Hanger Control Room
   - [x] Airbus Hanger Control Room
   - [x] Maintenance and Control Center
   - [ ] RAMP and Pier area

3. **Which device mostly use for access these systems**

   - [ ] Personal Computer /VDI in Hanger Control Room
   - [x] Laptops in Hanger Area
   - [ ] Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   - [x] Using URL on intranet
   - [ ] Using client on VDI

5. **How you mostly access the AirNav for your day to day work**

- [ ] Using client installed in PC/Laptop
- [x] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [ ] PDF file access from browser and read it
- [x] Use the search option for find the related documents
- [x] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [ ] User friendly
- [x] Fast access of the system
- [x] Effective search feature
- [ ] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☑	☐
II.	Video file access without delay -	☑	☐
III.	Mobile access method not issue -	☐	☑
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☑	☐

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☐	☑
III.	If mobile access integrate will it worth -	☐	☑
IV.	The external information resource requires -	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

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12. How about AirNav experience when working on Hanger

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I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☑	☐
III.	Well organize document library	-	☐	☑
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13. Is AirNav application features enough for Engineering operation

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15. How useful AirNav application for SriLankan Engineering

- [x] Most suitable application
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20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [ ] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ....Ruwan Gunasekara.....

Designation : ....Eng. Tech Services.....

Division : ....Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

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   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

   ☑ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

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Engineering Procurement & Logistics Manager
Sri Lankan Airlines Limited

5. **How you mostly access the AirNav for your day to day work**

- [ ] Using client installed in PC/Laptop
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- [x] Use the search option for find the related documents
- [x] Access the video files
- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [ ] User friendly
- [x] Fast access of the system
- [x] Effective search feature
- [ ] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☑
II.	Video file access without delay -	☐	☑
III.	Mobile access method not issue -	☐	☑
IV.	User friendly interface -	☑	☐
V.	Can you check your previous history -	☑	☐

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☑	☐
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☑	☑
IV.	The external information resource requires -	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
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- [ ] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☐	☒
II.	Access from any device without high skill	-	☐	☒
III.	Well organize document library	-	☒	☐
IV.	Does it has user friendly interface	-	☒	☐

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
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14. In which area should improve the AirNav application

- [x] Client interface
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- [x] Most suitable application
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- [x] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [x] Last history view and access
- [x] Live / On demand video streaming
- [ ] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: Ruwan Amila Kumarasinghe

Designation : Sen. Eng. Procurement Assistant

Division : Procurement and Logistics

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

   ☑ Maintenance and Control Center

   ☐ RAMP and Pier area

3. **Which device mostly use for access these systems**

   ☐ Personal Computer /VDI in Hanger Control Room

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   ☑ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

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RECEIPT SECTION
ENGINEERING MATERIALS
M/C PROCUREMENT & LOGISTICS
SRILANKAN AIRLINES
BIA - KATUNAYAKE

5. **How you mostly access the AirNav for your day to day work**

- [x] Using client installed in PC/Laptop
- [ ] Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- [ ] PDF file access from browser and read it
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- [ ] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [x] User friendly
- [x] Fast access of the system
- [ ] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

			Yes	No
I.	PDF file fast access	-	☐	☐
II.	Video file access without delay	-	☐	☐
III.	Mobile access method not issue	-	☐	☐
IV.	User friendly interface	-	☐	☐
V.	Can you check your previous history	-	☐	☐

9. **How DPUB accessibility and require features**

			Yes	No
I.	Website load quickly	-	☐	☐
II.	All the content up to date	-	☐	☐
III.	If mobile access integrate will it worth	-	☐	☐
IV.	The external information resource requires	-	☐	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- ☐ Most suitable
- ☑ Sometime require
- ☐ Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- ☐ Open PDF in client window and read full screen
- ☑ Most organize document library
- ☐ Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☑	☐
II.	Access from any device without high skill	-	☑	☐
III.	Well organize document library	-	☑	☐
IV.	Does it has user friendly interface	-	☑	☐

13. Is AirNav application features enough for Engineering operation

- ☑ Yes, it is more enough
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15. How useful AirNav application for SriLankan Engineering

- ☑ Most suitable application
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20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [ ] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [ ] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: ....B....Gunaratnam.....

Designation : ....Technical....officer.....

Division : ....Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

   ☑ Digital Publication ☑ AirNav (ADOC N@vigator)

2. **In which location you always use these systems**

   ☑ 747 Hanger Control Room

   ☑ Airbus Hanger Control Room

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3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

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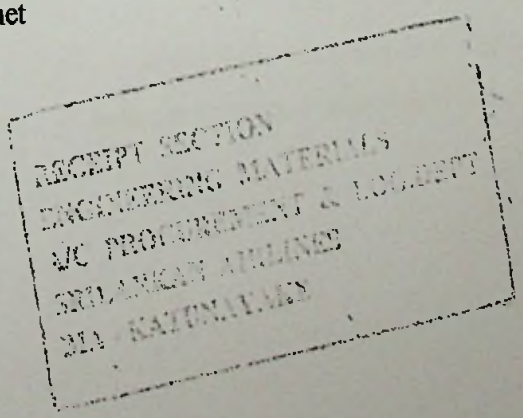
   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

   ☑ Using client on VDI



5. **How you mostly access the AirNav for your day to day work**

- [ ] Using client installed in PC/Laptop
- [x] Using ThinApp from VDI /Laptop

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- [x] Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- [x] User friendly
- [ ] Fast access of the system
- [ ] Effective search feature
- [x] Accurate of the content
- [ ] Role base access available

8. **What are the challenges that face when use the DPUB**

		Yes	No
I.	PDF file fast access -	☐	☑
II.	Video file access without delay -	☐	☑
III.	Mobile access method not issue -	☑	☐
IV.	User friendly interface -	☐	☑
V.	Can you check your previous history -	☐	☑

9. **How DPUB accessibility and require features**

		Yes	No
I.	Website load quickly -	☐	☑
II.	All the content up to date -	☑	☐
III.	If mobile access integrate will it worth -	☑	☐
IV.	The external information resource requires -	☐	☑

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
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12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☐	☒
II.	Access from any device without high skill	-	☒	☐
III.	Well organize document library	-	☒	☐
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13. Is AirNav application features enough for Engineering operation

- [ ] Yes, it is more enough
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- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: .....K.D...Nishantha....Ranathunga.....

Designation : .....Senior....Storekeeper.....

Division : .....Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

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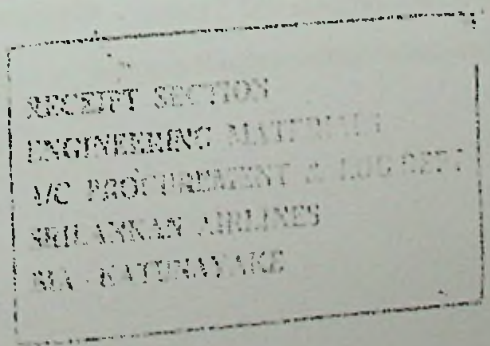

5. **How you mostly access the AirNav for your day to day work**

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			Yes	No
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II.	Access from any device without high skill	-	☑	☐
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Thank You for participating the survey

Questionnaire

Project: Video Streaming Solution for Organization Work Process Streamline

Name of the Employee: .....W.M.K. Fernando.....

Designation : .....Aircraft Maintenance Engineer.....

Division : .....Engineering.....

This questionnaire related with the newly introduce video portal for Aircraft engineering division and please answer the below questions for the conducting survey.

1. **What are the systems you use daily for refer the aircraft maintenance?**

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2. **In which location you always use these systems**

   ☐ 747 Hanger Control Room

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3. **Which device mostly use for access these systems**

   ☑ Personal Computer /VDI in Hanger Control Room

   ☑ Laptops in Hanger Area

   ☐ Any of mobile devices

4. **How you mostly access the DPUB for your day to day work**

   ☐ Using URL on intranet

   ☑ Using client on VDI

5. **How you mostly access the AirNav for your day to day work**

- ☐ Using client installed in PC/Laptop
- ☑ Using ThinApp from VDI /Laptop

6. **What are the features that you use when access DPUB system?**

- ☐ PDF file access from browser and read it
- ☑ Use the search option for find the related documents
- ☑ Access the video files
- ☐ Download the PDF for printing

7. **What are the advantage you think for DPUB is require to Engineering operation?**

- ☐ User friendly
- ☑ Fast access of the system
- ☐ Effective search feature
- ☑ Accurate of the content
- ☐ Role base access available

8. **What are the challenges that face when use the DPUB**

			Yes	No
I.	PDF file fast access	-	☐	☐
II.	Video file access without delay	-	☐	☑
III.	Mobile access method not issue	-	☑	☐
IV.	User friendly interface	-	☑	☐
V.	Can you check your previous history	-	☑	☐

9. **How DPUB accessibility and require features**

			Yes	No
I.	Website load quickly	-	☐	☑
II.	All the content up to date	-	☐	☑
III.	If mobile access integrate will it worth	-	☑	☐
IV.	The external information resource requires	-	☑	☐

10. If you rate DPUB application useful for Srilankan engineering how about your rate

- [x] Most suitable
- [ ] Sometime require
- [ ] Strongly recommend mobile version require

11. What is the most usable feature in the AirNav application with your experience

- [x] Open PDF in client window and read full screen
- [ ] Most organize document library
- [x] Optimize search option

12. How about AirNav experience when working on Hanger

			Yes	No
I.	Fast access and quick response time	-	☐	☑
II.	Access from any device without high skill	-	☐	☑
III.	Well organize document library	-	☑	☐
IV.	Does it has user friendly interface	-	☑	☐

13. Is AirNav application features enough for Engineering operation

- [x] Yes, it is more enough
- [ ] Either agree or disagree
- [ ] No, it require more features

14. In which area should improve the AirNav application

- [x] Client interface
- [x] Response time should minimum
- [x] Mobile Accessbility require
- [ ] Role base user access level require

15. How useful AirNav application for SriLankan Engineering

- [ ] Most suitable application
- [x] Require more improvement
- [x] Useless Application

16. If new system introduces to trouble shooting system access, which feature there

- [x] Web base access
- [ ] Video/Document access method
- [x] Optimized search feature
- [x] Mobile device access compatibility
- [ ] Last history view with user login

17. If new system has video files accessing method, will it be useful to operation

- [x] Extremely Yes
- [ ] May be
- [ ] That may be another headache

18. Which kind of software access method is convenience for day to day work

- [ ] Web base access method
- [x] Client base access method
- [x] Mobile base access method

19. Which mobile device are you prefer to access in most time while working

- [ ] Apple IPhone/IPad
- [x] Android Mobile
- [ ] Windows Mobile

20. As per your experience what kind of features should be available in the propose system for video and document access while working in the field

- [ ] Last history view and access
- [x] Live / On demand video streaming
- [x] According to the search query the most relevant video should display
- [x] Role base access level

Thank You for participating the survey