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JUDUL: KUTKM STREAMING RADIO: CONTENT DEVELOPMENT

SESI PENGAJIAN: 2005

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[^] Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

KUTKM STREAMING RADIO: CONTENT DEVELOPMENT

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This report is submitted in partial fulfillment of the requirements for the Bachelor of
Computer Science (Media Interactive)

**FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2005**

DECLARATION

I hereby declare that this project report entitled

KUTKM STREAMING RADIO: CONTENT DEVELOPMENT

is written by me and is my own effort and that no part has been plagiarized without citations.

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SUPERVISOR : MOHD. HAFIZ B. ZAKARIA Date : 22 November 2005

DEDICATION

To my parents, family and friends...

ACKNOWLEDGEMENTS

First of all, I would like to climb my gratitude to the most Almighty, Allah s.w.t for the strength given that I finally completed this PSM I without any circumvention.

Big thanks to my honored supervisor, Mr. Hafiz bin Zakaria for his caring and guidance which leads me to develop such a great improvement during this PSM I session. All his comments and criticism have inspired me to do better in order to develop a good skilled student.

Special thanks to the Putra FM management, Mr. Hazry and Ms Any Rozita for their co-operation and supportive act towards helping me in order to conduct the interview.

Lastly, to those who had helping me in the development process of my projects during PSM I (family and friends), thank you very much. I am very grateful to have all of these people around. Without them, this success is seemed to be impossible.

Thank you.

ABSTRACT

This thesis is related to the research field for KUTKM Radio streaming project. The KUTKM Radio Streaming project is a project that allows the KUTKM community to listen to the campus radio online through the KUTKM Online Radio website. The main objective for this project is to develop the content of programs for KUTKM radio streaming. The content of the radio will be developing based on the research from other campus radio in Malaysia like Universiti Putra Malaysia and Multimedia University. One of the project scopes is that this project is only for the KUTKM community (KUTKM students, lecturers and staffs). This means that the content of the KUTKM radio streaming programs will focus more on the KUTKM and the surrounding itself. This is because the main objective of this project is to develop a campus streaming radio. Therefore, all of the programs provided through the radio must be within the students and university bounds. The methodology used in order to develop this project is created by the developer which derived from the Waterfall model. The output is the content of the radio (in audio form) where user can listen to the KUTKM campus radio through the KUTKM Online Radio website. Finally, the project significance is that it would give so many benefits especially to KUTKM students, staffs and lecturer. As they will be furnished with information on education and KUTKM activities, they will also get entertain by the songs played and programs arranged. Apart of that, it will help KUTKM to brighten up its name to others from the KUTKM management ability to develop a campus radio using streaming technology even though the technology has been widely used all over the world. This is because, in Malaysia only Multimedia University used fully this streaming technology for Multimedia University campus radio.

ABSTRAK

Tesis ini adalah berkaitan dengan bidang kajian bagi projek KUTKM Radio Streaming. Projek ini adalah satu projek di mana ia membenarkan komuniti KUTKM untuk mendengar radio kampus secara *online* melalui laman KUTKM Online Radio. Objektif utama projek ini adalah untuk menghasilkan kandungan bagi program radio kampus KUTKM. Kandungan rancangan bagi radio kampus ini adalah berdasarkan kajian terhadap radio kampus universiti yang lain di Malaysia seperti Universiti Putra Malaysia dan Universiti Multimedia. Manakala skop bagi projek ini adalah untuk komuniti KUTKM sahaja. Ini bermakna, kandungan rancangan bagi radio kampus KUTKM adalah lebih difokuskn kepada KUTKM dan juga keadaan persekitaran KUTKM itu sendiri. Ini kerana, objekif utama projek ini adalah untuk menghasilkan kandungan bagi radio kampus KUTKM. Maka, semua kandungan bagi siaran radio tersebut mestilah berdasarkan kepada pelajar-pelajar KUTKM dan juga persekitaranye. Metodologi yang digunakan di dalam projek ini adalah dicipta sendiri oleh pembangun projek di mana ianya di ambil dari model Waterfall. Hasil bagi projek ini adalah kandungan bagi rancangan radio kampus tersebut (dalam bentuk fail audio) di mana pengguna boleh mendengar siaran radio tersebut melalui laman KUTKM Online Radio. Akhir sekali, kepentingan bagi projek ini adalah ia akan memberikan banyak kelebihan terutamanya kepada pelajar-pelajar, pensyarah dan juga kakitangan KUTKM sendiri. Selain mendapat informasi mengenai pelajaran dan aktiviti-aktiviti, komuniti KUTKM akan juga dihiburkan dengan lagu-lagu yang diputarkan begitu juga dengan rancangan yang telah disusun. Selain dari itu, ia juga dapat membantu untuk menaikkan lagi nama KUTKM dengan menghasilkan radio kampus menggunakan teknologi streaming walaupun teknologi ini telah banyak digunakan di seluruh dunia. Ini kerana, di Malaysia hanya radio Multimedia University sahaja yang menggunakan teknologi ini sepenuhnya bagi radio kampus universiti tersebut.

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LIST OF ABBREVIATIONS

ABBREVIATION	WORD
ADSL	Asymmetric Digital Subscriber Line
AOL	American On-line
AM	Amplitude Modulator
BI	Bahasa Inggeris
BM	Bahasa Melayu
CD	Compact Disc
CLNP	Connectionless Network Protocol
CNAME	Canonical Name
DNAS	Distributed Network Audio Server
DSL	Digital Subscriber Line
FM	Frequency Modulator
GMT	Greenwich Mean Time
HTTP	Hypertext Transfer Protocol
IP	Internet Protocol
IPX	Internetwork Packet Exchange
ISDN	Integrated Services Digital Network
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
LAN	Local Area Network
MACP	Music Authors Copyright Protection
MB	MegaByte

MPEG	Moving Picture Experts Group
NAT	Network Address Translation
PC	Computer
PPM	Public Performance Malaysia
QOS	Quality of Service
RIM	Recording Industry Association of Malaysia
RMMU	Radio Multimedia University
RTCP	Real-Time Control Protocol
RTM	Radio Televisyen Malaysia
RTP	Realtime Transport Protocol
RTSP	Real-Time Streaming Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	User Datagram Protocol
UPM	Universiti Putra Malaysia
URL	Uniform Resource Locator

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CHAPTER I

INTRODUCTION

1.1 Project Background

Radio performs many functions today. Even so, the performance of radio is being improved and new facilities are being introduced all the time. The benefits of radio technology are an integral part of our everyday life. Over the past years we have come to accept radio, taking it for granted and not realizing how much it contributes to the running of modern city. Due to that, this KUTKM (Kolej Universiti Teknikal Kebangsaan Malaysia) radio streaming project is proposed in order to show others how much we appreciate the technology. Since KUTKM does not have any campus radio before, this project could be a stepping stone in order to promote KUTKM to others.

The main purpose of this project is to develop the content of programs for KUTKM radio streaming. The content of the radio will be developing based on the research from other campus radio in Malaysia like Universiti Putra Malaysia, Multimedia University as well as Universiti Utara Malaysia.

Internet radio is not a new thing for certain people since they have been using the technology for the past few years. For example, Multimedia University has developed its first campus radio called RMMU using streaming technology in 1998 and it continues until now. While Universiti Putra Malaysia has been using this technology since 2004 and came out with the idea of Putra FM radio. However, Putra FM is not only using the streaming radio as a medium. They are using the analogue radio system too.

1.2 Problem Statements

This study is performed in order to develop a radio streaming especially for KUTKM. Since KUTKM has not producing any university radio, this project would be a stepping stone in order to introduce KUTKM to other people as well as to get involve in the broadcasting field. Therefore, to develop appropriate contents for KUTKM radio programs the developer has to do some researches and interviews on the topics with related people who involved in the field especially Putra FM teams. The Putra FM is one of the university radio streaming owned by Universiti Putra Malaysia under the Communication Department, Faculty of Modern Languages and Communication. Besides that, the developer will do some research with the existing radio streaming like Uniutama Radio (Universiti Utara Malaysia) and Radio Multimedia University (RMMU).

Furthermore, the main problem in streaming is that when users attempt to connect to a stream by using the Windows Media Player, they may experience very poor quality throughout the course of the connection. The symptoms include, but are not limited to, the following:

- The Windows Media Player goes into a buffering loop. It means that the buffering percentage may change from 16% to 58%, and then go to 96% and so on for example.
- The Windows Media Player reports a large amount of packet (type of data being transferred) loss.
- The Windows Media Player pauses in a “Buffering”, “Waiting” or “Connecting” stage.

This may be caused by some cable or digital subscriber line (DSL) modems that use Network Address Translation (NAT). Some NAT devices do not properly forward UDP packets. Similar behavior may be caused by personal firewall software. To resolve this problem, the User Datagram Protocol (UDP) is disabled for the Windows Media Player

on the client computer. If UDP protocol is disabled, the player (Windows Media Player) connects to streaming content through Transmission Control Protocol or Hyper Text Transfer Protocol (if these are enabled on the Windows Media Server).

Another problem with streaming is that the bandwidth requirement. The audio can be streamed over dial-up, but the experience is not nearly the same. Low-bandwidth audio is more compressed, and there is a noticeable degradation of quality. Therefore, the data often cannot arrive fast enough, so the feed will drop out and become choppy. By contrast, high-bandwidth feeds deliver audio close to CD quality.

Quality is another major problem in streaming an audio. The quality of the stream is depends on the number of listeners and the length of time they are connected to the site. Besides that, the format which one can stream the radio content in has different costs due to licensing models (Real One Player, Windows Media Player). Therefore, the developer will use the Windows Media Player because it is suitable for most circumstances and can be run without the need for additional software licensing beyond Windows 2000 sever. However, windows streams will only run on Windows platform.

1.3 Objectives

This project is proposed in order to achieve some objectives. The objectives of this project are stated as follow:

- To develop the content of programs for KUTKM radio streaming. The content of the radio will be developing based on the research from other campus radio in Malaysia like Universiti Putra Malaysia and Multimedia University.