

**DEVELOPMENT OF TELERESEARCH MODEL
USING OPEN SOURCE SOFTWARE**

RAJENDARAN A/L CHELLAPPAN PILLAI

UNIVERSITI UTARA MALAYSIA

2008

QA 13
76.73
S 46
2161d
2008

**DEVELOPMENT OF TELERESEARCH MODEL
USING OPEN SOURCE SOFTWARE**

A Thesis submitted to the graduate School in partial
Fulfillment of the requirement for the degree
Master in Information Technology
Universiti Utara Malaysia

By

RAJENDARAN A/L CHELLAPPAN PILLAI

Matric No.: 87105



KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(Certificate of Project Paper)

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certify that)

RAJENDARAN A/L CHELLAPPAN PILLAI
(87105)

calon untuk Ijazah
(candidate for the degree of) **MSc. (Information Technology)**

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project paper of the following title)

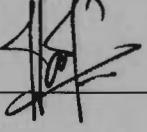
DEVELOPMENT OF TELERESEARCH MODEL
USING OPEN SOURCE SOFTWARE

seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project paper)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan
dan meliputi bidang ilmu dengan memuaskan.
(that the project paper acceptable in form and content, and that a satisfactory
knowledge of the field is covered by the project paper).

Nama Penyelia Utama
(Name of Main Supervisor): **DR. HASLINA MOHD**

Tandatangan
(Signature)

: 

Tarikh
(Date)

: 15th Dec. 2008

PERMISSION TO USE

In presenting this project in partial fulfillment of the requirements for a postgraduate degree from the Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholar purposes may be granted by my supervisor(s) or, in their absent, by the Dean of the centre for graduate studies. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given shall be given to me and Universiti Utara Malaysia for any scholar use which may be made of any material from my thesis.

Request for permission to copy or make other use of the material in this thesis in whole or part should be addressed to:,

Dean

Centre For graduate Studies

Universiti Utara Malaysia

06010 Sintok

Kedah Darul Aman

Abstracts

The importance of Video media for communications and entertainment has been a problem for many decades. Initially video was captured and transmitted in analog form. Video compression became an important area of research in the late 1980's and 1990's and enabled a variety of applications including video storage on DVD's and Video-CD's, video broadcast over digital cable, satellite and terrestrial (over-the-air) digital television (DTV), video conferencing and videophone over circuit-switched networks. The growth and popularity of the Internet in the mid-1990's motivated video communication over best-effort packet networks.

The report identifies the gaps between the capabilities of currently deployed systems and the user requirements, and proposes further work centered on the intranet (local Area Network) and World-Wide Web system to develop the teleresearch tools by using open source software. Considering the expensive budget allocation is required to develop the teleresearch tool, this project proposed a development of the teleresearch tools using open source software which freely available in the internet for University researchers usability. In addition, the open source software also gives flexibility to modify the source codes according to user's need with better security solution.

This report shows, how the Teleresearch is been developed by using most of the open source tools which freely downloaded from internet. The manipulation freedom in changing the source code to gather with the interface modifications, gives us a maximum freedom to develop the teleresearch as per the organization needs. The main contribution of the Teleresearch is giving a great opportunist to all the researchers in Allianze College of Medical and Science (ACMS) to use this software as most important communication tool in order to conduct their research. However, there is a limitation in teleresearch model which inadequate with the bandwidth to retrieve streamed files depending to internet traffic. Internet congestion can cause playback delays, and even living on a particular road or street can influence the reception of streamed video connection.

Consideration of the variation of video streaming quality and dynamic Optimization of internet traffic should be considerate as a future research in order to develop an advance quality of video streaming.

ACKNOWLEDGEMENT

Firstly, I would like to express my appreciation to my God, the most merciful and the most compassionate who has granted me the ability and willing to start and complete this study. I do to his greatness to inspire and enable me to continue for the benefits of humanity. My most prideful thankfulness goes to my supervisor **Dr. Haslina Mohd** for her scientifically proven and creativity encouraging guidance. Honestly, she has been all the time center of inspiration and guidance. I'm deeply grateful and thank her for her support and cooperation as being equipped to provide her best help. My Thank also goes to all the lecturers who giving me the moral support such as Assoc. Prof. Dr. Fadzilah Siraj, Assoc. Prof. Dr. Wan Rozaini Sheik osman, Dr. Nor Laily Hashim , Assoc. Prof. Dr. Norshuhada Shiratuddin. “May God bless all of them”.

Last but not least, I wish to thank all my dearest family members, especially my Uncle Mr & Mrs Munusamy, My Father and mother in law Mr & Mrs Nadason, Brother in law Mr. Gobinath and other family members. I dedicate my admiration and thanks to my lovely wife (Yamuna Nadason) who has sacrificed herself and supported me to the completion of the project. My demonstrative appreciations are to all my friends especially Mr. Masli Yahya, Mr. Hazly Arshad, Dr. Badrul Akmal Hisham (Orthopedic Specialist), Mr. Jay Ganesh, Mr. Asraf (My working colleagues), Colleagues, all FTM staff and everyone who has put the hand either directly or indirectly to complete this project.

2.3.1	The Use of Video streaming	10
2.3.2	The Advantage and Disadvantage of Video Streaming	11
2.4	Definition of Open Source Software	12
2.4.1	Advantage of Open source Software	13
2.4.1.1	Communal reflexivity	13
2.4.1.2	Reliability	13
2.4.1.3	Lower Overhead	14
2.5	The Culture of Teleresearch Model	14
2.6	Requirement of the prototype design	15
2.7	Rational Rose case tool	16
2.8	The application tools that using Open Source Software	16
2.8.1	Joomla	16
2.8.2	Centos	17
2.8.3	Dimdim	17
2.8.4	Webmin	18
2.8.5	PHP	18
2.8.6	Apache	19
2.8.7	Mysql	19
2.8.8	Vmware Player	20
2.8.9	Flash Player	21
2.90	Summary	21

CHAPTER 3 METHODOLOGY

3.1	Introduction	23
3.2	Awareness of Problem	24
3.3	Suggestion	24
3.4	Development	25
3.4.1	Analysis and Quick Design	26
3.4.2	Prototyping Cycle	27
3.4.3	Testing	27
3.4.4	Implementation	28
3.5	Evaluation	28
3.6	Conclusion	28

CHAPTER 4 ANALYSIS AND DISCUSSION

4.1	Introduction	29
4.2	Requirement of the prototype design	29
4.2.1	Use Case Diagram	30
4.2.2	Use Case Specification	32
4.2.3	Class Diagram	40
4.2.4	Sequence Diagram	42
4.3	Conclusion	43

CHAPTER 5 EVALUATION

5.1	Overview	44
-----	----------	----

5.2	General Questions	44
5.3	Usability Testing	47
5.4	Conclusion	49
CHAPTER 6		
6.1	Conclusion	50
REFERENCES		
APPENDIX A		
APPENDIX B		

LIST OF FIGURES

Figure 3.1: Design Research Cycle (Vaishnavi and Kuechler)	23
Figure 3.2: RAD Methodology used for develop the Teleresearch	26
Figure 4.1: Use Case Diagram for Teleresearch Model	31
Figure 4.2: Use Case: View Start Meeting	32
Figure 4.3: Use Case: Host Meeting / set up	33
Figure 4.4: Use Case: Enable Video / Audio	34
Figure 4.5: Use Case: Invite attendees	35
Figure 4.6: Use Case: Screen Sharing	36
Figure 4.7: Use Case: Up Load Power point slide / Pdf Slide	37
Figure 4.8: Use Case: Enable to use white board	38
Figure 4.9: Use Case: Enable to use Public or Private chatting board	39
Figure 4.10: Use Case: Leave Meeting	40
Figure 4.11: Class Diagram	41
Figure 4.12: Sequence Diagram	42
Figure 5.1: Range of Age who took the Survey	45
Figure 5.2: Frequency if Internet Usage Among researchers	45
Figure 5.3: Purpose of Internet Use	46
Figure 5.4: Variability Chart for Response of the Development of Teleresearch	46
Figure 5.5: Variability Chart for Response of the Development of Teleresearch	47

LIST OF TABLES

Table 5.1: Result of the Mean and Percentage for perceived usefulness	48
Table 5.2: Result of the mean and percentage for perceived ease case of use	49

CHAPTER 1

INTRODUCTION

This chapter discusses the overview of the study implemented in this study. This chapter consists of research background, problem statement, Research question, Research Objective, scope of study and significant of study. At the end of this chapter, thesis conclusion describe the structure of this report.

1.0 Overview of the research

The Development of teleresearch model using open source software is a tool designed for researchers. While in universities and colleges, where the combination of research been done by various faculty of research lectures and students at post graduate and PhD levels. Most of the universities or colleges are trying to implement the streaming tools method but fail to do it right due to the un realization on various types of open source softwares who offered free license by the open source organization and the significant cost which waiting to be funded although they are utilizing most of the equipments that needed in their organization for the project. While in Universities, lectures have been working without resting, running over to the Labs or to another faculties to meet other research colleague. Where else colleague or other researcher who are in other faculty out for some extra activities are unable to listen to the research discussion. Development of teleresearch model using open source software would give a great benefit to academic world.

The contents of
the thesis is for
internal user
only

REFERENCES

AboutVideoEditing. (2003a). *Streaming video over the web*. Retrieved November 4, 2005, from <http://www.aboutvideoediting.com/articles/webstreaming-video.shtml>

AboutVideoEditing. (2003b). How to shoot streaming videos for the web. from <http://www.aboutvideoediting.com/articles/shooting-streaming-video.shtml>

Association for the Advancement of Computing In Education Journal, 14(1) Reed, R. (2003). Streaming technology improves student achievement. *T.H.E. Journal*, 30(7), 14-20.

Babar, M.A. winkler, D.&Biffl, S(2003).Evaluating the usefulness and Ease of Use of a groupware tool for the software Architecture evalution process. Paper presented at the empirical software engineering and measurement,2007.ESEM2007.First International Symposium Madrid,Spain

Blane warrence. retrieved from June 8.2004.Use Webmin for Linux Administration. <http://www.sitepoint.com/article/webmin-linux-administration-1/>

Burnett, A., Maue, D., & McKaveney, E. (2002). Planning and implementing instructional video. *Syllabus*, 15(11). Retrieved November 4, 2005, from <http://www.syllabus.com/article.asp?id=6394>

Davis, F.D.(1989) Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340.

Falko time.2006. How To Import VMware Images Into VMware Player/Server. http://www.howtoforge.com/import_vmware_images

Graham Morrison.retrived from December 1.2004.Reviews centos. <http://www.linuxformat.co.uk>.

Hartsell, T., & Yuen, S. (2006). Video streaming in online learning. *AACE*

Hesham Khairy abdelfattah and Ali A.Raouf.2004 “ No more fear or doubt: electronic architecture in architectural education”

Jennifer Kyrnin.2008. How to Install the Apache Web Server on Linux. Jesus M. Gonzalez-Barahona 2000.retrived from April.24. 2000. Advantages of open source software. http://eu.conecta.it/paper/Advantages_open_source_soft.html”

John G. Apostolopoulos et al. 2002. Video streaming :concepts, algorithms and system. <http://www.hpl.hp.com/techreports/2002/HPL-2002-260.pdf>

John Mc Creesh.2003. OpenOffice.org 1.0, ODBC, and MySQL 'How-to'. <http://www.unixodbc.org/doc/OOoMySQL9.pdf> *Journal, 14(1)*, 31-43.

Ken Coar.2006 " <http://www.opensource.org/doc>.

Mayank Sharma. Retrieved from June 13, 2008 .Dimdim Open Source is a bright-bright solution for Web conferencing. <http://www.linux.com/feature/137877>.

Mike Chapple.2008.Php definition. <http://databases.about.com/cs/development/g/php.htm>

Nielsen, Jakob. (1999, August 8). Video and Streaming Media. *UseIt.com*. Retrieved February 23, 2000 from the World Wide Web: <http://www.useit.com/alertbox/990808.html>.

Paul Festa. Retrieved from April 6.2005. Flash authors ponder Google pitfalls. http://www.leyline.net/images/cnet_article.pdf

Quick Start Guide. <http://www.netshinesoftware.com/downloads/Joomla>. Reference chpt2: Retrieved November 4, 2005,

Russel Walker. retrieved from September.9.2005. Joomla 1.0

Stallman, Richard (2007). "Why Open Source Misses the Point of Free Software". retrieved on 2008-05-05. "Open source is a development methodology; free software is a social movement."

Schmerbeck, A. (2000). *Streaming video*. Retrieved November 4, 2005, from <http://www.edb.utexas.edu/multimedia/Streaming%20Video.pdf>

Shepard, K. (2004). Questioning, promoting, and evaluating the use of streaming video to support student learning. In J.J. Hirschbuhl & D. Bishop (Eds.), *Computers in education* (pp. 124-130). Guilford, CT: McGraw-Hill/Dushkin

Tanmoy Debnath, Nicola Cranley, Mark Davis, Experimental Comparison of Wired versus Wireless Video Streaming over IEEE 802.11b WLANs, Irish Signals and Systems Conference (ISSC) 2006, Dublin, Ireland.

Yadav, R.(2007).UML Guide v2.1(Electronic Version), 1-0. Retrieved March,3 from <http://devmentor.org/references/uml/uml.htm>.

Zinger et al.2003. Effective Use of Video-Streaming for Support of Traditional and Distance Learning Courses.
<http://www.oln.org/conferences/OLN2003/papers/ZirgerOLN03.pdf>

Zirger et al.2003 "Effective Use of Video-Streaming for Support of Traditional and Distance Learning Courses "